BOS

Jubilee Issue

NIEUWSLETTER

Stichting voor Nederlandse Bosbouw Ontwikkelings Samenwerking

no. 24, vol. 10 (3), 1991

The BOS NiEuWSLETTER is a bulletin of the Foundation for Netherlands Forestry Development Cooperation (Stichting voor Nederlandse Bosbouw Ontwikkelings Samenwerking).

The BOS secretariat invites you to send information on subjects related to tropical forestry for inclusion in the BOS NiEuWSLETTER.
Announcements of meetings and symposia, book reviews, comments on articles in the NiEuWSLETTER, and (short) articles describing your activities within the project or organization you work in, are most welcome.
Copy can be delivered both in Dutch or English, written by hand or typewriter but preferably on floppy-disk in WP 5.0 or WP 5.1.
The editor is entitled to make changes. As regards content this will only be done after consulting the author. The final responsibility for the article lies with the author.

Objectives of BOS

* to promote and improve the quality of the work and cooperation of Dutch tropical foresters in developing countries,
* to exchange information between tropical foresters, (Dutch) institutes on forestry development in the tropics, and other parties concerned,
* to increase public awareness of the importance of tropical forests and forestry in the tropics.

Activities of BOS

* to compile and publish a newsletter in which all types of information on tropical forestry are incorporated,
* to publish a series of BOS desk-studies, called BOS-Documents,
* to establish and maintain a register of tropical foresters called BODIS,
* to maintain contacts with all kinds of organizations, national and international,
* to keep up a question-answer service for people and organizations on any kind of aspect of tropical forests and tropical forestry.

ISSN: 0923-7488

Subscriptions to the BOS Foundation

Individuals:	Dfl. 25,-	for students,
	Dfl. 50,-	others in Europe,
	Dfl. 60,-	others outside Europe.
Organizations:	Dfl. 75,-	local organizations in the tropics,
	Dfl.100,-	other organizations.

Subscription may be made by cheque or money order to Foundation BOS (address and bank/giro account see below)

The NiEuWSLETTER will be provided free of charge to those organizations with which Foundation BOS has reciprocal arrangements.

Withdrawel for the next calendar year should be done with a month's notice.

Foundation BOS

Address:	IBN-DLO, "De Dorschkamp", Bosrandweg 20, Wageningen, The Netherlands.
Postal address:	Foundation BOS, P.O.Box 23, 6700 AA Wageningen, The Netherlands.
Telephone:	08370-95353.
Fax:	08370-24988.
Giro account:	4296433.
Bank account:	539024414 - ABN Bank, Wageningen, The Netherlands.

The secretariat members are Wiebe Kloppenburg and Bert van der Linden. Our volunteers at the moment are:
Antoinette Stoffers (technical advices), Mark Postma and Peter Sips (supportive activities).

Cover design: Roelof A.A. Oldeman.
Colour design: Peter Sips.

Contents

KANTOOR

VAN NOTARIS

A. GAZENBEEK

TE

WAGENINGEN

A F S C H R I F T

van de akte van

O P R I C H T I N G

van:

de "Stichting voor Nederlandse Bosbouw-Ontwikkelingssamenwerking, afgekort Stichting Bos, gevestigd in de gemeente Wageningen.

Heden, zestien december negentienhonderd één en tachtig, verschenen voor mij, Anton Gazenbeek, notaris ter standplaats de gemeente Wageningen:

1. de heer Roelof Arent Albert Oldeman, hoogleraar Bosteelt Landbouwhogeschool, wonende te Wageningen, Generaal Foulkesweg 76 geboren te Zeist op vijftien september negentienhonderd zeven-en dertig.
2. de heer Alfred Johannes Maria Wouters, medewerker Rijksinstituut De Dorschkamp, wonende te Wageningen, Thorbeckestraat 38, geboren te Rotterdam op één en dertig augustus negentienhonderd vijf en vijftig.

De comparanten verklaarden bij deze op te richten de stichting: "Stichting voor Nederlandse Bosbouw-Ontwikkelingssamenwerking", afgekort Stichting Bos, te vestigen te Wageningen, welke stichting zal worden geregeerd door de volgende bepalingen of statuten:

NAAM, ZETEL EN DUUR.

Artikel 1.

1. de stichting draagt de naam: "Stichting voor Nederlandse Bosbouw-Ontwikkelingssamenwerking", afgekort Stichting Bos.
2. Zij heeft haar zetel in de gemeente Wageningen.
3. De stichting is opgericht voor onbepaalde tijd.

DOEL.

Artikel 2.

1. De stichting heeft ten doel:
   - Het bevorderen van
     ontwikkel
   - Het

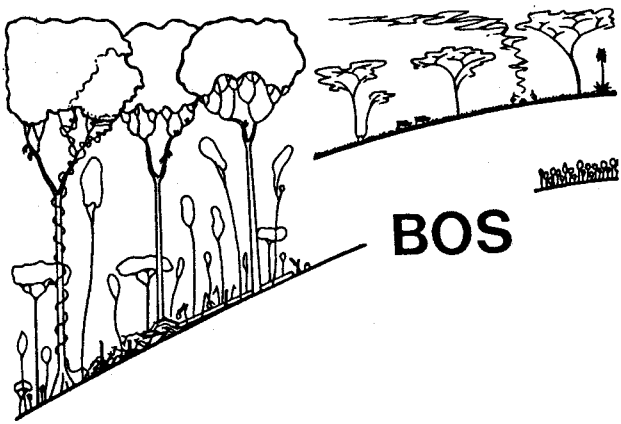
Akte d.d. 16 december 1981.

