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SOCIAL FORESTRY NETWORK



Newsletter

Agricultural Administration Unit, Overseas Development Institute

The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these has between 600-1500 members, drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

ISSN 0951-1849

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NETWORK PAPERS ACCOMPANYING THIS NEWSLETTER

The theme of this Spring mailing is management and control of natural resources by local people. Three of the papers describe woodland management systems in arid areas of Africa, whilst the fourth paper looks at urban/rural conflicts and male/female conflicts and their effects on natural resource management.

The conflicts over land-use and resource management raised in these papers are not exclusive to Africa and have a relevance to policy formation throughout the world.

- 6a 'Towards Better Woodland Management in Sahelian Mali'
 by J. Skinner
- 6b 'Trees and Pastoralists: The Case of the Pokot and Turkana'
 by Edmund Barrow
- 6c 'Rural Women and Urban Men: Fuelwood Conflict and Sustainability in Sussex Village, Sierra Leone'
 by Andy Inglis
- 6d The Reality of the Commons: answering Hardin from Somalia
 by Gill Shepherd

NEWS OF THE SOCIAL FORESTRY NETWORK

Funding

We are happy to announce that, as a result of negotiations over the last few months our two key funders, the Ford Foundation and the Aga Khan Foundation, have made grants to us which ensure the survival of the Social Forestry Network for the next three year period. We are exceedingly grateful to them.

Networkers who have written to us over the last three years with comments, encouragement and praise might like to know that their letters were one important way in which we could show our funders that the Network was filling a need not being met elsewhere.

Field Research

Gill Shepherd has been working in Somalia for ten weeks during the first few months of this year, on the possibilities for Natural Forest Management by Bay Region pastoralists. Preliminary findings are reported in the network paper which accompanies this newsletter. This piece of research is part of a larger project on participatory approaches to natural forest management in Africa, which will run through the first two years of the new grant period.

A second piece of research for the same grant period will focus on trees for the poor in Asia.

NETWORK ANNOUNCEMENTS

Change of address

Please note that, when you send us a change of address, we also need to know if you have changed your organisation, position or type of employment. We also need to be able to change these details in the database for reference and ultimately for inclusion in the next edition of the register.

Staff

Our network secretary Ingrid Norton moved into a full-time post with us at the beginning of April 1988. Mary Hobley continues to work for the network half-time as Network Assistant.

Apology

In paper 6c of the last mailing, 'Involving the Poor in Forest Management: Can it be done? The Nepal-Australian project experience', we accidentally omitted some of Mary Hobley's personal details from the inside cover. We reproduce them here.

Mary Hobley conducted the research detailed in the paper whilst enrolled for a PhD in the Department of Forestry, at the Australian National University, Canberra. The Nepal-Australia Forestry Project is a bilateral aid project between His Majesty's Government of Nepal and the Government of Australia. It is managed by the Australian National University.

From a Networker

The assembly of selected genetic material of tropical pines

A four-year-project is currently underway at the Oxford Forestry Institute with the purpose of conserving a genetic resource of potentially useful tropical pines for use in industrial plantations in the tropics. The work consists of collecting small parts of branches (scions) from selected trees

Pinus caribaea, *Pinus oocarpa* and *Pinus patula ssp. tecunumanii* in a wide range of tropical countries. This material is then grafted in glasshouses in Oxford and the clones multiplied vegetatively. The clones are sent to a small group of clonal orchards in the tropics from where further multiplication of the material and free transfer of seed, scion and pollen from the selected clones can take place. The network has a current membership of 32 organisations in 19 countries. Any individuals or organisations who are interested in receiving the network newsletter should contact:

Alan Pottinger
Research Officer
Oxford Forestry Institute
South Parks Road
Oxford OX1 3RB
UK

NEWS OF THE OTHER AAU NETWORKS

Agricultural Administration Network

run by John Farrington, published the following discussion paper:

'Experimenting Cultivators: a methodology for adaptive agricultural research' by Louk Box, Wageningen Agricultural University.

Irrigation Management Network

run by Mary Tiffen and Charlotte Harland, who has replaced Camilla Toulmin, published the following papers in its December mailing:

- 3b 'Rehabilitation and Participation: The Views of the Engineers' by Mary Tiffen
- 3c 'Checklist for Incorporating System Operation and Maintenance in Design' by Harold D. Frederiksen and 'Planning Implications of Socio-Economic and Institutional Findings' by Mary Tiffen
- 3d 'Matching Crop Water Requirements in Large Systems with a Variable Water Supply - Experiments in India' by Jeremy Berkoff and 'Situational Compatibility - The Example of Warabandi' by Walter Huppert
- 3e 'Developing Effective Extension Irrigation Programs with Appropriate Technology' by Marvin N. Shearer

Pastoral Development Network

run by Jon Moris, published the following papers in its March mailing:

- 25a 'Enclosure of the East African Rangelands: Recent Trends and their Impact' by Olivia Graham
- 25b 'Range Enclosure in Central Somalia' by Roy Behnke Jr
- 25c 'The Decline of Lahawin Pastoralism (Kassala Province, Eastern Sudan)' by John Morton
- 25d 'Towards Better Woodland Management in the Sahelian Mali' by J. Skinner

LUNCHTIME MEETINGS

Social Forestry Network

- 13 November 1987 Social Forestry and the Rural Poor in India
N. C. Saxena, Joint Secretary of the National Wastelands
Development Board, Ministry of Environment and
Forests, India
- 17 March 1988 Plan Piloto Forestal: An Alternative Approach to
Conservation and Sustainable Tropical Forest
Management in Mexico
Dr Guido Kuchelmeister, former team member of the
project in Mexico

Pastoral Development Network

- 18 March 1988 The Current Crisis in Africa's Common Property
Rangelands: Cases from Somalia and Sudan
Gill Shepherd, Social Forestry Research Fellow, ODI
John Morton

Irrigation Management Network

- 4 November 1987 Deriving Lessons from Experiences of Project
Management
G. L. Ackers, formerly of Sir M. McDonald and Partners
- 11 December 1987 Dambos and Micro-Scale Irrigation: Technical and
Social Aspects in Zimbabwe
- 8 April 1988 Irrigation in China
Prof. Guo Hua Xu
- 3 May 1988 How Much are Villagers Willing to Pay for Improved
Water Services?
Dale Whittington, University of North Carolina

Agricultural Administration Network

- 29 February 1988 Whither Farming Systems Research?
Mike Collinson, CGIAR, Washington

REPORTS ON RECENT CONFERENCES AND WORKSHOPS

1. Planning and Implementation of Social Forestry programmes in Indonesia

The workshop was held in the Forestry Faculty of the Universitas Gadjah Mada in conjunction with Wageningen Agricultural University and the FAO (Bangkok) Regional Wood Energy Development Programme from 1-3 December 1987. It was attended by people from Indonesian forestry and wood energy institutions. Special emphasis was given to the need for continued research and curriculum development in social forestry, as a means of improving the performance of social forestry programmes. The conclusions reached by the workshop were:

- i. Universities need to train their students in the new skills needed for Social Forestry project implementation. There should be increased emphasis on research to assist on-going field projects.
- ii. A need to train people in quantitative and qualitative diagnostic methodologies, to create a problem-solving approach to Social Forestry projects.
- iii. To be able to incorporate the diverse and sometimes conflicting needs of local people in social forestry management systems, professional foresters need to have good communication skills and social understanding.
- iv. Better adapted silvicultural and agroforestry technologies and appropriate technologies for village-level industries based on forest products, should be developed.
- v. Investigation into local knowledge of forest/tree management systems for application in social forestry projects must be continued.
- vi. Research into the institutional development necessary for increased adoption of resource management technologies in government and village organisations is required.
- vii. There is a need for a balanced curriculum for training of both generalist and specialist foresters.

Further details of this workshop are available from:

Mrs Ir. Wahyuni Andayani
Social Forestry Workshop Secretary
Universitas Gadjah Mada
Fakultas Kehutanan
Bulaksumur, Yogyakarta
Indonesia

2. Forest Policy in relation to tribal communities

The Centre for Tribal Conscientization in Pune, India, organised a workshop at Lonavala from 10-12 November 1987. The workshop discussed the recent draft of the Forest Policy Resolution produced by the Government of India. The workshop produced a critique of the official forest policy and also an alternative version of the forest policy. The major points of this critique are summarised below:

- i. The policy is a continuation of the British colonial forest policy.
- ii. The current policy shares with its colonial antecedents, the mistrust in people's ability to conserve forests.
- iii. The forest policy does not recognize the ecological importance of the forests.
- iv. Plantation forests cannot reproduce the rich biological diversity of natural forests. Compensatory afforestation provides a loophole for the destruction of natural forests by vested interests.
- v. The dependence of tribal communities on the forest for their livelihood and culture is ignored.
- vi. Participation is understood to mean payment for involvement by people in forest management.
- vii. Insufficient stress is placed on the need for attitude change within the forest department from forest policemen to partners with local people.
- viii. The policy should recognize existing people's movements and build on them.
- ix. The term 'national needs' should be clarified to ensure that the needs of local people are not subordinated to those of state and industry.
- x. Women's involvement should be given stronger emphasis.
- xi. Priority should be given to meeting the basic needs of the rural poor.

A new classification of forests was proposed:

National Forests

Natural forests to be conserved and the rights of forest dwellers to be protected. Management will be by a board with representatives from local groups and forest departments. All National Forests will be owned by the State.

Family Forests

Degraded forest lands and wastelands will be transferred to marginal and landless households. The land will be leased to women with controls over use of the forest.

Village Forests

Degraded land that is not included under Family Forests. To be managed by the Gram Panchayat, all produce from the area will be for the use of the village.

Institutional Forests

Wasteland, degraded forest to be afforested by institutions or cooperatives. They would have the right of usufruct but would not be allowed to cut trees.

State Forests

Forests which are not covered in any of the above categories would be managed by the Forest Department for the needs of industry and basic needs of the people.

Further information about this workshop and the work of the Centre is available from:

Sharad Kulkarni
Centre for Tribal Conscientization
B-4 Shantadurga
41/4 Karve Road
Pune 411038, Maharashtra
INDIA

REPORTS ON RECENT LUNCHTIME MEETINGS

Social Forestry and the Rural Poor in India

held on 13 November 1987

The talk given by N.C. Saxena was an interesting description of social forestry in Uttar Pradesh. Mr Saxena advocated that afforestation programmes should not be divided into social and production forestry but that it is more logical to compartmentalize into welfare and economic forestry; welfare needs to be met largely from government lands and the market to depend on privately produced trees. The meeting was well attended with a lively discussion afterwards.

Plan Piloto Forestal: An Alternative Approach to Conservation and Sustainable Tropical Forest Management in Mexico

held on 17 March 1988

Guido Kuchelmeister described how over four years of work of the 'Plan Piloto Forestal', a project funded by the Federal Republic of Germany, it was possible to introduce the rudiments of large-scale and sustainable management of tropical forests by the peasant community living in the vicinity of the forest. The peasant farmers controlled all aspects of management of the forest from an inventory of the resources to the extraction of timber on a sustainable basis. A video presentation of the work of the project showed the heavy mechanization of timber extraction. The purchase of the machinery was made possible by the governor of the state who extended credit facilities to the farmers. The farmers paid two foresters from the forest service to work for them in an advisory role. It was interesting to see a large-scale timber production project in the control of peasant farmer groups: a very different form of social forestry! In the discussion there were some doubts raised as to the effectiveness of the silvicultural system chosen, but it was stressed that this is only the beginning of a long-term project.

The Current Crisis in Africa's Common Property Rangelands:
Cases from Somalia and Sudan

held on 18 March 1988

This was a joint presentation given by Gill Shepherd and John Morton for the Pastoral Development Network. Gill Shepherd, drawing on material from a recent field trip to the area, discussed the conflicts in the Bay Region of Somalia over common property forest resources.

The charcoal-burners who supply Mogadishu are rapidly depleting the forest area used by agro-pastoralists for grazing and wood supplies, and have now begun to destroy woodland surrounding villages. The villagers are unable to prevent the charcoal-burners from cutting their forest. The National Range Agency, although recognizing the problem, is also unable to control the activities of the charcoal-burners. Since it has insufficient staff to ensure that the charcoal-burners avoid areas needed by the agro-pastoralists. Field work involved the discussion and formulation of possible management plans for the area to be implemented by Bay Region residents. These would restore certain communal land rights. This initial study forms the basis of a proposal to be drawn up for sustainable management of the forest for both agro-pastoralists and charcoal-burners.

John Morton's presentation drew on his fieldwork with the Lahawin people in Eastern Sudan. He discussed the decline of Lahawin pastoralism as a result of the expansion of officially supported, mechanized rainfed farming. The pastoralists now exist mainly by wage labour on the rainfed schemes and by the illegal sale of wood. Their grazing lands have been expropriated and communal rights to riverbanks for livestock access to water have been privatized by more powerful groups. Mechanized agriculture has destroyed large areas of woodland and increasingly destabilized the pastoral economy.

Both case studies showed how pastoralists are becoming increasingly marginalized by other stronger groups taking control of natural resources.

PULL-OUT SUPPLEMENT TO REGISTER OF MEMBERS
ADDITIONS & CHANGES

B E N I N

SIMSIK, MR MICHAEL, Rural Development Worker,
Peace Corps, Dept. of Forestry, B.P. 971, Cotonou, BENIN. Tel: 229()-
321115. Disc: Fo, M, NSc, Soil. Interests: 01, 02, 03, 07, 08, 10.

B O T S W A N A

KYOMO, MR M L, Director,
SACCAR, SADCC, P.B. 00108, Gaborone, BOTSWANA. Tel: 267(31)-52381 TX
2752 SACAR BD. Disc: Ag, Ed, Env, NSc. Interests: 01, 03, 04, 07, 12, 13.

B R A Z I L

KENGEN, DR SEBASTIAO, Forester,
Brazilian Institute for Forestry Development, Dept. of Forestry Economics,
Caixa Postal 02-0073, Brasilia, DF 70001, BRAZIL. Disc: Fo. Interests: 01,
03, 05, 09, 11, 12.

C A N A D A

SHEA, MR GARRY ALLEN, Forestry Consultant, formerly SRI LANKA
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C A P E V E R D E

MARMILLOD, MS ANGELIKA, Adviser, formerly UK
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163, Praia, CAPE VERDE.

C H I L E

ASTORGA, MR LUIS, Executive Director,
Centro para el Desarrollo Forestal, Barros Borgono 297, Santiago, CHILE.
Tel: 56(2)-2232858 TX 240301 BOOTH. Disc: Ec, Ed, Env, Fo. Interests: 01,
02, 03, 05, 09, 13.

C H I N A

TRAVERS, MR LEE, Representative, formerly EGYPT
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York, NY 10017, USA.

C O S T A R I C A

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Universidad Nacional, Escuela Ciencias Biologicas, Campus Omar Dengo,
Heredia 3000, COSTA RICA.

MCKENZIE, MR THOMAS A, Chief Economist,
CATIE, Dept. of Forestry/Agroforestry, Turrialba, COSTA RICA. Tel: 506()-
561516 TX 8005 CATIE CR. Disc: Ec, Fo, M, RP. Interests: 03, 08, 09, 10.

D O M I N I C A N R E P U B L I C

GEILFUS, MR FRANS, Project Coordinator,
ENDA - Caribe, Agroforestry Project. Apto. 2100 Huacal, Santo Domingo,
DOMINICAN REP. Disc: Ag, Ed, FS, G. Interests: 01, 04, 06, 07, 09.

RODRIGUEZ L, MR ALBERTO, Associate Director,
Peace Corps, National Resources & Appropriate Technology, Apto. 1412,
Santo Domingo, DOMINICAN REP. Tel: 1-809()-6824102. Disc: Ag, Env, Fo,
NSc. Interests: 01, 04, 07, 09, 11, 12.

E G Y P T

NYGAARD, MR DAVID, Representative,
Ford Foundation - Egypt, Middle East and North Africa Section, P.O.Box
2344, Cairo, EGYPT. Tel: 20(2)-32121 TX 93054 FORDF UN. Interests: 01, 02.

E T H I O P I A

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CONCERN, Dept. of Agriculture/Agroforestry, P.O.BOX 2434, Addis Ababa,
ETHIOPIA. Tel: 251(1)-186729. Disc: Ed. Interests: 01, 02, 03, 04, 05, 07.

I N D I A

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Kerala Forest Department, Dept. of Social Forestry, T.C. 4/611, Brahmin's
Colony, Kawdiar, Trivandrum 3, Kerala, INDIA. Tel: 91(471)-66635. Disc: Ed,
Env, Fo, NSc. Interests: 01, 02, 04, 06, 07, 11.

BHATTACHARJEE, MR ABHIJIT, Programme Officer,
Aga Khan Foundation - India, Dept. of Rural Development, Sarojim House,
2nd floor, 6 Bhagwan Dass Road, New Delhi 110001, INDIA. Tel: 91(11)-
384483 & 387938 TX 0315178. Disc: Ag, AE, Ec. Inter: 01, 03, 04, 06, 09, 12.

CHIKKASUBBANNA, DR V, Horticultural Instructor,
University of Agricultural Sciences, Div. of Horticulture, GKUK, Bangalore
560065, Karnataka, INDIA. Tel: 91(812)-330153. Disc: Ag, Env, H, NSc.
Interests: 01, 05, 06, 09, 10, 13.

CRAPPER, MR D B, Agric.Economics Advlser, formerly UK
ODA, British High Commission - New Delhi, c/o FCO - New Delhi, King
Charles Street, London SW1E 2AH, UK.

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World Wide Fund for Nature - India, Data Centre for Natural Resources,
104 Spencer Road, Bangalore 560005, Karnataka, INDIA. Tel: 91(812)-566506.
Disc: Ag, Env, Fo, NSc. Interests: 01, 03, 06, 11, 12.

DESHPANDE, DR R S, Assistant Professor,
Institute for Social & Economic Change,
Rural Economics Unit, Nagarbhavi P.O., Bangalore 560072, Karnataka, INDIA.
Tel: 91(812)-606224. Disc: AE, Ec. Interests: 02, 03, 04, 06, 09, 12.

JONES, MR NORMAN, Technical Manager,
Wimco Seedlings Ltd, BLK 5E Local Shopping Centre, Masjid Moth, New
Delhi 110048, INDIA. Disc: Ag, FS, Fo. Interests: 01, 03, 06, 07, 09.

KELLES-VIITANEN, MS ANITA, Expert,
ILO, Rural Women's Employment Promotion, 7 Sardar Patel Marg, New Delhi
110021, INDIA. Tel: 91(11)-3012101 TX 314909 ILO. Disc: Soc. Int:02,03,05,09.

MCFARLANE, MR R A B, Senior Forest Specialist,
Forestral International Ltd, c/o A.P. Forest Development Corp, NMDC
Building, Masab Tank, Hyderabad 500028, Andhra Pradesh., INDIA. Tel:
91(842)-224263 TX 4266640 SIIL. Disc: Ec, Fo, M. Interests: 03, 06, 08, 09.

MEHTA, MS KALPANA, Librarian,
Gujarat Institute of Area Planning, Nr Mahatma Gandhi, Vasahat Sarkhej,
Gandhinagar Highway, Gota 382481, Ahmedabad, Gujarat, INDIA. Disc: Ec, L.

MOSSE, DR DAVID, Regional Representative,
OXFAM, South India Region, 59 Millers Road, Benson Town, Bangalore
560046, Karnataka, INDIA. Tel: 91(812)-565154 TX (81)-8452603. Disc: RP.
Interests: 01, 03, 06, 11, 12, 13.

PHILLIPS, MR JOHN, Forestry Adviser,
Andhra Pradesh Forest Department, Canadian Social Forestry Team, NMDC
Building, 6th floor, Welfare Centre, Masab Tank, Hyderabad 500028, A.P.,
INDIA. Tel: 91(842)-228724 TX 4266640 SIIL. Disc: Fo. Int: 01,06,09,10,12.

RAWAT, MR TAJ BAR SINGH, Director,
International Institute of Educational Communication & Research, IIER, F-87
Lado Sarai, Mehrauli, New Delhi 110030, INDIA. Disc: Ed, Env, J, M.
Interests: 01, 03, 07, 09, 12, 13.

I N D O N E S I A

HAERUMAN, DR HERMAN J, Forest Management,
Fak. Kehutanan, Institut Pertanian Bogor, Jl. Condet Pejaten 9, Ps Minggu,
Jakarta 12510, INDONESIA. Tel: 62(21)-7997719. Disc: Ec, Fo, M. Interests:
01, 03, 04, 08, 09.

HILLEGERS, MR PAUL J M, FONC Project Manager,
Gadjah Mada University, Forestry Faculty, FONC Project, Bulaksumur,
Yogyakarta, INDONESIA. Tel: 62(274)-88688 x622 TX 25135 UG. Disc: Env,
FS, Fo, H. Interests: 01, 03, 07, 09, 12, 13.

MACKENZIE, MS CATHY A, Facilitator & Technical Adviser,
CUSO, Dept. of Forestry, P.O.BOX 381, Ujung Pandang, Sulsel, INDONESIA.
Tel: 62(411)-7919 (home). Disc: Fo, NSc. Interests: 01, 03, 07, 09.

PENISTON, MR BRIAN J, Field Representative, formerly CARE
USAID/O/PH, American Embassy, Jl. Merdeka Selatan 3-5, Jakarta Pusat.

VAN DER BIEST, MS MARIE-ANNE, Agricultural Engineer,
Flores Vrienden - Gent - Belgium, Kotak Pos 23, Maumere, Flores,
INDONESIA. Disc: Ag. Interests: 01, 02, 03, 04, 06, 09.

I S R A E L

AUSHER, MR REUBEN, DPY Director,
Ministry of Agriculture, Extension Service, Crop Protection Division,
P.O.Box 7054, Tel Aviv 61070, ISRAEL. Tel: 972(3)-211315. Disc: 01,04,07,13.

I T A L Y

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World Food Programme, Natural Resources, Via Cristoforo Colombo 426,
Rome 00146, ITALY. Tel: 39(6)-57971. Disc: Ec, Ed, Soc. Interests: 01, 03,
05, 06, 07, 10.

K E N Y A

BRADLEY, DR P N, Senior Research Fellow,
B.I.C.E.D.A., P.O.Box 56212, Nairobi, KENYA. Disc: Ed, FS, Fo. Interests: 01,
03, 05, 06, 07, 13.

FLEURET, DR ANNE, Senior Research Fellow,
University of Nairobi, Institute of African Studies, RDSO/ESA, P.O.BOX 222,
New York, A P O NY 09675, USA. Tel: KENYA 254(2)-582133. Disc: Soc.
Interests: 03, 05, 09, 11, 12, 13.

FOWLER, MR ALAN F, Programme Officer, formerly UK
Ford Foundation - Kenya, Eastern & Southern Africa, Regional Office,
P.O.Box 41081, Nairobi, KENYA. Tel: 254(2)-22298 & 338123 (h)-722077.

L E S O T H O

MALIEHE, MR TEBOHO PANGA, Division Head,
Ministry Of Agriculture, Forestry Division, P.O.BOX 774, Maseru 100,
LESOTHO. Tel: 266()-322826. Disc: Fo, M. Interests: 01, 03, 06, 07, 09, 10.

L I B E R I A

MAYERS, MR JAMES, Conservation & Dev. Adviser,
World Wildlife Fund, c/o Forestry Development Authority, P.O.Box 3010,
Monrovia, LIBERIA. Disc: FS, Fo, M, NSc. Interests: 01, 03, 04, 10, 12, 13.

SAMBOLAH, MR RICHARD SIAFA, Research Officer,
Forestry Development Authority, c/o German Forestry Mission, German
Embassy, P.O.BOX 34, Monrovia. LIBERIA. Tel: 231()-262252. Disc: Env, Fo,
NSc. Interests: 01, 07, 09, 11, 12, 13.

M A L A W I

NIHERO, MR D A, Forester, formerly MINISTRY OF FORESTS
South Lunzu F.P. School, P.O.BOX 2214, Biantyre, MALAWI.

M A L I

ABBOTT, MR STEPHEN PAUL, Project Director,
World Vision International, Menaka - Mali, B.P. 10853, Niamey, NIGER. Disc:
Ed, Fo, M, RP. Interests: 01, 02, 03, 06, 09, 10.

ATWOOD, MR DAVID, Agricultural Economist,
USAID, Agriculture Office, B.P. 34, Bamako, MALI. Disc: AE, Ed, FS.
Interests: 01, 02, 03, 11.

M E X I C O

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Instituto de Investigaciones Forestales y Agropecuarias, Dept. Manejo
Integral, Apto. 250, Chetumal, Quintana Roo, MEXICO. Tel: 52(983)-20500.
Disc: Ag, FS, Fo, M. Interests: 01, 03, 06, 09, 10, 11.

N E P A L

NEPAL, MR SUNIL K, Department Head,
Institute of Forestry, Dept. of Forest Mgmt, P.O.BOX 43, Pokhara, NEPAL.
Tel: 977()-61-20469. Disc: Ed, FS, Fo, M. Interests: 01, 03, 06, 07, 09, 10.

SHRESTHA, DR NARAYAN KAJI, Senior Research Officer,
New ERA, Social Action Research/Training, P.O.BOX 722, Kathmandu, NEPAL.
Tel: 977()-410803 & 413603. Disc: Ed, Fo, M, Soc. Ints: 01,03,04,05,07,08.

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Koshi Hills Development Programme Office, Dept. of Forestry, BTCO
Lazimpat, P.O.BOX 106, Kathmandu, NEPAL. Tel: 977()40022 & 413276 TX
2495 MET. Disc: Ed, FS, Fo, M. Interests: 01, 03, 06, 07, 09, 13.

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United Mission to Nepal, Jumla United Mission Project, P.O.BOX 126,
Kathmandu, NEPAL. Tel: 977()-212179 TX 2315 UMNEPA NP. Disc: Ed, FS,
Fo, H. Interests: 01, 03, 04, 07, 12, 13.

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Tribhuvan University, Institute of Forestry, P.O.BOX 43, Hariyo Kharka,
Pokhara, NEPAL. Tel: 977()-6120467. Disc: Ed,FS,Fo,Soil. Int: 01,03,04,06,07.

N E T H E R L A N D S

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FORTHCOMING CONFERENCES AND MEETINGS

Third International Rangeland Congress

November 1988, New Delhi

As part of this congress to be held in India, there will be a symposium on 'Ecosociology of range resources: getting the people involved'. The issues to be covered in this symposium include: the historical evolution of common property institutions to manage conflicts; contribution of women in managing rangeland; ecological degradation and emergence of social conflict amongst different economic classes; indigenous knowledge of tribal and other ethnic groups about plant and animal species.

For more information about this symposium contact:

Prof. Anil Gupta
Centre for Management in Agriculture
Indian Institute of Management
Ahmedabad 380015, Gujarat
INDIA

For information about other symposia in the congress contact:

Dr. Panjab Singh
Third International Rangeland Conference
Congress Secretariat
Indian Grassland and Fodder Research Institute
Jhansi 284003
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May 9-11 1988

Australia's Ever Changing Forests

Canberra, AUSTRALIA
Contact: J. Dargavel
Australian National University
P.O.Box 4
Canberra 2601, AUSTRALIA

May 16-18 1988

Changing Tropical Forests

Canberra, AUSTRALIA
Contact: J Dargavel
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- June 5-12 1988 Resource Availability and the Structure and Functioning of Tropical Ecosystems
Miami, Florida, USA
Contact: Jay M. Savage
Chairman
OTS Silver Anniversary Symposium
University of Miami
Department of Biology
P.O.Box 249118
Coral Gables, FL 33124, USA
- June 20-23 1988 International Symposium on Advanced Technology in Natural Resource Management
Fort Collins, Colorado, USA
Contact: Office of Conference Services
Rockwell Hall
Colorado State University
Fort Collins, Colorado 80523, USA
- June 20-25 1988 Workshop to introduce a management information system on multi-purpose tree species research
Sponsored by the University of Minnesota, in cooperation with CATIE in Costa Rica and with financial support of the Kellogg Foundation.
Contact: Dr Ronnie de Camino Velozo
Tree Cropping and Fuelwood Production Project
CATIE
Turrialba, COSTA RICA
- June 26-10 July 1988 Regional Workshop on Tropical Forest Ecology and Management in Asia-South Pacific
Lae, PAPUA NEW GUINEA
Contact: Dr S.M. Saulei
Chairman
Workshop Organizing Committee
University of Papua New Guinea
P.O.Box 320
Lae, PAPUA NEW GUINEA

- July 19-24 1988 First International Congress of Ethnobiology
Belem, BRAZIL
Contact: Prof.Dr. Darrell Addison Posey
Nucleo de Etnobiologia
Museu Goeldi
Caixa Postal 399
Belem 66040
Para
BRAZIL
- September 1988 The Forest: Structure, Ecology, Silviculture
and Agroforestry
Montpellier, FRANCE
Contact: Colloque sur la Foret
c/o Institute de Botanique
163 rue Auguste Broussonet
34000 Montpellier,
FRANCE
- November 1988 Forestry Congress /
International Symposium on Agroforestry
Havana, CUBA
Contact: Comitê Organizador
1 Congresso Forestal de Cuba
Palacio de las Convenciones
Apartado 16046
La Habana
CUBA
- September 18-29 1989 XIII Commonwealth Forestry Conference
Rotorua, NEW ZEALAND
Contact: XIII Com.For.Conference
231 Corstorphine Road
Edinburgh EH12 7AT
Scotland
UK

SHORT ARTICLES

The following article is in response to the June 1987 mailing of extension papers.

1. The Challenge for Forestry Extension in Fiji

by Dr. C. van Tuyll and K.T. Yabaki

The role of forestry extension is: to promote the protection and utilization of local natural resources for the benefit of the rural population; to contribute to sustainable land use systems; to support people with advice and assistance for the implementation of forestry and agroforestry activities.

The challenge of forestry extension in Fiji is to convince the people of the necessity and benefits of attaining a sustainable balance of their resources for those that depend on them. The strategy is to get to know the target group and gauge how the necessary information and educational material can be disseminated.

Forestry extension must involve continuous dialogue with the people so that a real and practical appreciation of their needs and aspirations is achieved by the extension agency before any form of assistance is formulated. The central position of any rural development plan should be the welfare of the people for the immediate and the long term.

Forestry extension in Fiji

The establishment of farm woodlots in sugar cane areas, heralded the beginning of forestry extension. With the formation of the Fiji Pine Commission in the sixties there was increased interest in planting in rural areas. The introduction of communal pine plantations was the trigger for the establishment of a forestry extension unit within the Forestry Department.

After Fiji gained independence in the early seventies there was a rapid increase in the number of communal pine schemes, following the national drive towards rural development. Barren areas were planted by local landowners and community groups, in many cases not for commercial gain

but for the conservation of the environment. It is these plantations that now provide the challenge to the extension service. There is a need for increased awareness of the fire risks in the mature plantations. Local people also need advice on the best way in which to utilize the forest products derived from these plantations - the establishment of small-scale industries or workshops. The extension service has clear educational and advisory roles in both these areas.

For forestry extension services to be able to perform these diverse functions, staff need to be trained to be aware of the broad range of needs of the local people. The advisor must listen, consider and consult with the people before any action is taken.

The current Development Plan for Fiji (1986-1990) has emphasized the important role of forestry in the development of the country. To ensure the more effective use of land, forestry and agriculture planning should not be carried out in isolation from each other. Forestry extension should act as a bridge between forestry and agriculture to ensure that sustained benefits can be achieved in rural areas. In an attempt to stem migration from the land, extension workers have the task of promoting agroforestry and an increased awareness of the benefits of forestry for creation of employment.

Forestry extensionists should work in close consultation with agriculturists and other land use planners; but more importantly the whole team must consult with the local people. There must be understanding of the needs of the people within the area, before there can be any effective planning. The local people's knowledge of their environment should be respected and built upon by the extensionists.

Recommendations

1. Forestry awareness and training programmes should be implemented for target groups.
2. Training programmes for extension officers on human interaction and effective communication should be given.
3. Cooperation between organisations involved in rural development should be improved and coordinated.
4. Land-use plans should be prerequisite for any governmental support for rural areas.

2. A wall-chart for Africa

Paul Caton-O'Grady, a wood worker and furniture maker who lives in Shropshire, England, has produced an excellent agroforestry educational wall-chart. The idea stemmed from the concern he felt for the problem of decreasing tree cover and increasing desertification in sub-Saharan Africa. He spent several years researching and designing the pictorial content of the wall-chart, with trips to Mali, Kenya and Burkina Faso. The wall-chart is to be used with schoolchildren to increase their awareness of the environment and the need for agroforestry.

The chart was completed in late 1987 and Paul Caton-O'Grady took it to Kenya to assess its usefulness to schools. It was shown to children of all ages, as well as to women's groups and forestry extension officers. Everybody helped to improve the chart by suggesting minor changes.

The chart shows a large picture of an African hillside, starting at the top with a thick forest, below this there is a well-maintained farm with contoured terraces and windbreaks; a small village with shade trees and animals in enclosures with shrub fences. Beyond this ideal scene there are bare hills, with no trees, erosion, dead cattle and finally a desert. Framing the central picture are many smaller ones depicting trees, stoves, farm implements made from wood, and methods of planting trees. The drawings are representations so that they can be used in any area within sub-Saharan Africa. Teachers can use it to promote discussion in the classroom, children can look at the picture and relate it to their own environment; the problems they might have collecting firewood; the multipurpose use of trees; new ways to raise tree crops.

The future work of Paul Caton-O'Grady and the Tree Trust, which he has founded, is to research and design similar wall-charts and educational material to promote agroforestry in India, Madagascar and South America.

The chart is large, 30 x 40 inches, and laminated on both sides. On the reverse are notes for teachers. The wall-chart will be distributed free-of-charge to groups in sub-Saharan Africa. If anyone else is interested in obtaining a copy, there is a charge of UK£ 5 which includes postage.

For further information please contact:

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**3. The Use of Tissue Culture in Agriculture and Forestry:
Ten Points to Ponder**
by Pat Mooney

Positive considerations

Negative considerations

1. Genetic Diversity

Tissue culture techniques offer a safe and quick means of germplasm transfer from one region to another. An increase in such transfers could substantially broaden the breeding base available to agronomists from which to develop new cultivars. Particularly in areas of new production (for oil palm, rubber, coffee, etc) this could have the effect of widening the genetic base of the crop and reducing the risk of losses.

Tissue culture techniques permit the mass production of genetically identical plants over vast areas. While it is possible to expand the breeding base of plantation crops in this way, the highly-centralised nature of the technology (e.g. Unilever in oil palm) is more likely to increase the uniformity and vulnerability of the crop. In addition, replantings are now taking place in the absence of a conservation strategy and are already accelerating the pace of genetic erosion.

2. Germplasm Identification

It can now take as long as ten years to identify the usefulness of characteristics in a tree crop from seed (such as coconut or oil palm for example). Clonal propagation could almost eliminate this risk of undesirable characteristics and enormously increase the pace of new cultivar development.

While this application has undeniable advantages, the key question is "who" will decide "what" characteristics are beneficial and for "whose" purpose. Recent commercial breeding for developing country markets has focused on broad adaptability often at the expense of resistance to local pests or in ignorance of those local conditions for which breeders should seek advantage.

3. Cultivar Dissemination

The low seed-bearing rate of some plants, combined with their long germination period, means that the multiplication of a new cultivar is slow and expensive. New technologies can produce hundreds of thousands of plantlets a year and make the total replanting of a crop feasible within a growing season.

The employment of this new technique has indisputable advantages for the dissemination of improved cultivars, as long as it is preceded by an equally thorough orientation/training programme upgrading husbandry skills etc, to match the innovation. The mass dissemination of uniform cultivars however, could destroy or severely handicap the crop's longer term biotech capacity. A full collection/conservation strategy is a first priority.

4. Production Increases

Whereas 20% of the trees often produce 80% of the yield, the development of uniform new cultivars could bring plantation harvests up to the level of the most productive trees. The new technologies can also be employed to significantly increase the yield of even the best trees. Depending on the crop, plantation harvests could easily increase anywhere from three to twelve-fold within a few decades.

Little attention has been given to the breeding of plantation crops, in general, and it is likely that even an increase in orthodox breeding would lead to major yield improvements. Higher yields could prove a significant benefit to some developing countries unable to grow their domestic requirements. There is reason to be concerned, however, that a sharp increase in production in major exporting states could mean overproduction leading to further market instability and reduced export prices. In such a case, the only beneficiaries may be those marketing the technology and/or those importing the product. In some cases (e.g. Unilever for vegetable oils or Firestone for rubber) the technology source and the importer are the same enterprise.

5. Pest Problems

Rapid tissue culture techniques may be the fastest way to combat pest epidemics (such as now afflicting bananas). The speed of character identification and multiplication are often essential to the survival of many vulnerable tree crops.

Such techniques may well be the saviour of banana in the short term but banana's major problem arises from its genetic uniformity resulting from its clonal propagation. The long term security of such crops depends upon increasing genetic variability of the crop. Furthermore, seed crops which may soon be propagated by clones (such as coconut and oil palm) can be expected to suffer six times the pest losses of outbred crops, meaning a major increase in the cost of chemicals.

6. Machine Uniformity

Beyond the development of higher yielding and more disease resistant varieties, cell and tissue culture will make it possible to develop more uniform plants amenable to harvest machinery and/or processing and other market requirements.

The market requirements being met may reduce the value of the crop for alternative domestic and export use (bananas for cooking or coconut for fuel or mats). The net benefit to the economy might be substantially reduced or eliminated. The obvious social risks of unemployment due to mechanical harvesting etc (e.g. date palm) may make the socio-economic gain even more dubious.

7. Germplasm Storage

Cell and tissue culture may prove to be the only viable means of achieving the long term storage of large-seeded and clonally-propagated crops. Living collections (now often the only means of conservation) take up enormous land areas and are very costly in labour and money.

The present international proposal for a tissue culture base collection would locate the centre of such collections in industrialized countries (e.g. Japan, France, UK, USA), increasing the political problems currently associated with access to economically important germplasm. Furthermore, while tissue culture storage should not be overlooked, the technology is new and living museums cannot safely be abandoned.

8. Land Use

In some countries, it may be possible to dramatically reduce the area devoted to a tree crop and make this land available for other national purposes including domestic food production and redistribution to peasant farmers.

This could prove to be a very wonderful advantage. It is, however, more likely that global overproduction will force a reduction in land area in the context of a depressed economy unable to take advantage of the potential social benefits.

9. Smallholders

More productive plants could do much to strengthen the viability of small holdings and allow the redirection of production towards family estates and away from traditional plantations.

While this would be a constructive result, large estates will have the technological access, husbandry skills, financial resources, market experience and economies of scale needed to utilize the technology first. In all likelihood, small holders will be seriously disadvantaged or eliminated.

10. Agricultural Developments

More stable and higher levels of production of a better quality crop should strengthen market conditions and reduce the risk of losses to synthetics or alternative crops.

The history of industrial country-originated technology since the Second World War would suggest that developing countries have not benefited equally from these changes (e.g. synthetic textiles vs cotton; synthetic latex vs natural rubber; polypropylene vs natural cordage, etc). Early experiences in biotechnology (maize replacing sugarcane; guayule challenging rubber; laboratory production of flavours and fragrances, etc) argue that this trend will continue and could lead to factory farming of many plantation crops in the decades to come.

BOOKS BY NETWORKERS

Agroforestry in Agricultural Education with a Focus on the Practical Implementation

Joachim Boehnert (1987)

Published by: Triops Verlag, Tropical Scientific Books,
Raiffisenstrasse 24, D-6070 Langen, GERMANY FR.

Price US\$ 29.00

This book describes ways in which agroforestry can become a vital part of agricultural education. It includes a description of agroforestry for use on school and college farms. The study covers many climatic regions throughout the world.

Anyone interested in obtaining a Spanish translation of the book should contact the author:

Joachim Boehnert
Servicio Aleman de Cooperacion Social Tecnica
Apartado 761-2 (Feria)
Santo Domingo
DOMINICAN REPUBLIC

**The Application of Farming Systems Research to Community Forestry:
A Case Study in the Harage Highlands, Eastern Ethiopia**

Peter Poschen-Eiche (1987)

Published by & available from: Triops Verlag, Raiffisenstrasse 24,
D-6070 Langen, GERMANY FR.

Price US\$ 29.00

This study develops and applies a methodology for the design of a community forestry programme in a rural area of Eastern Ethiopia that accounts for the fact that farming is the basis of people's livelihood. The methodology adapts the farming systems research approach to community forestry. The case study analyses in detail the traditional role and use of trees, the need for tree products and options for supply against the background of the dominant agricultural production system in the area. An appropriate community forestry programme is outlined.

BOOKS BY NETWORKERS

Management of the Forests of Tropical America: Prospects and Technologies

A collection of papers from a conference held in Puerto Rico in 1986. The book is published by the International Society of Tropical Forestry and is available free-of-charge to all members of ISTF.

For further information please contact:

International Society of Tropical Foresters
5400 Grosvenor Lane
Bethesda, Maryland 20814
USA

Power from the People:

Innovation, User Participation, and Forest Energy Development

Matthew S. Gamser (1988)

Published by: Intermediate Technology Publication,
103/105 Southampton Row, London WC1B 4HH, UK.

Price £ 9.95

This book analyses the process of technical change in both industrialized and developing nations; it stresses the importance of bringing the skills and ideas of technology users into the process of generating new technologies.

The author describes the experience of the Sudan Renewable Energy Project which in its work aspired to understand the needs of users as regards charcoal production, improved charcoal stoves and agroforestry. The project encouraged the active participation of local people in all aspects of technology design and management of forest resources.

The experience of this project shows that by recognizing the user needs, technology developments are adopted much more readily than when a top-down solution has been handed to the users.

This book is an interesting and useful guide to the way users must be involved to ensure the sound development of technologies, this applies to both developed and developing countries.

EMPLOYMENT OPPORTUNITIES

CONCERN - TANZANIA

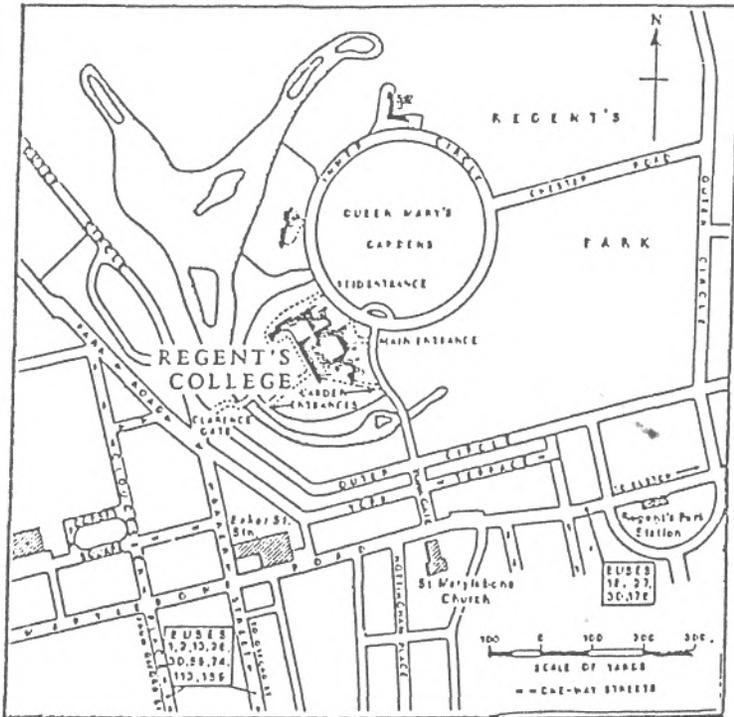
CONCERN is seeking a Forester for a Rural Development Project in Tanzania

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The Social Forestry Network is funded by The Ford Foundation and by the Aga Khan Foundation.



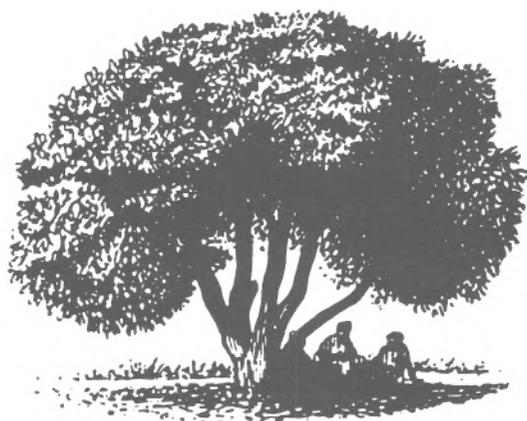
Agricultural Administration Unit

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SOCIAL FORESTRY NETWORK



TOWARDS BETTER WOODLAND MANAGEMENT IN SAHELIAN MALI

J. Skinner

James Skinner works for the IUCN project in Mopti, Mali.

TOWARDS BETTER WOODLAND MANAGEMENT IN SAHELIAN MALI

INTRODUCTION

The International Union for the Conservation of Nature has been running a project in the Inner Niger Delta, which lies in the sahelian zone in Mali, since 1984. The project is examining the social, ecological and economic factors which dictate how the natural resources of the area are used by different groups of people. One of the critical requirements is to set up better management systems which do not depend on the already overstretched resources of the state forestry department for their implementation, and which go some way towards reversing the abusive use of common land which is resulting in the severe degradation of the resource base on which rural inhabitants depend.

The Inner Niger Delta covers some 30,000 square kilometers in central Mali with an average rainfall of 300-450 mm. The rich postflood pastures, which are available from late November in the south and from early January in the north, are much sought after dry season grazing areas for cattle, sheep and goats from the surrounding Sahel. Recent periods of low rainfall have seriously reduced the maximum height of the annual flood of the River Niger which in consequence has reduced flooding area and duration. The resulting increase in pressure on the remaining parts of the flood plain has been found to be a major cause of their recent degradation.

This case study concerns an area of woodland near Bouna (Cercle de Mopti, Arrondissement de Kona) which surrounds four large marshes covering some 600 ha in total, although much of this is open water. The woodland sits in the middle of a flood plain and is therefore a usefully discrete unit with which to work. The major groups of pastoralists using the area are Peuls from the northern parts of the delta, Tamasheq (mostly the maraboutic branch, the Serifi) and their ex-slaves, the Bella. The fishermen along the River Niger are predominantly Bozos and Somonos.

The choice of Bouna as a pioneer site for interventions in the delta stems from the work on the distribution and rarity of heron

colonies, and the need to protect the few remaining woodlands as future breeding sites for these species. Two-thirds of the known breeding colonies have disappeared in the recent past, either due to low flood levels, or due to the loss of the wood through cutting. As the wood at Bouna is young, but already with a considerable colony in 1985/86, it constitutes a priority for intervention. This involved investigating during the dry season of 1986 how the quality of the wood as a heron colony could be preserved, while recognising the importance of the area for goat herding.

Since July 1986, work has continued in spite of the lack of a colony in the wood, and increased emphasis has been placed on looking at the wood as a mismanaged resource whose benefits to the community are considerable and varied, and on examining the complex interplay of vested interests which surround the use of the area. This ecological approach takes the observed short-term overexploitation of a resource and the real management possibilities of doing something about it as a starting point for an intervention with the interested parties. This contrasts and complements the socio-economic approach by other parts of the project which takes villages or communities as a starting point and looks at how their access to a range of different resources may affect their livelihood security. The natural evolution, however, is to combine the two approaches at a single site, thus linking ecology and the local economy through a common natural resource.

Before proceeding with a detailed description of the study at Bouna, a certain amount of background material is essential.

BACKGROUND

The Ecological Links

Woodlands of Acacia kirkii, such as that at Bouna, require to be inundated for a part of the year to ensure their growth cycle, and the flooded thorny woodlands which result are essential to the success of breeding herons and cormorants. Flooding generally occurs from early August until December, depending on the site and the height of the flood. The breeding cycle of the birds is linked to the flood as

well, with the maximum breeding activity being in September, but frequently extending from July to January. During this period, faeces, pellets and other regurgitated food from tens of thousands of birds fertilise the waters and provide good growing conditions for many species of fish. This may occur directly for detritus feeders, or indirectly through primary producers such as algae growing in the enriched waters, either attached to the ideal substrate provided by submerged tree trunks, or freefloating. In addition, fishermen may exploit the young herons and cormorants during the height of the flood (September/October) when the water is high and fish are hard to catch.

Local farmers benefit from the flocks of cattle egrets which eat millions of grasshoppers daily, making a small but significant contribution to crop protection in nearby millet fields.

In contrast to many sahelian species, A. kirki grows well during the dry season and is a highly sought after pasture.

The Social and Economic Links (Figure 1)

The traditional land-use system within the delta divides the area into discrete fishing grounds managed by villages during the flood season. When the same areas dry out, the herding communities, represented by the Dioro who is the nominal head of the old Peul fighting families, divide the grazing lands into units fixed in the mid 19th Century and remaining largely unaltered to this day. The Dioro administers the pastures, controlling access to herders and rice-growers, from which he and his family gain a substantial income.

Since Independence in 1960, the Malian Government has nationalised all land, and the management of fishing, grazing and woodland exploitation has been put in the hands of the technical services of the Ministry of Natural Resources. The delta has an extremely complex web of traditional land rights with fishing territories overlapping grazing territories and village ricefields. Superimposed on this traditional patchwork is the administrative system which does not always coincide

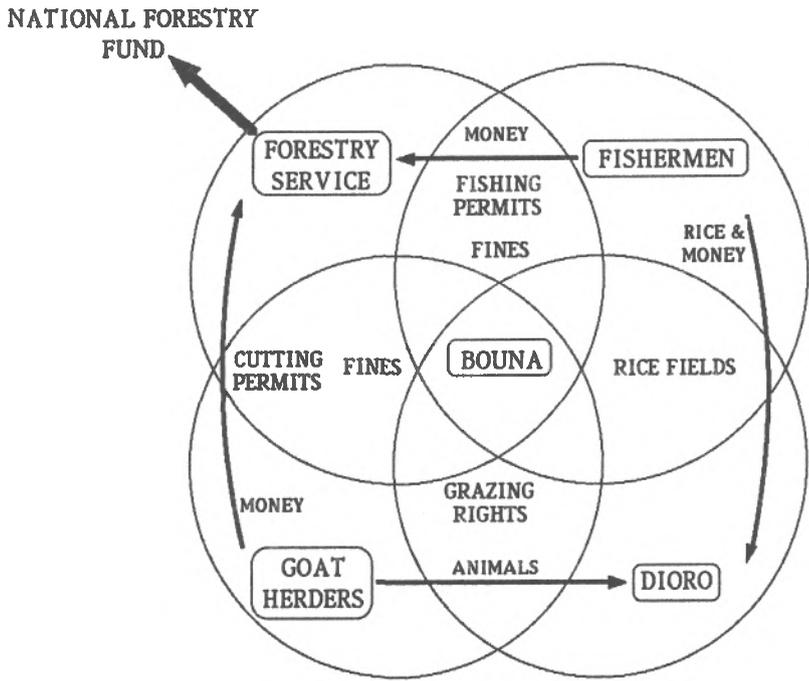


Figure 1. Social and Economic Links at Bouna

with traditional boundaries. This makes it difficult for forestry staff, who often come from other parts of the country, to understand how local traditions influence and control landuse.

Different production systems still lay claim to their traditional areas, but the breakdown in support of the fishing grounds following the introduction of a Fishing Permit, valid nationwide, is more extensive than that of the grazing areas, where the Dioros have managed to maintain their power structure and a degree of control over their pastures.

Goat herders, who come from up to 100 km away, bring their goats herds into the delta in the dry season, reaching the delta's postflood pastures in late December. Here, they negotiate pasturing rights with particular Dioros for the dry season. Generally, the Dioros' permission to graze need only be sought until about mid-March, after which time the pastures are declared 'open' and herders can move more freely between different grazing areas. Herders generally buy a Cutting Permit at the Forestry Department (cost 4,000 CFA) for permission to construct a thorn enclosure where the goats spend the night. In a justifiable attempt to reduce deforestation and tree damage by goat herders, substantial fines are levied by the forestry department on those who construct enclosures without a permit, or who cut live trees simply to feed their goats. Funds gained from the sale of permits go to the National Forestry Fund, as do 75% of the fines. The other 25% is split between the field agent and his immediate superiors (under review).

THE CASE STUDY AT BOUNA

Background

The major problem at Bouna was the extent of tree-cutting to allow goats access to foliage which they would otherwise have been unable to reach. This is common practice in the Sahel and has been seen as one of the major causes of deforestation in marginal areas. At Bouna, cutting had reached levels likely to damage the future of the wood both for goat grazing and for the heron colony (which only occupies a

small proportion of the total area), and hence for part of the fishery.

The fishermen may cut wood for domestic use and for the construction of fish traps and fish dams. They also cut large quantities of thorn branches which they throw into the river in the dry season as refuges for fish. Significantly, this practice is carried out only by migrant 'stranger' fishermen rather than local ones, who consider it unnecessarily destructive.

The fishermen have no control over the herders, nor vice-versa. The Dioro does not herd goats, only cows, so his interest is simply in the revenues which he may get from the herders. If the wood disappears, he suffers loss of income.

The Forestry agent is based in Kona (20 km distant) and given the large area he has to cover, he can only visit Bouna sporadically when he comes to check permits and the degree of cutting.

Discovering the reasons why so many people should be actively trying to destroy the resource on which they depend, forms the basis of the study. The particular interest of Bouna is not only the extensive links between production systems, but also their relevance to the thorny issue of how to integrate transhumant herders into a management system. This will give them a long term stake in the successful management of the wood with a future guarantee of pasture, but the role of the Forestry Service as a government body and that of the Dioro as traditional landowner must not be seriously compromised. In addition, we wished to avoid getting into any of the complicated disputes about traditional land ownership, which are only too common in the delta.

The Breakdown in Control

Two influences are at work: one social, one legislative. The Forestry Service controls permits for cutting and the fining of those who do not respect the law. The forestry agent at Kona fines those who have constructed enclosures without permission, cut down living trees to

feed their goats, or committed other sundry offences. In the case of enclosures, the owners of the camp, if they are present, have to pay, but for cutting of trees, collective fines are imposed, as the culprit is rarely caught red-handed. All herders in the area chip in a few thousand francs to achieve the total required to pay the fine. This results in a unification of the herding community against the forestry agent. No-one will breach this social wall to point out the actual offenders for fear of subsequent social consequences, even if in many cases herders sympathise about damage to trees.

The second stage of this process occurs as a result of the problems faced by the forestry agent. Through being able only to visit the area irregularly and being therefore unable to control the amount of damage to the woodlands, he is obliged to make prompt and difficult judgements as to the degree of damage which has occurred and who is responsible for it. His decisions are reflected in the nature of the resulting fine. For example in two woodlands at Bouna, one was largely untouched but the herders there were fined 40,000 CFA; but in our study wood, which was badly damaged, the herders were fined 'only' 50,000 CFA. The herders do not always understand how the fine is arrived at and they are liable to misinterpret the situation as one where if they cut trees to feed their goats, they are fined, and if they don't cut they are also fined but their goats are in less good condition. The obvious direction of such an attitude is towards increased cutting. Fining appears to herders to be completely independent of their actions.

Should the negative effects of cutting be strongly disapproved of by the other goat herders, they have no clear traditional power structure between themselves (coming from at least six different villages and being partly Peul, mostly Bella and partly Serifi) through which to resolve such problems. In addition, holders of 'Permis de Coupe' may defy local pressure to stop cutting by claiming that their permit gives them the official permission from the forestry service to cut trees. The use of a permit, issued solely for the construction of enclosures, to justify the cutting of trees for browse is a result of herders not fully understanding their own rights or the forestry laws

(which is itself a consequence of how forestry agents behave in the field. No-one will denounce another herder to the forestry agent, even if he believes that herder to be in the wrong).

The creation of new structures

It is clear that the present system does not work. All of the power is vested in the forestry agent, who has a large area to cover, can only visit sites irregularly and cannot always effectively put into practice forestry policy. The forestry department has gone some way towards recognising the problem and has begun a new policy which encourages participation of the users of forestry resources in the control and management of their own woodlands, through the creation of 'Forêts Villageoises'.

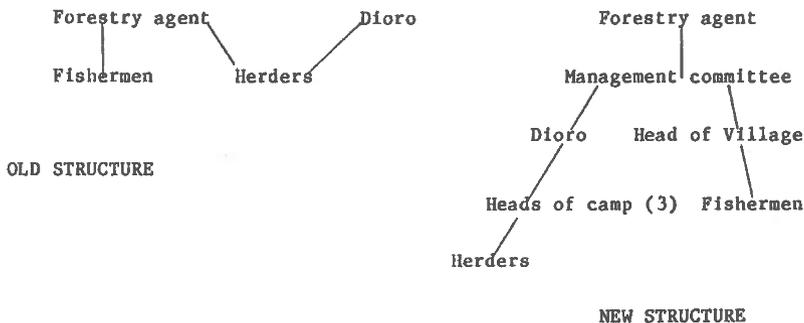
We felt that trying to set up a Forêt Villageoise would be a suitable way to allow a committee of users to begin to formulate their own policies, and to put them into action. The role of the forestry agent would be that of extension officer, coordinator and eventually upholder of the law against offenders. Bouna would be a pilot site in Mali's 5th Region to test the feasibility of new policies and legislation in the Sahelian zone. It is important in this instance to explore ways in which transhumant 'stranger' herders can be integrated into new management structures.

Given the complexity of the area and its users, and conforming with the existing political structure, a committee of eight people was proposed, consisting of:

The Head of the Village of Bouna	(fisherman)
Adviser of the Village of Bouna	(fisherman)
Representative of the Political Party, Bouna	(fisherman)
Two goat herders	(transhumant herders)
Two Dioros	(local 'landowners')
Forestry agent from Kona	

It is important that the two separate interest groups (fishermen and herders) should meet to decide common policy, because there is no

possibility of a fisherman making decisions concerning herding matters, nor vice versa.



The project laid down the ground rules in April 1986, following a large meeting of interested parties at Bouna. Although we expect the first official meeting of the committee to review some of these rules, they are intended to form a basis for discussion. We shall examine the proposed rules in turn:

- The wood is registered in the name of Bouna

This is a compromise for several reasons. To receive official recognition as a Forêt Villageoise the wood must be named as belonging to a village, and the Administrative recognition of a village's territory allows only for a radius of 6 Km. The Dioros who, if anyone, are the true owners live 25 Km away, and no administrative procedure allows for this. (This comes about partly because traditional land holdings in the delta are considerably larger than those of villages in the south of the country, which form the basis of most policy-making). However, Bounas' generally accepted fishing grounds include the whole area at high water, so they have been proposed as titular owners. The consequences of putting an area of grazing land in the name of a fishing village, who have no real use for it, may help to reduce conflicts between herders in the future.

- The Dioros retain their traditional management areas

An essential step. The area is run by three Dioros, who have largely delegated their responsibility to one of them. It is vital that the new structure makes no judgements as to the limits of each of their areas, but simply retains and reinforces the traditional status quo. Any proposal which defined, or allowed others to redefine, each Dioros grazing land would be subject to severe scrutiny (and potential alteration) by the administration, and could lead to border disputes. The traditional limits must be maintained.

- No cutting is allowed either for enclosures or for feeding

This proposal was put forward, and accepted, at the meeting in Bouna in April 1986. Herders said that they could make adequate enclosures from Mimosa pigra. There are two reasons for wishing to restrict enclosures: firstly to avoid extensive damage to certain areas of Acacia trees around traditional camps; and secondly to avoid the issue of whether cutting permits issued by the Forestry Department were still necessary and whether forestry agents should still continue to fine those without permits, despite the fact that the woodland was nominally under village control. In 1987, however, following attacks by jackals, most herders have built enclosures of Acacia, having bought permits. One herder lost four goats in one night; clearly losses on this scale have serious economic consequences, and good enclosures become essential. The possibility of using live hedging for enclosures needs to be looked into, but this example illustrates how a new structure must be flexible.

- The proposal does not affect fishing rights

Exactly the same points as for the grazing territories, above, but *vis-à-vis* the fishing community and with respect to the current laws on fishing permits, which allow holders access to fishing grounds nationwide.

- The number of herds is restricted to twenty

According to the Dioros, 26 herds pastured in the wood in 1986. The reduction in the number of herds (agreed to by the Dioros) is intended to have several effects. Firstly, it should improve the quality of grazing for those 20 herds, obviating the economic need for herders to cut browse to feed their goats. This in turn should make the same herders decide to return annually, knowing that the grazing is good, and thus beginning to stabilise a group of the transhumants in a single dry season site where they can also have some control over the resources on which they depend. Privileged grazing conditions should also help to reinforce the only sanction available to users - that of excluding wrongdoers in future years.

Secondly, reducing the number of herds may be a useful first step in tackling the theoretical problem of carrying capacity. The Dioros often have difficulty in recognising how maximising short-term income (through increasing the number of herds - cattle, sheep or goats - on his land) may have serious long-term ecological consequences.

The view expressed by the paying goat herders is often that they don't mind paying, but they like to know the pasture quality they are paying for, which will vary with the number of animals using it. Although the numbers of animals per herd is not fixed, it is the unit on which the Dioros determine fees. No-one will ever disclose the size of his herd anyway, so the true number of animals has little chance of being a viable measure of grazing density for the future.

Application of the rules

The users themselves must be sufficiently aware of the actions of others in the wood to point out offenders to the Head of the Village of Bouna or the Dioro. If sanctions are called for which lie within the ambit of traditional power, then the matter is straightforward. If things go seriously wrong, those who go against communal decisions must be delivered up to the forestry service or the administration, which must take appropriate action. If this last resort is unavailable and local power fails, the whole structure will crumble.

Significantly, the Head of the Village and the Dioros, being sedentary, will have much better links in this respect than the herders and will therefore have better access to, and understanding of, what is effectively the ultimate power. To try to mitigate this effect somewhat, the forester has his place on the committee and may therefore be more readily accessible to the goat herders.

Will it work? Where does the power lie?

The power of each group is of a different kind. The goat herders have no power until they can organise themselves into an effective pressure group. They recognise that they are strangers to the area (they come from six different villages) and are therefore without a fixed social structure. A proportion of them are Bella, the least respected ethnic group, who are unused to wielding power, organising or taking collective decisions. It is here that the project has most intervening to do, to weld these herders into an effective group who understand the law and the issues and their rights. This can be done through sensibilisation. If it is successful, the herders will have group power.

The Dioros are powerful, highly organised and decisive individuals, given their background of running the pastures, and they are accepted as effective landowners by local communities. They also maintain their influence through powerful links with the administration. The Dioros are the key to the successful functioning of the Forêt Villageoise. They alone have the dynamism to make it work once they are convinced of its utility. Equally, once they go against the project it is doomed to failure.

The forestry service has massive 'official' power and the ability to damage seriously any individual's livelihood through inflicting fines. However, the limited amount of time available to a forester for following herding practice in detail in any one area makes day to day control impossible for him.

The fishermen have no power at all in the pasture matters of Bouna. If they wish to take an interest in the management of the wood they

could play an important role by preventing the herders from disagreeing too irrevocably. At the other end of the scale, if the Head of the Village is unable to control cutting by fishermen, this may well undermine similar attempts by the herding community. Then all that will happen is an endless round of accusation and counter-accusation between the different ethnic groups. Again, the Dioros hold a key position because the fishermen grow rice on their land. They alone have a socio-economic link with the fishermen.

In our view, the best chance of success is to try to channel the group power of the herders through the traditional power of the Dioro into the hands of the forester. This should optimise the wielding of official power for communal benefit.

It is inevitable that there will be tensions, misunderstandings and manoeuvring at the beginning as people adapt, or try not to adapt, to the changing conditions. It is at this point that the project must work hard to prevent serious irresolvable conflicts which may prejudice the long-term success of the scheme.

The success or failure of the project depends on finding two strong, sensible representatives from among the herders who can carry the others with them in the communal interest. This must be done without seriously compromising the existing powers and traditional rights of the Dioros, who would certainly act to break it up if they felt threatened.

Status of the Bouna project in October 1987

At the outset, the project was conceived to consist of four main phases:

- Research and consequent development of a management plan
- Elaboration with the forestry service of a proposal to create a Forêt Villageoise as a framework for the application of the management plan

- Formation of the committee and agreement on the details and application of the plan

- Assessment of this pilot Forêt Villageoise two years after its inception.

Phase one was completed by August 1986. Agreement with the forestry service was reached by the end of September and a detailed 'Projet de Creation de Foret Villageoise a Bouna' was presented to the Chef d'Arrondissement for approval in October 1986. Unfortunately this coincided with the transfer of the Chef d'Arrondissement to a new administrative post, and the incoming Chef d'Arrondissement was unable to give due attention to the proposal until late February 1987. He was basically favourable towards the project. However, the Secretary of the Political Party cast doubts on the veracity of the Dioros' declarations during the meeting and insisted that, given the potentially litigious nature of the action, all members of the Dioros extended family should be consulted and their agreement sought.

This process is still continuing at the time of writing. It has not yet proved possible to assemble even two-thirds of the relevant Peuls in the same place at the same time. They are spread across the pastures of the central delta during the dry season after which they leave for transhumance on a circuit 120 km to the west. We have talked to them all independently, but unfortunately the setting up of this pilot Forêt Villageoise has coincided with other project activities including the development of rolling credit schemes. Everyone has heard about these schemes and there is a lot of suspicion within the Dioros family that there is money in this for someone and that they are missing out. In addition, several international projects work in the area, one of which is developing gravity fed ricefields on what would otherwise be prime grazing land. The Dioros have lost control over these parts of their pastures as a result of the project. They are understandably wary of our long-term aims at Bouna. Given that everyone has yet to meet to clear the air, there is still a degree of uncertainty, rumour and suspicion. In addition, those that have given their formal approval to the scheme are not

prepared to go to the Chef d'Arrondissement to make a formal declaration until everyone else also does so, otherwise they fear a split in the family. There are always manoeuvrings for power within the Dioros family and this does not always simplify discussions or decision making.

Despite the 'in principle' agreement of the Chef d'Arrondissement, we still await the within-family agreement of the Dioros before he will sign the proposal.

Although the lack of an official mandate has meant that we could not proceed with the full implementation of the proposals, we have nevertheless made good progress with restructuring the way herding takes place within the wood. This has been achieved by asking the Dioro to nominate three 'stranger' herders in whom he has confidence as camp chiefs, insisting that incoming herders settle in one of the three camps and abide by local grazing rules. If they do not do so they are asked, persuasively, to leave. This is an improvement on the old system where the Dioro rarely visits the wood, stays in Bouna, 3 km away, and is frequently absent while visiting his cattle or other areas of his pasture. He is therefore rarely available to take prompt action if required.

Delegating some responsibility to the herders themselves achieves one of the principle objects of the project, that of increasing the control of users over the resources on which they depend. This process is a slow one, challenging as it does deeply ingrained habits, and it has taken many months of patient discussion and negotiation with the Dioro before he was ready to accept the need to delegate some power of 'self-government' to those who are effectively his tenants.

In retrospect, it may be a good thing that the agreement of the Chef d'Arrondissement was not received immediately. This has obliged us to go more slowly than perhaps we would originally have liked, but we may find that the gradual restructuring results in a more stable and durable management base than would have been the case if we had arrived in Bouna with too many ideas, too quickly.

DISCUSSION

The work which has begun on woodland management in Bouna is tackling some of the fundamental practical problems associated with a major part of new forestry policy in Mali; how to increase villagers' control and management of their resources. This leads implicitly into how to encourage investment in natural resources (eg reafforestation or active management) which at present belong to, and are controlled by, the state rather than by collectivities.

At the centre of the problem lies the complicated issue of how to encourage management of open or restricted access common property when the attitude of users leads irrevocably towards a tragedy-of-the-commons situation. Our work has inevitably begun to add restrictions to rules governing access to the woodland at Bouna and is increasing the power of habitual users over itinerant or occasional users.

One of the consequences of this trend will be the development of a protectionist attitude by the herders not to only demonstrate that the wood is truly managed by them, but also to improve grazing quality for their own animals by excluding other herds. The whole concept of carrying capacity must lead to someone having to decide who shall be allowed to graze and who shall be excluded. The situation at Bouna is more complicated than this because of the interests of the Dioro to maximise the number of herds during the regulated grazing period (January to mid-March) as he charges a fixed sum per herd. Nevertheless for half of the grazing season (mid-March to June) access rights for those who have not been present since the beginning of the season are likely to be increasingly restricted.

If such a forestry policy was to extend over significant parts of the Sahelian zone in Mali, what is effectively a trend towards privatisation (even if in the name of communities) could lead to increasing pressure for sedentarisation due to protectionism against transhumant herds. This in turn would restrict the flexibility necessary to transhumant herds to survive unpredictable climatic fluctuations.

Even if a patchwork of Forêts Villageoises which were not contiguous were developed, allowing corridors for transhumant herds excluded from elsewhere, this land would still be open access where there will be no structures except the forestry department-with its concomitant problems, to manage the area. Under current conditions they would therefore rapidly become degraded and increasingly marginal, thereby defeating the object.

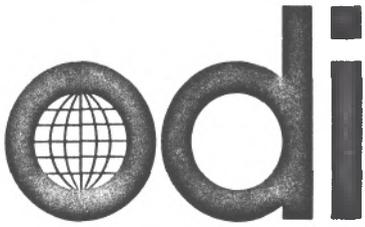
Having cited a few of the theoretical and conceptual problems which surround privatising resources in the name of communities, an element which might provide the key to socially and ecologically stable relations between communities owning Forêts Villageoises and transhumant goat herders are the traditional links which such herders have with sedentary communities. What will probably happen is that not everyone will be allowed access to all areas of bush, as is now the case, but everyone will be able to find somewhere with restricted access to graze their animals and where they can participate in a management system. The daily life of rural populations depends heavily on their relationships with other people and other communities. These links have developed over many years and although not formal or recorded, they are largely respected. Kinship relations and mutually agreed reciprocal access rights should be sufficiently stable within a given area to avoid marginalising large numbers of people if Forêts Villageoises should become widespread.



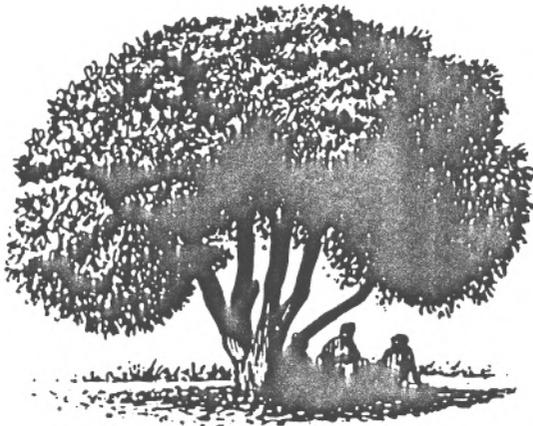
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SOCIAL FORESTRY NETWORK



TREES AND PASTORALISTS: THE CASE OF THE POKOT AND TURKANA

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TREES AND PASTORALISTS: THE CASE OF THE POKOT AND TURKANA

INTRODUCTION

Pastoral people in arid and semi-arid lands have, with time, developed rational sustainable land use systems based on the mobility of their livestock herds, and making optimal use of the land both geographically and ecologically. Historically such systems were self-regulating with periodic famines and disease out-breaks acting as controls. These self-regulating mechanisms are for various reasons, no longer allowed full play with resulting deterioration in land-use patterns, particularly in the settlement zones.

Few people perceive the use of their land-use strategies as a soil and water conservation benefit, yet in preserving their land and vegetation this is exactly what it is. Likewise planners in soil and water conservation, in many cases, do not see the value of such strategies, preferring the use of structures in curing the problem rather than preventing the disease.

This paper attempts, in some small way to highlight some of the traditional values that the Pokot and Turkana have which could be of intrinsic value to soil and water conservation, if used sensibly in the dry areas. It further attempts to identify methods of incorporating such traditional values into soil and water conservation practice for arid and semi-arid lands.

EXISTING RANGE MANAGEMENT AND LAND USE STRATEGIES

The Pokot

Nginyang Division falls into Ecozone IV-V (Marginal and Semi-Arid: Pratt and Gwynne 1977) and is occupied by a pastoral section of the Pokot tribe. Though the Pokot in Baringo District originated from the agricultural and pastoral Pokot of West Pokot, there has been little agriculture practised in East Pokot. However in the last eight years, as a result of development initiatives, quite substantial areas of land have been cultivated (Barrow 1985).

Livestock management, herd formation, and choice of grazing grounds are the responsibility of adult men, with all the family members

taking part (Tanaka 1981). Though stock tend to move seasonally, goats, sheep and camels usually forage in the vicinity of the homestead. While cattle are grazed near the homestead in the wet season, as it starts to get drier they are gradually moved towards the hills where they will graze during the dry season (Barrow 1980, 1985a) with distances varying from 5-50 km or more depending on water and forage availability and stock type (Tanaka 1981). This system makes optimal use of the flush of annual grass and herbs in the lowlands and gives the grass on the hills (with a higher percentage of perennials) a chance to set seed.

As pastoralists the Pokot have tried to exploit their environment to the optimum, getting most out of it in terms of livestock production without destroying the range lands in the process. However, as is common with many pastoralists, grazing and browse are communal while stock management and ownership is individual. This can lead to the maximisation of individual herds, at the expense of the communal graze and browse which is one of the biggest problems of successful range management. (Pratt and Gwynne 1977).

Within the broad grazing pattern, the people, under the auspices of the elders, set aside varying amounts of reserved grazing. This usually takes the form of hills reserved and guarded and may cover many thousands of hectares. The reserved grazing is used at the discretion of the elders during the dry season or in drought years (Barrow 1985a). Schneider (1959) identifies a similar system in West Pokot. This pattern of transhumance and reserved grazing may be locally modified to fit in with water distribution, topography and tsetse fly distribution. It particularly refers to cattle since they have to graze. Camels and goats are more cosmopolitan feeders on bush (which is plentiful).

The rangelands can be divided up into ecologically and socially viable units along the lines discussed on transhumance grazing. Normally within each unit there are a varying number of families who tend to herd their stock together, are often defined by their access to dry season watering points (Barrow 1985a), and centre around

a meeting place or kokwo. Such a grouping of homesteads or neighbourhoods constitutes an autonomous political unit (Schneider 1959) and the elders of this unit will meet under the kokwo (a special shade tree) to discuss and plan the group's activities and grazing patterns (Barrow 1985a). However the composition of the neighbourhood is not stable and people may come and go as they please.

The Turkana

Turkana District falls into Eco-zone V-VI (semi-arid and arid; Pratt and Gwynne 1977) and is occupied by the Turkana. The Turkana system of rangeland management is much the same as that of the Pokot, except that it is on a larger scale and distances travelled are much greater. Broadly, livestock (particularly cattle) are grazed in the lowlands after the rains to make use of the annual flush of grass. This may only last for a few months and then the stock will gradually move to the west and to the hills to make use of the dry season grazing areas. The hilly areas and the west are much wetter than the rest of the district. Indeed the Loima Range is probably the single most important dry season grazing area for cattle in Turkana. This herding movement reflects the way the Turkana divide their family and livestock into two divisions, namely the abor and eogos divisions. The abor division occupies the hill areas and is comprised of young and mature stock together with the younger people while the eogos is the lowland unit and is composed of old stock and the older people (Barrett pers. com. 1986).

Usually the herding unit follows roughly the same annual movement, but it also retains a relationship with the people who control the area and may want or need to use an alternative route. These relations are based on stock sharing, which is an important factor in strong continuing links to in-laws, relatives and leaders (Barrett 1986), and thus maintaining flexibility in grazing to cope with the different risks of disease, raiding and drought (Gulliver 1955; Broch-Due and Storås 1981).

The Turkana have two forms of traditional reserved grazing areas epaka and amaire. These systems of reserved grazing are similar to those in

Pokot (Barrow 1986). Though it may appear that grazing and forage availability is open to all, the situation is more complex (Hogg 1986). In a good wet season, forage is plentiful, there are no restrictions on movement of stock and questions of ownership of the resource do not arise. However in the dry seasons and dry years such issues become critical. Gulliver writes that 'The only time of the year when movement is at all restricted is towards the end of the dry season, when pastures are becoming critically impoverished' (1955: 35-36). But he also notes that camels and goats can be found anywhere at anytime.

It is this power over ownership of water and fodder that is central to pastoralism in Turkana (and indeed Pokot, though it is not so felt there because the climate is wetter). This is particularly critical in the dry plains areas and the herd owners depend, in the dry season, on the pods from Acacia tortilis stands along the major water courses to provide fodder for their animals (Hogg 1986). Here family ownership of such important resources is more clearly defined, particularly with relation to the riverine vegetation of the main river courses.

Such permanent family ownership or ere refers to that area of permanent settlement where old and young stock may remain all year around (Hogg, 1986; Barrett pers. comm.). It is from the ere that livestock (and in particular cattle) are sent to grazing camps as the dry season progresses. A herd owner's ere is normally where he was brought up, where his father died and was buried and where he has ownership rights to particular resources which include fodder, fruit trees and a dry season well. These resources are owned by the herdowner and his close family relatives and on occasions by close in-laws. Outsiders will not be allowed to use them without prior permission (Barrett pers. comm.; Hogg 1986).

The system of ere appears to be in conflict with the previous idea on ownership of resources in Turkana, for Gulliver (1955) indicates that all pasture is common to all members of the tribe, with the principle reason for movement of stock being the lack of grass or browse, lack of water or both.

Grazing, as well as taking place in defined patterns, is organised communally by a co-operative grazing community or adakar. An adakar represents a fairly temporary (or more permanent if there is a security risk) cluster of homesteads which come together in the wet season. An adakar can vary greatly in size (40 to 100 or more families) and is formed usually among families who know each other and have ties. Adakars facilitate herd security and herding co-operation together with a strengthened social network (Hogg 1986).

Because of the instability of the environment, such grazing communities can not be permanent social groups. They have to have the organisational flexibility to react to climatic, vegetation and disease criteria. Thus in the dry season such adakars will tend to break up as each group follows its own dry season grazing pattern.

Turkana have a strong tradition of sorghum gardens (amana pl. ngamanat) which are planted during the rains and, if harvested, help supplement the pastoral diet. These gardens are usually found in natural inundated areas close to the river or in a natural depression, and constitute a traditional form of water harvesting (Hillman 1980). Those gardens close to the river may be of two types, those at the high flood level where the soils are better but cropping is more risky, and those lower down where the crop could be washed away (Morgan 1974). Such gardens are individually owned, usually farmed by women, and are found close to the wet season livestock grazing areas or ere (Huntingford, 1953). In recent times these sorghum gardens or shambas have increased greatly in number not because the Turkana do not recognise it as a high risk enterprise but because they feel that the Government favours shamba owners (Hogg 1986).

Further the Government-supported irrigation schemes on the Turkwel have impinged on traditional Turkana gardens. Ignorance of traditional land use rights is exemplified by the conflicts and disputes that have arisen between the irrigation scheme and traditional cultivators at Katilu (Broch-Due and Storas 1983). In traditional Turkana sorghum plots, trees are not generally cut down,

only the bush and undergrowth is removed, a form of agro-forestry. Yet now in the area surrounding the irrigation schemes (Katilu in particular) all the rainfed plots are clear felled of trees, a lesson the people learnt from the irrigation scheme. As a result the soil erosion risks are greatly increased.

General Considerations

Both the Turkana and Pokot have clearly defined grazing systems. In the wetter areas of Turkana and Pokot where there is a greater abundance of resources ownership rights are less clearly demarcated. In the drier plains areas of Turkana near the river the herd owners have, a permanent homestead together with an area of riverine woodland from which the herd owner obtains dry season forage, building materials, fuel and a permanent (or at least semi-permanent) riverine well.

Thus the idea that the Turkana and Pokot are nomadic in the true sense of random movements governed by rainfall and forage availability is inaccurate. Both groups have well defined grazing patterns, combined with concepts of ownership that are more marked and defined in the drier areas.

Both the Turkana and Pokot keep a variety of stock types in response to the diversity of the forage resource which ranges from large trees to woody bushes and shrubs, perennial and annual grasses and herbs. Here diversification helps reduce the risk of loss should one or other stock type suffer. Further it acts as an optimal means of exploiting the vegetation resource on a sustainable basis. Such mobility and livestock diversity is necessary for making maximal use of the forage resources as well as reflecting the diversity of the plant community (Galvin 1985).

WOODY SPECIES UTILISATION AND MANAGEMENT

The Pokot

Pokot knowledge of their flora is almost totally in relation to the plant's value for livestock and people in terms of food, medicine and materials. Tanaka (1981) found that out of 307 plant species 61 (20%) were used for food and 118 (39%) were used for medicine (Tanaka 1981). Their knowledge is particularly well developed with relation to animal fodder where they can recognise seasonally available species that will promote milk and meat production, in different stock species and ages (Barrow 1985). Such knowledge is vital to the successful herding of livestock particularly in the dry season.

The Pokot attach great value to trees and will rarely cut a valuable tree. Trees are used on a sustained conserved basis for a variety of uses including fodder and food, medicines, building materials, fuel, fencing material and household implements, as well as for shade and for central meeting points for the elders. During the dry season some trees will be pollarded for their browse (eg Balanites aegyptiaca, Dobera glabra Barrow 1985), pods will be harvested for livestock feed from other trees (eg Acacia tortilis, Acacia albida). The only woody species that are actually cut back are the less useful bush species (eg Acacia reficiens, Acacia brevispica) which are used for fencing the homestead and livestock kraals (Barrow 1985). The cutting back of such bush woody species often serves to promote better ground cover of perennial grass.

Turkana

Like the Pokot the Turkana have a very well developed traditional knowledge of their flora and its uses (Morgan 1980), the woody species being especially valued. Indeed the woody vegetation of the District constitutes the most valuable resource that the District has, the Turkwel riverine forest and the Loima mist forest being the most important. Since the area is considerably drier than Pokot, very few trees will be cut back completely and pollarding or branch-lopping is the norm.

Trees are vital to the Turkana way of life. Dry timber is used for fuel; building material is selectively cut from different trees (eg Cordia sinensis, Hyphaena coriacea); household utensils are made from tree produce; small branches will be cut in the long dry season to feed livestock and pods and fruits of certain trees will be harvested and collected as fodder for livestock and food for people. Many medicinal uses of trees have also been identified and some of these have recognised clinical properties (Lindsay 1978).

The importance of the woody vegetation is stressed by Ecosystems Ltd (1985: 3-4): 'In 23% of the District, woody vegetation is virtually confined to riparian strips. These areas coincide with the driest eastern parts of Turkana and dry season grass cover was found to fall consistently along a gradient of increasing importance in the riparian component...Despite the acute shortage of grass, areas of exclusively riparian woody vegetation supported over 30% of all livestock in the District during the dry season, underlining their extreme importance as a dry season forage resource'.

The Turkana have developed the management of their trees a step further especially in the drier parts where the vegetation resource is more critical. Within the ere the herdowner will have an ekwar which literally means the trees on the side of the river. Given the vital importance that the riverine woodland plays in the District, the ekwar is an integral and vital part of the ere and livestock management. In the dry season it is often access to fruit and fodder trees that restricts movement. So in the dry season the livestock and herd owner will be found in his ekwar unless all the stock have to go to the wetter hill areas in the west. Certain important trees (eg Acacia tortilis, Hyphaena coriacea, Cordia sinensis, Zizyphus mauritiana, Dobera glabra, Acacia albida) are particularly protected by custom (Barrow 1986; Soper 1984).

The system of ekwar is stronger in the drier central part of the district and to the south (Lokori, Katilu and parts of Central Divisions). To the west and north this system is not so strong because it is wetter and there are few rivers with well developed

riverine woodlands. However preliminary analysis of a survey being carried out by the author on ekwar indicates that people are based in their ekwar (and consequently their ere) for much longer periods of time than planners associate with pastoral peoples. Usually at least one generation has stayed in their own ekwar and the father will have, in many cases, been buried there. This indicates time spans in excess of 40 years.

Discussion

Traditional knowledge is knowledge developed from the pursuit of daily life. Thus it is likely to be comprehensive on some topics and weak on others. Table I (adapted from Barrow 1985) allows for different change-directed interventions to be considered and compared in terms of susceptibility to change and their traditional knowledge. This in turn can help to explain which efforts are likely to be more successful and under what particular circumstances.

There is a high susceptibility to change where there is an extensive degree of traditional knowledge. Here there is likely to be a fast adoption rate since in this category the tangible benefits can be quickly seen and felt. But where there is a low susceptibility to change and a high traditional knowledge there is a slow adoption rate. Thus, whereas there is a rich knowledge about trees and their value, tree planting is not perceived as an important activity.

It is therefore vital to try and make the connection between what is known (ie value of trees) and what is not known (ie tree planting) and the reasons for this (eg lack of regeneration among naturally growing trees and degradation around the settlement areas). Therefore an aspect of any arid lands forest project should include finding out what the traditional knowledge base is concerning trees, what the people perceive as the problems and what the solutions might be. This can then form a rational base for social forestry interventions in the arid lands and help to ensure the long term success of any such

Development Activities Analysed in Terms of Traditional
Knowledge and Susceptibility to Change Among the East Pokot

Table 1

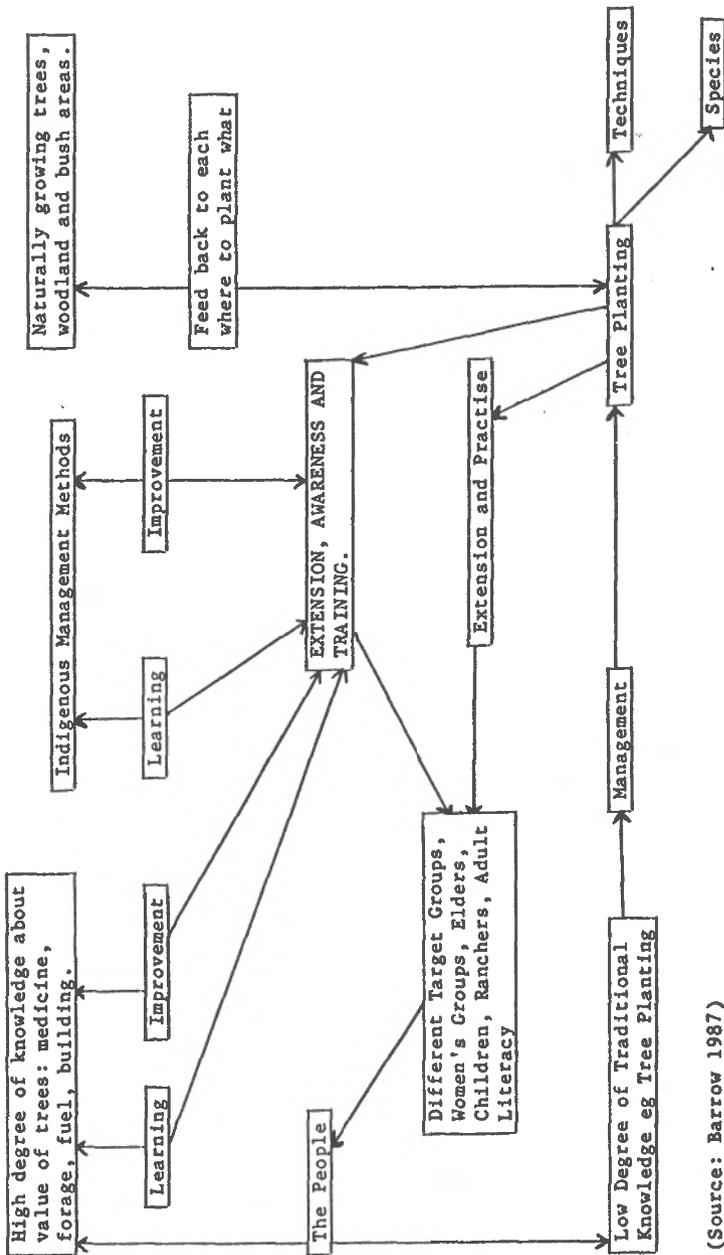
Susceptibility to Change		
	: High	: Low
	: Extensive	: Veterinary medicine
	: Reserved grazing	: Group ranches
	: Goat improvement	: Tree planting
	: Water development	:
	: Tree values	:
<u>Traditional Knowledge</u>	: Limited	: Grassland re-seeding
	: Improved seed vars.	: Donkey ploughing
	: Income generating projects	: Clean water in house
	: Health (curative)	: Dietary improvement
	:	: Seed storage
	:	: Improved crop husbandry
	:	: Hygiene, Education
fast adoption <----->		----->slow adoption
	increase in development differential	

venture. However this does demand a sensitive understanding of the area and its people, a long term involvement and the development of an extension approach based on awareness of values and solution finding.

This important role of extension in relation to woodland management in arid and semi-arid lands is shown in Table 2 (after Barrow 1987) where the role of extension is used as the link between differing degrees of traditional knowledge (uses of trees, woodland management) and tree planting which in many cases is an alien concept to the people.

ROLE OF EXTENSION IN WOODLAND MANAGEMENT IN ARID AND SEMI-ARID LANDS

Table 2



(Source: Barrow 1987)

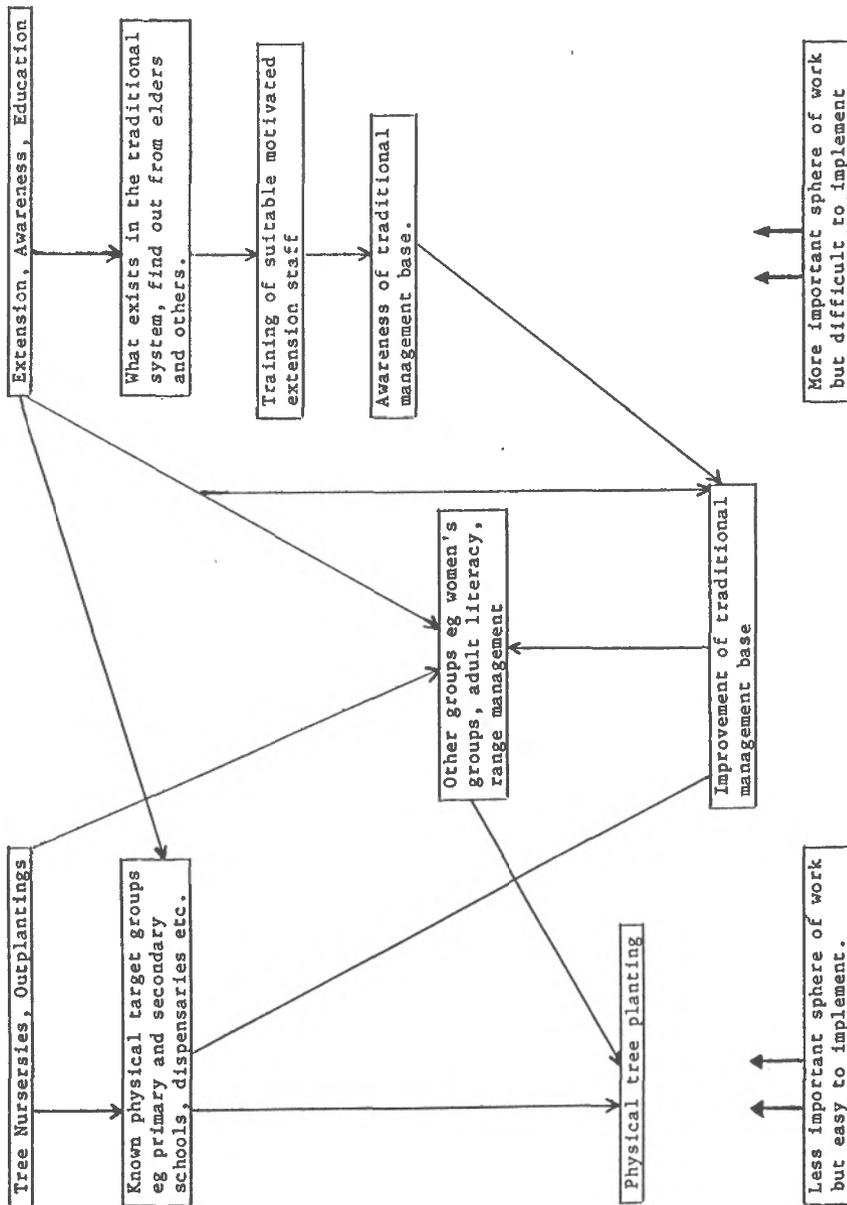
Technical input from the project can then be used to try and help resolve some of the problems that the people will have identified. It is important here that the technical issues come after the extension, knowledge-discovery and problem-solving phases. Such technical issues must be understandable and acceptable to the people (eg. water harvesting strategies to improve crop production, tree planting and range improvement; resting of land to allow regeneration). Those technical inputs should be related to what people know and understand. Table 3 (after Barrow 1987) shows how tree planting activities, management strategies and extension can be related.

One of the important experiences gained in both Pokot and Turkana is that people do not readily perceive the relationship between tree planting and the utilisation of those trees. While mature trees are considered very important in that they yield a variety of produce, the value of young trees is questionable since they yield very little. For one of the most important arid and semi-arid land trees species, Acacia tortilis the Turkana have different names for the mature tree (ewoi) and the young tree (etir). The planting of young trees has to be related to the benefits and produce they will bring at a later date.

How does this relate to social forestry projects that have to be seen to be carrying out forestry work in the dry areas? Firstly there is an increasing body of information relating to the traditional values of trees in the dry lands which can be summarised as follows:

Co-ordination of Tree Planting Activities with Management

Table 3



(Source: Barrow 1987)

Tree values

Fuel
 Building timber
 Food for stock
 Food for people (fresh and cooked)
 Medicinal values (stock and people)
 Making utensils
 Shade, fencing
Ceremonial values

Management values

Harvesting methods
 Individual tree management
Rangeland management

The traditional values should then be related to problem identification (eg no regeneration, no young trees, valuable trees now gone) and solution finding (tree planting, protection, encouraging regeneration of trees). Much of this is basically common sense, yet very rarely utilised in the technology of ASAL tree planting. Finding out and utilising these traditional values and identifying problems need not take long before actual solutions can start to be implemented. In fact the two approaches go hand in hand.

It is in this context that physical tree planting should be carried out. There are a number of issues to be considered including:

- a) Tree species to plant should be based on what the people want to plant, after all it is they who will be using and managing the trees. This selection will also be governed by what species will grow in the given conditions, seed availability and whether the trees can actually be raised in the nurseries. New species can be introduced but this should be done initially on a demonstration basis.
- b) Encourage the natural regeneration of trees through protection (which is difficult in many of the settlement areas but can be encouraged through a gradual process of extension) and by

physically encouraging natural re-generation through some form of simple water harvesting around the young trees as if they were actually planted.

ASPECTS OF RANGE AND FOREST MANAGEMENT RELEVANT TO SOIL CONSERVATION

From the preceding discussion there are a number of aspects inherent in the traditional management systems that are and should be of direct value to soil and water conservation yet do not appear to be used as such. These beneficial aspects relate firstly to the overall management methods and then the more localised usage of the resource which lend themselves to sensible and sustainable land use combined with soil and water conservation practise.

Both the Pokot and Turkana practise a form of transhumant grazing, particularly for their cattle (camels and goats do not have to move so far for browse). This is based on wet season grazing in the lowland areas to make use of the annual flush of vegetation after the rains and dry season grazing in the hilly or wetter areas. Within this, large tracts of land may be set aside for reserved grazing to be used in times of drought.

Flexibility and mobility in movement is retained yet the grazing patterns followed are approximately similar. Thus different groups of Turkana and Pokot follow the same grazing cycle and this can form the basis for sociologically and ecologically viable grazing units. In Turkana this can centre around grazing associations based on the akadar, while in Pokot such grazing patterns could be used as the basis for the formulation of group ranches.

Both the Turkana and Pokot show a high degree of knowledge concerning their flora, with an emphasis on values in fodder and food, medicines to sustain their stock and themselves. Likewise they are not destructive of their resource, but they manage and use the vegetation, and in particular the woody species, on a sustained basis. Valuable

trees are rarely cut down; rather, selective pollarding is practised. Dry and dead timber are used for fuel. Only the less useful bush species are cut for fencing manyattas.

The importance of trees is strongly stressed culturally. People are named after trees, shady trees act as meeting places, trees provide a lot of traditional medicine. Trees play a vital and integral role in the many initiation ceremonies such as birth, marriage and various feasts. All this helps preserve an interest in sustaining tree resources, for trees which have important cultural associations cannot be cut down without serious consequences.

These issues are of integral importance in both sustained rangeland management and by inference soil and water conservation. The broader traditional range management policies help conserve the rangelands, while the attitudes to woody species and trees in particular ensure that very few or no trees are actually cut down. This acts as a conservation control along the riverine and water course areas where the majority of the good trees are found. This is further refined along the water course areas in Turkana where the people have actual ownership rights to discrete areas of riverine woodland, and in having ownership rights are responsible for that area's management and utilisation.

INTERFERENCE IN TRADITIONAL LAND USE SYSTEMS

Many of these well developed traditional land management systems are in danger of breaking down because traditional methods have not taken into account the speed of modern interventions. Likewise planners and implementers of development do not take into account the real needs and aspirations of such people. In this respect the negative factors are often related to interference in the traditional management system from outside without trying to adapt the system to the new changes.

1. The perception is that in many pastoral areas all land and resources are common property. The tragedy of the commons argument

(extensively put forward in pastoral and rangeland literature) holds that there is a basic conflict between private ownership of livestock and the communal ownership of pasture. The individual pastoralist has little incentive to conserve communal grazing by reducing the size of his herd because he has no guarantee that others will do the same.

While the latter part of the argument may be true, the Pokot and Turkana examples indicate that the resources are by no means communally owned and indeed conservation is actively practised (eg in the ekwar).

2. The increased use of veterinary drugs has to a greater degree removed livestock disease as a constraint to production. If this is not balanced with an increased productivity of the rangeland or increased offtake, then there is likely to be an increased grazing pressure on the land which may lead to an increase in soil erosion.
3. The population of many pastoral areas is on the increase (though not as fast as the national average). This is related to the provision of better health conditions and food security (from famine). While it is imperative that health conditions should be improved this fact has not yet been incorporated into land management strategies. However this interference with the natural population controls (drought, famine and disease) has affected the overall human ecology, since in such an environment the ecology and vegetation is already used to near its maximum subsistence potential (Soper 1984).

4. Improvements in water supplies that do not take into account grazing patterns and in particular the dry season grazing areas which may be opened up to grazing with no in-built controls to conserve the grazing, are dangerous. In some areas of West Africa provision of an increased number of livestock-watering-facilities actually led to an increased risk since forage availability became the primary constraint, not water, and in drought years this resulted in no forage and so a huge die-back.
5. The concentration of people in settlements, famine and feeding camps has taken people out of the pastoral sector and concentrated them in small areas. This has resulted in serious localised depletion of the vegetation and an increase in soil erosion. This overuse of the vegetation is very obvious even if the people only have very few stock and the restricted range of movement further strains the vegetation resource and is exacerbated by the emphasis on small stock. (Broch-Due and Storås 1981).

This growth of the settlements in Turkana District, and Katilu in particular results in an intensification of land use. In Katilu the establishment of an irrigation scheme resulted in the collapse of traditional controls. This policy of converting a flexible land use system into a private one is promoting environmental degradation (Broch-Due and Storås 1983).

Along the upper reaches of the Turkwel river between Lodwar and the Turkwel gorge, woodland depletion is only serious and increasing in the settlement areas associated with Katilu, Jiluk

and Nakwamoru (Ecosystems 1983). Likewise the area around Lokichar since 1975 has shown a sharp reduction in vegetation cover due to an influx of people associated with road construction resulting in an increased forage pressure and woody material off-take (McCabe et. al. 1983).

6. The authority of elders, who are traditionally responsible for livestock management, is gradually being eroded by the education of the youth and the authority of Government officials.
7. The present education system, while preparing the youth for life in modern Kenya to a certain degree, gives them very little opportunity to learn and improve their ways of land management in such dry areas. They are often no longer capable of fitting back into the pastoral system.
8. Development strategies are primarily orientated towards the more easily definable and countable projects, eg health facilities constructed, veterinary vaccinations carried out, school enrolment, land put under irrigation, trees planted, food for work completed, water structures installed and so on. Such development inputs tend to offer alternatives to pastoralism (eg irrigated agriculture, fishing) rather than (or at the same time) strengthening the pastoral set up to produce more for the local and national economy in terms of livestock sold. Yet nowhere in this shopping list is the prime target seriously tackled, that of range and woodland management and utilisation. Both of these form the basis for livestock production and offtake in such dry areas as Turkana and Baringo.

9. Rangeland areas are gradually being turned into agricultural land for crop production, often due to population pressure. In a dry area crop production is more risky than livestock enterprises. This is aggravated by the fact that methods of agricultural production are not suited to the aridity of the climate, (this can be seen in West Pokot in the Marich Pass where there is now very serious soil erosion).

Firstly we must realise, and at present we do not, the value of existing land management strategies as a basis for long term development. Unless the rangelands are managed and conserved the existing development initiatives in such dry areas will only exacerbate the problem and cause an increased level of soil erosion, hardship and so famine relief dependency. The traditional values, roles that trees play and people's ownership rights to trees must not only be realised but respected (Barrow 1985). Hitherto this has not been the case (eg Katilu irrigation scheme, by traditional law under ekwar, probably belongs to over 50 people).

In the high potential areas of Kenya such traditional rights are taken into account during demarcation. Why are they essentially ignored in the drier areas? Many of the existing group ranches in Maasai and other areas are not based on either ecologically or sociologically viable grazing units (see the extensive literature on these ranches) and as a result such ranches are in a very fragile state now.

In realising the importance and need for sustainable use of the grazing lands both as an ecological imperative and for production, the traditional knowledge base should be used as a building block to development, not a hindrance as such traditional knowledge is often labeled. After all both the Turkana and Pokot have survived and thrived in these areas for hundreds of years.

Traditional land use systems are not perfect given current trends in population growth, and health provisions. The traditional herd constraints have been removed. But we should use the traditional

base as a means to realistically incorporate such factors as increases in population, improved health and feeding facilities.

As a starting point, flexibility and mobility of livestock grazing and herding must be recognised as the priority. Without such flexibility and mobility the risks increase. This is very visible in the settlement areas where settlement is the direct cause of over-utilisation of the woody resource, while in the pastoral areas both in Pokot and Turkana there is no such over-utilisation. This situation has been aggravated by the setting up of large feeding camps in times of famine which is administratively easier but ecologically disastrous.

Traditional grazing associations (adakar in Turkana and based on the relevant kokwo in Pokot) could be the basis for rational rangeland development. Their security of tenure should be strengthened to ensure that their land is not taken from them, as has happened in Narok where much of the dry season grazing has been taken from the Maasai. Such tenure should be based on existing grazing patterns which incorporate both wet and dry season grazing areas combined with substantial areas of reserved grazing. There should be some form of legal recognition of individual tenure particularly as it is related to the ownership of riverine woodland in Turkana (ekwar). This will help ensure its conservation and so is important in riverine protection.

Using this as a basis, improvements can be made. For instance browse availability could be improved by discrete plantings, particularly in the existing settled areas, to ensure both a browse and fuel supply for the people associated with the settlements. Watering points, health facilities, education facilities can then be orientated around the grazing system.

Extension and education plays a vital role in this. On the one hand such work will help planners and implementers understand the existing system and so form a vital link to see in what ways such systems can be adapted for the better. Currently the role of extension is strongly supported in policy documents, yet physical and logistic

support is often very weak. The formal education sector does not take into the account the needs of the dry areas (yet 75% of the Kenya Republic is arid and semi-arid). As a result the educated youth in dry areas are often no longer equipped to live and work in the pastoral sector. This must change with a more realistic incorporation of dry area topics into the syllabus.

The introduction of the National District Focus policy will help achieve this as it makes planning a district priority and no longer the responsibility of the Centre. Therefore district needs and aspirations are more likely to be taken into account.

CONCLUSION

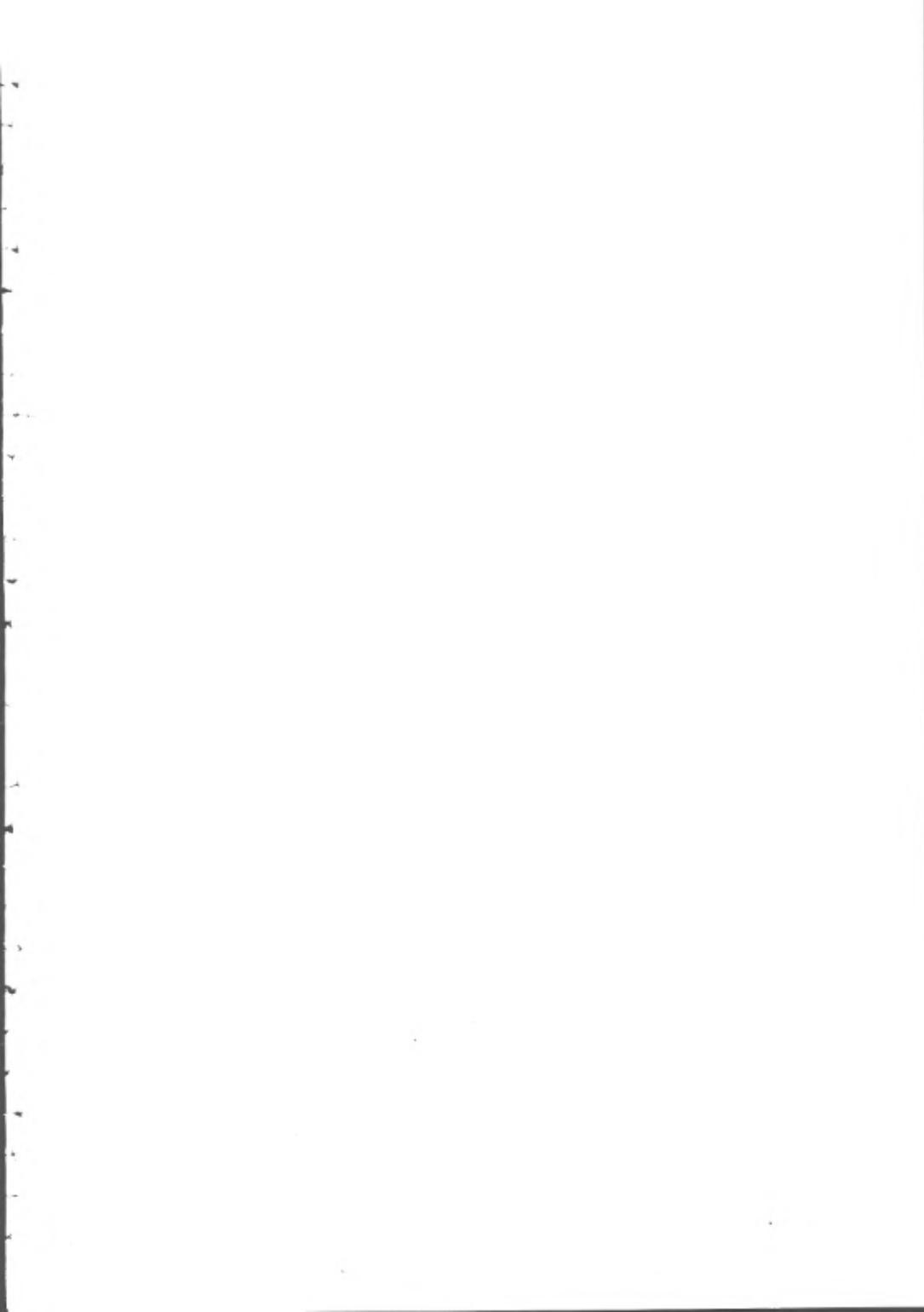
Why do we have to re-invent the wheel? Why can planners and implementers of development not use the traditional knowledge base as a building block for improving the lives of the people in pastoral areas? Examples all over Africa show the failure of development projects to grasp the real problems of the arid and semi-arid lands in a realistic fashion. I am sure that much of the desertification, increase in soil erosion in the arid and semi-arid lands of Africa are man made problems as a result of various interventions (some often with good development intentions) as a direct or indirect consequence of some form of development.

Development projects tend to compartmentalise life in arid and semi-arid areas and so the process. This cannot be done, the threads are too interlinked. Yet if we realise this and use the traditional management system as a base (the Pokot and Turkana adequately exemplify this), then pastoral areas will be able significantly to increase their productivity and contribution to both the local and national economy and budget. At present the opposite is probably the case. In Kenya, with District Focus, this emphasis can now be made. In so managing the vegetation on a sustained basis, the quality of the land will be conserved and the ever-present threat of desertification be retarded.

REFERENCES

- Barrett, T. 1986. Sacrifice and Prophecy in Turkana Cosmology. PhD Thesis (forthcoming). Department of Anthropology, University of Chicago, USA.
- Barrow, E. G. C. 1980. East Pokot Agricultural Project, Range Management Project. Preliminary Investigations. Mimeo.
- Barrow, E. G. C. 1985a. An Analysis of Human and Environmental Factors in the Agricultural Development of East Pokot (Nginyag Division, Baringo District, Kenya). A Case Study. Masters Thesis, Antioch University, USA.
- Barrow, E. G. C. 1985b. Use of local knowledge about forestry in food production with particular reference to dry areas, in Gorta. (ed.) Forestry and Food Security, proceedings of a seminar held on World Food Day 1986. Dublin, Ireland.
- Barrow, E. G. C. 1986. Woody Management Course No.3 for Chiefs, Leaders and Extension Agents. Report of a course held at the Nakica Centre Lodwar, Forest Department, Turkana. Mimeo.
- Barrow, E. G. C. 1987. Results and findings from a survey on ekwar, carried out from November 1986 to July 1987. Report prepared for Forestry Department, Turkana District, Kenya.
- Broch-Due, V., Storås, F. 1981. The Relationship Between Nomadic Adaptation and Alternative Economic Forms With Specific Reference to the Organisation of Work and Productive Relations. Turkana Project Progress Report no.5. Department of Social Anthropology, University of Bergen, Norway.
- Broch-Due, V. and Storås, F. 1983. The Fields of the Foe - Amana Eloit - Factors Constraining Agricultural Output and Farmers Capacity for Participation. Report of NORAD consultancy team, Department of Social Anthropology, University of Bergen, Norway.
- Ecosystems Ltd, 1983. Survey of Rainfed Agriculture, Settlement and Woody Resources on the Upper Turkwel River. Report for NORAD and Government of Kenya Ministry of Agriculture and Livestock Development, Nairobi, Kenya.
- Ecosystems Ltd, 1985. Republic of Kenya Ministry of Energy and Regional Development. Turkana Rehabilitation Project (Development Support Unit). Turkana District Resources Survey 1982-84. Main Report. Nairobi, Kenya.
- Galvin, K. 1985. Food Procurement, Diet and Nutrition of Ngisonyoka Turkana-Pastoralists in an Ecological and Social Context. PhD Thesis, State University of New York, Binghamton, New York, USA.

- Gulliver, P. H. 1955. The Family Herds. Routledge and Kegan Paul, London.
- Hillman, F. 1980. Water harvesting in Turkana District Kenya, Pastoral Network Paper 10d, ODI London.
- Hogg, R. S. 1986. Building Pastoral Institutions. A Strategy for Turkana District. Report to Oxfam, Nairobi, Kenya.
- Huntingford, G. W. B. 1953. The Turkana location and population. In Fade D. (ed) Ethnographic survey of Africa, vol.VII. East Central Africa. International Africa Institute. London.
- Lindsay, R. S. and Hepper, F. 1978. Medicinal Plants of the Marakwet. Kew, London.
- McCabe, J. T., Hart, T. C. and Ellis, J. E. 1983. Road Impact Evaluation in Northern Kenya - A Case Study in South Turkana. Final Report for NORAD.
- Morgan, W. T. W. 1974. South Turkana Expedition. Scientific papers X. Sorghum gardens in South Turkana: cultivation among a nomadic pastoral people. Geographic Journal, 140(1).
- Morgan, W. T. W. 1980. Vernacular Names and the Utilization of Plant Species Among the Turkana of Northern Kenya. Special Report. Department of Geography, University of Durham, England.
- Pratt, D. T. and Gwynne, M. D. 1977. Rangeland Management and Ecology in East Africa. Hodder and Stoughton, London.
- Schneider, R. K. 1958: Pokot resistance to change. In Bascom, W. R. and Herskovits, M. L. Continuity and Change in African Culture. University of Chicago Press. USA.
- Soper, R. C. (ed) 1984. Republic of Kenya Socio-Cultural Profile of Turkana District. Institute of African Studies, University of Nairobi and Ministry of Finance and Planning. Nairobi, Kenya.
- Tanaka, J. 1981. On residential patterns and livestock management among the pastoral Pokot. In Kipkorir, B. E., Soper, R. C. and Seenyonga, J. W. (eds) Kerio Valley, Past, Present and Future. Proceedings of a seminar held in Nairobi at the Institute of African Studies, University of Nairobi, Kenya.





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SOCIAL FORESTRY NETWORK



**RURAL WOMEN AND URBAN MEN: FUELWOOD CONFLICTS AND
FOREST SUSTAINABILITY IN SUSSEX VILLAGE, SIERRA LEONE**

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RURAL WOMEN AND URBAN MEN: FUELWOOD CONFLICTS AND FOREST SUSTAINABILITY IN SUSSEX VILLAGE, SIERRA LEONE

Andrew S. Inglis

INTRODUCTION

This paper¹ details the conflicts between users of a forest resource, showing how urban needs for firewood are threatening the local economy of a rural village. It illustrates the need to implement forestry projects that are not directed solely to the protection of forests, realising the interconnections of all parts of the local economy.

THE VILLAGE

Sussex village is a settlement at the mouth of the Sussex river, with a population of 425. The village is divided into two groups - the Sherbros who settled in the area in 1750, and the Creoles, descendants of freed slave settlers who settled in Sussex in 1824. The village is on the west coast of the Western Area Peninsula (Mapla), 17 km from the suburbs of the capital Freetown. This area has an extended rainy season of 7-8 months and a dry season of between 4-5 months.

The economy of Sussex is primarily dependent on two renewable natural resources: fish and trees. However, external pressures, mainly from the city, are affecting the basis of the local economy. At sea, modern trawlers owned by businessmen in Freetown encroach on traditional fishing grounds, causing a reduction in the amount of fish landed by the villagers.

On land, the areas of forest and forest regrowth, which are the main source of fuelwood for the local community, are being exploited by woodcutters/traders who commute regularly from the city.

Sherbro men fish throughout the year, with a peak of activity during the wet season. The fish are sold at wharveside to the Sherbro women fishmongers, who then dry the bulk of the catch and transport the surplus processed fish to the wealthier inland areas of Sierra Leone and to Liberia.

Although the Sherbros are more economically active locally than the Creoles, the Sherbro standard of living is much lower - poor housing, inadequate water supplies, no electricity, high population density and a lack of communal facilities.

THE PROJECT

PLAN International have been working in Sussex for two years. They have initiated cooperatives for the fishermen and also have started a community forestry project. This area was selected by PLAN because of the rapid erosion of natural resources on which the economy of Sussex is dependent. However, PLAN's initial assumptions, stating that the local community was responsible for causing deforestation, were too simplistic. The survey on which this paper is based was conducted to find out what and who were the causes of deforestation in the Sussex area.² The results of the survey, which will be discussed below, showed that the primary cause of the rapid degradation of the Sussex forests was the requirement for urban firewood. The firewood needs of the local community were a lesser cause.

THE WOODCUTTERS

The original settlers of what later became known as Sussex were the Sherbros who called their settlement Bambuatuk - village on the rock.

At this time, the Sherbros were able to collect dead wood from the high primary and secondary forests which bordered their fishing village. Wood was also available from the small cassava farms that the Sherbros had cleared. In 1824, the Creoles came to the area and settled in the Sherbro village which they renamed Sussex. The Creole settlers bought and cleared the forests for farms and land for building homes and a church, forcing the Sherbros further afield to collect fuelwood.

Today, farming of the flat land around Sussex has all but ceased. Local people own only a small proportion of land; large areas of land are privately owned by individuals who live in Freetown. The land is severely degraded, having been overfarmed with increasingly shorter fallow periods. The vegetation is sparse low forest regrowth, with a low species diversity, providing only a small amount of fuelwood.

The local wood cutters collect most of their fuelwood from the lower slopes of the peninsula mountains which are separated from the flat degraded land by the main road to Freetown. The mountain slopes are privately owned up to the Government Forest Reserve boundary. The local woodcutters do not have formal or financial rights of access agreements with landowners. However, they are not physically prevented from entering the area or harvesting firewood.

Sherbro women collect the majority of fuelwood that is used in Sussex and some of the woodcutter women are also commercial fishmongers. Amongst this group of female woodcutters are six women from different tribes (Mende, Temne). They operate as woodcutters and traders throughout the year, selling fuelwood to the fishmongers and to the Creole women who do not cut and collect their own firewood but who depend on it for cooking. A few unemployed males (non-Sherbros and Sherbros too young to be fishermen) also cut wood to sell in Sussex but only in the dry season.

Firewood Harvesting

The women leave their house early in the morning after feeding the household and cleaning the house and compound. They meet up with their friends and walk in groups of 4-6 women about 1 km to their own small areas of bush (about 0.5 ha) which are scattered along the lower slopes of the peninsular mountains. The group then splits up and the women go to their individual sections within the group's area to cut firewood.

Small trees are cut using a sharp cutlass, and if it is a coppicing species with a large number of shoots, only two or three of the thickest stems are harvested. The wood is collected in a central clearing from where, at the end of the harvesting session, each woman takes a bundle back to the village balanced on her head. Each bundle weighs about 60 kg when wet and 50 kg if it is dry wood. There is now no species preference for firewood for cooking and drying fish because of the few trees remaining. However, the women try to cut from colonising species and those that coppice. Fuelwood is stored next to the house, with wet wood left in the

open for four or five months to dry.

From October to December the Sherbro woodcutters cut only dry dead wood for immediate use, as their stocks are exhausted after the wet season. From January to May they cut live wet wood. This differs from the full time woodcutters who operate throughout the year depending on the weather. Usually they cut live wood and leave it hidden in the bush until it is dry and then sell it within the village.

In recent years, however, the woodcutters have been joined on the lower mountain slopes by urban woodcutters and traders - mainly males of the Fullah tribe. The Fullahs have formal and informal financial agreements with the landowners in Freetown for entry to these lands to cut firewood. The Fullahs have acquired a reputation of being very industrious and this characteristic extends to their woodcutting activities on the lower slopes. Large trees are felled, split into firewood with axes and the tied bundles are then left to dry for a few months before they are transported to the city. They also harvest the forest regrowth, cutting all coppice wood and small trees which are popular locally, leaving no regeneration. Groups of 2-4 men work from early morning until mid-afternoon, every weekday during the dry season and 2 days each week during the rainy season.

It has not been possible to estimate how much wood is cut every year because the wood is usually hidden in the bush and the Fullahs will not answer questions about their activities, probably because, as local rumour says, they are encroaching on Government Forest Reserve. However, large

quantities of wood are removed from the forest, evident by the lorry loads of wood transported to Freetown each week.

There is increasing pressure on the forest in areas where absentee landowners have permitted the urban woodcutters/traders to operate. The vegetation cover is decreasing rapidly; tracks and paths which were formed by woodcutting and transporting operations are becoming small rivers during the rains. Silt and small stones are being washed down onto the main road below, which in turn becomes a large river whenever it rains heavily, and a mass of gullies, pot holes and silt beds when the rain stops. The government bus to and from Freetown - the only fairly regular cheap form of public transport which serves Sussex - has now been stopped because of the worsening condition of the road in the Sussex area and also in other woodcutting areas. The people of Sussex, who depend on Freetown for trade and commodities are left with the choice of paying high prices for private transport to and from the city, or walking, with the possibility of hitching a lift in lorries which ironically are often loaded with wood from the Sussex area.

The stress that local firewood demands are placing on the forest resource have been estimated to be sustainable from the forest.³ However, if the male urban woodcutters/traders are permitted by absentee landowners to continue and even to expand their exploitative operations on the lower mountain slopes, then the local community and in particular the women fishmongers and woodcutters will suffer.

FIREWOOD CONSUMPTION

Cooking

The majority of the cooking in Sussex is done by women over wood fires in covered outhouse kitchens. The traditional three stone cooking stoves used by most of the households require large amounts of fuelwood.⁴ At least two meals are cooked over the fire each day. Dry firewood is preferred to wet, and generally the best species for catching alight and producing heat are Octhocosmus africanus and Hymenocardia sp. In households with young children, the fire is kept alight for heating water and the kitchen.

The three stone fire is not an efficient user of firewood. Air passes freely through the gaps in the stones causing the fire to burn more quickly; heat escapes from between the stones and from around the base of the pot. To try and reduce the firewood requirements a new stove was introduced, based on traditional designs - the Louga stove developed in Mali and Senegal.

The new stove is easily constructed using locally available materials. The inefficiencies of the three stone fire have been resolved by enclosing the stones with a thick clay wall with only one entrance through which to feed fuelwood. Households that have adopted the stove have found that they need 50% less firewood than before; cooking times have also been reduced. However, exclusive use of the stove is not possible because some traditional foods cannot be cooked on it - each household with a new stove also has a three stone fire. Even with the continued use of the old stoves, new stoves could cause a significant reduction in the amount of fuelwood used for cooking.

Commercial Fish Processing

The second major area of firewood use is in the local fish processing industry. A large majority of all fish landed in Sussex is dried and smoked over wood fires (banda) by the fishmongers. Only a small amount of fresh fish is consumed locally and a few high value species are sold in the market. The fish have to be processed a few hours after being landed or they will spoil. The heat from the wood fire dries out most of the moisture from the fish and smoking the fish helps to preserve it. The fish is then kept from three days up to a month, depending on the number of times it has been dried, before it is sent to market.

The bandas are also located in the covered kitchens. Fish are laid in a tightly packed layer on a wire mesh and a fire lit underneath. As the fire underneath the fish catches alight, fuelwood is spread out along the length and breadth of the fireplace, ensuring that all the fish are evenly dried and smoked.

The existing fish drying system uses large amounts of fuelwood (estimated total fuelwood consumption per annum is 70 tonnes)⁵. The number of times that a commercial banda is used depends on the amount of fish landed, but generally during the rainy season the bandas are used four times each week and three times per week in the dry season. A variety of species are used in the drying process including Ochthocosmus africanus and Hymenocardia sp. and damp branches of Utex domana and Anisophyllea lawina. Dry coconut husks and palm fronds are used at the end of the fish processing operation, to produce thick smoke to brown the fish and thus increase its market value.

However, as with the three stone fire cooking stove, the traditional banda does not use firewood efficiently. Unrestricted air flows fan the flames and scorch the fish. The large amounts of smoke produced make an unpleasant and unhealthy working environment. Alternative fish drying bandas have been introduced in the area with varying degrees of success. However, an improved banda - the chorka banda - developed by FAO in Ghana, is proving to be successful with fishmongers in the Sussex area.

The open fireplace of the bandas is enclosed in a firebox with only one entrance to each fire. Several trays of fish are laid on top of one another and rotated regularly throughout the drying process, so that all the fish are dried and smoked evenly. The same size and species of fuelwood are used as in the traditional bandas but there is a 50-60% reduction in the amount of fuelwood required to process the same amount of fish. Users have also noted that these new ovens are safer to operate and drying times are shorter.

The three stone fires and traditional bandas have been used since the settlements were established and when fuelwood was an abundant local resource. At present, the local fuelwood sources are still able to meet the community's current demand for fuelwood. Community awareness of future fuelwood supply problems is low with a consequent poor adoption rate of fuel saving technologies. However, extension programmes are being set up to raise people's awareness and to demonstrate the benefits of the new technologies.

Table 1 shows the potential savings of firewood if there is widescale adoption of these new technologies.

Table 1

Operation	Apparatus	No. of units in village	Present fuelwood consumption/yr. (tonnes)	Possible savings (tonnes)
Cooking	3-stone fire	50	142	72
Cooking	Louga stove	10	14	-
Fish processing	Commercial banda	15	70	40
	Small banda/ 3-stone fire	32	16	9
	Louga stove/ mud oven	8	2	
Total		115	244	121

EXTENSION

Extension programmes for the introduction of improved stoves and fish-drying ovens should be conducted by experienced, preferably female, field communicators, who are fluent in local languages and who also understand the basic theory behind the improved technologies.

The success of extension programmes in Sussex depends on which groups within the village are contacted; local female opinion leaders should be used as agents of change. These would include older women amongst the fishmongers, bundu (women's secret societies) and 'bigwigs'. Existing women's groups should be used as the forum for discussion and

dissemination of new cooking stoves and fish drying ovens. The women should be encouraged to participate in designing and adapting stoves to fit with their local conditions.

ALTERNATIVE ENERGY SOURCES

Alternative energy sources are not going to be an immediate solution to the future fuelwood problem. Supplies of electricity are irregular, expensive and restricted to the Creole settlement; bottled gas and kerosene have to be bought from Freetown. Again the supply is uncertain and the cooking apparatus needed is prohibitively expensive. The immediate solution to the fuelwood problem would seem to lie in the better management of the existing forest resource and also the creation of new resources.

ALTERNATIVE LOCAL FUELWOOD SOURCES

There are three other possible sources of fuelwood that have not been exploited by the local woodcutters: the mangrove swamps on the sides of the Sussex river; the Porro Society Bush; and driftwood on the beach. However, there are cultural and practical reasons for why these firewood sources remain uncollected. Women are unable to swim and so are afraid to go in the river; even when the tide is out the terrain is soft mud and sand which makes cutting the mangrove wood a difficult and dangerous task. The women do cut dry, dead mangrove wood but only from the easily accessible fringes when they are collecting oysters. The Sherbro people are wary of interfering with the ecology of the river and the estuary (in the past they have prevented outsiders from extracting sand, fishing with dynamite or building a bridge over to the beach) as the river provides

them with large high quality fish in the wet season and oysters which are collected when fish is unavailable.

Wood is not cut from the high secondary forest - the Porro Society Bush - as it is sacrosanct. Women are not permitted to enter the forest nor would they want to go inside the Bush boundaries. The Society Bush is reserved for use by the men and boys of the village; it is the area where boys are initiated into adult male society.

Driftwood is collected during the dry season when the Sussex river can be forded at low tide. During the rainy season when driftwood is more abundant due to heavy storms, and fuelwood stocks are at their lowest in the village, the river runs too high and too fast for the women to cross and return carrying wood.

Tree Planting

Planting trees for fuelwood is a new concept in this area and many of the local people feel that it is a waste of time and effort as the forest (God) has always provided in the past and it (He) will provide in the future. However, by conducting a sensitive environmental awareness campaign through local opinion leaders, the community has begun to understand the future problems and the ways in which the forest or God can be helped to provide the community's fuelwood needs.

Trees have been planted around compounds and vegetable gardens, along roads and around the primary school, community centre and church.

Initially, the tree seedlings were supplied by PLAN International but now a small nursery has been constructed in the village which now supplies all the tree seedlings.

The growth performance of trees planted in the first year of the project has helped to stimulate interest. Several of the species planted have grown to heights of over 3 m in 14 months.

The tree planting programme is as 'untechnical and unscientific' as possible - no particular tree spacings were recommended. Although mistakes were made, people have learnt from them, and the first stage has been achieved in the process of ensuring that valuable reforestation skills are being adopted in the community.

The future for the village and this project is to plant all the underutilised land within the village and to restock the depleted farm bush and forest regrowth. It is important to involve the Sherbro women woodcutters in the programme. The extension campaign needs to be carefully organised to ensure that tree planting is not a cosmetic exercise but provides an alternative source of fuelwood to help the energy needs of the community. Most of the extension has been directed at the educated males of the Creole community who have shown the most interest in the project. The extension programme must ensure that the users (mainly women) of the forest resource are involved in its management and regeneration. Without their interest there can be no real protection of the resource.

ALTERNATIVE STRATEGIES

There are several courses of action which could be followed:

- Do nothing and let the local woodcutters go further up the mountain slopes into the Forest Reserve or continue to compete with the urban wood traders on the lower mountain slopes for the remaining vegetation. This will incur heavy social, environmental and economic costs, particularly when the road is improved and more transport is available to the urban traders.
- Allow urban traders to cut and collect firewood from the Forest Reserve, under licence and supervised by Forestry Division rangers and guards.
- Reduce the demand for firewood in the urban areas. Freetown is one of the few African capital cities that still depends on fuelwood (instead of charcoal), over 90% of Freetown's population use a three stone fire for all their cooking. A reduction in demand could be achieved by promoting a recently initiated marketing campaign for cheap, efficient, one pot, wood-burning cooking stoves made from scrap metal.
- Help should be given to the Sussex community to put pressure on the absentee landlords, to stop them allowing urban traders access to their land, and giving local woodcutters priority over rights of access to firewood on the land.

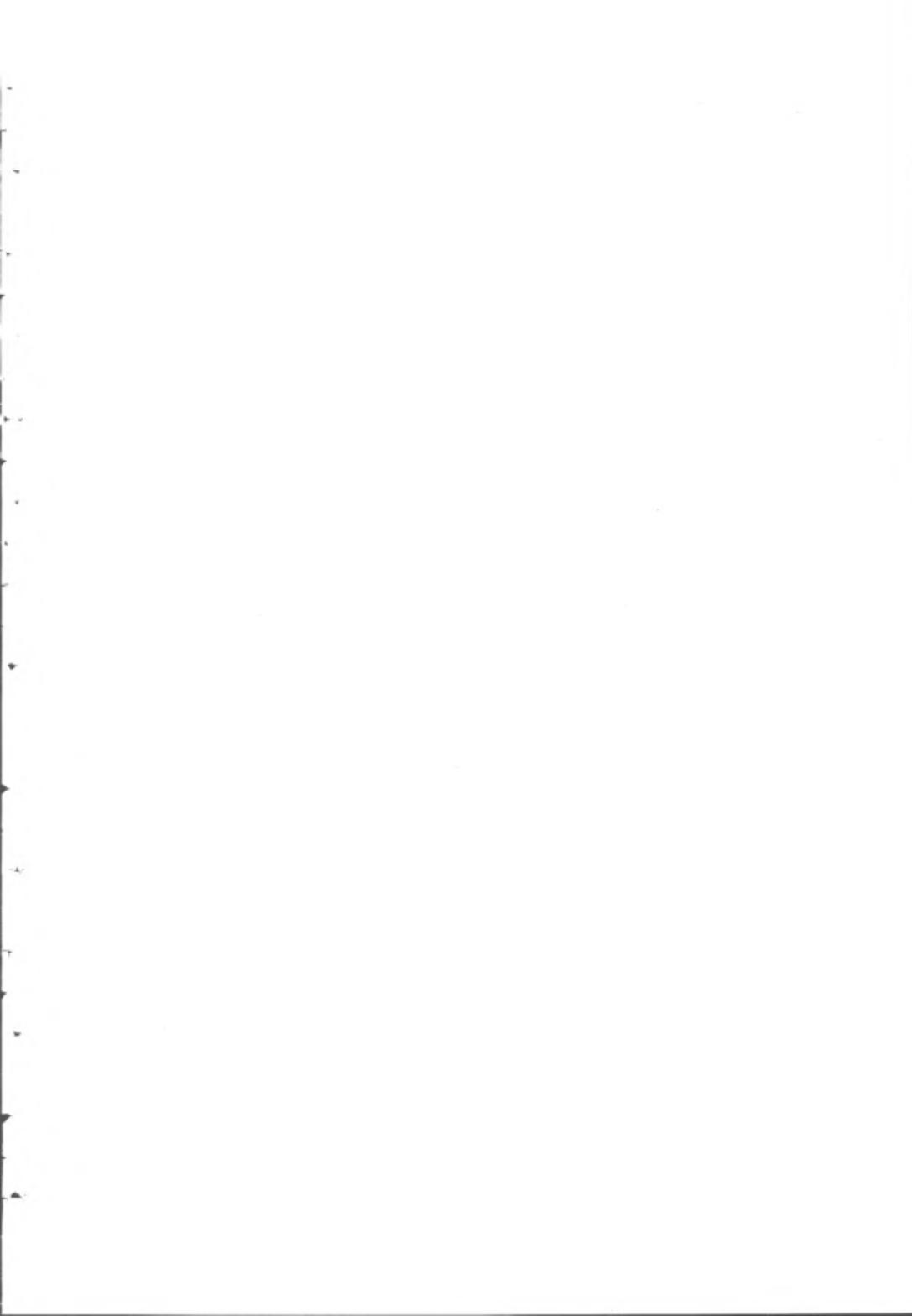
CONCLUSIONS

This case study outlines the problems of balancing the various demands on a resource, ensuring that the local community does not suffer and that the resource can be sustained. It is predominantly male urban wood traders and land owners who are exacerbating the deforestation problem; while it

is the female rural traders who suffer. At the same time it is clear that the way in which female rural woodcutters cut shows more thought for issues of sustainability than the methods of their male urban counterparts. Yet their residence and gender doubly disadvantage them in any conflict over the resource. There is a need here for appropriate land use planning and an understanding of the whole local economy and its interactions with the wider economy. The sectoral approach that is currently being followed will not lead to a sustainable use of natural resources and the conflicts between urban/rural; rich/poor; men/women are not yet being addressed. Whilst small forestry projects may not seem to be a significant step in attempting to tackle these underlying conflicts, they may lead to a greater control of the forest resources by those that need them; if they can clearly document and publicize the relationship between good forest management and local managers.

NOTES

1. This work was carried out with the help of many people, whilst the writer was working as a VSO volunteer in Sussex Village for PLAN International. The views expressed in this report are the author's and do not necessarily reflect the views of PLAN International nor VSO.
2. The surveys were carried out in May and August 1986. Additional information is from field notes made over an 18 month period and from time spent working with local woodcutters.
3. Local firewood needs have been calculated to be 300 m^3 per year. This would be collected from 72 ha of forest regrowth on the lower mountain slopes ie $4.16 \text{ m}^3/\text{ha}/\text{yr}$.
4. According to the survey responses, the amount of fuelwood used per day ranges from 2.5 kg to 13.6 kg with an average of 7.75 kg per household. Each year the community uses about 142 tonnes of fuelwood.
5. The amount of fuelwood varies according to the amount of fresh fish processed. From the survey the average weight of fuelwood used per commercial fish drying session is 27.3 kg. There are 15 commercial bandas giving a total annual firewood consumption of 70 tonnes.



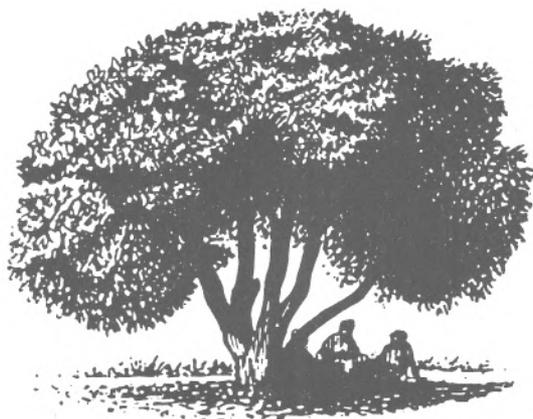


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SOCIAL FORESTRY NETWORK



THE REALITY OF THE COMMONS: ANSWERING HARDIN FROM SOMALIA

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THE REALITY OF THE COMMONS: ANSWERING HARDIN FROM SOMALIA

Introduction

'Twenty years ago this year, the biologist Garrett Hardin wrote a now famous paper which has strongly influenced attempts to understand human use of the environment. He popularized the resonent phrase 'the tragedy of the commons' in arguing that though society is composed of rational individuals attempting to maximize their own best good, this rationality is individual and fundamentally at the expense of other individuals.

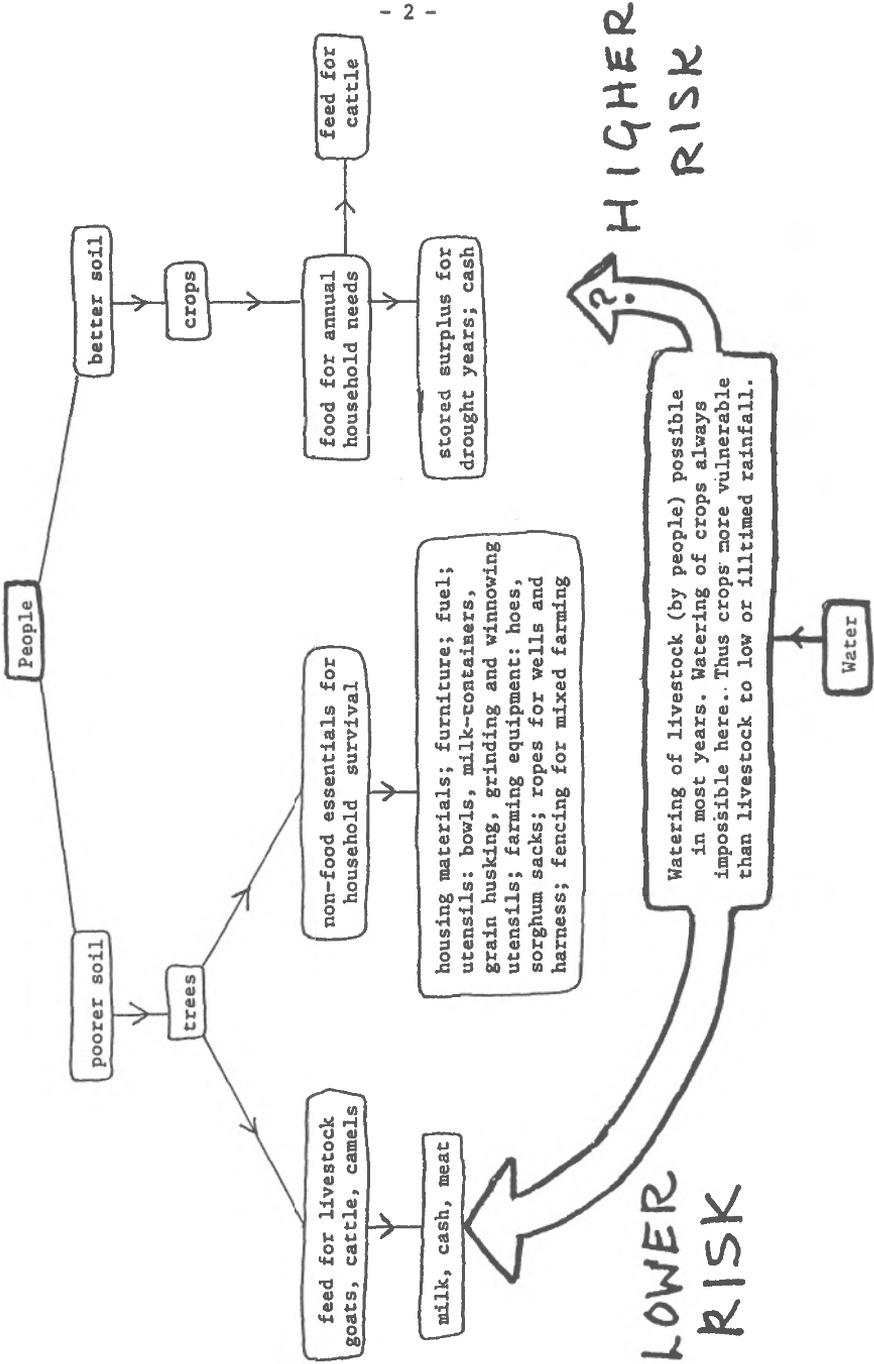
Nowadays, it is often forgotten that Hardin was prompted to write not by the misuse of common lands, but by population growth rates. In 1968, the year in which Hardin's article appeared, Ehrlich had just published his apocalyptic book, The Population Bomb, and the rapid natural increase of populations in Latin America and Asia was terrifying the world. It was the seeming mad irrationality of this increase which prompted Hardin to write with such passion and despair of the commons. Yet in fact by 1975 rates had slowed significantly in both these areas, far faster than demographers had expected. We have learned since then that rapid population increase is usually the result of declining death rates not of soaring birth rates, and that, though there is inevitably a time-lag, the pattern of falling death rates is as inevitably followed by a rational decline in birth rates.

Hardin's work on population has thus long ago been superseded. Ironically, though, the illustration he used of individual rationality leading to mass irrationality - that of the individual herder maximising his cattle on communally owned grazing at the expense of other herders - still continues to shape the thinking of some natural and social scientists concerned with best human use of natural resources, and to make them fearful of communal resource management.

It is time that the weaknesses of his argument for this branch of knowledge were also more widely understood. In fact, Hardin overlooked exchange relationships, where the best for the individual is deemed by that individual to depend upon the *forbearance of others* towards him in return for his towards them. Such situations most commonly occur where group membership is an important political, economic or defence asset. Groups in turn may then selfishly pursue their goals against other groups or treaty with them, as their interests dictate.

Academics who do dryland or pastoral research are familiar with the reality of the commons, and there are more published examples than there used to be of the way in which groups of individuals may successfully and jointly manage commonly owned lands over long periods of time (1). But it is still too readily assumed by field practitioners that there is and perhaps can be no successful management of lands held in common. We argue here for the opposite proposition, that the real tragedy comes when the commons are thrown open and unrestricted exploitation allowed.

SCHEMATIC VIEW OF THE DIFFERENT COMPONENTS OF THE BAY REGION ECONOMY



The Bay Region of Southern Somalia

This paper reports on work undertaken in the Bay Region of southern Somalia between January and April 1988, during which it became clear that the assertion and denial of common property rights to bushland were at the heart of the energy issues which were the original field of study (2). It also describes the early stages of research aimed at returning common property rights to rural people who have lost them, and thereby ensuring the survival of resources which would otherwise be lost as well.

Bay Region is an area of Southern Somalia lying 300 km inland from Mogadishu. It is a region of slightly higher rainfall than the rest of Somalia (averaging 500-600mm) and consequently its best watered areas constitute Somalia's main rainfed agriculture zone.

Bay Region's inhabitants are agro-pastoralists. All households grow sorghum in years when rainfall allows it - indeed achieving creditable surpluses for storage or sale in good years - and keep some livestock. Cattle and goats are the main animals kept, and household increasingly invest in camels as the household head grows older and has more capital to invest, and more labour available in the form of older children big enough to herd camels away from home. Though the numbers of animals per household are lower in Bay than in other more fully pastoral parts of Somalia, the population density is such in this area that the region exports more livestock, as well as more sorghum, than any other region of Somalia.

As Diagram 1 indicates, Bay Region people survive by the complementarity of the low risk trees-and-livestock component of their economy practised on the region's poorer sandy soils, and high risk sorghum cropping on the clay ('bay') soils after which the region is named. The extreme unpredictability of the rains means that crop-failure years are frequent, and animals represent the capital with which sorghum can be bought if necessary. In good years sorghum can be stored in underground pits against hardship and future household commitments such as weddings or funerals, or reinvested in the purchase of livestock. Sorghum stalks are stored as emergency fodder for cattle, who are the poorest foragers in the bush of the animals kept, but the best suppliers of milk close to the farm. It cannot be too strongly stressed that animals, and the tree-browse on which they feed, constitute the essential underpinning of the whole economy of this region. Furthermore, most of what goes on economically in Bay Region is outside the cash sector, and villagers mostly have to grow, gather or make what they need.

The Bay Region and the charcoal trade to Mogadishu

Because of the region's slightly higher rainfall, and the fact that its capital, Baidoa, is only three hours away on a tarmac road from Mogadishu, it is also the chief supplier of charcoal for the Mogadishu market, which consumes at least 300 tonnes of charcoal a day. Charcoal production and transportation is organised by a single cooperative which transferred its headquarters to Baidoa when woodland resources nearer to Mogadishu became too depleted for further exploitation.

As a result of anxieties first expressed two or three years ago about the number of trees suitable for charcoal still available in Bay region, and offtake rates, an ODA-funded forest inventory project has been underway in the region for the last two years. Towards the end of that period, complementary data began to be collected aimed at discovering the competing needs for trees of the inhabitants of Bay Region themselves.

The results of fieldwork among the people of Bay Region

We were quickly to discover that there is intense conflict over trees in the region, especially on the clay plains in the north-west where the best soils and the best rainfall of the region have concentrated both farmers and the preferred charcoal species. Local people are heavily dependent upon trees, not only for the sustenance of their animals but also for housing materials and a wide range of other products of which the most important are bark-rope, agricultural implements, domestic furnishings and utensils, and milk and water containers.

Villagers were especially worried at the steady disappearance of many of the trees of a girth and durability suitable for house centre-poles and ridge-poles: *Acacia bussei*, *Acacia senegal*, *Acacia tortilis* and *Terminalia* spp. They were also concerned to see that as the flattened 40-gallon oil-drums which used to be used in the preparing of charcoal kilns became harder to obtain, charcoal workers were beginning to substitute non-charcoal making species for them before the final earth packing. In this way important fodder species such as *Grewia* spp., *Cordia* spp., and *Commiphora* spp. were beginning to disappear into the kilns as well, along with species usually selected for the lath walls of huts. Many of these species are further used in the making of water- and milk-containers, and other domestic and farming equipment.

Land tenure

But the problems as presented to us by the people of Bay are as much about communal land-rights as they are about particular trees growing on that land.

As has happened in many other countries, and in a closely parallel way in the Sudan, what used to be a triple land-rights classification system has been collapsed into a dual one. Among Bay Region people in the past, land used to be classified under traditional customary arrangements as private farm-land; as communal clan or village land; or as remote open access land.

In both these countries the government, in an overhasty attempt to create a modern nation-state out of a cluster of clan and tribal groupings, abolished the clan as a political entity and with it communal clan land-rights. Thereafter, communal land was lumped in with open access land as State Land, and only the sanctity of private farm-land was upheld. The right to manage communal lands was withdrawn - and thus all previous attempts at management came to an end.

Land tenure : the view of Bay Region villagers

The elders of one Bay Region village described the end of customary common property rights in the following terms:

'All the problems started after the Somali flag came. We used to look after our trees! All grazing belonged to one settlement or another and we had our own grazing reserves. Only our own people were allowed in. The British allowed boundaries between different groups, and people owned their grazing reserves and fought for them. That is why, when the republic came, it cancelled all the grazing reserves: to stop the fighting.

In the old days we would kill people who came and grazed in our area without permission. For those just passing through there was a corridor area. Someone would come and request passage rights, and they would be allowed through. But they had to keep moving, more or less. They could not settle. Everyone knew everyone else from the area by sight, so strangers were easy to identify.'

The villagers of another village in the region wrote to the government two or three years ago, (and gave us a translated copy of the letter they had written) expressing their confusion and outrage at a world without bounded communal land-rights in which complete strangers from

other parts of Somalia could now cut 'their' trees close to their village, and turn them into charcoal without let or hindrance,:

'..of course we are sure if there were no forest, there had been no animals that we could have seen...After knowing the profit and management of this woody land that is destroyed by few people carelessly...we ask the Government again 5 questions as follows:

1. If there are animals in a certain family, can anybody go and collect them without having any agreement?
2. Is there anything in this world that has no boundary? Between two nations, two provinces, two districts, two divisions, two locations, two gardens....where does the boundary of destroying the woody land end?
3. In this world there are very many projects. Every one has a starting and an end. Where does this project end?
- 4.They are finishing this country. To where will they migrate? And when?
5. These people who are working as if the land is not theirs - why do they have more right than the people....who were feeding on this forest?

Both these texts make it clear that lands were managed differently in the past; and the second stresses the importance of the continuity of the woodland for those who feed their animals and indirectly themselves from it, in contrast to the destructiveness of 'those who are working as if the land is not theirs'. Even allowing for the circumstances in which these statements were made, there is no mistaking the fact that, once, the Bay Region woodlands were carved into areas owned by local people. Both documents stress the destruction of boundaries, and the second expresses puzzlement that careless strangers should have stronger rights than those whose livelihood depends on the woodland.

Today, two levels of land-law operate in the Bay Region in an unsynchronised way. Bay people still behave to one another, on the whole, as if the old unwritten customary code of law still stands - except that killing is now very rare. Reciprocal grazing occurs by request, and neighbouring villages are supposed to ask each other's permission before cutting polewood in the other's terrain. There is every incentive to keep reciprocal grazing going, because rainfall is often patchy and generosity to a neighbour this year will ensure access for one's own livestock next year.

Land tenure : the national level viewpoint

However, the people of the region are highly aware that the State takes no notice of the customary land rights they accord one another: especially as evidenced by the behaviour of the Charcoal Coop. Coop members, who are from other parts of Somalia originally, have been able to cut trees in Bay only because of the formal abolition of earlier clan-based customary land-rights.

It is thus not surprising that, in conflict with villagers, coop members and their camps of workers stress the national level, the capital, literacy and modernity and deny, by so doing, the local and the traditional. The intimidation and insults used against protesting villagers by charcoal employees are instructive:

'You are an illiterate and unimportant man, you cannot talk to us.'

'We have written permission for what we do - you have nothing'.

'If you threaten us we will have you arrested and taken to Mogadishu'.

'We can use this land whether it is yours or not: the Government says so'.

Village elders told us wrathfully of the government's failure to make the charcoal burners obey the rules laid down for them - which specify only two tree species which may be cut for charcoal, light harvesting of trees before moving elsewhere, and charcoal camp siting away from villages. Not only was the government's inability to patrol the area noted, but elders had discovered that journeys to Baidoa to complain, or attempt to bring an official back with them to inspect bad practice were rarely fruitful. It was clear that officials in Baidoa were hesitant to offend Mogadishu - and Mogadishu was reluctant to have much interruption to its charcoal supply.

Strengthening Common Property Rights - the Villagers' Solution

The villagers we interviewed had plenty of suggestions as to what was now needed.

Firstly they wanted to see restored the right to reserve portions of woodland for the use of particular groups. In some areas, individual villages wanted reserves; in others, where an important local elder commanded the loyalty of several villages, a shared reserve for the group was preferred. While there has not been time so far to plan out reserves in detail with villagers, two separate needs emerged which demanded two separate approaches to the idea of reserves.

- o Villagers said that the most acute need which such a reserve would meet would be trees for good-sized house poles. Browse was less of a problem except at the very end of the dry season, when a pole reserve near the village might offer some fodder for village-based animals. A pole reserve should be the exclusive property of the village who spent time protecting it, villagers felt.
- o As far as grazing reserves were concerned, villages did not want exclusive reserves because the scattered nature of the region's rainfall makes it politic to offer reciprocal grazing to others and thus have rights to it in return. Grazing reserves would be owned, however, and though they might be shared with other groups in times of need, there should be no access to them for charcoal burners.
- o Since the agricultural villages of the north-west Bay region clay plains are clustered on their farm-lands, and these in turn are enclosed within an outer ellipse of bushland and woodland, villagers visualize a contiguous area of bush, on the edge of farmland, from which charcoal cutters are completely banned and which they divide village by village among themselves. Charcoal burning should take place in open access land well away from settled agricultural areas and adjacent communally owned woodland. Villagers suggested 8-15 km away.

Secondly, while the driving force behind villager enthusiasm for woodland management is obviously stronger rights to defend trees for their own purposes, it was clear to them that remembered management practises for grazing would be insufficiently stringent to deal with non-reciprocal arrangements over poles. Poles were not in short supply twenty years ago, after all. Village chiefs or committees would have to manage the resources of the village in such a way that self restraint would be coupled with mechanisms for giving permission to cut poles, the monitoring of the woodland, and the protection of seedlings against browsing.

In seeking for evidence of existing management practices of possible relevance for pole reserves, we found that some chiefs already monitor the cutting of poles for sorghum pit-props, and try to discourage villagers from thoughtless hacking of good pole-trees for goat fodder. A few have planted Euphorbia or Commiphora hedgerows along roadsides or fields, and have encouraged others to do likewise.

Thirdly, several village groups proposed that they be given the legal right (i.e. the written right) to watch the charcoal burners and make sure that only trees of the right species and ages are cut. In present day Somalia, where written documents are used for land registration and charcoal permits - that is, in negotiations with the State rather than with one another over land-use - villagers are aware that tangible government documentation is required if they are to hold the charcoal burners to the rules perfectly well known to both sides. Meanwhile, bows and arrows have been used successfully by villagers in the defence of trees near their village, and there have been one or two armed confrontations.

A sheikh explained to us that it has always been customary to use a settlement's young men as local police and that he would send them to guard the woodland if the right to do so were established. Several other groups of village elders had suggestions for involving co-villagers in guarding resources, and made the point that such police would owe their loyalty to the village, and would not be bought off with a sack or two of charcoal as some government officials have been.

Fourthly, villagers were well aware that the restoration of the right to manage local resources must be cast in a new idiom. In the past, grazing areas were owned and defended in the name of clans and tribal sub-sections. Today, such groupings have no legal basis, and communal land-rights would have to be ordered on another basis. Villagers suggested that, since villages and coops own communal property - and are the only institutions in present-day Somalia that do - communal land-rights should be organised through them.

Common Property Rights and the State

For Bay Region people, some strengthening of the right to own and control a natural resource every bit as vital as farmland is paramount. Yet arguments on their behalf in the capital needed to be made carefully. Rural rights do not readily interest national government and may in certain circumstances be seen as a threat to the dominance of the centre. In this case, rural needs were in direct competition with Mogadishu's need for charcoal, as well.

Any hope the project team might have of making it possible for rural common property regimes in Bay to survive and thrive, and with them the environmental health of the region, had to be realistic about the pressures on natural resources from outside the region, and make some proposals for how they might be lightened. The project team were thus keen to present their findings powerfully in a form which government would find convincing.

The national seminar

It was decided that the team's preliminary findings in Bay Region should be presented to a wide audience in Mogadishu before the project final report was written and an 'Energy Planning Study' seminar was arranged for this purpose in April 1988. Appropriate civil servants, politicians and others were invited, along with the radio and television.

The interviews with groups of villagers in north-west Bay Region villages had made it clear how overwhelming was the concern over tree losses of the region's inhabitants, and yet how depressing their certainty that they would never be able to put their case in Mogadishu since regional officials would not pass their complaints on upwards. It seemed to the team that they were morally bound to give the villagers a forum at the seminar if they could, despite the fact that places were limited.

Two actions were taken in an attempt to provide effective representation at the seminar for all the villagers interviewed.

- o Firstly, while fieldwork was still in progress, a document was prepared which summarised all the most widely expressed opinions in the village interviews. It was read back to villagers for their comment and amendment, and was then produced in both English and Somali versions and distributed at the seminar (See Annexe).
- o Secondly, permission was obtained from the regional authorities to invite three Bay Region village elders to the seminar on the grounds that since the team was proposing woodland management by villagers on the basis of what Bay inhabitants had told them, it was vital for close villagerteam collaboration from the very beginning - even before the next phase of the project had begun.

The team presented its main findings which were, in short, that charcoal offtake rates in Bay Region were unsustainable; that the tree-based economy of the local population was under extreme stress; that there would be repercussions from this on the national economy because of the importance of the region's livestock exports; but that the inhabitants of the region were eager themselves to manage the woodlands on a more sustainable basis and the project was enthusiastic about working through village management groups in the project's next phase. The eldest and most senior of the Bay Region elders also spoke to the seminar, endorsing the 'Village Opinions' document and underlining the gravity of the environmental crisis facing Bay Region.

The points from the seminar which most caught the attention of the audience, and which were broadcast and discussed on radio and television for the next three days were that there is now less than two years' supply of charcoal left in the main charcoal-producing area in Bay Region; that growth rates of charcoal-producing trees are too slow to replace those felled, so that the bushland is being destroyed;

and that serious hardship was being caused to the people of Bay Region, and their economy, by the charcoal trade. Audience participants appeared not previously to have been aware of the fact that the trees of Bay Region could support the livestock economy on a sustainable basis, or the charcoal industry for a very short time - but not both. Possible solution for Mogadishu's energy needs, though not relevant to this paper, were naturally also eagerly discussed (3).

Conclusion

Most descriptions of common property resource regimes describe past or passing systems, either because national laws have undermined them, or because a technological change has irretrievably altered the way in which they are exploited. It is equally rare to come across attempts to restore common property rights to their original holders, though the restoration of Panchayat Protected Forests to villagers in Nepal in 1976, after twenty years of unsuccessful nationalisation of forests, has been one such.

In the area of Bay Region in which most charcoal burning is taking place, there are only two National Range Agency offices (Ministry of Livestock, Forestry and Range) neither of which has transport. The officers cannot possibly monitor the activities of charcoal camps as they are supposed to, and there is little or no prospect of more funding being made available to them to do so. Where a country is as poor as Somalia, as the villagers themselves argue (see Annex), key natural resources will be far more cheaply and far more thoroughly protected by common property resource management than by paid government officials.

There will certainly be difficulties in giving an earlier institution a new lease of life. The most starkly obvious concerns sanctions for rule-breakers. Where, as in the past, rule-breakers are local people, pressure on them to conform and to practise self-restraint when required can be brought to bear because of the multitude of ties which bind offender and the resource group he has offended. But Bay Region villagers find it impossible to deal with charcoal burners in this way, and need recourse to a State body such as the Police or the National Range Agency which will support them when they impose sanctions on offenders.

Although there is precedent in land-registration procedures and the judiciary for village-level rights and duties to be part of the wider State system, the relationship of village-level natural resource management to State agencies will have to be given time to develop and find its most appropriate form.

Nevertheless, the strongest impression left with the individual who discusses natural resources with Bay Region inhabitants, is the durability of the concept of communal ownership of the woodlands - especially when one considers that it has been a concept in exile for the last twenty-five years. The reality of the commons is too powerful to ignore, and every effort should be made to use it for renewed natural resource management.

FOOTNOTES

(1) By far the best collection currently available is contained in the 'Proceedings of the Conference on Common Property Resource Management', edited by the panel on Common Property Resource Management, B.O.S.T.I.D., National Research Council, Washington D.C., National Academy Press, 1986.

(2) The ODA project which began in December 1985 and is due to end in July 1988 was originally conceived simply as a woodfuel inventory of the charcoal-bearing species of Bay Region. It was entitled the Energy Planning Study, and formed one component of the British Forestry Project, Somalia.

The author's fieldwork for the project took place entirely during the first four months of 1988, and was greatly facilitated by the longstanding contacts and expertise that the team and their Somali technicians had established in Bay Region over the previous two years. Especially grateful thanks are due to the author's interpreter, Ibrahim A Faarah, who had worked previously as a forestry technician with the project and whose knowledge of the area and easy relationship with Bay Region people, alone made quick useful fieldwork a possibility.

(3) One set of recommendations involved suggesting raising the price of charcoal in Mogadishu and thus forcing the population to use it more carefully. Evidence from urban surveys had suggested that the inhabitants of Mogadishu had a far higher per capita consumption rate of charcoal than did charcoal users in Nairobi and Mombasa in Kenya. Exhortation on the radio to use charcoal more carefully had had little effect and a price rise seemed the only way of generating conservative use. The other advantage of higher prices would be that charcoal cooperative members and their employees would make the same profits from smaller volumes of charcoal, and could thus be pressed hard to acquiesce to tighter controls on charcoal production in Bay Region.

Some discussion of fuel substitution in Mogadishu also took place, though the team had no especial expertise in the subject. In fact, in a meeting with the National Energy Committee held immediately after the Seminar, it became clear that there was already far more concern about Mogadishu's prodigious domestic and commercial energy demand than the team had expected. Alternative fuel sources were already under discussion and the team's findings merely confirmed fears about long-term charcoal prospects rather than having to make headway against an incredulous reception.

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REFERENCES

Ehrlich, P. The Population Bomb, London:Pan, 1968.

Hardin, Garrett. 'The Tragedy of the Commons', SCIENCE vol.162,
pps 1243-1248 December 1968.

VILLAGERS' OPINIONS
(English translation)

In this paper, we are presenting a summary of the majority views of the villagers in twelve villages in the agricultural area of North-West Bay Region.

1 THE IMPORTANCE OF TREES

Trees are fundamental to our life in this area:

- We depend upon animals, and the animals depend upon trees for fodder.
- We need trees as well, for poles for houses, for household utensils, for farm tools and herding equipment, and for medicine.

2 TREE LOSSES

We are now very worried about the loss of trees - above all for poles and fodder.