1981 - 1991

The Board and the Secretariat of the BOS Foundation herewith wish to thank all relations for the meaningful cooperation during the first 10 years of existence.....

and hope to continue this cooperation in the future, starting with wishing you a good and healthy

1992



Editorial.

By: Bert van der Linden

As you have noticed at the cover this BOS-NiEuWSLETTER is a very special one: Foundation BOS is celebrating its 10^{th} anniversary and this special occasion deserves a BOS-NiEuWSLETTER with a special cover and special contents.

In this issue you will find the winning contributions to the BOS Essay Contest which was held in honour of the 10^{th} anniversary of the Foundation, plus the judgements of the jury and a short introduction to the prize winners. Furthermore a tribute is paid to the person who might be considered the engine of Foundation BOS during the past 6 years: Wiebe Kloppenburg. Another tribute of a somewhat different degree was paid to Professor Oldeman, Honorary Member of the Board of the Foundation, for his contribution to the 10^{th} World Forestry Congress, held in Paris last September, notably in the form of his "position paper" entitled "the Paradox of Forest Management". The tribute and position paper are included in this issue. A contribution about forestry on Santo Antão, Cape Verde, and the regular notices complete this special issue.

As mentioned before the appearance of this issue is somewhat different. The cover was "refreshed" to illustrate the ever present élan of the Foundation and is meant to be the regular cover of the future issues of the BOS-NiEuWSLETTER. The credits for the design go to Peter Sips. Hopefully you will like the new appearance as much as we do.

A Personal Jubilee Note from the Secretariat.

By: Wiebe Kloppenburg

The Secretariat is housed in a room rent from the Institute of Forestry and Nature Research (IBN-DLO), location "De Dorschkamp". The size of the room is 15 m^2. Inside are three desks, three cupboards, three filing cabinets, six chairs and one wooden table. On the desks one can find two telephones, three (drooping) plants, a type-writer, a personal computer with printer and piles of paper work. Take care when entering the room otherwise you will stumble over the boxes containing books and documents that have to be mailed!

Indeed there's not much space left, but then again space is not the most valuable aspect of the work at the Secretariat. Bert van der Linden, my appreciated colleague, works five days a week in this room, of which two for the SNV-Sahel project of the IBN-DLO and three for the secretariat. I have a part-time job working three days a week (Wednesday, Thursday and Friday) and the rest of the week I try to be a good houseman (which I'll never be according to my wife Maria, who is also part-yime working) and father. Nevertheless taking care of my sun (Sil, five years old) and daughter (Aafke, three years old) and our puppy (Sien, sixteen weeks old) is a wonderful experience with its particular ups and downs. Above all I love them very much.

Which reasons make me go to the Secretariat, three days per week and sometimes more? Well, earning money and meeting my contractual obligations. Simple isn't it? Indeed, on one hand it's simple, on the other hand there is a lot more to it. First of all I like to say that the work at the Secretariat is very pleasant. For instance the part related to "networking" gives a lot of satisfaction. By the way, one of the winning essays included in this issue deals with networking. To give service to more or less like-minded people which support the Foundation with their donations is a daily challenge. Moreover the growing number of donors and the acknowledgement of the work of the Foundation received from the Netherlands and foreign tropical forestry section is of great value to me. It is also a pleasure to mail interesting information to you, both in the Netherlands and abroad. After having packed all BOS-NiEuWSLETTERs, documents etc. in envelopes and boxes and taken to the post office it is always very satisfying to receive positive reactions on the information disseminated.

Another important aspect of my work is the cooperation with Bert and others. Contacts with so many different people, be it in character and/or background,

is fascinating. For instance I am constantly impressed with the motivated volunteers, mostly acquainted with the Foundation through their study. At the moment Peter Sips, Hans Groenendijk, Antoinette Stoffers and Mark Postma are offering part of their spare time to activities of the Foundation. These people, each gifted with unique and specific qualities contribute their part.

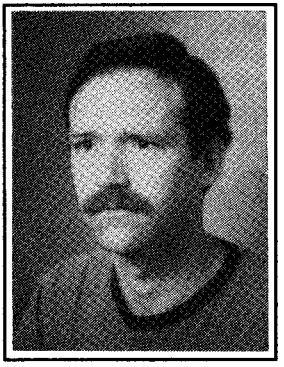
Students were also the people who came up with the initiative for this foundation in the late seventies: Cor von Meijenfeldt, Cathrien de Pater, Herman Savenije and Fred Wouters. They analysed the problems related to forest and forestry in the tropics and became the "godparents" of the BOS Foundation. They were the pioneers of the NGO-tropical forestry movement in the Netherlands (see also farewell speech of Prof. Oldeman in BOS-NiEuWSLETTER no. 20, vol. 9 (1), 1990). Till then according to them society had not payed enough attention to the increasing problems related to forests and forestry in the tropics. The fact that important governmental organizations accepted participation in the Board of the Foundation meant that their appeal was taken seriously.

During the past ten years a lot has changed nationally as well as internationally in the field of tropical forestry development cooperation (see also BOS-NiEuWSLETTER no. 23, vol. 10 (2), 1991). Much attention was given to the arid tropics (Sahel) and recently the humid tropics are gaining more attention. Especially the Netherlands Government "Policy on Tropical Rain Forests" means an important initiative that lifted the case of tropical forests and tropical forestry into an interdepartmental sphere.