Both charcoal burning and the needs of towns within Bay Region for poles and firewood are causing this worry, though it is the charcoal burning which causes the greatest loss of trees.

3 FARMERS' PROBLEMS

We have had many clashes with charcoal burners. They abuse us if we try to protect our trees. They are cutting right near the village in many areas - although it is against the law - and they refuse to leave.

In one or two of the villages, we are so desperate that we wish we could move right away from the area. But there is no-where else to go, because the same problem is found everywhere else in the region.

4 HERDERS' PROBLEMS

Herders are angered by the way in which charcoal burners cut too many trees in one area, so that fodder for animals begins to be a problem. Overcutting of fodder species to help pack the kiln (as barrels run short) is also a great worry to us.

The other problem for herders is that the prickly discarded branches from trees cut for charcoal block the familiar pathways through the bush. This makes it difficult for us to locate straying animals at night, or to reach them in time when a hyena attacks. The area has become a wilderness to us and our animals.

5 LACK OF CONTROL OF CHARCOAL BURNERS

Because the NRA have only two officers in the charcoal-cutting areas near us, and because neither office has transport, the government cannot control the charcoal burners. This is why they cut illegal species, cut in illegal places, and make the kilns in a more and more inefficient way as the barrels become hard to obtain.

6 LOCAL MANAGEMENT

For that reason, we propose a much stronger management role for rural people. In the past, we had the right and duty to protect woodland near our settlements, and that is the job we would be willing to do again. Village groups could set aside a tree-reserve, big enough for the pole needs of each village. In the agricultural areas, where there are many villages, these separate reserves would touch one another to form a solid block of woodland.

Although pole-cutting in these reserves would be limited only to villagers of the village protecting that reserve, we would allow grazing reciprocally on one another's reserves. This is because rainfall varies from place to place each year.

We are prepared to do this work, and we can do it more easily than the NRA: we are many, and we do not need transport to the area because we live there already.

But in return, we would need the support of the NRA, and some kind of legal right to the land: so that we too, like the charcoal people, had written government permits stating our rights.

Charcoal should only be made right away from the agricultural areas in thinly populated parts of Bay Region, and in other regions.

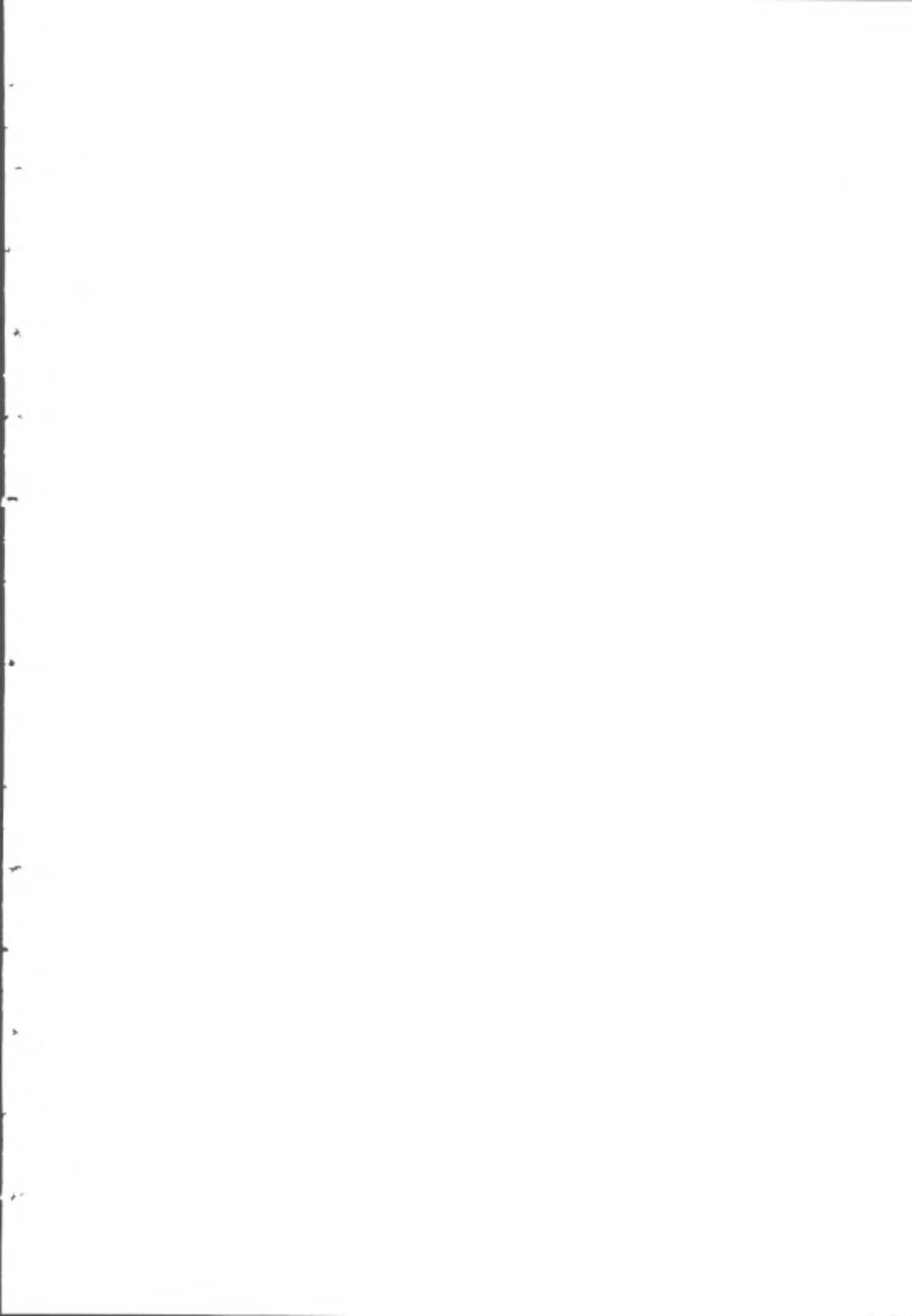
In this way our economy would be saved which produces much sorghum and exports large numbers of livestock to the rest of Somalia, and overseas. And the woodlands would also be saved for the future.

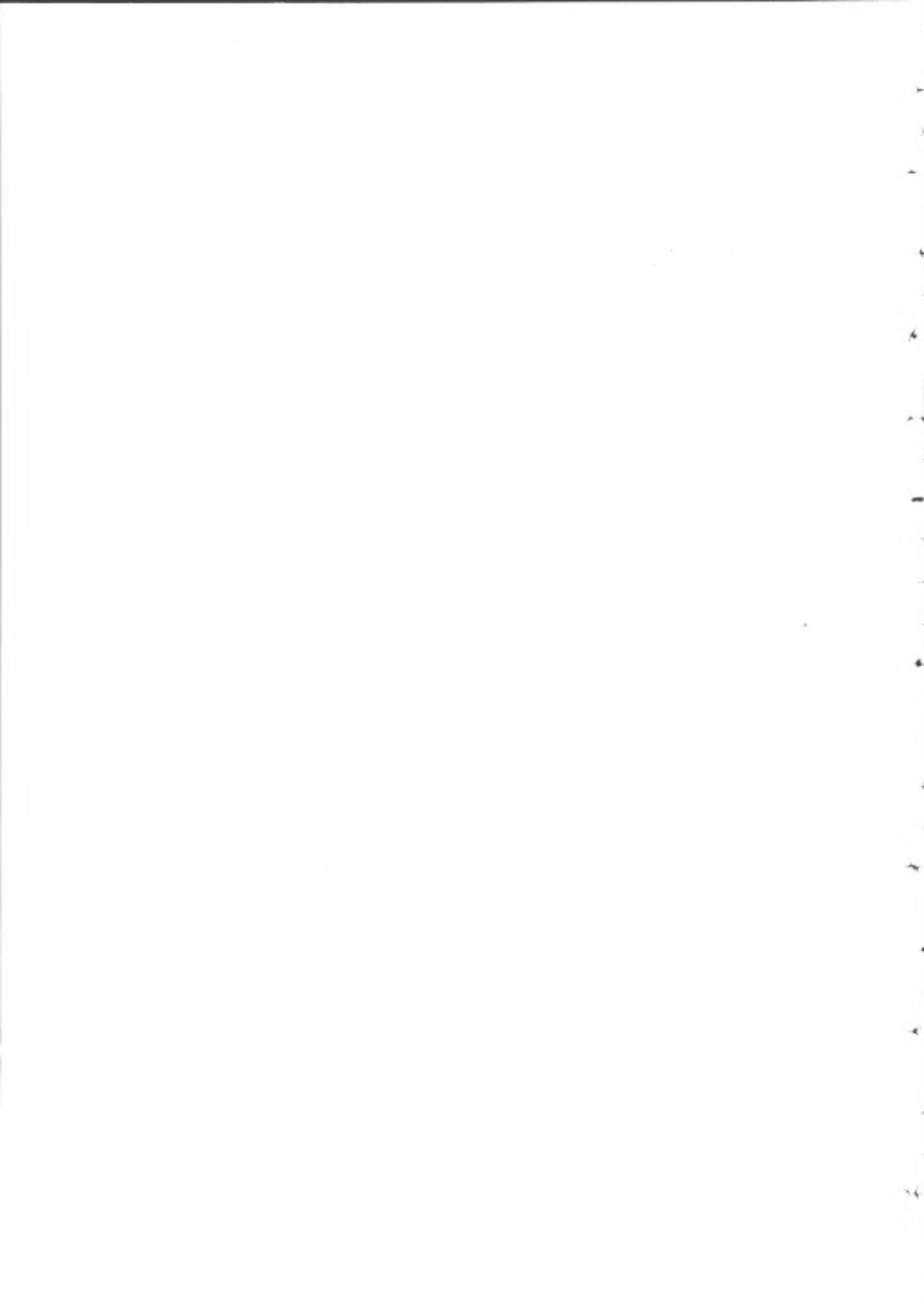
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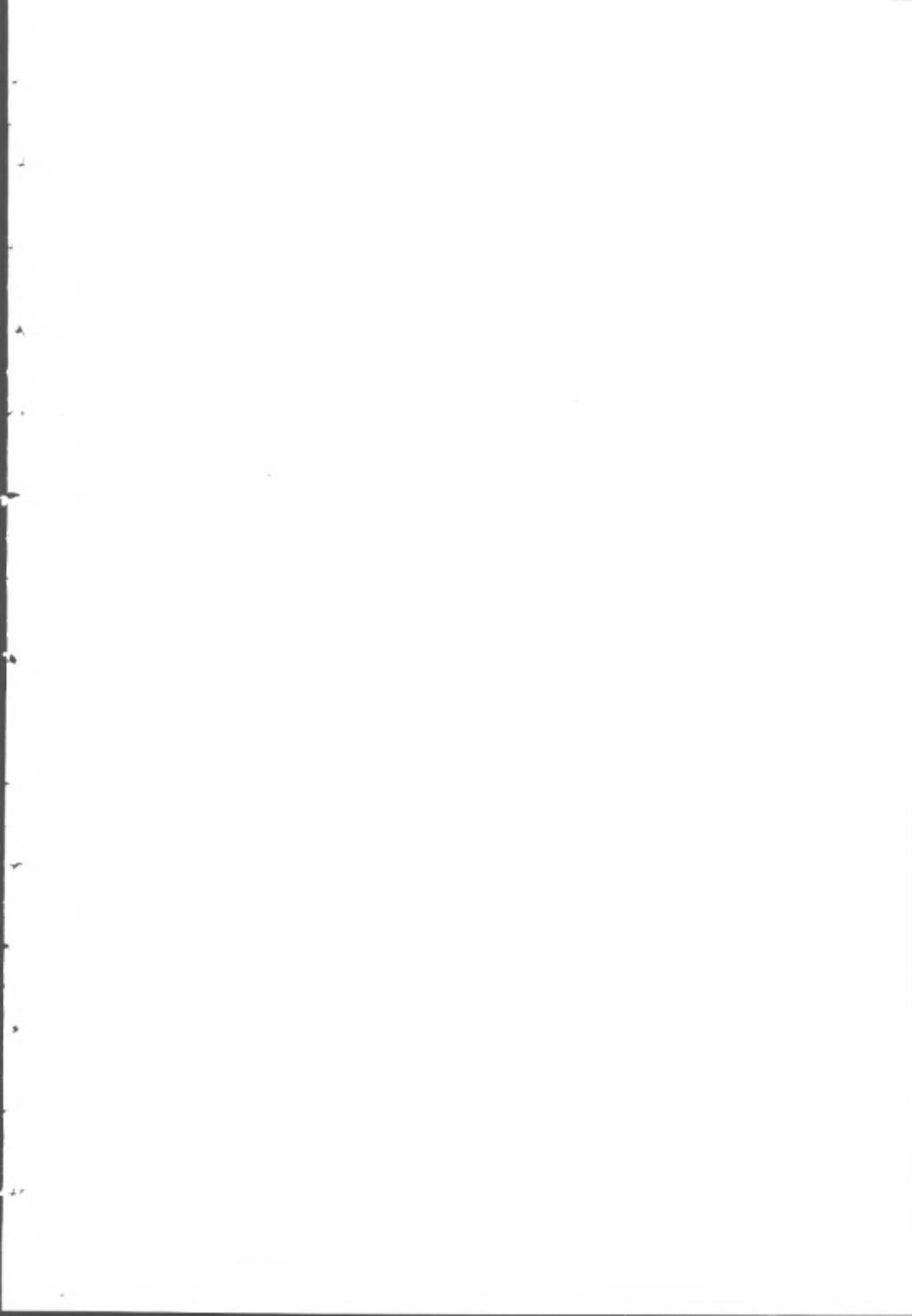
Abdulrahman Sheikh Hussain Bananey
Sheikh Bananey Social Cooperative, TOOS WEYN

Sheikh Hassan Ali
Headman of Korunbod, near QANSAXDHEERE

Abdi Bulle Hassan
Headman of UFUROW







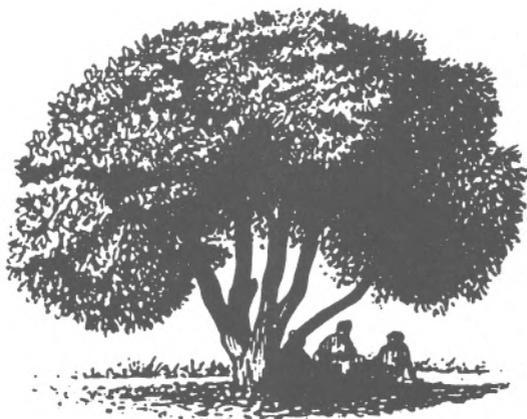


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SOCIAL FORESTRY NETWORK



Newsletter

**Agricultural Administration Unit,
Overseas Development Institute**

The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these has between 600-1500 members, drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

ISSN 0951-1849

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Centrefold

Reminder to fill in form for new REGISTER

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FORM FOR NEW AUTUMN 1989 REGISTER

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NETWORK PAPERS ACCOMPANYING THIS NEWSLETTER

The three papers in this Winter mailing depict the central role of forest products in the economies of both rural and urban areas. The interesting case of Kano shows how in some areas under conditions of high demand for fuelwood, it is possible to retain woody cover on farms. The Kano study is a good example of the rational farmer responding to markets and the need to ensure that a sustainable farm-forest system is maintained.

The Falconer & Arnold paper puts the forest system in context and shows the centrality of forest products to the nutrition and well-being of individuals. However, without good extension systems none of the forestry projects will be able to reach the individuals who are to be involved in the projects.

The Holding paper describes how the Sudanese forest service has reoriented itself to involve rural people in the process of tree growing and forest management.

- 7a 'Forests, Trees and Household Food Security'
by Julia FALCONER and Mike ARNOLD
- 7b 'Wood Fuel in Kano, Nigeria: The Urban-Rural Conflict'
by R.A. CLINE-COLE, J.A. FALOLA, H.A.C. MAIN, M.J. MORTINORE,
J.E. NICHOL & F.D. O'REILLY
- 7c 'Forestry and the Development of a National Forestry Extension Service'
by El Taib Ahmed ABDULLA and Christine HOLDING

NEWS OF THE SOCIAL FORESTRY NETWORK

Field Research

Gill Shepherd has been working in Kenya for four weeks during the autumn of this year, on the EMI Forestry Project. Preliminary findings are reported in the next Network mailing. This piece of research is part of a larger project on participatory approaches to natural forest management in Africa, which will run through the first two years of the new grant period.

Apology

We apologize for the delay in bringing out this edition of the Network mailing. We have spent a few months applying for additional funding for the Network which we have been successful in securing.

Funding

We are happy to announce that, as a result of negotiations over the last few months, the Overseas Development Administration has made a grant to us which secures our future in conjunction with the grants already received from the Ford Foundation and the Aga Khan Foundation.

NETWORK ANNOUNCEMENTS

THE REGISTER

IN THE AUTUMN MAILING WE WILL BE ISSUING A NEW REGISTER. IT IS ESSENTIAL THAT ALL NETWORK MEMBERS COMPLETE THE FORM ENCLOSED IN THE CENTRE OF THIS NEWSLETTER, IF THEY WANT TO REMAIN ON THE NETWORK. ONLY THOSE MEMBERS WHO COMPLETE AN APPLICATION FORM IN 1989 DO NOT NEED TO FILL OUT THE ENCLOSED FORM.

The Autumn 1989 Network issue

The Autumn 1989 issue of the network will present papers on field-level experiences with establishing and running nurseries. If you feel that the situation in which you work offers insights useful to others, we would be very happy to hear from you. Letter-length, network-paper-length or 1000-1600 word length contributions will all be welcomed.

Staff

Mary Hobley continues to work half-time for the Social Forestry Network but as a Research Associate.

For reforestation researchers

The Organisation for Tropical Studies, Inc. wish to pass on details of the OTS Reforestation Project. Its aim is to research unknown native species for reforestation. Currently seedlings are donated to farmers in exchange for their land and labour to develop experimental plantations. Research is then conducted over five years. Participation may extend beyond this period if local interest remains high. OTS also run an extension programme whereby students at the local agricultural high school, under the tutelage of a volunteer, will reforest school land with seedlings from their own nursery. The nursery may eventually become self-sufficient by selling surplus seedlings.

For further information contact: Organizacion para Estudios Tropicales
Oficina Centroamericana
Apartado 676
2050 San Pedro de Montes de Oca
COSTA RICA

NETWORK ANNOUNCEMENTS

Forest policy research grants

The Conservation Fund, World Wildlife Fund are seeking research proposals from organisations and individuals under their new small-grants programme. The scheme is supported by the Rockefeller Institute. Its aim is to support research that has direct implications for policy changes affecting forest resources.

Contact:

Jane M. Engert
1250 Twenty-Fourth Street,NW
Washington, DC 20037
USA

Wood burning stoves programme

The French Technical Assistance Improved Wood Burning Stove Programme operates in Bo, Sierra Leone, West Africa. To counteract an increasingly heavy demand on diminishing energy resources, the Department of Agricultural Engineering, Njala University College, in association with the Forestry Department introduced a new wood burning stove to the township of Bo in 1985. The stoves are constructed to shield the fire and thus have increased the efficiency of existing cooking methods from between 10 to 40%. Extension work focusses on rural women, students and the rural poor. For further details of the programme and of the stove's construction, contact:

E. K. Allieu
Regional Forestry Officer,
Regional Forestry Office
Lyon Rd
Bo
SIERRA LEONE
West Africa

NETWORK ANNOUNCEMENTS

ICRAF agroforestry review

ICRAF are seeking information for a worldwide review of monitoring and evaluation activities in agroforestry extension and on-farm research projects. Briefly, the study tries to answer:

1. Which agroforestry technologies are currently being monitored and evaluated in terms of their adoption and adaptation by farmers, and their on-farm performance and/or impact, both on the farm and at the community level?
2. What methodology is being used to monitor and evaluate agroforestry technology?
3. Who conducts the monitoring and evaluation? Who uses the results, and how?
4. What criteria are used to define agroforestry technology, and how?

For more information, contact:

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254(2)-521460

OBITUARY: Jack Westoby

Trees and people

It was, as he enjoyed saying, an accident that led Jack Westoby into the realm of world forestry where he became such a major intellectual and political influence.

In 1945, after 9 years as a railway clerk in Hull and Leicester, he completed an external statistics degree, passed a civil service exam and found himself in the Board of Trade where, among other things, he assumed responsibility for wood statistics.

Sent, for this reason alone, as British delegate to the first European timber conference, he made such an impression that in 1952 he was recruited to the forestry section of the FAO.

There for the next 22 years (in Geneva and from 1958 in Rome) he became a beacon of original, clear and progressive thinking about the world's forests.

He pioneered the analysis of forestry in the economic development of poor countries, many of which he visited.

Increasingly in his writings and memorable addresses (some of them collected in *The Purpose of Forests*, Blackwell, 1987) he expounded a simple yet, in the context of a conservative discipline, iconoclastic idea that 'Forestry is not about trees, it is about people. And it is about trees only in so far as trees can serve the needs of people'. This was the basis of a devastating but never despairing critique of the practice of forestry in the world.

These are the themes of his book *Forests, Trees, People*, to which he was putting finishing touches only days before he died.

OBITUARY: Jack Westoby

If Jack Westoby's entry into his profession was accidental, his development within it into a leading voice for social progress was not. His youthful involvement with the Communist Party ceased in the Forties. But the ideals which prompted it were always with him, showing themselves in the defence of colleagues against witch-hunts during the Forties and Fifties and in his professional life and writing.

After his retirement from the FAO in 1974, hastened somewhat by growing conflicts with its direction, he maintained a remarkable schedule of writing, visiting lectureships and consultancy missions.

During the last five years of his life motor neurone disease brought increasing physical problems. Yet his determination to remain intellectually creative inspired a network of cooperators at the centre of which was Flo, his wife. These difficult but productive years were a final example of the qualities of rationality, purpose and humanity which for so many friends and colleagues made Jack's life a source of inspiration.

Bob Sutcliffe

Jack C. Westoby, born December 10, 1912 - died September 11, 1988

NEWS OF THE OTHER AAU NETWORKS

Agricultural Administration Network

run by John Farrington, published the following Network papers:

- 1 'Strength in Diversity: Innovation in Agricultural Technology Development in Eastern Bolivia' by G. THIELE, P. DAVIES and J FARRINGTON
- 2 'Participatory approaches to technology generation: from the development of methodology to wider-scale implementation' by Deep SAGAR and John FARRINGTON
3. 'The Agricultural Extension system in China' by Jorgen DELMAN
4. 'Agricultural Extension in the Hills of Nepal: Ten years of experience from Pakhribas Agricultural Centre' by Hem B THAPA, Terry GREEN and David GIBBON

Irrigation Management Network

run by Mary Tiffen, published the following autumn 1988 papers:

- 2b 'Rehabilitation and Participation: The Views of the Engineers' by Mary Tiffen
- 2c 'Checklist for Incorporating System Operation and Maintenance in Design' by Harold D. Frederiksen and 'Planning Implications of Socio-Economic and Institutional Findings' by Mary Tiffen
- 2d 'Matching Crop Water Requirements in Large Systems with a Variable Water Supply - Experiments in India' by Jeremy Berkoff and 'Situational Compatibility - The Example of Warabandi' by Walter Huppert
- 2e 'Developing Effective Extension Irrigation Programs with Appropriate Technology' by Marvin N. Shearer

Pastoral Development Network

run by Jon Moris, published the following September 1988 Network papers:

- 26a 'Private and Communal Land Tenure in Morocco's Western High Atlas Mountains: complements, not ideological opposites' by Lloyd MENDES
- 26b 'A Model of Herd Composition that Maximises Household Viability and its Potential Application in the Support of Pastoralists under Stress' by Ruth MACE
- 26c 'OXFAM's Kenya Restocking Projects' by Jon MORIS
- 26d 'Barriers to Range Management Research in Peru' by Jere Lee GILLES and Keith JAMTGAARD

LUNCHTIME MEETINGS

Social Forestry Network

- 4 July 1988 NGOs and the Role of Forestry in Arid Lands
Shadia El Amln Abbas, Women's Extension Officer, SOS
Sahel International, Shendi, Sudan, and Harnath
Jagawath, Director, Sadguru Water & Development
Foundation, Gujarat, India
- 20 September 1988 Community Management of Indigenous Woodland in
Southern Zimbabwe
B B Mukamuri, Field Coordinator, ENDA - Zimbabwe,
Community Management of Indigenous Woodland
Resources Project

Agricultural Administration Network

- 6 October 1988 China's Agricultural Reform: Developing Technologies
for the Small Farmer
Jorgen Delman, Institute of East Asian Studies,
University of Aarhus, Denmark

Irrigation Management Network

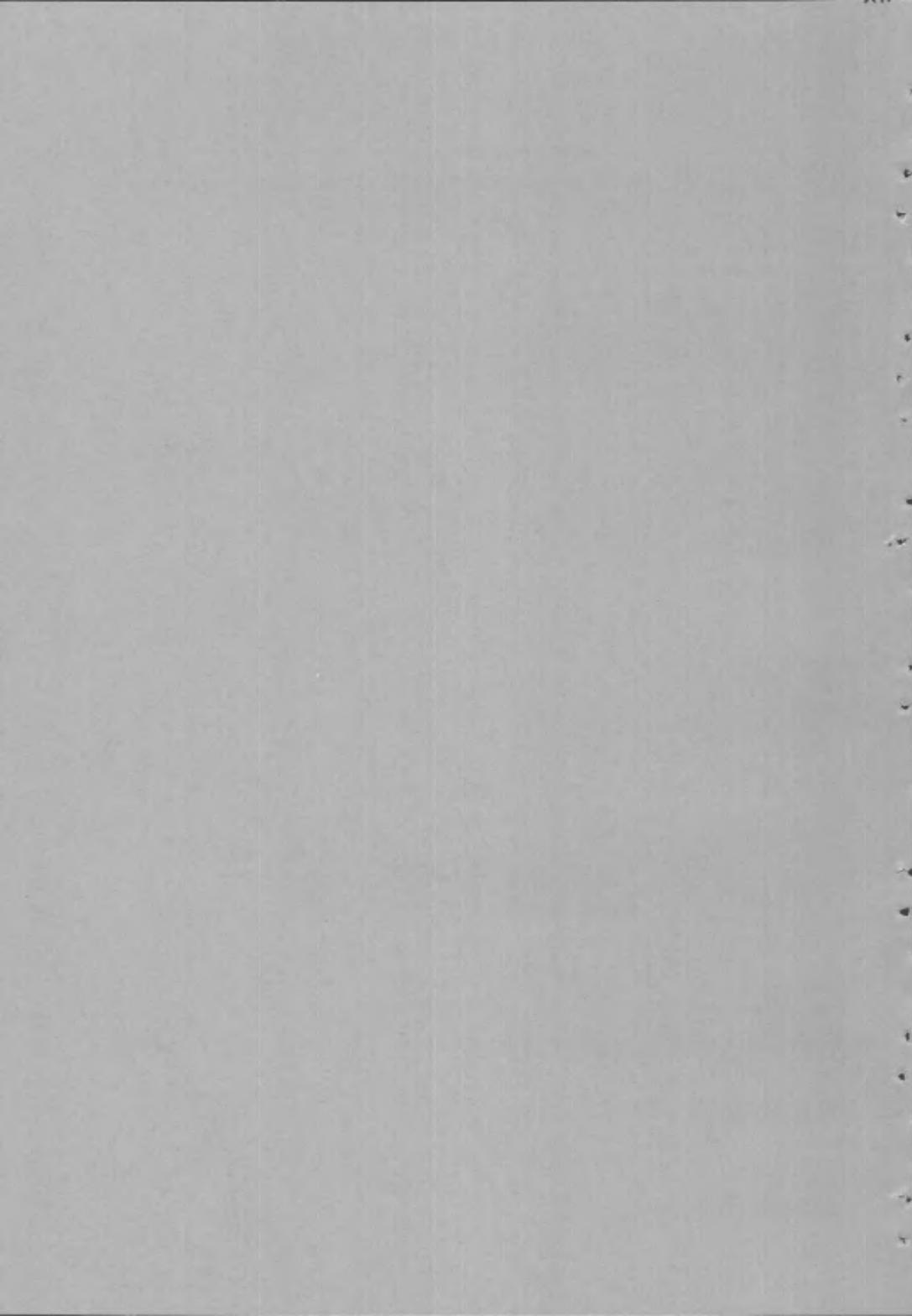
- 14 October 1988 Operation and Maintenance of Minor Canals in the
Gezira: Problems and the Impact on Production
Marcus Francis, Hydraulics Research, John Gowing and
Omar El Awad, University of Newcastle

Pastoral Development Network

- 15 December 1988 Coping with Drought in Kenya: National and Local
Strategies
Thomas Downing, National Center for Atmospheric
Research, Boulder, Colorado, USA
Kangethe Gitu, Ministry of Agriculture, Nairobi
Crispin Kamau, National Environment Secretariat,
Nairobi, Kenya

I M P O R T A N T

PLEASE FILL IN
AS SOON AS POSSIBLE
THE NETWORK RE-REGISTRATION FORM
IN THE CENTRE OF THIS NEWSLETTER



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Reid, Collins & Associates Ltd, Marketing Dept, Ste 1550, 401 West Georgia
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Disc: Ec, Ed, Fo, M. Interests: 03, 07, 08, 10, 11, 12.

OSBORN, MS LIZ, Consultant formerly GAMBIA
1180 Queens Ave, West Vancouver, B.C. V75 2K2, CANADA. Disc: Env, Fo,
J, Soc. Interests: 01, 02, 03, 04, 10, 13.

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DED - German Volunteer Service (not GTZ, as erroneously stated in the
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Interests: 01, 02, 03, 06, 07, 09.

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CARE - Ecuador, Dept. Integrated Forestry & Agriculture, Aptdo 2097,
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E T H I O P I A

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05, 07, 12.

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G E R M A N Y F R

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Ag, Env, NSc. Interests: 01, 06, 09.

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5000 Cologne 51, GERMANY FR. Tel: 49(221)-3890. Disc: J. Interests: 01, 03,
04, 07, 12, 13. RPR: Development Journalist, responsible for Asia Desk of
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YOUNG, MR DAVID, Community Forestry Officer change of address
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01, 03, 06, 07, 09, 13.

I N D I A

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RABI. Disc: AE, Ec, Fo, G. Interests: 03, 05, 08, 09, 12, 13.

DIXIT, MR SREENATH,
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Veerabhadraiah, Hebbal, Bangalore 79, INDIA. Disc: AE, Ed, Env, Soc.
Interests: 03, 04, 06, 07, 12, 13.

GUPTA, MR HARISH, Scientist,
ICAR, Dept. of Animal Nutrition, Research Complex for NEH Region, Sikkim
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09.

JAYAL, MR NALNI DHAR, Director of Natural Heritage,
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618912 & 616581. Disc: Env, Nsc. Interests: 01, 02, 03, 07, 12, 13.

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06, 07, 09, 13.

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Ed, Fo, Soc. Interests: 03, 11, 12, 13.

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686003, Kerala, INDIA. Disc: Fo. Interests: 01, 03, 04, 06, 07, 09.

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17 & 14. Disc: Ed, NSc. Interests: 02, 03, 04, 11, 12, 13.

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Fo, H. Interests: 01, 02, 03, 06, 07, 09.

I N D O N E S I A

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06, 07, 09.

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03, 06, 07, 08, 10.

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M, RP. Interests: 01, 03, 09, 10, 13.

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Eng, NSc. Interests: 05, 09, 12, 13.

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Fo. Interests: 01, 03, 06, 07, 12, 13.

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12, 13.

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N I G E R I A

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N O R W A Y

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University of Bergen, Dept. of Geography, Loevenskioldsgate 4, N-0263 Oslo
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P A K I S T A N

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WANI, DR BASHIR AHMED, Ass. Inspector,
Ministry of Food, Agriculture & Coops, Dept. of General Forests, Islamabad,
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Interests: 01, 02, 03, 04, 06, 07.

P E R U

SZOTT, DR LAWRENCE, Team Leader,
University of North Carolina, Dept. of Soil Science, Tropical Soils
Programme - Yurimaguas, Estacion Experimental San Ramon, Yurimaguas,
Loreto, PERU. Disc: Ag, Fo, M, Soil. Interests: 01, 09, 10.

P H I L I P P I N E S

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24745 CCCI PH. Disc: FS, G, Soc. Interests: 01, 02, 03, 11, 12, 13.

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FS. Interests: 01, 04, 06, 09, 12.

R W A N D A

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S R I L A N K A

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07, 08, 10.

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SOCIAL FORESTRY NETWORK - RE-REGISTRATION

PLEASE FILL IN AS CLEARLY AS POSSIBLE and return to:

SOCIAL FORESTRY NETWORK
Overseas Development Institute,
Regent's College,
Regent's Park, Inner Circle,
London NW1 4NS

Tel: 44(1)-487-7413

- 01 SURNAME
- FORENAMES
- DR/MR/MRS/MS etc
- 02 PRESENT POSITION
- 03 ORGANISATION
- 04 DEPARTMENT
- PROJECT
- 05 MAILING ADDRESS
-
-
-
- 06 COUNTRY
- 07 TELEPHONE
- TELEX / FAX
- 08 COUNTRY IN WHICH YOU WORK
-
- 09 TYPE OF EMPLOYMENT (please tick only one)
- | | | |
|----|---|--------------------------|
| 01 | International or National Aid Agency
(e.g. WHO, UNDP, USAID, SIDA, ODA, etc) | <input type="checkbox"/> |
| 02 | Government Civil Service, Parastatal, | <input type="checkbox"/> |
| 03 | Non-Government Organisation (NGOs,
PVOs, Foundations, etc) | <input type="checkbox"/> |
| 04 | University, College,
Research Institution, etc | <input type="checkbox"/> |
| 05 | Library, Documentation Centre,
Editing, Publishing, | <input type="checkbox"/> |
| 06 | Business - incl. independent consultancy | <input type="checkbox"/> |

10 MAIN DISCIPLINES (not interests)
Please indicate your main disciplines (up to 4)

- | | | | | | |
|--|--------------------------|------------------------------|--------------------------|---------------------------------------|--------------------------|
| 01 Agriculture/
Agronomy | <input type="checkbox"/> | 07 Farming
Systems | <input type="checkbox"/> | 13 Management | <input type="checkbox"/> |
| 02 Agricultural
Economics | <input type="checkbox"/> | 08 Forestry/
Silviculture | <input type="checkbox"/> | 14 Natural
Sciences | <input type="checkbox"/> |
| 03 Economics | <input type="checkbox"/> | 09 Geography | <input type="checkbox"/> | 15 Regional
Planning | <input type="checkbox"/> |
| 04 Education,
Training &
Extension | <input type="checkbox"/> | 10 Horticulture | <input type="checkbox"/> | 16 Social Sciences
(not Economics) | <input type="checkbox"/> |
| 05 Engineering | <input type="checkbox"/> | 11 Journalism | <input type="checkbox"/> | 17 Soil Sciences | <input type="checkbox"/> |
| 06 Environmental
Sciences | <input type="checkbox"/> | 12 Librarianship | <input type="checkbox"/> | 18 Others
(pl. specify) | <input type="checkbox"/> |
| | | | | | |

14 INTERESTS BY COUNTRY
Please list the countries about which you are most knowledgeable
(up to 7 in descending order of importance)

- | | |
|--------------|--------------|
| 01 | 05 |
| 02 | 06 |
| 03 | 07 |
| 04 | |

Other ODI Networks in which you are interested (please tick as appropriate)

- | | already a
member | please send
information |
|--------------------------------|--------------------------|----------------------------|
| 21 Agricultural Administration | <input type="checkbox"/> | <input type="checkbox"/> |
| 22 Irrigation Management | <input type="checkbox"/> | <input type="checkbox"/> |
| 23 Pastoral Development | <input type="checkbox"/> | <input type="checkbox"/> |
| 24 Social Forestry | <input type="checkbox"/> | <input type="checkbox"/> |

25 INTERESTS BY SUBJECT within Social Forestry (up to 6)
Please indicate your main areas of knowledge and interest.
(This is to help assess the strength of the Network; you will receive
Network papers on all subjects)

- | | | | |
|--------------------------|--------------------------|---|--------------------------|
| 01 Agroforestry | <input type="checkbox"/> | 08 Institutional Management | <input type="checkbox"/> |
| 02 Anti-desertification | <input type="checkbox"/> | 09 Production Aspects:
fuelwood/food/fodder etc. | <input type="checkbox"/> |
| 03 Community Forestry | <input type="checkbox"/> | 10 Project Management | <input type="checkbox"/> |
| 04 Conservation Measures | <input type="checkbox"/> | 11 Rights of Forest Dwellers | <input type="checkbox"/> |
| 05 Energy Issues | <input type="checkbox"/> | 12 Rights for the
Poor, Landless, | <input type="checkbox"/> |
| 06 Farm Forestry | <input type="checkbox"/> | 13 Women and Forestry | <input type="checkbox"/> |
| 07 Forestry Extension | <input type="checkbox"/> | 14 Others (please specify) | <input type="checkbox"/> |
| | | | |

31 LAST TWO MAIN PROFESSIONAL RESPONSIBILITIES
It is often helpful for Network members seeking to consult others to know
your recent professional responsibilities. As job titles alone do not give
much indication of your duties, please give them here, with similar brief
information on your last post. This information will be published in the
Register of Members.

.....

.....

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.....

.....

.....

.....

TODAYS DATE: Year Month Day

I have completed the registration form and would like to be a networker

SIGNATURE _____

If you wish to provide any further details on your career or interests, please do so below. This information will not appear in the Register of Members but will be kept on file for reference when considering possible co-operative research programmes.

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Checked

Amended

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SAVAGE, Mr Ron F	ECUADOR

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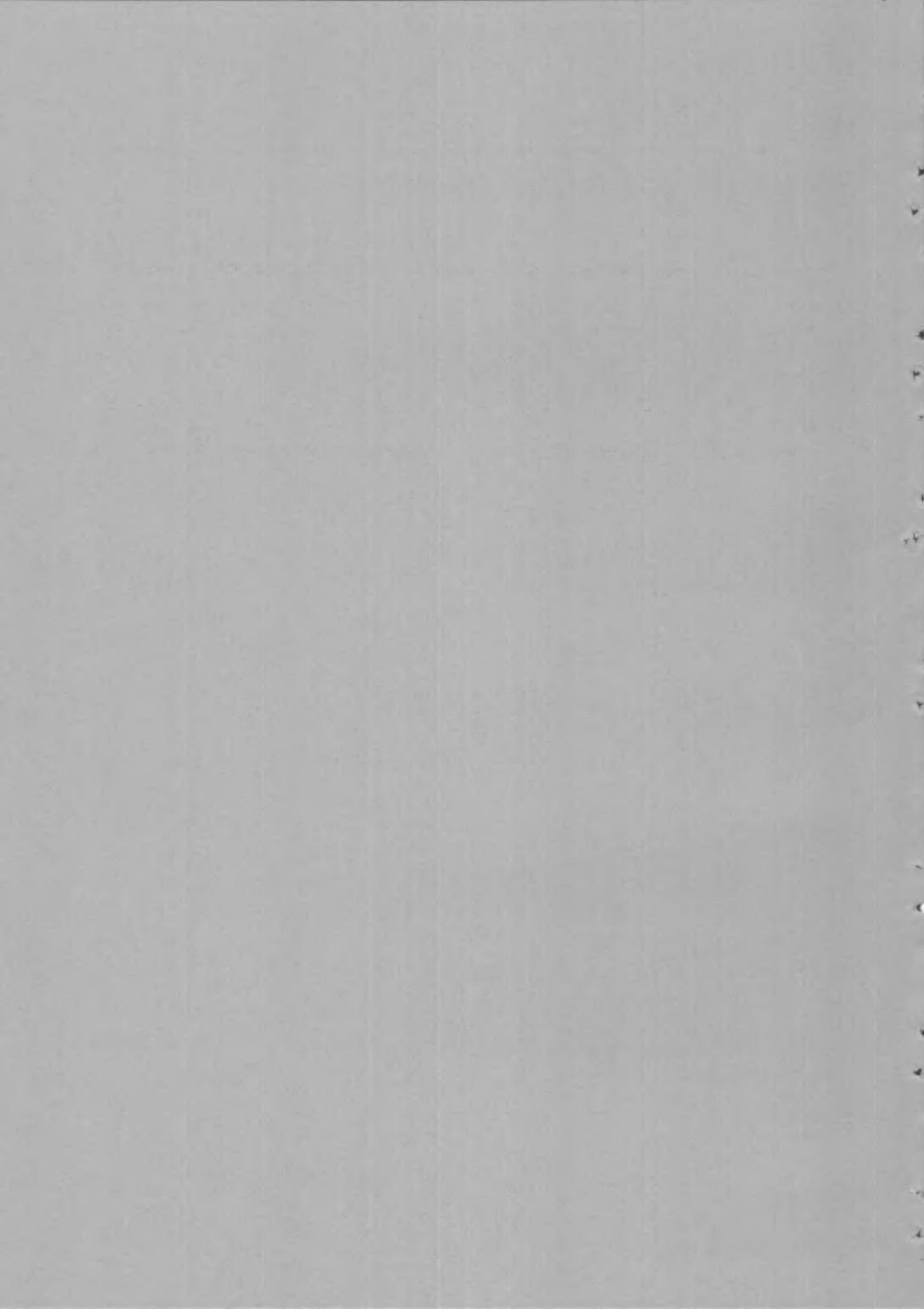
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I M P O R T A N T

**HAVE YOU FILLED IN
THE NETWORK RE-REGISTRATION FORM
IN THE CENTRE OF THIS NEWSLETTER?**



REPORTS ON RECENT CONFERENCES AND WORKSHOPS

1. The Future of the Tropical Rain Forest

The conference provided an arena for the Friends of the Earth, the Timber Traders Federation, and other interested groups, to meet and discuss issues affecting tropical rain forests including climate, forest dwellers, timber trade and future research needs. The forum was held between June 27-28, 1988 at the Oxford Forestry Institute. The aim of the conference was to allow open discussion amongst the participants and to provide a basis for future action. In summary:

- a) The forum highlighted conflicts between the expert and the concerned; idealism and realism; and ecologists versus traders.
- b) Endorsement was expressed for the proposal that timber traders observe a code of conduct and that products carry labels to indicate country of origin.

The conference urged governments, the British government in particular,

- i. to reassess their contribution to solving or worsening the critical problem of tropical deforestation,
- ii. to bring together international and governmental decision-makers, non-governmental organisations and the indigenous residents of tropical forests in order to formulate realistic strategies integrating conservation and development,
- iii. to commit substantially greater resources, both financial and human.

The conference concluded that, 'while the future of tropical rain forests is a responsibility shared by many communities and disciplines, it remains the responsibility of our leaders to place this crucial issue higher up the political agenda'.

Conference report available from:

Oxford Forestry Institute
South Parks Road
Oxford, England OX1 3DR

2. Workshop on Social Sciences in Asian Forestry Curricula

This Workshop was held by Winrock International, through the USAID-funded Forestry/Fuelwood Research and Development (F/FRED) Project, at Khon Kaen, Thailand from November 27 - December 2 1988.

The goals of the Workshop were to support the integration of the social sciences in university forestry programmes, and to strengthen the role of the forestry and social science profession in improving existing and future farm, community, and other forestry programmes throughout Asia. Workshop participants represented a range of disciplines and countries in South and Southeast Asia.

The output of the Workshop will include:

- i. Published workshop proceedings
- ii. Volumes of excerpts from selected literature in anthropology, political science and sociology that relate to farm, community, and other forestry in South and Southeast Asia.
- iii. A volume of papers contributed by the workshop participants that deal with the integration of the social sciences and forestry curricula, farming systems, and social forestry research, planning and monitoring.
- iv. A curriculum evaluation and design questionnaire.
- v. A bibliography of important references.
- vi. A directory of experts and key contacts.

Further details of this workshop are available from:

Winrock International - F/FRED
1611 N.Kent Street, Suite 600
Arlington, VA 22209
USA

REPORTS ON RECENT CONFERENCES AND WORKSHOPS

**3. Third International Rangeland Congress
November 1988, New Deihl**

As with many large congresses, the opportunities to participate in parallel symposia were limited. However, the Eco-sociology symposium provided the forum for a set of interesting papers. The contributors to the Symposium came from diverse backgrounds and brought with them a variety of disciplinary approaches to the problems of pastoralists and rangeland management. Many issues of critical importance were raised over the two day period, with a number of the presentations concentrating on the necessity for involving the users of rangelands in the planning and decision-making process. The symposium highlighted the degree of conflict between natural and social scientists. The challenge remains to combine an understanding of pastoralists' social systems with technologies which will be of direct use to pastoralists.

Further information concerning the Symposium is available from:

Prof. Anil Gupta
Centre for Management in Agriculture
Indian Institute of Management
Ahmedabad 380015, Gujarat
INDIA

REPORTS ON RECENT LUNCHTIME MEETINGS

NGOs and the Role of Forestry in Arid Lands

held on 4 July 1988

This presentation given by two fieldworkers considered the contribution forestry is making to their respective projects: one among the riverain Sudanese in Shendi, Northern Sudan, and the other among tribals of Dahod, Gujarat, India.

Shadia El Amin Abbas, the Women's Extension Officer of the SOS Sahel International project in the Sudan presented a film documenting the forestry extension methods used with village women. Women are successfully involved in the project's activities, planting courtyard nurseries and trees for their own use.

The second part of the presentation given by Harnath Jagawat, the Director of the Sadguru Water and Development Foundation also included a film. The SWDF project is located in a tribal area where the basis of their farming system has been destroyed through drought and over-cutting of forests. The project is working to give tribal people back some of the security they have lost, through an integrated programme of water-harvesting, lift irrigation and tree-planting.

The two films vividly portrayed the work of the projects and indicated the difficulties of working in such arid environments. It was a useful and interesting meeting which provoked much discussion.

REPORTS ON RECENT LUNCHTIME MEETINGS

Community Management of Indigenous Woodland in Southern Zimbabwe**held on 20 September 1988**

Mr. B.B. Mukamuri, Field Coordinator of ENDA, described the work of the project which is promoting community management of indigenous woodland resources. The local communities, through Village Development Committees, research and plan the management of their local woodland resources. Village-based nurseries produce a mixture of indigenous and exotic tree species which the farmers have requested for their land. Local farmers act as community workers who identify villagers' needs and ensure that these are transmitted to the project. The project acts as a catalyst of change and supports the Village Development Committees to research, plan and implement their own resource management plans. The discussion reflected the interest in participatory forms of forest management.

FORTHCOMING CONFERENCES AND MEETINGS

- TBA Training Course in Forest operations
in the Tropics
COSTA RICA
Contact: D.P. Dijkstra
School of Forestry
P.O.Box 4098
Flagstaff, Arizona 86011
USA
- TBA Fuelwood Inventories
INDIA
Contact: G.H. Lund
USDA Forest Service
P.O.BOX 96090
Washington, DC 20090-6090
USA
- March 20-26 1989 International Workshop on Conservation Farming
on Hillslopes
Taichung, Taiwan, ROC
Contact: San-Wei Lee
Chinese Soil & Conservation Society
No 8-1, Lane 113
Hsia-men St
Taipei
TAIWAN
- May 25-26 1989 A Century of Research at the Institute of
Tropical Forestry: from the First Half,
Themes for the Second
Institute of Tropical Forestry
Golden Anniversary Symposia
San Juan, PUERTO RICO
Contact: No contact designated

FORTHCOMING CONFERENCES AND MEETINGS

- July 24-29 1989 International Conference on Agroforestry
Edinburgh, UK
Contact: Secretariat
Agroforestry Conference
University of Edinburgh
Dept. of Forestry & Natural Resources
Edinburgh EH9 3JU, Scotland
UK
Telex: 727 442
- September 18-22 1989 Forest Planning for People
I.F.A Biennial Conference
Blue Mountains, New South Wales
Contact: Mr E Nicholson
I.F.A. Conference Steering Committee
G.P.O.Box 2667
Sidney, N.S.W. 2001, AUSTRALIA
- September 18-29 1989 XIII Commonwealth Forestry Conference
Rotorua, NEW ZEALAND
Contact: XIII Com.For.Conference
231 Corstorphine Road
Edinburgh EH12 7AT
Scotland
UK
- September 24-30 1989 Global Resources Assessment 2000 and beyond:
National plans, problems, prospects & proposals
Venice, ITALY
Contact: H.F. Kaiser
USDA Forest Service
P.O.BOX 96090
Washington, DC 20090-6090
USA

FORTHCOMING CONFERENCES AND MEETINGS

September/October 1989 Harvesting and Utilisation of Foliage

Riga, USSR

Contact: M.O. Daugavieties

Latvijas Zinatniskas

Petniecibus

Rigas Iela 111

SU-Salaspils, Latvian SSR

USSR

October 3-7, 1989

Environmental Education for Sustainable
Development

GOA

International Society for Environmental
Education

Contact: Dr. Desh Bandhu

P.O.BOX 7033

New Delhi 110002

INDIA

Autumn 1989

Growth Models, Expert Systems and Forest Mgt

Vienna, AUSTRIA

Contact: K. Johann

Forstliche Bundesversuchsanstalt

A-1131 Vienna

AUSTRIA

BOOKS

Farmer Participation in Agricultural Research: A Review of Concepts and Practices

John FARRINGTON and Adrienne MARTIN (1988)

Published by: Overseas Development Institute,
Regent's College, Inner Circle, Regent's Park,
London NW1 4NS, UK

Price £ 4.95

The Agricultural Administration Unit Occasional Paper 9 assesses the conceptual framework underlying four different approaches to farmer participatory research, and analyses the institutional context in which such research is undertaken. The book includes an examination of the role of indigenous technical knowledge, and a major substantive review of recent field experience with farmer participatory research in a range of agencies.

Anyone interested in obtaining a copy should add to the price of £4.95, 50p for inland or overseas surface mail, or £1.00 for airmail, and contact:

ODI Publications
Regent's College, Regent's Park
Inner Circle
London NW1 4NS, UK

Agricultural Biotechnology: Prospects for the Third World

Edited by John FARRINGTON

Price £ 4.95
+ postage

Following on from the last newsletter where we reported on the use of tissue culture in forestry and agriculture, a new book is about to be published by ODI which examines developments in agricultural biotechnology and the implications for North-South trade.

Copies of the book will be available in February 1989 from:

ODI Publications
Regent's College, Regent's Park
Inner Circle
London NW1 4NS, UK

Beyond the Woodfuel Crisis: People, Land and Trees in Africa

Gerald LEACH & Robin MEARNS

Published by: Earthscan Publications Ltd
3 Endsleigh Street, London WC1H 0DD, UK

Price £8.95

For too long assumptions about the causes of deforestation have remained unquestioned. Forestry literature is bedeviled with statistics which attribute large-scale deforestation to the rural poor with predictions of expanding tree-less landscapes. This book critically analyses these assumptions and presents numerous case-studies where local people have succeeded in reversing agricultural and forest degradation. It is a book full of hope for the future which advocates a people-centred approach going beyond the narrow confines of energy to consider all the needs of local people.

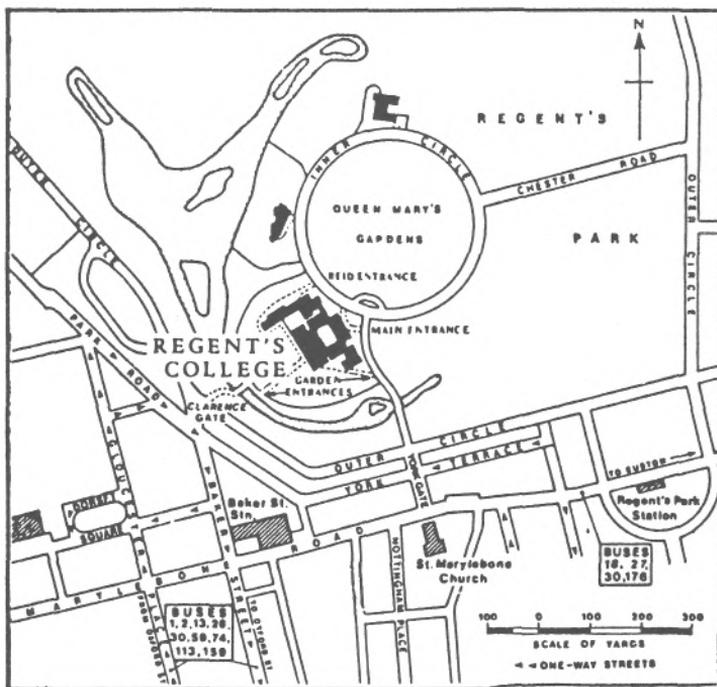
EMPLOYMENT OPPORTUNITIES

Ford Foundation - Nairobi

The Ford Foundation has a position opening for a Program Officer or Assistant Program Officer in the Nairobi Office of the Ford Foundation, to begin around June 1, 1989. The job responsibilities entail the management and further conceptual development of a growing portfolio of Foundation grants in the Eastern and Southern Africa region aimed at improving rural land use. These activities focus on agroforestry, social forestry, community management of common property resources, and a linking of indigenous and "formal" science to enhance agricultural productivity by small farmers and pastoralists on marginal lands. The assignment involves work with public and private organisations engaged in relevant applied and social action. It requires a person capable of working with equal effectiveness in field settings and policy arenas, and across a range of agricultural and social sciences. Daily activities include the evaluation and development of funding proposals in these areas, and the preparation of funding recommendations, grant evaluations and related programme reports.

Qualification: Candidates should possess a strong background in the social dimensions of agroforestry or rural resource management (preferably including a PhD), knowledge of participatory research and natural resource appraisal methods, and a general familiarity with African agriculture, land use and environmental issues. Candidates should have previous experience in Eastern and Southern Africa; and be able to demonstrate good analytical, management and interpersonal skills. This is a demanding job which requires a strong commitment and above average writing skills.

APPLICATIONS TO: Ms Joan Carroll
Office of Personnel Services
The Ford Foundation
320 East 43rd Street
New York, NY 10017
USA



Overseas Development Institute
Regent's College

Nearest Underground Station: Baker Street (Bakerloo, Jubilee, Metropolitan and Circle Lines).

Nearest Bus Stop: Gloucester Place (going North), Baker Street (going South), and Marylebone Road (going East or West).

ODI is 3-4 minutes walk from Baker Street Station. From there walk along Marylebone Road and turn left into York Gate. Cross over the bridge and you will see the main entrance of Regent's College on your left. At the Regent's College reception desk ask for ODI.

Credits

Newsletter and Network papers edited by:
Mary Hobley, Social Forestry Research Associate

Design, typing and layout by:
Ingrid Norton, Social Forestry Network Secretary

Network Coordinator: Dr Gill Shepherd

The Social Forestry Network is funded by The Ford Foundation and by the Aga Khan Foundation.

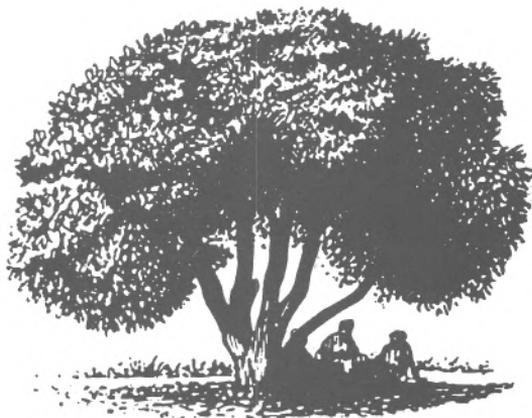
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-487 7413



SOCIAL FORESTRY NETWORK



FORESTS, TREES AND HOUSEHOLD FOOD SECURITY

Julia Falconer and J.E. Mike Arnold

JULIA FALCONER has been working at the OFI and FAO, and will shortly move to Ghana to work with an ODA-supported Forest Management Project. MIKE ARNOLD is a senior researcher at the OFI.

This paper is drawn from a review study by the authors that was prepared for FAO, which the Organisation is publishing, under the title *'Forestry and Food Security: An Analysis of Socio-economic Issues'*, as part of the FAO/SIDA Forests, Trees and People Programme. Readers wishing to obtain that study should write to Marilyn Hoskins, Community Forestry Officer, Policy and Planning Service, Forestry Department, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy. The views expressed in the present paper are those of the authors, and do not necessarily represent those of FAO.

FORESTS, TREES AND HOUSEHOLD FOOD SECURITY

Julia Falconer and J.E. Mike Arnold

1.0 INTRODUCTION

Forestry and food security? For the forester deciding on the timing of the next timber sale or worrying about the regeneration losses incurred by browsing livestock and wild animals, the issue of food security may seem as though it belongs in another realm ... of agricultural production, grain prices, droughts and population explosion. And yet, in many rural areas forests and farm trees provide critical support to agricultural production, they provide food, fodder and fuel, and they provide a means of earning cash income.

The subject of food security for rural households in developing countries encompasses all factors affecting a household's access to an adequate year round supply of food. Thus it is likely to involve not just the household's production of food crops, but availability of income with which to purchase other food, seasonal variations in food supply and income, the nutritional quality of the food available, shifts from subsistence to the cash economy, and the incidence of other cash needs such as school fees.

The focus of this paper is on the socio-economic aspects of forestry's role in household food security. It synthesizes findings from a longer study conducted for the FAO Forestry Department (see note on inside cover) which draws together information on household food and income which are derived from activities dependent on tree and forest products. It examines the changing uses of these resources, focussing particularly on the impact on the poor and women. It also addresses the consequences of decreasing forest resources and considers the implications for management of forests as well as trees outside the forests.

It is clear that forests and farm trees contribute to a great variety of household needs which often makes it difficult to distinguish between their contribution to household food security and other benefits they provide. Nonetheless, from the information reviewed for this study, it is evident that their contribution to household food security is often crucial. Figure 1,

highlights some important linkages between forestry and food security and suggests some of the ways forest products, environmental benefits, as well as forestry activities can have an impact on household food security and individual nutritional well-being. The boxes on the far left represent forest products and benefits on which forestry projects often focus (e.g. fuelwood production and shelterbelts). Moving to the right, the linkages between forestry outputs, household food and nutrition status are highlighted. It emphasizes the links between household income, women's work loads and the household availability of food (all of which are factors on which forestry activities can have an impact).

In terms of household food security, forest and farm tree resources serve to supplement existing food resources and income, fill in seasonal shortfalls of food and income as well as provide seasonally crucial agricultural inputs, and help reduce risk and lessen the impact of droughts and other emergencies. In addition, forests and farm trees appear to be especially important for the rural poor (many of whom are women), as frequently they must rely on off-farm employment opportunities and available forest resources to help meet their household needs.

1.1 Supplementary role of forest products

For the majority of rural people, forest food adds variety to diets, improves palatability, and provides essential vitamins, minerals, protein and calories. The quantities consumed may not be great in comparison to the main food staples, but they often form an essential part of otherwise bland and nutritionally poor diets. Diet diversity is an extremely important element of nutritional well-being, in part because more vitamins and minerals are consumed, and also because it improves the taste of staple food. Some species are noteworthy as particularly rich sources of vitamins, minerals, proteins and fats.

There are many different kinds of food gathered from forests, ranging from termite larvae to leaves and mushrooms. Forests also provide the habitat for many commonly consumed wild animals and fish. Forest food may also be smoked, dried or fermented, making it available over extended periods of time. For example, the fermented and dried seeds of *Parkia* sp. are rich

sources of protein and are widely used as a condiment throughout Sahelian Africa (Campbell-Platt, 1980).

The most common supplementary food are leaves and wild animals, both of which are generally added to sauces and soups which accompany staple food. For example, the leaves of *Doscia senegalensis* are consumed year-round by the Peuhls in Senegal, where they are added to sauces which accompany their grain staple (Becker, 1983). This combination is important because, in addition to increasing nutritional value, these wild leafy vegetables add flavour to bland staple food, thereby encouraging greater food consumption. Little attention has been paid to the importance of improved palatability provided by wild food, yet it may have significant nutritional implications.

Trees are often left or planted on farms for the food and fodder they provide. For example, home gardens (intensively managed farm systems combining tree and herbaceous crops) supplement food production from other sectors of the farm. The few studies which have examined their nutritional impact show that home gardens increase the total quantities of food consumed by households (Soemarwoto 1985, Immink, 1981). In addition, trees may be maintained or planted to provide wildlife habitat. In Thailand, for example, trees are left in paddy fields and on dikes, in part to provide a habitat for commonly consumed wild animals such as lizards, birds and tree ants (Grandstaff, 1985).

Forest and farm tree products are also valued throughout the year as snack food. Forest fruits and nuts are the most common snack food, especially for children. They are commonly eaten on the job: while working in fields, while herding and while gathering fuelwood. There is little information on the consumption of snack food and its nutritional significance, as most nutrition studies focus on meals or food markets. However, some authors suggest the role is important: a study in Swaziland, for example, estimates that wild fruits are a major source of vitamin C (Ogle and Grivetti, 1985). Forest fruits can be used to combat nutrient related health problems. For example, many forest fruits and leaves are good sources of vitamin A, shortage of which is a common cause of blindness in many developing countries. Table 1, illustrates some of the ways in which forest and tree food might be used to combat specific nutritional problems.

TABLE 1

SOME COMMON NUTRITION PROBLEMS AND THE POTENTIAL ROLE OF FOREST FOOD

Nutrient-related problems	Forest food with potential for combatting deficiencies.
<p>Protein-Energy malnutrition: due to inadequate food consumption causing reduced growth, susceptibility to infection, changes in skin hair and mental facility.</p>	<p>Energy rich food which is available during seasonal or emergency food shortages, especially, nuts, seeds, oil-rich fruit and tubers; e.g. the seeds of <i>Geoffroea decorticans</i>, <i>Ricinodendron rautanenii</i>, and <i>Parkia</i> sp.; oil of <i>Elaeus guineensis</i>, babassu, palmyra and coconut palms; protein-rich leaves such as baobab (<i>Adansonia digitata</i>); as well as wild animals (e.g. snails) incl. insects and larvae.</p>
<p>Vitamin A deficiency: in extreme cases causes blindness and death; responsible for blindness of 250,000 children/yr.</p>	<p>Forest leaves and fruit are often good sources of Vitamin A; e.g. leaves of <i>Pterocarpus</i> sp., <i>Moringa oleifera</i>, <i>Adansonia digitata</i>, the gum of <i>Sterculia</i> sp., palm oil of <i>Elaeus guineensis</i>, bee larvae and other animal food; in addition fats and oils are needed for the synthesis of Vitamin A.</p>
<p>Iron deficiency: in severe cases causes anaemia, weakness and susceptibility to disease; especially women and children.</p>	<p>Wild animals including insects such as tree ants, mushrooms (often consumed as meat substitutes), as well as forest leaves such as <i>Leptadenia hastata</i>, <i>Adansonia digitata</i>.</p>
<p>Niacin deficiency: common in areas with a maize staple diet; can cause dementia, diarrhoea, and dermatitis.</p>	<p>Forest fruit and leaves rich in niacin such as <i>Adansonia digitata</i>, fruit of <i>Boscia senegalensis</i> and <i>Momordica balsamina</i>, seeds of <i>Parkia</i> sp., <i>Irvingia gabonensis</i> and <i>Acacia albida</i>.</p>
<p>Riboflavin deficiency: common throughout southeast Asia; among those with rice diets causes skin problems.</p>	<p>Forest leaves are especially high in riboflavin, notably <i>Anacardium</i> sp., <i>Sesbania grandiflora</i>, and <i>Cassia obtusifolia</i>, as well as wild animals, especially insects.</p>
<p>Vitamin C deficiency: common to those consuming monotonous diets; increases susceptibility to disease, weakness.</p>	<p>Forest fruit and leaves often supply the bulk of Vitamin C consumed, especially good sources include fruit of <i>Ziziphus mauritiana</i>, <i>Adansonia digitata</i> and <i>Sclerocarya caffra</i>, leaves such as <i>Cassia obtusifolia</i>, and the gum of <i>Sterculia</i> sp., are also good sources of this vitamin.</p>

Forests also contribute to the food supply indirectly providing fodder for livestock, thereby helping maintain a supply of milk and meat. In addition, where available, trees are the main source of energy used for cooking and food processing. In some cases this function is essential, as food such as beans cannot be consumed without cooking. Fuelwood is also used to process food such as fish, seeds, and oil, which are generally smoked, dried or cooked. Processing serves to extend food supply, and in some instances provides a source of cash income.

In many rural communities where poor farmers cannot raise enough to be self-sufficient in food, and are forced to earn cash for food purchases, income from forest-based activities may supplement the household budget. In a village in the Philippines, for example, poor farmers rely on year-round rattan gathering as a major source of supplementary income (Siebert, 1985). In many cases forests provide one of the few income earning options for those limited by scarce resources. The burgeoning fuelwood trade demonstrates both the growing demand for fuelwood and farmers' ever-growing need to supplement their farm income (e.g. Kamara, 1986). In many regions, trapped and hunted wild animals also provide supplementary income.

Money earned in forest-based activities may be spent directly on food purchases or may be invested in agricultural assets such as livestock, land, farm implements, or seeds. In this sense, forest-earned income contributes indirectly to a household's food situation, by helping them invest in future production.

1.2 Seasonal importance of forest and farm trees

Forest and farm trees are most extensively used to help meet dietary shortfalls and to supplement household income during particular seasons in the year. Many agricultural communities suffer from seasonal food shortages generally known as 'hunger periods'. They commonly occur at the time of year when stored food supplies have dwindled and new crops are only just beginning. During this period the consumption of forest and tree food increases. In many areas the consumption of wild animals and fish is also highly seasonal. Forest and farm tree produce are also valued during the peak agricultural labour period, when less time is available for cooking and people consume more snack food.

On the other hand, some favoured forest food, such as snails, mushrooms and honey, has particular harvest seasons that do not necessarily correspond to food short periods. In these cases, food is gathered for as long as it is available. For example, in Upper Shaba, Zimbabwe, women are reported to spend several hours a day collecting mushrooms during the early rainy season (Parent, 1977).

In many arid regions, trees provide an important source of dry season fodder, ranging from nil to 100% of the livestock diet. In the Sahelian region browse represents an estimated 30-40% of the dry season feed (Le Houerou, 1986).

Home gardens are widely designed to make use of variations in the timing of the harvest of different component tree crops, in order to supply food and saleable produce during the period between harvests of staple crops. Another important feature of such gardens, and other systems incorporating trees, is that work on the latter can often be undertaken during the slack season, thus helping to even out the peaks and troughs in the demand for farm labour.

A great many forest-based employment opportunities are seasonal. The seasonality of some activities is dictated by the availability of the product or raw material, while in other instances it is determined by the demands of other activities such as agriculture. For example, in Northern Brazil, babassu palm kernels are gathered and processed during the agricultural slack period. During this period the income earned from these activities represents more than a third of the family's overall budget (May *et al.*, 1985). In Sierra Leone, the collection of fuelwood for the market closely mirrors the work requirements for agriculture; during the slack months, fuelwood collection increases (Kamara, 1986). In other cases, the activities may be dictated by seasonally induced cash needs such as loan payments or school fees. As the markets for many locally processed forest products are dependent on rural people's purchasing power, they too are tied to the cyclic nature of agricultural incomes.

Several authors have remarked that income earned in forest-based activities is often used to purchase inputs, such as seeds, needed for the following

agricultural season (Engel, 1984; May *et al.*, 1985). In these cases, forest-based income is quite closely linked to the agricultural production cycle.

1.3 Forests and risk reduction

Many studies indicate that forests have provided essential resources during emergency periods such as floods, droughts, famines, and wars (Becker 1983, Campbell 1986, Irvine 1952, Turton 1977). In times of crop failure they may provide emergency food as well as products which can be gathered for sale. There is a wide range of forest resources used as emergency food. Often they differ from resources exploited in other periods. In famine periods, roots, tubers, rhizomes and nuts are most sought after. They are characteristically energy rich, but often require lengthy processing. For example, in Zimbabwe the stems of *Encephalartos poggei* are soaked in running water for three days, sun-dried and crushed into a fine powder before being consumed (Malaisse, 1985). Some studies indicate that, with increasing commercialisation of rural markets these emergency uses of forest resources are dwindling as people rely to a greater extent on food purchasing (Turton, 1977). Nonetheless, for the rural poor with good access to forest areas, these resources may still provide a buffer in food-scarce periods.

The sale of gathered and processed forest products tends to increase as agricultural production falls. A study in the Philippines revealed that a greater proportion of villagers became involved in rattan collection and trade as agricultural conditions worsened. In addition, villagers also turned to this activity when income was needed for emergencies - to cover expenses of funerals, medical treatment or weddings (Slebert, 1985).

Trees are also valued by farmers as insurance. They are planted where drought threatens; or to help diversify farm production, increasing the variety of crops available in order to guard against the risk that a crop may fail. Trees may also be viewed as a form of savings which can be drawn upon when needed, or to provide more flexibility in planning expenditures. For poor farmers who have access to few resources, trees may provide one of the few assets they can liquidate in emergency periods (Chambers and Leach, 1987).

TABLE 2

ESTIMATES OF INVOLVEMENT IN FOREST BASED ACTIVITIES

Source (country)	Estimated number of people involved in forest-based enterprises
Van Buren, 1982 (India)	25% of the fuelwood used is sold in commerce, and as many as 15 million people (full-time) are involved with market trade.
Agarwal, 1983 (India)	2 to 3 million people are dependent on the fuelwood trade, earning an average Rs. 5,50 /day/20 kg headload of fuelwood.
Surin, 1980 (Chotanagpur, India)	Fuelwood sales are an important source of income for 70% of forest-dweller households.
Hunter, 1981 (Madhya Pradesh)	The collection of Tendu (<i>Diospyros melanoxylon</i>) leaves for bidi cigarette wrappings employs ten million people part-time in the off-peak agricultural season, and earns the state some \$40 million in revenue.
Tewari, 1982 (India)	Tendu leaf collection provides about 90 days employment to 7.5 million people; a further 3 million people are employed in bidi processing industry; and 3 million people are involved in lac (resin) production; 735,000 people earn income from sericulture; 550,000 people are employed in bamboo-based craft enterprises.
Jha, 1985 (India)	126,000 households are involved in Tassar silk cultivation (of those 100,000 are from Bihar).
Blair, 1984 (Kerala, India)	More than 300,000 people are involved in mat production from reeds.
Jalal-ud-Din, 1984 (NW Pakistan)	More than 3,000 families are involved in sericulture (raising silkworms), and over 3 million rupees is generated from the sale of the cocoon crop (the majority is purchased by the Forest Department).
Fisseha, 1987 (Zambia)	25,000 are involved in the fuelwood trade. There are more than 52,000 forest-based small-scale processing enterprises, who employ 137,000 people;
(Sierra Leone)	18,000 people are employed in FB-SSEs;
(Jamaica)	10,200 people are employed in FB-SSEs.
Marks, 1984 (Zambia)	48,000 people are employed in charcoal production (36,000 of them are part-time charcoal producers and traders); 11,500 people are involved with bee-keeping; 96,000 households earn income from handicraft production.

TABLE 2

ESTIMATES OF INVOLVEMENT IN FOREST BASED ACTIVITIES
ctd.

Source (country)	Estimated number of people involved in forest-based enterprises
Johnson, 1985 (NE Brazil)	Gathering forest products is a component of the agriculture cycle. In 1980, 18,300 tonnes of cashew nuts were gathered and 18,000 tonnes of wax were collected from carnauba palm leaves.
Saadallah, 1978 (Tunisia)	The minor forest product trade provides 270,000 days employment a year.
Chetty, 1985 (India)	Gum collection uses 300,000 man/days. There are an estimated 50,000 small-scale forest product processing enterprises.
Jambulingam, 1986 (Tamil Nadu, India)	The collection, processing and trade in palmyra products (sugar, wine and handicrafts) involves 28,000 households and generates Rs. 120 million annually.
Kulkarni, 1983 (India)	Estimates that 30 million people derive part of their livelihood from forest products.
Rao, 1978 (India)	More than 80,000 tonnes of myrobalan fruit (tannin production) are collected annually by agriculturalists and tribals, 150,000 tonnes of other tannins are also collected. Workers earn between Rs. 0.25-0.50/kg for myrobalan fruit and 0.25-0.4/kg for tannin bark.
Chetty, 1985 (Kolar, India)	20,000 people are involved in bamboo collection for local FB-SSEs.
Moby-Etia, 1982 (Cameroon)	Palm wine production provides income for an estimated 20,000 people from region (an estimated 6,000 tonnes/month enter commerce).
Forest Service, 1982 (Senegal)	Estimates that 700,000 litres of palm wine enter commerce a year.
Engel, 1984 (Bo, Sierra Leone)	60% of the farm households in the region process palm fruit and kernels for sale.
Kaye, 1987 (Cote d'Ivoire)	Estimates 65,000 people are involved in rattan/cane basketry part-time, while 1,500 are involved full-time.
Shlembo, 1986 (SW Cameroon)	3,600 people are involved in raphia and rattan processing in the region.

2.0 THE IMPORTANCE OF FOREST RESOURCES FOR THE POOR

In many developing countries, people have historically had relatively unrestricted access to forests. Poorer people have thus been able to exploit the forests for food, fuel and marketable products. While forest gathering activities are not restricted to the poor, they depend on these activities to a greater extent. The poor, and especially poorer women, often dominate forest product gathering and processing activities, both for household products and income. In some circumstances, the integration of trees into farming systems may be particularly attractive to poor farmers because of the low inputs required for their establishment and management.

2.1 Forest food

Forest food is often particularly important for poorer groups of rural people. It provides an available and accessible source of a diverse range of food. Where it is prevalent, it is widely consumed. Especially important are wild animals and fish as well as seasonally available fruit, leaves, nuts and mushrooms. In some cases the availability of forest food may allow farmers to market a greater share of their agricultural produce.

In some societies, food gathered from the forest is believed to be poor man's food. In these cases few people like to discuss the forest food they might consume and purchased food is substituted whenever possible. Thus, in some regions the consumption of forest food appears to be declining.

2.2 Income earned from forest resources

Forest-based activities provide substantial employment opportunities in many rural regions, as is shown from the examples reproduced in Table 2. Many forest-based activities often require low establishment costs, and are characterized by easy entry and open market access. Many are undertaken as part-time activities to provide supplemental income. These activities are especially important for the poor as they may have access to fewer alternatives. The collection and processing of babassu palm fruit in Northeastern Brazil, for example, provides a major source of income to millions of tenant farmers who have few opportunities for earning cash

income (May *et al.* 1985). Similarly, in the Philippines one study revealed that the poorer farmers were most dependent on income earned from rattan collection and forestry labour (Table 3); for these households it provides a major source of year-round income (Siebert and Belsky, 1985).

Income earned from forest-based activities is sometimes invested in agricultural assets such as livestock for land. In this sense these forest resources offer the poor a means for investment in their future; thus providing an opportunity to escape from the cycle of poverty.

TABLE 3 FOREST PRODUCT USE BY HOUSEHOLD RICE SELF-SUFFICIENCY* (in %)

Forest product activity**	Use by household rice self-sufficiency status+			
	Low (n-14)	Middle (n-27)	High (n-22)	Total (n-63)
Rattan gathering	57	37	9	32
Employment as timber labourer	43	33	36	37
Either rattan or timber	79	48	41	52

* Household rice self-sufficiency refers to the ability of a household to meet its rice consumption demands through rice farming (whether irrigated or rainfed, or as owner-cultivators and sharecroppers).

** At least one adult household member (15 years and older) gathers rattan on a weekly basis or accepts work as a timber wage labourer, whenever work is available.

+ Low: no rice production
 Middle: up to 50% self-sufficiency
 High: more than 50% self-sufficiency
 Rice self-sufficiency is used as a measure of a households economic situation.

Source: Siebert and Belsky 1985. Economic Botany 39(4) 530.

While forest-based activities provide numerous opportunities for the rural poor, information from studies suggests that the earnings vary substantially from one activity to another. For example, a Tanzanian study revealed that returns to labour varied from well below the minimum rural wage rate for mat-making to two or three times the standard wage for carpentry

(Havnevick, 1983). The returns to labour from many forest-based activities are marginal. In addition, markets for products may be quite vulnerable to introduced substitutes. Thus, while forest activities provide some means of income earning for a large number of rural poor, activities which are dominated by the poor and women often provide the lowest returns. Therefore, these enterprises may not be sustainable in the sense that they will be abandoned if other income earning possibilities arise or if substitutes cause a market collapse.

While it is sometimes assumed that women are mainly involved in subsistence activities, in fact they are extensively involved in many forest-based gathering and processing enterprises - as is shown from the situations reported on in Table 4. Women often have little access to land and capital resources. Thus forests provide women with a source of raw materials and products for sale. In addition, women often combine cash earning activities with forest-based subsistence activities such as food and medicine collection. In addition, many forest-based activities can be undertaken near the homestead, thus allowing women to combine these activities with domestic chores.

2.3 Tree cultivation by poorer farmers

It has often been argued that cultivation of trees is something that is possible only for wealthy farmers. This assumption is based on the premise that the poor farmers' main objective is the production of staple food. However, the evidence suggests that in many cases poor farmers' resources are too limited for them to meet their basic food needs, so that income generation becomes increasingly important.

In these circumstances trees may prove to be appropriate cash crops, or intercrops with agricultural cash crops. In situations where land rather than labour is the limiting factor, joint tree/crop/livestock systems may give better returns than monocrops. Where availability of labour has become the constraint, because of the need to find work away from the farm, low input tree crops may provide the best way of keeping land in productive use. Although, overall returns from the latter would be greater under agricultural crops than trees, poor farmers often raise trees because they

TABLE 4

SUMMARY OF BASIC CHARACTERISTICS OF FOREST-BASED SMALL-SCALE INDUSTRIES IN SELECTED COUNTRIES¹

Attributes	Jamaica	Honduras	Zambia	Egypt	Sierra Leone	Bangladesh
Proportion of total FBSSIs %						
One-person operations	58	59	69	69	--	36
Production at home, not workshop	52	72	81	76	--	--
Rural location:						
- Enterprises	88	100	96	80	99	97
- Employment	79	100	95	65	96	--
Women's share:						
- Ownership	32	10	12	65	--	(3)
- Labour force	30	6	12	31	--	21
% family members in						
- Labour force (No)	82	51	86	89	(41)	73
- Hours worked	68	57	--	89	34	--
Mean values:						
No. of workers per enterprise	2.2	2.2	1.7 ²	1.9	1.8	3.8
Total investment (US\$)	3030	1055	--	--	431	255
Hours worked annually per worker	990	1247	1205	1712	2004	836
Annual production value per firm (US\$)	4979	2536	--	1501	1384	2362

Source: Fisseha, 1987. In Small-Scale Forest-Based Processing Enterprises, FAO.

¹ A small-scale manufacturing or repair business based on raw materials from forests, employing less than 50 people, privately owned & operating from a fixed location. With the exception of Zambia excludes enterprises producing fuelwood and charcoal.

² The number of hours per worker for Zambia is estimated from the one-visit survey.

cannot afford the capital and labour costs of agricultural production. Trees are also planted by the poor to help maintain the productivity of their land when the cost of alternatives such as fertilizer, herbicide, and irrigation are beyond their means (Conway 1987, Lagemann 1977, Soemarwoto and Soemarwoto 1984, World Bank 1986).

As was noted earlier, trees provide a measure of insurance and can be harvested in times of emergency cash needs. For poor farmers who live at or below subsistence level, the reduction of risk may be an overriding objective. In addition, the income earned from tree crops may provide poor farmers the capital to invest in agricultural assets such as better land or livestock.

3.0 THE IMPACTS OF CHANGE ON THE USES OF FOREST AND FARM TREE RESOURCES

Rural people, especially the poor, employ a diversity of means to help meet basic needs: food crop production; forest product gathering, consumption, processing and sale, cash crop production and income earning enterprises both on and off the farm. The impact of changes in the physical, social and economic environment will affect people in different ways, depending on their available resources and opportunities.

The following section focuses on two aspects of change: the diminishing forest resource base and the implications of the growing importance of the cash economy in rural areas.