In the light of the problems of tropical forests and forestry you, somehow engaged in this field, are the pivot on which the activities for the Foundation turn. In this aspect your activities are indispensable.

I consider myself a fortunate person to be working with and for you for the interest of the people, trees, forests and forestry in the tropics in the limited space of $15m^2$.

A Fairy-tale?



Somewhere in the north of the Netherlands, about 40 years ago, a boy was born. His parents, in good tradition, called him Wiebe. Soon after his birth the Kloppenburg family found out that their last born was in some way gifted. While being fed Wiebe stared into the new world constantly making remarks and looking for answers. This however was a problem, for his remarks were not understood and then again the answers given were sheer abracadabra to him.

Not in the least demoralized by these enormous problems in his early childhood Wiebe kept thinking and looking for answers. Strengthened in his belief in a separate way of reality it was in this period he started talking to the animals on the farm. It was during these sessions that he developed his first ideas about a different world-order. Leaving his parents in despair he stated his first, yet provisional theory about the existence of 5 billion different worlds on one planet instead of one world with 5 billion people.

During primary school Wiebe came in contact with children of his own age. Driving the teacher up the wall he started a sustainable series of conversations and study-groups. Children were talking about the North-South relationship, modern machinery, a new world-order and several other things children of their age talk about.

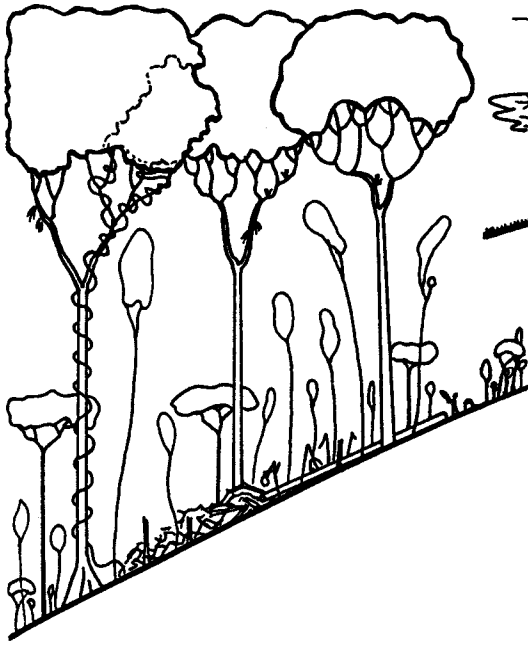
Slightly disappointed about the depth of the conversations secondary school to Wiebe was a mere period of confirmation and broadening of ideas. In a haystack the North-South relation was evaluated and integrated into the men-women relation. Riding 14 km up and down to school on his bike taught him the selective opportunities of modern progress and the relativeness of the written word. It was in a hostile winter storm that he pledged never to use a personal computer for he would not trust his words to be saved by a computer. The use of an electric typewriter was his compromise to the world.

His higher education period brought Wiebe some lifetime decisions. Instead of concentrating on the farm-life up north he focused more and more on forestry in general. After a first contact with Africa the South-component of his theory became a major, yet elusive drive in his behaviour. In this period a vital counterpart came into the picture. Maria took up the burden of trying to slow Wiebe down. This process lead to a new phase in the life of Wiebe. They got married and somewhat later children called for his attention. During this

stage of rejuvenation he started working for a foundation. Happiness was complete. Foundation BOS found its true advocate, Wiebe his real separate reality. With inexhaustible energy he entrusts his words to an electric typewriter, picks up the phone to surprise people with his enormous knowledge and enthusiasm about the role of forestry in development cooperation, but also about children and fatherhood, he lobbies as were his life at stake, receives people with an open mind, discloses his philosophies and positive ideas, maintains an ideal working climate for him and his colleagues at the secretariat and sees to it that al goes well with the Foundation BOS and the objectives and activities it stands for. As such he manages to make a forester feel proud of his or her profession and after hearing his words you know that the world cannot do without you.

Maybe, somewhere in his mind he is hoping that his separate way of reality becomes less separate. We cannot say we are disciples of a Wiebe way of knowledge, but the teachings of Don Wiebe are not to be disregarded.

Peter Sips,
Bert van der Linden,
Piet van Gisbergen.



BOS

"Tropical Forestry in the 21st Century"

Essay Contest

Tropical Forestry in the 21st Century.

Announcement of the Essay Contest in BOS-NiEuWSLETTER no. 22, vol. 10 (1), April 1991

In December 1991 Foundation BOS will be celebrating its 10th anniversary. One of the activities concerning this celebration is an essay contest. The theme of this essay contest is:

Tropical Forestry in the 21st Century

To give an impression about the wide range of possible items covered by this theme some ideas are mentioned below:

- Sustainability and tropical forestry;
- Survival of the tropical forests;
- The role of NGOs;
- Political circumstances in developing countries;
- Western commitment, tropical impossibility;
- Development cooperation, a call for a change;
- Agroforestry: agriculture for foresters or forestry for farmers;
- Expertise in donor countries and the transfer of knowledge;
- New views, knowledge, approaches and techniques;
- Family planning as a prerequisite for forest survival;
- Intrinsic value of life forms;
- Conservation or management, both, either or neither;
- The economic versus the ecological imperative;
- Perception and use of forests by indigenous peoples;
- Local participation;
- Women, emancipation and sustainable development.

It may be clear that every point of view, be it economic, ecological, technical, philosophical or ethical, can be the basis for your contribution.

Prizes

The Board of Foundation BOS has the intention to reward the best three contributions. The prizes will be:

-the first prize: an amount of 1.500 Dutch Guilders,
-the second prize: an amount of 1.000 Dutch Guilders,
-the third prize: an amount of 500 Dutch Guilders.

The jury has also the intention to adjudge a special 'originality' prize.

The adjudication and the distribution of the total prize-sum will be the full responsiblity of the jury.

Procedure

- The essay has to be written by one person;
- Participants are requested to send in an essay that has not been published before;
- Contributions are to be send to Foundation BOS (for address see below);
- The essay should contain a minimum of 1500 words up to a maximum of 2500 words,;
- The essay should be anonymous. Participants should enclose a seperate sheet with the title, full name and address;
- Contributions have to be written in the English language;
- Contributions have to be delivered in print and preferably also on floppy-disk in Word Perfect 4.2 or 5.0;
- Contributions have to be received at Foundation BOS before August 1, 1991;
- Receipt of the contributions will be acknowledged;
- The jury will judge contents, style, composition, and use of words. Criteria like innovation and originality are important;
- In October the jury will decide who are the prize winners;
- The jury is entitled to publish the winning essays. Publication will take place after consulting the author and with mentioning of the name;
- Participants are obliged not to publish their contributions before March 1, 1992;
- The decisions of the jury are binding. Discussion about the decisions is not possible;
- Distribution of the prizes will be on December 20, 1991;
- Prize winners will be noticed in due time;
- Members of the Board, the Secretariat and the Jury are excluded from participation;
- Matters not covered by the above-mentioned rules are decided on by the jury.

Report of the Jury.

The members of the jury are:
(final composition)

-Ir. Cathrien H. de Pater, Chairperson of the jury (Ministry of Agriculture, Nature Management and Fisheries),
-Dr. Ir. A.G. Voorhoeve, Secretary of the jury (Forestry Vocational Training Centre, Arnhem; Chairman of the Board of Foundation BOS);
-Ir. Martha Bloemberg (Wageningen Agricultural University),
-Prof. Dr. Ir. R.A.A. Oldeman (Wageningen Agricultural University).

General part

In the first place the jury would like to congratulate the BOS Foundation with its 10^{th} anniversary.

Tropical forestry is enjoying increasing public interest these days. Much has been written and is being written on the subject. Not only in professional magazines but also in broader press media the subject has come to the forefront of attention. The fate of the tropical rainforests has become a topic of world politics, and not in the least by our own Dutch government which recently issued its governmental policy paper on the subject. But the field of tropical forestry is much wider. Harmonization of international efforts has been endeavoured since about the mid-1980s and has emerged in the worldwide Tropical Forestry Action Plan (TFAP) framework in which at present over 80 tropical countries are engaged (See also BOS-NiEuWSLETTER no. 23, vol. 10 (2), August 1991). Also non-governmental organizations are increasingly active and influential in the field of tropical forestry.

Not that the problems in tropical forestry have diminished. We would say, on the contrary; but it is precisely therefore that the choice of the subject as a focus of the decennial anniversary celebration of the BOS foundation is, in our opinion, an excellent challenge to foresters and others who are concerned with tropical forests to use their creativity and formulate their ideas on this important matter. So we are now here to present response to this challenge.

Eight essays have been submitted. In the first place, the jury would like to express its high appreciation for the great commitment shown by the writers to spend their time and efforts on this undertaking. It is not often that foresters all over the world, are asked to write in-depth essays. The fact that six of the essays did not sufficiently meet with the quality standards explained

below, and therefore did not qualify for a prize, should not discourage the authors and others to continue their endeavours at future occasions.

We have made our judgement according to a number of criteria which I shall discuss point by point. I should like to stress beforehand that the authors' opinions were *not* considered as a criterion, although their consistency of argument was.

* *The theme.* With a few exceptions, it was treated from a global and more or less general perspective: Economic values and tropical forestry, population issues and tropical forestry (two essays!), the role of tropical forestry in climatic change, tropical forests seen from the "Gaia" perspective, and limitations and opportunities for tropical forestry in the 21st century. In two essays, a detailed theme was treated: one paper described local forestry networks as an instrument for future forestry development, and the other, a case of community forestry in Irian Jaya. Adherence to the theme varied, however, which was perhaps due to its rather cursory treatment in the announcement.

* *Is it an essay?* In other words, does the author abandon the objective distance which is required for scientific articles and publications, does it contain a "cri de coeur"? Here, too, the answer for six of the eight documents is: yes, to a varying degree.

* *The length.* All authors except one had adhered to the limitations of 2500 words. As a consequence, they must have wrestled to squeeze what they had to say within this limited frame. Their apparent difficulty is no surprise given the wideness of the theme and the necessity to embody it, together with relevant details, within this limited length.

* *Originality.* The earlier mentioned "specialised" themes were found to be highly original, while two of the six "worldwide" themes were treated in a more or less original way.

* *Correctness of facts.* With the exception of three essays, the contributions proved to be weak on this point. Many of the presented facts and figures are incorrect, incomplete, or disputable. In many cases no sources were mentioned which might have indicated the authors' critical treatment of their material. It appears that at least some of the authors are perhaps not experienced professionals in the field of tropical forestry; if this indeed is the case, they should have treated their material with all the more caution.