3.1 Impact of diminishing forest resources

Throughout the developing world forest resources are rapidly being logged, degraded, cleared for agriculture and cordoned off for private or government use. In many regions, the result is that an ever-expanding rural population must rely on decreasing forest and land resources. In terms of household food security, this trend implies diminishing availability and use of forest food resources as well as diminishing knowledge about their utility, fewer income earning opportunities for the rural poor, and increased burdens on households in their efforts to meet their basic needs.

Declining consumption of forest food

The role that forest food plays in household nutrition has changed with the diminishing availability, penetration of rural markets by new products, and changing tastes. In many regions forest food is no longer consumed, and knowledge about its use is vanishing, although this trend is not universal.

In some areas forests still supply a readily available source of food and fodder. In addition, commercialisation and rapid migration have led to expanded markets for some forest food. In other instances it is sought after for its traditional social value, while still in other cases it is valued for medicinal qualities. Throughout West Africa, for example, the urban bushmeat market has been expanding rapidly, causing prices to soar well above those of domesticated meats. Several studies report that the consumption of gathered food is not declining; but even in these cases the diversity of gathered food consumed may have decreased (Fleuret 1979, Ogle and Grivetti 1985, Asibey 1986).

The impact of the declining consumption of forest food is not clear. In some cases these changes have led to a poorer quality diet; most notably diets are becoming less diverse as people rely on purchased food. Wild animal consumption provides a good example of the effects of forest decline on food consumption. In Southern Nigeria, for example, where there are large forest reserves, bushmeat accounts for the greater part of meat consumed, but in other areas with poor forest conditions and no reserves, bushmeat is rarely consumed (Charter, 1973). In Southern Cameroon, villagers relate that their food base has become less diverse, mentioning particularly the decline in wild animal meat consumption (Laburthe-Tolra, 1981).

Perhaps the worst impact of the loss of forest food is that poorer people's food options will be further reduced, especially during seasonal and emergency hardship periods.

Energy and household nutrition

As was illustrated in Figure 1, fuelwood supply can affect household food security influencing the time women have for cooking, childcare, food production and income earning, the quality of cooked food, and possibly the prices of processed food. While few studies have focused on the impact of

fuelwood scarcity on nutrition, a few important linkages can be discerned. Fuelwood supply may influence the amount of food supplied or cooked, and in some instances fewer meals are cooked. This trend may have a particularly damaging effect on child nutrition, as children may be unable to consume enough of the often-starchy staple food in one meal. Fuelwood shortages may also affect the quality of food consumed as well as the quality and supply of processed food. If women cook for less time, the consumption of uncooked and reheated food may increase, which could cause a serious increase in disease incidence. In some areas the increasing prices of fuelwood have forced the costs of processing food such as smoked fish to increase, and these increases are in turn passed on to the consumer (Cecelski, 1987).

The increasing time needed for fuelwood collection may reduce the time available for cooking. In some areas the result may be that people consume more fast food and purchased snack food, often of lower nutritional quality. However, it should be noted that many other factors are associated with changes in dietary customs which should not be attributed to fuelwood shortages alone. In addition, fuelwood shortages may indirectly affect household food security: as women are forced to spend more time collecting fuelwood they have less time to spend on food production or income earning activities.

Dwindling raw materials for forest-based small enterprises

Over-exploitation of forest resources has resulted in a dwindling supply of raw materials for small enterprises, and fewer income earning possibilities for the rural poor. For example, over-exploitation and deforestation in rattan producing areas in Southeast Asia are leading to diminished supplies, lower quality materials, and reduced returns for the poor involved in its collection and trade. In addition, access by the poor to forests and other formerly 'common' lands is often restricted by increasing privatisation. As a result, they are gradually losing a source of income, as only wealthier gatherers are able to pay the fees to use private lands.

The supply of raw materials for both wood and non-wood products is likely to become an increasing problem for many small enterprises. Small enterprises are rarely able to create or conserve their own resources for future use on a sustained basis. This is an area where involvement of

foresters could be most useful: both in terms of managing forests for these locally needed products and in redirecting forest policy and laws to incorporate the needs of small enterprises.

Incorporation of trees into farms

Another response to the declining availability of forest resources is the protection and incorporation of these resources into farming systems, both for home consumption and trade. Generally, trees are incorporated into these systems for a variety of products and overlapping motivations. Thus, while trees may be planted for marketable fruits or poles, these products and many others are also valued for consumption and use by the household. The intensification of management of farm and fallow lands for a combination of tree and annual plant products can be seen as a response to the changing availability of resources and opportunities for the farmer. Some of these responses, which are summarised in Table 5, are discussed further in the following section.

3.2 Implications of increasing dependence on the cash economy

As the physical resources of both agricultural and forest lands available to them decrease, poor farmers are forced to rely increasingly on the cash economy. In many cases, diminishing size and productivity of farm holdings forces farmers to rely on off-farm cash earning opportunities. The resulting decline in labour available for their farming obliges them to shift to planting low input cash crops on their farms.

In some cases, farmers are increasing the value of production from farm land by processing higher value products such as coconut sugar, and producing more products from the same area such as fuelwood and charcoal, byproducts of land clearing (Penny and Singarimbun, 1973). In a farming study in rural Sierra Leone many farmers noted that non-agricultural activities such as fuelwood collection, hunting, fishing, oil processing, craft production and palm wine tapping are of major importance for them, both in terms of their time and the benefits for the households (Engel, 1984).

As was noted earlier, as farm productivity decreases to a point where farmers must turn to earning cash income, trees may be grown as cash

TABLE 5

FARMER RESPONSES BASED ON TREE-GROWING COMPONENTS

Tree subsystem	Changes in Resources	Farmer responses	Contribution of tree subsystem
Home gardens, Java	1. Declining landholding size, minimal or no rice paddy, minimal capital	Increase food and income output from home gardens component of the farming system	Highest returns to land from increasing labour input, flexibility of output in face of changing needs and opportunities
	2. Further fall in landholding size below level able to meet basic food needs	Concentrate on low management tree crops to release labour to off-farm employment	Most productive stable use of land with reduced labour input
Compound farms, Nigeria	Declining landholding size and site productivity, minimal capital	Concentrate resources in compound area, raise income-producing component and off-farm employment	Improves productivity, highest returns to labour, flexibility
Home gardens, Kerala, India	1. Declining landholding size, minimal capital	Bring fallow land into use, intensify home garden management	Multipurpose trees maintain site productivity and contribute to food and income
	2. Capital input substantially increased	Transfer land use to high value cash crops, substitute fertilizer and herbicide for mulch and shade	Trees removed unless they are high value cash crop producers
Farm woodlots, Kenya	Farm size falling below basic needs level, minimal capital, growing labour shortage	Low input low management pole cash crops, off-farm employment	Lower capital input than alternative crops and higher returns to labour
Farm woodlots, Philippines	Abundant land, limited labour	Put land under pulpwood crop	Expands area under cultivation increases returns to family labour

crops in order to take advantage of growing markets for forest products. For example, in Haiti, trees are being planted by farmers for the pole and charcoal markets. Trees are often chosen over other cash crops as they tend to entail low establishment costs and require less labour, minimal costs throughout the year, less water after establishment and thus lower susceptibility to drought. For poor farmers, the possibility of accumulating capital through tree growing may also be important (Chambers and Leach, 1987).

The impact of the penetration of the cash economy on household food security is unclear. Results from some studies suggest that overall household nutrition conditions decline with increasing reliance on cash crops (Longhurst 1987, Hassan 1985). Production for cash crops may lead to increasing food prices as land is transferred from food production. Reliance on cash crops makes households dependent on the vagaries of market prices for these products: a drop in cash crop prices will mean a household has less with which to purchase food. In situations where the shift from food to cash crop production entails a shift in control of household income from women to men, household nutrition may be affected as women are most closely involved with provision of the household's food. There are some studies which indicate that women are most concerned with subsistence needs, while others suggest that they are equally involved and interested in cash earning. Obviously, these factors vary greatly, depending on the culture, economy, available opportunities for women, and household situation. Nonetheless, some nutrition studies indicate that where women have control of household income, overall family nutrition may improve.

In the case of tree growing, the potentially negative aspects of cash crop production may be offset by other features of tree growing. As was discussed earlier, the transfer of land from food to tree crops is often in response to changing conditions which make food crop cultivation impracticable, such as increasingly scarce land and labour. Thus, the shifting emphasis from food to cash crops may be unavoidable. Most trees provide other products in addition to those for cash sale. In addition, tree crops provide a great deal of flexibility as they can be harvested when the farmer most needs them, i.e. for emergencies and to meet lump sum cash needs. For these reasons, they may be most appropriate for poor households.

4.0 CONCLUSIONS

Forestry's contribution to household food security must be viewed in perspective. Forests and farm trees are components of complex rural environments. Forestry efforts alone cannot substantially alter fundamental social, economic and political factors at the root of many food supply inequalities. Nor would it be correct to conclude that the answer to declining availability of food, income or employment from forest-based sources necessarily lies in forest-based interventions. Alternatives to forest food, fuel and products exist or could be made available in nearly every situation.

However, forests and tree resources have played an important role in household food security, especially during seasonal and emergency hardship periods. Evidently, the management of forests and the planning of agroforestry activities could and should include consideration of these uses of forest and tree outputs much more widely than is the case at present.

This cannot be a static process, amenable to use of standard models and approaches. The importance of trees and tree products varies greatly from community to community and also between households within communities. Their use and role within the household economy are changing as rural areas become increasingly commercialised, forest resources are progressively degraded, and farm productivity declines. Planners and managers, therefore, need to be aware of and responsive to these changes, and to the new opportunities as well as the growing demands which they are creating for forestry and agroforestry in each situation.

BIBLIOGRAPHY

- Agarwal, A. and Deshingkar, P. (1983), *Headloaders: Hunger for fuelwood-I*. CSE Reports N° 118. Delhi: Centre for Science and Environment.
- Becker, R. (1983), 'The contribution of wild plants to human nutrition in the Ferlo, Northern Senegal', *Agroforestry Systems*, 1, 257-267.
- Blair, H. and Olpaldawala, P. (1988), *Forestry in Development Planning: Lessons from the Rural Experience*, Boulder & London: Westview Press.
- Campbell, B.M. (1986), 'The importance of wild fruits for peasant household in Zimbabwe', *Food and Nutrition*, 12(1), 38-44.
- Campbell-Platt, G. (1980), 'African locust bean (*Parkia* sp.) and its fermented food product Dawadawa', *Ecology of Food and Nutrition*, 9(2), 123-132.
- Cecelski, E. (1987), 'Energy and rural women's work: crisis response and policy alternatives', *International Labour Review*, 126(1), 41-64.
- Chambers, R. and Leach, M. (1987), 'Trees to Meet Contingencies: Savings and Security for the Rural Poor', *Discussion Paper 228*, IDS, University of Sussex.
- Charter, J.R. (1973), 'The economic value of wildlife in Nigeria', Research Paper N° 19 (Forest Series), Lagos (Nigeria): Federal Forestry Dept.
- Chetty, N.V.R. (1985), 'Social Forestry and Forest-Based Small-Scale Rural Industries', *Indian Forester*, 3(7), 678-692.
- Conway, F.J. (1987), 'Case Study: The Agroforestry Outreach Project in Haiti', paper presented at the IIED Conference on Sustainable Development, London.
- Engel, A. et al. (1984), *Promoting Smallholder Cropping Systems in Sierra Leone. An Assessment of Traditional Cropping Systems and Recommendations for the Bo-Pujehun Rural Development Project*, Studien N° IV/86, Berlin: Technische Universität.
- Fisseha, Y. (1987), 'Basic Feature of Rural Small-Scale Forest-Based Processing Enterprises in Developing Countries', in *Small-Scale Forest-Based Processing Enterprises*, Forestry Paper 79, Rome: FAO.
- Grandstaff, S. et al. (1985), *Trees in paddy fields in Northeast Thailand*, series in Ford Foundation Project Socio-economic Studies of the Farmers in Rainfed Areas of N.E. Thailand, Khon Kaen University.
- Hassan, N. et al. (1985), 'Seasonal patterns of food intake in rural Bangladesh: Its impact on nutritional status', *Ecology of Food and Nutrition*, 17(2), 175-186.
- Havnevick, K. J. (1983), *Analysis of rural production and incomes, Rufiji District, Tanzania*, Bergen (Norway): CHR Michelsen Institute, DERAP Publication N°152, 137, issued jointly with the Institute of Resource Assessment, University of Dar-es-Salaam, IRA Research Paper N°3.

- Hunter, J.R. (1981), 'Tendu (*Diospyros melanoxylon*) Leaves, Bidli Cigarettes and Resource Management', *Economic Botany*, 35(4), 450-459.
- Immink, M.D.C. et al. (1981), 'Homegardens and the energy and nutrient intakes of women and preschoolers in rural Puerto Rico', *Ecology of Food and Nutrition*, 11, 191-199.
- Irvine, F. (1962), 'Supplementary and emergency food plants of West Africa', *Economic Botany*, 6(1), 23-40.
- Jha, L.K. and Jha, K.N. (1985), 'Tassar culture and its impact on generation of income and employment', *Myforest*, 21(4), 289-294.
- Jalal-ud-Din, (1984), 'Problems and Prospects of Sericulture in the Northwest Frontier Province of Pakistan', *Journal of Rural Development and Administration*, Peshawar, Pakistan, 26, 3/4, 11-22.
- Jambulingam, R. and Fernandes, E. (1986), 'Multipurpose trees and shrubs in farmlands in Tamil Nadu State, India', *Agroforestry Systems*, 4, 17-32.
- Johnson, D.V. and Nair, P.K.R. (1985), 'Perennial crop-based agroforestry systems in Northeast Brazil', *Agroforestry Systems*, 2, 281-292.
- Kamara, J.N. (1986), 'Firewood energy in Sierra Leone: Production, marketing and household use patterns', *Studien N° 9, Hamburg (FRG): Verlag Weltarchiv*.
- Kaye, V. (1987), 'Etude sur les potentialites de l'artisanat d'art en Côte d'Ivoire: Plan Triennal de developpement de l'artisanat d'art, 1988-91', Direction de la promotion de l'artisanat d'art, Abidjan (Côte d'Ivoire): Ministère du Tourisme.
- Kulkarni, S. (1983), 'Toward a social forestry policy', *Economic and Political Weekly*, 5 February 1983, 191-196.
- Laburthe-Tolra, P. (1981), *Les seigneurs de la foret: Essai sur le passe historique, l'organisation sociale et les hommes ethniques des anciens Betis du Cameroun*, Paris: Sorbonne.
- Lagemann, J. (1977), *Traditional Farming Systems in Eastern Nigeria: An Analysis of Reaction to Increasing Population Pressure*, Africa Studien, München: Weltforum Verlag.
- Le Houerou, H.N. (ed.) (1986), *Browse in Africa: The current state of knowledge*, London: IBPGR and Royal Botanic Gardens Kew.
- Longhurst, R. (1987), 'Cash crops, household food security and nutrition', Cash Crops Workshop, IDS, University of Sussex.
- Malaisse, F. and Parent, G. (1985), 'Edible wild vegetable products in the Zambezian woodland area: a nutritional and ecological approach', *Ecology of Food and Nutrition*, 18, 43-82.
- Marks, S. and Robbins, R. (1984), 'People in Forestry in Zambia', paper prepared for the FAO Forestry Department.
- May, P.H. et al. (1985), 'Babassu palm in the agroforestry systems in Brazil's mid-north region', *Agroforestry Systems*, 3(39), 275-295.

- Moby-Etla, P. (1982), 'Les pays Bas-Mungo Bas-Wouri: Etude géographique de la vie rurale et des relations avec les Douala', doctoral thesis, University of Paris I.
- Ogle, B.M. and Grivetti, L.E. (1985), 'Legacy of the chameleon: Edible wild plants in the Kingdom of Swaziland, Southern Africa: A cultural, ecological, nutritional study', *Ecology of Food and Nutrition*, in four parts, 16(3), 193-208, Parts II-IV, 17(11), 1-64.
- Parent, G. (1977), 'Food value of edible mushrooms from Upper Shaba', *Economic Botany*, 31, 436-445.
- Penny, D.H. and Singarimbun, M. (1973), *Population and Poverty in Rural Java: Some Economic Arithmetic from Sriharjo*, Cornell International Agricultural Development Monograph 41, Ithaca (USA): Cornell University, Department of Agricultural Economics.
- Rao, C.K. et al. (1978), 'Vegetable Tanning Materials: A Minor Forest Product in India', paper presented at the *Eighth World Forestry Congress - Jakarta*.
- Saadallah, J. (1978), 'Importance des menus Produits Forestiers en Tunisie', paper presented at the *Eighth World Forestry Congress - Jakarta*.
- Siebert, S. and Belsky, J.M. (1985), 'Forest Product Trade in a Lowland Filipino Village', *Economic Botany*, 39(4), 522-533.
- Shiembo, P. (1986), 'Development and Utilization of minor forest products in Cameroon with particular reference to Raphia and cane (rattan) palms', M.Phil. thesis, Department of Forest Resource Management, Ibadan University, Ibadan, Nigeria.
- Soemarwoto, O. and Soemarwoto, I. (1984), 'The Javanese Rural Ecosystem', *An Introduction to Human Ecology Research on Agricultural Systems in Southeast Asia*, Rambo, A.T. and Sajise, P.E. (eds), Laguna (Philippines): UPLB.
- Soemarwoto, O. (1985), 'The Javanese homegarden: an integrated agro-ecosystem', *Food and Nutrition Bulletin*, 7(3), 44-47.
- Surin, V. and Badhurl, T. (1980), 'Forest Produce and Forest Dwellers', in *Proceedings of a Seminar on the Role of Women in Community Forestry*, Dehra Dun, India, December 1980.
- Tewari, D.N. (1982), 'Minor Forest Products of India', paper presented at the *USAID Conference on Forestry and Development in Asia*, Bangalore, India.
- Turton, D. (1977), 'Response to drought: The Mursi of south-western Ethiopia', *Disasters*, 1, 257-287.
- Van Buren, A. and May, (1982), *Rural Energy Concepts: the Commercialisation of Wood and Other Subsistence Fuels*, Brussels: ISPRA.
- World Bank (1986), *Economics Issues and Farm Forestry*, Working Paper prepared for the Kenya Forestry Sector Study, Washington (mimeo).



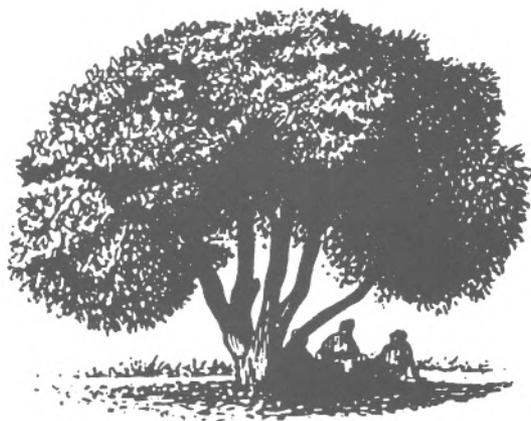


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SOCIAL FORESTRY NETWORK



WOOD FUEL IN KANO, NIGERIA: THE URBAN-RURAL CONFLICT

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This paper draws on a longer report written by members of the Kano Rural Energy Research Group which was set up under the sponsorship of the United Nations University, in the Department of Geography, Bayero University, Kano, and under the direction of Professor Michael Mortimore.

INTRODUCTION

The Kano Rural Energy Research Project was established to investigate the quantitative and organisational dimensions of wood fuel production, consumption and exchange, and the ecological implications of wood fuel resource management. This paper summarizes some of the major and most interesting findings of the study. The area chosen for the study was the Kano region, in northern Nigeria, where a major urban metropolis is extending its firewood hinterland beyond the Kano Close-Settled Zone (where intensive agroforestry is practised) to woodlands at ever greater distances. The study investigated fuelwood consumption in urban Kano, the rural-urban trade in firewood, the ecology of wood fuel, and the management of wood resources in the hinterland. The database for this study has been formed over a 20 year period, with household, commercial and traffic surveys carried out in the 1960s and again in the 1980s. This paper presents an account of the changes that have occurred in the wood fuel hinterland of Kano during the past two decades and in particular the demands of urban energy needs on rural areas.

THE RURAL-URBAN ENERGY CRISIS

The process of urbanisation in the Third World involves very large numbers of people, many of whom retain rural habits in relation to energy use. This leads to the rural-urban energy crisis where large quantities of firewood are supplied from the rural areas. The energy alternatives for many of the urban population are restricted due to cost and inadequate infrastructure. Wood fuel is the main energy source in the urban areas of Kano and it is its supply which forms the focus of this paper.

According to the orthodox view (see Morgan, 1978; Moss and Morgan, 1981, 34-36), wood fuel is bulky and therefore transport costs form a large part of the total costs of production and marketing, limiting the distances from which it is brought to major urban markets to what its price will bear. Recalling von Thunen's classic theory of land use, Moss and Morgan propose a model of concentric zones to describe wood fuel hinterlands. Von Thunen, accepting the high costs of animal transport in early 19th century Europe, proposed that firewood should be produced close to the city market, assuming a homogeneous plain in an isolated economy. Where such conditions are approached, as perhaps at the town of Bara in the Sudan (Hammer, 1977, 1979), a model of concentric land use zones, in which firewood cutting moves outward through time, leaving a treeless tract behind, approximates reality. Such experiences have been elevated to the status of general law: 'There is the urban energy crisis. Treeless zones expand around cities that depend primarily on woodfuel, and fuel gets increasingly expensive' (Energy Research Group, 1986, 114). But its general applicability is questionable under modern conditions of transport and tenure. Wood fuel compared to other energy sources is still relatively inexpensive, although it incurs heavy transport costs in relation to its value. Urban growth may therefore be expected to intensify pressure on wood fuel resources in the peri-urban zone.

Between 1962 and the early 1980s the urban population of Kano increased from a quarter of a million to about a million, according to unofficial estimates. The increasing population has led a number of observers to predict the elimination of trees, in time, from the Kano Close-Settled Zone, the immediate hinterland of Metropolitan Kano. Indeed Eckholm *et al.* (1984,

p 28) have stated that 'over the last 25 years commercial wood demands have led to severe deforestation and the collapse of a sustainable agricultural system ... now farmland within a 40 km radius of the city (of Kano) has been largely stripped of trees'. These imaginings bear little relation to the well-wooded reality of this area. Instead, the fuel hinterland of Kano has widened, taking advantage of improvements in the transport infrastructure, intensifying motor traffic and subsidised fuel costs.

The enlargement of the wood fuel hinterland of Kano, where distances of 300-400 km are commonplace for consignments of firewood, and wood carried as 'supercargo' on other vehicles may travel further, has opened up a vast area to the influence of its buoyant energy market. Few places in northern Nigeria are exempt from the woodcutter's axe, and administrative control, through licensing cutting and policing forest reserves is increasingly difficult. On the other hand, and contrary to expectations, wood fuel resources are managed under conditions of stable offtake in farmed parklands such as those of the Kano Close-Settled Zone.

The firewood hinterland of Kano is divided into two on the basis of the dominant forms of transport. First, is the local hinterland in which the dominant mode of transport was, until the 1970s, the donkey. This hinterland has historical continuity with the pre-colonial energy hinterland of Kano, and comprises the Inner Close-Settled Zone. Beyond it is the distant hinterland, accessible only by motor transport, where farmers harvest wood from farmland, fallow or bush and sell the wood in small consignments along the roadside. This area is now heavily exploited by urban-based entrepreneurs who send trucks into the remote woodlands.

Surveys of traffic in wood fuel from the local hinterland, conducted in the 1960s and 1983, show that this traffic has declined dramatically during the last two decades. However, recorded imports from the distant hinterland have increased, with some consignments of wood coming from up to 600 km away. Large-scale operations are more profitable than small-scale wood transactions, and have attracted merchant capital to the distant hinterland. There has been a shift from the small-scale local supplier to the large-scale merchant supplier. This shift has also moved the geographical locus of the operation away from woodland close to the urban centre to distant areas of low population and extensive woodland.

The outward shift of Kano's wood fuel hinterland has both positive and negative implications. Positively, the stabilisation of offtake in the farmed parkland agroforestry system has removed any necessity for a zone of deforestation or desertification to follow urban growth. Negatively, pressure on natural woodland in the distant hinterland is increasing without adequate conservatory safeguards.

THE URBAN FIREWOOD SUPPLY SYSTEM

To understand the deforestation problems of the rural area, it is necessary to understand the urban demand system for firewood. Urban firewood distribution is organised hierarchically. Most firewood arrives by truck at a central depot, before being split, bundled and distributed through a chain of local wood piles, smaller neighbourhood piles and itinerant retailers. The organisation and costs of local firewood pile operators and barrowmen show that the entire system falls into the urban informal sector. It is uncontrolled, but competitive and cost-efficient from the consumer's point of view, and effective in meeting the spatial and temporal distribution of demand.

A survey of households was carried out to assess the demand for firewood. The results of this survey indicated a mean monthly consumption of firewood of 332 kg, however, this figure disguises a wide variation between households of different economic and social status. Consumption of wood and demand also varies daily, weekly and between seasons. Significant intraseasonal variation is related to increased demand at special occasions and festivals. More wood is also used when kerosene or gas become scarce; the cost of gas and the long queues for kerosene force users to turn to the more readily available firewood.

Most urban firewood users buy firewood from retailers and a small number collect their own firewood. Purchases are made mostly within urban Kano, but a small proportion buy firewood outside. Users buy from the nearest woodpile retailer to them; from vendors using carts from door to door; or directly from central firewood depots. About a third of those who patronise vendors always do so, the rest occasionally, or when one happens to pass. Vendors are used because they provide a convenient source of firewood. However, price differences for firewood between the different suppliers also dictates the sale of firewood. The standard price of firewood in 1982-1983 was N 1.00 for a large bundle and about N 0.50 for a small bundle. Lower prices were reported by some who bought in bulk or directly from rural producers.

Almost 90% of the respondents obtain their wood from within Metropolitan

Kano. Only the educational institutions and a bakery send vehicles directly to buy wood from rural producers or middlemen. The wood supply market covers a mixture of sources which ensures that it cannot be controlled by a small group of distributors who can fix prices and profit from periods of scarcity.

The survey showed that recorded donkey traffic in wood fuel had fallen, by 1983, to 6% of its volume 14-18 years earlier: from 150 to a mere 8.5 tons/day during the peak flow season. However, other modes did not decline to the same extent. This with the increased use of motor cycles, may perhaps be attributed to a scarcity of low cost rural transport resulting from the decimation of the donkey population during and after the Drought of 1972-7. The shift to motor transport which occurred in the northern Nigerian countryside between the 1960s and the 1980s affected short distance as well as long distance traffic, and particularly relevant is the substitution of the motor 'pick-up' for the beast of burden. These vehicles now ply many rural tracks which were limited to walkers and cycles in the 1960s.

The wood fuel hinterland of Kano can be subdivided on organisational criteria into roadside and woodland subsectors. The first consists of a linear market along the trunk highways, where passing motorists buy small consignments to carry as supercargo which may be delivered to urban consumers without passing through the urban distribution system. Wood is only one commodity dealt with along such highway interfaces between the urban and rural sectors, and may be prominent where a new road crosses well wooded and previously less accessible country. The woodland subsector, on the other hand, is systematically exploited by entrepreneurs using trucks for large consignments, and the wood is delivered to urban distributors for splitting, bundling and resale. The distant hinterland is expanding as these commercial operators venture into less accessible areas.

The profit margin available on large scale capitalised operations in the distant hinterland, compared with the smaller margins obtainable on transactions involving one tree at a time in the Close-Settled zone, directs wood merchants away from the local hinterland. Their entry into the firewood trade of Kano has helped to transform its spatial pattern and the present price structure guarantees them a fast return on their investments.

THE FARMED PARKLAND OF THE KANO CLOSE-SETTLED ZONE

The Kano Close-Settled Zone is a region of continuous farmland and dense rural population living both in dispersed farming compounds and in compact villages. The Zone has long been intimately related with the urban economy, though a distinction may be made between an inner zone, from which the city may be reached on foot in the course of a day, and an outer zone whose urban links depend mainly on motor transport. The further Kano region, beyond the Close-Settled Zone, where population densities are more variable and extensive areas of woodland may be found, is nevertheless dominated economically by Metropolitan Kano.

The second study area in the Outer Close-Settled Zone is less densely populated and less intensively cultivated, and contains a larger, though diminishing, proportion of fallow and shrubland, and also part of a protected forest reserve. On farmed parkland, evidence was found of a significant increase in tree density from 1972 to 1985. Timber volume on the farmed parkland areas is much higher than for the study area in the Inner Close-Settled Zone. Farmed parkland in the Outer Close-Settled Zone is the most productive management regime, and therefore the trend of conversion of shrubland into farmland is beneficial to wood production. The evidence for increasing tree densities on farmed parkland, even close to the urban area, during a period of recurrent drought stress, shows that the replanting and protection of farm trees is widespread and effective.

Much of the densely populated semi-arid zone is dominated by a 'farmed parkland' landscape. Cultivation is the dominant form of landuse, and widely spaced trees of similar age and size are maintained by farmers for economic purposes. The Kano Close-Settled Zone is intensively cultivated farmed parkland where soil fertility is maintained by the application of manure, and farm incomes are supplemented by the sale of a variety of tree products for medicinal, constructional and fuel purposes. Woody vegetation by virtue of the shade it casts, the nutrients contributed to the soil by leaves and fruits, and its effect as a windbreak, is an integral component of a traditional and essentially 'conservationist' farming system. In some areas, where soils are less fertile farmed parkland is replaced by shrub vegetation.

Counts carried out on air photos dated 1972 and 1981, and ground surveys carried out in 1983-84, show that the density of trees on permanent farmland increased significantly (by 18%) during the survey period. The volume of timber, excluding the tree *Adansonia digitata* (which is not used for firewood), is 8.9 m³/ha, almost twice as large as volumes recorded in residual areas of shrubland. The species composition of farmed parkland is markedly diverse (39 species). In residual shrubland, by contrast, timber volume is low and the species few (5).

A survey of woodcutters was carried out in several villages in the Inner Close-Settled Zone to map the supply of wood to both local and urban markets. Woodcutting is a part-time occupation adding significantly to the farming income of a minority of farmers. Wood is generally cut from other people's farms on payment of a fee. Fuel is obtained by cutting off branches or by felling whole trees; both living and dead trees are cut and felled. The price of wood appears to have some effect on whether branches or whole trees are cut, and whether trees with alternative uses are cut.

Owners of trees who wish to raise money by selling them for firewood evidently prefer to dispose of the trees, or parts of them, to woodcutters rather than cut and sell the wood themselves. This is linked with the ownership of transport, for a woodcutter must either own a donkey or hire an animal or vehicle to evacuate the wood. Although tree-cutting is a major source of income and employment for the farmers, tree-planting is also accepted as an important and integral part of the agroforestry system. Tree-cutters replant and protect seedlings which they obtain from forest department nurseries, or in other cases they protect volunteer seedlings by enclosing them in cages of cornstalks.

In obtaining planting material, both formal (Federal, State or Local Government) extension forestry outlets, and informal information and plant exchange networks are used. Informal channels are credited with the first introduction of neem (about 25 years ago) and mahogany (about 15 years ago). Trees are planted, transplanted or simply protected as part of the everyday farming system maintenance. Tree planting needs to be put alongside the successful protection of volunteer seedlings of *Acacia albida* and other species to explain the successful maintenance of tree stocks in the inner Close-Settled Zone. The mix of species is the product of a balance between perceived needs and what the environment has to offer.

Firewood needs represent only one of several demands made on farmed parkland trees, and the operators of the agroforestry system have to resolve conflict between such demands. Farmed parkland trees may be categorised as:

1. main parkland trees which are intercropped with farm crops
2. peripheral farm trees used as shade and boundary plants
3. residential shade or fruit trees

Amongst the more commonly protected and planted trees is *Adansonia digitata* which is exploited exclusively for its non-fuel value; its bark is stripped, leaves picked and small branches cut. *Diospyros mespiliformis* and *Ziziphus mauritiana* are the only two species felled live, reported to be for utility wood, although the branches and twigs are used as fuel. Trees with lopped branches are most commonly *Acacia albida* and *Parkia biglobosa*.

There is a complex use of species for the varying wood product needs of the household. There are several different categories of biomass fuel used in the household: wood (ice) and its derivative charcoal (gawayi), and cornstalks (kara). These fuels are used for domestic cooking including the preparation of cooked food for sale and space heating. The main criteria used by the villagers for distinguishing between firewood categories are use and inherent properties. Wood for the domestic cooking fire (wutar girki) is conceptually distinct from wood for the heating or log fire (wutar jindimi). The only industrial activities with any significance for the consumption of biomass energy are blacksmithing and the production of wooden articles—stools, bowls etc.

The whole system of tree-planting and protection has a long history of rules and traditions; there are formal rules governing the felling of trees (Barrot, 1972). These used to be effectively enforced at the district level by the District Head who used to encourage the villagers to preserve their tree heritage for posterity by replacement planting. It appears that the effectiveness of the system depended on the personality of the District Head as well as on the real authority he wielded; the most respected District Heads were the most successful at enforcing the rule.

Thus, until 1970 the Village Head's permission, or at least his knowledge, was required for the felling of farm trees anywhere in the village area; no

fee was charged and no formal licence issued, but he was expected to ensure that a replacement seedling had been planted, or a volunteer identified as a replacement and put under effective protection from human or animal predators.

It is also evident that at present, although planting and protection are practised widely, such activity is carried out neither in response to formal rules nor with any reference to the Village Head, who attributes this apparent collapse in the system to political changes. But as one respondent pointed out the system's undoing was its rigidity and its responsiveness to external, rather than local perceptions of environmental degradation: 'Sometimes, trees are felled to reduce shade on the farm - what sense is there in replacing such a tree with another one which will only produce more shade?'

As the foregoing demonstrates, the system has not been destroyed, but instead decentralised; it has not disappeared but merely transformed itself from a top-down structure into one organised laterally. Farmers may have stopped seeking the Village Head's permission to exploit their trees, but they have not lost interest in what happens to the woodstock on their farms. However, a scarcity of indigenous species in the villages is forcing villagers to make do with the exotics produced by the nurseries. Trees such as neem and mahogany, which are regularly supplied by the nursery, are used as peripheral farm or shade trees, and villagers cite them to show how the range of trees available has increased. However, these trees are not substitutes for the important indigenous species and should be seen as complementary to these major species.

REAL OR PERCEIVED CRISIS?

The present study has shown that the model proposed by von Thunen is not applicable to the conditions in Kano. During the decade and a half separating the surveys of the 1960s from that of 1983, the shift from a local to a distant wood fuel hinterland, begun in 1965, was advanced much further. Since the local hinterland remains wooded, an explanation for the change is called for. Several factors have been at work. First, rising prices of firewood, together with subsidised petrol costs, have made the increased distances acceptable to merchants. Second, resistance to woodcutting has stabilised offtake within the local hinterland. Such resistance can be explained in terms of the alternative use value of trees, local government restrictions on woodcutting, or a combination of both. It is remarkable in view of the severity of the Drought of 1972-74 in the Kano area and the need of many farms to cut and sell wood in order to survive. But even in such a crisis, owners of trees must weigh short-term benefits of cutting and selling against the long-term value of a hedge against future contingencies - a perception of trees common in the Third World (Chambers and Leach, 1987). In such an integrated system of agroforestry, the value of trees for food, fodder, medicines, building materials, soil stabilisation, fertilisation and shade have to be considered. Third, the change of hinterland may represent a response to the species preference of the market.

The extent of price inflation, the construction and improvement of Federal and State highways crossing densely wooded and lightly populated areas of the country, the maintenance (until recently) of price subsidies on petroleum fuel, and the availability of merchant capital in the country have blown aside the constraint of distance as the only determinant of the spatial pattern of commercial firewood production. All these factors can be traced to the effects of the oil boom, which came into its own in the 1970s, and therefore may not apply to the same extent in other countries. Nevertheless, trucks were supplying Kano from considerable distances as long ago as 1965. Since the tree stock in the local hinterland was then (and is now) as healthy as it had been more than a century before (Barth, 1857 Vol.2, 97-147), an explanation for the shift in hinterlands has to be found outside the special factors operating during Nigeria's oil boom.

This explanation is to be found in the 'producer resistance' put up by the agroforestry system of the Kano Close-Settled Zone. Under conditions of individual tenure, the alternative use value of the tree stock in the longer term, one of the corner stones of indigenous land use management, forbade its destruction in response to short term commercial opportunity even at times of drought and social distress. Tree-planting and felling on farms is highly regulated on an individual basis and has thus ensured that local and urban markets for firewood can be met without degradation of the wood stock.

No doubt this is not the whole story. The response of merchant capital has been critical. Kano's heavily capitalised road transport capability was a product of the groundnut boom, especially in the profitable 1960s when the overloaded railway system had to be supplemented by road. The same vehicles could as easily be used for carrying firewood, when returning empty from the coast, or during the slack seasons. It was well known that road transport brought a higher return than alternative opportunities. Innovative response to new markets had often in the past attracted Kano businessmen into buying rural commodities in bulk. Thus both the organisation and the capital were prepared to move into firewood supply as soon as prices rose high enough to justify investment in its large scale production.

Notwithstanding these changes, a residual contribution to urban firewood supply must be expected to continue from the small sector, both in what we have called the local hinterland, and at greater distances. This is because of the importance of firewood production in many farm budgets, and the availability of surplus wood from farm trees and fallows. This output is transported by donkey, headloading or motor pick-up in small consignments to local markets, the roadside or directly to Kano. In view of the productivity of tree stock on farmland, the conservatory practices of agroforestry, and the ecological risks of uncontrolled exploitation in woodlands by large-scale operators, such small-scale firewood production ought to be encouraged, provided that adequate safeguards continue to be observed.

In view of the visibility of farm trees around almost every old established settlement in Nigeria, and the well documented role played by the Kano

Close-Settled Zone in meeting Kano's firewood needs (Trappes-Lomax, 1952; Mortimore & Wilson, 1965; Mortimore, 1972), it is extraordinary that the potential contribution of farmed parkland to commercial wood production is ignored or underrated in the forestry literature (but see Barrott, 1972). At best it tends to be relegated to meeting the needs of the local rural communities.

It is notable that the timber volume of farmed parkland may be more than double that of reserved natural woodland in the same locality. This also indicates that if shrubland and fallows are converted to farmed parkland, their wood productivity may be expected to increase by a large factor. These conclusions support an optimistic view of the potential contribution to urban, as well as rural, wood fuel needs that may be met from farmed parkland.

The indigenous firewood resource system of the Kano Close-Settled Zone supports the subsistence fuel needs of a dense rural population. This is achieved within the context of a rational and conservatory management regime, oriented to the objective of sustained yield. A wood surplus is generated and marketed through a commercial subsector whose operations are fully consistent with this objective. The firewood system operates within the overall framework of a high-intensity system of agroforestry in which multiple use objectives govern the planting, protection and management of individual trees. The diversity of species, and the high degree of substitution practised amongst firewoods, guarantees the system's survival in the face of unexpected tree mortality or changes in consumer demand.

However, there are grounds for scepticism about the size of the contribution which the farmed parklands of the Close-Settled Zone may be expected to make to Metropolitan Kano's firewood needs, even if they are extended by the progressive conversion of fallows into permanent farmland in the less densely populated areas further from town. Between 1962 and 1983, the Inner Close-Settled Zone, or local hinterland, diminished in its contribution to urban firewood supply both relatively and absolutely (by 80%). Since this change does not appear to have been associated with any loss of trees, at least after 1972, it must be asked whereto the 'surplus' firewood was diverted. One answer to this question is that it was consumed

by a growing rural population. The marketable surplus of wood may be expected to diminish with rising population density, given a constant rate of consumption. The labour intensification that permits the conversion of rotational woody fallows into a farmed parkland agroforestry system implies such an increase in the rural population and, therefore, in subsistence wood requirements.

To meet this projected demand, Moss and Morgan (1981, p155), on the basis of their data on annual wood increments, advocate the substitution of exotic for indigenous trees and their integration into agricultural systems in farm plantations and hedgerows. In the absence of incremental data for indigenous trees on farmed parkland, it is not possible to evaluate this proposal in terms of wood productivity. However, other factors should be considered: exotics are poor firewood trees and their propagation on farmland would do nothing to meet urban or rural demand for favoured species. Exotics have few alternative uses and would occupy space and nutrients better given to multiple use indigenous trees. The exotic trees in this rainfall zone have no recorded beneficial effects on farm yields - such as *Acacia albida* has - and on the contrary, one of them, *Eucalyptus* spp., has a positively harmful effect on crops grown near it. Irrespective of the question of wood productivity therefore, the case for introducing exotics to the agroforestry system of the Kano Close-Settled Zone, as a response to the demand for wood fuel, is a weak one. Our conclusion is that this system should not be interfered with. Instead ways should be found of improving its productivity along traditional lines.

CONCLUSIONS

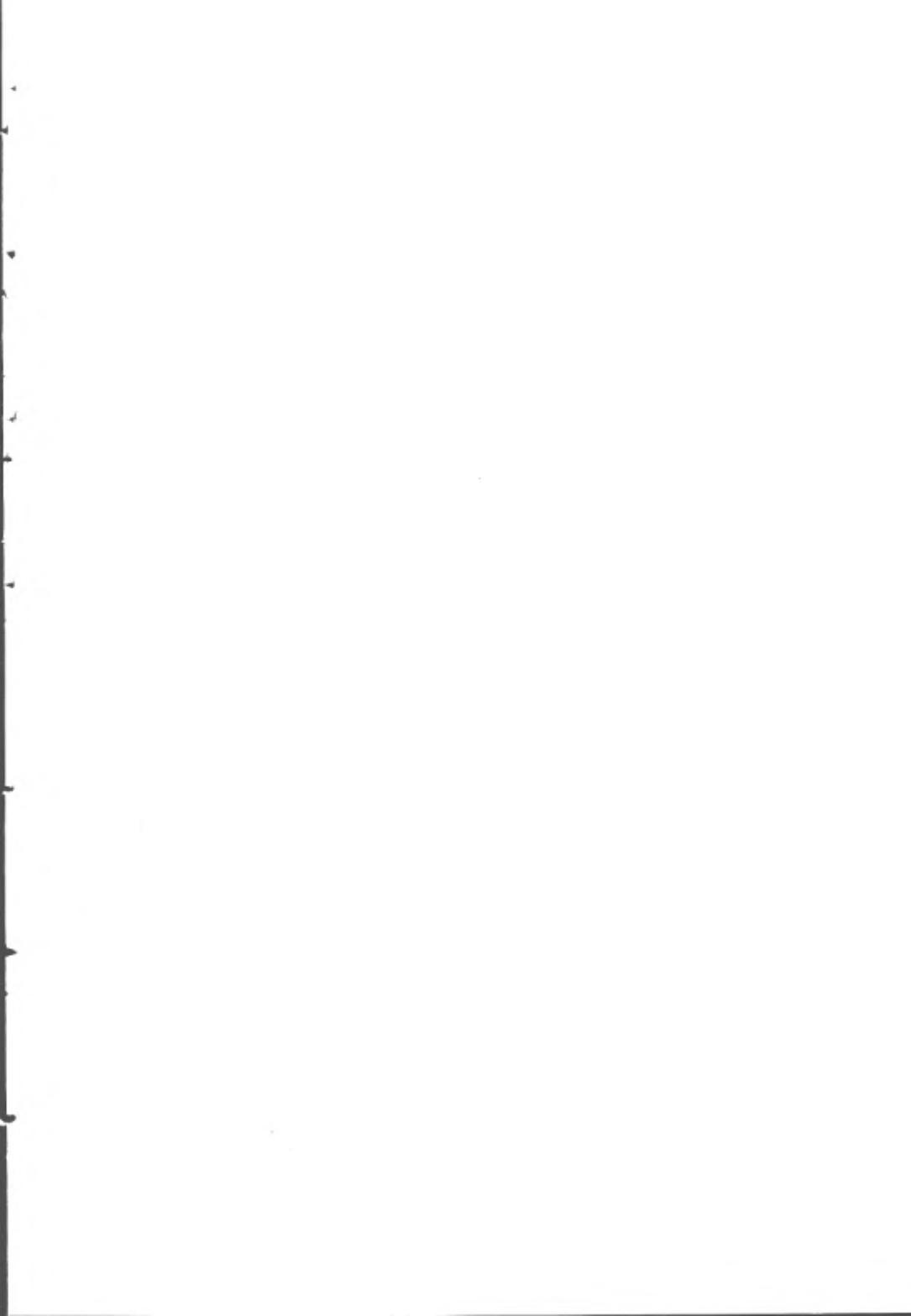
From this study it became apparent that several factors account for the preservation of trees in areas close to the urban centre. First, rising prices of firewood, together with subsidised petrol costs, have made the increased distance acceptable to merchants. Second, resistance to woodcutting by the local farmers has stabilised offtake within the local hinterland. Such resistance can be explained in terms of the alternative use value of trees and local government restrictions on woodcutting. Third, consumer wood preferences, popular tree species are scarce in the local hinterland and thus demand has forced firewood cutters to move to distant areas where the species are available.

In view of the evidence of the importance given by woodcutters to sustained yield, it is out of place to diagnose an ecological crisis in the local wood fuel hinterland of Kano, even under present conditions of inflation and recurrent food shortages. The form of agroforestry practised in this area is the most rational land use in the Kano Close-Settled Zone. However, in the distant hinterland an ecological crisis is in the making, unrestricted large-scale cutting of firewood will lead to massive environmental degradation. It is these areas that are in need of immediate management with restrictions imposed on wood cutting.

This long term study shows how urban demands for fuelwood have affected local resource management systems. The commonly accepted hypothesis of an urban firewood hinterland constrained by transport costs to a proximate and widening zone around urban centres, and subject to progressive deforestation, is inappropriate under northern Nigerian conditions. The burden of providing for urban demand has been effectively shifted from the Inner Close-Settled Zone to the further Kano region, but without deforestation of the near areas. The fuel hinterland of Kano has widened, with merchants taking advantage of improvements in the transport infrastructure, intensifying motor traffic and subsidised fuel costs. Farmers in areas close to the urban centre have retained and increased the tree cover on their farms with small scale production of wood fuel as a component of an intensive system of agroforestry.

REFERENCES

- BARROTT, H.N., 1972, 'Firewood supplies in Katsina Province', *Nigerian Journal of Forestry*, 2/2, 62-66.
- BARTH, H., 1857, Travels and discoveries in Northern and Central Africa, 5 vols., Longman, London.
- CHAMBERS, R. and LEACH, M., 1987, 'Trees to meet contingencies: savings and security for the rural poor', *Discussion Paper 228*, IDS, University of Sussex.
- ECKHOLM, E., FOLEY, G., BARNARD, G. and TIMBERLAKE, L., 1984, Firewood: the energy crisis that won't go away, Earthscan (IIED).
- ENERGY RESEARCH GROUP, 1986, Energy research. Directions and issues for developing countries, International Development Research Centre, Ottawa and United Nations University, Tokyo.
- HAMMER, T., 1977, Wood for fuel. Energy crisis implying desertification. The case of Bara, the Sudan, major thesis in Geography, University of Bergen.
- MORGAN, W.B., 1978, 'Development and the fuelwood situation in Nigeria', *Geojournal*, 2.5, 437-42.
- MORTIMORE, M.J., 1972, 'Some aspects of rural-urban relations in Kano, Nigeria', in La croissance urbaine en Afrique Noire et a Madagascar, Colloques Internationaux du C.N.R.S. 539, 871-88, Centre National de la Recherche Scientifique, Paris.
- MORTIMORE, M.J. and WILSON, J., 1965 Land and people in the Kano Close-Settled Zone, Occasional Paper 1, Department of Geography, Ahmadu Bello University, Zaria.
- MOSS, R.P. and MORGAN, W.B., 1981, Fuelwood and rural energy production and supply in the humid tropics, Tycooly International, Dublin, for the United Nations University.
- TRAPPES-LOMAX, A.F., 1952, 'Consumption of fuel - Kano', *Forestry Information Bulletin* (Ibadan), 10, 2.



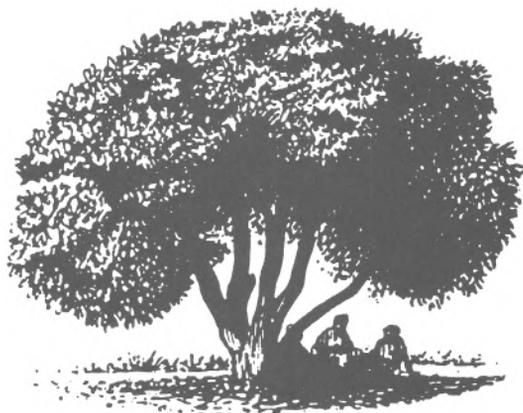


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SOCIAL FORESTRY NETWORK



FORESTRY AND THE DEVELOPMENT OF A NATIONAL FORESTRY EXTENSION SERVICE A SUDAN CASE STUDY

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INTRODUCTION

The emergence of a National Forestry Extension Service in the Sudan (as from 1985 onwards) represents a considerable shift in emphasis on the part of the Forests Administration. This shift reflects the realisation by the Administration of the gravity of the forestry situation and their inability to control the rate of deforestation using existing methods of forest protection and management. The demand for fuelwood both in the rural and urban sector is large and increasing; currently over 90% of the wood harvest is destined for use either as firewood or for charcoal. Forest reserves cover less than 0.5% of the total land area and will not be able to meet the projected demands for wood products over the next 15 years. The Administration recognised that if the people of Sudan are to be able to meet their forest product needs, forestry must reorient itself beyond the boundaries of the forest reserves: forest product users should be involved and encouraged to take responsibility for the forest resource.

THE EVOLUTION OF THE SUDANESE FORESTS ADMINISTRATION

The Forest Department was one of the first departments created in Sudan by the British Government in 1901. Initially, its main purpose was to secure a good supply of wood for the steamers plying the River Nile. This objective was later superseded by the development of gum arabic as a commercial crop in the 1920s. The Forest Department was renamed Department of Forestry and Agriculture after the development and increasing importance of large-scale commercial agriculture. The word forestry completely disappeared from the title in 1965 when the Ministry of Agriculture was created which later became the Ministry of Agriculture and Natural Resources. At this stage, the Forestry Department became one of five departments within the Natural Resources Section.

Since 1908 forest management rules have been enacted, and in 1917, additional conservation rules were passed to increase the extent of land under Forest Department jurisdiction and management. It was not until 1932

that a general policy for forestry was drawn up; a policy which increased the powers of the Forest Department to include control over the cutting of trees outside reserved areas. The Policy also made provision for the creation of Central and Provincial forest reserves which were to be managed by Central and Provincial forest departments. These reserved forests were to supply the needs of local and urban areas. Management plans for these forests concentrated on the exploitation of forest products and did not fully take into account the needs (grazing and fuelwood) of the local people. However, rights of passage and water points were given to local people in certain areas. Management practices were highly restrictive and protectionist, guards with guns were employed to protect the forests and tree-cutting was permitted only in forest reserves and on issue of a permit from the forest authorities. The allocation of forests to the Provinces brought forest management firmly under the control of local government.

The pressure on the forest areas outside the reserves has increased with changing agricultural practices. The introduction of mechanised farming has led to the degradation of many marginal areas (Seif El Din, 1986). Illegal charcoal burning, overgrazing and drought have further contributed to the increased forest degradation. The commercialisation of charcoal production with traders using lorries to transport large quantities of charcoal has ensured that forest guards on camels and donkeys are unable to stop this trade.

The conflicting pressures on the forest resource were further exacerbated by the Forests Administration's own lack of control and ability to enforce rules. Throughout the 1970s the Forests Administration experienced a continuing decline within the Ministry of Agriculture. Promulgation of numerous and often conflicting laws since 1971 has had the effect of transferring forestry authority from the central government to regional and local governments. As a consequence of the Regionalisation Act of 1981, the forestry sector was decentralised and the Regional Directors of Forestry were made responsible to Regional Governors through the Regional Director Generals of Agriculture. The administration of forestry research was transferred to the Agricultural Research Corporation (ARC) in the Ministry of Agriculture. Forestry education and training administered by the College of Forestry was put under the Ministry of Education (Anon, 1987). Forestry

suffered a severe professional status blow through its subordination to the Agricultural Administration.

As a result of these changes, forestry research became increasingly removed from the field situation and had no connection with dissemination activities in the Forests Administration. Similarly, because the technical foresters were trained under a wider umbrella organisation, the curriculum became remote from the needs of the field, and did not relate to the changing needs of the Forest Service (World Bank, 1985).

Although regionalisation led to devolution of responsibility, it did not lead to increased funds to the regions, and thus, resulted in the mining of forest resources to generate funds locally. The funds generated in this way were directed to the Ministry of Finance and were not reallocated to the Forests Administration either nationally or regionally (World Bank, 1985). Low budget allocations contributed much to the decline of the Forests Administration: development funds allocated to forestry did not exceed 1% of the total development budget despite the fact that forestry contributes 7% of the GNP and 16% of the agricultural sector (Anon, 1987).

By 1973, about 23% of the professionals and technicians in the Forests Administration had left for more rewarding employment elsewhere and the "brain drain" of forestry graduates continues to this day. Overall, forestry institutions have become severely hampered by critical shortages of manpower and funds (Anon, 1987). All these factors have combined to form a highly demoralized Forest Service.

During the late 1970s and early 1980s most of the reforestation activities were funded by about 26 international bilateral donors and NGOs. The Forests Administration, while expected to give technical assistance to these donors, exercised little of its own control and coordination over these initiatives. Forestry extension was virtually ignored and led to insufficient support for private forestry (Anon, 1987). This situation of rapid deforestation, low Forest Service morale and inadequate budgets led to a complete reorientation of both the Forests Administration and donor policy.

THE TRANSITION TOWARDS SOCIAL FORESTRY

Prior to 1985, the Forests Administration had attempted to introduce local involvement in forestry through 'taungya' systems in its forest reserves. Open areas in reserved forests, away from rivers, were planted by farmers with *Acacia senegal* (hashab). The farmers entered into three year contracts with the Forests Administration which granted the farmer access to reserve forests for a period of two years to plant sorghum. In the third year the farmer was obliged to plant both sorghum and hashab seeds and then relinquish the land after the third year once he had harvested his crop. As land became increasingly scarce, the number of farmers participating in the scheme increased beyond control. At the same time the price of sorghum improved and so less hashab was planted and farmers were reluctant to leave the land at the end of the three year period. Rapidly large areas of reserve forests were turned over to mechanized agriculture.

The experience of the Forests Administration with the 'taungya' system had many negative consequences, not least the increase of suspicion within the forestry profession towards schemes which involved local participation. However, more recent trials of taungya systems for small farmers are under way and it is hoped that these will have a better chance of success.

Until the mid-1980s the majority of forestry projects in the Sudan were primarily concerned with reforestation (Tapp, 1984). Many of these forestry projects had no extension systems and would often not inform the local population of activities being conducted on their land. This resulted in one case in the Qala Nahal area of Kassala Province of a project tractor driver being forced off the land at gun point by local people.

Even when projects had some extension services they were of limited success. The United Nations Sahelian Organisation (UNSO) supported gum restocking project produced large numbers of seedlings at Forests Administration nurseries, but few were successfully planted or survived the necessary 5-6 years for gum production (Gamser, 1987). Key problems identified were those of uncontrolled animal browsing, poor planting techniques and failure to protect the seedlings in the following years.

However, these were all symptoms and not the cause. The real issue was the lack of communication between forester and farmer - 'the foresters spent the bulk of their time in and around their central nurseries, caring for seedlings, while farmers spent most of their time in their villages'. Brief interaction occurred between the forester and the farmer during village and farm selection, and seedling delivery, but only limited field visits occurred both before and, more importantly, after tree planting had begun.

This UNSO project, in spite of its reputation, was not a 'community' forestry project, it was largely a tree propagation endeavour carried out within centralized forestry facilities. It involved the local population only at a very late stage of project development. The experience of the gum restocking project of low community participation and limited effectiveness of outplanting with farmers was also experienced by other donor projects in the Sudan.

IMPETUS FOR CHANGE: DROUGHT AND ELECTION

The catastrophic drought of 1984/85 led to the eventual overthrow of the military regime and to the democratic election of the government in the April uprising of 1985. In the wake of this drought worldwide attention was focussed on the problems of Sudan: deforestation was singled out as one of the major problems that must be overcome if such droughts are to be withstood in the future. Donors increased funding to the Forestry Sector and pressure was exerted on the Forests Administration for change.

The history of low levels of local participation, poor motivation within the Forests Administration, and a lack of an effective extension service led to the complete reorientation of the Forests Administration following the April uprising. It was obvious that the Forest Service alone could not reforest and manage sufficient land to provide for the needs of the Sudanese people for forest products, and so local people had to be closely involved in any future forestry programme. To do this however, changes in the forest law and in its implementation had to be made. In its form the forest law acted as a hindrance to tree planting by forbidding the cutting of any tree,

either on private or on public land, without the prior consent of the Forests Administration.

A review of the forestry sector was carried out by a five man forestry committee. The suggestions for reformation which emerged from this committee were directed to two aspects - the law and the structure of the Forests Administration. The committee recommended a centralized structure for the Administration, and the recommendation was implemented during 1985. It also recommended that the Administration be restructured into a Forests National Corporation (FNC).

The Law amendments included the following:

'... essential amendments to the Forest Bill include clarification of the individuals right to plant his land, or villagers theirs, to legally own trees and to fell and secure profits from them without interference by the FNC.

Also vital is a clause empowering the FNC to raise royalties and fees on all except privately owned trees' (FAO, 1989).

To ensure that the Corporation has authority and control over its own future, the Ministry of Finance and Economic Planning has agreed to permit the Forests National Corporation to retain income from the sale of trees and to return to them a portion of the surplus. However, it is still unstated how large that portion will be or how the profit will be calculated.

Another important recommendation refers to forest classification. Previously there were two types of classified forest, the Central and Provincial. A third category of "Others" has been created, which includes other government department forests (e.g. Department of Energy), community forests and personal forests. The Central forests continue to be for the supply of firewood and charcoal to Khartoum, the Northern Region and Red Sea province; the Provincial forests for the provision of local needs.

In 1982, the World Bank was invited by the government of the Sudan to undertake an assessment of the Forestry Sector. The assessment was started in 1984 by a multi-donor team led by the World Bank, and by a local Sudanese team. The recommendations made by the five man forestry

committee in 1985 were incorporated into the plan of action proposed by the World Bank.

As a result of this review the World Bank and other donors are to provide US\$ 58 million over 7½ years to strengthen key function of the Forests National Corporation (FNC), such as planning, management, marketing, financial systems and career development. A large extension component accounts for 25% of baseline costs with extension training provided for all Forest Service staff.

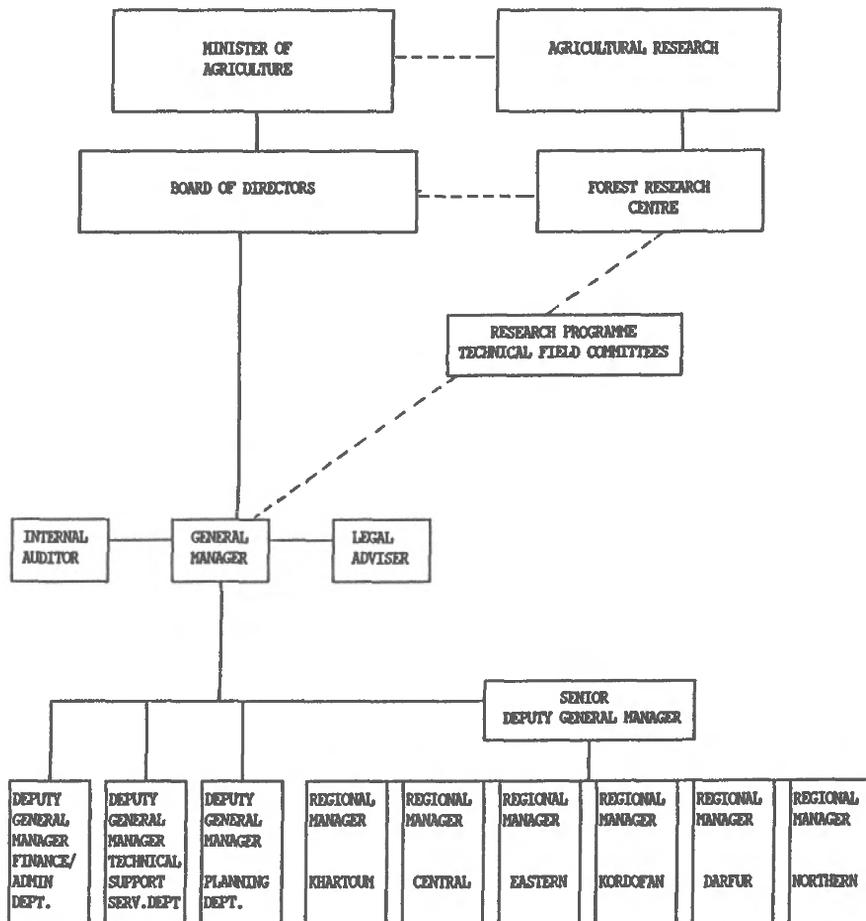
The current Forests Administration is to be restructured following the passing of the FNC Act to form a centralized Forest Corporation with authority devolved to Regional Managers (Table 1). The Forest Corporation will be officially designated a service corporation. However, it will combine the duties of a forest authority with the role of an executing agency. As a forest authority it will be responsible for law making, policy planning and training. As an executing agency it will plant and sell trees (at replacement cost) and be responsible for the collection of royalties from public land and revenue from forest reserves. While officially designated a service corporation - its commercial activities will be profit oriented.

The components of service activities such as extension will be reviewed on the basis of cost effectiveness. It is suggested that overall, the creation of a Forest Corporation would enable the forestry sector to have better control of its revenue and staff, and hence a more effective administration of the Forestry Sector (Anon, 1987).

There is however, a potential conflict of interest between the service and profit sectors of the Corporation that could impair the long-term environmental policy issues of the Sudan. If, for example, the profit sector prefers to emphasize irrigated plantations at the expense of managing the dryland forest, the long-term environmental consequences could be severe (Ball, 1988). The creation of the Forest Corporation will not be a panacea for all the issues facing the Forests Administration at this time.

A report carried out by FAO in 1989 estimates that 14 million ha of forest reserve are required to be developed over the next 15 years to sustain national consumption. The World Bank proposal is relatively modest

TABLE 1

PROPOSED STRUCTURE FOR THE FORESTS NATIONAL CORPORATION

From: FAO - Rome, 1989

compared with the demand, and only makes provision for 3.1 million ha over 15 years, or 6 million ha if the extension systems are effective.

The FAO report outlines a system whereby half the reserved forests would be managed by the FNC and the other half would be private, commercial, institutional or provincial forests, managed under the extension programme. At the time that the World Bank was commencing its pre-project studies the National Forestry Extension Service under the auspices of the FAO project 'Fuelwood Development for Energy in the Sudan' started operation. The creation of the Forestry Extension Unit was seen to be one way of raising morale within the forest service by giving it an alternative approach with which to work (Ball, 1988).

THE NATIONAL EXTENSION SERVICE: PAST, PRESENT AND FUTURE

In the early 1980s several projects had begun tentative experiments with extension systems. These efforts were consolidated in 1984 with the introduction of the FAO project 'Fuelwood Development for Energy in the Sudan' (FDES).

Under FDES the extension service was to be composed of both Forests Administration staff and staff particular to extension at the Range and Circle levels. However, such a plan would have been very difficult to implement due to the large number of staff required. The proposal was reviewed and it was decided to create two separate systems of staff within the Forest Services. Though preferable, combining the role of guard and extensionist is not an easy task.

In 1986 the FDES extension proposal called for the formation of a national extension service within the Forests Administration, to increase the training in extension and to enhance community involvement in the management of reserved forests. An implementation plan for extension was prepared to include the following strategies (Ouerfell, 1988):

1. Reach the grassroots in terms of political suppliers and of actual users.
2. To provide economic benefits to landless, nomads and disadvantaged.
3. Increase forest awareness among the population.
4. Use existing government institutions, organisations and staff. Promote NGO coordination.
5. Strengthen existing and future forestry staff to carry out extension through in service training, and training at the Forest Institute, Soba and University of Khartoum.
6. Concentration on pilot/model villages and area.

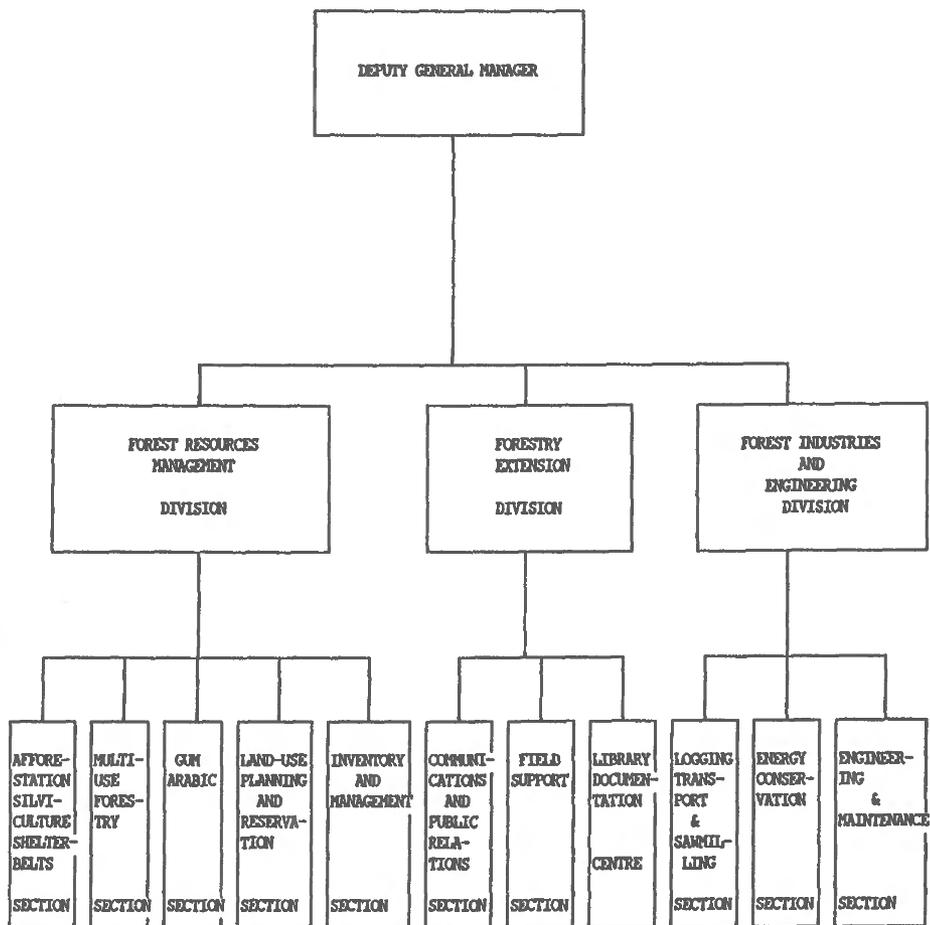
It was thought that it would be possible to implement parts of the extension plan through the Ministry of Agriculture extension office. However, due to conflicts within the Agricultural Extension Service this has not been possible. The Extension Division is now solely within the Forests Administration (Table 2).

The extension division is divided into two sections: communications and field support. A third documentation and library section is to be added under the forthcoming World Bank finance. The communication section deals with the national campaign media of radio, press, video, slides and publications. The field extension section is responsible for training, monitoring and the regional extension offices (Table 3).

The Regional Extension offices are responsible for coordination with other NGOs working in forestry extension. This coordination involves the allocation of areas and activities within each project, in an attempt to reduce duplications of interventions. Discussions are also held to try and draw together the approaches of the various agencies.

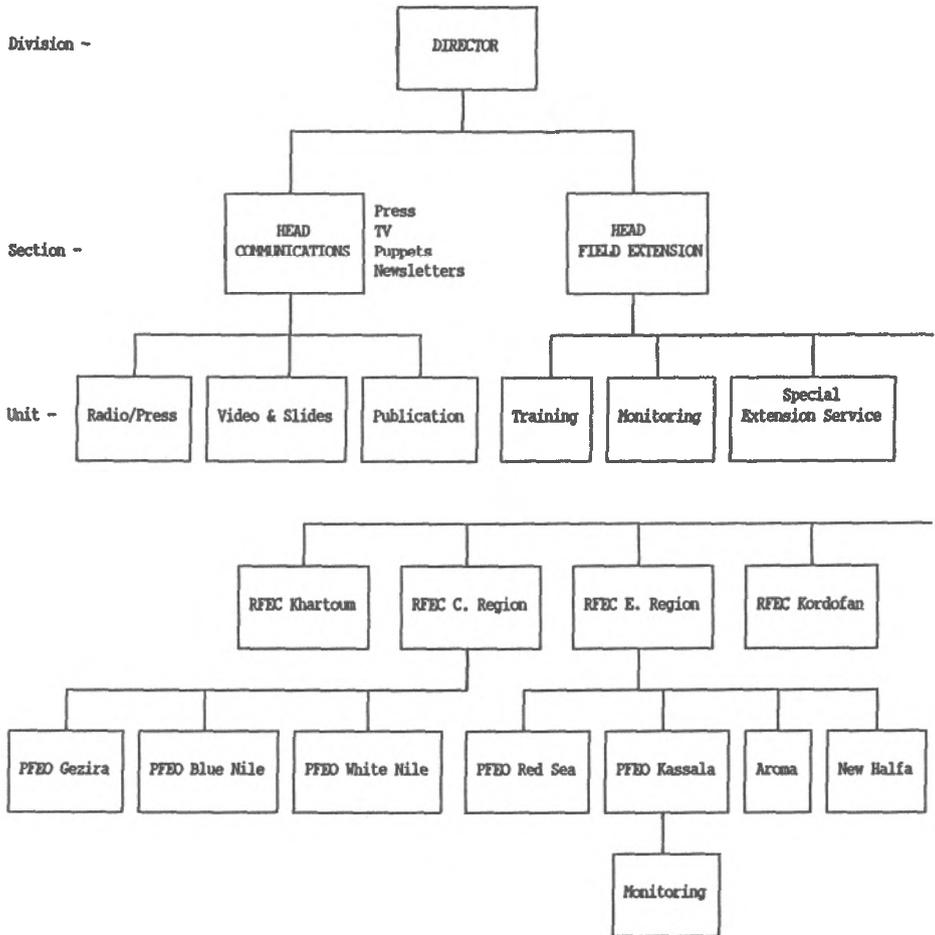
All forest personnel are to receive training in forestry extension and the training programme has a practical emphasis whereby 'training the trainers' a wider number of participants can be reached. The conflict between the role of the forester as a guard and his new role as extensionist will be one of the central concerns of the training programmes. However, the type of extension methodologies to be used by the foresters must be adaptive to the needs of the farmers. The findings of CARE's attitude survey (July 1986)

TABLE 2

TECHNICAL SUPPORT SERVICES DEPARTMENT

From: FAO - Rome, 1989

TABLE 3

CURRENT STRUCTURE OF FORESTRY EXTENSION DIVISION

From: OUERFELLI, 1987

and of a report by Kuchelmeister (Sept. 1988) indicate that farmers are fully aware of the benefits of trees, and the causes of desertification which have tended to be the central messages of the extension programme to date. This general level of environmental awareness suggests that awareness creation is not the form of extension that is required, it is now time for action oriented demonstrations and specific technical advice (Dafaalla & Holding, 1988).

Over the four year period in which the Extension Service has been developed, several lessons have been learnt which should now be incorporated into any future planning. It has been found that projects which promote tree-planting alone meet with little success; forestry extensionists need to be aware of the wider context of the agricultural system in which they work (Dafaalla & Holding, 1988). In preparation for the final evaluation of the Eastern Refugee Reforestation Project (ERRP) CARE staff wrote a report of their observations during the project life. The report highlighted the problems faced by staff involved, in forestry extension:

"An outreach program dealing only with trees in isolation from many other factors affecting rural life, tend to be viewed by small farmers as marginal to their needs." (Clausi & Holding, February 1988)

These views have been reiterated by other projects demonstrating the importance of having a full understanding of the people's needs and access to forestry resources, along with the realisation that trees are not necessarily the first priority of farmers.

It is important to retain a flexibility of approach when devising extension programmes, so that the extension agent is not constrained by rules which may be applicable to one village but not to another. The quality of community forests and woodlots varies considerably from area to area. Predictably in flood irrigated areas where growth and returns are more immediate, the woodlots are meeting with greater success. In 1987 in Kassala the Extension Service started with five irrigated woodlots of 3½ ha each, in 1988 six woodlots were created totalling about 40 ha. These woodlots are organized to ensure that there is communal planting to include all those who wish to participate. Each family head who participates in the

programme is allocated a certain number of trees. The family head is responsible for the maintenance and harvesting of the woodlots and also for financial contributions to the guard and irrigator (Shami & Osheik, 1988). Similar woodlot trials established under rainfed conditions have not met with such success. There are a different series of extension problems, among which are the need to fence and protect the trees against grazing animals.

From experiences in Eastern Sudan, it has been found that village tree planting activities should be started on a small scale; some woodlots may be as small as a fifth of a hectare. However, the demonstration effect of a successful woodlot, of whatever size, is great and encourages other villagers to participate in the programme. In many cases more ambitious trials have failed and have had a negative impact in the locality of the trial.

All the experiences of projects demonstrate the need for field-level research which must be carried out to ensure a successful and responsive extension programme. Currently, there are no agroforestry interventions which are applicable to farmers in rainfed areas. In a review carried out by Kuchelmeister of 20 systems under trial in the Sudan of which 13 were on irrigated land, he found that knowledge of farm forestry in the Sudan is limited, because very little systematic research has been done and validated in the field. He recommends that forestry extension staff and students should be trained through action research oriented workshops, and be encouraged to initiate simple informal trials with farmers.

Field-level extension activities can be divided into two different types of forestry intervention: one relating to private tree planting, and the other relating to management of existing forest resources. The FDES have been preparing an integrated forest management plan for Rawashda and Wad Kabo forests reserves in the Eastern Region which involves the local people in taungya activities and also in the protection of the forests against illegal wood cutters. Much has been learnt from this process of local management, not least that the people should be involved in the whole decision making process. This was demonstrated in 1987 when the management coupe was halted when the villages around Rawashda officially complained to the Governor of the Region about the project sending staff to cut the trees (Vink, 1989).

Forestry extension agents meet their greatest difficulties when trying to involve women in tree-planting schemes. Many projects are now involved in encouraging women to participate in forestry. The CARE Eastern Refugee Reforestation Project has found that the most effective way of drawing women into their forestry programme is through the Adult Education Service, which traditionally provides nutrition, sewing and literacy classes for women in rural areas. The Department has trained adult educators, but it lacks adequate resources with which to encourage women to plant trees.

CARE supplied the needed materials and gave additional training to the female extensionists in women's crops, tree production and maintenance. Women who have become involved in the project have established nurseries in their homes, grown trees for their compounds and sold surplus trees to neighbouring villages.

It is important for the Extension Service to be able to offer a variety of skills and training to the women that will fulfil their diverse needs. Women have many priorities which must be met before they can direct their attention to tree-planting. The experiences of the ERRP in Gedaref District highlight this:

'If the ultimate objective is to plant trees, and the program doesn't first meet people's other needs, the trees won't be planted anyway. This same assumption was also articulated by the Director of Extension for the Forestry Administration as an appropriate forestry extension activity ... This project has demonstrated that separate extension strategies are necessary for men and women in Gedaref District. It also demonstrated that an extension programme must be oriented towards the recipients needs and priorities, even if that extends beyond the scope of trees. It was difficult to work with women with a tree agenda, when they had concerns which were of higher priority' (ERRP, Final Evaluation).

The extension programme is still in its initial stages of formulation and as such, there are many issues that must be resolved arising out of past experience before the programme can become fully effective. Amongst the most important are:

I. Donor coordination

Donor activities should be incorporated into government programmes and be guided by government plans and priorities. Due to a lack of clear government priorities, much of the current programming relies on donor coordination. This is not an appropriate way to proceed. When coordination does not occur one may find in the same rural council one project promoting tree planting through food for work, and another through participatory extension techniques. Clear government guidance is required.

The large number of differing approaches within the forestry extension sector, is not a problem in itself, however the lack of evaluation of those approaches is. A greater analysis of methods used and sharing of experiences would facilitate the development of the extension service.

II. Time frame of projects

A longer time frame is needed for forestry projects. The current time span of five years is sufficient only to establish demonstrations. Little effective extension can be carried out in such a short time frame.

III. Monitoring of extension activities

To confirm the role of extension in afforestation activities in the Sudan, greater efforts are required to monitor and quantify extension results. Those of us working in extension can see the results of our efforts in the changing attitudes of people, the greater involvement of people in forestry activities and the increased planting and protection activities in the villages. What we need now is to come up with the numbers to prove it.

IV. The development of a clear land use policy in the Sudan

This issue is now being addressed under the World Bank Forestry Conservation Project.

V. Clarification is needed not only of the role of the Forests Administration, but of all government departments involved in rural development.

Even if all these issues are resolved, the actual effectiveness of the extension systems and the measurement of their success is still to be evaluated. Both CARE and FDES have had problems in monitoring and evaluating their extension activities. It has been relatively straightforward to count numbers of trees distributed, the configurations of plantings and the survival. However, it has been more difficult to assess the effectiveness

of the extension service in terms of the time spent and the cost involved in promoting tree planting activities at village level. These issues are to be addressed by a joint monitoring and evaluation project between CARE and FAO.

There are several major constraints to the implementation of an effective extension system, as have been outlined above. However, the history of forestry in the Sudan indicates the importance of involving local people in the management of resources that they use. It has also shown the key role that the forest service must play in any extension system and the importance of appropriate field-level training programmes. Tree planting should be addressed within the context of the whole farming system, and not viewed as a sectoral activity remote from other aspects of the agricultural system.

The history of the Sudan forestry sector demonstrates the problems of reorienting a service which has been built up to act as the guardians of the forests, to a service which is to devolve responsibility to the local people for the protection and maintenance of the forests. The conflicts engendered by such a change will need time to be resolved both within the forestry service and also at the local level. It is to this future that donor agencies are working in Sudan with the formation of an effective extension system.

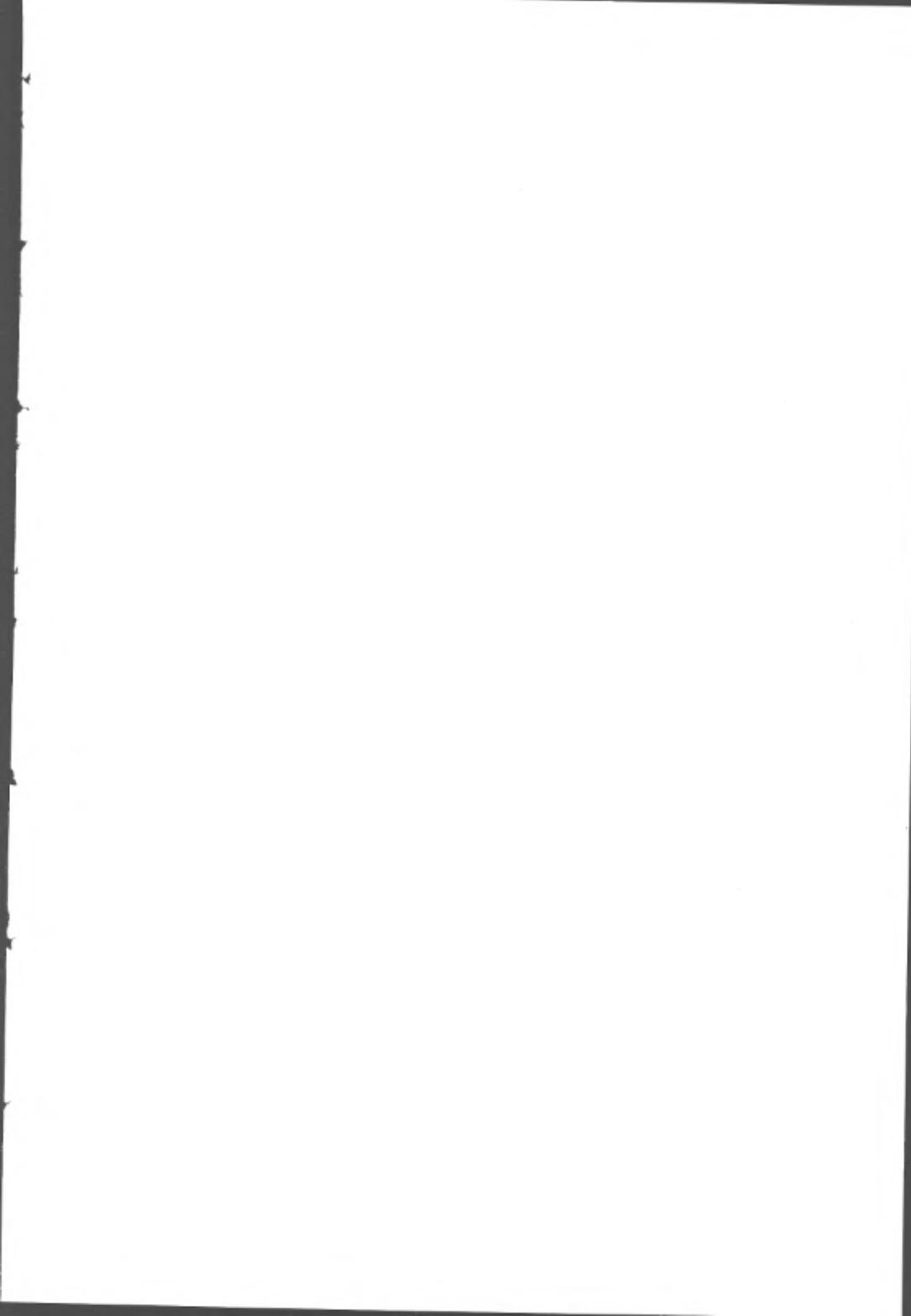
REFERENCES

-
- ANON, 1987, Sudan Restructuring of the Forestry Administration. Report of the forestry team on restructuring of forestry administration in the Sudan, Khartoum.
- ANON, 1988, The Forests Bill 1988 Explanatory Note.
- BALL, Jim, March 1988 and February 1989, Personal communications.
- CLAUSI, Robert and HOLDING, Christine, May 1988, Final Evaluation Report on CARE - Eastern Refugee Reforestation Project, USAID.
- DAFAALLA, Mohamed DafaAlla, and HOLDING, Christine, 1986-1988, CARE-Monthly extension reports. Eastern Refugee Reforestation Project.
- FAO, May 1988, Manpower Assessment of National Forest Corporation. Human Resource Development Survey. Revenue Collection. Organisation and Structure. Sudan National Forest Corporation. Reports by FAO under Pre-project Activities of Forestry Project UTF/SUD/043/SUD.
- FAO Rome, 1989, A consolidated overview of the Sudan Forests National Corporation. Draft of Final Version, UTF/SUD/043/SUD.
- GAMSER, M S, 1987, Letting the Piper Call the Tune: Experimenting with different Forestry Extension Methods in the Northern Sudan. ODI Social Forestry Network Paper 4a.
- HOLDING, Christine, and DAFAALLA, Mohamed, July 1988, Summary of findings from end-of-project attitude survey. CARE - Eastern Refugee Reforestation Project.
- KUCHELMEISTER, G, 1988, Report on the consultancy in the development of a forestry program for farmers. FDES Phase II, GCP/SUD/033/NET.
- OUERFELLI, M, 1988, Report on extension activities 1987, and Plan for Extension Activities 1988, Forestry Extension Section, Forest Administration, FAO - Khartoum, GCP/SUD/033/NET.

- SEIF EL DIN, A G, 1986, Integrated Land Use in Forest Reserves in Eastern Region: Global Diagnosis and the involvement of the people. FAO FDES GCD/SUD/033/NET, Field Document N° 11.
- SHAMI, Saeed, and OSHEIK, Aisha Adam Sidi, 1988, Regional Extension Reports 1985 - 1988, Regional Forest Extension Office - Kassala.
- TAPP, Charles, 1984, Review of Forestry Projects in Sudan, Khartoum. Agricultural Research Council/USAID.
- VINK, A T, (ed), 1986, Proceedings of consultative seminar on integrated forest management, with special reference to Rawashda and Wad Kabo forest reserves, Eastern Region.
- VINK, A, 1989, Report on 1987 coupe.
- WORLD BANK, 1986, Sudan: Forestry Sector Review, Report N° 5911 - SU.

ACKNOWLEDGMENTS

The authors would like to express their gratitude particularly to Jim Ball, Project Manager FAO/FDES, for his support and comments during the development of this paper. We would also like to thank Syd. Kamal Osman Khalifa, the Director General of the Forests Administration for his review of this document. The document is published with the knowledge of the Forests Administration of the Government of Sudan. The opinions expressed, however, are those of the authors, and do not necessarily reflect those of the Forests Administration, FAO or CARE.





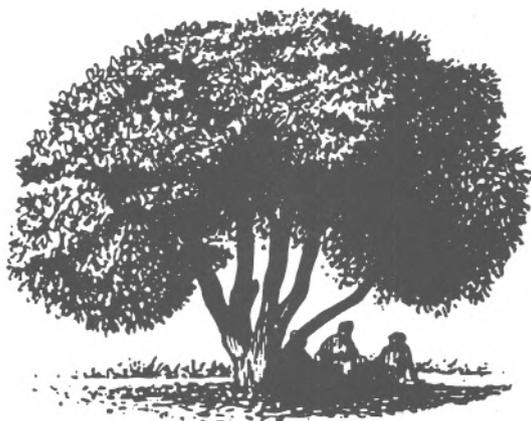
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SOCIAL FORESTRY NETWORK



Newsletter

**Agricultural Administration Unit,
Overseas Development Institute**

The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these has between 600-1500 members, drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on these networks is available from the Administrative Secretary of the Agricultural Administration Unit. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

ISSN 0951-1849

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CENTREFOLD

Reminder to fill in form for new REGISTER
RE-REGISTRATION FORM FOR NEW 1989 REGISTER

NETWORK PAPERS ACCOMPANYING THIS NEWSLETTER

The theme of the Network papers in this Summer mailing is Agroforestry from the farmers' point of view. Gill Shepherd's paper reports on recent work to investigate agroforestry decision-making as farming-systems intensify in the Embu-Meru area of Kenya; Meiggs' paper gives us insights into farm forestry practices in the early Mediterranean; and Rackham's paper, based on formidable historical botanical research, gives us fascinating insights into the management of hedgerows in Britain over the centuries. Both the latter papers are drawn from works to which most Network members would be unlikely ever to have access, and we are especially grateful to the authors for permission to use their work in this way.

- 8a 'Putting Trees into the Farming System: Land Adjudication and Agroforestry on the lower slopes of Mount Kenya'
by Gill SHEPHERD
- 8b 'Farm Forestry in the Ancient Mediterranean'
by Russell MEIGGS
- 8c 'Hedges and Hedgerow Trees in Britain: A Thousand Years of Agroforestry'
by Oliver RACKHAM

NEWS OF THE SOCIAL FORESTRY NETWORK

Field Research

Gill Shepherd spent the whole of January 1989 in Karnataka, as one of a four person team, undertaking the final evaluation of Phase II of the Karnataka Social Forestry Project, funded by ODA and The World Bank. A major report has been produced in conjunction with J.E.M. Arnold, P. Howland and P.J. Robinson.

In March 1989, Gill Shepherd spent a week in Shendi, North Sudan, assessing the utility of the Evaluation Report, written by Sudanese Consultants, of the SOS Sahel International Village Extension Project, and modifying and amplifying sections of it with the agreement of the consultants.

In June 1989, Gill Shepherd undertook an Evaluation Mission to Tanzania for the Institut für Internationale Zusammenarbeit (IIZ)-Vienna, Austria, of the Caritas 'Village Afforestation Project in Mwanza', a contribution to forestry extension in Tanzania.

International Conference on Agroforestry: Principles and Practice

24-29 July 1989, University of Edinburgh

A full report on this important conference will appear in Newsletter 9.

NETWORK ANNOUNCEMENTS

THE REGISTER

IN THE AUTUMN MAILING WE WILL BE ISSUING A NEW REGISTER. IT IS ESSENTIAL THAT ALL NETWORK MEMBERS COMPLETE THE FORM WHICH WAS INSERTED IN THE CENTRE OF NEWSLETTER N°7, AND WHICH YOU CAN FIND AGAIN IN THE CENTRE OF THIS NEWSLETTER, IF YOU WANT TO REMAIN ON THE NETWORK. ONLY MEMBERS WHO COMPLETED AN APPLICATION FORM IN 1989 DO NOT NEED TO FILL OUT THE FORM.

ODI/AAU Inter Network Paper Series

The Use of Micro Computers for Project Planning, Monitoring and Evaluation, by Gale MENDELSSOHN

The Agricultural Administration Unit has introduced a new series of papers the content of which are of common interest to all four Networks. These papers will be mailed to those Networkers who express an interest in the particular subject of the paper. The first paper of this series is written by Gale Mendelissohn and reviews her experience of using micro computers for project planning, monitoring and evaluation in the Commonwealth of Dominica. Copies of the paper are available on request from ODI.

Call for papers on Indigenous Knowledge of Tree Management

The Centre for Indigenous Knowledge for Agriculture and Rural Development (CIKARD) seeks publications and other documents for a comprehensive bibliography on the use of indigenous technical knowledge for private tree management.

The bibliography will focus on traditional management practices of trees, shrubs or other woody plants by individuals, their families or kin groups. Management includes planning, selection, propagation, growing, maintenance, protection, production, harvesting and conservation. We are also interested in materials on indigenous intercropping and spatial management practices, and knowledge of ecological interrelationships of trees, crops and the soil. 'Grey literature' such as conference papers, research results, special reports are of particular interest.

The bibliography will be compiled in cooperation with FAO. Please send any information to:

Olivia Muchena
CIKARD
Iowa State University
318 Curtiss
Ames, IA 50011
USA

NETWORK ANNOUNCEMENTS

GRET - Technological Research and Exchange Group

GRET is a non-profit making organisation working on some 40 development projects throughout the world. It initiates technical innovation and provides support on request to projects and institutions. GRET works through specialized teams which include agriculture, farm product processing, housing and construction, small enterprise support and renewable energy teams. It has a major dissemination function and produces audio-visual material, technical books and several periodicals; it also maintains a large documentation centre which is open to the public.

For further details please contact:

GRET
Groupe de Recherche et d'Echanges Technologiques
313 rue Lafayette
75010 Paris
FRANCE

Osborn Center Forestry Policy Grants

The Osborn Center for Economic Development, a joint programme of World Wildlife Fund and The Conservation Foundation, announces a grants program to support policy research and dialogue on key issues concerning the management, utilisation and control of forest resources in developing countries. Grants will range from US\$ 5000 and up and will be awarded to nationals of developing countries for the preparation of policy studies of practical value to decision makers from governmental organisations and NGOs concerned with equitable and sustainable management of tropical forest resources. Grants will also be given to support policy-making processes such as the creation of effective channels for disseminating research findings and sharing information to stimulate further work.

The programme is open to foresters, planners, social scientists, and other scholars and practitioners from developing countries in Asia, Africa and Latin America. Grantees may conduct work in conjunction with host-country organisations such as universities, NGOs, research institutes, or government agencies. Formal guidelines for grant applications are available. However, interested applicants should send a preliminary letter of inquiry describing their proposed work before preparing a formal application.

Correspondence should be directed to:

Matthew Perl
Osborn Center Forestry Policy Grants
World Wildlife Fund/The Conservation Foundation
1250 24th Street NW
Washington, DC 20037
USA

NETWORK CORRESPONDENCE

Letter from Martin Adams in response to Network Paper 7c

Dear Social Forestry Networkers,

I feel sufficiently uneasy about the paper on the proposed national forestry extension service in Sudan (Network Paper 7c, 1988) to voice some of my worries.

The paper raises some important issues, but fails to grapple with them: e.g. the balance of authority between central, regional, district and village in matters of resource management and use in different parts of Sudan; the potential conflict between revenue collection and extension functions of the new Forests Corporation; problems of donor coordination. The paper ends with a number of cliches about the need to involve local people in the management of resources (when the problem lies not with local people's involvement, but with piecemeal and ill-considered attempts at involvement by government responding to ephemeral donor policies, e.g. 'anti-desertification' and, more recently, fuel and energy pricing policies to arrest deforestation - yet another burden for the urban poor - poorer than the rural poor).

The paper fails to provide an adequate justification for a separate national forestry extension service to advise and assist farmers with tree production, nor does it adequately explain what the extension service would do or give any idea of its density of coverage or its likely cost.

The authors make the connection between the widespread depletion of tree cover, caused by mechanised farming, illegal charcoal burning, overgrazing and drought (mostly in eastern Sudan) and the need for a national forestry extension service. It would be equally absurd to justify an agricultural extension service on the grounds of urban encroachment, larceny and hurricanes, etc. (rather than on the grounds that farmers were facing technical problems of crop production and marketing which they were unable to solve unaided).

NETWORK CORRESPONDENCE

The linkage made between deforestation and the need for an extension service would seem to imply that the semi-desert and low woodland savanna, which covers two thirds of Sudan or approximately 600,000 square miles, would receive priority, rather than the irrigated areas. It is in the vast rainfed areas that the provision of useful advice to farmers on growing trees is going to be most expensive for logistic reasons and probably least necessary. Stock-keepers and cultivators already have a profound knowledge of savanna ecology as well as the establishment techniques and economic value of a multitude of indigenous tree species. Whether or not farmers choose to plant and tend trees on their own or common land will depend on the availability of land and their rights to forest produce on the extensive areas of common land beyond.

This is not to deny that technical advice and assistance may be welcomed by farmers in the immediate confines of the Nile Valley north of Khartoum or in the irrigation schemes along the Blue and White Nile and on the River Atbara.

With the severe constraints on the government budget, proposals for forestry extension, need to be formulated in terms (geographical and technical) which are most likely to be effective and which Sudan can afford. The proposed multi-donor support (IDA, Danida, Norad, ODA, etc.) to the Forests National Corporation (although not yet finally agreed) could prove another milestone. I am concerned about the existing proliferation of donor financed tree-planting projects in eastern and western Sudan, particularly those being implemented by UNSO. These projects, 'to control desertification', are supply rather than demand-driven and based on the assumption that, if farmers are supplied with seedlings (mostly *Acacia senegal* - gum arabic) from a nursery, they will plant and maintain them. The authors rightly question the lack of monitoring of seedling establishment and survival and the narrow sectoral nature of the UNSO and other gum-belt restocking projects. They observe (quoting Kuchelmeister) 'that farmers are fully aware of the benefits of trees, and the causes of desertification which have tended to be the central messages of the extension programme to date' and that 'awareness creation is not the form

NETWORK CORRESPONDENCE

of extension required'. They emphasize that 'action-oriented demonstrations and specific technical advice' are now needed.

However, following a month's intensive field investigation in En Nahud District (the heart of the so-called gum belt) of N.Kordofan earlier this year (a follow-up to several previous visits extending over longer periods), I reconfirmed that rural people have a good understanding of the ecology of *A. senegal*, its husbandry and its economic value, whether as a source of income or employment and that technical advice and demonstrations promulgated by the forestry authorities with donor finance were generally inappropriate and unnecessary. The early government research work on *A. senegal* was largely overlooked.

Let me say that I have the greatest respect for the long and honourable tradition of the Sudan Forest Service and for the devotion and professional competence of their staff. I do feel, however, that they are allowing themselves to be led by the nose in return for desperately needed operating funds. Progress in research, agroforestry, reforestation, tenurial controls, etc. will be dependent on progress being made in other sectors, not least in the field of local government and public security. In current circumstances, a major investment in a Forests National Corporation is unlikely to pay off. More strategic interventions in east-central Sudan and the Nile valley downstream of Khartoum would be more appropriate.

Yours sincerely,

Martin Adams

If networkers have comments to make in response to Martin Adams' letter, or would like to raise more general issues about the role of extension, the extent to which donors lead Forestry Departments by the nose, or other issues we would be delighted to hear from them.

LUNCHTIME MEETINGS

Social Forestry Network

- 19 May 1989 Re-training Indian Forest Officers for Social Forestry
Dr. L.M. SANTHANAM, Deputy Director - Psychology,
National Institute of Rural Development in Hyderabad,
India
- 6 June 1989 The Impact of Rural Capital and Labour Availability on
Smallholder Tree Growing in Kenya
Peter A. DEWEES, Oxford Forestry Institute, University
of Oxford

AAU Joint Network Seminars

- 25 April 1989 The World Bank and Rural Poverty in India
Dr. Roger SLADE, South Asia Division, World Bank
- 6 July 1989 Grassroots Participation and District or State
Planning experience from Kwara State, Nigeria
Dr. Oluwayome David ATTE, Senior Lecturer, University
of Ilorin, Nigeria

Irrigation Management Network

- 11 January 1989 Irrigation Charges in the Barind Integrated Area
Development Project: A New Approach
M. ASADUZZAMAN, Bangladesh Agricultural
Development Corporation
- 9 June 1989 Improvement of Operation in Nong Wai Pioneer
Agriculture Project, Thailand
G.N. KATHPALIA, Team Leader, Technical Assistance
Project to Improve Water Management in Nong Wai,
Thailand
- 14 July 1989 Performance evaluation of irrigation tanks in South
India
Dr. K Palanisami

REPORTS ON RECENT LUNCHTIME MEETINGS

Re-Training Indian Forest Officers for Social Forestry**held on 19 May 1989**

Dr. Santhanam from the National Institute for Rural Development in Hyderabad, India presented a talk on the training programmes used by the Institute for the re-training of mid-career forest officers. The courses focus on the problems of involving local people in forest programmes and provide the foresters with opportunities to learn new communication skills. The programmes are field-based with an emphasis on techniques for understanding people's attitudes, perceptions and reasons for lack of participation in forest programmes. The foundations of the course lie in the statement that 'behind every sapling there is a person'. The week long course has proved to be successful with the foresters who have found the techniques and skills learned to be useful in their work. However, the extreme brevity of the course excludes the foresters from a thorough understanding of the problems of villagers. It is, however, an important beginning in establishing a good rapport between foresters and villagers.

REPORTS ON RECENT LUNCHTIME MEETINGS

The Impact of Rural Capital and Labour Availability on Smallholder Tree Growing in Kenya

held on 6 June 1989

This very interesting talk by Peter Dewees of the Oxford Forestry Institute, provided an unusual and important insight into the forest cover history of Murang'a District in Kenya.

Peter Dewees has been working in this area for several years and has collected information on the changing forest cover from aerial surveys and colonial records. These records demonstrate that woody cover has not decreased over the last 80 years despite encroachment into the forests for agriculture. There has been a decrease in forest cover but an increase in trees on private land. Colonial records indicate how trees have been an important part of the farming system, wattle introduced at the beginning of the century as a cash crop was planted widely throughout the District. The farmers adopted trees as cash crops because they were an easy source of income which did not require large inputs of labour or capital. Farmers, today are reiterating these reasons for planting trees on their land, there is a high level of male out-migration from the District leaving women with the sole responsibility for farming the family lands.

Peter Dewees showed how important it is for planners to understand the dynamics of tree cover: the disappearance of forests does not necessarily lead to the disappearance of trees from the farming system. Indeed, as markets change and expand and demand for wood products increase it is more likely that trees will become a major part of the farm economy.

REPORTS ON RECENT CONFERENCES AND WORKSHOPS

1. Women, Environment and Development

Tuesday, 7 March 1989

The Women's Environmental Network, in conjunction with WAR-ON-WANT, International Institute for Environment and Development, The Black Environment Network, and OXFAM, held its first seminar on Environment and Development in London to discuss the growing concerns felt about environmental issues. The seminar was addressed by a number of notable environmentalists including Vandana Shiva from India and Chee Yoke Ling of Friends of the Earth Malaysia. Both speakers challenged the perceived western complacency towards the environmental problems of the Third World. Their challenges were accepted by the audience and led to fierce discussions as to what could be achieved by concerned individuals. It was an interesting seminar but unfortunately there was insufficient time to discuss the practical difficulties of changing policy both at global and national levels. Although, it is interesting to bring together individuals who share a common concern it was a day where at the end nothing had changed because we were all speaking to the converted.

M Hobley

For further information on this seminar and on the work of the Women's Environmental Network contact:

The Women's Environmental Network
287 City Road
London EC1V 1LA
UK

I M P O R T A N T

HAVE YOU ALREADY FILLED IN
THE NETWORK RE-REGISTRATION FORM
AND RETURNED IT TO THE SOCIAL FORESTRY NETWORK?
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SOCIAL FORESTRY NETWORK - RE-REGISTRATION

PLEASE FILL IN AS CLEARLY AS POSSIBLE and return to:

SOCIAL FORESTRY NETWORK
Overseas Development Institute,
Regent's College,
Regent's Park, Inner Circle,
London NW1 4NS

Tel: 44(1)-487-7413

- 01 SURNAME
- FORENAMES
- DR/MR/MRS/MS etc
- 02 PRESENT POSITION
- 03 ORGANISATION
- 04 DEPARTMENT
- PROJECT
- 05 MAILING ADDRESS
-
-
- 06 COUNTRY
- 07 TELEPHONE
- TELEX / FAX
- 08 COUNTRY IN WHICH YOU WORK
-
- 09 TYPE OF EMPLOYMENT (please tick only one)
- | | | |
|----|---|--------------------------|
| 01 | International or National Aid Agency
(e.g. WHO, UNDP, USAID, SIDA, ODA, etc) | <input type="checkbox"/> |
| 02 | Government Civil Service, Parastatal, | <input type="checkbox"/> |
| 03 | Non-Government Organisation (NGOs,
PVOs, Foundations, etc) | <input type="checkbox"/> |
| 04 | University, College,
Research Institution, etc | <input type="checkbox"/> |
| 05 | Library, Documentation Centre,
Editing, Publishing, | <input type="checkbox"/> |
| 06 | Business - incl. independent consultancy | <input type="checkbox"/> |

10 MAIN DISCIPLINES (not interests)
Please indicate your main disciplines (up to 4)

- | | | | | | |
|--|--------------------------|------------------------------|--------------------------|---------------------------------------|--------------------------|
| 01 Agriculture/
Agronomy | <input type="checkbox"/> | 07 Farming
Systems | <input type="checkbox"/> | 13 Management | <input type="checkbox"/> |
| 02 Agricultural
Economics | <input type="checkbox"/> | 08 Forestry/
Silviculture | <input type="checkbox"/> | 14 Natural
Sciences | <input type="checkbox"/> |
| 03 Economics | <input type="checkbox"/> | 09 Geography | <input type="checkbox"/> | 15 Regional
Planning | <input type="checkbox"/> |
| 04 Education,
Training &
Extension | <input type="checkbox"/> | 10 Horticulture | <input type="checkbox"/> | 16 Social Sciences
(not Economics) | <input type="checkbox"/> |
| 05 Engineering | <input type="checkbox"/> | 11 Journalism | <input type="checkbox"/> | 17 Soil Sciences | <input type="checkbox"/> |
| 06 Environmental
Sciences | <input type="checkbox"/> | 12 Librarianship | <input type="checkbox"/> | 18 Others
(pl. specify) | <input type="checkbox"/> |

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14 INTERESTS BY COUNTRY
Please list the countries about which you are most knowledgeable
(up to 7 in descending order of importance)

- | | |
|--------------|--------------|
| 01 | 05 |
| 02 | 06 |
| 03 | 07 |
| 04 | |

Other ODI Networks in which you are interested (please tick as appropriate)

- | | already a
member | please send
information |
|--------------------------------|--------------------------|----------------------------|
| 21 Agricultural Administration | <input type="checkbox"/> | <input type="checkbox"/> |
| 22 Irrigation Management | <input type="checkbox"/> | <input type="checkbox"/> |
| 23 Pastoral Development | <input type="checkbox"/> | <input type="checkbox"/> |
| 24 Social Forestry | <input type="checkbox"/> | <input type="checkbox"/> |

26 INTERESTS BY SUBJECT within Social Forestry (up to 6)
Please indicate your main areas of knowledge and interest.
(This is to help assess the strength of the Network; you will receive Network papers on all subjects)

- | | | | |
|--------------------------|--------------------------|---|--------------------------|
| 01 Agroforestry | <input type="checkbox"/> | 08 Institutional Management | <input type="checkbox"/> |
| 02 Anti-desertification | <input type="checkbox"/> | 09 Production Aspects:
fuelwood/food/fodder etc. | <input type="checkbox"/> |
| 03 Community Forestry | <input type="checkbox"/> | 10 Project Management | <input type="checkbox"/> |
| 04 Conservation Measures | <input type="checkbox"/> | 11 Rights of Forest Dwellers | <input type="checkbox"/> |
| 05 Energy Issues | <input type="checkbox"/> | 12 Rights for the
Poor, Landless, | <input type="checkbox"/> |
| 06 Farm Forestry | <input type="checkbox"/> | 13 Women and Forestry | <input type="checkbox"/> |
| 07 Forestry Extension | <input type="checkbox"/> | 14 Others (please specify) | <input type="checkbox"/> |
| | | | |

31 LAST TWO MAIN PROFESSIONAL RESPONSIBILITIES
It is often helpful for Network members seeking to consult others to know your recent professional responsibilities. As job titles alone do not give much indication of your duties, please give them here, with similar brief information on your last post. This information will be published in the Register of Members.

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TODAYS DATE: Year Month Day

I have completed the registration form and would like to be a networker

SIGNATURE _____

If you wish to provide any further details on your career or interests, please do so below. This information will not appear in the Register of Members but will be kept on file for reference when considering possible co-operative research programmes.

FOR OFFICE USE ONLY

Checked

Amended

I M P O R T A N T

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IF NOT, PLEASE DO SO NOW

I M P O R T A N T

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IF NOT, PLEASE DO SO NOW

REPORTS ON RECENT CONFERENCES AND WORKSHOPS

**2. Workshop on Agroforestry for Sustainable Development:
Economic Implications****17-21 April 1989, Swaziland**

This week-long Workshop was organized by the Commonwealth Science Council and hosted by the Government of Swaziland at Mbabane. Some 50 participants were present, spanning a range of relevant professional interests, with several research funding agencies also present. The Workshop's main purpose was to put over the main elements of Cost-Benefit Analysis (CBA) as a tool for choosing and appraising Agroforestry (AF) schemes. The core team of instructors were Mike Stocking and Nick Abel of the University of East Anglia, and Jan Bojo from the Stockholm School of Economics. Woven around this central thread, 16 formal presentations were made on case studies, methodological and technical aspects of the subject, and a dozen or so brief research proposals were introduced. There was widespread interest amongst foresters and soil scientists present in a 'user-friendly' version of CBA, which was seen as a useful decision tool which could help promote Agroforestry projects in planning and financial circles.

J Winpenny

For further information on the Workshop Proceedings please contact:

**Dr. Roslyn PRINSLEY
Project Officer
Commonwealth Secretariat
Dept. of Agricultural Sciences
Marlborough House
Pall Mall
London SW1Y 5HX
UK**

Tel: 44(1)-839-3411 Extension 8405

REPORTS ON RECENT CONFERENCES AND WORKSHOPS

3. RRA Workshop

19/20 June 1989, IDS

The two day workshop at IDS, Sussex, attracted 33 participants including representatives from donor agencies, NGOs, consultancy and research organisations. On the first day, participants made presentations concerning the tools and applications of RRA: diagrams, aerial photography, interviewing, ranking, monitoring and evaluation, participatory RRA, health. Individual methods discussed ranged from cartoons to aerial photography and included usage beyond the agricultural sector such as for the study of artisanal systems in Zimbabwe and epidemiological surveys in Tanzania.

Each presentation was followed by discussion and questions. Plenary sessions were used to set the agenda for a series of open discussions which occupied most of the second day. With the rising acceptance of RRA techniques, major concerns were:

1. to avoid simplistic overselling and adoption of an incomplete information-gathering tool kit as some kind of new orthodoxy;
2. to preserve the informality, diversity, flexibility and local adaptability of the techniques as well as to appraise frankly any unsuccessful applications;
3. to recognize that RRA is a deceptively demanding methodological approach and that a correspondingly high level of training is required to practise RRA effectively.

REPORTS ON RECENT CONFERENCES AND WORKSHOPS

The function of RRA itself was also discussed. Some participants considered that it should be seen solely as a means to acquire information, often as a complementary activity to more gradual or formal methods of data collection. Others felt that RRA has an important additional role to play in the development process itself via local institution-building and beneficiary involvement.

Looking to the future, emphasis was placed on the need to maintain and build the credibility of RRA while at the same time ensuring understanding of its appropriate applications. Attention was also drawn to the current predominance of Western development professionals in this field and it was hoped that practitioners from developing countries would become the major users of RRA techniques in the foreseeable future.

G Cromwell

For further information on the RRA Network and for Workshop Proceedings please contact:

Jennifer McCracken
IIED
3 Endsleigh Street
London WC1H 0DD
UK
Tel: 44(1)-388-2117

FORTHCOMING CONFERENCES AND MEETINGS

- September 13-15 1989** International Conference on Forest Statistics
Freiburg, West Germany
Contact: George Z. Gertner
University of Illinois
Department of Forestry
Urbana, IL 61801
USA
- September 18-22 1989** Forest Planning for People
I.F.A Biennial Conference
Blue Mountains, New South Wales
Contact: Mr E Nicholson
I.F.A. Conference Steering Committee
G.P.O.Box 2667
Sidney, N.S.W. 2001, AUSTRALIA
- September 18-29 1989** XIII Commonwealth Forestry Conference
Rotorua, NEW ZEALAND
Contact: XIII Com.For.Conference
231 Corstorphine Road
Edinburgh EH12 7AT
Scotland
UK
- September 24-30 1989** Tropical Forest Products and Economic Development
with special emphasis on Research Needs in Africa
Yamoussoukro, COTE D'IVOIRE
Contact: Ch. Sales
Centre Technique Forestier Tropical
F-94130 Nogent-sur-Marne
FRANCE

FORTHCOMING CONFERENCES AND MEETINGS

- September 24-30, 1989 Global Natural Resource Assessments:
Preparing for the 21st Century
Venice, ITALY
Contact: Dr. H.F. Kaiser
Coordinator Division IV
USDA Forest Service
P.O. BOX 2417
Washington, DC 20013
USA
- September 27-28, 1989 Maraca Rainforest Project Review Conference
London, England
Contact: Dr John Hemming or Ms Fiona Watson
Royal Geographical Society
1 Kensington Gore
London SW7 2AR
UK
Tel: 44(1)-589-5466
- October 3-7, 1989 Environmental Education for Sustainable
Development
GOA
International Society for Environmental
Education
Contact: Dr. Desh Bandhu, President
P.O. BOX 7033
New Delhi 110002
INDIA
- Autumn 1989 Growth Models, Expert Systems and Forest Mgt
Vienna, AUSTRIA
Contact: K. Johann
Forstliche Bundesversuchsanstalt
A-1131 Vienna
AUSTRIA

FORTHCOMING CONFERENCES AND MEETINGS

- October 2-6, 1989 International Congress on Forest Decline Research:
State of Knowledge and Perspectives
Friedrichshafen, FRG
Contact: INTERPLAN
Congress Office
Sophienstrasse 1
D-8000 Munich 2
West Germany
- November 14-18, 1989 Workshop on the Management and Conservation
of the Tropical Moist Forest Ecosystem
Cayenne, FRENCH GUIANA
Contact: Centre Tech.Forestier Tropical
Div.Inventaires et Amenagement
45 bis Ave de la Belle Gabrielle
F-94736 Nogent-sur-Marne
FRANCE
- November 22-24, 1989 First Cuban Forestry Congress and International
Symposium on Agroforestry Techniques
Havana, CUBA
Contact: Symposium Org. Committee
Instituto de Invest.Forestales
Calle 174 N° 1723, Entre 17B y 17C
Ciboney, Zona Postal 16,
La Habana
CUBA
- Nov.26 - Dec.3, 1989 ICRAF/IBSRAM Soils Research Workshop
Nairobi, Kenya
Contact: Anthony Young or Peter Ahn
IBSRAM
P.O.BOX 9-109, Bangkok
Bangkok 10900
THAILAND

FORTHCOMING CONFERENCES AND MEETINGS

- December 4-8, 1989** 14th Asia-Pacific Forestry Commission Meeting
Manila, Philippines
Contact: Y.S. RAO
Regional Forestry Officer
FAO Regional Office for Asia & the Pacific
Phra Atit Road
Bangkok 10200
THAILAND
- February 12-16, 1990** The International Rangeland Symposium
Reno/Sparks, Nevada, USA
Contact: James A. Tiedeman
Forestry and Range Management
Washington State University
Pullman, WA 99164,
USA
- July 8-21, 1990** 11th International Seminar on Environmental Impact Assessment
University of Aberdeen, Scotland
Contact: Sandra Ralson
Centre for Env.Man. & Planning
Old Aberdeen AB9 1FX
Scotland,
UK
Tel: 44(224)-272480
- August 23-30, 1990** 19th World IUFRO Congress
Montreal, CANADA
Contact: IUFRO Montreal 1990 Inc.
P.O.BOX 1990
Place d'Armes
Montreal, Quebec H2Y 3L9
CANADA

NEWS OF THE OTHER AAU NETWORKS

Agricultural Administration Network

run by John Farrington, published the following June 1989 Network papers:

5. '340 Abstracts on Farmer Participatory Research' by Kojo AMANOR
6. 'A Multiple Source of Innovation Model of Agricultural Research and Technology Promotion' by Stephen BIGGS
7. 'Participatory Technology Development in Ecologically-Oriented Agriculture: Some Approaches and Tools' by Ann WATERS-BAYER
8. 'Joining FSR to Commodity Programme Breeding Efforts Earlier: Increasing Plant Breeding Efficiency in Nepal' by D.L. GALT

Irrigation Management Network

run by Mary Tiffen, published the following July 1989 papers:

- 1b 'Identification of Causes of Poor Performance of a Typical Large-sized Irrigation Scheme in South China' by Mao ZHI
- 1c 'Rehabilitation of Communal Irrigation Schemes in Nepal' by Nasiruddin ANSARI
- 1d 'Economic Returns to Operation and Maintenance Expenditure in Different Components of the Irrigation System in Pakistan' by Muhammad A. CHAUDHRY and Mubarik ALI
- 1e 'Irrigation and Water Management for Diversified Cropping in Rice Irrigation Systems: Major Issues and Concerns' by S.I. BHUIYAN

Pastoral Development Network

run by Jon Moris, published the following March 1989 Network papers:

- 27a 'A Solution to Desertification: Holistic Resource Management' by Allan SAVORY
- 27b 'Economic and Ecological Carrying Capacity Implications for Livestock Development in the Dryland Communal Areas of Zimbabwe' by Ian SCOONES
- 27c 'The Predicament of the Peasants in Conservation-based Development' by Jan HULTIN
- 27d 'Camel Husbandry and Management by Ceeldheer Pastoralists in Central Somalia' by Ahmed A. ELMI

BOOKS

Changing Tropical Forests: Historical Perspectives on Today's Challenges in Asia, Australasia and Oceania

Edited by John DARGAVEL, Kay DIXON and Noel SEMPLE (1988)

Published by: Centre for Resource & Environmental Studies,

The Australian National University,

GPO BOX 4, Canberra, ACT 2601, AUSTRALIA,

Price \$ 19.95

+ postage

This book is an edited collection of papers presented at a workshop on Tropical Forest History (IUFRO) held in Canberra at the Australian National University. The papers cover a broad range of topics and geographical areas from Mauritius to Australia and Papua New Guinea to India. The papers present a challenging and interesting approach to the understanding of current global forestry problems. They illustrate the importance of documenting and understanding the historical context of forests in the regional, national and global economy.

Anyone interested in obtaining a copy should add to the price of \$ 19.95, \$ 5.00 for inland or overseas surface mail, or \$ 10.00 for overseas airmail, and contact:

Publications Clerk
 CRES Publications Section
 Australian National University
 GPO BOX 4,
 Canberra, ACT 2601,
 AUSTRALIA

The Purpose of Forests: Follies of Development

Jack WESTOBY (1987)

Published by: Basil Blackwell Ltd

108 Cowley Road, Oxford, OX4 1JF

This book presents a collection of Jack Westoby's writings and thoughts about forestry and development. The papers follow his own development in forestry from the first heady days of the early 1960s when in his seminal paper on forestry for economic development Jack Westoby proposed forestry as the vehicle for promoting development in underdeveloped countries. As both Jack Westoby and forestry grew in the development world his increasing disillusionment with world forestry became apparent. The last section of the book documents this change as Jack Westoby himself, moves from the promotion of technocratic solutions to a forestry by, for and with the people.

It is a fascinating book both as a pilgrimage through the last 30 years of forestry and also as a compilation of the writings of one of forestry's most influential thinkers.

BOOKS

Approach Development: A contribution to participatory development of techniques based on a practical experience in Tinau Watershed Project, Nepal

Ueli SCHEUERMEIER (April 1988)
Published by: LBL,
Landwirtschaftliche Beratungszentrale Lindau,
CH-8315 Lindau (ZH), SWITZERLAND

Ueli Scheuermeier worked with the Tinau Watershed Project for a number of years. This report examines the participatory process which he developed with other members of the Project. This process they have called Approach Development (AD); rural families are the focus of the project and are encouraged to identify and formulate their problems and to find their own solutions with technical assistance given by members of the Approach Development team. The project's involvement begins and ends with the farm family. AD is not confined to the farming system but includes all the natural resources on which the farm household depend for daily and long-term subsistence.

The report details the methodologies used and the experiences the project has gained with this form of participatory development. Throughout the report stress is laid on the importance of flexibility within the project to be able to respond to changing situations and problems within the farm family. Following problem identification by farm families, complete documentation is maintained by the AD worker of action taken. The report is well-illustrated with cartoons which help to demonstrate how AD works. There is a growing need for projects to document the approaches that they have used to involve farmers in the process of technology development. This report demonstrates how one project has tackled problems within the rural environment and developed a useful methodology with which all members of the team, from farmer to project worker, can work.

The Fuelwood Trap: A Study of the SADCC Region

Barry MUNSLOW, Yemi KATERERE, Adriaan FERF, Phil O'KEEFE (1988)
Published by: Earthscan Publications Ltd
3 Endsleigh Street, London WC1H 0DD, UK

£ 8.95

A study commissioned by the SADCC Energy Secretariat and carried out by the ETC Foundation, Consultants for Development.

Fuelwood its supply and demand form the focus of this book. The authors draw heavily on case studies from the SADCC countries to illustrate the reasons for the firewood crisis and the responses to this crisis made by both farmers and planners. The important point to emerge from this book is the need for coordinated action from the various agencies involved in energy, forestry and agriculture development. For too long firewood and its supply has been treated as a sectoral problem without due regard to the effects of other areas of the economy on access to fuel sources.

For further information please contact: Sara Dunn, Earthscan Publications.

JOURNALS OF INTEREST TO NETWORKERS

Rural Development in Practice

The first volume of this new journal has recently been produced; it is subtitled the 'International Journal for Rural Development Practitioners', an indication perhaps of the niche that the editors of the journal seek to fill. One of the main functions of the journal is to act as the starting point for a Rural Development Practitioners network to encourage an active exchange of information between those involved in rural development projects and programmes. Each edition of the journal has a particular theme; the papers in the first volume detail experiences of practitioners implementing rural credit schemes: projects from Nepal, Thailand, Kenya, Sierra Leone, Tanzania and Paraguay are discussed. Future editions of the journal are to focus on the themes of rural marketing, rural diversification and rural technologies.

For further information contact:

Dr. T. Scarlett Epstein
Editor-in-Chief
RWAL Publications
Lloyds Bank Chambers
15 Devonshire Road
Bexhill-on-Sea
East Sussex TN40 1AH, UK

ILEIA

A useful journal covering a wide range of issues from Social Forestry through to farmer innovation. The articles are written by readers of ILEIA and thus reflect a broad spectrum of field-level experiences.

The ILEIA Newsletter is available from :

Information Centre for Low External Input and
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The Social Forestry Network is funded by The Ford Foundation, the Aga Khan Foundation and ODA.

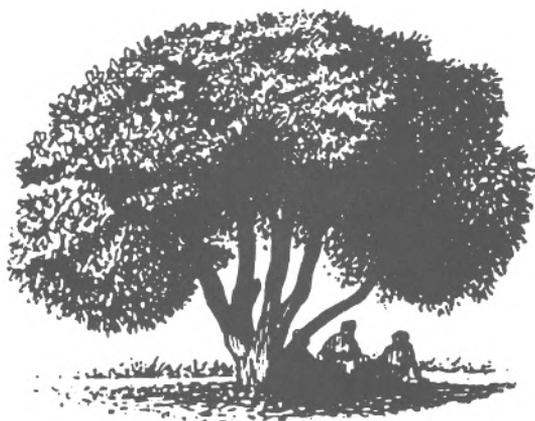


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SOCIAL FORESTRY NETWORK



**PUTTING TREES INTO THE FARMING SYSTEM: LAND ADJUDICATION
AND AGROFORESTRY ON THE LOWER SLOPES OF MOUNT KENYA**

Gill Shepherd

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This paper is based on a part of the research conducted in October 1988 for the ODA/Government of Kenya 'Embu-Meru-Isiolo Arid and Semi-Arid Lands Project'. The full report is entitled '*Assessing farmers' tree-use and tree-planting priorities*'.

PUTTING TREES INTO THE FARMING SYSTEM:
LAND ADJUDICATION AND AGROFORESTRY ON THE LOWER SLOPES OF MOUNT KENYA

Gill Shepherd

INTRODUCTION AND SURVEY METHOD

The writer was asked to help the Government of Kenya/ ODA Embu-Meru-Isiolo Forestry project, located on the lower northern and eastern slopes of Mount Kenya in Kenya by conducting rapid rural survey work which would highlight farmers' tree-needs and interests and hence help to shape the planning of nursery species and extension methods. Only the initial farmer-survey is reported on here.

Since too many surveys of farmer attitudes are based on asking hypothetical questions, we decided to try to focus on what farmers were actually doing already on their farms, using a farm by farm approach. It was decided to select study locations which reflected a range of altitude zones, population densities and social groups, and which had varying access to the forestry component of the project. After a preliminary period of discussion with project staff and visits to the project area the writer decided to work in six localities, to represent Zones 3, 4 and 5 in Embu and Meru respectively.

The plan was:

- o to choose six nurseries, and the areas within which each was sited; and to make a checklist of the species being grown in each particular nursery, with which to compare the species being grown on farms in the area;
- o in the company of a nursery-worker familiar with the surrounding area to visit farms and interview farmers at a progressively increasing distance from the nursery until interviewers discovered that they were beyond its area of outreach. (This method is known as distance decay sampling.)

- o to record the tree-species found on the farm with the farmer's and project staff's help, noting site and the species' value in the farmer's eyes; and to ask a small number of other questions spending no more than about 20 minutes with each farmer interviewed.

Sample size and composition

The aim was to interview a roughly equal number of farmers in each of Zones 3, 4 and 5, split roughly 50:50 by sex and 22:33:44 by class. The intention was that the work should be quickly, simply and replicably done, not that a daunting major sampling exercise should be set in train. We completed 100 useable interviews in the time available (about ten days).

The whole sample breakdown class-wise is close to the goal set, though it is more uneven at zonal level. It was fairly easy to make rough-and-ready household class assessments, with the guiding knowledge of accompanying nursery and project staff and in two areas the sub-location chiefs who came with us for the day. Indicators used were the state of repair of homestead buildings and the presence or absence of corrugated iron or concrete; the number of buildings in the compound (household size is quite a good wealth indicator where family labour is so important); and any available evidence of off-farm employment or cash-crop earnings.

The gender balance is more uneven, and is a product of chance in that we did not know whom we would find at home when we called at farms. Nor were the women we interviewed all household heads. We encountered, nevertheless, strong views about trees and their usefulness, regardless of the formal position within the household of women interviewed.

Background for the selection of areas

Zones

Although zone boundaries are arbitrary by comparison with the infinite gradations actually to be found on the slopes of Mount Kenya, and although there are several zoning systems in use which do not entirely tally with one another, the pattern is broadly as indicated in Table 1 overleaf.

Table 1: Agro-ecological zones

German AEZs	offic Zones	ALTITUDE m	MEAN TEMPERATURE °C	AVERAGE RAINFALL mm	DESCRIPTION OF ZONE'S VEGETATION
L.M.3	3	910-1280	20.6-22.9	1000-1400	Good for cotton, Fair for food. Less intensive cultivation.
L.M.4	4	760-1220	21.0-23.7	800-1200	Much uncultivated land; millet, sor ghum and drought- resistant crops.
I.L.5.	5	610-700	24.1-24.7	650--850	Very low fertility Acacia scrub.

(Source: Diocese of Meru and ITDG, 1987)

Population

Co-varying with zone are population densities, which are naturally high in the higher, better watered, and more fertile zones, and which thin out in the lower, drier, zones where the soil is poorer, as well. Villages are smaller in the lower zones and ultimately scattered homesteads almost entirely take their place.

Sources of income

The diversity of income opportunities decreases from higher to lower zones. Crop sales are the main income source for everybody and livestock, acting as the buffer of stored wealth against droughts, come second. Brewing (of honey and millet beers) though officially illegal, is an important third source of income in Zones 4 and 5. Businesses such as shopkeeping and wholesaling are similarly key subsidiary activities in Zones 3 and 4.

Four-fifths of wealthy farmers own cattle, while only a third of poor farmers do. Cattle are kept for milk, and as a store of wealth for food purchases and for larger expenses such as school fees. Two-thirds of poor farmers own goats, however. Goats act almost as currency in the lower zones and are valued above all for their hardiness and their ability to

thrive on browse. Nearly half of all farmers own beehives, and almost all have chickens.

Land consolidation

Land consolidation has given the individual farmer greater security of tenure, but substitutes a single larger plot for several smaller ones. The loss of access to plots in different ecological zones reduces flexibility and increases risk, and many individuals have had to give up good higher-zone land. Consolidation also reduces access to fallow and grazing land, and forces farmers to adopt more labour-intensive methods. Finally, the strengthening of individual title systematically destroys the clan and lineage as land-allocating political entities. Plots are larger among the wealthy in each zone and tend to be larger in the lower zones than the higher, except that in Tharaka (Zone 5), farm plots are relatively small because Tharakans rely heavily on livestock which are kept elsewhere. In this sample Magutuni (Zone 3) in Meru, and Rwika (Zone 3) and Thiba (Zone 5) in Embu, were areas where land adjudication was complete or all but complete. Marimanti (Zone 5) in Meru and Kathera (Zone 4) in Embu were about half way through adjudication. Mutonga (Zone 4) in Meru had not yet begun upon land adjudication.

THE RESULTS OF THE SURVEY

Tree species by interview area: the balance between indigenous and exotic species

In each of the areas studied, the species discovered on each farm were recorded if the farmer had either planted the tree, or had made a deliberate decision not to fell it when clearing land. As might be imagined, a farmer fortunate enough to have 'captured' a good number of valuable pole and timber trees on his farm at the moment when he began to farm the land, will only plant further trees for highly specific purposes.

In the course of interviewing farmers, it became clear that their

classification of trees did not fit neatly with the standard botanical one. While foresters contrast indigenous with exotic species, farmers contrast 'local' (kinyejji) with 'new' (kigeni) species. To them, trees brought into the Meru-Embu area from elsewhere in Kenya could be 'new' and familiar exotics such as mango, papaya and sisal be regarded as kinyejji. It would be perverse to set out non-local indigenous species as exotic here, but the distinction between 'naturalized' and new exotics is an important one, since nurseries are predominantly concerned with introducing farmers to the latter.¹

In general where the number of species saved is high, the number of new exotics planted is low, while the number of old exotics remains almost constant. This is predominantly because the already-familiar exotics are mainly fruit trees or boundary species both of which enhance the value of the farm. In more denuded areas - such as Embu 3 and Embu 5 in this sample - there are far fewer saved species, far fewer of the indigenous species which farmers progress from saving to planting, and a high proportion of new exotics. In such situations farmers had made a lot of effort, in often extremely unrewarding circumstances, to plant and replant pole species until they had some success.

The average number of species found on each farm was seven to eight in most areas, and twelve or more in Magutuni, Meru 3, the most favourable area of the six.

In both districts planted trees become relatively less important and saved trees more important as one moves from Zone 3 to Zone 5. But it is also clear that there are fewer saved indigenous species to be found in the Embu areas, than in Meru, and consequently more enthusiasm for planting. All three Embu areas, where the rainfall is slightly less good, but particularly Embu 3 and Embu 5, plant a higher proportion of new exotics than do the Meru areas. Old exotics on the other hand are of similar importance in all areas.

¹ The tree species classified as 'naturalized' exotics in this report are: *Azadirachta indica*; Banana; Citrus orange; Citrus lemon; Mango; Papaya; Sisal. Two familiar exotic non-trees also appear in the lists because they had tree-like functions for farmers - *Ricinus communis* (Castor Oil plant) and *Lantana camara*, a 'weed' used for kindling and hedging.

Tree species and land adjudication

Once land is demarcated there is a new need for boundary markers, and gradually the pole and timber trees which were on the land when it was demarcated will be felled and replaced by planted substitutes of other species. Until land is permanently cultivated, there is no real need for roads to reach each farm without passing over the land of another. But as land-use intensifies, roads are created and they in their turn generate the need for gates and stock-proof hedging.

Bernard (1972) argued that trees are removed when land is adjudicated, but this clearing in fields is only a part of the process. Riley and Brokensha (1988), who have monitored the Mbeere area for many years, have noted that in the medium term, land adjudication engenders the planting of more trees than before, as it does the building of more permanent housing.

In Embu there appears to be a visible contrast between the study areas in Embu 3 and Embu 5, where land adjudication is all but complete and higher proportions of exotics are being planted, and Embu 4, where land adjudication is still at an early stage and where there are clearly more indigenous species and fewer exotics. Yet the picture is not so simple. Meru 3, where land adjudication has long been complete, and Meru 4 where it has not yet begun, both show identical proportions of planted to saved trees, and indigenous to exotic trees. It is necessary to look at where on the farm the trees cluster to fully understand the way in which land adjudication changes the landscape: overall numbers do not help.

Table 2, which was compiled by aggregating data from the 67 adjudicated and 33 unadjudicated farms in the survey, suggests how the clustering of trees on land changes with adjudication. Where previously trees were predominantly planted in cropland, consolidation causes a decrease in this practice and a great increase in field boundary planting. Block planting may possibly increase as well. At the same time, the number of indigenous species saved in the field decreases sharply. It would seem from this sample that more effort is made to preserve valuable species in the compound after land adjudication but that compound planting - already important in the pre-adjudication phase - simply continues much as before. During the period

of the survey, it was possible to see clearly that adjudication tends to lead to a smaller number of species on the farm, but to the presence of more individual trees from each species.

Table 2: Where tree species are planted,
in adjudicated and unadjudicated land

SITE	ADJUD	UNADJUD
PLANTING		
compound boundary	18%	17%
in compound	15	16
COMPOUND TOTAL	33%	33%
field boundary	16	8
in cropland	14	17
in a block	2	1
FIELD TOTAL	32%	26%
PLANTING TOTAL	65%	59%
SAVING		
compound boundary	5	1
in compound	9	8
COMPOUND TOTAL	14%	9%
field boundary	1	0
in cropland	20%	32%
FIELD TOTAL	21%	32%
TOTAL SAVING	35%	41%
GRAND TOTAL	100%	100%

NB these are numbers of species, not trees

Farmers' reasons for planting trees

After the trees planted on their farms had been identified and noted, farmers were asked to say for what purposes in their own case, they had been or would be prepared to plant trees, mentioning as few or as many as they liked. These were subsequently classified under eleven headings - fruit, fodder, fuelwood, cash, shade, windbreaks, fencing, and four categories which need a little more explanation -

- poles and timber: these were not distinguished by farmers, since the ideal tree would provide both;
- microclimatic improvements: informants mentioned the coolness trees provide; and their belief that trees attract rain;
- soil benefits: under this heading are grouped mentions of terracing using trees, or the recognition that trees can increase soil fertility.
- beauty: some farmers felt strongly that trees enhanced the landscape around their homes and mentioned this as an incentive for planting distinct from practical reasons such as the creation of shade or protection from wind.

Over the whole sample, the reasons given for tree-planting aggregated as follows:

1.	poles	86%
2.	fruit	49%
3.	shade	40%
4.	fuelwood	37%
5.	cash	21%
6.	windbreak	17%
6.	microclimatic benefits	17%
8.	soil benefits	11%
9.	fodder	9%
9.	beauty	9%
11.	fencing, boundary marking	5%

However, it is the variations observable on the pattern, by area studied, by wealth category, and by gender, which make the results most interesting and useful.

Area summary

To summarize, poles are in demand in all areas, followed by fruit where feasible. Those in completely adjudicated areas are keener to grow fuelwood than those who are not; and on the whole it is only those whose land is adjudicated who begin to think of making money out of selling fruits or poles. Those in unadjudicated land are the keenest on planting trees as boundary markers and hedges: the rest presumably have already planted all

the trees they want for this purpose. Of the more minor benefits of trees, shade is the most important, followed by trees for wind protection and microclimate improvement.

Wealth summary

All wealth categories place a similar high priority on poles, fruit and shade. The poor are more interested in growing fuelwood than are the well off and have more interest in cash from trees and in windbreaks. Interest in microclimatic and soil benefits from trees is greater, the higher the wealth category. (Have the wealthy heard more about these benefits on the radio than the poor?) The poor are more interested in tree-fodder than are the wealthy - a finding which tallies with the fact that the poor are more likely to be goat-owners than cattle owners, and that leaf-fodder for cattle is a new idea in the area. The desire for trees for fencing and for beauty seems not to be class related.

Gender summary

Poles are of similar importance to men and women. Both sexes also place a similar value on growing firewood, which was almost universally used among our interviewees rather than charcoal. Some men also mentioned growing it to sell to tobacco growers. Women value fruit somewhat less highly than men and are far less interested in the cash that may be made from growing trees. (Fruits are currently the main money earners from farm-grown trees.) Men are also more interested in tree-fodder than are women, which makes sense since animals are still predominantly owned by men.

Among the more intangible benefits of trees, women not only value shade a great deal more than do men, but also mention trees for windbreaks and trees for hedges and boundaries far more. They would also seem to be more interested than men in the value of trees to the micro-climate. It is as if women are mainly interested in making the farm a more comfortable and secure place to live and work. On the other hand men mentioned the beneficial effect on the soil of trees, and their beauty, more often than women.

We asked several couples informally whether there were conflicts over tree-planting priorities. On the whole they claimed that there were not, and other research (e.g. Shepherd, 1984) has pointed to the unforeseen improvement in husband-wife relations with the weakening of the clan and the strengthening of the individual household after land adjudication. As one husband said, 'If you grow poles and try to sell them privately and use the money privately, she will be furious. You have to agree. Women and men have come together these days.'

Pole preferences

The project especially wished to know whether pole crops were valued more for speed of growth or for durability. While the preference was clearly for fast-growing if soft poles, over a quarter of the sample said that they needed both. Preferences by sex were insignificant, but preferences by class are worth noting. The least certain about what they want are the poorest. All categories express a preference for fast-growing (but therefore soft) poles, and the rich realise most clearly that they also need hard poles and that they therefore need to plant both. No discernable patterns emerged by zone or by adjudicated or unadjudicated farms.

Income from trees

We asked farmers to tell us about on-farm and off-farm income from trees. Income data is notoriously hard to collect from strangers, and we usually approached the question crab-wise by asking firstly what prices could be got in the area for various items, and then which of those the farmer him or herself sold at times, and how often.

It is perfectly clear that, for the time being, many people can make more out of bushland products such as charcoal and honey than they can out of any tree product grown on the farm. Farmers explained that charcoal-making was hard work but the most reliable cash-earner and women and men may turn to charcoal burning if need arises. Honey produces a good return for modest investment but only in unadjudicated areas. As the best honey trees are felled or privatised, incomes from this source will dwindle.

Only in Tharaka (Meru 5) are honey and charcoal incomes likely to continue far into the future. Here, beekeeping is still the best source of income after crop and livestock production (ICRA and EMI, 1984).

However, quite large numbers of farmers are involved in modest sales of tree products which they have grown themselves. A higher percentage were involved in Meru (with better rainfall) than in Embu and in high zones, where fruit can be grown, than low zones. Thus in Meru Zone 3, 62% of the sample grew fruit for sale, and even in arid Embu Zone 5, 10% did so. Cash is a constant need and there is no doubt that farmers wish to sell whatever they can. Farmers hoped that they would be able to sell firewood to tobacco growers, home-grown charcoal to town, and poles to market, in future. Currently only a tiny number of farmers in the study areas have sold farm-grown poles and so far always to neighbours.

Farmers' preferred farmsites for tree-planting

Within the constraints imposed by what will grow in particular zones, farmers were remarkably consistent in the choices they made about where to put particular categories of tree and particular species, in fact.

Table 3 gives us a picture of the way in which tree location on the farm changes through time - as suggested by the adjudication stage of the six study areas. As land-use becomes more intensive and permanent, and planted trees begin to take over from saved trees, so trees shift ground.

True agroforestry mixes are positively unpicked in the process. Firstly, the shift is from the field to the compound, a shift seen everywhere, but most in the driest areas. Here, once saved indigenous field species begin to be used up, farmers cluster many of the trees they decide to plant around the compound, presumably to keep an eye on them and water them. But the more striking pattern is the exodus of trees over time from cropland mixtures into field boundaries or blocks. This is seen not just in the changeover from saved to planted trees, but even in the fact that there are more planted trees in crops in unadjudicated areas than in adjudicated areas. Indeed, whenever farmers answered 'yes' to our question: 'Did you make any mistakes about where you put the trees?' they would explain that

Table 3: Location of species on the farm, for each of six areas

	EMBU3 adjud	EMBU4 in proc	EMBU5 adjud	MERU3 adjud	MERU4 unadjud	MERU5 in proc
PLANTING						
compound boundary	18%	15%	24%	16%	14%	17%
in compound	17%	12%	15%	15%	14%	18%
COMPOUND TOTAL	35%	27%	39%	31%	28%	35%
field boundary	22%	20%	12%	16%	7%	1%
in cropland	16%	17%	12%	10%	21%	19%
in a block	4%	3%	0%	1%	2%	1%
FIELD TOTAL	42%	40%	24%	27%	30%	21%
PLANTED SPECIES	77%	67%	63%	58%	58%	56%
SAVING						
compound boundary	4%	0%	5%	8%	1%	1%
in compound	8%	6%	13%	10%	8%	9%
COMPOUND TOTAL	12%	6%	18%	18%	9%	10%
field boundary	1%	1%	2%	1%	0%	1%
in cropland	10%	26%	17%	23%	33%	33%
FIELD TOTAL	11%	27%	19%	24%	33%	34%
SAVED SPECIES	23%	33%	37%	42%	42%	44%
	100%	100%	100%	100%	100%	100%

NB: Percentages are of species identified not of numbers of trees

adjud: adjudicated
in proc: undergoing adjudication
unadjud: not yet adjudicated.

tree-planting in crops had been a mistake (usually because of the introduction of ploughing) and that they wished they had grouped their trees at the boundaries.

A breakdown of trees on the farm by apparent wealth of the household shows a modest tendency for the poor to plant more species in the compound and less in the field than their wealthier counterparts, and for the wealthy to have a higher proportion of planted species to saved species than the middling or poor. However, these categories have saved more species in the compound than the wealthy. The fact that the wealthy do more block planting than anyone else is probably an indication of their having both more land and more labour at their disposal.

Preferred species for each farm site

Nearly 100 tree species were identified on the farms investigated: 'old' and 'new' exotics; indigenous species saved but never planted; saved and planted species; and a small number of indigenous species found planted and not saved. In order to focus only on the most important, however, a shorter list has been drawn up which includes only species identified at least four times in at least one type of planting site. This gives us 37 species: 16 indigenous species which farmers both plant and save; 7 indigenous species which they save but do not attempt to raise; 7 'new' exotics; 6 'old' exotics; and 1 indigenous planted-only species. These are as follows, in descending order of importance in each category.

Planted and saved species

1	<i>Commiphora</i> spp	9	<i>Ficus natalensis/thonningii</i>
2	<i>Melia volkensii</i>	10	<i>Lonchocarpus eriocalyx</i>
3	<i>Tamarindus indica</i>	11	<i>Markhamia</i> spp
4	<i>Balanites aegyptiaca</i>	12	<i>Vitex doniana/keniensis</i>
5	<i>Cordia abyssinica</i>	13	<i>Bridella micrantha</i>
6	<i>Croton megalocarpus</i>	14	<i>Azanza garckeana</i>
7	<i>Terminalia prunioides</i>	15	<i>Acacia mellifera</i>
8	<i>Erythrina abyssinica</i>	16	<i>Kigelia aethiopum/africanum</i>

Indigenous species saved only

1	<i>Acacia tortilis</i>	5	<i>Sterculia africana</i>
2	<i>Terminalia brownii</i>	6	<i>Berchemia discolor</i>
3	<i>Combretum zeyheri/spp</i>	7	<i>Fagara spp</i>
4	<i>Combretum collinum</i>		

'New' exotics

1	<i>Grevillea robusta</i>	5	<i>Cassia spectabilis</i>
2	<i>Cassia siamea</i>	6	<i>Melia azederach</i> (actually indigenous to other parts of Kenya)
3	<i>Eucalyptus spp</i>		
4	<i>Leucaena leucocephala</i>	7	Avocado

'Old' exotics

1	Mango	4	Lemon
2	Papaya	5	Banana
3	Citrus orange	6	Sisal

Indigenous specie planted only

- o *Euphorbia tirucalli*

If we aggregate the data from the 100 farms in the sample, the careful planning of tree-location becomes apparent.

Farmsite 1: The Compound Boundary

In this site, top preference has gone to two good indigenous hedging species grown vegetatively - *Commiphora spp.* and *Euphorbia tirucalli*; Sisal also makes some contribution where it will grow. Six 'new exotics' grown for poles, are used to help demarcate the compound as well, while other

indigenous saved or saved-and planted species (the latter starred) provide shade, and store quality timber against the time it may be needed. The only fruits are Papaya and *Tamarindus indica*.

Table 4 : Compound boundary preferences

TREE SPECIES PLANTED	COMPOUND	
		boundary
22 <i>Commiphora</i> spp *		29p
31 <i>Euphorbia tirucalli</i>		27P
76 <i>Cassia siamea</i> E		24p
82 <i>Grevillea robusta</i> E		21p
80 <i>Eucalyptus</i> spp. E		11p
84 <i>Leucaena leucoceph.</i> E		9p
85 <i>Melia azederach</i> E		8p
77 <i>Cassia spectabilis</i> E		6p
97 Papaya OE		5p
57 <i>Tamarindus indica</i> *		5p
26 <i>Croton negalocarpus</i> *		4p
52 Sisal OE		4P
SAVED		
59 <i>Terminalia prunioides</i> *		5s
19 <i>Combretum collinum</i>		4S
22 <i>Commiphora</i> spp *		4s

15 species

Table 5: Preferences in the compound

TREE SPECIES PLANTED		COMPOUND within yard
97	Papaya OE	27p
96	Mango OE	26p
93	Citrus orange OE	14p
14	Balanites aegyptiaca *	7p
76	Cassia siamea E	6p
95	Lemon OE	6p
99	Banana OE	5p
57	Tamarindus indica *	4p
23	Cordia abyssinica *	4p
80	Eucalyptus spp. E	4p
SAVED		
7	Acacia tortilis	15s
20	Combretum zeyheri/spp.	8s
22	Commiphora spp *	8s
58	Terminalia brownii	8s
14	Balanites aegyptiaca *	5s
19	Combretum collinum	5s
59	Terminalia prunioides*	4s
30	Erythrina abyssinica *	4s
60	Vitex doniana/keniens*	4s

19 species

Farmsite 2 : Inside the Compound

It would seem from this sample, set out in Table 5, that the yard is an important site for fruit trees. There are eight listed here - both old exotics and indigenous species. Trees valuable for light poles, or which provide wood suitable for domestic carving also appear (Nos 23, 30, 60). Trees which provide shade and which store timber for future needs constitute much of the 'saved' list here, and *Commiphora* spp seem to be saved wherever they are found because their ability to generate live fencing from stakes is so useful. New exotic species are far less important in the yard than on the yard boundary.

Table 6: Preferences in field boundary

TREE SPECIES PLANTED		IN THE FIELD boundary
82	<i>Grevillea robusta</i> E	35P
76	<i>Cassia siamea</i> E	12P
47	<i>Melia volkensii</i> *	12p
31	<i>Euphorbia tirucalli</i>	9P
80	<i>Eucalyptus</i> spp. E	8P
77	<i>Cassia spectabilis</i> E	7P
84	<i>Leucaena leucoceph.</i> E	6P
96	Mango OE	6P
26	<i>Croton megalocarpus</i> *	4p
SAVED		
3	<i>Acacia mellifera</i> *	5s

Farmsite 3: The Field Boundary

In the field boundary, as shown in Table 6, new exotic pole species reign almost supreme: new trees for a new function. The exception is *Melia volkensii*, the one indigenous timber species whose growth rate can match the exotics. *Euphorbia tirucalli* plays a far more minor role than it does in the compound fence, and *Commiphora* is hardly used at all. *Acacia mellifera* is planted and saved to some extent in the hedgerow because it is thorny as well as providing good poles; *Croton megalocarpus* is a highly valued timber tree, and mangos are valued in the hedge for shade, fruit and ultimately timber. The field boundary is clearly not regarded as a suitable place to put many fruit trees: seemingly because they are too valuable to be planted where others could gather the fruit. Since they constitute such a reliable source of income, the fact that they shade other crops is regarded as an acceptable trade-off: indeed, once they have begun to bear, they are an annual crop in their own right.

Farmsite 4: Field Blocks

Few farmers in the sample had planted field blocks. Those who had, naturally had speedy cash returns in mind, and only new exotics were seen.

Because most farmers must live from their small farm-plots, they want trees to complement crops, not replace them. On our limited evidence, block-planters seem to be those with off-farm incomes, such as shop-keepers and drivers: a pattern more frequently seen in the highest rainfall zones.

Table 7 : Preferences for field blocks

TREE SPECIES PLANTED	IN THE FIELD	
		block
82 <i>Grevillea robusta</i>	E	7P
76 <i>Cassia siamea</i>	E	4P

Farmsite 5: In the field

Considering the range of saved trees in fields (see Table 8b) the switchover made by farmers when they choose trees to plant there, is spectacular. Of the 11 most popular planted trees found in the field, 6 are fruit-trees (four old exotics, one indigenous and one new exotic) and 5 are fast-growing pole and timber species: *Melia volkensii* and the four most popular new exotics. *Cassia siamea* is the best liked of these because of its light shade, and relative compatibility with crops.

Table 8a: Planted species in the field

TREE SPECIES PLANTED		IN THE FIELD within crop
96 Mango	OE	20p
76 <i>Cassia siamea</i>	E	19p
82 <i>Grevillea robusta</i>	E	11p
97 Papaya	OE	11p
95 Lemon	OE	10p
93 Citrus orange	OE	9p
47 <i>Melia volkensii</i>	*	9p
57 <i>Tamarindus indica</i>	*	8p
84 <i>Leucaena leucoceph.</i>	E	6p
80 <i>Eucalyptus spp.</i>	E	5p
92 Avocado	E	5p

There are twenty-two saved indigenous species noted in four or more instances in the fields in this sample (see Table 8b), of which fifteen are also planted by farmers. Yet farmers have chosen to continue to locate only two of these - *Tamarindus indica* and *Melia volkensii* - in the field when

Table 8b: Saved species in the field

TREE SPECIES SAVED	IN THE FIELD within crop
7 <i>Acacia tortilis</i>	26s
58 <i>Terminalia brownii</i>	17s
57 <i>Tamarindus indica</i> *	15S
20 <i>Combretum zeyheri</i> /spp.	14s
47 <i>Melia volkensii</i> *	14S
59 <i>Terminalia prunioides</i> *	11S
23 <i>Cordia abyssinica</i> *	9S
30 <i>Erythrina abyssinica</i> *	8S
45 <i>Lonchocarpus eriocaly</i> *	7S
17 <i>Bridelia micrantha</i> *	7S
14 <i>Balanites aegyptiaca</i> *	6S
55 <i>Sterculia africana</i>	6s
19 <i>Combretum collinum</i>	5s
22 <i>Commiphora</i> spp *	5S
26 <i>Croton megalocarpus</i> *	5S
36 <i>Ficus natalensis</i> /thon*	5S
13 <i>Azanza garckeana</i> *	4S
15 <i>Berchemia discolor</i>	4s
33 <i>Fagara</i> spp.	4s
40 <i>Kigelia aethiopum</i> /af.*	4S
46 <i>Markhamia</i> spp. *	4S
60 <i>Vitex doniana</i> /keniens*	4S

planting them. The rest, kept seemingly partly to provide a source of seed or cuttings for future planting, are relocated, once they are planted rather than saved, to the field boundary, compound boundary and into the compound.

Of the seven remaining planted-only species, six are highly valued for timber but are too slow-growing to be perceived as worth planting: *Acacia tortilis*, *Terminalia brownii*, *Combretum zeyheri*, *Combretum collinum*, *Berchemia discolor*, and *Fagara* spp. One, *Sterculia africana*, however, has excellent wood for the carving of utensils, and ought to be planted in the compound. Lack of interest so far in 'domesticating' is curious.

CONCLUSION

Looking at the way in which trees are incorporated into the farm, it is clear that what has gone on is a process of improvement upon what nature gave in the first place. A tract of bush is turned into a farm with trees on it, through careful processes of selection and enrichment. While the diversity of good hardwood species is gradually lost, the gain in fruit-trees, in appropriately placed trees of all kinds and in species which are really wanted, is enormous.

From the evidence presented in this paper one sees the hand of both men and women in the trees planted on an adjudicated farm. Women have helped to make the farm cool, sheltered and secure with compound shade, windbreaks, and boundary hedging; men have planted tree cash-crops, especially fruit, and have planted and preserved timber for the future. The detailed interest in the trees of the bushland almost always found among rural peoples, continues in the carefully planned incorporation of privately owned trees into the new tenurial situation.

Findings from the 'distance decay' approach

Somewhat to our surprise, no very clear pattern emerged to distinguish farms near to nurseries and those further away in this particular survey. Numbers of 'new' exotics planted are a little higher in nearby farms, but many factors complicate this perception.

Firstly, farmers had acquired nursery-raised seedlings from a variety of sources, not all of them necessarily attributable to the project. Farmers mentioned special occasions on which they had been able to take a few seedlings from a temporary distribution point, such as a Harambee (communal self-help) gathering; several had planted seedlings brought home by their children from school, and it was impossible in the time available to find out where these schools had obtained their seedlings; in Thiba, as we got further and further from the nursery, we gradually realised that we were drifting into the distribution area of the Tana River Development Board nursery, which was more used because it was located near to the place people were going to for water anyway. Sometimes individuals had simply bought seedlings in a town such as Meru or Embu when they happened to be there.

Secondly, farmers had taken seeds from one another to some extent, particularly of easy-to-collect new exotics such as *Cassia siamea* and *Leucaena leucocephala*.

Thirdly, a few farmers had made amazingly strenuous efforts to travel for seedlings. One farmer had walked 6 km each way several times, in order bring home the several hundred seedlings he wanted to plant in his farm. He was lucky enough to live in the company of a large extended family, so that he could make this effort in the rains without detriment to the farming activities which others were able to continue with.

Only in one locale (Marimanti) did we get to the point where some farmers had no contact with any source of nursery-raised seedlings, and indeed had never heard of the project nursery. Nevertheless, all of them had planted some indigenous species.

In all the hundred farmers we visited and interviewed, only two had planted no trees at all, and both had only recently been through the land consolidation process, and were newly settled on their land. Both had planted trees at their previous farm, they said. On the contrary, farmers readily plant species which grow by cuttings, truncheons, and root-suckers, collect seed from the field for species which germinate easily, and look for transplantable wildings. Mini nurseries were occasionally found, occupying a few thorn-protected tins by the back door, or an old sufuria (aluminium cooking pot) lodged in the branches of a compound tree, out of the reach of chickens and goats.

What the distance decay survey revealed perhaps most strongly, was that those far away from nurseries simply lack extension advice and hence access to or knowledge of new species whose properties might better meet needs than the species already known and used. But farmers were already deeply committed to trees and tree-planting, and need advice, rather than motivation sessions.

References

Bernard, Frank Edward, 1972

East of Mount Kenya: Meru agriculture in transition
Ifo-Institut für Wirtschaftsforschung München, Afrika-
Studienstelle, Weltforum Verlag, München, 1972.

ICRA and EMI, 1984

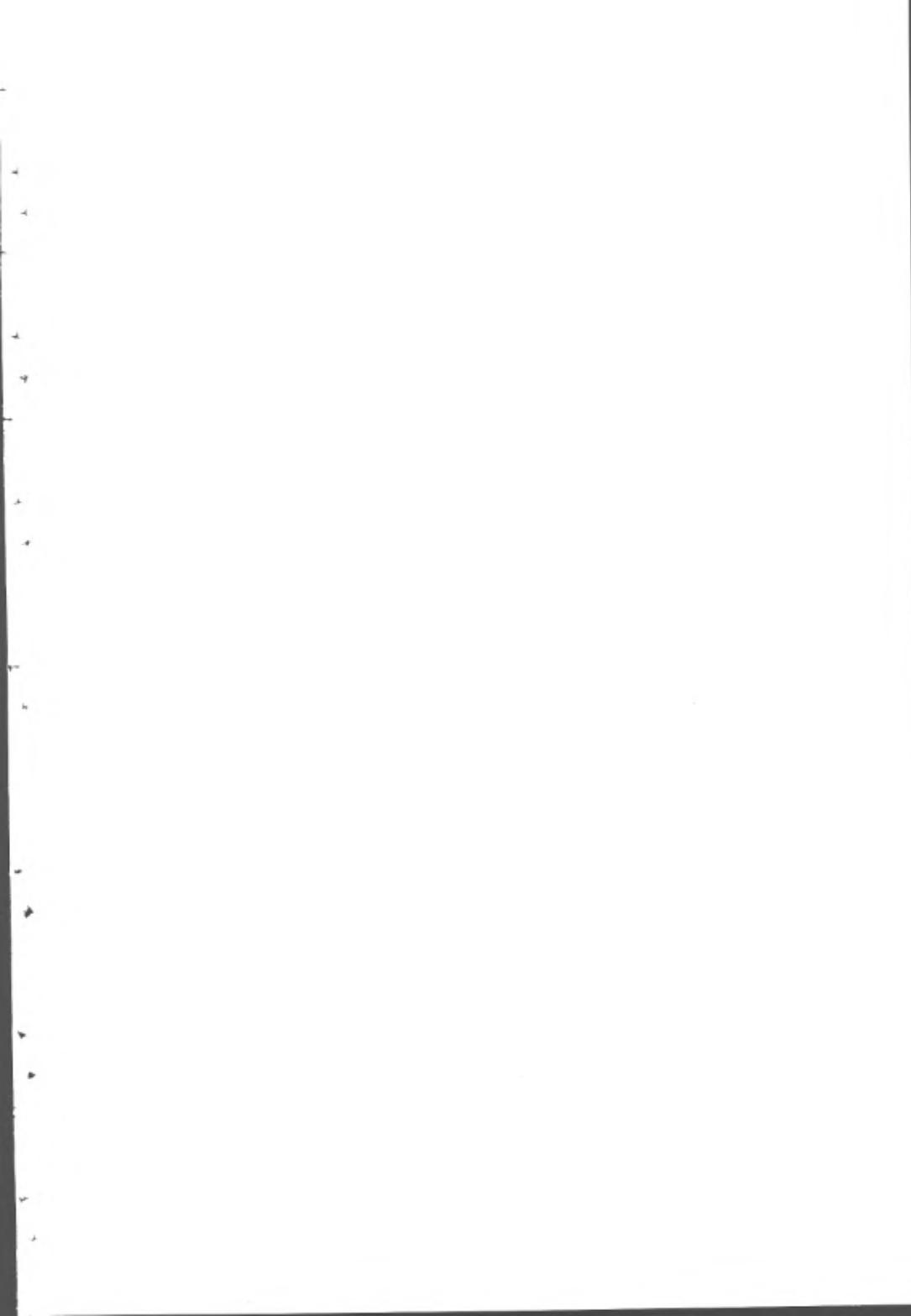
The Farming system in Tharaka: strategies for subsistence in a marginal area of Kenya. A report prepared for the EMI programme and ICRA. (The International Course for Development-Oriented Research in Agriculture, Wageningen, Netherlands.) ICRA Bulletin No 15. December 1984.

Riley, Bernard and Brokensha, David, 1988

The Mbeere in Kenya (2 vols) Institute for Development Anthropology, University Press of America, 1988.

Shepherd, Gill, 1984

Responding to the contraceptive needs of rural people. A report to OXFAM on Kenya. OXFAM: Oxford, 1984.





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SOCIAL FORESTRY NETWORK



FARM FORESTRY IN THE ANCIENT MEDITERRANEAN

Russell Meiggs

RUSSELL MEIGGS

Russell Meiggs was lecturer in Ancient History at Balliol College, Oxford from 1939 to 1970, except for a period during the Second World War when he was put in charge of the timber section of the Ministry of Supply. Only in his retirement did he find time to fuse two long-standing interests to write the book from which this paper is taken, *'Trees and Timber in the Ancient Mediterranean World'*, Oxford at the Clarendon Press, 1982.

Before he died, earlier this year, he kindly gave permission for the preparation of this paper, summarized from Chapter 9, and was delighted to hear that it might speak to those involved in the needs of present-day Third World farmers for trees and tree-products.

FARM FORESTRY IN THE ANCIENT MEDITERRANEAN

Russell Meiggs

This network paper looks at the available evidence in Greek and Roman authors from 700 BC to 300 AD for on-farm tree-planting and tree-management. This evidence is of interest because of the glimpses it gives us of the way in which farmers planned land-use on their farms so as to incorporate trees for a variety of subsistence and cash purposes into the overall scheme.

In contrast to some of the somewhat utopian proposals for on-farm agroforestry we sometimes hear put forward for farmers today, we have here fascinating descriptions, from those who were actually farming themselves, of how land was used to provide a diversity of products as economically as possible.

The issues are startlingly close to those raised by Third World farmers today: the need for coppicing species grown on the shortest possible rotations to be economic for firewood, props and poles; the need for multipurpose boundary trees - here used especially for fodder as well as poles; land-use planning which puts marginal farm-land under trees for particular purposes; the pointlessness of growing trees over and above subsistence requirements unless there is a market for it. Even trees for dowry investment get a mention here.

Because of the intrinsic interest of this unusual documentation, and because we are here offered data on farm forestry practices existing for hundreds of years and in fact no doubt for millennia, the paper has been brought to the attention of networkers, virtually none of whom would ever have access otherwise to this material.

FARM FORESTRY IN THE ANCIENT MEDITERRANEAN

Russell Meiggs

GREEK SOURCES

Although the Greeks wrote more than fifty books on agriculture, the only work that has survived is the first, the *Works and Days* of the Boeotian poet Hesiod who, in the early archaic period (c. 700 BC), described the hard life of the farmer in poetry.

Hesiod's father had lived in Cyme on the east side of the Aegean, but poverty forced him to seek a new home with his two sons, Hesiod and Perses. He settled at Ascra under Mt. Helicon in Boeotia, where he seems to have been able to take over land that had not yet been cultivated and leave it when he died to his two sons. While Hesiod worked hard, his brother, according to Hesiod, wasted his time in fighting legal battles and relying on the corruption of the nobles who dispensed justice. Before writing was widespread, poetry was a natural medium of communication to a wider audience; Hesiod set out to vindicate his own way of life in contrast to his brother's.