* *Consistency of reasoning.* This varied from good to bad in the various essays. In the better essays, the reasoning was consistent with the theme, did

not deviate too much from it or left obvious areas untreated.

* *Formulation of thoughts.* Here, too, the contributions varied. The better essays showed a use of terms and phrases which was in line with their theme and reasoning, and did not present conceptual confusion like, for instance, between tropical *forests* and tropical *rainforests*, and between "global" and "tropical" forests, as some other contributions did. The use of the English language was in the majority of cases reasonably correct, but this was considered as a secondary criterion since English was not expected to be the mother tongue of the authors.

* *Attitude.* All essays showed the authors' great concern with the subject. However, only four essays expressed just that degree of "modesty", or so to say, wonder whether their contribution could really help bring tropical forestry forward in future, which attitude characterizes the authors' familiarity with the complexity of the subject while leaving room for discussion open to others.

Conclusion

The fact that only eight essays have been submitted may be due to the somewhat short lead time between announcement and closing date.

Most striking was what was *not* mentioned in any of the essays:

1) The widespread problem of the open access character of the tropical forests as a *de jure* or *de facto* common property resource;

2) Existing and on-going efforts of tropical countries themselves to address deforestation, whether effective and adequate or not. Yet we know that many countries have been or are in the process of formulating forestry laws, policies, programmes, strategies, and projects, often with the help of donor organizations, for the better or for the good. I only have to refer to what I mentioned in the beginning of my speech about the TFAP, to give an example.

To sum up, we should like to make the general recommendation that the interested public be better informed on what developing countries are really doing in tropical forestry, and on the growing enthusiasm and dynamism in this field. To contribute to this purpose, we hope that initiatives such as this contest may be repeated in future.

Prizes

The jury has judged two essays eligible for an award. After long deliberation, we have decided that the article "Local Forestry Networks" deserved a third prize. It describes a highly original contribution from a local perspective to the global development of tropical forestry, without pretending that this solves all problems; It is consistent, clearly written, well-structured, and testifies ample field experience. Our doubts were about the fact that it remained almost a too local description of a case; it was, however, saved by the concluding remarks referring to the general theme. I should herewith like to invite the author to the stage to accept the prize: Ir. Paul C. Romeijn!

The jury has further concluded that one article qualified for the first prize: "Tropical Forestry in the 21st Century; a view on limitations and opportunities". It gives a well-balanced and well-structured overview of the problems of tropical forestry and its future potential; it shows the professionality of the author (although we may differ in opinion on the use of some terms); and it contributes to the evolution of thinking by drawing other disciplines outside forestry into the discussion and by concluding, among others, that foresters of the future should broaden their scopes and become environmentalists. Although the presentation in the essay may not be new to the reader, the conclusion goes beyond the obvious and will certainly provide food for thought.

The author is Drs. A.C. (Fred) Smiet. Unfortunately he cannot be present on this occasion since he has just taken up a position as environmental sector specialist at the Netherlands Embassy in Jakarta. However, the Jury was able to meet him in the Netherlands and to congratulate him personally. The prize was presented to him by the Ambassador of his Embassy this morning.

Herewith the task of the jury has been accomplished.

Thank you for your attention.

Cathrien de Pater
Chairperson

The First Prize Winning Essay.

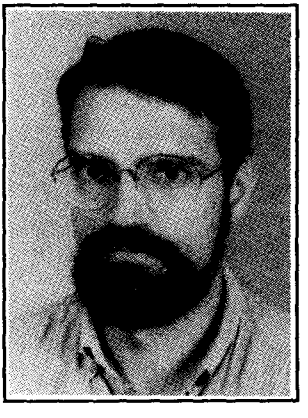
TROPICAL FORESTRY IN THE 21ST CENTURY
A view on limitations and opportunities

Judicium

The essay of Mr. Smiet earned a maximum score on nearly all criteria, applied by the jury and described in the general judicium.

Mr. Smiet presents us with a well-structured essay. He accepts current problems as problems, but with a very positive attitude he turns problems into challenges. Many relevant topics are just touched, but the author is very consistent in refraining from exuberance. Although not a shockingly new insight, his conclusion that future tropical foresters will be ecologists too, goes beyond the obvious, thus showing perspective and vision.
With his message that forestry in the 21st century will no longer be an isolated discipline, but a fully integrated activity in synthesis with other disciplines, Mr. Smiet has rightfully won the Foundation BOS Essay Contest.

The author



Fred Smiet, 40 years old, is married and has two children, twins of 4 years old. He studied biology at the Leiden University in the Netherlands. Since 1977 he has worked in the tropics on subjects concerning agricultural research, ecology, agroforestry, forestry and watershed management. From 1985 till recently he worked at the School of Environmental Management in Bogor, Indonesia, 3 years as a lecturer of Environmental Conservation and 3 years as a lecturer of Watershed Management. He has contributed to many publications on these topics. Presently, he is employed by the Netherlands Ministry of Foreign Affairs as environmental adviser in Jakarta, Indonesia.

TROPICAL FORESTRY IN THE 21ST CENTURY
A view on limitations and opportunities

By: Drs. A.C. Smiet

Tropical forestry in its aspects of science, land use practices and professional ethics is evolving and, albeit much more complicated than temperate forestry, will follow the latter's evolution with a time lapse.