Having traced the development of society through the five Ages from the Age of Gold to his own generation, when violence and injustice flourish, but honour and justice still struggle for survival, he appeals to his brother to realize that happiness comes from justice and hard work. He then proceeds to the practical advice that a farmer needs if he is to be successful. General moralizing is accompanied by specific advice, and though he is thinking primarily of grain crops and harvest, he assumes a need for timber and timber knowledge: so far as possible the farm must be self-sufficient. Hesiod knew that the best time to cut timber was when the high heat of summer has passed and the leaves fall: "Then is the time to cut your timber. Cut a mortar three feet wide and a pestle three cubits long,

and an axle of seven feet, for so it will fit well; but if you make it eight feet long you can cut a mallet from it too. Cut a felloe three spans across for a wagon of ten palms width.¹

'Cut many curving timbers; and bring back for your plough a holm-oak when you find one, whether on mountain or field; for this is the strongest for oxen to plough with ...' The woodcutter has to watch the calendar carefully. 'On the seventh of the mid-month ... let the woodcutter cut beams for house building and timbers such as are suitable for ships. The farmer must look ahead and if he needs to build a wagon he must remember that a wagon takes "a hundred timbers": take care to have these ready in time.'

Of the many Greek treatises on agriculture written from a more intellectually developed background we have to remain ignorant and there is not much to be gleaned about Greek farms from other branches of literature or from inscriptions. But in agriculture as in so many other things the Romans appreciated the value of Greek experience and Roman writers on agriculture used more Greek than Roman sources.

ROMAN SOURCES

M. Porcius Cato (234-149 BC), the first of these Roman writers, fought hard politically to preserve what he regarded as the essential Roman virtues, which were primarily those of an agricultural community. He admits that trade can be more profitable, but there are serious risks involved; money-lending can also be lucrative, but it is dishonourable; agriculture produces the sturdiest soldiers and commands the most respect. Cato had worked hard on his family's farm when he was growing up and had learnt the basic principles of agriculture by personal experience.

His purpose in writing a treatise was not to produce a literary work that would find its way into the libraries, but a practical guide to landowners. He was not thinking primarily of the peasant farmer with a holding of less than ten acres, nor of the very large ranches, but of medium-sized estates with substantial farm buildings and a variety of crops. There is little logical organisation in his work and shrewd practical sense is accompanied by the kind of superstitions that are found in all agricultural societies. Besides advice on crops he discusses the siting of the farm, marketing, and the treatment of the work-force. He gives inventories of equipment required to operate an olive-grove of 140 *iugera* and a vineyard of 100 *iugera*, and detailed instructions for building pressing-rooms for olives.²

As a general guide to land-use Cato lists the various crops in order of profitability: 'If the soil produces good wine and plenty of it vines bring the greatest profit; next comes the irrigated garden; third the willow-bed; fourth the olive; fifth the meadow; sixth grain; seventh coppice-wood; eighth orchard; ninth mast-wood (trees providing fodder in the form of acorns or other nuts).'

But while holding that wood brings least profit, he assumes that the farm will grow what timber it needs. 'Plant elms and poplars round the borders of the farm and along the roads to give you leaves for the sheep and cattle, and timber when you need it.'³ If a farmhouse has to be built 'the owner will furnish the timber and materials needed, and also a saw and a plumb-line, but the contractor will fell, square, and cut the timber (into beams and boards).' Cato gives details for the construction of a pressing-room for the olives and seems to assume that the timber will be provided from the farm for, in specifying a beam thirty-seven feet (11.28 m) long, two feet (0.61 m) broad, and one foot (0.31 m) thick, he adds: 'If you do not have a single solid beam use two together.' This is the longest timber needed, but the press-beam requires a length of twenty-five feet (7.62 m). For the anchor-posts and guide-posts oak or pine are specified, for the great disc elm and hazel, because of their strength. Oak is used for dowels, cornel, one of the strongest woods, for nails, and willow for wedges. For the press-beam black hornbeam should be used.

The estate will grow its own trees: Cato discusses the raising from seed of olives, elms, figs, apples, vines, pines, and cypress. In assessing the profitability of crops he ranks the willow-grove higher than coppice-wood, and later writers on agriculture did not find this surprising, for the willow grows fast and served a number of useful purposes. The branches could provide poles and props: the combination of flexibility and strength explains its use for felloes on chariot-wheels in the Bronze Age, and its bark provided ties for vines; willows were also invaluable for basketry and for chair-making.

Silva caedua is a technical term for coppicing, which involves the encouraging of multiple stems from the base of a tree and cutting them at regular intervals. It was the commonest method of producing props and stakes, firewood, and secondary timbers. *Silva glandaria*, mast wood, would normally mean oak-wood but could also be applied to beech, whose nuts were valued highly for fattening pigs. Cato puts it last on his list, probably because he is thinking in terms of a mixed farm without much livestock. In Cisalpine Gaul, whose oak forests supplied a large part of the Roman market with pork, *Silva glandaria* was a good capital investment.

Cato is anxious that no land should be wasted: 'Where there is a river-bank or wet ground plant poplar cuttings and a reed thicket. Plant Greek willows along the borders of the reed thicket, so that you may have withes for tying up the vines.' But there is to be no planting for the sake of planting: 'The place for planting a willow-grove is on ground that is well watered and remains wet', but 'be sure before you plant that the crop is needed on the estate or that there is a market for it'.

Elms and poplars are specially commended because, in addition to providing useful timber, their leaves make good fodder for sheep and cattle; elm leaves are best, followed by poplar, but there are others. 'If you have poplar leaves mix them with the elm to make the latter last longer; and falling elms, feed oak and fig leaves'.

Firewood is another by-product that he considers seriously. Normally an orchard has low priority in Cato's mind, but for estates near large towns orchards are highly recommended: 'You can sell logs and prunings and there will also be a supply for the owner.' If there is a surplus of suitable stone a contractor should be employed to provide a lime-kiln and supervise its operations with timber provided by the owner: 'If he has no suitable stone and no market for his surplus logs he should use them to make charcoal.'

M. Terentius Varro was born at Reate in the Sabine country and had followed a senatorial career to the praetorship. But in politics his ambitions were strictly limited and he chose to devote himself to study and writing. He was the most learned Roman of his day and the range of his interests is amazing: more than fifty of his titles survive and they involve, besides philosophy and history, geography, philology and medicine. In 37 BC, in his eightieth year, he settled down to write his own book on agriculture.

Why did Varro so late in his life and against such a discouraging political background write a book on agriculture? He hoped, he says, that it could be of practical value to his wife when he died, but a much shorter book would have served that purpose very much better. The main reason is probably that after so much writing on academic subjects he was attracted by a subject in which he could add his personal experience to his learning from the library. He had himself built up large herds of sheep and horses in Apulia and at Reate and maintained a lively interest in his estates throughout his political career. While commanding his fleet in the war against the pirates he took the opportunity to discuss breeding with some of the big cattle-ranchers of Epirus,⁴ and when he had to lead a military force through Gaul to the Rhine he noticed where the vines and olives, which were such a familiar part of the landscape in the Italy he knew, reached their northern limit.

In form his book was very different from Cato's. Cato had simply provided a practical handbook of recommendations based on experience, set down without any serious consideration of how his material could best be organized. Varro's book was a literary work in dialogue form, designed to

interest as well as instruct. The book was divided into three sections--agriculture proper, sheep and cattle, birds, and other lesser animals. His material, he tells us, was drawn partly from other authors, partly from consultation with experts, and partly from his own experience.

Varro does not follow Cato in regarding vineyards as the landowner's first choice; he prefers meadows as an investment and concentrates mainly on stock-raising. Like Cato he lays no emphasis on timber but accepts it as an essential element on any large estate. The ideal site for a villa is at the foot of a wooded hill. Trees will be needed to mark the boundary of the estate: 'Some plant pines as does my wife, others cypresses as I have done myself'. He agrees with Cato on the importance of the elm, if the soil and site suit it: it is one of the best nurse-trees for the vine, its leaves are good for cattle and sheep, and the timber is useful for fencing-rails and fuel for fire or furnace. For stakes and props he recommends oak and juniper. The estate will also need a willow-bed and a reed thicket; and different types of land will be needed for coppice. Like Cato he thought that nothing should be bought which could be economically produced on the farm. It would be ridiculous, for instance, to buy such things as baskets, threshing-sledges, fencing, and rakes.

The next of the surviving prose writers on agriculture was, unlike Varro and Cato, a professional specialist; Lucius Junius Columella, who lived in the first century AD, was born in Spain, held a junior command in the army, but spent most of his life in managing his estates in Italy.

His objective is to explain how the landowner can make the most efficient and profitable use of his land. As in all general works on agriculture timber occupies little space, but he is fully aware of its importance. Columella's ideal estate, like Cato's, would be near the sea or a navigable river, in order to provide the most economical transport for the products of the estate that are to be marketed, and for the supply of what the estate needs from outside. It would include different types of land to suit different crops -- level land for pasture and arable, willow-groves and reed thickets, but also hills. Some hills should be reserved for grain crops when the slope is

not steep, others for olive-groves and vineyards, and the production of stakes for the vines. Hilly country was also required for timber and stone should building be needed, and for grazing.

Columella regards vines as the most profitable investment and discusses the management of the vineyard in great detail. In some parts of Italy it was customary to grow vines on trees and to plant trees specifically for the purpose. In most Latin poetry it is the elm that is most closely associated with the vine. Columella gave first place to the poplar, followed by elm and ash, whose leaves are liked by sheep and goats.⁹

But low-growing vines were more widespread and it was an obvious economy to grow the stakes that were needed on the estate itself. These were produced by coppicing and the best woods for the purpose were oak and chestnut. The chestnut grew more quickly and would renew itself after cutting in five years, whereas the oak required seven; it was therefore natural to use chestnut where it already grew or where the soil suited it: 'It likes a dark, loose soil, does not mind a gravelly soil, provided that it is moist, or crumbling tufa; it is at its best on a shady and northward-facing slope', a specification which would be generally accepted today. A detailed description of the planting of the nuts follows and then the cutting: the cut nearest the base should supply four stakes when split, and the second cut two. Every *iugerum* should yield 12,000 stakes.

Pliny closely follows Columella. Only large nuts should be used and they should be planted five together (as an insurance against failures). He also lists other trees that can be coppiced: ash, laurel, peach, hazel, apple, though these grow more slowly. Elder and poplar grow from cuttings. There is a year's difference in Pliny's cycle. According to Columella chestnuts should be cut after five years, oaks two years later. In Pliny chestnut should be cut within the seventh year, oak three years later.

This confirmation of a short rotation will reassure those who from current practice in England would expect a much longer cycle of some twenty

years. This much longer cycle is comparatively modern, influenced by the sharp decline of the firewood market on the introduction of cheap coal. Practice during the Middle Ages in both Italy and England was very similar to the Roman.⁶

An alternative to producing stakes and props by coppicing from the stump was to use branches from a growing tree. According to Pliny cypress trees were commonly grown for this purpose.⁷ Branches after twelve years' growth could be sold for a denarius apiece, making a cypress-grove a profitable investment; which is why they were called a daughter's dowry. Poplar branches were also often taken for stakes.

Columella's advice to landowners is to plant vines wherever the soil is suitable, for this was the most profitable investment provided that the vineyards are managed efficiently; but he has to admit that his own view is by no means generally accepted and that there are very many who would prefer to own meadows, mast-woods, or coppice. He defends his preference by quoting figures for the yield of vineyards, 'whereas if meadows, mast-woods, and coppice brought in 100 sesterces for every *iugerum* the owner would seem to be doing very well'. Columella has described coppice only as a means of producing stakes for vines; from his admission that it was a common form of silviculture it follows that there were other markets.

Coppice could produce fencing, poles, and firewood as well as stakes and props, and the market was sufficiently large to encourage the peasant as well as the large-scale landowner. When Martial makes the contrast between rich and poor, his rich man, Torquatus, 'has his palatial home by the fourth milestone; at the fourth milestone the poor Otacilius has bought a smallholding... Torquatus has planted a grove of myrtles; Otacilius has sown a hundred chestnuts.' These surely are to be his main source of income.

The younger Pliny, consulting a friend when he is considering the purchase of an estate, says that 'the land is fertile and rich and consists of arable fields, vines, and woods producing timber which provides a return that,

though modest, can be depended on'.⁸ The dependability of the income suggests coppice-wood cut at regular intervals and produced not only for the estate but for sale.

Coppicing was the easiest way of producing fuel and all substantial towns would provide a reliable market for landowners in the neighbourhood. The needs of Rome, however, must have been so large that they could not have been supplied from the immediate neighbourhood; coppicing for the Roman market was probably a common feature on the hillsides of Tuscan and Umbrian estates near the Tiber and its tributaries.

The last surviving Latin treatise on agriculture was written more than three centuries later than Columella. Palladius was a landowner of the late Empire. He knows the works of his predecessors and often follows Columella closely, but he makes new contributions from his own experience. For us his main importance lies in his list of building-timbers. In emphasising the usefulness of larch he is following Faventius;⁹ and together they imply that larch was more widely marketed, in the late Empire. More important, Palladius gives us our earliest evidence of the common usage of chestnut for building.

In the Greek and Roman writers on agriculture, timber is a minor concern, introduced only because it is a sensible economy for a farm to produce its own timber to maintain the buildings and to supply stakes for the vineyards and fencing, and also firewood. But no advice is given on the economical management of woods other than coppice. We might expect discussions on the age at which the various species of trees should be felled, on the comparative advantages of selling trees standing or felled, and on the most profitable trees to plant for selling outside the estate. The impression that one gains from literature is that woods were appreciated more for pasture and leaf-fodder than for their timber.

There is ample evidence of olives being planted on a very substantial scale, especially in Africa, but I have found no evidence of the planting of trees

to produce timber for the market. There must surely have been some estates in which a significant part of the income came from selling timber, but we hear nothing about them.

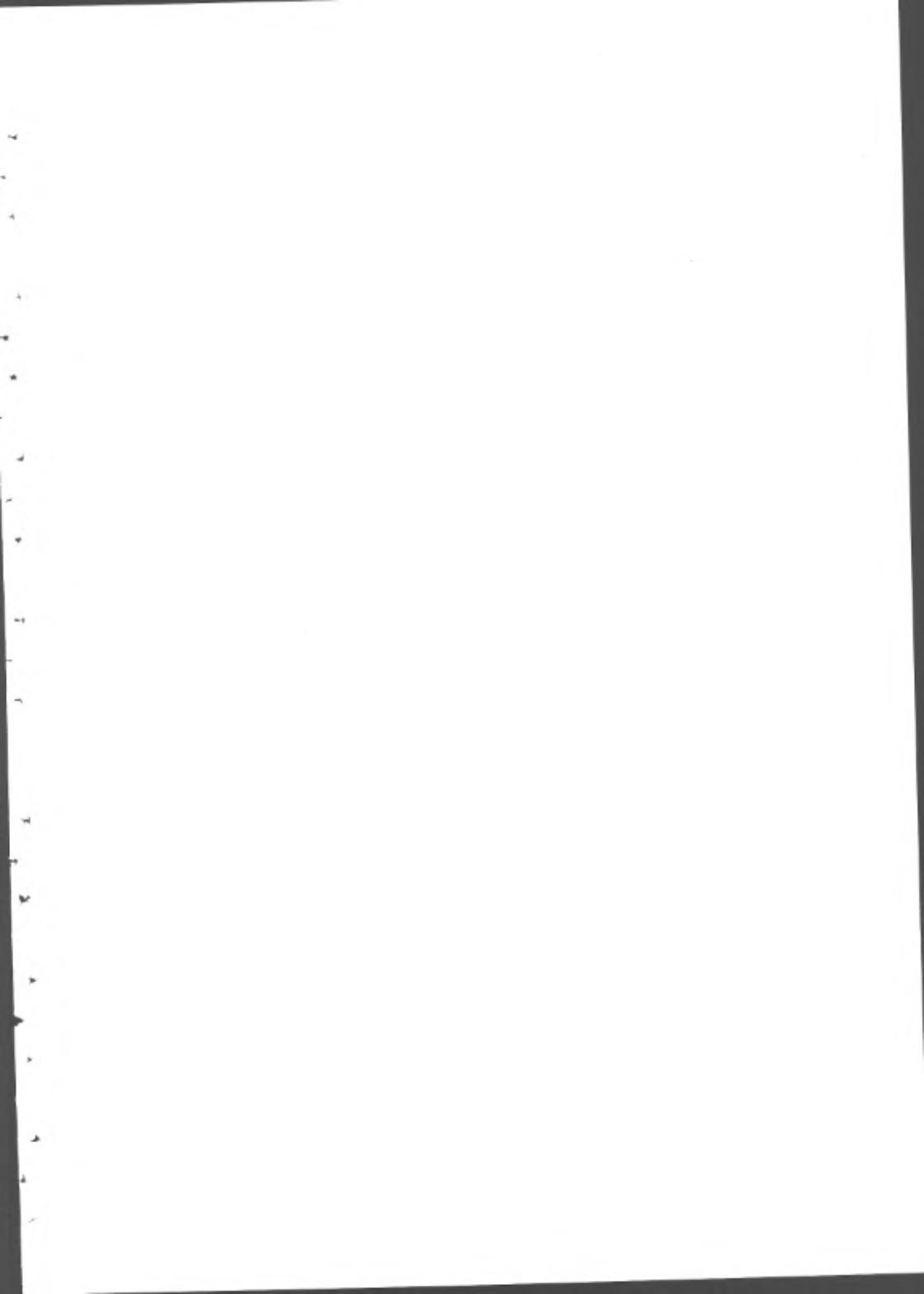
We also have to look elsewhere for the growing interest in trees for pleasure in the late Republic. The influences that gave rise to new attitudes to parks and gardens passed to Rome through Greek channels, but they derived ultimately from further east. Assyrian and Babylonian rulers, coming from the comparative treelessness of Mesopotamia, delighted in the great forests of the lands they conquered. Assurnasipal II collected plants and trees 'from all the countries through which he had marched and all the mountains he had crossed' and he lists forty-one species that he claims to have brought to Assyria.¹⁰ The Persians inherited this tradition and extended it. A *paradisos*, or park, was an essential adjunct of a Persian governor's court.

The main new development, in using trees to improve towns, probably came in the Hellenistic period, when architects were particularly interested in the peristyle enclosing a garden of trees and shrubs.

In the last century BC there was a growth in the scale of private gardens in the city. Although the centre of Rome and the riverside districts became more crowded, room was found by the western periphery, especially on and between the Pincian and Esquiline hills, for aristocratic gardens. Although we know the names and the sites of many of these gardens, no descriptions survive of their designs and we are left to guess what impact they had on public views and what use was made of trees in them.

For more detailed references to the authors mentioned in the text, readers are referred to the original Meiggs book '*Trees and Timber in the Ancient Mediterranean World*'.

1. Hesiod, *Works and Days*, pp 427-36.
2. M. Porcius Cato, *De agricultura*, pp 10-11.
3. For the importance of leaves as fodder, see Columella, *Res rusticae*, p11.
4. M. Terentius Varro, *Res rusticae*, Book 2, Introduction p 6.
5. Lucius Junius Columella, *De arboribus*.
6. Oliver Rackham, *Trees and Woodlands in the British Landscape* (1976), pp 72-73. In England the seventeenth century was a transitional period, when both short and long cycles are found. (More information on this subject from John Evelyn's *Silva, or a discourse on forest trees and the propagation of timber*. First Edition, London 1664.)
7. Pliny The Elder, *Natural History*
8. Pliny The Younger, various extracts from his letters.
9. H. Plommer, *Vitruvius and Later Roman Building Manuals*, Cambridge, 1979.
10. D.J. Wiseman, *Iraq*, 1952.





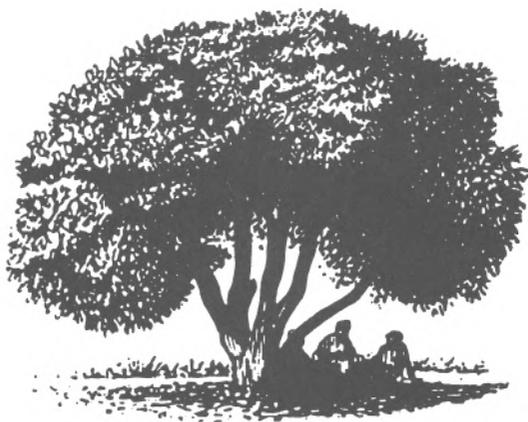
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SOCIAL FORESTRY NETWORK



HEDGES AND HEDGEROW TREES IN BRITAIN: A THOUSAND YEARS OF AGROFORESTRY

Oliver Rackham

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This network paper is based on chapters nine and ten of Oliver Rackham's *The History of the Countryside*, J M Dent & Sons Ltd, London, 1986, by kind permission of the author.

HEDGES AND HEDGEROW TREES IN BRITAIN:
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This network paper has been produced in order to try to raise the status of hedges and hedgerow trees in the thinking of foresters and others involved in agroforestry - types of tree-production which have often been regarded as marginal in more ways than one.

The paper is made up of much shortened versions of Chapter 9, Hedges and field-walls, and Chapter 10, Trees of hedgerow and farmland, in Oliver Rackham's book, *The History of the Countryside*.

Rackham has been able to track down information on hedges in Britain stretching back over more than a thousand years in some areas. In the process we are treated to information on the very intensive management of hedges which went on in the past, some of the methods used, and the tremendous productivity and longevity of hedges.

We have tried to retain as much of the broad interest of the original as possible, while taking out material only of interest to someone living in Britain.

Since so many farmers of the Third World are currently in the process of creating hedges for the first time, or of intensifying the management and diversity of their hedges in response to a land squeeze, we hope this paper might inspire some readers to look with renewed interest at hedging practices in their own areas - and perhaps indeed to write to the network about it.

HEDGES AND HEDGEROW TREES IN BRITAIN: A THOUSAND YEARS OF AGROFORESTRY

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HEDGES AND FIELD-WALLS

Regions with and without hedges are to be found over much of the world. In general, traditions of hedgeless open-field or prairie-farming belong in great plains or broad valleys. Where the whole of a region is not hedged, hedges tend to go either with hilly terrain or with the neighbourhood of woods.

Where Hedges Come From

In Britain, hedge-planting is familiar and well documented; nearly all more recent hedges have certainly been planted. (But) let us not slip into the generalization that all hedges have been planted: there are two other ways to get a hedge.

North America lacks this hedge-planting tradition: settlers fenced their fields with wood or wire. Yet the United States now has more miles of hedge than Great Britain. Americans believe that nearly all their hedges arose by default. Tree saplings sprang up alongside the fences and eventually replaced them. The prairies of middle Texas, originally maintained by wild animals, were parcelled out into farms and fields by barbed-wire fences in the 1880s. Seedlings of Texas elm, black oak, Texas ash, prairie sumach, poison-ivy, and many other trees and shrubs have sprung up at the bases of the fences, which have sheltered them from browsing and cultivation. The hedges have advanced gradually: aerial photographs prove that many of them were discontinuous, or not there at all, twenty years ago. There can be no question of any planting - this has been a time of

declining prosperity. Tree seeds have arrived naturally from the wooded canyons nearby. People have failed to prevent the trees from growing, and doubtless have found them a useful relief from replacing rotten fence-posts.

Later stages can be seen in other States. Michigan is parcelled out by nineteenth-century fence-rows. In Massachusetts the seventeenth-century fences were replaced by eighteenth-century hedges. They are seldom managed except by casual woodcutting.

Has this happened in Britain? Our tree species have much the same colonizing powers as their American sisters. Close to Hayley Wood (Cambridgeshire) there was a railway from 1892 to 1969, separated from the adjoining field by the usual wire fence and shallow ditch. Since the railway has been disused, trees and shrubs rooted at the base of the fence have grown into an almost continuous row which it will be possible to maintain as a hedge. Probably the railway-men who mowed the grass verges were unable to reach a narrow strip at the base of the fence.

That this has not happened more often in the last 200 years is because farmers and labourers have had time on their hands in slack periods and have chosen to spend it in tidying, 'brushing', and suppressing young trees. Fences turn into hedges by birds sitting and dropping seeds; the fence protects the incipient hedge.

Hedges arise in a third way as the 'ghosts' of woods that have been grubbed out leaving their edges as field boundaries. The marginal trees, often already forming a hedge to protect the wood's interior, may be left as a hedge having woodland, rather than hedgerow, characteristics.

History of Hedges and Walls

Prehistoric

In the Land's End Peninsula there is one of the most impressively ancient farmland landscapes in Europe. The Peninsula is a moorland-covered granite dome surrounded by a belt of farmland, with a strip of rough grazing

bordering the cliffs of the coast. The farmland is of tiny irregular pastures separated by great banks, each formed of a row of huge granite boulders-topped off level with lesser boulders and earth. Their function is to dispose of the boulders which had slid down from the moorland onto the fertile land. The banks zigzag and deviate in order to incorporate immovably large boulders or small outcrops. This is a famous example where the whole system is of a piece. The banks, from their construction, are contemporary with the fields; once formed they are difficult to alter and cannot be added to. They can be roughly dated by the Bronze Age objects which were buried in the banks. These banks, indeed, are among the world's oldest artifacts still in use.

Roman

The Romans in Italy had a long and elaborate tradition of hedging. The most ancient authors preferred a living hedge to a constructed fence, because it not only called for less expense, but was more permanent and lasted for an indefinite time.

Siculus Flaccus, a first century AD writer on surveying, says in a section on boundary-marks:

If hedges form the boundary, record their species; whether they are only on the extreme edge [of the property], because there are often bushes in the middle of fields owing to farmers' neglect; and whether they are artificially planted. For if a region does not have shrubs which can form a protection for vineyards or gardens, they are imported from distant regions and planted. And trees are often to be found put in hedges.

The Romans knew about plashing (thickening) a hedge, but it was evidently a wonder of far-off lands and was not familiar in the Italian countryside. Julius Caesar encountered the practice only just outside Britain in c. 56 BC. The Nervil tribe, he says, had an ancient practice:

They cut into slender trees and bent them over so that many branches came out along their length; they finished these off by inserting brambles and briars, so that these hedges formed a defence like a wall, which could not only not be penetrated but not even be seen through.

There is some evidence for hedges from excavation. For instance, part of an actual hedge may have been excavated at Bar Hill (Dunbartonshire). Beneath a Roman fort were found hawthorn stems showing the characteristic distortions, cuts and calluses produced by hedge management. It appears that there had been fields divided by plashed hawthorn hedges and ditches. When the fort was made in c. 142 AD, the hedges were levelled and the remains buried.

Anglo-Saxon

Old English has several words for hedges and the like, some of which have been preserved by their existence in place names. The commonest word for hedge, 'haga', is the 'haw' or 'haugh' of place-names such as Northaw and Thornhaugh.

Occasional hedges are named after beasts, which perhaps they keep in or out: I have found six roe[deer]-hedges, six swine-hedges, two wolf-hedges, and a hart-hedge.

Anglo-Saxon hedges were not related to particular soil types, but were quite closely correlated with woodland. They were not necessarily the boundaries of woods, although some were. Hedges existed mainly in regions that also had woodland: they were not, as a rationalizer might guess, a substitute for woods.

Medieval

There are several medieval allusions to the cutting of thorns and to their importance: this may be why spinneys - woods of thorns - were quite highly valued.

Hedge management is discussed academically by John Fitzherbert. After dealing with dead hedges he says: 'And lay thy small thorns, that thou hedgest with, over thy quicksets, (live cuttings) that sheep do not eat the spryng (regrowth) nor buds of thy sets' (Book of Husbandry, 1523). This suggests two other uses of thorns: to protect the 'quicksets' of a newly-

planted hedge, or to protect the regrowth of a hedge newly cut to the ground for underwood.

Sixteenth and seventeenth centuries

Early maps often carefully distinguish hedges from fences, walls, park pales, etc. and from unmarked boundaries. They show beyond argument that almost every parish in England had at least a few hedges; that most of the Ancient Countryside was already fully hedged; and that the majority of the hedges then existing were still there in the twentieth century. This is easily seen in the published selection from the early maps of Essex.

Writers begin to draw attention to the difference between fully-hedged counties and those still relatively unhedged. Thomas Tusser, in his book, *'Five hundred pointes of good Husbandrie, as well for the Champion or open countrie, as also for the Woodland'*, (1573), notes that among the many disadvantages of living in open country is the lack of firewood and the trouble of fetching other fuels from a distance. Hence the term 'woodland', used by writers at this time not for woodland in the normal sense, but for land possessing hedgerows which produced wood.

There had been nurserymen at least since the fourteenth century and Tusser tells us to:

Buy quickset at market, new gathered and small,
buy bushes and willow, to fence it withall.

Evidence of the value of hedges as sources of wood does not depend on generalized writers alone. In south Essex, surveys often treat hedges as woods, giving areas and years' growth since last felling. The Elizabethan age was a time of rising demand for fuel, some of which came from hedges. The 1590s and 1600s were terrible years of cold and poverty. Courts took an increasingly severe attitude to hedge-stealing. For instance:

Any persons breaking any hedge or stealing wood be put next Sunday or holiday in the stocks (ie open-air imprisonment) for 2 hours at the least, and the wood be placed before them, signifying the cause of the punishment.

Felsted (Essex) 1567

Eighteenth and nineteenth centuries

The Great Enclosures, though not a universal transformation, were a time of more new hedging than ever before or since. The hedges planted between 1750 and 1850, probably about 200,000 miles, were at least equal to all those planted in the previous 500 years. The same applies to stone walls, in moorland country as well as on former open-field. The thousand million or more hedging plants needed to make 200,000 miles of hedge were big business, and founded the fortunes of several Midland nursery firms.

Even in Ancient Countryside, the pattern of hedges in 1900 was not exactly the same as in 1600, but the changes should not be exaggerated. The network remains mainly medieval, but contains many single hedges of all subsequent periods.

New hedging and walling in this period also transformed many Scottish, Welsh, and Irish landscapes; but we cannot yet say how much of these countries was affected.

Recording and Dating Hedges

In the twentieth century hedges were taken for granted and thought to be uninteresting. The different kinds of hedge were not noticed, although their complex history was never quite forgotten. The scientific study of hedges began with the book on the subject by Dr Max Hooper and his colleagues (Pollard and others 1974). In the time of ignorance we supposed that the trees and shrubs in a hedge were determined, in some vague way, by soil, climate, or management, or by the whims of those who planted the hedge.

Dr. Hooper noticed that all these were less important than the age of the hedge. He counted the tree and shrub species in 227 hedges whose age, varying from 75 to 1100 years, was known from written records, and found an unexpected correlation between species and age.

The hedges of Rougham, Suffolk, have been studied by Mr David Dymond and Mr Colln Ranson. The parish is of common East Anglian type with a central, solitary church from which church-paths radiate to six ancient hamlets and four ancient farms. The youngest hedges, of 1 to 4 species, are in the middle and north of the parish on the site of open-field and commonland formally enclosed in the late eighteenth century. Mixed hedges, of 5 to 10 species, are in the neighbourhood of the settlements and throughout the south of the parish. Medieval Rougham evidently had a central open-field bounded by heathland on the north and surrounded on the other side by settlements each with its own hedged fields. In the south there may have been substantial woodland in the early Middle Ages, later reduced to the small ancient woods which still survive.

There are three hypotheses to account for Hooper's rule that older hedges have more species:

1. A hedge acquires further species as it gets older. Tree and shrub seeds are constantly being brought by chance and birds. They germinate and occasionally get established.
2. In earlier times it was the custom to plant hedges with more species than later. Enclosure Act hedges were generally planted with one species only, usually hawthorn: the large scale and commercial character of the operation encouraged simplicity, whereas earlier hedgers often had to use whatever saplings they could dig up in the woods or existing hedges.
3. The older a hedge, the more likely it is to be natural rather than planted, and therefore to be mixed from the start. Both kinds of natural hedge - the ghosts of woods, and accidental hedges on the Texas or Hayley Wood Railway model - are unlikely to be specifically documented; but conditions for them to arise have probably been much less rare in the past.

Conclusions

The study of hedges has suffered from the belief that they are merely artificial. From the American parallel I hazard the conjecture that perhaps one-quarter of those in England have arisen naturally along fences and boundaries, chiefly at times of recession and neglect. Already in Anglo-Saxon times there were newly-planted hedges and hedges inherited from the Roman landscape; but many hedges had probably arisen by default in the Dark Ages. This explains why there should have been more hedges in the vicinity of woodland: as in America, default more easily produces a hedge where there is a wood to provide the seed.

Hedges are more complex, and less easily replaceable than is often supposed.

TREES OF HEDGEROW AND FARMLAND

... To the two oaks that stand into the road; then along the hedge to the east of Lamhyrst; ... to the ivy-tod (*iffhtan stoc*); ... to the stock that the swing-gate used to hang on; from the stock out through the middle of Hill-lea to the old ash; from the ash south over the road to the apple-tree; from the apple-tree to the white hazel; ... along the hedgerow out to the Limburn ...

Boundary of Havant (Hants), dated 980
(A typical Ancient Countryside charter)

... Along the stoneway to the long crucifix at Hawk-thorn; then from Hawk-thorn to the long thorn at Icknield way; so to the third thorn at Wirhangra; from the thorn to the fourth thorn standing on Wrong Hill; so on to the fifth thorn; to the elder-tree (*elebeame*); then west along the little way up to the thorn ... along the old ditch to the place of AEpelstan's tree ... to the red-leaf maple tree ...

Boundary of Blewbury (Berks), dated 944
(A typical charter of downland and open-field)

This chapter is about the pollards and timber trees of hedges, trees standing in fields and around farmsteads, by watercourses, and on downland.

Hedgerow trees are poorly understood. Naturalists and writers associate trees with woodland; trees that do not fit that preconception are often misinterpreted as being an extension into the countryside at large of the eighteenth-century ideal of romantic landscape. Yet hedgerow trees are a distinctive and historic feature of England and probably Wales; they used to go far to make up for our relative lack of woodland. Most other countries that have hedges do not make our distinction between hedgerow trees and the rest of the hedge.

Species of Tree

Traditions of hedgerow trees differ from those of the nearby woodland. Oak is not the universal timber tree in hedges that it is in woods; hornbeam and lme are very rare as hedgerow trees. Among the peculiar trees of hedges, black and white poplars, though not now common, are of such historic importance as to deserve detailed mention. Elms have a separate chapter. Three poplars are native or ancient introductions to Britain. Aspen, now mainly a woodland tree, used to be quite common in hedges. Black and white poplars are meadow and hedgerow trees and have never been recorded in ancient woods.

The Anglo-Saxon Period

The origin of hedgerow, field, and settlement trees is lost in antiquity. The first detailed records show that they were already commonplace by the eighth century AD. There were non-woodland trees in Classical as in modern Italy, but we are not told whether the Romans had them in Britain. The mysterious pit-alignments of Iron Age England - single rows of regularly-spaced soil-marks running sometimes for miles across country - have been proposed as rows of pits in which trees were planted to mark boundaries, but there is no means of confirming this conjecture.

Middle Ages

No trees are directly mentioned in *Domesday Book* but with the revival of record-keeping in the thirteenth century, evidence for non-woodland trees is resumed. They are usually beneath the notice of surveys, but are mentioned in almost any long run of estate accounts or of court rolls. There were hedgerow trees and trees sheltering buildings, around ponds, lining river-banks, and standing in fields. They gave rise to income, disputes between neighbours or between landlord and tenant, obstructions of highway, and petty offences:

John House complains that William Bene ... [in 1435] cut off the branches of certain trees of the said John, namely poplars and maples, growing in a certain hedge of his belonging to three rods of arable land of the said John's ...; and the said William took and carried away the underwood of the branches which he had cut off; and ... the said William again [this year] in the same way cut off the branches of the said trees and took and carried away the branches whereby the said John has ... suffered damage to the value of 10s. [This evidently refers to pollarding.]

Court roll, Hatfield Broad-oak (Essex), 1443

John Petye cut down 1 poplar without permission ... [fined 2s]
Will Gunnild cut down 1 abel and sold it without permission ...
worth 2s 6d. [The trees were the lord of the manor's; Gunnild was apparently acquitted.]

Court roll, Nowton (Suffolk), 1310

The Lady Countess has one ancient and decayed poplar growing too far over the King's highway [and agrees to let the parish have it for a bonfire].

Court roll, Great Canfield (Essex), 1422

[A tenant] damaged the common highway and made a nuisance by cutting down trees.

Court roll, East Donyland (Essex), 1385

John Gru ... cut off the branches of an ancient oak without permission, amounting to 1200 billets worth 6s. [Another gigantic tree: there were about 500 billets to the ton of firewood.]

Court roll, West Donyland, 1392

John ... Gybbe cut down one willow in which was a swarm of bees (*unum swarm apum*) and destroyed the said swarm and took the wax and honey. [Fined 40d.]

Court roll, West Donyland, 1391

The Suffolk and Essex examples are from well-hedged parts of the country, but non-woodland trees existed even in open-field districts. They comprised both pollards and timber trees. The latter, as in two instances just quoted, were often much larger and more valuable than trees in woods. At Hindolveston, which had rather few non-woodland trees, I find that the average income between 1256 and 1327 from trees on 2200 acres of farmland was £ 0.53 per acre a year, equivalent to that from 12 acres of the local woodland.

Some records of non-woodland species exist. Ash is often mentioned, willow occasionally, and alder once. Records are of timber trees or pollards and for this reason do not often mention thorn. The species are independent of the local woodland. The commonest non-woodland tree could be oak, ash, elm, poplar, or willow; there is not trace of the woodland convention of selecting oak as a timber tree. Elm, although commoner than in Anglo-Saxon charters, was probably less abundant than now.

Apart from the lack of exotic trees, the most striking difference from the present scene was the abundance of (black) poplar, probably the fifth commonest non-woodland tree mentioned in Suffolk and Essex. Poplar and abele, among the few native softwood trees, were much used for floorboards etc in an age when conifers had to be imported.

Pollard willows along watercourses are recorded at Cambridge, both in the town fens (where they still exist) and in the open-fields, and at Oxford.

Hedgerow trees probably increased in numbers during the Middle Ages in parallel with the increase of hedges.

The Heyday of Hedgerow Trees, 1500-1750

From 1500 to 1750 the earlier kinds of evidence for farmland trees are reinforced by detailed surveys, maps, and landscape paintings. Some of the trees themselves are preserved in pseudo-medieval parks.

Soon after 1495 Thomas Waring made a detailed survey of more than 2000 timber trees at Tanworth-in-Arden (Warwickshire). The trees, except for some small groves, were said to be in 'hedges'. Oaks were described in terms of the house timbers that might be made from them, and their bark was valued. Ashes were regarded as wheelwright's timber and are measured as so many felloes in length. This is the earliest and nearly the most detailed survey of hedgerow trees on a farm or estate.

Such surveys later become more frequent. They may specify the number of trees, species and whether timber or pollard. The usual convention is to assign trees to particular fields rather than hedges: we are not told how the surveyor decided to which field to assign the trees in a hedge, or how he avoided counting them twice.

In 1605 James I had a survey made of trees and wood on Crown lands, for he intended to raise money by selling superfluous trees. Trees in woods, parks, commons, Forests, and farmland were numbered and valued; they are entered as 'tymber' or 'decaled'. Decayed trees were presumably pollards: they were of small value per tree and apparently absent from woods, and the sixteenth century, with its slowly-rising price of trees, was hardly a time when large numbers of timber trees would have been allowed to rot through under-use. In 1608-9 there was a further survey of timber on Crown lands suitable for shipbuilding, in order that the Navy, then still his Majesty's private Navy, might be maintained without having to spend money on buying timber. Only the larger trees were included, classified according to the special shapes which each might provide. These surveys, though hasty and unfinished, are extensive and enable woodland and non-woodland

trees to be compared.

The earliest pictures of identifiable landscapes, such as Hoefnagel's view of Norwich in 1580, depict hedgerow trees. They appear in vast numbers in almost all the views of English landscapes by the seventeenth-century artists Jan Siberechts, John Kip, and Mathias Read.

Much of the Ancient Countryside in the sixteenth and seventeenth centuries had at least as many hedgerow trees as in 1951 and more than twice what it has now. Many were pollards. James I's 1605 survey shows that pollards often outnumbered timber. On Crown-owned farmland in Essex there were 409 timber and 9121 'decaying' trees; in Hertfordshire the figures were 1110 and 4184.

By the mid-eighteenth century there were more hedgerow trees than ever before or since. At Thorndon timber trees and pollards were sixty times as many as the average for eastern England now - indeed they were thicker on that farmland than in most woodland. This was probably exceptional: the owner remarked on the 'Pollard Trees which this Estate is very much incumbered with & if a great deal more was cut down it would be much better for the Land'.

Such immense numbers are confirmed by landscape artists, who often show hedges astonishingly packed with trees.

Oak, ash, and elm were by far the commonest species. Any of the three could predominate according to no obvious pattern, except that oak, then as now, was most often in the majority on the less clayey soils. Elm was distinctly commoner than in the Middle Ages, but willow and poplar had declined. Oak, elm, ash, and others were pollarded; where pollards were thick on the ground they usually included much elm.

Hedgerow timber shows signs of being preferred for shipbuilding, even though this industry was still only a small user. The 1608-9 survey, limited to oak on Crown estates, records 1623 suitable oaks in Norfolk, Suffolk and Essex. Although there was considerable woodland half these trees were on farmland. Hedgerow trees predominated in large sizes (over 45 cubic feet per tree) and in special shapes for parts of ships such as hooks and knees.

Changes After 1750

The latter eighteenth century saw itself as a time of decline in hedges and hedgerow trees, in consequence of agricultural subsidies, Enclosure Acts, and reorganizing of fields. Grubbing-out of hedges and trees was reported from eighteen out of thirty-eight counties examined. This source is perhaps prone to exaggeration; but it is supported by John Clare, one of the few literary writers to tell us what the effects of an Enclosure Act looked like at the time. Clare wrote in sorrow and fury at the tidying-up of the medieval landscape of his childhood and the destruction of Langley Bush, Lea Close Oak, and the pollards which had given Helpston its individuality.

The loss of numbers (though not of individuality) was to some extent made up by trees planted in the new hedges of eighteenth-century enclosures; but many later enclosures appear to have had few or no hedgerow trees.

From 1810 to 1860, when the price of oak was unusually high, hedge trees were a valuable source of income, as shown by the accounts of St. John's College, Cambridge. The college sold wood and timber regularly from wooded estates at Thorington (Essex) and Great Bradley (Suffolk), but also, though less frequently, from estates without woodland. In 1838, for example, Thorington produced £ 219, while timber from two woodless estates realized £ 370 and £ 276.

In the late eighteenth century pollarding became unfashionable and new

pollards ceased to be formed in most areas, except for willows along water-courses. The reason may have been the growing ascendancy of landlords over tenants. In 1787 St. John's College was complaining that

The ... tenants ... strike off the heads of the young oaks ... and make pollards of them; the heads of the pollards belong to the tenants so that by this means the College Timber and Timber-like trees will all be made pollards of ...

The period 1750-1870 was, on the whole, an age of agricultural prosperity in which hedgerow trees almost certainly decreased. The period 1870-1951 was, on the whole, an age of agricultural adversity, in which there was less money to spend on either maintaining or destroying hedges. Neglect gave innumerable saplings an opportunity to grow into trees. Moreover there was probably less felling of timber than usual between 1860 and 1914. Even the great fellings during and between the World Wars, and the Elm Disease epidemic of the 1930s, failed to offset the beneficial effects of neglect.

Renewal of Non-Woodland Trees

Foresters have long known that planted trees, unless sheltered, are slow to grow and difficult to keep alive; a lesson which modern conservationists insist on learning the hard way. Despite this most twentieth-century writers assume that farmland trees are all planted: the philosophy that trees are mere artefacts is strong enough to overcome practical considerations.

Like many misapprehensions, this has some truth. Evidence for planting non-woodland trees is stronger and much earlier than for trees in woods. For example:

In wages of 2 men pulling ashes to plant at Hyndringham and Gatell for 6 days - 2s.

Account roll, Hindolveston (Norfolk), 1312-13

In wages of 1 [man] planting ashes in the manor for
13½ days at 1½d - 20½d.

Account roll, Hindringham (Norfolk), 1312-13

In pulling plants of thorn and ash to put on 1 ditch
from the south of the manor[-house] to the
churchyard, 14 works [i.e. units of labour service].

Account roll, Forncett (Norfolk), 1378

Plants were dug up from local woods and hedges, but there was also a nursery trade; in the fourteenth century plants of elm, hazel, willow, and poplar were articles of commerce. Oak is not mentioned, possibly because it is difficult to transplant satisfactorily.

Despite all this evidence, confirmed as it is by exotic trees in nineteenth-century records and in the landscape today, the case for planting should not be overstated. Trees of hedges are not a random selection from nurserymen's catalogues. Exotic species, including popular garden trees like hybrid lime, are still a minority, but hedges are full of species which are not planters' trees (e.g. maple and many elms). ...

Planted trees, especially oaks, are inevitably at a disadvantage by losing some of their roots in the transplanting. This does not apply to natural saplings and suckers, which grow faster and are not killed by drought. There can be no doubt that, except in new hedges, most hedgerow trees were not planted but promoted from such saplings, which cost nothing and therefore rarely appear in records.

Non-woodland Trees as they are now

Recent decline

In the 1960s many influences conspired against non-woodland trees. Unwonted agricultural prosperity coincided with a lack of confidence in free-standing trees as a crop (due, in large part, to the decline of arrangements for selling them). There was money, some of it public, to spend on either destroying hedges or excessively maintaining them, and both operations were mechanized. Established trees were regarded as a nuisance and destroyed for various reasons or pretexts, such as that they supposedly got in the way of maintaining watercourses. Even worse for young trees was the fashion for tidiness. Hedging and trimming formerly done carefully once in five to ten years were now done hastily every year. A man with a tractor, 'brushing' a ditch-bank, could cut off a thousand saplings in an hour without noticing that they were there.

By 1970 conservationists, including many farmers, realized that hedgerow trees were in a bad way, but the cause was disastrously misdiagnosed. The planting mentality had become established and prevailed over the conservation of existing trees. Trees were treated as mere inanimate ornaments with no life or meaning of their own. People were encouraged and financed to plant trees as a matter of routine, without considering whether it was necessary. Species planted were a random mixture of whatever nurserymen wanted to get rid of. When they died this was put down to bad luck with the weather rather than to the planting itself being inadvisable. Official trumpets were blown for the planting of tens of thousands of trees, but no voice was raised against the destruction of hundreds of thousands of natural saplings.

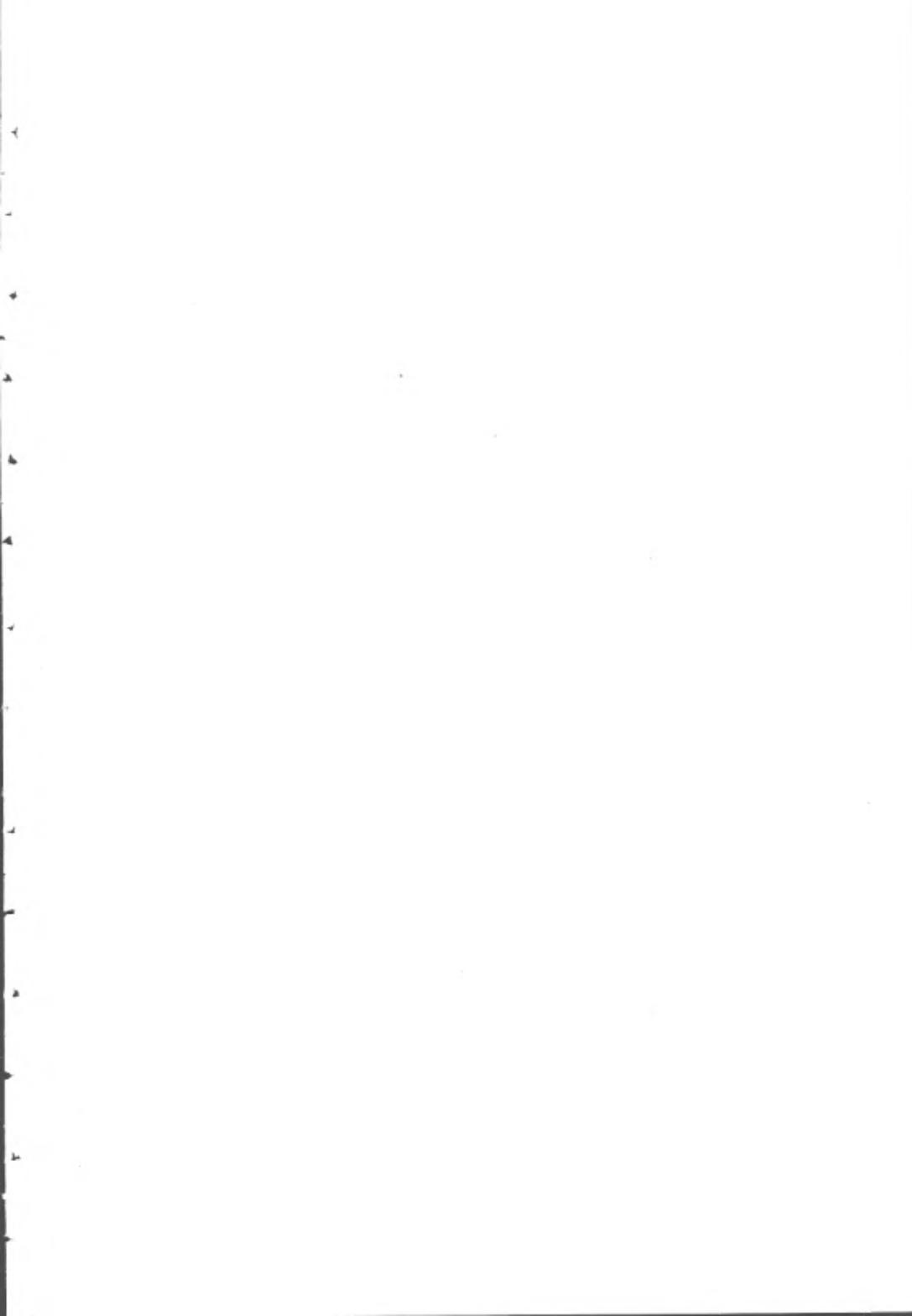
Most of these factors have operated from time to time in the past; what is unprecedented is their coming all together. Hedgerow trees have usually declined even more than hedges, and field trees more still. This is still not so everywhere. Where agriculture is less prosperous and less mechanized, farmland trees still flourish. Parts of inland Cornwall, with its erstwhile

reputation as a rather bleak land, now have a profusion of hedgerow and even field trees, many of them young and still increasing. The same happens anywhere where ancient hedges are a source of saplings and money is not spent on cutting hedges every year. And throughout the country some individual landowners do understand hedgerow trees, mark and protect likely natural saplings, and where they have to plant take trouble to cherish and water the planted saplings.

Pollards

Pollards have a strong and mysterious geographical distribution. They still exist in thousands in Essex and Suffolk but in other areas there are almost none. I cannot suggest why. If a hedge has pollards, it is almost certainly older than the Enclosure Acts. Most pollards are antiquities; even a quite small bolling can be 400 years old. Usually they are aged between 200 and 600 years, although some giants are older still, and in a few places with a strong tradition new pollards were started in the nineteenth century. Many pollards have not been cut for several decades, although as fuel rises in price this art of managing trees is happily being revived.

The medieval practice of shredding - cropping the side-branches of a tree leaving a tuft at the top - vanished from Britain long ago. Only at Haresfield (Gloucestershire) have I seen a few ancient ashes that may once have been shredded.





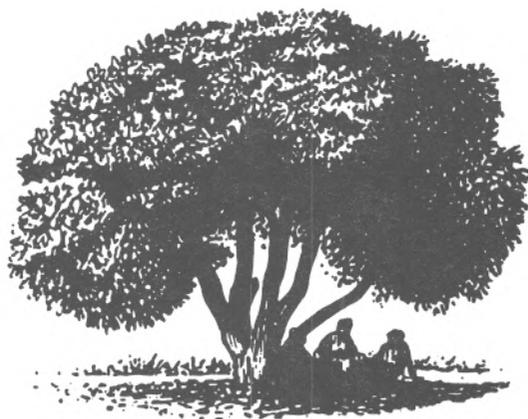
Agricultural Administration Unit

Regent's College
Inner Circle
Regent's Park
London NW1 4NS

Tel: 01-487 7413



SOCIAL FORESTRY NETWORK



Newsletter

Agricultural Administration Unit, Overseas Development Institute

The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these has between 600-1500 members, drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on other networks can be obtained from network secretaries. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

ISSN 0951-1849

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Photocopies of any part of this publication may be made without permission, but we would be interested to know how network papers are used, for our own further information.

The opinions represented are those of the authors and network members and do not necessarily reflect the policies of the Overseas Development Institute.

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<p>NETWORK PAPERS ACCOMPANYING THIS NEWSLETTER</p>
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The theme of the Network papers in this Winter mailing is the role of nurseries as extension tools in social forestry projects, and in particular the roles of centralized and decentralized nurseries. The papers presented here make it clear that both may be needed in different contexts and for different purposes, but that it is decentralized nurseries which have the greatest development impact, and which most support sustainability. The papers offer case study material from north and south India, from Tanzania and from Nepal, the latter paper concentrating in particular on nurseries specifically designed to offer villagers fodder-tree seedlings in an area of great importance for livestock production.

- 9a 'Fodder trees, nurseries and their central role in the hill-farming systems of Nepal'
by Patrick ROBINSON and Ian THOMPSON
- 9b 'Drylands agroforestry, homestead trees, and the nurseries to support them. NGO experience in Tamil Nadu, South India'
by T. FATIMSON with the staff of the Social Forestry Information Project, Madurai
- 9c 'After Ujamaa: farmer needs, nurseries and project sustainability in Mwanza, Tanzania'
by Christian GUGGENBERGER, Patrick NDULU, Gill SHEPHERD
- 9d 'Nurseries in Gujarat, North India: two views'
- (1) 'Observations on centralised and decentralised nurseries in an NGO in Gujarat, India'
by Harnath JAGAWAT
- and
- (2) People's decentralised nurseries: field-level experiences of the Gujarat Forest Department, India'
by D.P.S. VERMA
- 9e 'Forest Tree Nurseries in Agricultural High Schools: Analysis of Ecuadorean Experiences'
by Dennis F. DESMOND

NETWORK NEWS

EXTENSION MATERIAL

During the Autumn of 1989, we contacted everyone on the Network in a trawl for forestry extension material. The response has been overwhelming: over one-third of our members have replied and sent us extension material produced by their projects and organisations. We were able to hire-in an assistant for a short period to answer letters and summarise some of the material. However, we are continuing to receive material and apologise if we have not yet thanked everyone for sharing their information with us. We are now seeking funding for six months' assistance with the material in order to produce a source-book guide to the production of forestry extension materials, and an annotated bibliography. There has been immense interest in our collection from a number of different sources, and all have agreed that it is timely to bring together everyone's current knowledge on extension methodologies.

The extension material we have received include extensive field-manuals, audio-visual materials and posters devised in conjunction with local people. One of the major issues we will address in our guide to appropriate extension methodologies is the costs involved in producing and using different material, and thus what type of extension material and strategies are appropriate at different funding levels. We hope that the two books we produce will be of use to a broad spectrum of people in different situations: for those involved in teaching and training courses, and for those involved in extension work in villages.

NETWORK ANNOUNCEMENTS

The Environment, Development and Economic Research Conference

27 - 28 March 1990

Regent's College

Regent's Park,

Inner Circle

London

The conference is organised by the Overseas Development Institute and aims to set an agenda for policy-related economic research on environment. Its focus will be on developing countries although trends in developed countries will be examined where relevant.

The conference agenda includes the following areas:

Transnational Issues, including international policies for global environmental threats.

National Environmental Management and Policies, including natural resource degradation.

Methodological Issues, which will include discussion of economic valuation of environmental resources.

Further details available from:

**Jim Winpenny
Conference Organiser
Overseas Development Institute
Regent's College
Inner Circle
Regent's Park
London, NW1 4NS, UK**

ESMAP - A Roster for Gender-Sensitive Consultants

The World Bank

ESMAP is seeking to expand its roster of gender-sensitive short-term consultants in both household energy and energy efficiency and strategy, and also to increase the number of women experts on its roster generally.

For further details about this roster write to:

**James P. Mullan
Chief of Household Energy Unit
The World Bank
1818 H Street N.W.
Washington D.C. 20433
USA**

NETWORK ANNOUNCEMENTS**Seminar on Research Policy for Community Forestry**

8-11 January 1990

Bangkok, Thailand

This seminar organised by the Regional Forestry Community Training Centre discussed the present research policies in the Asia-Pacific region, and the means by which they influence or affect solutions for the maintenance and development of community forestry programmes in the region.

Further information about the outcome of this seminar may be obtained from:

Dr. Somsak Sukwong
Director
Regional Community Forestry Training Centre
c/o Faculty of Forestry
Kasetsart University
Bangkok 10900
Thailand

Wasteland and Forest Management Workshop

15-17 March 1990

Anand, India

The Institute of Rural Management Anand, India, is holding a workshop to discuss issues relating to the legal and research needs for management of forest resources.

Detailed information about the workshop may be obtained from the coordinator:

Dr. Vishwa Ballabh
P.O.BOX 60
Anand 388001
Gujarat
India

NETWORK ANNOUNCEMENTS

Forest Tree Improvement Short Course

12-30 March 1990

North Carolina State University

Raleigh, NC, USA

This course will be held at the College of Forest Resources, North Carolina State University, from 12-30 March 1990. The three-week course will convey technology appropriate for optimum management of temperate and tropical plantation species. The course is designed for foresters with field experience, and will include class room instruction and field trips to view some of the most intensively managed plantation operations in the southeastern United States.

For further details about the course contact:

Robert C. Kellison, Director
International Forest Programs
College of Forest Resources
North Carolina State University
P.O. BOX 8007,
Raleigh, NC 27695-8007, USA
Tel: +1(919)-7372738
Telex: 4937780 CAM UI
Fax: +1(919)-7377231

The Third Certificate Course in Community Forestry

11 June to 7 December 1990

Kasetsart University, Bangkok, Thailand

The course which extends over a six month period will explain the role of forestry in daily community life. It will introduce the student to the complex interactions involved in managing, promoting and overseeing community forestry projects and programmes. The course encompasses the skills needed for the practitioner of community forestry, including appropriate extension techniques, an understanding of human and economic behaviour, the complexity of resource use systems and methodologies for planning and administration.

Further details about the course are available from:

Dr. Somsak Sukwong, Director
Regional Community Forestry Training Centre
Kasetsart University
c/o Faculty of Forestry
Bangkok 10900
Thailand
Tel: +66(2)-5790108
Telex: 21957 RECOFTC TH

NETWORK ANNOUNCEMENTS

Tenure and Management of Natural Resources in Sub-Saharan Africa

Course from 18 June - 20 July 1990

University of Wisconsin

The course is intended for professionals from African countries responsible for policy making, project design, socioeconomic research, and for managers of natural resource programmes. Course topics include land and resource tenure systems in sub-Saharan Africa; causes and extent of soil erosion, deforestation and loss of species diversity in these areas; relationships between tenure security, user decision-making and economic efficiency; resource legislation; gender rights and resource management; common property resource management, and tree and land tenure as factors in adoption of agroforestry practices. Participants will be expected to complete a project related to tenure and resource management issues in their home countries. Further information is available from:

Dr. Steven W. Lawry
Land Tenure Centre
University of Wisconsin
1300 University Avenue
Madison, WI 53706, USA

**Fourth International Permaculture Conference:
Developing a Sustainable World**

10-15 February 1991

Kathmandu, Nepal

The aim of this conference is to serve as a forum for discussion of the use of permaculture for the sustainable development of land use systems in the Third World. Permaculture has focussed primarily on cooperative agricultural models in the belief that without achieving a stable form of agriculture, social stability is impossible. As such each permaculture system is developed to suit a particular ecological and social environment. There are general principles which may be applied widely but the strength of permaculture lies in its adaptability to changing environments.

Policy makers, planners, and those interested in the practice of permaculture are invited to attend. The conference will include presentations from experts on sustainable farming systems, energy efficient housing, cooperative economic systems and new directions for aid projects.

Further details concerning the conference and the pre-conference permaculture design course are available from:

Institute for Sustainable Agriculture
GPO Box 3033
Kathmandu
Nepal
Fax: +977(1)-524509
Telex:2439 ICIMOD NP

LUNCHTIME MEETINGS

Social Forestry Network

14 December 1989 Evolving Concepts and Practices in Community Forestry: Experiences of the Nepal-Australia Forestry Project
Prof. David Griffin, Australian National University,
Department of Forestry, Canberra, Australia

AA (Research and Extension) Network

9 October 1989 Biomass Conversion, Energy efficiency and Integrated Farming Systems: Lessons from China
Prof. George LAI CHAN, Guangdong Academy of Sciences,
Institute of Geography Shenzhen, Guangdong, China

REPORT ON THE RECENT LUNCHTIME MEETING

Evolving Concepts and Practices in Community Forestry: Experiences of the Nepal-Australia Forestry Project

held on 14 December 1989

Prof. David Griffin, Project Director of the Nepal Australia Forestry Project discussed the evolution of a community forestry project in two hill districts of Nepal. His involvement with the Project since 1975 has given him an unique insight into the challenges faced in implementing a project which has moved from tree-planting programmes to instituting participatory forms of local forest management at the village-level.

The flexibility with which the Project operates has led to its responsiveness to rapidly changing situations: innovation has not been stifled through rigid project frameworks, objectives and targets. The Project has now moved to institutionalise change through training field-level forest personnel as facilitators of participatory forest management. The discussion focussed on the lessons to be drawn from the experience of this Project to forest management projects in areas of the world other than South Asia.

AGROFORESTRY IN AFRICA: THE CENTRAL ROLE OF NURSERIES

Paul Kerkhof

Introduction

The following discussion of different types of nurseries draws on a larger study which surveyed 19 projects in 11 countries in Africa. The aim of this study was to look at the experience gained by these agroforestry projects which were chosen to represent a range of ecological conditions and project approaches. The study summarises the main lessons learned, viewed from the perspective of the people directly involved in designing and implementing projects.

Seedling production is a key element in most agroforestry projects. The question of how this is best organised has been a subject of considerable debate, which ranges from the use of centralised and highly controlled nurseries to decentralised farmer-run nurseries.

Centralised Nurseries

Most of the projects in this study have started by establishing centralised nurseries. Some, especially those in very dry areas, have relied on them entirely. The advantage of centralised nurseries is that they enable a seedlings production system to be set up quickly. They also allow the project to control the quality and number of seedlings produced.

The obvious problem with centralised nurseries is seedling distribution. It is often forgotten that, even if farmers consider seedlings useful, they rarely rank them high on their list of priorities. One project found that farmers were unwilling to walk more than about 2 km to collect seedlings. In many projects, however, the average distance between the central nursery and farmers is twenty or more kilometres, and sometimes much further. It is therefore not surprising that the uptake of seedlings has often been disappointing.

The problem can be alleviated by transporting seedlings to villages, schools and other collection points. But this is only possible if vehicles are available at planting time. Even then, there can be problems for lorries and pick-up trucks attempting to use bad rural roads during the rainy season. As a result of these difficulties, large numbers of seedlings are often wasted. It is not uncommon to find that less than half the seedlings grown in a central nursery find their way to the local community.

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Group nurseries

A number of projects have promoted communal or group nurseries at the village level as a way of decentralising seedling production. The techniques used tend to be simpler than in standard forestry nurseries and they are usually much smaller. Most are supported by projects or government agencies and are provided with plastic bags, tools, seed and advice.

Group nurseries can go a long way towards solving the seedling distribution problem. But projects have found that establishing and sustaining them is not always an easy task. It requires a strong extension organisation and above all, an interest in tree growing among the local people.

Some projects have offered incentives for villagers to establish nurseries. One project provided inputs such as water points and donkey carts and paid for the nursery staff. This confuses the issue to some extent as it raises the question of whether people really want the nursery or are just out to get the benefits provided. Projects therefore face a deliberate choice. If they provide too little assistance groups may not be interested in setting up nurseries; but if they provide too much, the motivation of groups may be distorted so the whole operation becomes unsustainable.

Problems of this kind were common among the projects visited. None were entirely satisfied with the results they had achieved so far. In most projects, group nurseries accounted for well under half of total seedling production, and usually much less. Despite this, however, there was a widespread feeling that group nurseries do play an important role in encouraging communities to learn about tree growing and take responsibility right from seedling production onwards.

Farm nurseries

It has been generally assumed that farmers need to be provided with seedlings if agroforestry programmes are to have an impact. A survey in west Kenya, however, carried out in 1984 by KWDP, found that as many as a third of households were already raising their own seedlings without any outside assistance.

The costs and work involved are negligible. The seedlings are mainly raised at the beginning of the rainy season so that watering is not required. Plastic bags are not used, there is no root pruning of seedlings and little effort is made to protect the nursery against animals. The seedlings are planted on farmers' own lands or are sold or given to others.

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Since then, there has been increasing interest in promoting or assisting such 'farm nurseries'. A number of projects now provide farmers with assistance in the form of seeds, plastic bags, technical advice, and perhaps a watering can. Extremely encouraging results have been reported in some places. In Koro in Mali, for instance, it is expected that the seedling production from nurseries run by individuals will soon exceed that from central nurseries.

The KWDP project in Kenya has made considerable efforts to promote such farm nurseries. It has used films, radio and mass meetings as ways of reaching large numbers of people. It also provides farmers with seeds. The project has suggested a number of ways in which the nurseries might be improved but it seems that few farmers are interested in accepting this advice. They refuse to carry out root pruning, for example, despite the improvement it brings in the survival of seedlings after they have been planted out.

Some projects have used cash incentives to encourage farmers to grow seedlings on their farms. These are then bought at a fixed price and used on the project. But as in any case where money is given, questions arise about the sustainability of the practice.

The discovery that farmers are perfectly able to produce their own seedlings when they wish to is important. It means that centralised seedling production may not always be as necessary as has been assumed in the past. The challenge for projects is to identify ways by which these nurseries can be encouraged.

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The main research and writing was carried out by Paul Kerkhof for the Panos Institute, London. The study was edited by Gerald Foley and Geoffrey Barnard and will be published by the Institute as a book entitled: *Agroforestry in Africa: A Survey of Project Experience*

For further details about this book and the work of the Panos Institute, please contact:

The Panos Institute
8 Alfred Place
London WC1E 7EB, UK

SHORT ARTICLES

LIST OF PROJECTS COVERED IN SURVEY

Type A: Tree growing to increase productivity in high potential areas

- | | |
|--|----------|
| 1. Projct Agropastoral de Nyabsiindu | Rwanda |
| 2. Soil Erosion Control & Agroforestry Project | Tanzania |
| 3. Promotion of Adapted Farming Systems Based on Animal Traction Project | Cameroon |

Type B: Tree growing for fuelwood and other products

- | | |
|---------------------------------------|----------|
| 4. Gituza Forestry Project | Rwanda |
| 5. Kenya Woodfuel Development Project | Kenya |
| 6. BAT Tree Planting Project | Kenya |
| 7. Rural Afforestation Project | Zimbabwe |
| 8. Gursum Land Use Project | Ethiopia |

Type C: Village forestry projects

- | | |
|---|---------------------|
| 9. Projct Bois de Village | Mali & Burkina Faso |
| 10. Village Woodlot Programme | Tanzania |
| 11. Reforestation Around Wells in the North | Senegal |

Type D: Tree growing to increase productivity in dryland areas

- | | |
|--|--------------|
| 12. Majjia Valley Windbreak Project | Niger |
| 13. Koro Village Afforestation Project | Mali |
| 14. Projct Agroforestier | Burkina Faso |
| 15. Soil Conservation and Agroforestry Project | Zambia |

Type E: Projects to promote natural regeneration

- | | |
|---|----------|
| 16. Hifadhi Ardhi Dodoma Project | Tanzania |
| 17. Turkana Rural Development Programme | Kenya |
| 18. East Pokot Agricultural Project | Kenya |
| 19. Forest Land Use Project - Guesseibodi | Niger |

THE ROLE OF NURSERY CENTRES

John Casey

Introduction

The fuelwood crisis and its accompanying problems stimulated the development of social forestry projects, and to the planners the answer was relatively easy - produce tree seedlings of quick growing exotic species which the people will plant. In order to produce seedlings, nurseries are needed and therefore a major component of most social forestry projects has been the establishment of extensive nursery networks.

For most projects, establishing nurseries and growing seedlings was relatively easy and millions of trees were produced, but the planting of these trees by farmers fell considerably short of the proposed targets. Projects have since learnt that nurseries have grown the wrong species, farmers need extension advice, farmers have difficulties collecting seedlings, young trees are susceptible to animal and insect damage and many farmers propagate their own seedlings. Armed with such information planners are now developing new approaches to social forestry projects but is there still a place for government (project) run nurseries?

Strategic Nursery Network

The following discussion of a strategic network of nurseries is based on the author's experiences as a monitoring and evaluation officer with the Rural Afforestation Division of the Forestry Commission in Zimbabwe.

A project may decide to establish a nursery network in an area, but it has been found that most farmers will not travel further than 5 kilometres to a nursery to collect seedlings. An extensive network of nurseries will therefore be required if a significant proportion of the rural population is going to be reached. Such networks would be a cost and administrative burden to governments and thus, more efficient and effective ways of producing seedlings needs to be investigated. One possibility is to offload production onto the local community, by encouraging and supporting the setting up of individual or farmer nurseries, school nurseries, council nurseries, etc. This approach still requires project nurseries but rather than an extensive spread of large centralised nurseries a strategic network of relatively few government or project nurseries should be planned and the role or uses of these nurseries must be broadened.

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Nursery Education and Training Centre

A nursery education and training centre (NETC) comprises a seedling production area, parent fruit tree orchard and demonstration site. The seedling production area should not produce vast quantities of seedlings but should be used to demonstrate trees that can be grown in the area. The trees should be clearly labelled with their local name and uses, and the seedling production area should also grow 'difficult' species, species for research, fruit trees and be used to demonstrate seedling production.

The demonstration plot adjacent to the nursery should show how trees could be planted within the farm such as boundary planting and rows of intercropped trees. Once the trees have been established and are growing, tree management practices (coppicing, pollarding) may then be demonstrated. In addition to this a parent fruit tree orchard should be established with a small area of fruit trees such as mangoes and oranges which can be used as a source of material for budding and grafting.

The NETC should act as a practical learning centre where farmers and others involved in nursery establishment can have experience of new techniques and species useful for their area. A model of a small scale nursery (less than 5,000 trees) based on locally available materials would be an effective extension tool. Field days or practical demonstrations should be regularly held at the nursery for farmers, agricultural extension workers, schools (teachers and students), women's groups and other interested groups.

The NETC should be used to produce specialist trees, demonstrate seedling production (pot filling, sowing, etc), planting and how to set up a small nursery. The centre should also carry packets of seed or even seed-packs (seed + plastic pots) for distribution. The centre should be able to advise on most tree problems and issues and have available quantities of handouts or booklets on seedling production, planting and management.

Staff who run these centres must be competent nurserymen, possess the necessary skills to deal with the public and have the ability to organise and put across demonstrations of techniques in a clear manner.

A NETC should comprise:

- seedling production area
- fruit tree orchard (for building/grafting material)
- demonstration plot (planting and management)
- office and store
- demonstration area (small scale nursery, pot filling, sowing, watering).

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The role and functions of NETCs:

- Provision of seedlings especially difficult to grow species and budded/grafted fruit trees.
- All seedlings should be clearly labelled with name (local name), where to plant (ecological zone) and the uses of the trees.
- Provision of seed packs (packet of seed plus plastic pots), and also packets of seed, plastic pots, cuttings, etc.
- Demonstration model of how to set up a small scale nursery.
- Provision of literature/handouts on nursery establishments, sowing, planting, etc.
- Planting area to demonstrate tree-planting, planting models (boundary planting, hedging, intercropping) and tree management (coppicing pollarding). All trees should be labelled.
- Practical demonstrations at the nursery should include:
 1. how to establish a small nursery
 2. pot filling, sowing, watering, root pruning
 3. planting and planting models
 4. tree management

Conclusions

This suggested network of nurseries would ensure that many low-cost farmer-run nurseries could be established and linked through extension systems to the more experimental training oriented nursery centres. Thus farmers would have easy access to seedlings that meet their needs, and the larger centralised government or project run nurseries could be used as information and resource centres.

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SOCIAL FORESTRY IN KENYA

C K Kirinya

Introduction: the decline of tree-cover

According to Eckholm (1979) there are three principal immediate causes of deforestation, the spread of agriculture, fuelwood collection and timber harvesting. Of the three, the spread of agriculture in one form or another is the main factor of outright forest loss, as other writers, too, have noted (Bene *et al.* 1977; World Bank 1978, and FAO n.d.). Poor farmers often seek their livelihood through low productivity agriculture, either by legal or illegal conversion of forested lands to agricultural lands, or through shifting cultivation or overgrazing.

As Eckholm points out, many of those responsible for the greatest forest destruction today are rootless and landless people often squeezed from their homelands by unequal land tenure or population growth, struggling to make what living they can amidst unfamiliar ecological conditions. The second important contributor to forest depletion is fuelwood collection. Both these processes can be seen at work in the semi-arid areas of Kenya, such as Kitui, today.

Forests are a most important aspect of a country's wealth - an asset that even very poor countries could possess - for they provide renewable raw materials for a whole range of industries which so far have acquired great importance in industrially advanced countries.

The contribution of Social Forestry

Though there is still no satisfactory definition of Social Forestry, its features are well known. The participation of the local population in tree management and in the resulting benefits will often lead to production for local use or local processing.

Introduction of Social Forestry requires an ample study of socio-economic and cultural aspects of the local population. It is important to highlight also that forest planning in areas where social forestry could be developed must include a study of state owned and private land as well as forest land and non-forest land.

Where tree growing conditions are difficult, as in semi-arid Kenya, or local organisations are weak, it is much harder to start communal programmes than those in which farmers participate for direct personal profit. Social Forestry pre-supposes the existence of competent and representative local

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organisations that can plan and implement projects and distribute benefits fairly. Where it does not already exist, creating a body just to manage community forestry is difficult.

The degree to which farmers benefit from social forestry projects is directly proportional to their level of participation. Even the landless can participate in community nurseries. Also Social Forestry programmes generate employment and income through industrialization and the marketing of wood fruits and other forest resources.

The need for farmer-oriented planning and training

The more these programmes solve local needs, respect local culture and traditions and implement local technologies and resources the more farmers become committed to and benefit from their forestry programmes.

The success of social forestry programmes largely depends on effective coordination between the government and communities. Farmers are more receptive to grass roots systems that allow them to plan their own development programmes based on local needs.

This grassroots approach also helps improve the farmers' development capabilities through organization and training especially on job. The training needs that should be addressed include crop protection, soil rehabilitation, forage production, and management of rural based small scale forestry enterprises.

Building in short-term benefits

The personal commitment needed for continuous self-development of forestry activities can be obtained by showing farmers how forestry can improve daily living. The problem is that many farmers are in desperate need of immediate benefits from their work. Therefore it is imperative that projects that produce a visible dividend almost immediately are favoured. One possibility is using trees that support agriculture by controlling erosion, producing fruits and fodder, and protecting crops.

Therefore species choice must address the needs of the farmers in order to enhance total farm/pastoral activity enterprise. Marketing forest products is another way to generate profits while waiting for trees to grow.

Retraining forestry field staff for the new task

Here in Kenya, the Forest department is responsible for the protection and management of national forests. As such it developed in the past, a corps

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of forest guards that use police-like methods to capture and fine those who violate national forestry laws. To carry out social forestry projects this role needs to be reviewed. The department has realised this, so these days it educates rather than policing and it encourages social forestry developments instead of being a sole developer. Foresters are being trained in practical aspects of applying the social sciences to social forestry.

Collaboration with others

Forest department cannot do the job alone. The necessary political support to ensure financing of social forestry programmes can be generated by inviting politicians to participate in setting programme objectives. By showing them how such programmes can support political mandates, their commitment to programme success could increase. Also cooperation with other agencies both governmental and non-governmental has created much awareness of social forestry.

Training village-level forestry promoters

Communication with farmers has been facilitated through extension officers and small planning groups within the traditional organisation of the community.

To be effective group members have been elected by the community and trained (in-service training). As promoters, they in turn must learn how to stimulate participation by the farmers in forestry development through education. Training can begin once there is a commitment to a self-development programme. Subjects that need to be covered include plant production, plantation establishment, agroforestry, management of forest industries, and marketing of forest products. Filmstrips, posters, and video programmes evaluated before use by selected farmers, will help extensionists give a productive training course.

Conclusions

Social Forestry should be regarded as people's participation in forestry activities not only to promote forest resource development but also the development of people themselves. However its concern is becoming clear: although everybody can participate in social forestry activities it gives top priority to the rural dweller particularly the rural poor. Social forestry should not be rigid but flexible to fit the needs, abilities and socio-economic and cultural contexts of a given community, region or a country.

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Acknowledgement

This paper has been submitted for publication with the approval of the Director, Kenya Forestry Research Institute, P.O.BOX 20412, Nairobi, Kenya.

REFERENCES

1. Bene, J. G. *et al*, 1977. Trees Food and People Land Management in the Tropics, IDRC, Canada.
2. Eckholm, Erik, 1979. Planting for the Future: Forestry for Human Needs. Worldwatch Paper No 26. Worldwatch Institute.
3. FAO, n.d. Forestry for Rural Communities. Rome, Italy.
4. World Bank, 1978. Forestry Sector Policy Paper. Washington DC.

REPORT ON RECENT CONFERENCE

International Conference on Agroforestry: Principles and Practice

23-28 JULY 1989
University of Edinburgh
Edinburgh, Scotland

This was a conference with some exceedingly good individual papers, but which was disappointing as a conference because it went nowhere and surprised no-one.

The organisers of the conference revealed their own biases - and perhaps their lack of more sparkling material, as well - with heterogeneous sessions which mixed papers concerned with temperate large-scale agroforestry in Scotland or New Zealand with papers drawn from the small under resourced farms of the Third World; and with the relegation of socio-economic aspects of agroforestry for the small farmer (by far the most important for Third World participants) to a session on the last day when the trickle home was already well established.

Many of the participants complained that the conference was too large, and that too many low-calibre papers had been allowed to go forward, with the result that sessions were over-full of material, and presentation over-runs cut discussion time to almost nothing.

That said, there were some beautiful case-history papers - from A Perera and R Rajapakse on forest gardens in Sri Lanka and from Parmesh Shah on the AKF Rural Support Programme in Gujarat, for instance. Interesting comparative papers were offered by Gerardo Budowski on live hedging, and by Paul Kerkhof from his forthcoming book on African agroforestry projects (from which we have excerpts elsewhere in this newsletter). John Raintree from ICRAF placed the emergence of agroforestry as a discipline neatly for us using a Philosophy of Science approach.

REPORT ON RECENT CONFERENCE

The outstanding paper, for those not already familiar with the authors' work, was that presented by C K Ong and others from ICRISAT in India, on above and below-ground interactions in agroforestry. Their analysis shows conclusively that atmospheric interactions in alley cropping in the semi-arid tropics are positive, but of minor importance compared to below-ground interactions. As they point out, much current agroforestry work is based upon a series of assumptions:

- that trees have a beneficial effect on soil fertility;
- that crops and trees grown together raise biomass production because the roots of the two different kinds of plants use different water and nutrient sources;
- that trees can act as a protective barrier for soil erosion or windbreaks.

While this third assumption is well documented, benefits from other types of agroforestry have hitherto escaped critical examination. As the authors point out, since in the semi-arid and arid tropics nearly all crop residues and tree-prunings have a high fodder value, they are unlikely ever to be available as mulch to increase soil fertility.

The only remaining benefit would have to be that tree/crop intercropping raised biomass production. The argument is too complex to summarize fully here, but the results from very careful experiments show that competition of roots for moisture between trees and crops is much greater than had been assumed, not nearly enough to offset minor microclimatic benefits from the mixture.

The paper was a striking confirmation of farmers' hunches in the semi-arid tropics, in fact.

G Shepherd

FORTHCOMING CONFERENCES AND MEETINGS

- March 10-19 Workshop on the Management and Conservation of the Tropical Moist Forest Ecosystem
Cayenne, French Guiana
Contact: Madame L. Gerard, Secretariat
45 bis, avenue de la Belle Gabrielle
94736 Nogent-sur-Marne Cedex
FRANCE
Tel: 33(1)-43944300
- May 16-19 Third Symposium on Social Science in Resource Management: Human-Resource Interactions: An Interdisciplinary Inquiry
Contact: Department of Recreation and Parks
Department of Rural Sociology
Texas A & M University, College Station
USA
Tel: 1(409)-8454920
- May 21-23 The Ecological Economics of Sustainability
Washington D.C, USA
Contact: Dr. Robert Costanza
Coastal and Environmental Policy Program
Center for Environmental and Estuarine Studies
University of Maryland
Solomons MD 20688-0038
USA
- June 25-17 August Arid and Semi-Arid Australian Trees Short Course
Contact: Australian Trees Short Course
ANUTECH Pty. Ltd.
Australian National University
PO Box 4, GPO
Canberra, 2601
AUSTRALIA
- July 8-21 11th International Seminar on Environmental Impact Assessment
University of Aberdeen, Scotland
Contact: Sandra Ralson
Centre for Environmental Management and Planning
Old Aberdeen AB9 1FX
Scotland, UK
Tel: 44 (244)-272480
- August 23-30 19th World IUFRO Congress
Montreal, Canada
Contact: IUFRO Montreal 1990 inc.
PO Box 1990
Place d'Armes
Montreal, Quebec H2Y 3L9
CANADA

NEWS OF THE OTHER AAU NETWORKS

Agricultural Administration Network

run by John Farrington, published the following December 1989 Network papers:

9. 'Indigenous Knowledge and Technical Change in a Subsistence Society: Lessons from the Moru of Sudan' by Roger SHARLAND
10. 'Linking Formal R & D to Indigenous Systems: A User-Oriented Potato Seed Programme for Peru' by U SCHEIDEGGER, G PRAIN, F EZETA and C VITORELLI
11. 'Institutional Options and Multiple Sources of Agricultural Innovation: Evidence from an Ecuadorean Case Study' by Anthony BEBBINGTON

Irrigation Management Network

Linden Vincent has been appointed as the Network Coordinator and Mary Tiffen is now working half-time on the Network, and for the other half of her time she is developing cross-network research in her position as Chairman of the AAU. The Network published the following December 1989 papers:

- 2b 'Equity Considerations in the Modernization of Irrigation Systems' by Gilbert E. LEVINE and E. Walter COWARD
- 2c 'Second Approximations: Unplanned Farmer Contributions to Irrigation Design' by Douglas L. VERMILLION
- 2d 'Tubewell Irrigation in Bangladesh' by James MORTON
- 2e 'Irrigation Charges in the Barind Integrated Area Development Project' by M. ASADUZZAMAN

Pastoral Development Network

Roy Behnke has taken over the network from Jon Moris whose final set of papers were published in August 1989:

- 28a 'Gambling with Goats: Variability in Herd Growth Among Restocked Pastoralists in Kenya' by Ruth MACE
- 28b 'Cattle and Development in Dryland Zimbabwe: Farmer Knowledge and Ecological Theory' by Ian SCOONES
- 28c 'Cattle and Development in Western Zambia' by Adrian WOOD
- 28d 'Nigeria's Experiment with a National Programme for Nomadic Education' by Catherine VEREECKE

BOOKS

The Political Economy of Forest Use and Management

M.V. NADKARNI with Syed AJMEL PASHA and L.S. PRABHAKAR

Published by: Sage Publications

M-32 Greater Kallash Market 1

New Delhi 110048, India

This interesting book describes the history and political formation of forests in the Western Ghats of India. It draws on extensive historical work and combines this with detailed field studies in the Western Ghats of Karnataka. It examines the conflicts of interests involving local people, government and commercial forces over a 100 year period (1880-1980), and the impact of this conflict on the local economy and forests. The contemporary field studies focus on selected villages in the area and demonstrate how forest use is determined by the class character of the villages, where the major proportion of the benefits from the forest accrue to the richest groups in the area.

Saving the Tropical Forests

Judith GRADWOHL and Russell GREENBERG (1988)

and

No Timber without Trees: Sustainability in the Tropical Forest

Duncan POORE, Peter BURGESS, John PALMER, Simon RIETBERGEN and Timothy SYNOTT

Published by: Earthscan Publications Ltd

3 Endsleigh Street

London WC1H 0DD, UK

Earthscan have recently produced two publications concerning the future of tropical forests. The book by Gradwohl and Greenberg details the extent of deforestation in tropical areas with case-studies describing sustainable grass-root management systems, from ecologically-sound traditional practices to actual conservation projects. The second part of the book reviews large-scale forestry projects and assesses the impact of such programmes on tropical forests, and their potential for sustainable development. The book by Duncan Poore continues this same theme and reviews a series of case-studies from Australia, South America, Africa and Asia. The final part of the book discusses current and future initiatives to halt the rapid rates of deforestation and policies which would be effective in promoting sustainable and equitable forms of land use.

Agroforestry in Dryland Africa

D. ROCHELEAU, F. WEBER and A. FIELD-JUMA

Published by International Council for Research in Agroforestry

ICRAF House

PO Box 30677

Nairobi, Kenya

\$ 12.00

A practical well-illustrated handbook for agroforestry researchers, field workers, and policy makers. It describes methodologies for planning projects which rely on and learn from rural people to develop land-use systems suited to local needs. Guidelines for the evaluation of agroforestry projects emphasise full participation by local communities in all stages of the project process. There are sections describing types of agroforestry practices encountered in different areas of dryland Africa, and practical measures illustrating how to integrate trees and crops in the farming system. The final section brings together useful information for the fieldworker when carrying out agroforestry projects, including guidelines for interviews, check lists of multi-purpose trees and lists of contact addresses and references.

The presentation of this book with its numerous line-drawing illustrations and its practical emphasis makes it an invaluable guide to practitioners of agroforestry.

Agroforestry for Soil Conservation

Anthony YOUNG (1989)

Published by: CAB International

Headquarters

Wallingford

Oxon OX10 8DE

UK £ 14.95
elsewhere £ 16.50

In contrast to the broad base of the Rocheleau book, this book takes the problem of soil conservation as its focus and reviews the potential of agroforestry as a technique to alleviate problems caused by erosion. Soil conservation is treated here in its wider sense, to include both control of erosion and maintenance of soil fertility. The overall conclusion is that appropriate agroforestry systems have the potential to control erosion, maintain soil organic matter and physical properties, and promote efficient nutrient cycling. However, many obstacles, social and economic as well as technical, need to be overcome if the potential of agroforestry for soil conservation is to be fulfilled.

BOOKS

Forests and Farmers: Management Alternatives in Asia

Edited by Mark POFFENBERGER (1990)

Published by: Kumarian Press

630 Oakwood Avenue, Suite 119

West Hartford, CT 06110-1529, USA

This book examines the historical context of the forest management crisis and presents a multi-faceted, regional response to the problem in Southeast Asia. The argument is followed through three sections in the book: part 1 traces the evolution of government control over forests; part 2 discusses alternative management options, focussing not only on technological questions, but also on the organisational, methodological and tenurial strategies that might lead to sustainable and productive forest use. Part 3 describes particular case studies from Thailand, Indonesia and the Philippines which illustrate the shift from traditional forest management techniques for commercial exploitation of forests to community-based production and protection systems.

Appropriate Technology

This journal published quarterly by Intermediate Technology is intended for those actively involved with introducing appropriate technologies to urban and rural people in the Third World. It reports on recent events in natural resource management and has articles from around the world describing new technologies and methodologies for involving people in their own development. Recent articles have included a discussion of new cooking stoves built by their users in Venezuela, low cost technologies to ease the processing of cassava in Nigeria and cooking with biomass residues in Kenya. Past editions have also focussed on particular aspects of social forestry. The March edition will discuss, amongst other reports, techniques for monitoring and evaluation and rapid rural appraisal. The strength and interest of the journal lies in its articles which are contributed by practitioners of the appropriate technologies described. It is a useful source of information and also includes news items from around the world, and forthcoming conferences and events.

For further information contact:

IT Publications Ltd.
103-105 Southampton Row
London WC1H 4HH, UK

EMPLOYMENT OPPORTUNITIES

HVA-HOLDING BV - TROPICAL FORESTRY SPECIALIST

HVA-Holding bv is a world-wide operating organisation specializing in the establishment and management of projects in the agricultural industry. For more than 100 years HVA experts have been involved in (sub)tropical agriculture, horticulture, forestry, fishculture, stockbreeding and poultry breeding as well as the food industry in Africa, Central and South America, the Middle East and Asia.

In the Agricultural Department of the head office in Diemen there is an opening for a:

TROPICAL FORESTRY SPECIALIST

Candidates should have over 7 years experience in tropical forestry in Africa and/or South America, and must speak English, French and preferably Spanish. Knowledge of reforestation practices, erosion control and agroforestry is required.

The candidate will be based at the head office in Diemen with regular visits to HVA projects abroad.

Applications including a professional resume to:

Mr. R. van der Aa
Manager Personnel Department
HVA-Nederland
Postbus 503, 1110 AM Diemen
Netherlands

Further information can be obtained from :

Mr. E. van der Spek
Head of the Agricultural Department
Tel: 31(20)-954211

SEEKING EMPLOYMENT?

Make sure that your up-to-date CV is with the Social Forestry Network, as we do receive frequent enquiries about available people with Third World experience.



Overseas Development Institute
Regent's College

Nearest Underground Station:

Baker Street (Bakerloo, Jubilee, Metropolitan and Circle Lines).

Nearest Bus Stop:

Gloucester Place (going North), Baker Street (going South), and Marylebone Road (going East or West).

ODI is 3-4 minutes walk from Baker Street Station. From there walk along Marylebone Road and turn left into York Gate. Cross over the bridge and you will see the main entrance of Regent's College on your left. At the Regent's College reception desk ask for ODI.

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The Social Forestry Network is funded by the Ford Foundation, the Aga Khan Foundation and the Overseas Development Administration.



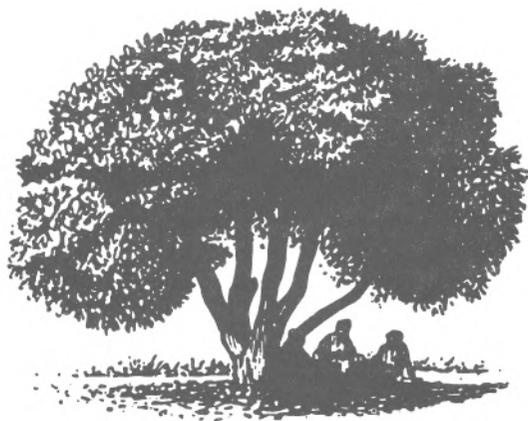
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SOCIAL FORESTRY NETWORK



FODDER TREES, NURSERIES AND THEIR CENTRAL ROLE IN THE HILL-FARMING SYSTEMS OF NEPAL

Patrick Robinson and Ian Thompson

Patrick Robinson was the Fodder Tree specialist for the Nepal/UK Forest Research Project. He is now working for the Swiss sponsored Integrated Rural Development Project in Dolakha District, Nepal.

Ian Thompson is the Natural Forest Management specialist for the Nepal/UK Forest Research Project.

FODDER TREES, NURSERIES AND THEIR CENTRAL ROLE IN THE HILL-FARMING SYSTEMS OF NEPAL

Patrick Robinson and Ian Thompson

Introduction

This paper highlights the importance of fodder trees to livestock production in Nepal, and discusses the role of village-level nurseries for the supply of fodder-tree seedlings. Trees, forests, and livestock form the cornerstone of Nepalese farming systems, where nutrient inputs for cropland originate largely from animal manure and leaf material. Cropland yields are known to be decreasing in many areas due to inadequate nutrient input, since manure is in short supply and artificial fertilizers are not readily available in Nepal, particularly in the hills. Further, artificial fertilizers are not in their present form an adequate alternative to manure since they are made up of a limited range of the nutrients which are necessary for sustaining fertility. In any case, organic matter in the soil is essential for efficient application and utilization of artificial fertilizers.

Livestock contribute a considerable proportion of the total income of small farmer households. The demand for livestock products (meat, milk, wool, manure) is increasing and yet, in many areas of the Kingdom, livestock numbers have been declining in the last 10 to 20 years without a concurrent increase in productivity per livestock unit for the range of livestock products which are required. The decrease in livestock numbers is due to a combination of factors but usually, in part, to reductions in forest and fodder resources and reductions in labour availability.

The main constraint to improved livestock productivity is the poor quality and insufficient supply of fodder, particularly during the long dry season. An important contribution of fodder trees to the farming system is in providing a store of green and nutritious fodder for the dry season as a supplement to crop residues which usually do not supply sufficient levels of nutrients to meet basic maintenance requirements. Hence, the actual and potential role of fodder trees to livestock production and productivity and to the sustenance of farming systems in Nepal is crucial.

Contribution of Fodder Trees to Livestock Production

There are considerable differences between agro-ecological zones, within agro-ecological zones, and within farming system types between farms of different size in the contribution of fodder trees (private and public) to the total supply of fodder for livestock. In the Hills, Panday (1982) suggests that up to 90% of the fodder supply in some areas may be provided by trees and undergrowth in forests. He suggests that for Nepal as a whole 55% of fodder is supplied by forest trees and 7.5% from private trees. A number of other estimates show private trees and forest trees contributing between 5% and 15% of the annual supply (Heuch, 1986, based on Heuch and Shrestha, 1986). Yet, clearly, in some areas the contribution from trees appears to be higher. Fonzen and Oberholzer (1984) estimated that the fodder contribution of privately owned trees in two villages of Palpa District was 50% and 60% of total supply respectively. The area from which these data were obtained is, however, unusually well-managed by the farmers.

One reason why estimates differ is the high variability in tree resources, both private and common, and differences in amounts of alternative fodder resources available to farmers in the same area. However, another important reason is that the various estimates are based on different assumptions and measurements with the use of imprecise and uncertain methodology. The basic assumptions underlying calculations are often unclear. This makes it impossible to make meaningful comparisons between different sources of data (Heuch, 1986; Robinson 1986a, 1986b).

However, the crucial importance of fodder trees becomes apparent when it is realized that they often provide the only green fodder during the critical times of the dry season. In a village in Western Nepal, Fox (1983) estimated that while 11% and 14% of dry matter supplied to cattle and buffalo fodder originated from trees on a yearly basis, their contribution during the dry season was 25% and 28%, respectively.

The demand for fodder from trees is usually considerably higher than the supply and since the fodder resources are usually said by villagers to be shrinking, clearly their potential contribution could be much higher.

Availability of Fodder Tree Species

From surveys in different areas of Nepal it has been found that farmers are aware of and use a large number of fodder tree species, ranging from between 70-130 species. (Heuch, 1986; Van den Dool personal communication). It is becoming clear that some species which are identified as single taxonomic units by botanists and foresters do occur as different varieties. These are known by farmers to have distinct site requirements and to vary in their fodder quality, sometimes to considerable degrees (Amatya, 1988; Upton and Robinson, 1988).

The need to identify the fodder species used by farmers is accepted the next step is to ensure that nurseries in the village contain these fodder tree seedlings. Some species may be preferred by farmers, but because these have not traditionally been grown in nurseries, farmers do not request them from the nurseries. It is a problem of nursery workers not being able to find out what farmers need, and farmers not being able to communicate their needs to the nursery worker. The techniques for growing some of these species are already available, although more work needs to be carried out to identify species suitable for high altitude areas (over 2,000 metres).

Constraints to Fodder Tree Development: Nurseries and Species Selection

Given the scarce resources available for research in Nepal, the crucial importance of fodder trees in small farmer production systems, and the obviously far greater impact which fodder trees could make on livestock production in Nepal, it is important to identify what range of factors prevent the further development of fodder tree resources in most areas of the Kingdom.

To say, as some people still do, that farmers are ignorant about the benefits of planting fodder trees, or cannot be bothered to plant seedlings, is, if not totally incorrect, a gross over-generalization. It may be true that farmers who are still close to forest areas where fodder is available have less interest in planting fodder trees on their own land. However, the

largest proportion of the remaining fodder-producing forest areas are also found at high altitudes, and it has been found that farmers living at these altitudes see little value in planting fodder trees on private land, believing that trees have adverse effects on crop yields.

As forests have deteriorated or become less productive due to over-utilization, farmers at lower altitudes have, in many areas, been very actively promoting tree development on their private land. In Sindupalchowk and Kavre districts, Carter and Gilmour (in preparation) have found an average of 2- to 3-fold increases in tree vegetation between 1964 and 1987 on farmers cultivated land. Very little of this increase has been due to planting seedlings originating from nurseries, but largely due to encouraged and protected natural regeneration. The species composition of the increased tree population is, in the early phases, usually not of preferred fodder species probably because few of the preferred species produce seed in the early phases when trees are lopped hard. The Community Forestry Development Project found that the number of small trees on 900 households land in 25 Midhill districts was encouraging (Messerschmidt 1984). Very few of these originated from nurseries while 50% of the small, protected fodder trees had regenerated naturally. The farmers then transplanted naturally regenerated seedlings which had been transplanted from other areas on the farm and also wildlings collected from the forests, and this served to diversify their fodder species base.

Robinson and Neupane (1988) found that only 4% of the trees on 30 farmers land in a Panchayat of Dolakha District had been planted and less than half of these had originated from the Panchayat nursery, the rest originating as wildlings from the forest. This evidence of farmer use of fodder seedlings from sources other than nurseries must raise certain questions, including whether the species offered in the nurseries are the ones desired by the farmers.

Surveys, done in 1982 and 1983, of the Community Forestry Development Project (CFDP) private seedling distribution programme (Messerschmidt, 1984) show that after fruit trees, fodder trees are the most preferred group of species. Yet, while 15 species were found to be preferred for fodder, CFDP nurseries produced only 3 out of these 15 species in any significant numbers and these made up only 5.3% of the seedlings

distributed to farmers. In Mati Panchayat (Dolakha) Gautam (1986) found that while fodder trees were preferred, the panchayat nursery provided only 2 out of the 10 species locally preferred for fodder, and these made up only 17% of the total number of seedlings distributed.

Hence, it is clear that despite the general inability of panchayat nurseries to provide the seedlings farmers would prefer, rural communities are keen to, and able to, increase their tree resources by traditional methods. However, the species they are able to promote may not be those they would prefer.

The evidence therefore suggests that farmers in the Midhills are prepared to plant more fodder trees on private land. The key to the establishment of more fodder trees lies in two directions:

- 1) establishing user group forests with advice on how to manage these forests for the products people want i.e. fodder;
- 2) an increase in the fodder tree population on private land (cultivated and uncultivated) of species which are productive, grow reasonably fast, and which produce fodder quality of above-maintenance requirements. This second case requires that research is carried out on ways to integrate farmer needs and the technical problems of raising a large number of different species in village nurseries.

Table 1. Reasons for farmers not planting seedlings, for failure in establishment, or for poor growth

Reason	Causative factors
Preferred species not available	I,
Seedlings too small	I, T
Seedlings of poor quality	I
Seedlings available at wrong time	I
Labour problems at planting time	M
Nursery too far	I
Browsing damage	M
Wrong species for site	E, T
Fear of government authorities claiming ownership of trees and land	I, E
Poor weeding	M, E
Negligence at grass cutting time	M
Poor growth rate	T, E
Improper planting method	E
Negative effects on crops	T, M, E
Theft	

Codes:

I = Institutional factors

M = Mgt factors at farm/community level

T = Technical factors

E = Extension

Table 1. lists the reasons why fodder tree seedlings are either not planted or why, where they have been planted, they have not established well. For each reason, the causes can be categorized into technical problems which researchers should investigate (if the technical solutions are not yet known); institutional problems of the implementing agency; reasons of lack of appreciation by farmers as to the potential for improving the situation; and management factors at the farm or community level.

Seeds, Germination and Nurseries

There are problems with germination and availability of seeds of many fodder tree species. In the case of most fodder trees the trees are lopped too heavily for there to be any seed production. However, this is not an insurmountable problem and several organizations have solved it by paying money or providing materials (e.g. seedlings) to farmers so that a tree or part of a tree is not lopped until seed has been collected.

Nursery research

Valuable research has been done on the technical side of nursery seedling production including work on potting mixtures, growing media, size of polypot, drainage, fertilizer application, and length of time needed for seedlings in the nursery at different altitudes to produce normal-sized seedlings (about 30 cm in height).

Some species have been propagated very successfully from cuttings for generations by villagers, often using special techniques such as air layering. Surveys on such techniques for different species and in different parts of Nepal have been started, the results of which should be incorporated into any future nursery strategies.

The Division of Forest Research, and other organizations have conducted research on the vegetative propagation (by using semi-hardwood cuttings) potential of a number of species (Napier, 1988). For this technique to be

applicable under normal field conditions stool beds of suitable species would have to be established in or near nurseries, or on farmer's land.

A more technical option, *in vitro* propagation, has been successfully developed by the Department of Medicinal Plants for a few species (Raj Bhandary, 1988). The extent to which such a technique can have practical application for distribution of plants to farms in remote regions in Nepal is, however, debatable.

It is clear from experience in a number of districts that farmers usually take very few seedlings from government nurseries and that the survival rates of those taken are low, even though it is known that there is a demand from farmers for more fodder trees (Robinson and Neupane, 1988). There are many non-technical reasons for this such as seed of preferred species not being made available to nursery workers; use of the best seedlings for Forest Department plantations first and only poorer plants being available for distribution to farmers, often only half way through the monsoon; and the timing of the budget release being too late to produce normal-sized seedlings. Research results and common sense experience have already shown that these problems need to be solved if government nurseries are to be able to supply the seedlings farmers want.

It is also becoming increasingly clear through contact with farmers that they often want larger sized seedlings than the 30 cm which has been traditionally accepted as the proper size for Forest Department plantations (Baral 1988 and Napier 1987). The Division of Forest Research is starting research on nursery requirements to produce seedlings 75 to 150 cm tall. Some farmers would prefer to plant a few seedlings well before the monsoon and water them through the dry months because they do not have the labour available to plant trees in the early part of the monsoon. On moist sites and on north facing slopes, particularly at higher altitude, winter planting also may be feasible. It is important to recognise the diverse needs and constraints under which farmers operate before it is possible to establish a successful nursery programme which can respond to these needs.

The following areas of research are critical to support successful farmer-responsive nurseries:

- o For large seedlings: time of sowing, length of time required in the nursery, establishment success and early growth.
- o Bare rooted stumps: which species can be propagated by this technique and the advantage over normal seedlings in terms of ease of transport and growth rate.
- o Vegetative propagation using semi-hardwood cuttings: time of cutting harvest and insertion and size of cutting.
- o Farmers' knowledge surveys of propagation techniques.
- o Winter and pre-monsoon planting.
- o Ways of reducing seedling time in the nursery at high altitudes e.g. poly tunnels and cold frames.
- o Since distance from nurseries to farmers fields often prevents farmers from collecting seedlings, it is important to review initiatives which have established local nurseries easily accessible to farmers.

From Nursery to Farmers' Lands

Non-cultivated land

In the past mainly non-fodder tree species, and particularly pines, have been planted on non-cultivated land. However, in most areas fodder trees are preferred by rural communities, particularly in the Midhills. Hence, Forest Department research has, in the past few years, been looking at ways to improve the survival and early growth of some fodder species on sites which would normally be planted to pines. Good success has been achieved on the less harsh sites with a number of species.

Cultivated land

We know little about the effect of trees on adjacent crop yields. Farmers have their own opinions, which are often contradictory. The effects can be direct (e.g. shading, root competition) or indirect (e.g. more fodder

available, therefore more manure available from more animals being fed). Different farmers in short discussions on this topic may put more or less emphasis on direct or indirect effects. Carter (unpublished) has found that farmers believe (1) different species have varying effects on crop yields, (2) that aspect can make the difference between positive or negative effects on crop yields, and (3) that altitude influences the effects.

It is often stated, incorrectly, that trees should never be grown on irrigated land as rice is very sensitive to shade. However, in the Phewa Tal Watershed Project area the "galae" rice cultivar is grown with *Schima wallichii* on poor quality irrigated land, 'khet', while on good 'khet' the "dschouari" cultivar grows well with a reasonable stocking of *Artocarpus lakoocha*. Appropriate timing of lopping of trees in relation to crop rotation and crop development can reduce significantly the negative effects trees might have on crop yields. Fodder trees which can be lopped more than once a year (e.g. *Ficus semicordata*, *Buddleia asiatica*, *Leucaena* spp.) are therefore particularly suitable for planting on cropland where there is fear of negative impact since canopy management can be more easily matched with crop development.

Natural forest management

The Nepal-Australia Forestry Project (NAFP: Applegate and Glimour, 1987) and the Integrated Hill Development Project (IHDP: Posthuma, 1988) have examined the succession of broadleaf species in pine plantations. The Division of Forest Research has trials on different management systems in mixed broadleaf forests which will estimate production of fodder and other products.

Forest use by communities is complex and varies with forest characteristics (such as type, area, structure) availability of alternative fuelwood and fodder resources and social characteristics of the community. As an example, 'khasru', *Quercus semecarpifolia* in Kalinchowk forest, Dolakha, is frequently felled and sold as fuelwood in the nearby Charikot bazaar while in Lespar Village Panchayat, Parbat District, individual trees are allocated to households on an annual basis for fodder lopping. Poor management in Lespar is punishable by a fine.

The main problem in natural forest management is the lack of knowledge on the part of planners and administrators as to the demand and supply situation in regard to fodder and fuel and the trade-off between these products under different management systems. Commercial interests favour fuel, poles, and timber (often of unpalatable species) at the expense of foliage and particularly fodder production. Partial protection results in the less favoured species dominating the forest. Forestry professionals preconceptions of an ideal forest as a closed canopy of long clear boles of timber species is in direct conflict with the Nepalese small farmer whose production system depends on forest nutrients in the tree foliage and undergrowth.

Forests in farming areas must be managed for foliage production as the principal objective; fuel is supplied as a by-product. Village people are meeting their basic needs for forest material often in contradiction to the forest laws. The main task is to gain recognition for this basic usage, legitimize it, and control other more damaging exploitation so that the forests remain in a productive state.

Conclusions

The above discussion suggests that three main types of research must be carried out in a coordinated manner: on station and on farm research and farm surveys. Priorities between these three needs to be established in order to allocate resources to pursue different research topics. A long-term association between the researcher and the farmer enables researchers to learn from farmers' day to day perception of their needs and opportunities. It is the locally perceived needs which should be the primary determinant of external inputs. On farm research, while very demanding in time and manpower, provides the researcher with immediate feedback on the relevance of technologies proposed for farmers' fields and also enables local farmers to be their own extension agents.

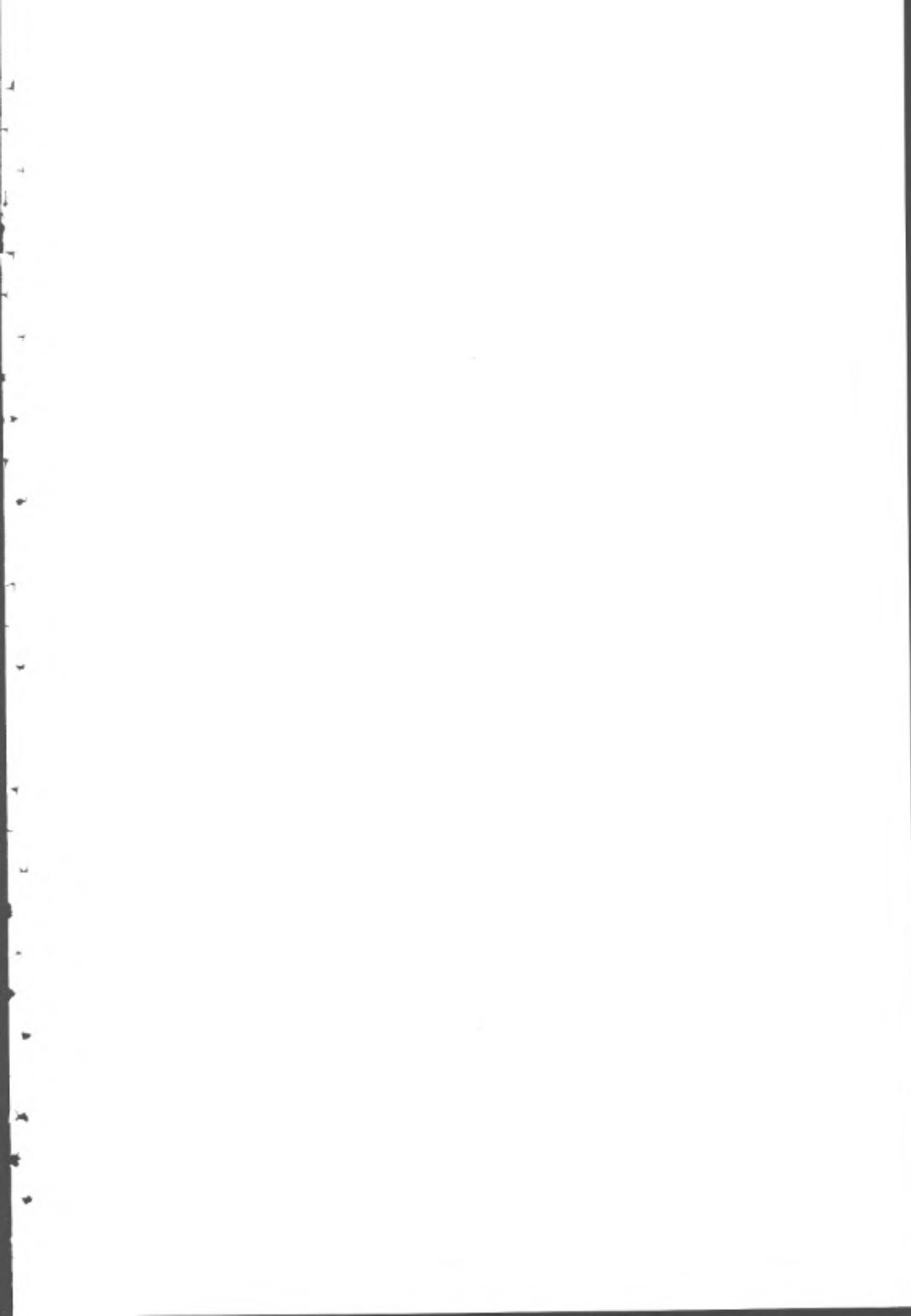
The supporting role of village-level nurseries is to ensure that they supply farmers' needs for fodder species, since an increase in fodder-tree planting

on private land will reduce the pressures on those forests used to supply fodder. It is essential therefore to establish nurseries which are responsive to farmers' needs and form part of an integrated approach to the role of fodder trees in these farming systems. To achieve this end government and Forest Department initiatives must be directed towards identifying the needs and preferences of the farmers, and to the formation of effective extension systems which link farmer needs with nursery seedling production and appropriate research either on-farm or on-station.

References

- Amatya, S M (1988) Variations of Khanyu (*Ficus semicordata*) in Nepal. In 'Proceedings of the 2nd meeting of the working group on fodder trees, forest fodder and leaf litter' (ed. P J Robinson). pp 14-16. FRIC Occasional Paper 2/88.
- Applegate, G S and Gilmour, D A (1987) Operational experiences in forest management development in the hills of Nepal. ICIMOD Occasional Paper No.7. ICIMOD, Kathmandu.
- Baral, N R (1988) Study of the fodder situation in Khoplang and Kharibot Panchayats of Gorkha District. In 'Proceedings of the 2nd meeting of the working group on fodder trees, forest fodder and leaf litter' (ed. P J Robinson). pp. 7-9. FRIC Occasional Paper 2/88. Kathmandu.
- Carter, A S and Gilmour, D A (in preparation) The dynamic nature of trees on private farm land in Central Nepal. NAPP. Kathmandu.
- Carter, Jane (1988) An investigation into the factors influencing private tree cultivation, management and utilization in the Pahad (Middle Hills) of Nepal, focussing on Dolakha District. Progress report No.7 (unpublished). 6 pp.
- Fonzen, P F and Oberholzer, E (1984) Use of multipurpose trees in hill farming systems in Western Nepal. Agroforestry Systems 2: pp. 187-197.
- Fox, J M (1983) Managing public lands in a subsistence economy: the perspective from a Nepali village. Ph.D. thesis, University of Wisconsin. Madison, 225 pp.

- Gautam, K H (1986) Private planting: forestry practices outside the forest by rural people. HMG/USAID/GTZ/IDRC/FORD/Winrock Project Forest Research Paper series No.1. Kathmandu. 13 pp.
- Heuch, J (1986) Fodder for foresters - an introduction to tree fodder use in Nepal. LAC Technical Paper 86\13, LAC. 17 pp.
- Heuch, J and Shrestha, N P (1986) Fodder trees for the mid hills of Nepal. Presented at IRRI Crop-Livestock Systems Workshop Khon Khaen, Thailand, 16 pp.
- Messerschmidt, D (1984) Private tree ownership and results of seedling distribution in the Community Forestry Project. Compiled for 'Workshop on Hill Forestry' LAC. (Unpublished draft) 19 pp.
- Napier, I A (1987) Large plants for farmers, Banko Janakari 1, 2, p. 35.
- Napier, I A (1988) Vegetative propagation of fodder trees. Preliminary research results and practical recommendations. Banko Janakari 2, 1, pp. 21-30.
- Panday, K K (1982) Fodder trees and tree fodder in Nepal. Swiss Development Corporation. Berne, Switzerland, 107 pp.
- Posthuma, H (1988) Natural regeneration in some plantations in Dolakha District, Nepal. Department of Silviculture and Forest Ecology, Wageningen, Netherlands and IHDP, Kathmandu, 107 pp.
- Raj Bhandari, S B (1988) *In vitro* propagation of *Dalbergia sissoo*. Banko Janakari 2, 1 pp. 31-33.
- Robinson, P J (1986a) The dependence of crop production on trees and forest land. In 'Amelioration of Soils by Trees' (eds. R T Prinsley and M J Swift) pp. 104-120. Commonwealth Science Council, London.
- Robinson, P J (1986b) Fodder tree research in Nepal: a brief review of past work and future needs. In 'Proceedings of first farming systems workshop' pp 171-185, FSRDD, Kathmandu.
- Robinson, P J (1988) (ed.) Proceedings of the second meeting of the working group on fodder trees, forest fodder and leaf litter. FRIC Occasional Paper 2/88, Kathmandu.
- Robinson, P J and Neupane, H R (1988) Preliminary results of the Dolakha private tree trial survey. In 'Proceedings of the 2nd meeting of the working group on fodder trees, forest fodder and leaf litter' (ed. P J Robinson), pp 36-40. FRIC Occasional Paper 2/88. Kathmandu.
- Upton, P L J and Robinson, P J (1988) Fodder Tree Survey of South Lalitpur. In 'Proceedings of the 2nd meeting of the working group on fodder trees, forest fodder and leaf litter' (ed. P J Robinson). pp 34-36. FRIC Occasional Paper 2/88. Kathmandu.





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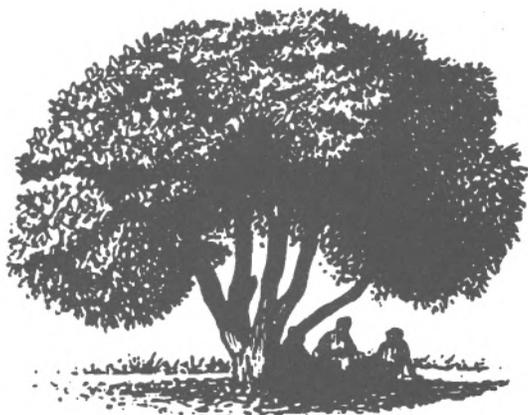
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SOCIAL FORESTRY NETWORK



**DRYLANDS AGROFORESTRY, HOMESTEAD TREES, AND THE
NURSERIES TO SUPPORT THEM
NGO EXPERIENCE IN TAMIL NADU, SOUTH INDIA**

T Fatimson

with the staff of the Social Forestry Information Project, Madurai

T Fatimson and his colleagues are members of the Social Forestry Network who work with the Social Forestry Information Project, a consortium of indigenous NGOs linked with the Chase Trust, situated near Madurai, Tamil Nadu, South India.

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How we came into this work

Our involvement in Social Forestry began in 1984 in the following way. The ten year Swedish International Development Agency (SIDA) aided social Forestry (SF) project was launched in Tamil Nadu. The project had components varying from block planting on tank foreshores, tree planting on village commons and road avenues, to farm-forestry on private lands that belong to the small/marginal agriculturalists and big farmers as well.

Taking a close look at the implementation of the project in Tamil Nadu one could observe the following:

- o The project was highly target oriented instead of being community based, in the sense that the Forest Department (FD) was more concerned about raising - planting seedlings in lakhs and millions than reaching out to the people and touching their lives by bringing a measure of improvement to their standard of living, not to speak of an improvement to their quality of life.
- o Contrary to the objectives expressed in the documents, the tree species raised by the Forest Department failed to fulfil the fuel, fodder, fertilizer and timber needs of the people and it was obvious that priority was being accorded to the raising of more commercial timber trees.
- o It was a highly centralised programme wherein the selection of planting sites, raising of nursery stock, planting and maintenance were taken on by the department itself.

- o The more vital environmental and ecological requirements were ignored at every stage of implementation.

- o The efforts put in to mobilise small/marginal farmers, local peoples' organisations and non-government organisations (NGOs) were not adequate; hence even in those few pockets where the Forest Department was implementing the programme, the local people - for whom the project was meant and on whom it was to be focussed, were hardly aware of the project.

It was at this time that a group of concerned NGOs came together to initiate a programme to mobilise other like-minded NGOs, create linkages - using publications, motivate people and involve to adopt free planting on the commons as well as on available marginal land-holdings. This effort came to be known as the Social Forestry Information Project (SFIP).

Activities

Besides orientation camps, training sessions, study trips and awareness-raising programmes for NGO leaders and organisers, small/marginal farmers and school children, a few field level experiments were established in close collaboration with some NGOs who are members of the SFIP linkage. These experiments were organised in village clusters where the participating NGOs are involved in activities such as, health, employment generation, motivation programmes and peoples' organisations.

The experiments were:

- o Agro-Forestry in the Drylands
- o Trees for Home Needs

Agroforestry in the drylands

This project is being carried out in the foothills of Murugamalai, part of the Palani hills, in Devadanapatti village in Madurai District of South Tamil Nadu. The project has expanded to such an extent that today a Micro-

Watershed Development Project, embracing an area of about 500 acres, is about to take off. Of the 500 acres, 350 belong to the farmers, 100 acres form part of the lower slopes of reserve forest land, and ravines and gullies cover an area of about 50 acres.

Other than the reserve forest lands, most of the land belongs to harijan farmers from three villages namely Devadanapatti, Vadipatti and Silvarpatti. Like most drylands of this region, here too soil erosion is severe; a network of ravines cut through the red earth. Since the land lies in the foothills, tonnes of top soil are lost to monsoon rains each year; in summer the barren fields are swept by hot winds. Most of the land has come to the stage where it can no longer support any vegetation. Indigenous tree cover has long been destroyed and desertification has begun. It is on this land that we are initiating the agroforestry effort.

It was an uphill task to help the subsistence farmers develop and update their living conditions to the present stage, where there are small orchards on everyone's land. Farmers are now able to concentrate on their annual rainfed crops. A loose collective called the Tree Growers' Association, with a membership of about 60 farmers, decides upon and cooperates in the process of regenerating their land and improving living conditions. All this was possible because of the following factors.

Firstly, the farmers have seen for themselves the status of the land as it was in the earlier years, when the upper portion of the Murugamalai hills was thick with green vegetation. Now they have seen the very same hills totally barren, and the land at the bottom of the foothills which barely supports even one crop a year.

Secondly, the land we are concentrating on was lying unused for years. The farmers plant annual dry crops and have seen that the land has lost everything and is slowly drying and dying. They feel the need to regenerate this land and hope that the combination of annual crops with suitable tree species, will lead to soil regeneration and sustainability.

Thirdly, SFIP had established demonstration plots, on equally degraded land, where demonstrations of multiple cropping in combination with multi-

purpose tree species were carried out. This served as a model to the farmers who realised that all was not lost.

Fourthly, the farmers were offered alternative methods for regenerating their land through appropriate extension and demonstration programmes.

Fifthly, the programme is on their own land, the only source of livelihood that the majority of them own. More than anything is it this which has motivated them.

Seedling species raised and distributed

The following seedlings are raised and distributed to farmers:

Orchard trees:

Grafted mango

Guava

West Indian Cherry.

Pioneer Trees - As shelter belts (400 trees per acre):

Acacia arabica

Acacia auriculiformis

Acacia holoserica

Cassia fistula

Cassia siamea

Casuarina equisetifolia

Celba pandra

Leucaena leucocephala

Melia dubia

Pongamia glabra

Timber trees:

Azadirachta indica

Morsupium

Dalbergia latifolia

Dalbergia sissoo

Trees for home needs project

This was initiated with the aim of involving women in tree planting on the homesteads, with species that would fulfil their fuel, fodder, fruits and green leaf needs. Secondly to relate deforestation to land degradation, and scarcity of fuel and fodder to the day to day problems of village women. Thirdly to collectivise the efforts of women in rural reconstruction. Fourthly to relate trees to the nutritional needs of rural women and children.

Three hundred households from four villages from Ottanchatram block of Quaide Millet District were identified. Why these villages? Basically because, these are situated in the foothills which are part of the Eastern Ghats of South Tamil Nadu. The women in these villages have no alternative but to collect fuelwood from the barren hills surrounding their villages.

We began with a field study to assess the availability of fuelwood in the area, the number of hours a woman spends each day collecting fuelwood and the type of "chulos", stoves, that are commonly used in the area. The study was completely participatory and hence an assessment based on the needs, wishes and priorities of the participants was not very difficult.

Species raised and distributed for homesteads

Sesbania grandiflora	- Fodder
Silk cotton	- Fodder and cash
Drumstick	- Vegetable
Papaya	- Fruit
Leucaena leucocephala	- Fodder
West Indian Cherry	- Fruit

Based on the positive experiences and feed back from these villages, a project was submitted to the Department of Non-Conventional Energy Sources (DENS), Government of India, and we succeeded in securing a grant to pay for the introduction of Hay Boxes¹, energy saving devices for which less cooking fuel is needed and which keep cooked food hot for not less than twelve hours. This saves working women from having to cook twice a day and thus saves not only fuel but also time and labour. This innovation is being tried in close collaboration with a women's organisation working in these villages.

Nurseries and seedling raising

Different approaches to the organisation of nurseries are currently being implemented in our part of the state both by government and non-government institutions. We see centralised nurseries; decentralised nurseries, and kisan (farmers') nurseries. All have their various merits and demerits. We describe here our own experiences.

Centralised Nurseries

A nursery that is 10-15 km away from the planting site. This could be called a departmental or institutional nursery since in such nurseries everything is taken care of by departmental or organizational staff and labour is hired for nursery work.

¹ A hay box is a wooden or cardboard box packed with a good insulating material such as hay (dried grass), an old blanket, silk cotton, or some similar material, in such a way that a space is left in the centre of the box for a cooking pot. Food is brought to the boil in a metal or clay cooking pot, and when both the food and the pot are very hot indeed, the whole thing is transferred to the hay box and closely packed around with the insulation material. If the hay box is an efficient one, where no heat escapes, food will continue to cook in its own heat until it is cooked, and will keep warm long after that.

Centralised Nurseries

MERITS	DEMERITS
<ol style="list-style-type: none"> 1. Can have research on seeds collected from different agro-climatic regions at different seasons; seed processing; treatments before sowing; good data collection on germination and survival rates. 2. Under the normal situation nursery protection and maintenance is easy. 3. One can guarantee the number of seedlings that will be ready for planting within a given period of time. 4. Central nurseries serve as a buffer reserve when decentralised nurseries or kissan nurseries, due to unforeseen circumstances, fail. 5. Since the nursery gets constant care, the quality of seedlings can be guaranteed. 	<p>Has the risk of the whole nursery becoming vulnerable to pest attack. In such an eventuality the cost per seedling will increase.</p> <p>Transportation of soil, manure and silt takes more time and also transporting the seedlings back to the planting site increases the cost per seedling.</p> <p>Since labour is hired and the nursery is away from the planting site the people who participate in planting have nothing to do with the raising of seedlings in the nursery.</p> <p>Transporting seedlings long distances may damage the seedlings and hence tend to affect the survival percentage of seedlings planted.</p>

Decentralised (People's) Nurseries

Nurseries that are located at a distance of not more than 2 km from the planting site. A nursery in which the target group of people decide for themselves how many seedlings to raise, the species, the period of raising and planting; one where the participating community, paid or otherwise, contributes to raising the seedlings.

Decentralised Nurseries

MERITS	DEMERITS
<ol style="list-style-type: none"> 1. Wishes and priorities of farmers can be responded to better. 2. Since the farmers express their choice there is better scope for survival of seedlings when planted. 3. It gives greater employment to the target groups of people. 4. Since the number of seedlings is restricted to what is required both the quality and the quantity of seedlings available at a given time can be guaranteed. 5. Since nurseries are closer to the planting site cost for transporting seedlings back to the planting site is low and the casualty rate is reduced. 6. Farmers from the surrounding areas become motivated. 7. There is scope for research and for the findings to be disseminated to the target community as seedling raising goes on. 	

Kissan (Farmers') Nurseries

This is the sort of nursery where an individual farmer raises a nursery for his own farm and for sale, and/or does it for a government department or an institution on a contract basis.

Kissan (farmers') nurseries

MERITS	DEMERITS
<ol style="list-style-type: none"> 1. It gives spare time employment to a greater number of people. 2. Since the needed materials like, sand, silt, compost, etc. are collected locally, the cost is relatively low. 3. Every interested farmer can become an entrepreneur. If enough motivation is imparted this could become the most viable and efficient nursery approach. 4. It will instill motivation and confidence in the minds of fellow-farmers within the local community. 	<p>When a farmer raises seedlings for sale he normally does not pay attention to the quality of seedlings.</p>

Our nurseries serve as both central and decentralised ones. We normally have one nursery, at a place close to the planting site where the required number of seedlings are raised. The farmers can just walk in to the nursery and come out with the required number of seedlings.

- o Labour is normally hired from among the participating farmers. In some cases it is one or more among them, who raise the seedlings.
- o Records relating to germination, growth and survival rates of each species are recorded right at the nursery site.

Farmer's Uptake

The choice of tree species is decided through formal and informal discussion. Farmers normally see trees mainly as a source of revenue, and hope to realise that revenue in a short period of time. They prefer fruit-bearing trees to those that provide them with fuel, fodder, fertilizer and fibre.

Efforts are made to discuss with farmers the indirect benefits of trees. This makes them realise the fact that trees are not just sources of revenue alone, but that they have multifarious roles.

Since tree planting is done in combination with the planting of annual rainfed crops and since fruit-bearing trees, like mango, guava, jack-fruit and West Indian cherry are also distributed as orchard trees, there is a tremendous response from the farmers.

Extension

In any comprehensive programme to involve people in tree planting, especially the type of project we have initiated, nursery raising can only be a part of the whole programme. What happens after distribution of seedlings is more important, and is dependent on an effective extension system.

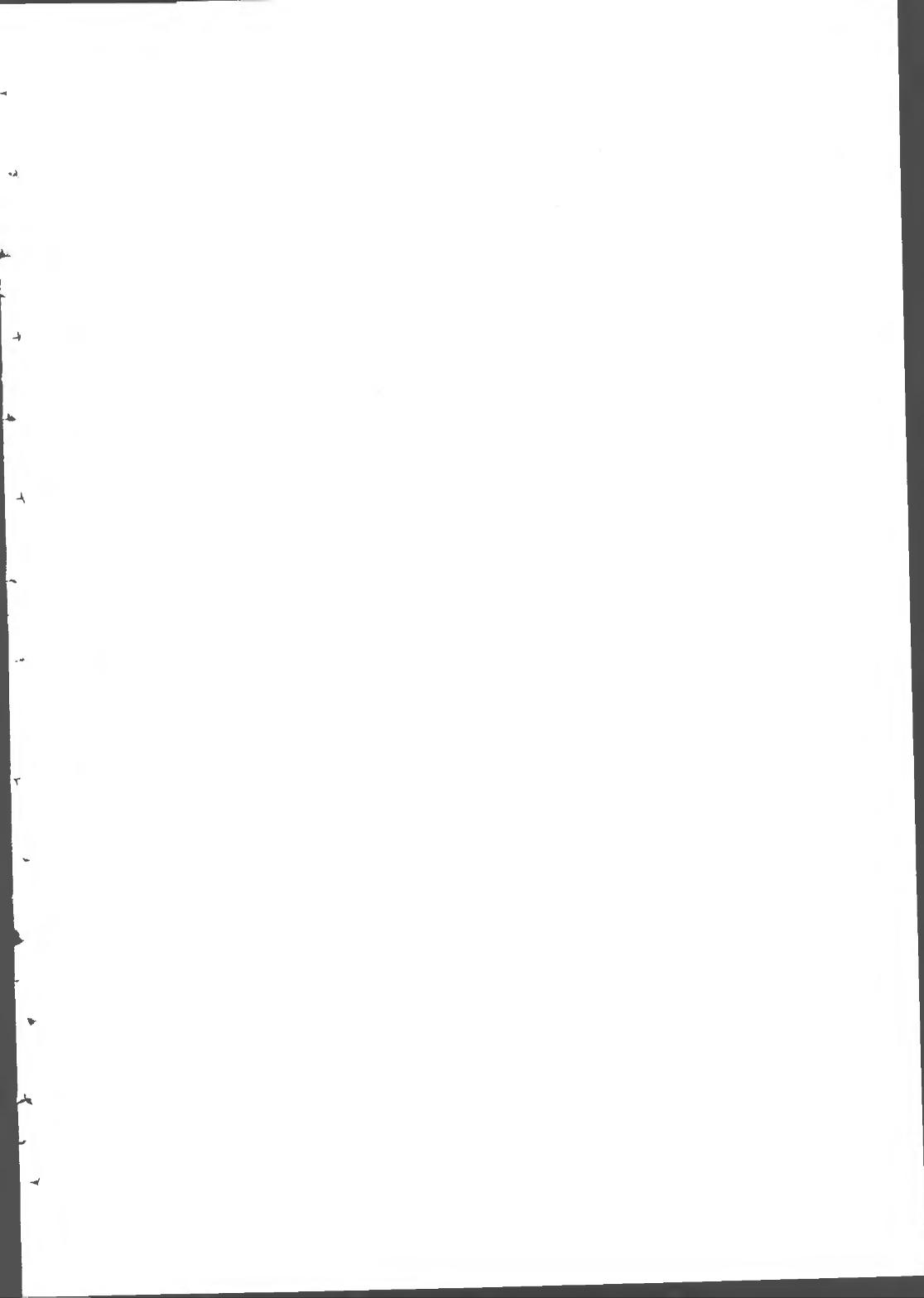
In addition to seedlings farmers normally also require systems for water harvesting, soil conservation and information about moisture retention techniques. These are practices which farmers have known and used traditionally, but through our extension service we introduce improved techniques such as, the use of 'A' frames to mark contour lines, or contour bunding along hill slopes to arrest run off and to contain soil erosion. Convincing farmers about contour bunding is quite difficult because the farmers are used to building only straight bunds. Farmers also seek guidance concerning techniques such as the introduction of mulching practices or drip irrigation by using mud pots.

Another area of great concern is protecting seedlings from the ravages of cattle, especially goats. This not only from the cattle of participating farmers but also from those of adjoining villages.

Social fencing (i.e. local agreements about where cattle may and may not graze) could be one of the possible solutions. But besides mobilising the local communities for this, a community cattle shed programme is being organised.

Under this programme, fodder grass and trees are to be grown in a particular area, within the project site, where all the cattle will be kept together and the required fodder will be provided to the cattle owners. This, we believe, will not only protect seedlings on farm land but also increase regeneration on the lower slopes of the hills. Of late a serious attempt in this direction, is being made in Devadanapatti Village.

What we have tried in Devadanapatti and a few other places is experimental and evolutionary in nature. The experience we have had so far is positive and we look forward to improving it further through means of dialogue with the people, and with their active participation in all parts of the project.





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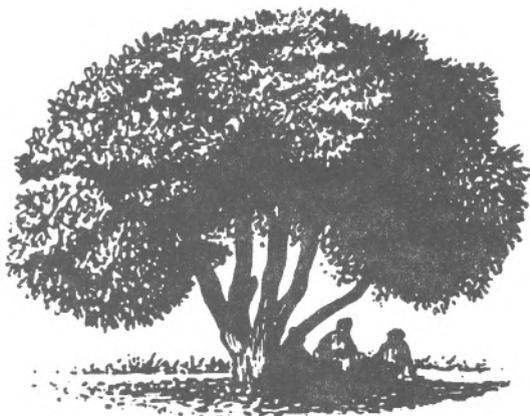
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SOCIAL FORESTRY NETWORK



AFTER UJAMAA: FARMER NEEDS, NURSERIES AND PROJECT SUSTAINABILITY IN MWANZA, TANZANIA

Christian Guggenberger, Patrick Ndulu and Gill Shepherd

This paper is taken from the final evaluation of the CARITAS Village Afforestation Project in Mwanza, Tanzania, conducted by Gill Shepherd in June and July 1989, with the assistance of the project's outgoing and current foresters, Christian Guggenberger and Patrick Ndulu. The evaluation was carried out for IIZ in Austria, who funded the project until 1989. Christian Guggenberger is now working for Austrovieh, Box 16, Ruhengeri, Rwanda; Patrick Ndulu heads the project in Mwanza.

**AFTER UJAMAA:
FARMER NEEDS, NURSERIES AND PROJECT SUSTAINABILITY
IN MWANZA, TANZANIA**

Christian Guggenberger, Patrick Ndulu and Gill Shepherd

Introduction: Land-Tenure in Mwanza

Sukuma land-use patterns before the Ujamaa¹ period

The Sukuma of Mwanza live near the south-east corner of Lake Victoria, occupying an area of low hills surmounted by granite outcrops, and separated by wide grassy valleys. In times gone by the rocky hilltops were covered in trees, homesteads and fields were to be found scattered down the hill slope, the seasonally wet valleys were used to grow rice and sweet potatoes, and cattle were grazed on valley edges in the dry season and on hill fallows and hill tops in the rains. The ideal holding was a wedge of land running from hilltop to valley centre.

Because there was ample land, the most valued store of wealth for the Sukuma was cattle, which were and for some still are the substance and the currency of many social and economic transactions.

¹ Ujamaa is an abstract noun formed from the word meaning 'family' or 'kindred' so it translates literally as something like 'familyhood'. Coined by Mwalimu Nyerere, it embodied a national ethic for Tanzania which stressed the sharing in African traditional life: qualities which he hoped to recreate, after the colonial period was over, on a national rather than a family or village basis. It led to the communalization of tasks and responsibilities which had never been anything but individual, and which were more and more deeply resented by people as time went by.

Villagisation and Sukuma adaptation to it

The villagisation of scattered farmers in the early 1970s, mostly in village sites on low hill-slopes with a perennial water-supply, and the creation of collective Ujamaa landholdings, involved extensive land reallocation from and to groups and individuals in Sukumaland, and for some, substantial dislocation. The clustering created unforeseen problems, of which one was more concentrated firewood gathering in limited areas, and another was loss of control and management of now remote hilltop, common land and in-field tree resources. Unoccupied, these areas fell prey to urban charcoal burners.

During the Ujamaa period it would seem that the rural Sukuma tried to avoid the imposition of irreversible land-use changes, against the day when a return to previous patterns might become possible. To this end they have strongly resisted attempts at large-scale afforestation on open land between villages, for instance, where the preferred land-use is pasture and the option of agriculture in the future. There was of course nothing they could do about the loss of vegetation in areas they had to abandon in the villagisation process.

Their response to the government decision that trees should be communally owned was passive resistance and the determination that until things changed, they would not plant any trees.

Trees and tenure after Ujamaa

The Sukuma have found themselves, for the last year or two, in a situation where they may return, if they wish, to the scattered homesteads they lived in previously. The authorities had seen the inconvenience, for many people, of not living near their fields, and in 1987 gave formal permission for transfers, so long as individuals told local officials what they were doing. Villagers' responses have varied according to the situation they find themselves in.

It seems clear that, while particular forms of land tenure acted as a constraint on tree-planting for the first few years of the project, recent events have changed all that. Farmers newly returned to their farms are eager to plant to strengthen their land rights, while the possibility of tree-growing as a private investment is attractive to those conveniently placed to take advantage of the market.

The Villagers' Views on the Need for a Tree-Project

Despite the Tanzanian Government's concerns about deforestation in the Mwanza district, there was no overwhelming felt need for more trees among rural Sukuma.

Villagers had observed that trees were disappearing, but by comparison with other problems, the lack of tree-cover was a minor aggravation for which in any case they blamed the inhabitants of Mwanza town. CARITAS, the development arm of the Catholic Church in Mwanza, which conducted a 'Listening Survey'² over a year in the district, found that water-supplies, health care and transport were villagers' chief concerns. Trees were only mentioned once.

Villagers' Views on Deforestation and Interest in Tree-planting: Insights from a six-village survey

Two years into the project, in December 1985, a survey was conducted in order to get further insight into farmers' opinions about tree-cover, tree-planting, and the woodfuel crisis. (The data could not be collected sooner for political reasons.) Group meetings were held in the six project villages for the informal collection of data. The results highlighted the problems villagers were or were not interested in tackling through a forestry project.

² A method in which staff listen to the predominant topics being discussed at bus-stops, in markets, bars, shops, etc.

Local deforestation and its causes

Farmers noted that the rocky hills throughout Mwanza district, once covered in trees, were now almost bare; traditional hardwoods, originally used for building, carving and so on, were disappearing; it was getting harder to find 6-10 cm diameter polewood and timber prices were rising. Firewood collection involved walking for longer distances, and crop yields had decreased - problems farmers attributed to the villagisation programme.

It was the villagers' opinion that deforestation was caused by the explosive growth of Mwanza town, whose fuel needs not only encouraged villagers to make charcoal for sale, but also drew entrepreneurs such as the managers of Mwanza soap factory, who sent their employees out in lorries to cut fuel.⁹ They claimed that the 1984 prohibition on clearing woodland for commercial purposes had not been respected and that the foresters supposed to ensure the act's application were corrupt.

However villagers felt that once all the larger diameter trees had been felled, charcoal cutters would move elsewhere. Then, the remaining thornbush would be left once more for local people only, and would regenerate faster than they could cut it. So lack of firewood would never be a serious problem, and the planting of fuelwood for their own use made no sense. Thus, from their point of view, the most appropriate response to a woodfuel crisis, if there was one, was to cease to supply Mwanza with charcoal from local tree-resources.

⁹ Guggenberger learned from official statistics that indeed, during the previous 20 years, the population of Mwanza region had grown at a rate of 3%. However, there had been an increase of only 1.5 people per sq km in the rural areas, while Mwanza town had grown by 600% to a total of 250,000. *'Problems of increasing scarcity of fire and timber wood as considered by the rural population'*. Christian Guggenberger, Nyegezi, Tanzania, December 1985. The inhabitants of Mwanza town, though they have caused a great deal of the deforestation without knowing it, experience no fuel shortages because wood is brought in to supply them not only from Mwanza district, but also from the islands in Lake Victoria and from the other side of the lake towards the Rwandan border.

Tree-planting before the project began

Individuals who had made a permanent commitment to village or town residence were already planting hedges around their compounds for privacy and to exclude village cattle. A few had planted compound shade trees as long as 20 years ago, and the numbers of old mango trees in the fields bear witness to the fruit-tree planting activities of the Sukuma long ago. On the whole, though, relatively few people had ever planted trees.

Adaptation to loss of tree-cover before the project began

In fact, before the project got under way, many farmers had chosen to make do with lower quality poles and fuel, rather than invest money or labour in obtaining higher quality supplies. They were using sisal poles for construction, and corncobs, sorghum stalks and cowdung for fuel. These responses, however, need to be understood in the context of the Ujamaa period, when villager uncertainty about the future made long-term planting investments unlikely. As one individual explained during the evaluation, 'We were like Government officials who only plant tomatoes (because they are annuals) in case they are transferred'.

Villagers' proposals for appropriate project components

However, village elders and the others who were interviewed for the survey told the project forester that there was certainly room for the project, so long as it focussed on three aspects which, in their opinion, met most people's tree-needs and interests.

- o The project should build on the fact that there was an increasing pole problem, with individuals suggesting that they needed between ten and thirty poles a year. However, the interviewed groups stressed that the best solution to the need for poles was the planting and owning of trees privately (kujitegemea)⁴. Negative experiences with communal agriculture had made villagers very reluctant to take part in communal woodlot projects.

⁴ Kujitegemea means 'self-reliance' and was coined to suggest the independence of Tanzania from the outside world. But by the time this survey was conducted, Tanzanians in Mwanza were using the word tongue-in-cheek to mean that the individual should not rely on government but should make provision for his needs himself.

- o They preferred to grow all the poles they needed near the house where trees could be kept an eye on and animals chased off, and where the trees could be used for shade and windbreaks. But houses in villages did not have enough space in their compounds for many trees. Villagers said that, ideally they would go back to their private lands to live, and plant on a bigger scale there.
- o The village groups were keen to grow fruit trees and wished to see the project making a priority of on that.
- o Elders especially stressed that it was important to ensure the continuity of high value indigenous species, not only by preserving examples of them where they occurred naturally, but also by planting them.

Farmers' Goals

Guarantees required by farmers before they were prepared to raise seedlings or plant trees

From 1983 to 1985, the project had produced all seedlings at a central nursery and distributed them to farmers. But in 1985/6, after the survey, the project decided to decentralize by finding individual farmers keen to raise seedlings themselves for use or sale.

This logical step highlighted further farmer uncertainties mentioned during the survey and it became clear that farmers needed reassurance on several points before they were prepared to raise seedlings or plant many trees:

- o that the seedlings were for the owner to do as he liked with;
- o that trees planted belonged to the owner including any profit from harvesting and selling them;
- o that the trees could be planted where the owner could keep an eye on them himself; and
- o that any income from the time, money, and effort invested in the nursery would be entirely for the individual concerned;

The clarification of farmer goals once they had begun to take an active part in the project

By 1986, the changes afoot in Tanzania made working with private farmers much easier. Though initially village committees expressed doubts about private afforestation because they were so uncertain of the legal and institutional implications of the situation, from 1986 onwards people gradually came to believe that Ujamaa was a spent force, and that the trees they planted would belong to them. A pattern began to emerge:

- o Homestead planting was the commonest form of planting in the project. 'All villagers plant the trees close to their homesteads or at the borders to neighbours. No trees are planted in far or remote areas as is common with food-crops and cash-crops ' we were told. This limited the number of trees which could be planted, however. The compounds in the village were too close for substantial planting; but far away in the fields, trees were vulnerable to browsing and theft.
- o Villagers did not want to plant firewood, but were keen to plant fruit and poles and, on the whole, raised them with care.
- o Individual farmer tree nurseries sprang up and were far more popular than group nurseries.
- o Farmers began asking for more extension help than they had received in their initial training, in order to tackle more effective and ambitious tree-planting.
- o As people tried out trees, they became more knowledgeable about which performed well in what circumstances.

Farmers and the market

By the end of the project's first six years, villagers had seen that there was a way of planting trees for private benefit, and that they would not be forced into tree-planting for urban needs. Many were interested in planting on that basis.

For a farmer keen to make some money out of his trees, fruit has proved the best option. Prices in Mwanza are high and rising, and for any farmer who can transport fruit there, it is not worth selling locally. Citrus fruits are especially popular because they are durable and not easily bruised. In the villages, fruit is a luxury apart from home-produced and consumed

pawpaw and mango. Citrus fruit seedlings have a certain market, but those who take them cannot tackle very large numbers and the market in any one village is rapidly saturated since most villagers do not expect to sell enormous quantities of fruit.

Clearly project areas nearest to Mwanza town present far more attractive opportunities for tree products than remoter areas, because of the market factor. Poles have a potentially high value and even seeds can be sold near Mwanza, as can a variety of seedlings including hedging species and ornamentals. In remoter areas, more pole trees than fruit trees will probably be planted since in addition to any cash value they may have, their non-cash economic benefits in boundary assertion and demarcation are important.

Project Structure, Extension and Nurseries

Pilot farmers

Until the project had attracted the interest of a few pilot farmers, it was very difficult for it to move forward. But once it had, it became possible to take groups of other farmers to visit those who had already made a start. Some of these pilot farmers were familiar with leadership roles because they had been catechists or in one case Village Chairman.

Example 1: Silveri R, Ng'wasonge

Silveri is a farmer who is also an unpaid catechist; he is not wealthy, but he has much natural authority. He has ringed his compound/home field with 600 Mella azederach trees and can supply his household's entire firewood needs from their side-branches, as well as having a magnificent pole-crop in the making. He is now well-versed in the budding of oranges, and has taught other villagers and sold them orange-tree seedlings. All his neighbours have planted at least 50 orange trees each as a result of his efforts, and he himself made 28,000/- (£140 sterling) from selling oranges in 1988.

The informal diffusion effect - of other villagers copying innovative individuals without the project having contacted them directly - was also noticeable.

Example 2: Daniel L, Usagara

The project was keen to encourage the planting of private woodlots in some cases, and the foresters were delighted when Daniel said he was interested in a plantation of eucalypts. He had made enough money out of irrigated vegetables to own a plough and a cart for taking water wherever he needed it, the land he proposed for trees was spare, and the low labour inputs trees require were an attraction to him.

He took 2,000 seedlings in 1987, but then hesitated and delayed planting them. The project forester threatened him with study visits from groups of farmers to show them how he had wasted his seedlings, and in the end the trees got planted. Local reaction was initially mixed and some neighbours told him he was wasting his field by putting trees in it. His response has been to say that he sees the trees as a pension. He has also planted closely so that in the short run thinnings are yielding firewood and tomato stakes as well. He has added to the trees in each subsequent year, and now the first local farmers are beginning to copy him.

Intermediaries between project and farmer

Despite some gratifying successes, the problem of project multiplication and continuity was looming large. It was possible to have direct inputs to the activities of only a handful of individual farmers, after all. Thus a key concern had been trying to identify a structure through which to work.

The project was transferred to CARITAS Mwanza at the beginning of 1987, and the Village Afforestation project was formally extended to the whole Archdiocese of Mwanza. In the following year, a hybrid management structure was evolved which had the reliability of the durable and the formal, but yet directly took up the time only of those most involved.

In order for villagers to have dependable links to the source of forestry extension, which in this case was based at, and funded through, the Catholic Church's Development arm, the forestry project was explicitly attached to the centre-to-periphery structures of diocese and parish. At village level, however, planning and execution of activities was carried out independently.

The formation of interest groups

The project had set up a series of meetings of neighbours from particular quarters of villages, which were intended to help recruit more pilot farmers. From these informal meetings 'village interest groups' came into

being - fairly small groups of farmers, formed independently of religious affiliation, interested in learning more about seedling production and tree-planting. These villagers could communicate upwards through diocesan structures when they needed to, but be as independent as they chose in the village. Once a group was working successfully and had found its own identity, then official recognition was sought, often by asking the Village Chairman or some other local dignitary to be patron of the group. The groups felt more comfortable with such legitimation, while the elders approached liked to head successful groups.

Interest group organisation

Interest groups would consist of about 15-20 people, mostly men, some of whom ran group nurseries and many of whom ran individual nurseries. The compounds of village individuals (sometimes those of pilot farmers with whom the project had already worked) were used as regular places for interest group meetings such as weekly teaching sessions from one of the project foresters in the early stages, follow-up surgeries' or one-day workshops to benefit all comers. From the project's point of view, group nurseries were preferable, though most villagers chose the individual route. The current project forester finds himself at times in the position of working with only one farmer while neighbours come to listen, but finds, even this simple approach draws in others over time.

Example 1: Busweru interest group

In Busweru, very close to Mwanza town, a group of about 20 was formed. Some members participated in the tending of a nursery of about 4,000 seedlings in the compound of the Village Chairman, while others raised their own nurseries at home and came to meetings simply for advice and information. The main interest was orange trees and pole trees, and between them, they enabled at least another hundred people to plant trees by giving and selling them seedlings.

Example 2: Ng'ombe interest group

In Ng'ombe, (60 km from Mwanza) during 1988, a group nursery raised well over 3,000 seedlings, choosing to produce in the following proportions:

39% decorative trees; *Delonix regia*, *Bougainvillea*; *Jacaranda*;

31% timber trees such *Melia azederach* and *Eucalyptus* spp.

25% fruits - oranges, tangerines, papaya, *Annona squamosa* and *Annona reticulata*.

3% local medicine trees - minengonengo, miarobaini (neem).

2% agroforestry trees - *Leucaena leucocephala*.

These trees, a very different mix from the almost exclusive concentration on oranges in Busweru near Mwanza, show the greater interest in a broad range of rural needs to be found out in Ng'ombe, and would suggest that ornamentals are of more interest to tree-purchasers than the project has perhaps so far realised.

Working jointly with CARITAS

The formation and follow up of the forestry committees and interest groups was carried out to some extent in liaison with CARITAS' other rural development and training programmes. The link provides moral support for the foresters and an excellent partner for discussing village difficulties.

Nurseries

The project's handling of the issue of nurseries is one of its most admirable aspects. Over the years the project has decreased the planned size of its central nursery, and diversified its function, while spreading nursery skills to a widening pool of villagers and steadily up-grading these skills.

When Guggenberger first arrived at the project he set about tree-trials and was ready for the 1983/4 planting seasons with a central nursery at Bukumbi Destitutes' Camp holding about 60,000 seedlings. Having very quickly discovered that the *Eucalyptus* sp. and *Pinus* sp. recommended by Government did not do well in the sites available to him, he made an early decision to concentrate on indigenous timber and pole species such as *Melia azederach*, and also on fruits.

Seedlings were distributed to villagers free in the first year of the project, but successfully sold subsequently. In the second year, the complete lack of petrol underlined the difficulty of running a village tree-planting project out of a central nursery, and the project had to build a

donkey-cart in order to transport 45,000 seedlings to the project's six villages.

Accordingly, in the 1985/6 growing season, Guggenberger tried the experiment of training volunteer farmers with their own small nurseries, in addition to running a central nursery. Though early recruitment was difficult, the example of independent and privately-producing farmers attracted villager interest as no activity had previously.

The encouraging results determined the project forester to concentrate on increasing supplies by this means, and decreasing supplies from the central nursery. The small nurseries also proved ideal sites for workshops for co-villagers at which seed selection, seedling production, tree-planting, plant protection, and even grafting could be taught.

In 1986, project and central nursery were transferred nearer to Mwanza town, and central nursery specialization was further developed. Here seedlings could be prepared for bigger-scale purchasers such as government and non-government institutions, as well as urban individuals eager to buy seedlings for hedging and ornamental purposes. Seeds were also collected, bulked and sold.

By the 1986/7 season, with the number of private nurseries standing at 39, the central nursery and its staff were able more and more to take on the role of a research, motivation and training area, while the project forester worked directly with farmers.

The nursery has conducted research on the germination of difficult or initially unfamiliar species (identifying a method for the germination of *Melia azederach* which farmers could easily use, for instance), and continues to produce seedlings for tricky species like teak. It collects seed for, and germinates, traditional indigenous hardwoods which may not be hard to grow, but for which it is now difficult to get seed. All other work, including citrus grafting of oranges onto lemon rootstock, takes place in the village nurseries, along with the germination of other fruit and pole species.

Villager nurseries vary in size from group nurseries handling 2,000-3,000

seedlings, down to an individual nursery observed set up in a cooking-pot wedged into a tree away from chickens, and consisting of no more than a dozen seedlings. In the 1988/89 season, 72% of nurseries had fewer than 100 seedlings in them, 20% contained 100-1000 seedlings, and 8% contained over 1,000 seedlings.

What has been particularly admirable in the planning of the nursery programme has been the way in which the need to transport seedlings from centre to farmer has been progressively reduced, and every aspect of tree-production demystified. Farmers are taught from the beginning how to select and obtain seed (and how to help the project by locating good examples of highly valued indigenous trees from which seed may be collected); how to mix potting soil for seedlings; and how to build shading and protection for their nurseries. Plastic polybags for seedlings are currently available in the district, but since they may not always be so, farmers have also been taught how to prepare a seedbed in which to sow seed, and how to make polybags out of banana-leaves. If they do not have a water source for seedlings during the nursery period, farmers are taught to raise their seedlings during the rains.

The project has managed to avoid many potential inputs bottlenecks by its healthy low-technical input approach. While Mwanza is not a difficult area in which to grow trees, the project's flexible attitude has done much to help farmers see tree-growing as simple, and not dependent upon the presence of a project. Perhaps the only outstanding problem is that, from the project's point of view, group-owned nurseries are easier to service, while from the farmers' point of view, small private nurseries are the preferred pattern.

Extension and Training

Extension and training have taken place on this project in both a planned formal way, and in various unplanned ways, of which the chief has been farmer to farmer imitation and informal advice.

Formal extension - the forester's personal role in the early stages

It is clear that the project's hardest extension task was the recruitment of pilot farmers in the earliest stages of the project, when there were few privately planted trees to interest and inspire farmers, and a history of coercive and unpopular village woodlots programmes as the sole thing with which to associate tree-planting.

It would seem that the first project forester's personal commitment, his association with the Church (which has generally been seen as a reliable rural development body by villagers) and the fact that information through village meetings and workshops was being made available not just once but regularly, all contributed.

Farmers who had planted a dozen nursery trees the first year, started asking for help with their own nurseries the next. Those who took this risk in the first year (and the risk was that of government reprisal, not merely the risk of wasted time or money) were often, but not always, the educated, or religious figures.

Formal extension - tools

The first project forester began his work in the area with an exhibition and with written publicity sent to parishes and other bodies. Probably neither of these methods had the impact of his own constant presence in the area, and their omission would have had little effect on the course of the project.

However, more precise materials, produced at a later stage of the project, have been greatly welcomed. These are the series of leaflets on tree-nurseries, tree-planting, and hedge-creation produced by the project. A fourth on grafting is still being piloted with villagers. These leaflets have been very carefully tested and drawn, to convey the maximum information, clearly, with modest amounts of text.

The project also made a commitment to study tours as it called them-taking farmers from villages where little tree-planting activity had yet taken place, to see the compounds, the nurseries and the work of

individuals and groups in other villages. Such visits help the project spread from village to village over a wider area than the informal spread described in a succeeding section could possibly do.

Finally, one of the project's strengths has been its personal and continuing contact with farmers. The follow-up 'surgeries' happen with sufficient frequency that farmers know they will not be abandoned with their problems, but will be able to see one of the project foresters without too much effort.

Formal extension - training

When an interest group is newly formed, the first teaching offered consists of three workshops. In the first, the topic of deforestation and woodfuel problems is raised, and the scope of the project is explained in a general way. In the second, a specific action plan is developed, and in the third practical training is given. Farmers are taught how to select and obtain seed and treat it; how to obtain and mix soil; and how to set up their nursery. These workshops, and their follow-ups, seem to work excellently.

The informal extension of tree-planting by example

Enthusiasm for planting trees seems to have been inspired by a wide variety of stimuli. In one village, for instance, tree-planting got a tremendous boost when the Party Chairman, who had initially disapproved of the project, began to get interested in planting trees himself.

Individuals were encountered during the evaluation who had watched the progress of the project for up to five years before deciding to come and receive training in nursery establishment. Such a person might then be ready to plant large numbers of trees immediately.

One eighty-seven year old farmer saw the project planting trees at a school near his farm, and asked for 3,000 seedlings. Staff could not believe he would plant them and tried to dissuade him, but he planted a treble row of *Casuarina equisetifolia*, *Melia azederach*, and *Delonix regia* all round his field, and told the project that he had done so in order to have something to leave to his children.

Some have cited the visual example of government plantations as the decisive factor which encouraged them to plant trees.

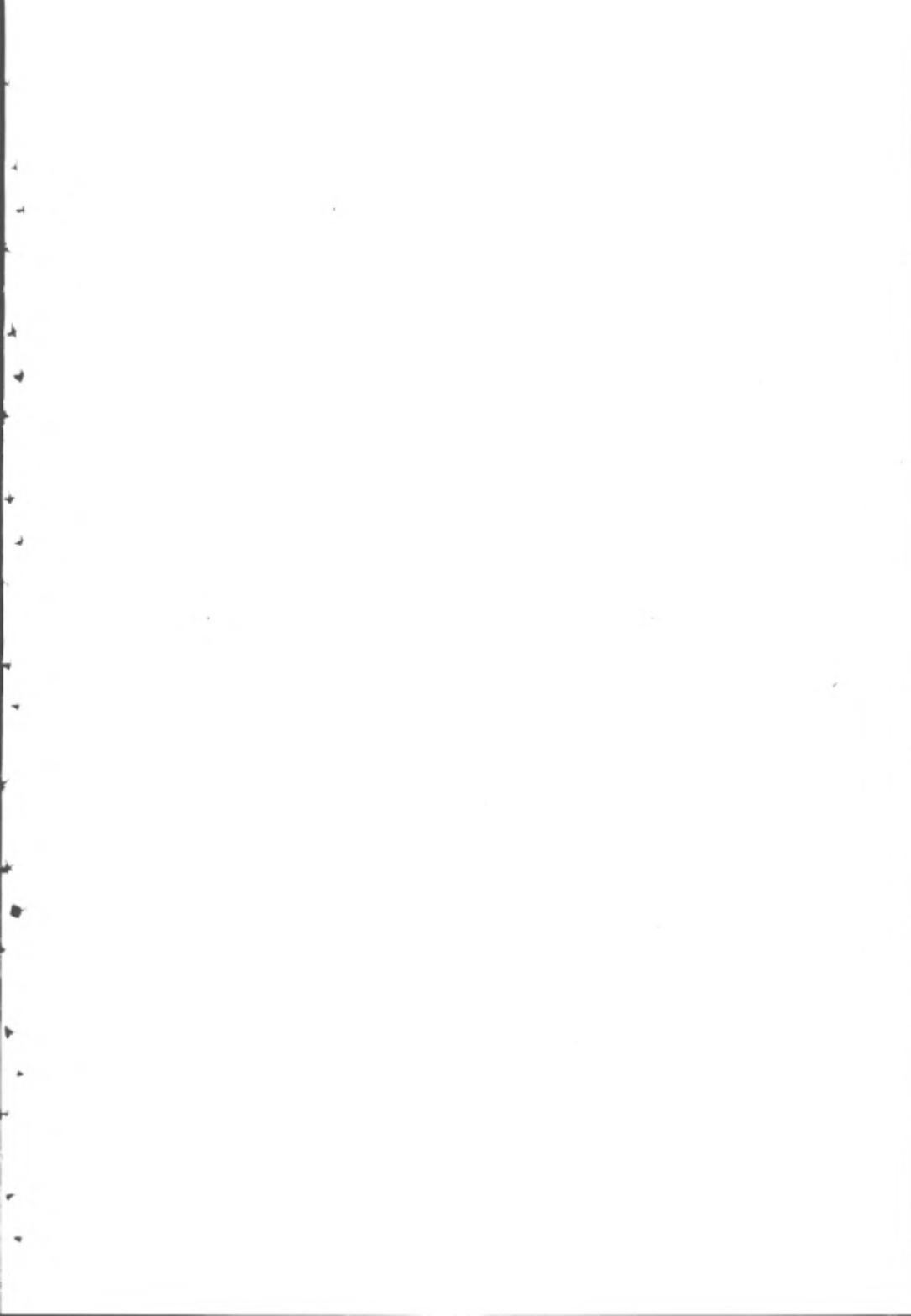
But the outstanding piece of unplanned extension has been the existence of the village nurseries themselves, where villagers could come to look, ask questions of the owner(s), and find that tree-raising did not require great capital investment. Project staff are constantly hearing of new nurseries, which they in no way helped to start, being formed in villages where other work has gone on before.