Past trends: forests hinder development

Ever since the early stages of his evolution early man seems to have had preference for open landscapes above mysterious forests. In historic times, forested areas were considered backward and in need of development. Development meant - and indeed frequently means - that natural forests were drastically modified or completely converted to make way for another land use type, most often agriculture, less often tree plantations. Land was now considered productive and its benefits were tangible. In a worldwide trend, forests decreased and only land which was not (yet) needed or which was considered unsuitable remained forestclad. In developed countries this trend seems to have been halted, but people in tropical countries, from shifting cultivators to policy makers, continue to heed this development perspective and to stimulate this trend.

Public policies, aimed at economical development such as agricultural and industrial expansion, were indirectly responsible for the misuse of forest resources. Indeed, many of the factors affecting forests were totally outside the scope of forestry. Since tropical forestry came into being about 100 years ago, foresters readily accommodated their activities to public policies. Research, training, planning and management centered on wood production, while other aspects of forestry were largely ignored. Dissent with these policies was rarely voiced amongst foresters, which is not surprising because the interests of foresters were closely linked to those of government (development) and private enterprise (commerce).

Present trends: forests as commodity and environmental asset

Ongoing deforestation as a result of agricultural expansion, large scale exploitation and encroachment, is an indirect result of past policies. Legally facilitated for a long time, these processes seem to have gathered a momentum of their own. Of course, knowledge, insights and, in some

instances, even policies have changed in the last 10 - 20 years, but as yet it is too early to see results of changed management. Decision makers have to be pressured into adapting policies to incorporate other forest values besides wood production, to reduce deforestation and to manage forest resources wisely. Policy changes which affect forests directly or indirectly (land clearing, land use, land tenure, forest exploitation) are being considered, albeit reluctantly. Institutional constraints, vested interests and lack of political will for the time being hamper reformulation of policies and limit effective management.

Tropical forestry as an applied science has changed too. Instead of being preoccupied with production, forestry now takes an ecosystem approach and has developed links with other disciplines, such as ecology, soil science, hydrology, agriculture and even sociology. Management recommendations for natural forest as well as for plantation forests are now based on interdisciplinary findings and take other forest values, besides production, into account. Agroforestry, for example, has developed into almost a separate discipline based on principles from forestry, agriculture, soil science and sociology. Foresters themselves have changed as well and now participate actively in attempts to influence a change of policies.

Future trends: application of new principles

Realistic expectations

The future of tropical forestry will be determined by the present condition of forests, itself a result of past and present trends. Years of misuse have rendered many remaining forests, plantations and natural forests alike, depleted, not only with respect to standing stock, but also with respect to soil conditions. To increase its productivity, such land will need rehabilitation. Without major inputs, which will affect economic viability, forest productivity on such land may be lower than anticipated. The implementation of new ideas, successfully tried on a small scale, on for example sustainable management of natural forest or on management of extensive tree plantations, may run into problems when attempted on a large scale.

The public sector has funded and subsidized forestry activities to a large extent. Although private enterprise will certainly continue to play a role in the future - possibly even larger than at present -, it is unlikely that sustainable exploitation of natural forests or plantations can be economically realized without government incentives. A drastic rise in the price of forest products is needed before government involvement can be reduced, but seems unlikely in the foreseeable future. The price of tropical hardwoods may rise due to

scarcity, but growing cycles are that long that unsubsidized cultivation seems beyond the scope of private enterprise anyway. Thus government funding in whatever form will remain a prerequisite, which is on the one hand an opportunity to guide forestry activities, on the other hand a potential limitation in economically hard times.

Populations will continue to increase and so will the demand for land and tangible benefits; if forests cannot provide sufficient benefits, with or without government assistance, pressure for their conversion will remain high.

Synthesis with other disciplines

Exchange between forestry and other disciplines must be continued and stimulated further, not only in research and training, but also in forest planning and management. Topics such as land evaluation, rapid rural appraisal, extension ect. need to be further developed and adapted to specific forestry conditions and requirements.

Forestry and agriculture, for example, are now different disciplines with their own place in society and with their own interests. Conflicting interests have in the past always been solved in favour of agriculture: forests were converted to make way for agriculture, and tree crops such as rubber, oilpalm and coconuts are firmly embedded in the sphere of agriculture. The segregation and the resulting antagonism of these disciplines is an anachronism. Forestry and agriculture will remain separate applied sciences, but a synthesis, aptly named agroforestry, is now developing and will expand into a full-fledged discipline of its own. Agroforestry, be it alley-cropping, socioforestry, silvopasture or one of its many other forms, has great prospects on the many millions of ha of marginal land throughout the tropics. Combinations of agricultural and forestry techniques may render such land productive - particularly when viewed from the perspective of growing land hunger due to population increase - in a way that neither forestry nor agriculture alone could have achieved. From socioeconomic and environmental points of view it is realistic to expect long term and large scale success from agroforestry on such land, e.g. low-input agriculture in combination with tree crops.

Another important and promising line of synthesis falls within the scope of forestry and economics: *resource evaluation*. It has been shown recently that traditional techniques for economical and financial evaluation grossly overestimate the short-term benefits of timber exploitation and grossly underestimate long-term environmental costs (Repetto & Gillis, 1988). An important consideration in forest management, the outcome of such calculations is presently biased in favour of short-term exploitation at the

expense of other forest values and is ultimately detrimental to society as a whole. Realistic cost/benefit ratios and internal rates of return are needed to convince policy makers of other forest values besides timber production. New techniques for forest resource evaluation, taking long-term environmental and social consequences of forest management into account, may well lead to a new perspective on "intangible benefits": biodiversity, nature conservation, hydrological protection, soil conservation and effects on global warming. As for other environmental values, a reappraisal of forests is needed. For example, arguments for natural forest preservation - presently intangible and unconvincing - could be strengthened by making them tangible: new ways of calculating forest values might show that leaving forest intact - or truly sustainably exploited - is more valuable to society than converting or mining them.

The forester as environmentalist

A new dimension has been added to forestry in general and to tropical forestry in particular. The issue of global warming and the role of forests therein has lifted forestry into the international limelight and will give new impetus to forestry activities. Preservation of remaining forests and large scale reforestation efforts are now of global importance, far beyond the local and regional levels foresters used to operate on.

Besides classical activities, forestry in the 21st century will entail a wide spectrum of activities, which are presently being formulated and tried out on a small scale. The challenge is that new techniques in forest planting, forest protection, forest production, sustainable management, conservation, agroforestry, bufferzone development, land rehabilitation etc. will have to be practiced on a large scale. It is of vital importance that forestry will not only broaden its scope further, but its mentality as well: foresters should become environmentalists. Forest management is an environmental issue and environmentalism not only has a broad scope with respect to activities, it also deals with different scales, e.g. local - regional - national - global. Also environmentalists are politically active within and without governments, criticizing existing policies and attempting to guide and instigate new policies. As in the past, many decisions affecting forests directly or indirectly will be taken outside the realm of forestry. Foresters can hope to have a say in what happens to forests by joining the influential environmentalist movement.

Environmentalism is already advanced in developed countries, but is new to tropical countries. Although societies in tropical countries are presently not yet ready to accept and incorporate environmentalism, they will be in the future. Pressure from outside and a growing awareness of environmental

issues within, will induce tropical countries to adopt environmentalism, including forestry issues, in their policy making.

Undoubtedly, agroforestry will constitute a growing part of forestry activities. Whether the future of tropical forestry will also bring a workload of replanting and rehabilitation or tasks in natural forest management and conservation, will be determined largely by events and decisions of today.

References

Repetto, R.C. & M. Gillis, 1988. **Public policies and the misuse of forest resources.** Cambridge Univ. Press, Cambridge pp. 432.

The Third Prize Winning Essay.

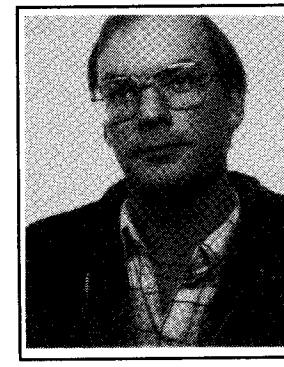
LOCAL FORESTRY NETWORKS

Judicium

The contribution of Mr. Romeijn scored high on many of the criteria, applied by the jury - but not high enough to gain a second prize. Therefore the jury rewarded Mr. Romeijn with the third prize.

One of the considerations of the jury was, that the well-structured contribution was more a project description than an essay. However, in this description the author very clearly and convincingly stated his view, that local forestry networks might well prove to be an essential element of future tropical forestry. His essay is an operational case, which deserves to be lifted to a much more international level. The jury hopes to stimulate Mr. Romeijn by this prize to further serve the cause of local forestry networks.

The author



Paul C. Romeijn was born on 21-04-1955 in Kuala Belait, Brunei, and grew up in Asia, South-America and the Netherlands. In 1973 he obtained the H.B.S.-B-diploma and started his working life at the production-line of a bakery. He also worked as a punching-typist and a ski-teacher. As a result of the decision to undertake something meaningful he studied tropical forestry at the Wageningen Agricultural University in the Netherlands. In this period he became co-founder of Driade loudspeakers and worked at marketing, design and development. He published "Het oerbos van Saba" (Nederlands Bosbouw Tijdschrift, augustus 1989: p. 202-205) thanks to a donation from the Treub-Maatschappij. From 1989 till 1991 he was employed as assistant-expert by the FAO in Quito, Ecuador, and engaged in the promotion of community forestry in the Andes-region. At the moment he is employed as a consultant at the IUFRO's SPDC (Special Programme for Developing Countries) in Vienna working at the development of a database about financing of research and development programmes in the tropical forestry sector.

LOCAL FORESTRY NETWORKS

By: Ir. P.C. Romeijn

Networking among local institutions proves effective in promoting community forestry. Ecuadors' agroforestry network serves as a case in point of how such a network can be put to work.

Introduction

Is all well with development aid in forestry? Of course not. The complexity and urgency of tasks have increased over the years. In the sixties forestry aid was aimed towards improvement of national economies by developing the sectors' industry. In the eighties the social aspects were to receive much more attention, and recently forestry is regarded as an essential tool within a framework of integrated land use planning.

Whatever the aims, the complexity and urgency of forestry development aid will continue to increase as we move into the next century. One way of dealing with complexity is networking. Many networking initiatives to aid forestry development are taken. Most of these work on a large scale, but local forestry networks seem to be a neglected field.

In this article, an attempt is made to describe the reasons for the success of forestry networking in Ecuador. Future support for local networks is recommended.