CONCLUSION

In conclusion, the aspects of the project which stand out are three-fold.

Firstly the great care taken to establish good links with officials, church and villagers, so that one of the frequent criticisms of NGOs - that they undermine local services and create anti-government feeling - was defused. Secondly, the low external input approach, with its trust in villagers' capabilities and skills, and its realistic appraisal of the availability of extension staff in the future.

Finally, and most importantly, the small nurseries, and the fact that the project after the first two years entirely avoided the transportation of heavy seedlings out to the farmers from the central nursery, bear witness to a common-sense approach with a high likelihood of sustainability.





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SOCIAL FORESTRY NETWORK



NURSERIES IN GUJARAT, NORTH INDIA: TWO VIEWS

- (1) Observations on Centralized and Decentralized Nurseries: Experiences of an NGO in Gujarat, India
Harnath Jagawat
- (2) People's Decentralized Nurseries: Field-Level Experiences of the Gujarat Forest Department, India
D P S Verma

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OBSERVATIONS ON CENTRALIZED AND DECENTRALIZED NURSERIES:
EXPERIENCES OF AN NGO IN GUJARAT, INDIA

Harnath Jagawat
Sadguru Water and Development Foundation

Introduction

The Panchmahals area of Gujarat is a tribal area which used to have substantial areas of forest according to local history. About 100 years ago—maybe even 75 years back — this district of Gujarat had thick forests on about 75% of its total land area, and the entire economy of the district revolved around forests and forest products. The Sadguru Water and Development Foundation, which is an NGO, was formed to encourage local people to plant trees on their own land in this district.

In one of our village meetings with a women's group, an elderly woman of about 65 years of age told us that when she came to the village as a newly married bride, there were thick forests all around the village. The forests were so thick that women would always go in a large group to fetch drinking water hardly 300 metres away, accompanied by a man with a weapon because they feared attack from wild animals.

Loss of the forests has shattered the entire tribal economy. Most of the people are living below the poverty line, and 50-75% of the population are forced to migrate in search of work for at least 8 months of the year. It is estimated that over 50% of the land area in this district is suitable for tree plantation, as it is too degraded to support agriculture, but the forest department can neither restore the forests in this area nor can they achieve the plantation on the scale required. It is only possible to reforest this area if the people themselves take up this massive programme and plant up their degraded land with trees. However, as long as the forest department persists with its dog-in-the-manger attitude that people cannot be involved in the restoration of forests in former forest areas, then the trees will not be replaced.

The Foundation's Social Forestry Programme

When the Foundation started their social forestry programme they relied on the forest department to supply the villagers with seedlings. In one village this led to the following experience which confirmed the Foundation in its aim to set up local-level nurseries. The forest department had pledged to supply the villagers with seedlings in time for planting during the first rains of the monsoon. However, the monsoon rains were unusually good and the forest department were too busy planting up their own land, and could not supply the seedlings to the villagers until the end of the monsoon in August. The villagers knew that if the seedlings were not planted immediately they would not survive. The local people called on relatives and friends from surrounding villages to help them with carrying the seedlings from the delivery point and also with the planting.

Although the villagers had faced such difficulties in obtaining seedlings, the following year they continued with their large planting programme, and over two years they planted over 400,000 seedlings. The survival rate of the seedlings was over 90%, with the occasional sale of trees over the years. Considering that usually cattle are allowed to roam freely around the villages and that there were no fences around the young trees, it shows the degree of individual and collective commitment to ensuring the survival of the trees.

During the drought years of 1985 and 1986 farmers realized the importance of trees as an insurance against the hazards of drought, and sold some of their trees to maintain their families over this period. Trees planted in 1982 and 1983 were providing visible benefits to their owners, for example wood was available for cooking and house construction and some mortgaged their trees for a short period to tide them over this difficult period.

However, the supply of seedlings from forest department nurseries did not improve, and although farmers were producing half the seedlings they needed, the remaining seedlings promised by the forest department

frequently did not arrive in the villages. It was decided by the Foundation that farmers should be encouraged to raise all the seedlings themselves and so avoid dependence on this unreliable source from the forest department. Accordingly, 245 decentralized nurseries were set up in 13 villages by the farmers in 1988 and together they raised over 3 million seedlings, which were planted out by nearly 2000 families in the monsoon of 1988.

The farmers, themselves, prefer to raise and plant Eucalyptus, but the Foundation persuaded them to raise a greater variety of species. These trees were planted by the farmers on several different types of land from privately owned degraded wastelands to common wastelands encroached by farmers. They also planted trees on field edges, in strip plantations, and on open irrigation water courses.

The success of SWDF's tree-planting strategies has been possible only through the work of the farmer and the establishment of many decentralized nurseries. From SWDF's experience with both farmer-run decentralized nurseries and forest department centralized nurseries it is possible to enumerate some of the advantages and disadvantages of these two different approaches.

Advantages of centralized nurseries:

- o Easy for the supervision, management and monitoring.
- o May need proportionately less manpower, including less technical supervision.
- o The protection problem is minimal and manageable.
- o Impressive appearance.

Disadvantages of centralized nurseries:

- o Require relatively larger water resources, and the water source has to be very near to the nursery site as watering requirements are very labour-intensive
- o Occupies more space at one single site
- o Transportation of seedlings becomes a serious problem, from the point of view of the management, cost and time involved in the transportation

- o Chances of higher casualty rates during lifting and transportation. Poor road conditions compounded by bad handling during loading and unloading, would result in the higher casualties. Like infant children, the seedlings need the utmost care and tenderness in handling. This is difficult when a large number of seedlings are to be transported from centralized nurseries. In particular, the transportation operations are rarely carried out by the people who planted the seedlings, and therefore excessive damage is normal.
- o If there is any delay in transportation due to the road conditions in the monsoon or any other reason, planting is delayed. Such abnormal delays upset the programme. In 1987, SWDF faced this problem when the seedlings were to be transported from the centralized Forest Department nurseries to a distant place. The planting was not done at the proper time, due to non-availability of vehicles.
- o Sometime good soil must be brought from a distant place for filling the bags. This is costly as well as time consuming.
- o The ultimate planters have no stake in or attachment to seedlings raised in a centralized nursery in a distant place.
- o The people involved in the centralized nurseries consider themselves wage earners and do not see themselves as participants in the total tree plantation programme.
- o The centralized nursery is not people-oriented. Very few people are involved and as the technical staff are omnipresent in such centralized nurseries, nursery workers tend to disown the responsibility of maintaining and protecting the centralized nursery. Whatever is done, is done by strict supervision, and not by the people's own initiative and interest.
- o Small damage and small scale casualties do not come to notice; or, if they are noticed, they are ignored owing to the very size of the nursery.
- o The benefits of earnings go to fewer people. Often, relatively rich farmers with adequate water resources would monopolise the production and profits from nursery raising. We have seen the Forest Department allotting nurseries of 100,000 seedlings (one hundred thousand) to one individual having a good water source. Such a nursery raiser may earn about Rs.30,000/- in a short period, which is quite a large sum in the Indian situation. And it helps to add to the prosperity of a person who was already well-to-do.

Advantages of decentralized nurseries:

- o Decentralized nurseries are people-oriented and they become part of the people's own programme.

- o A larger number of people (families) are involved. Thus the earnings from the nurseries are distributed among a larger number of people-making a more equal distribution of earnings.
- o Decentralized nurseries require much less land and water, and therefore, even a poor farmer with small land and scant water can also raise a nursery of between 10,000 and 20,000 seedlings.
- o Even if the water source is at a distant place, a farmer can easily manage the watering as a small decentralized nursery requires much less water. In our experience, even if the water source is half a kilometre away from the nursery place, it requires not more than one hour in a day to give one watering to a small nursery of 10,000 to 20,000 seedlings.
- o The transportation is easy, timely and without any cost, as the plantation area is close to the nursery site and the entire family of the planter lift the seedlings in head loads as quickly as possible. Transportation is labour intensive instead of capital intensive.
- o With the nursery so small, even small scale casualties and damages could be noticed and could be rectified well in time.
- o The nursery raiser can grow vegetables around the nursery on a small piece of land as some moisture will be available in the nearby soil and the vegetables could be grown under the common management without special efforts. This was noticed in a number of our decentralized nurseries.
- o As the nursery is nearby the house, the entire family including children are involved in its various operations. It becomes a common concern for the entire family.
- o There is a constant relationship between the nursery raiser and the ultimate planters who are to plant the seedlings from the specific nursery.
- o In fact, the ultimate planters develop an interest in and attachment to the nursery as they constantly feel that their seedlings are being raised in this nursery. Sometimes, we have been contacted by a prospective planter about the bad shape of some nursery, because he feels that he would be the ultimate loser if the seedlings are not properly cared for. This can never be expected in the centralized nurseries.
- o Even at a late stage, some corrective measures to replace the casualties by fast germinating and fast growing species could be taken. This would minimise the ultimate casualty rate. We have experienced that even when less than one month period is available before planting out, new seedlings of the proper species can be sown. In our part, the normal peak planting out period is 15th to 31st July. Yet we have often filled up the gap of nursery casualties as late as 15th to 20th June the growth of such seedlings was good, since we had chosen to replace losses with the fastest growing species.

Disadvantages of decentralized nurseries:

- o Technical supervision and monitoring becomes difficult. More technical and other supervisors are required.
- o They require greater and more elaborate managerial skills, particularly, in ensuring timely input supply, remedial measures, etc.
- o Communication problems in a case of urgency can be difficult.
- o If supervisors and nursery raisers are careless, much damage may take place, which only comes to light at a very late stage.

CONCLUSIONS

There are distinct advantages and disadvantages to both centralized and decentralized nurseries as has been demonstrated. Which type is better can depend on certain factors like the specific area and type of programme. For example, if a plantation is to be made in forest land, one might prefer a centralized nursery. But, if large number of people in scattered villages are to be involved in tree-planting, decentralized nurseries are much better in many respects. For tree-planting on private wastelands, for agroforestry or for farm forestry programmes, decentralized nurseries have to be preferred. If such planting is to be part of a people's movement, decentralized nurseries help a lot.

Our observations are based on the specific area that we are operating in. There would be different conditions in arid or semi-arid zones, where because of scant water sources, the centralized nursery may be the only choice. However, wherever water is available in such areas, the decentralized nurseries are more advantageous.

We may also conclude that NGOs, working in different villages intending to involve people and seek their participation in the plantation programme, should prefer decentralized nurseries. They demand somewhat more managerial skill, but the ultimate advantages are much more.

Overall, the Foundation through its encouragement of tree-planting by the local people has succeeded in increasing the number of trees on farmers' land from less than 100 trees in one village to over 80,000 trees. Most of the villages in which the project works have planted up all their degraded land, and in the case of Shankerpura village all the families are self sufficient for their firewood needs. Due to the availability of wood, use of cow-dung for cooking has been almost discontinued in this village, and consequently the amount of organic matter available to farmers for their agricultural land has increased.

Many farmers sold wood in the drought years, each farmer obtaining between Rs 2000 to Rs 11000 which is a large additional income for these tribal farmers considering that their plantations are only 6 years old. In this same period of time 30 new houses have been built by the villagers using their own wood, which they could not have done if they had been forced to buy the wood from local markets.

The most significant impact of the tree plantations in Shankerpura village is on the level of sub-soil water. Ten years ago there were only 2 open dug wells in this village, both were used for drinking water and dried up during the summer. Now there are 44 open wells in the village half of them dug in the last two years. Despite the successive drought years of 1985-1987 each well dug struck water. It is interesting to observe that despite dense plantations of Eucalyptus, the sub-soil water levels have increased rather than decreased. This phenomenon has attracted the attention of many knowledgeable visitors, because the evidence is contrary to the views of those opponents of eucalypts who state that they have an adverse effect on sub-soil water-levels.

Finally, the real benefits accrue to the villagers whose trees have become a real asset and source of wealth. This asset can be banked in times of need, either by selling the trees or mortgaging them.

The lessons learned by the Foundation are many, but perhaps the most important message is that control of production of seedlings and their planting is best left with the farmers who want and need the trees.

PEOPLE'S DECENTRALIZED NURSERIES: FIELD-LEVEL EXPERIENCES
OF THE GUJARAT FOREST DEPARTMENT, INDIA

D.P.S. Verma
Conservator of Forests

Introduction

Gujarat is a relatively urbanized state by Indian standards, highly industrialized and with a well-developed agricultural base. Consequently, there is little scope for diverting any land from its present use to forestry.

The chronic shortage of forest produce, especially firewood, forces the large-scale use of cow-dung as a fuel. Some experts have estimated that state-wide about 1 million tonnes of cow-dung is burnt as fuel each year.

Climate and rainfall vary widely across the state, in the north and north-west drought is common and leads to widespread famine. Altogether about 35% of the state is chronically affected by drought which together with an acute scarcity of fodder leads to massive imports of fodder from other states.

The late 1960s and early 1970s saw floods and droughts of enormous and catastrophic proportions. These devastating droughts left their lasting scars throughout the State but they did create an awareness of the value of trees. The plight of the poorer sections of society who constitute about 40% of the population continued to decline due to dwindling supplies of fuelwood and small timber which resulted in rocketing prices for these forest products.

At this time large tracts of land were lying unused, along the sides of roads, canals, and railways together with barren forest lands and some common grazing lands. The Forest Department planned a tree-planting programme on this land which began in 1969. Initially the plantations were confined to roadside plantings carried out by the Forest Department on state highways. There was an unexpected outcome of these plantings in that local people began to support these initiatives because they could see that it was possible to grow trees on wasteland, at a reasonable cost and with little water.

Following the severe drought and famine of 1974 the Forest Department undertook another social forestry programme, which came to be known as the village forests programme. This project promoted tree-planting on barren community-owned grazing lands to provide local people with fuelwood, fodder, small timber and fruits. Due to uncontrolled grazing these lands had been reduced to wastelands where hardly a blade of grass grew, they were merely exercise grounds for village cattle rather than grazing lands. Theoretically, the extent of village forests should be related to the fuelwood requirements of the village, but this was not possible due to the limited amounts of available community lands, coupled with the need to keep some land for grazing.

Farm and Agroforestry

Before the mid seventies, tree seedlings were raised by Gujarat Forest Department (GFD) in response to demands from the Revenue Department and the panchayats. The seedlings were handed over to these organisations at the nursery site for further distribution to the local people. The GFD therefore played a passive role in the programme. Most of the seedlings taken by the panchayats and Revenue Department were bare root seedlings. These agencies neither had resources nor the necessary infrastructure to transport containerized seedlings, and furthermore, there was no extension work done among the local people before seedling distribution. It was a programme meant for the masses but was conceptualised at the top and handed down to the bureaucratic machinery for execution. There was no

involvement of local people. This resulted in the programme becoming an occasion for ceremonial planting which was forgotten soon after the crowd disappeared.

Both the Wastelands Development Programme and Village Woodlots were successful in convincing people that trees could be raised successfully without irrigation. With the inception of a separate Social Forestry Wing (SFW) tree seedlings were supplied free to farmers, but initially, only wealthy farmers approached the Forest Department for these seedlings.

Slowly, however, the obvious success of the large farmers encouraged small and marginal farmers to participate in the tree-planting programme on their farms. Encouraged by this success, the SFW took up distribution of seedlings direct to the people and also gave them technical advice; thus transferring the technology of tree-planting and tree-rearing from the Forest Department to the farmers.

Despite the many arguments that can be put forward against supplying free seedlings, they provided the most effective way to encourage the planting of a large number of trees by a large number of farmers, in the shortest period of time. Although it is the case that considerable subsidies may have gone to richer farmers who took the largest number of seedlings in the initial years which may result in an over-production of trees for the commercial sector.

The Decentralized People's Nursery Scheme

In the beginning all the seedlings for public distribution were raised by the Forest Department in about 3200 nurseries spread across the state. Each nursery had an average catchment area of 62 square km covering about 6 villages. This arrangement had some inherent defects of which the main one was that the GFD selected the tree species to be grown. Although, the GFD tried to raise seedlings to meet popular demand, there remained an element of GFD perceiving the demands of the state and not of users.

Farmers also had to transport seedlings over relatively long distances, incurring high transport costs and leading to high seedling mortality. Another problem was that the highly skilled technical staff of the GFD were constrained by having to support these centralized nurseries and could not keep up with the ever-increasing demand for seedlings by the local people. It was therefore decided to decentralise the production of seedlings by transferring nursery technology to schools and farmers. This released GFD personnel for the more specialized jobs of silviculture and forest protection. Other advantages of decentralization included lower transport costs, and farmers and schools could also make money by selling surplus seedlings.

In 1986, after nearly 10 years of success in Gujarat, the National Wastelands Development Board (NWDB) adopted this scheme and launched a massive programme throughout the country which came to be known as the Decentralized People's Nursery Scheme (DPNS). DPNS entrusts the task of raising seedlings to the under-privileged sections of society such as the landless, scheduled casts, scheduled tribes, small and marginal farmers, women's groups and schools. The cost of raising a seedling (30 paise) is paid to each participant in three equal installments in December, March and June. When the seedlings are ready the participants can sell them to purchasers at mutually agreed prices. Thus, the participants not only earn wages right on their doorstep, but also receive additional money from the sale of seedlings, which are in great demand.

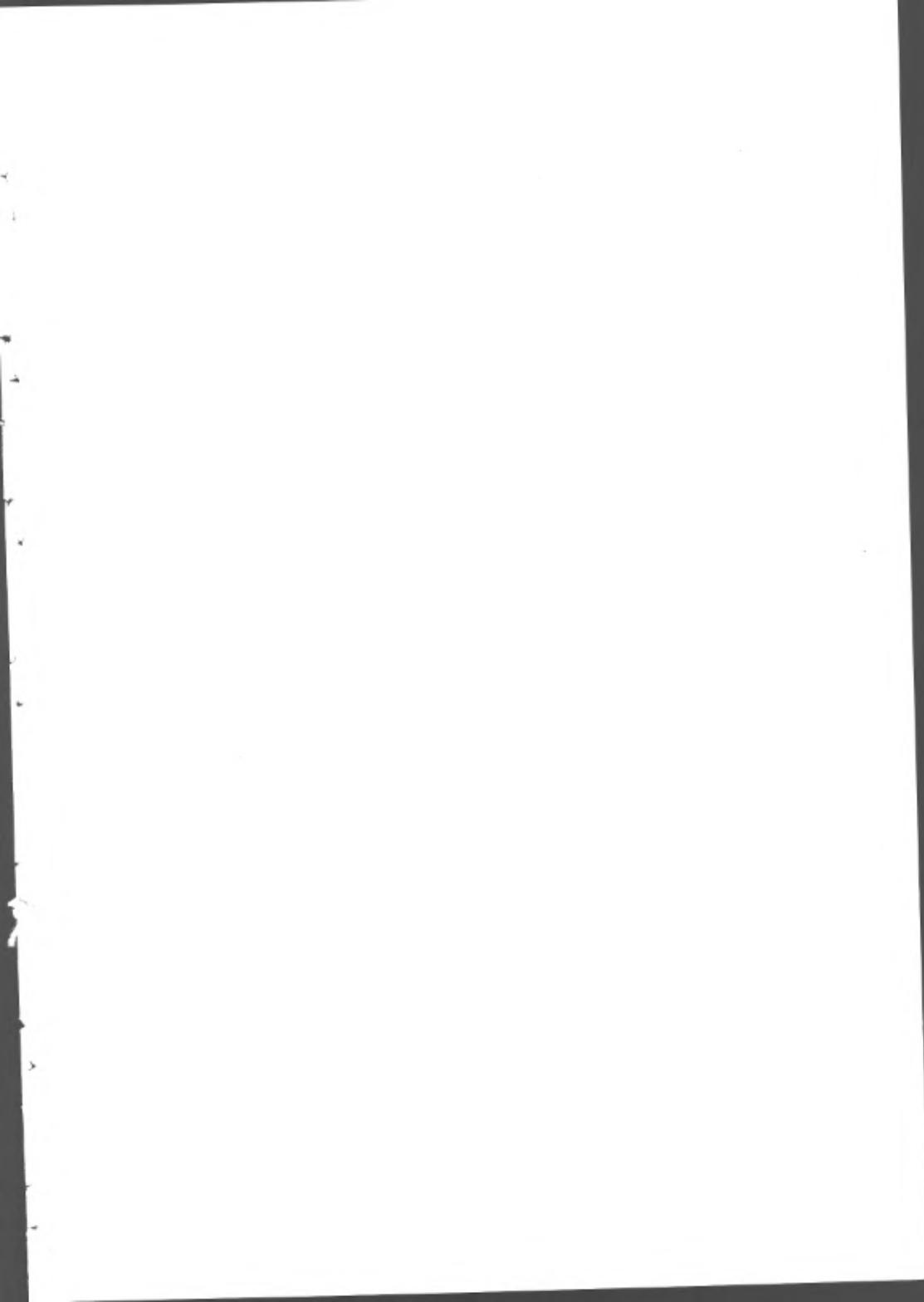
Lessons Learnt

The choice of tree species is left to the participants themselves, who generally prefer to plant fruit trees since there is a greater demand for them. It has been possible to sell most of the seedlings from DPNS at varying rates depending on the species: fruit and bamboo carry the highest premium. The expected income from sale of seedlings indicates the trend of demand for particular species by local people. It establishes that though eucalypts may not be an ideal tree for social forestry, it is still the species most sought after by farmers for income generation. The high premium on

fruit trees may not be a lasting phenomenon because once the supply of fruit tree seedlings increases to a level greater than the demand, prices will fall.

The DPNS has created an important decentralized economic activity for poor rural communities. Since the nurseries are close to the farmers it has reduced their transport costs and also decreased the mortality rate incurred by long distance transport. It is also easier for the farmers to obtain seedlings from decentralized nurseries because they do not have to become involved in the bureaucracy of centralized nurseries which took up valuable time in their planting period.

Overall, the DPNS has been very successful in Gujarat and has responded to local farmer demand.





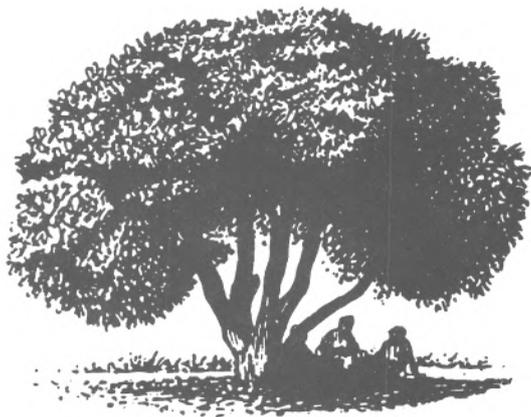
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SOCIAL FORESTRY NETWORK



FOREST TREE NURSERIES IN AGRICULTURAL HIGH SCHOOLS: AN ANALYSIS OF ECUADOREAN EXPERIENCES

Dennis F Desmond

Dennis F Desmond worked as a Peace Corps Forestry Adviser in Ecuador for five years. Initially he worked on the CARE Community Forestry Systems Project and then as Forestry Adviser to an agricultural high school.

FOREST TREE NURSERIES IN AGRICULTURAL HIGH SCHOOLS:
AN ANALYSIS OF ECUADOREAN EXPERIENCES

Dennis F Desmond

Introduction

The global proportion of tree planting compared to tree cutting is one to ten. For every ten hectares deforested, we are planting one hectare. However, the rate of deforestation in Ecuador is difficult to quantify, in most cases the data is not available, and the rate varies between the coast, highland, and Amazon regions. However, no one can deny that we have to increase the amount of tree-planting in the country, especially in the highlands.

Population growth is increasing the demand for forest products, especially wood. Small farmers walk further each day in search of fuelwood. Every day patches of native forest are eliminated in order to establish crops, pastures, and housing. The bare soils are being washed away by erosion, and are declining in fertility. The climatic and hydrological cycles are changing, affecting the production of food, potable water, and hydroelectric energy.

Governmental tree-planting programmes, operating with limited resources and depending on centralised nurseries, have not been able to resolve these problems satisfactorily. Besides the lack of tree seedling production, there is a need to institutionalise the plantation and protection of trees in existing social systems. In other words, there is a need to create a forestry tradition within the rural communities. In order to encourage local tree-planting initiatives it is important to train promoters and extensionists who live in rural areas and know local customs and practices.

Some Experiences

This paper is based on the author's experience with three agricultural high schools over a five year period in Loja, Canar, and Azuay provinces. The work in Saraguro formed part of a CARE Community Forestry Systems Project. The principal goal of the CARE project was the establishment of 700 hectares of forest plantations on the communal lands of the indigenous communities of the Loja zone, with seedlings from a school nursery. The current capacity of the nursery is 500,000+ seedlings.

The school nurseries supported by CARE were endowed with plenty of financial resources. However, the only goal of the nurseries was the production of seedlings for the communities that work with the Project. The integration of the Project with the high schools in order to teach tree-planting techniques to students was considered a goal of little importance and up until today such integration has been minimal.¹

In the last case, the Nabon high school already had a nursery with a capacity of 40,000-50,000 seedlings. For all three nurseries the author tried to balance the goal of seedling production with the promotion of forestry education of students and teachers.

Assumed benefits and actual experience of school nurseries

The possible advantages of establishing and maintaining forest tree nurseries in agricultural high schools are numerous. Many of these advantages have been mentioned in other documents (Convenio MAG-MEC 1983, Benge 1987). However, there is a lack of documented experience for evaluating the validity of these theoretical advantages. In the following section the author describes his own experiences, in contrast to the benefits assumed in the literature for school nurseries.

¹ The CARE Project at the time of writing is slowly withdrawing its involvement with the high school nurseries, in order to rely on individual / community nurseries.

It has been assumed that high school nurseries represent an intermediate step between centralised government nurseries and individual/community nurseries. Centralised nurseries are expensive to build and operate. Furthermore, transport of the seedlings is difficult and expensive, both for the producers and the buyers. Individual/community nurseries, although constituting the optimum method for the creation of a forestry tradition, at present lack the resources necessary to employ sufficient numbers of technicians and extensionists to ensure adequate nursery supervision in every community.

From experience the author found that a nursery of intermediate size (say 20,000 to 100,000 seedlings) is a major and complicated responsibility. Good planning and administrative and technical management are needed to operate it. Without an adequate system of control and accounting, the per seedling production expenses can be enormous and the seedling quality low.

It has been assumed that because agricultural high schools are usually located in the centre of rural zones, their position will facilitate people's access to tree seedlings and alleviate transportation problems.

There are undeniable advantages for nurseries located within rural zones. Small farmers can transport small quantities of plants by foot, horse, or bus without major difficulties. However, for larger quantities of seedlings transportation is difficult. Due to the scale of production, the purchase of small trucks by the high schools is not justifiable. In several cases, the author has noted a lack of extension to the local farmers resulting in the production of seedlings that never leave the nursery.

The assumption that high schools will be receptive to the idea of having forest tree nurseries is partially proven by experience. As well as the nurseries acting as a living laboratory for student education, they benefit the whole area. In each of the three high schools, the rectors were receptive to the idea of a nursery, especially when help is given by other institutions. However, although the rectors are motivated, their daily participation cannot be expected in the operation of the nurseries due to their other responsibilities. Lamentably, the experience with teachers has been much less favourable than expected. Due to low salaries and the lack of other incentives, most of the teachers are not motivated to participate

in high school nurseries. At the same time, most of them do not have training or experience in the operation of intermediate size nurseries.

In the case of high schools located in rural area, the majority of the teachers do not live in the zone. Instead, they travel weekly, sometimes daily, between the high school and the city. Moreover, during the summer vacation, when nurseries in the highlands are in the middle of seedling production, the teachers (especially the teacher in-charge) are not present.

Incentives do not exist for teachers to be at the high school outside of normal classroom hours. It has even been noted that peer pressure exists on the teachers-in-charge by their colleagues so that they do not work extra hours. Also, the constant change of teachers, year after year, leads to a lack of continuity in the various activities. This lack of motivation that predominates among the teachers diminishes the other possible advantages that high school nurseries offer.

It was assumed that the capital investment for establishing a high school nursery would not be high because the high school already possesses much of the infrastructure that is needed, including land, irrigation, tools, buildings, etc. "Free" labour provided by the students also reduces the cost of operation.

Although in reality it is true that the existing infrastructure reduces many of the costs of nursery establishment, operating costs are high. Although "free" student labour is a significant saving, a nursery of intermediate size needs at least one part-time nursery worker, depending on the production scale, in order to ensure its daily care. As pointed out before, if there are no trained and motivated teachers to plan, manage, and promote the nursery, a great majority of plants, of poor quality, will never leave the nursery.

It was assumed that both centralised nurseries and high school nurseries would be able to work with a wide variety of species, including species new to the zone, multiple use species, those difficult to propagate, or species whose seeds or vegetative material is expensive or hard to obtain. For example seed or vegetative material of genetically superior plants.

Although without doubt a high school can work with a wide variety of species, it should not be expected that the nursery follow a high level of technology. That is to say, propagative material that is difficult to obtain or propagate, or that is expensive would be better raised in centralised nurseries. Raising of these species in high school nurseries is a poor investment of time and money.

It was assumed that high school nurseries would benefit from the ability of the students to collect seed and vegetative material. This reduces the need to buy seed from outside sources. The students' detailed knowledge of the local vegetation can be used to identify those trees that may be useful to propagate.

Experience has shown that in order to guarantee an ample range of species in the nursery, students without a doubt have provided significant support through the collection of seed and vegetative material. However, sufficient training and control have not existed to ensure that the material collected is of proper maturity and from trees with good characteristics.

It was assumed that with the collaboration of the teachers and students, high school nurseries would serve as centres for investigation concerning propagation and production methods, especially of native species.

Experience has shown that investigations carried out by students in high school nurseries have been in general of poor quality and/or of little utility. Moreover, there has been no dissemination of the results. For the students, the practical focus of the activity should not be in the results of the investigation, but rather in the learning of new scientific methods and, in the awakening of interest in forestry. It should not be expected that investigations in high school nurseries equal or replace investigations carried out in centralised nurseries.

It was assumed that there would be possibilities for inter-institutional coordination between high schools, local communities, governmental entities such as the Ministry of Agriculture and Livestock (MAG), and non-governmental organisations such as CARE among others.

Coordination between the high schools and other organisations has been carried out. However, due in part to the lack of motivation and training of the teachers, the high schools became dependent on these other institutions, be they governmental or private, for the provision of materials and management of the nurseries.

It was assumed that school nurseries would have a multi-purpose role within the local community; as well as producing seedlings for the zone, the high school nursery may serve as a practical tool for forestry or environmental education. Compared with adults, young people are more open to learning new ideas. Creating a forestry consciousness amongst young people will provide future benefits. These nurseries have an important role in institutionalising a forestry tradition in Ecuadorean society/culture. More than training future landowners, future technicians will also be trained.

However, since forestry is not part of the required coursework for the students, teachers lack the motivation and understanding to teach this subject. When the students do work in the nursery, in order to fulfil their hours of "agricultural practice", the teachers are not interested in teaching theory as a complement to the practical activity. The students, in most cases, become "slaves" providing free labour and nothing more.

It was assumed that establishment of forest tree nurseries may encourage other forestry activities by the high schools, including establishment of forest plantations, agroforestry systems, fruit tree orchards, and soil conservation practices. The high schools could become demonstration sites for students as well as adults of the zone.

High school nurseries have encouraged other initiatives, principally the plantation of trees on high school lands. However, the teachers lack training in techniques of establishment and management of forest plantations, agroforestry systems, fruit orchards, and soil conservation practices. It is difficult therefore for high schools to serve as adequate demonstration sites of the most appropriate techniques. These subjects need to be part of the student coursework.

It was assumed that high school students can serve as forestry promoters in the zone, since they take seedlings to their homes and thus encourage their parents, neighbours, and even the whole community to plant trees. As students know the local norms and customs and how to work within them they are more effective motivators than people from outside the community.

However, the author has not had any experience of the students acting as promoters in their communities, although the high schools have required the students to plant trees, normally on their parents' land. There has been no formal programme of forestry promotion by the high school towards the surrounding communities. Again, neither motivation nor resources exist so that the teachers or students assume this responsibility.

It was assumed that the sale of tree seedlings and the produce from trees planted at the high school (wood, Christmas trees, fruit, etc.) can be a source of income for the high school.

Although this assumption is appealing it is unusual today to find small farmers who are able to pay for seedlings at their actual price. In government nurseries, it has been necessary to subsidise the price of the seedlings or promote their plantation through other forms of incentive. This, along with the inefficient operation of the high school nurseries, makes it difficult for these nurseries to be profitable. However, over the long term, the products obtained from the trees planted on high school lands do constitute a source of income for the high schools.

Conclusions and Recommendations

In general, it is concluded that the majority of the benefits assumed for high school nurseries have not been realised in practice. Without the active participation of other organisations, seedlings of poor quality are produced that never leave the nursery. Moreover, the students learn little about forestry. This is due to two principal causes: a misunderstanding of the role of high school nurseries; and low levels of motivation and training of the teachers.

Therefore, three general recommendations are proposed:

- o High targets for seedling production should not be set for school nurseries. High school nurseries should be small scale (say 5,000 to 20,000 seedlings). The principal focus of the high school nursery should not be the production of large numbers of seedlings in order to satisfy the needs of the entire zone.
- o Instead of high seedling production targets, the principal focus should be a programme of forestry education for the students, in which the high school nursery serves as a fundamental and practical component of the programme.
- o In order to realise such a focus, it is necessary to design, implement, and evaluate an incentives package directed towards the teachers.

In continuation, some incentives are discussed that could be applied in order to effect this change:

It is important that forestry education becomes a priority of the Ministry of Education and Culture. Forestry education, by itself or as part of a broader programme of environmental education, has to become a required part of the coursework in agricultural high schools. Such programmes should focus on both the theory and practice of forestry. There already exist precedents for this type of action in other countries, such as in Paraguay and Peru.

Currently teachers are not trained in forestry. By instituting training courses for teachers they will gain the technical knowledge necessary for administering a forestry education programme; the teachers will also be motivated by being chosen to attend such courses and by the awareness that is developed as a result of the training. In order to maintain their motivation, this training should be repeated at regular intervals and include workshops, seminars and study tours.

Besides training courses, a source of reference information is needed. Excellent documents already exist concerning nursery techniques (Galloway and Borgo 1983, Valdivia 1986), forest plantations (Galloway 1986, Galloway

1987), and agroforestry and soil conservation (Carlson and Ronceros 1987). However, there is a lack of documents that describe curricula for forestry education and methodologies for teaching. These documents have to be made available to the teachers in charge of the programmes.

In order to motivate and train the students, there is a need to design, test, and evaluate quality teaching material and to train the teachers in how to use this material effectively. In addition monetary incentives should be provided to the teachers in charge of the programmes as compensation for their extra hours of work. Other bonuses could include subsidised housing, awards of money, diplomas and certificates, and public recognition for outstanding service in the programme. It is also important to look for ways to promote the interest of the students and their parents. Their interest and participation can provide another incentive for motivating the teachers.

This is a partial list of the various incentives that can be applied. To ensure success, it is necessary to design a realistic "package" of incentives and monitor its application so that it can be modified when necessary.

In order to guarantee the design, implementation, and evaluation of the forestry education programme and the incentives package associated with it, the following actions are necessary:

- o Creation of a special department within the Ministry of Education and Culture for administering the programme. This should include an interdisciplinary team of experts in administration, education, forestry, and audiovisual materials, as well as regional supervisors.
- o A system of reporting and supervision for monitoring and evaluating the activities of the programme and the validity of the incentives.
- o Regular meetings of teachers in-charge and supervisors in order to evaluate the effectiveness of the programme.
- o Adequate financing. This, perhaps, constitutes the bottleneck of programme implementation.

Some possible mechanisms for financing the programme are briefly mentioned (adapted from McNeely 1988):

- o The first mechanism is an increase or redistribution of the regular national budget of the Ministry of Education and Culture. It was mentioned beforehand that high school nurseries are not profitable. Income generated from the sale of seedlings and tree products should be reinvested in nursery operations, in order to minimise dependence on external funds. With good promotion, it has been seen that nurseries can also produce vegetable seedlings for sale to the public.
- o Links with larger development projects should be encouraged following the example of similar school nursery programmes in other countries. For example, the "School, Ecology, and Small Farmer Community" Project in Peru was born out of the Community Forestry Development Project financed by FAO/Holanda/INFOR.
- o Taxes or sanctions on industries that are contaminating or in other ways degrading the environment could be used to finance school nursery programmes.
- o Direct support from international development agencies, be they governmental or non-governmental. Worldwide, these agencies are considering the financing of projects that improve or protect the environment. However, if this support is not carefully targetted it could create dependency instead of self-sufficiency.
- o Establishment of an independent foundation that generates funds for use in the school nursery programme. This foundation could be administered by a local environmental group such as Tierra Viva or Fundacion Natura.
- o On a smaller scale, coordination with other institutions could be continued at a regional or individual high school level.

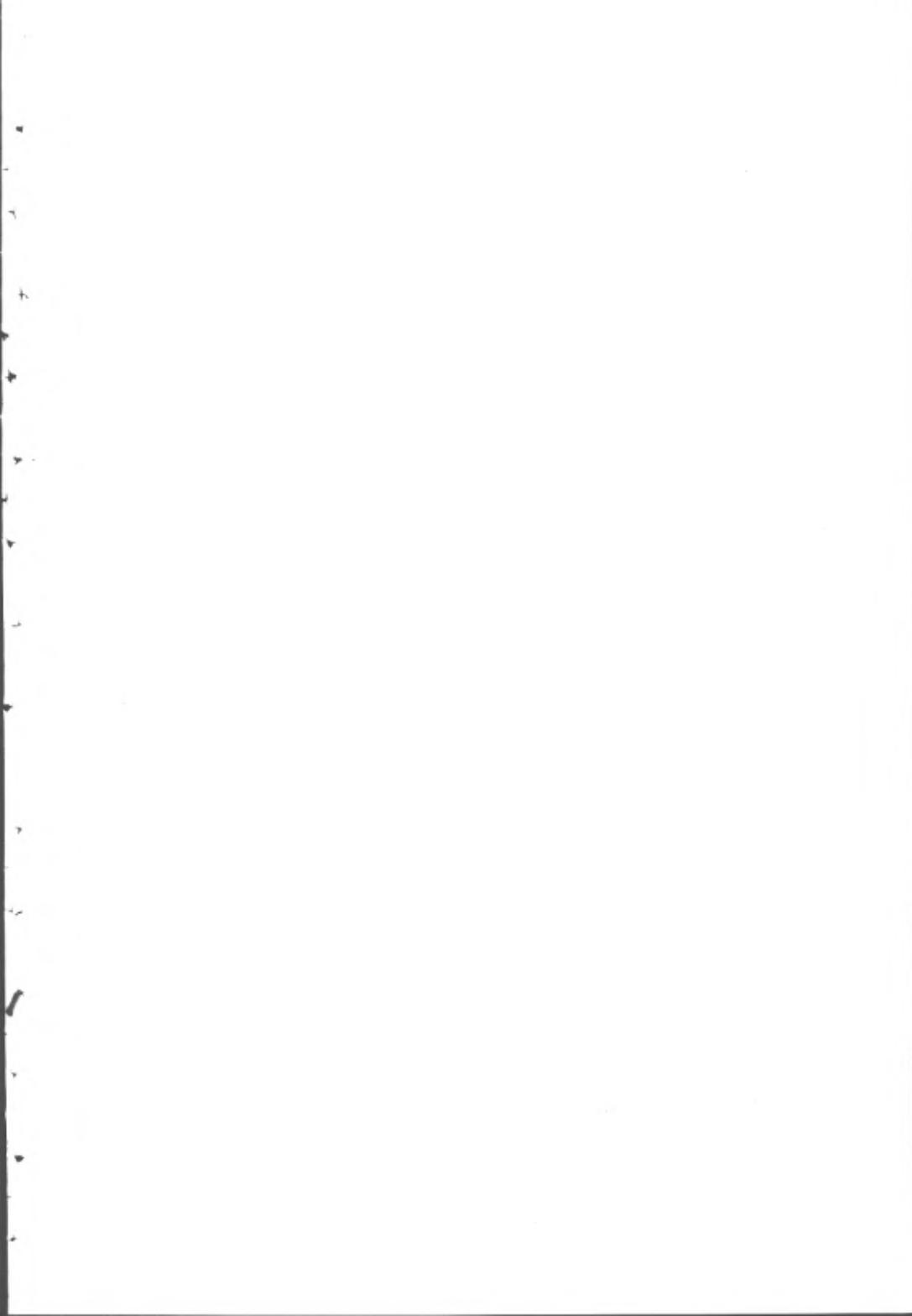
Once a forestry education programme is established in the agricultural high schools, with a good incentives system for motivating the teachers, it will be possible to experiment anew with the concept of a high school nursery

that has a co-principal goal of seedling production at an intermediate level. There is a need for this, especially in the highlands. Until then, seedling production in high school nurseries should be maintained as a secondary goal.

It is hoped that the experiences described in this paper will help to direct future school nursery programmes, and raise awareness of the problems of implementing programmes that do not have trained staff to support them. However, school nurseries are a vital extension tool both for the students and the local communities, and are a necessary part of education programmes. We have to sow the seed before we can harvest the fruit.

BIBLIOGRAPHY

- Benge, M.D. 1987. School nurseries: an innovative way to decentralize reforestation. S & T/FNR, USAID, Washington, D.C.
- Carlson, P.J. y Ronceros, E., eds. 1987. La agroforesteria en la sierra ecuatoriana. Cuerpo de Paz, Washington, D.C.
- Galloway, G. y Borgo, G. 1983. Manual de viveros forestales en la sierra peruana. Proyecto FAO/Holanda/INFOR, Lima, Peru.
- Galloway, G. 1986. Guia sobre la repoblación ecuatoriana. Proyecto DINAF-AID, Quito.
- Galloway, G. 1987. Criterios y estrategias para el manejo de plantaciones forestales en la sierra ecuatoriana. Proyecto DINAF-AID, Quito.
- McNeely, J.A. 1988. Economics and biological diversity: developing and using economic incentives to conserve biological resources. IUCN, Switzerland.
- MEC. 1983. Convenio de cooperacion y coordinacion entre los ministerios de agricultura y ganaderia y de educacion y cultura para la ejecucion de un programa a nivel nacional de forestacion y reforestacion. Quito.
- Valdivia Rodriguez, M. 1986. Guia metodologica: programa de educacion forestal. Programa de Educacion Forestal, Proyecto FAO/Holanda/INFOR, Lima, Peru.
- Valdivia Rodriguez, M. 1986. Manual de viveros y plantaciones escolares. Programa de Educacion Forestal, Proyecto FAO/Holanda/INFOR, Lima, Peru.





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SOCIAL FORESTRY NETWORK



Newsletter

Agricultural Administration Unit, Overseas Development Institute

The Overseas Development Institute (ODI) is an independent, non-profit making research institute. Within it, the Agricultural Administration Unit (AAU) was established in 1975 with support from the British Aid programme. Its mandate is to widen the state of knowledge and flow of information concerning the administration of agriculture in developing countries. It does this through a programme of policy-oriented research into selected subject areas. The dissemination of this research and the exchange of ideas and experience between countries is achieved through the four Networks on Agricultural Administration, Irrigation Management, Pastoral Development and Social Forestry. Each of these has between 600-1500 members, drawn from a wide range of nationalities, professional backgrounds and disciplines. Members contribute to and receive papers, and newsletters containing information on recent work, workshops and other recent events. Information on other networks can be obtained from the network secretaries. Membership is currently free of charge, but members are asked to provide their own publications in exchange.

ISSN 0951-1849

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PAPERS ACCOMPANYING THIS NEWSLETTER

Social Forestry in South-East Asia has received scant attention in our previous network mailings; we hope to begin to redress this with this collection of papers which focus on some of the major organisational problems in implementing social forestry programmes in Java and the Philippines. The mailing also sees the launch of a new series of network papers called 'From the Field'. The first of our new papers contains articles from Thailand, China, Indonesia, India and Senegal.

- 10a **'Social Equity and Social Forestry in Java: Preliminary Findings from four Case Studies'**
William SUNDERLIN (Editor), Ananda ARTOÑO, Sri PALUPI, ROCHYANA, and Ellya SUSANTI
- 10b **'Social Forestry in Disputed Upland Areas in Java'**
Dadan SUWARDI MACHFUD
- 10c **'The Cebu Integrated Social Forestry Project'**
Salve B BORLAGDAN, Edna M ALEGADO, Isabel M CARILLO, and Joselito Francis A ALCARIA
- 10d **'Social Forestry Planning: Searching for a Middle Way'**
Jefferson FOX, Muljadi BRATAMIHARDJA, and Ir POEDJORAHARDJO
- 10e **FROM THE FIELD**
Shorter Contributions from Networkers
Tonny DJOGO, Thérèse GLOWACKI & David CLEAVES, M.S.R. PREM KUMAR, Rod G NELSON, Dusit WECHAKIT, Zhang XIANPING

FROM THE FIELD**Shorter Contributions from Networkers****A NEW SERIES**

This is the first of our new omnibus papers 'From the Field': a collection of shorter contributions bound as a single network paper. The series is in response to our concern that excellent short contributions to the newsletter tend to 'get lost' because newsletters are so much more ephemeral than full-length network papers.

It makes sense for both users and would-be-authors if such pieces have a slightly longer shelf life. We also hope that a specific slot for short items might encourage networkers who hesitate to write at length. We especially welcome case-histories, problem-oriented pieces and comments, and contributions sent in response to the most recent set of network papers.

The first 'From the Field' contains pieces on the role of monks in Thailand as extension workers; on Social Forestry in China; and on an NGO farm forestry programme in Timor, Indonesia; finally, we publish two case-history responses to our mailing on nurseries and sustainability, one from India and one from Senegal.

NETWORK ANNOUNCEMENTS

RURAL EXTENSION FOR FORESTERS

Short Course for Social Foresters – AERDD, University of Reading, UK

The course is designed for foresters at all levels who work directly with rural communities, groups or individuals; or who have management, supervisory or training responsibilities within forestry extension programmes.

Participants on the course will develop their understanding of the nature of rural extension within forestry programmes. In particular they will assess the processes of social and technical change in rural communities, and identify constraints to effective forestry extension work in their own country or project. The course is designed to provide the participants with the skills necessary to establish effective forestry extension systems.

Further information available from: Professor M J Rolls
Head of Department
AERDD, The University
London Road, Reading RG1 5AQ, UK

JOHNS HOPKINS UNIVERSITY – SOCIAL FORESTRY WORKSHOP **A Call for Papers**

The Johns Hopkins University Nitze School of Advanced International Studies (SAIS), in Washington, DC, is planning a conference on Social Forestry. Suggestions from networkers on how to shape the conference and as to what are the most important current issues, would be appreciated. Proposals of papers to present and/or to publish are welcome by or before September 1990. Case studies are especially welcome from networkers engaged in fieldwork.

Replies by fax or mail to: Dr. Grace Goodell, Director
Program on Social Change & Development
Johns Hopkins University/SAIS
1740 Massachusetts Avenue, NW
Washington DC 20036, USA

FAX: 1(202)-6635656

INTERNATIONAL CENTER FOR RESEARCH ON WOMEN**1991/1992 Fellowship Program for West Africa**

The objective of this programme is to train promising professionals from West Africa in the use of social science research for the development of effective policies and programmes to increase the economic participation of low-income women and their families. The programme is based at the International Center for Research on Women and fellows may participate in the following areas of ICRW's work: policy analysis, data analysis, current development issues and communications.

Applicants should have a formal background in any of the following areas social sciences, economics, agriculture, education, nutrition and public health. Applicants should also be affiliated to an institution to which they will return on completion of the programme.

Further details are obtainable from: **ICRW**
1717 Massachusetts Ave, NW
Suite 302
Washington DC 20036, USA

INTERNATIONAL SYMPOSIUM ON STRATEGIES FOR SUSTAINABLE MOUNTAIN AGRICULTURE, ICIMOD**Kathmandu, 10-14 September 1990**

This Symposium aims to share the findings and analyses of ICIMOD's research on mountain agriculture and related areas with the wider community dealing with mountain development. The papers presented from the Hindu Kush-Himalayan Region will compare perspectives on mountain agriculture with special reference to development problems. The Symposium will also reflect on strategies to deal with these problems, and identify priority areas in mountain agriculture for future research by ICIMOD and other organisations.

Further information from: **Dr. N.S. Jodha, Head**
Mountain Farming Systems - ICIMOD
GPO Box 3226
Kathmandu, NEPAL

NETWORK ANNOUNCEMENTS

FOREST HISTORY SOCIETY

Request for information

The Society maintains an on-line guide to forest-related archives, in this respect they are interested to receive information from individuals working in forest history. They are particularly interested in knowing where older forest extension materials are archived and how they might be used to reconstruct the development of public relations and communication in forestry as a profession or in forestry projects as a subset of all development projects.

For further information contact: Alice E. Ingerson
Editor
Forest and Conservation History
Forest History Society Inc.
701 Vickers Avenue
Durham, NC 27701, USA

ICRAF - INTERNATIONAL WORKSHOP ON GREVILLEA ROBUSTA Nairobi, Kenya 28-31 August 1990

Grevillea robusta is rapidly gaining popularity as a component of agroforestry systems in the tropical highland zones of Africa. Its use is widespread and economically significant in tropical highland, subtropical and warm temperate regions of other continents.

This international workshop organized jointly by ICRAF, CSIRO and ACIAR reviewed the uses of *Grevillea robusta* in agroforestry and forestry with particular reference to genetic improvement and research on appropriate agroforestry technologies. The aim was to bring together specialists who contributed to an overall picture of current research and utilisation practices. For further information contact:

Dr. Fred Owino
ICRAF
PO Box 30677
Nairobi, KENYA

or

Dr Chris Harwood
Division of Forest Products
P.O.BOX 4008, Queen Victoria Terrace
Canberra, ACT 2600, AUSTRALIA

OSBORN CENTER FORESTRY POLICY GRANTS PROGRAM

A grants program to support forestry policy research and forums for forestry policy dialogue in Latin America, Africa and Asia.

The Osborn Center has a Forestry Policy Grants Program which offers grants ranging from \$5000 to \$25000 to specialists from developing countries. The goal of the programme is to stimulate policy research and dialogue around key issues concerning the management, utilization and control of forest resources including the potential contributions to economic development.

Grants will support studies that provide critical examination of policy issues affecting the use of forest resources and which offer feasible recommendations for change. Grants will also be given to enable in-country organizations to convene forest policy working groups to stimulate cooperation among different interest groups. The goal of these grants will be to support the process of building consensus for reforming forest policies in developing countries through dialogue and assessment.

Applications will be accepted from individuals or collaborating groups in Latin America and the Caribbean, Africa and Asia.

For further information please contact:

World Wildlife Fund and The Conservation Foundation
Osborn Center Forestry Policy Grants
Attn. Matthew Perl
Suite 500
1250 24th Street, N.W.
Washington D.C. 20037
USA

SOCIAL FORESTRY NETWORK

- 19 Jan. 1990 - 'Incorporating Local Needs and Preferences into Social Forestry Planning: the case of Karnataka in South India'. Prof. ALAN REW, Centre of Development Studies, University of Wales at Swansea, and Dr GILL SHEPHERD, Social Forestry Research Fellow, ODI.
- 7 Feb. 1990 - 'Gender, Trees and Fuel - Social Forestry in West Bengal, India'. CATHY NESMITH, University of Cambridge, Dept. of Geography, Cambridge, UK.
- 10 April 1990 - 'Forestry and Agroforestry Development in Ghana'. ROBERT and JUSTINE DUNN. Both returned recently from Ghana. Robert worked for ODA and Justine lectured in Agroforestry at the University of Science & Technology.
- 19 April 1990 - 'An Examination of Four Social Forestry Extension Successes in Southern and Western Uganda'. NICK PYATT, University College of North Wales.

'Incorporating Local Needs and Preferences into Social Forestry Planning: the case of Karnataka in South India'. Prof. Alan REW
held on 19 January 1990

Prof. Alan Rew who had recently returned from a visit to formulate an environmental project in the Western Ghats in Karnataka discussed some of his first impressions of the area and its problems. At the request of the state Forest Department a new project is being drafted whose aim will be to manage the state's remaining high rainfall forest on the Western Ghats. Gill Shepherd reviewed her experiences with the social forestry programme in Karnataka and possible lessons to be learned for the Western Ghats project. One of the main points to emerge from this discussion is the importance of consulting local people before any new environmental management initiatives are taken.

**'Gender, Trees and Fuel - Social Forestry in West Bengal, India'.
CATHY NESMITH**
held on 7 February 1990

Cathy Nesmith discussed her doctoral research in West Bengal which focused on the work of the Forest Department and the social forestry plantations established in several case-study villages. Her analysis was based on rigorous quantitative and qualitative work detailing how benefits from the eucalyptus plantations were distributed amongst the villagers based on their class and gender. Interesting trends emerged which showed how some women were able to get access to eucalypt leaves through informal links with wealthier members of the villages. The study also showed how the Forest Department had not contacted poorer members of the villages who were physically and socially isolated from the main village.

REPORTS ON LUNCHTIME MEETINGS

'Forestry and Agroforestry Development in Ghana'. Robert & Justine DUNN
held on 10 April 1990

Robert Dunn, recently returned from working with an ODA-funded Forest Inventory Project in Kumasi, discussed the state of forests and their management in southern Ghana. Justine Dunn had devised and lectured on a agroforestry programme also in Kumasi. She discussed the types of agroforestry training she had been involved with and future difficulties with implementing this type of programme. This interesting presentation drew together the disparate strands of forestry in Ghana: management of existing forests carried out by the Forest Department and tree-planting on farmers' land.

'An Examination of Four Social Forestry Extension Successes in Southern and Western Uganda'. Nick PYATT
held on 19 April 1990

Nick Pyatt chose to compare and contrast four case study villages in Uganda to show the effectiveness of different forms of forestry extension. He reviewed the work of several organisations including CARE, ActionAid and the Forest Department which were involved in the villages helping villagers to secure their diverse forest product needs. This talk clearly demonstrated the importance of a flexible approach to extension, as each village required different forms of external assistance from the various organisations. However, the overall lesson was clearly demonstrated that it is essential to develop a forestry extension service with the necessary skills in order to ask the right questions and to facilitate appropriate action.

The Rainforest Harvest: Sustainable Strategies for Saving Tropical Forests

17-18 May 1990, Royal Geographical Society, London, UK.

Rainforests have entered the global agenda of environmental concern; a concern reflected by this conference through its speakers and the range of people invited to attend. However, it was a conference presenting the future of rainforests in a venue far removed from the countries and people involved in the direct and indirect use of rainforests. Several people were obviously frustrated by this and suggested that such conferences must be held in those countries where public awareness and policies must change.

One of the positive themes to emerge was an understanding of the rainforest in all its ecological and social complexity. Speakers drew on their research into the use and importance of non-timber products and focused on the role of tropical forest flora and fauna in sustaining local and regional markets. However, there was a general atmosphere of powerlessness to change the way in which forests are being exploited. Alternative sustainable management scenarios did not appear to be in operation although the efforts of one timber trader to identify sustainable management systems has ended up in cooperation between his Ecological Trading Company and a group of Peruvian Indians.

David Gee, the new director of Friends of the Earth, proposed the following agenda for achievement of sustainable development, with a particular emphasis on the role of western nations in directing change:

- o Involvement of local people must be paramount and should be adopted as an essential part of forest policy.
- o Third world goods should receive a fair price.

REPORTS ON RECENT CONFERENCES

- o Debts must be alleviated. Mechanisms must be instituted to ensure that money saved ends up in the right place.
- o Our own house must be set in order. For example, money could be diverted from our military budgets to help fund sustainable development initiatives. Our definition of security should be broadened to include environmental security.
- o The marriage of economics and ecology must be achieved. For example, financial incentives could be used to change the market. However, it is also important to be aware of the limits of the market since many people operate outside the market economy.
- o We should change the way we live and view the world. Our models of development based on the profligacy principle must be replaced by the precautionary and preservation principle.

This final recommendation summed up much of the feeling dominating the conference that western driven models of rapid industrial expansion have led to the over-exploitation of the world's resources. We are all losers in this over-exploitation. However, it is those countries and people who depend directly on the forest for their existence who are the greatest and uncompensated losers.

It was a bold agenda but one that should be repeated in other regions of the world where action and awareness about systems of sustainable harvesting are low.

Mary Hobley

FORTHCOMING CONFERENCES AND MEETINGS

SEPTEMBER 1990

- 10 - 14** **International Workshop on Sustainable Forestry**
New Delhi, INDIA
Contact: Dr. Desh Bandhu, Chairman
Centre for Sustainable Development
P.O. BOX 7033
New Delhi 110002, INDIA
- 17 - 22** **International Conference on Forestry Education**
University of Tuscia, Viterbo, ITALY
Contact: Dept. of Forest Environment & Resources
Facolta di Agraria
Via S. Camillo de Lellis
01100 Viterbo, ITALY
- 23 - 28** **World Renewable Energy Congress**
Reading, UK
Contact: Prof. A A M Sayigh, Congress Chairman
University of Reading
Department of Engineering
Whiteknights, P.O. BOX 225,
Reading RG6 2AY, UK
Tel: 44(734)-318588
FAX: 44(734)-313835
- 25 - 29** **Biological Nitrogen Fixation and Sustainability of**
Tropical Agriculture
Ibadan, NIGERIA
Contact: K Mulongoy, IITA,
Oyo Road
PMB 5320
Ibadan, NIGERIA
or IITA
c/o LW Lambourn & Co
Carolyn House, 26 Dingwall Road
Croydon CR9 3EE, UK

FORTHCOMING CONFERENCES AND MEETINGS

OCTOBER 1990

- 14 - 17** **10th Annual Symposium - Association for Farming Systems Research-Extension AFSR-E**
East Lansing, Michigan, USA
Contact: The 1990 AFSR-E Symposium Program Office
Institute of International Agriculture
Michigan State University
324 Agriculture Hall
East Lansing, MI 48824, USA
Tel: 1(517)-355-0175
FAX: 1(517)-353-1888
Telex: 650-265-1763 MCI
- 15 - 17** **Managing Tropical Natural Forests for Non-Timber Forest Products and Environmental Services**
Escazú, COSTA RICA
Contact: Dr Gerardo Budowski
Director - Natural Resources
University for Peace
Apartado 199,
Escazú, San José,
COSTA RICA
- 16 - 23** **2nd Conference of Alley-Farming Network for Tropical Africa**
Ibadan, Nigeria
Contact: The Coordinator
IITA
Oyo Road
PMB 5320
Ibadan, NIGERIA
or
IITA
c/o LW Lambourn & Co
Carolyn House, 26 Dingwall Road
Croydon CR9 3EE, UK

FORTHCOMING CONFERENCES AND MEETINGS

NOVEMBER - DECEMBER 1990

Fodder Tree Legumes - Multipurpose Species for Agriculture

St. Lucia, AUSTRALIA

Contact: University of Queensland
St. Lucia, AUSTRALIA

DECEMBER 1990

8 - 15

International Conference on High Salinity-Tolerant Plants in Arid Regions

United Arab Emirates

Contact: Dr M.H. Amiri, Director

Desert & Marine Environment Research Centre

United Arab Emirates University

P.O. BOX 1777, Al Ain, U.A.E.

FAX: 971(3)-664524

FEBRUARY 1991

10 - 15

Developing A Sustainable World

Kathmandu, NEPAL

Contact: Institute for Sustainable Agriculture Nepal
(NSAN), P.O. BOX 3033

Kathmandu, NEPAL

FAX: 977(1)-524509

17 - 22

Latin American Forest and Conservation History Conference

San José, COSTA RICA

Contact: Harold K Steen

Forest History Society

701 Vickers Ave, Durham, NC 27701, USA

Tel: 1(919)-6829319

NEWS OF THE OTHER AAU NETWORKS

Agricultural Administration Network

run by John Farrington, published the following June 1990 papers:

12. 'Non-governmental Organisations and Agricultural Research: The experience of The Gambia', by Elon GILBERT
13. 'Multi-institutional Approaches to Participatory Technology Development: A case study from Senegal', by Tom OSBORN
14. 'NGO-government Links in Seed Production: Case studies from The Gambia and Ethiopia', by P.A. HENDERSON
15. 'The State, Voluntary Agencies and Agricultural Technology in Marginal Areas', by Kate WELLARD, John FARRINGTON and Penny DAVIES
16. 'Ensuring Farmer Input into the Research Process within an Institutional Setting: The case of semi-arid Botswana', by D. NORMAN and E. MODIAKGOTLA

Irrigation Management Network

run by Linden Vincent, published the following 1990 Network papers:

- 1b. 'Variability in Water Supply, Incomes and Fees: Illustrations of Vicious Circles from Sudan and Zimbabwe', by M. TIFFEN
- 1c. 'The Operation and Maintenance of a Pilot Rehabilitated Zone in the Office du Niger, Mali', by J. JAUJAY
- 1d. 'The Design of Farmer Managed Irrigation Systems: Experiences from Zimbabwe', by J. M. MACKADHO
- 1e. 'Irrigation Service Fees in Asia', by Leslie E. SMALL
- 1f. 'Design for Sustainable Farmer Managed Irrigation Schemes in Sub-Saharan Africa', by J.J. SPEELMAN

Pastoral Development Network

run by Roy Behnke, published the following May 1990 Network papers:

- 29a 'Land Degradation, Stocking Rates and Conservation Policies in the Communal Rangelands of Botswana and Zimbabwe', by N.O.J. ABEL and P.M. BLAIKIE
- 29b 'The Concept of Rangeland Carrying Capacity in Sub-Saharan Africa - Myth or Reality', by P.N. DE LEEUW and J.C. TOTHILL
- 29c 'Short-Term Gains in Livestock Management may lead to Long-Term Range Management Benefits: a Pilot Programme in Morocco', by C.W. GAY, D. NOLTE, R. BANNER, Y. BERGER and M. HAMOUDI
- 29d 'Comments on PDN papers 29a (Abel and Blaikie, 1990) and 28b (Scoones, 1989)'

The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya

Ramachandra Guha (1989)

Published by: Oxford University Press - Delhi
2/11 Ansari Rd
Daryaganj
P.O.BOX 7035
New Delhi 110002
INDIA

Price: £ 12.50

The time is ripe for a reappraisal of forestry theory and practice as is well demonstrated in this case-study of the history of change in the forests of Uttar Pradesh in India. This detailed historical analysis of two hill areas known as Uttarakhand focusses clearly on the origins of opposition to external intervention in local forest use. Guha documents the change from forests used to meet subsistence needs of local people to meeting the wider commercial demands of the expanding British empire. As village economies were incorporated into British India demand increased on local forests to supply resin and timber for railway sleepers; local people's rights were translated into privileges, and in many cases access to local forests was denied.

Guha draws heavily on colonial records and early editions of the Indian Forester both of which provide rich sources of information on the exercise of forest management by the nascent forest department. The study concludes with a detailed examination of the formation and actions of the Chipko movement, and Guha compares and contrasts this with other peasant movements in Britain, France and Russia. Guha has provided a useful framework in which to link current environmental change with the historical origins of these changes.

The Hour of the Fox**Tropical Forests, the World Bank, and Indigenous People in Central India****Robert S. Anderson and Walter Huber (1988)****Published by: University of Washington Press, Seattle and London
P.O.BOX 50096
Seattle, WA 98145, USA****Price: £ 15.50**

Forests and their use by indigenous peoples are the subject of major international concern as the linkages are drawn between deforestation and global warming. Anderson and Huber in a detailed study of the impact of the proposed and now abandoned World Bank funded Bastar pine project show how interventions in local economies can cause severe social and economic problems. The authors have both had a long association with this predominantly tribal and forested district in Madhya Pradesh. They have drawn on an extensive field-based empirical study and unpublished reports to describe the evolution of this project, and the lessons to be learned from the mistakes made by project planners.

The project, implemented in 1975, proposed to transform large areas of tropical forest in Bastar district to a plantation containing one species of pine. For the tribal people forests form the basis of their culture and society and these forests cannot be replaced by monocultures of pine. For the regional, national and international users of forest products tropical forests, it was said, are of less use than plantations of pine which are able to supply pulp and paper needs. Reconciliation of these divergent needs was not attempted by the planners of the pine project. Thus although industrial forestry was considered by many to bring benefits to local people, the local people who had not been consulted resisted the destruction of the tropical forest for a pine plantation. Ultimately, it was the lack of dialogue between tribal people, forest department and the World Bank which led to the eventual termination of the project in 1981. The lessons to be learned from this project are legion, but the one that is most strongly developed by the authors is that without the consent and participation of all local people such projects do not bring development to an area only destruction.

Introduction to World Forestry

Jack Westoby (1989)

Published by: Basil Blackwell
108 Cowley Road
Oxford OX4 1F
UK

Price: £12.95

Westoby takes the reader from the wood to the trees; through the biological properties to the social context of trees throughout history. Westoby looks at the forests in the evolution of societies from trees in fire-stick farming systems through to hierarchical systems. He uses examples drawn from different historical epochs and geographical areas to illustrate how deforestation and population growth are joint manifestations of exploitative social relationships.

Westoby shows how as forest resources declined management became important to ensure the sustained production of wood based products to supply the needs of national and global markets. Unfortunately, the last section of the book and in many ways the most important part is too short. Here he considers the recent changes in forestry practice as shown in social forestry and agroforestry, and describes the essential future for forestry both as a profession and a practice: 'Forestry today must encompass the art and science of harnessing forests, woodlands and trees for human betterment'. The concluding words of Jack Westoby's book provide both a fitting epitaph to a man dedicated to changing the face of forestry and as a pointer to the way ahead: 'All forestry should be social'.

Fight for the Forest**Chico Mendes in his own Words**

Additional material by Tony Gross (1989)

Published by: Latin American Bureau
1 Amwell St
London EC1 R1UL
UK

Price: £ 3.95

Chico Mendes in a powerful interview, recorded shortly before his death, details the struggles of the rubber-tappers in Acre in Brazilian Amazonia. Here the local people fight against the might of the landowners and their private armies and a legal and political system dedicated to their destruction both in economic and physical terms, as Chico's death and the death of many others so tragically demonstrates.

The history of forest exploitation in the Amazon is one of greed both by the colonists and later by the landlords; enslavement and debt-bondage mark the recent histories of the rubber-tappers, and only now is the world slowly awakening to their plight. This book is a strong statement by one who understands the reality of forest exploitation for those who are dependent on that forest for their continued survival. It should be read by all those who are involved with international forest policy since without a full understanding of the stark reality of forest degradation by powerful commercial and local interests international legislation can have little success at halting this devastation.

Guidelines for Development Agents on Community Forestry in Ethiopia

Hakan Sjöholm

Published by: Community Forests and Soil Conservation Development
Department
Ministry of Agriculture
ETHIOPIA

The book starts with an important disclaimer: 'Community Forestry is not new in Ethiopia. Farmers in many parts of the country have been planting trees, especially eucalypts for fuelwood and construction'. However, the authors of this handbook see that there is a need for more information about the variety of trees available for planting and also descriptions of the most appropriate planting and tending techniques. The book is a step-by-step guide to extension workers showing the role of trees in the farming landscape and ways in which to promote successful tree-planting.

For further information contact: SIDA
Project Support Unit
P.O.BOX 1142
Addis Ababa
ETHIOPIA

Trees and Shrubs from some Hillside Closures in Welo

A joint study carried out by SIDA Welo Program (MOA) and Upper Mille Cheleka Catchment Disaster Prevention Program
By Mesfin Tadesse, Beyenne Sebeko and Anders Tivell

A useful pictorial guide to the identification and uses of trees and shrubs of this particular area of Ethiopia. Each tree is identified with a photographic plate of its distinguishing characteristics. However, one of the major problems of this book is that there are no photos of the shape of the trees and shrubs in their habitats, making it a less useful extension guide for use with farmers.

Afforestation of Village Common Lands: A Case Study of Aslali Village Woodlot in Gujarat**Katar Singh and Vishwa Ballabh****Published by: Institute of Rural Management
Anand 388001, INDIA**

This case-study of one village woodlot in Gujarat demonstrates how important it is to plan woodlots with the cooperation of the whole village and not just the panchayat. The Forest Department and the panchayat decided that particular species of trees should be planted but the local people wanted a different set of trees. Although the panchayat enjoyed a large financial benefit from the sale of products from the woodlot local people believed that the village woodlot 'was an exclusive concern of the forest department and that their involvement in establishment and management of the woodlot was nil'. Some households indicated that the planting of the village woodlot on panchayat land had led to a loss of grazing land making it very difficult for them to find sufficient fodder for their animals. The patterns described in this paper seem to reflect many of the experiences with woodlots in other parts of India.

Van (Forest) Panchayats in Uttar Pradesh Hills: A Critical Analysis**Vishwa Ballabh and Katar Singh****Published by: Institute of Rural Management, Anand 388001, INDIA**

The history of the formation of Van Panchayats in this area is one marked by local unrest at the actions of the Forest Department. Four Van Panchayats were selected for study representing different agro-climatic regions, each was managed by women. Details of the functions, membership and responsibilities of Van Panchayats are given, and the processes through which local rights over forest land are recorded and administered. It was interesting that in each of the study areas the Van Panchayats had devised different rules for management of their forests according to local need and what was available from the forest. The report ends with a series of recommendations for the future of Van Panchayats which the authors suggest can only succeed in those villages of caste homogeneity and equitable land distribution.

Mountain Population and Employment Discussion Paper Series

This valuable series of case-studies forms part of a larger programme implemented by ICIMOD. The Programme on Organisation and Management of Rural Development focused primarily on the organisational resources and their relationship to the management of natural resources for sustainable development and increased productivity in mountainous areas. Across the Hindu Kush-Himalayan Mountains, rural development projects are relying on different strategies for the achievement of the above goal. These strategies are being implemented within a given macro-institutional and legal framework; presumably with adequate attention given to the socio-cultural context. The framework and the context limit, as well as offer, possibilities to development agencies. The purpose of the case studies was to examine innovative institutional strategies implemented in projects (carried out by governmental or non-governmental organisations) and also to analyze and assess the utility and effectiveness of indigenous resource management systems.

For further information about this programme and the series of studies contact:

Deepak Bajracharya
International Centre for Integrated Mountain Development
PO Box 3226
Kathmandu
NEPAL

Contractual Responsibility System and Rural Development in Miyi County, Sichuan, China

By Chen Guojie, Yu Dafu, Wang Fei, Li Jiguang, Huang Xiyi, and Li Ling
MPE Series No.6, 1990

It is unusual to read detailed information about a remote area of China. In this fascinating study of several villages in Miyi County, the authors reveal how different types of communities manage their natural resources. They describe how different periods of political organization affected agricultural productivity, with highest productivity during the time when decision-making was in the hands of farmers. The uncertain political environment led to short-term exploitation of natural resources including massive deforestation. The introduction of the 'Contractual Responsibility System' has led to increased benefits to the farmers. However, it has also led to increased differentiation between rich and poor farmers: 'the current policies encourage the rich to become richer and the administration merely subsidises the poor instead of introducing measures to get rid of poverty'.

Management of Resources for Development in Quxu County, Tibet, China

By Zhang Mingtao, Qi Yachuan, Yo Chengqun and Li Gaoshe
MPE Series No.7, 1990

Political uncertainty has led to much of the ecological degradation seen in these case-study villages. The study looks at nine villages in different agro-ecological zones and assesses the way resources are controlled and used. As for the study carried out in China the introduction of the 'Responsibility System' has led to an increase in productivity with households allowed to own land and livestock. Although the enforced collective action has not been effective there are still remnant collective management systems for forests which have survived the political upheaval.

The Management of Forest Resources in Sindhu Palchok and Kabhre Palanchok Districts of Nepal

Robert J. Fisher, Hukum Bahadur Singh, Deepak R. Pandey, and Helmut Lang

MPE Series No.8, 1990

In common with the other case-studies in the series, this interesting report looks at existing indigenous systems of resource management and the methods adopted by an external agency, the Nepal-Australia Forestry Project (NAFP), to strengthen these systems. It looks at the successes and failures of institution building for sustainable management of forests in two districts in Nepal, and through examples shows where the future lies for sensitive and successful intervention in existing management systems. The work of NAFP and its dynamic and innovative approach to forest management has laid the foundations for a social forestry which involves all those people who use the forests. It has established a dialogue between villagers and forest department staff and provided the basis for widespread legislative change in forest resource management.

Women in Hattisunde Forest Management in Dhading District, Nepal

Shanta Pandey

MPE Series No.9, 1990

This interesting report details a forest management system instituted by four villages. Strict rules have been formulated to control forest encroachment and these are observed by all members of the villages. The study focused on women's roles in conserving the forest and the ways in which they regulate their use of the forest. Shanta Pandey makes several recommendations for the future management of this forest including the following observation: 'Currently everyone in the villages has an equal responsibility for protecting Hattisunde forest, regardless of age or gender. The more formal the management committee becomes the more likelihood of women being excluded from its management system, because women's role in formal committees is not socially recognized in these villages. Hence, the forest protection and management system should remain informal.'

Village Management Systems and the Role of the Aga Khan Rural Support Programme in Northern Pakistan

By Tariq Husain with Abdullah Jan and Fawad Mahmood
MPE Series No.10, 1990

This study details the pioneering work of the Aga Khan Rural Support Programme in nine villages in Gilgit district. The completion of the Karakoram Highway has brought about sudden changes in resource use; in one case the forest has been cut to a quarter of its previous size. To counteract these effects, AKRSP has established Village Organizations (VO) through which to implement projects and as a means by which local people can express their needs. The VO is the executing agency for all village-level projects sponsored by AKRSP and is an interesting example of an institution for local sustainable resource management.

Organisational Innovations and the Impact on Resource Utilisation in the Pak-German Self-Help Project Area, Baluchistan

By Saifur Rahman Sherani, Hafeez Buzdar and Karim Nawaz
MPE Series No.11, 1990

The Pak-German project has been working in Baluchistan since 1983 with the objective to improve socio-economic conditions of rural poor in selected union councils by better use of local resources. This report documents the successes and failures of the approaches adopted by the Project and in particular shows how village organisations have been dominated by the more powerful members of the village community.

Tropical Forest Conservation

World Wide Fund for Nature (WWF) Position Paper 3, August 1989

Sustainable management forms one of the major parts of WWF's position on conservation of tropical forests. This position paper describes some of WWF's work and its recommendations for future strategies at international, national and local levels to ensure the sustainable utilization of tropical forests. Although this paper focuses almost exclusively on tropical moist forests it includes a brief section on dry 'open' forests which reveals the inadequacy of policy prescription advocated by WWF for these forests.

For further information contact: **Chris Elliott**
WWF International
CH-1196 Gland
SWITZERLAND

A Community Scheme to Encourage Private Tree Planting by Farmers in the Hills of Nepal

B. Thapa, L. Joshi, S.L. Sherpa, I.B. Karki, R.K. Kusle, Y.N. Jha and M.P. Mainali (1990)

Available from: **Pakhribas Agricultural Centre**
c/o BTCO, P.O.BOX 106, Kathmandu, NEPAL

Pakhribas Agricultural Centre has been working in the Kosi Hills of Nepal since 1972, as such it has been able to build a strong rapport with local villagers. Since 1977 a forestry extensionist has been working with farmers encouraging them to plant fodder and fuelwood trees on their farmland. This study details the work of PAC in one village and demonstrates the conditions necessary for farmer participation in the private tree-planting project. In the case described in this report the initiative came from the farmers themselves, when a group approached PAC and asked for advice with planting a large area of grazing land owned by 68 households. It is an interesting example of close cooperation between farmers and extension agents.

Towards Green Villages: A Strategy for environmentally-sound and participatory rural development

Anil Agarwal and Sunita Narain

Based on detailed village-level studies of resource utilisation throughout India, Agarwal and Narain have derived national-level policies to promote participatory forms of rural development. They discuss the mechanisms necessary to implement these policies through a radical restructuring of village organisations, national laws and financial mechanisms. 'It was in Seed really that we learnt a lot of what is said in this paper. Because it was here that we found a unique situation in which the poor villagers had the legal right to determine what they wanted to do over their common lands After Seed, we no longer saw the problem as one of grasses, trees, cooking energy, ecosystems or natural regeneration, it became one of open village-level institutions, laws and financial frameworks, and a system that creates self-reliance rather than dependence'.

Agarwal and Narain have contributed a valuable document to the debate on what constitutes effective methods to ensure local participation in resource management. However, they slip into an over-idealised view of the village community when they suggest that open village discussion groups will allow women and poor people an active role in resource use decision making.

EMPLOYMENT OPPORTUNITIES

THE FORD FOUNDATION
320 East 43rd Street, New York, NY 10017

POSITION ANNOUNCEMENT
Program Officer
Asia Programs

SUMMARY DESCRIPTION:

Working with the Foundation's Representative for India, Nepal and Sri Lanka and other program staff, formulating program objectives and strategies develop, monitor and evaluate grants in the area of Rural Poverty. Primary responsibility will be the management of the Sustainable Development Program in India, Nepal and Sri Lanka which has three components: 1) the development of institutional capacity in farming systems research and extension in Eastern India, 2) support for innovative research into sustainable agriculture and sustainable development generally, and 3) support for research and training, with a policy emphasis on national and international issues in environmental and natural resource management and environmental economics and law.

REQUIRED QUALIFICATIONS:

Demonstrated understanding of the theoretical and practical issues posed by Sustainable Development in the context of the less-developed countries. Graduate study in relevant social or natural sciences with demonstrated interdisciplinary orientation. Substantial prior experience working in a less-developed country. Strong analytical, organisational and writing skills and demonstrated capacity to think strategically in a complex situation. Prior experience in South Asia is preferred.

LOCATION: New Delhi, INDIA

TARGET DATE: January 1, 1991

The Ford Foundation hires staff without regard to race, colour, religion, national origin, age, gender, sexual orientation, marital status or disability. Minority candidates are encouraged to apply.

THE FORD FOUNDATION
320 East 43rd Street, New York, NY 10017

POSITION ANNOUNCEMENT
Program Officer
Asia Programs

SUMMARY DESCRIPTION:

Working with the Foundation's Representative for India, Nepal and Sri Lanka and other program staff, formulating program objectives and strategies develop, monitor and evaluate grants in the area of Rural Poverty. Primary responsibility will be for developing and sustaining the Community Land Management Program which supports the participatory forest management programs of the forest departments of: 1) West Bengal, 2) Haryana, 3) Gujarat, and 4) Nepal. These experiments involve the creation and nurturing of working groups consisting of forest departments, universities and NGOs which develop research and training strategies to empower communities to protect and benefit from state forest lands.

REQUIRED QUALIFICATIONS:

Demonstrated understanding of rural resource use systems and institutional issues in resource management. Graduate study in relevant social or natural sciences with a strong interdisciplinary orientation. Experience in community action and in institutional development. Demonstrated skills in program management and fostering interagency collaboration. Prior field experience in Asia. Strong interpersonal, analytical, organisational and writing skills and demonstrated capacity to think strategically in a complex situation. Prior experience in South Asia and knowledge of RRA and related techniques is preferred.

LOCATION: New Delhi, INDIA

TARGET DATE: January 1, 1991

HUNTING TECHNICAL SERVICES LIMITED

International Consultants in Natural Resource Development

We are increasing our involvement in all aspects of forestry and are looking for people with experience in Social Forestry, Agroforestry, or Forestry in general, especially if you can work in French.

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Thamesfield House
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Hemel Hempstead
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UK

Do we have your current CV?

As Social Forestry grows in importance there is an increasing demand for Social Foresters with good field-level experience. Do we have your current CV so that we can respond to the frequent demand for Social Foresters.



Overseas Development Institute
Regent's College

Nearest Underground Station:

Baker Street (Bakerloo, Jubilee, Metropolitan and Circle Lines).

Nearest Bus Stop:

Gloucester Place (going North), Baker Street (going South), and Marylebone Road (going East or West). ODI is 3-4 minutes walk from Baker Street Station. From there walk along Marylebone Road and turn left into York Gate. Cross over the bridge and you will see the main entrance of Regent's College on your left. At the Regent's College reception desk ask for ODI.

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