Local networks

The need for networking is well recognized and forms the basis for initiatives like the TFAP, the IUFRO's SPDC data bases and the CGIAR's plans to coordinate tropical forestry research. These networks are conceived to operate on a macro or global level. Next to such global networks there is a need for efficient local forestry networks.

Local networks can and do provide services that are in high demand. They can provide a link between international networks and field operations. But they can do much more. Specific services that can be provided by a local forestry network and how such a network was made operational in Ecuador are described in this article.

The Ecuador example

The Ecuadorian agroforestry network was inaugurated in March 1990 as a result of a two day meeting between representatives of 17 organizations. Twelve organizations agreed to found the network. These initial members included governmental and non-governmental organizations from Ecuador and a number of international institutions' development projects.

Together these organizations form a representative section of the range of entities involved in community forestry in Ecuador. The Ecuadorian agroforestry network thus unites a diverse group of organizations, including the national forest service, nature conservationists and regional rural development groups.

The network was founded with the goal to promote community forestry development in a broad sense. The founding members agreed that the network should set out to: a) assure a committed membership, b) share costs, c) share resources, d) exchange information e) integrate workplans and methodology and f) aid new programs with starting up.

In one year the network has made substantial progress towards what is was set out to do, and has produced a number of quality products for its members. How this was achieved will be illustrated for each specific item.

a) membership. The network did not seek to increase the size of its membership until a sound base for its organization had been established. Once the network proved its worth to the initial members, other organizations took the initiative to apply for membership and were accepted. After one year of operation the network counted 25 institutional members.

b) cost sharing. The network's survival depends, to a great extent, on the strict policy of cost sharing it has adopted. No activity is financed or executed by one single member. This assures cooperation between the members and precludes domination by a single organization.

Down payments for many of the network's activities exceed its financial scope. Funding for such activities was usually achieved by securing pre-financing by a number of the financially powerful members. Subsequently, the entry fees of the specific events served to reimburse the sponsors and left a small overhead as a contribution to the general network operations.

c) resource sharing. Sharing of resources enhances cooperation between members. Concretely, resource sharing means that events, infrastructure and personnel from one organization are made available to other members of the

network. By sharing resources, the specific expertise of each member organization is put to far better use.

Resources were shared for training courses for field personnel and staff members, for a national agroforestry congress and other events, and for the publication of information.

d) information. The network facilitates information gathering, storage and dissemination. Network members form a target group to ensure the distribution of relevant material that members wish to share. Not one single member on its own is capable of reaching such a large target group efficiently.

The following example illustrates the importance of this activity. Network member organizations raised funds to publish two books by dedicated authors. These books would never have been written or published because of lack of funds. Both contain highly relevant information for community forestry in the Andes and would never have received the wide distribution deserved had the network not assumed responsibility for publication and distribution. The first book sold over 700 copies within months of its publication.

Another network activity is the organization of field days. One member organization invites its colleagues to participate in a number of field days, where on-site observations are made about progress and problems of field work. All participants are obliged to forward a written comment with their observations and recommendations to the organizers within fourteen days. This material is gathered, commented upon and then distributed to the participants and interested third parties. These field days are highly appreciated by the organizers and participants alike and are deemed most useful to improve field operations.

The network thus helps its members multiply the impact of their findings and materials; it also prevents the loss of information that usually occurs when a project is terminated.

e) integration. The network offers a forum for formal discussion to enrich and unify work methods. This reduces the discrepancies in approaches used by the members, discrepancies that might otherwise lead to confusion in communities.

A seminar was held to discuss development strategies, as a first step towards a common policy on incentives and approaches to community forestry development work. As a spinoff of this event common training courses for extensionists from all member organizations are due to start later this year.

Information is also exchanged on an informal basis. The exchange includes information regarding plans to change or expand field-work areas. A workshop was held where members were invited to comment upon drafts of future community forestry development projects.

The integration of work plans and methodologies should reduce the competition between programs in the search for communities and should reduce the mistrust that sometimes occurs between projects.

f) **fast starts.** More often than not, new projects are limited in their access to information during their initial phase. Given that the intended life span of most projects is four to five years, much valuable time is lost in starting up and incorporating a new project into the local institutional structure.

The network provides new project personnel with the opportunity to be introduced rapidly to colleagues, related organizations and up to date technical information. In this manner the network fulfills an important role in helping new projects get off the ground efficiently.

Observations

A word of caution. Although the results achieved by the Ecuadorian agroforestry network in a single year of operation may seem impressive, this success might prove fragile. Each success was obtained by the sheer hard work and commitment of a small group of highly motivated individuals. Such people are hard to come by, but they form the key to success for any network. It remains to be seen if this is the organization's Achilles heel, or whether the thrust of the first year can be maintained.

Another word of caution. Assuring support for a non existent or infant network is not an easy task. Enthusiasm is simply not enough because a network needs cold hard cash, and that is hard to come by. A major restraint to the acquisition of funds was found inside the bureaucracies of potential members. Their institutional budget regulations normally assign all available funds well in advance and preclude booking under headings that aren't premeditated. Budgetary space within ongoing programs to move their funds towards expenses for network activities proved very limited.

Conclusions and recommendation

The Ecuadorian agroforestry network is effective because of a small group of highly motivated people. Limited initial membership, cost and resource sharing, information exchange, and an open forum for discussion are a few of the approaches used in the network that have proven effective.

The experience in Ecuador does signal a message to professionals working in forestry development aid. Local networks can become an essential complement to the international forestry networks, and they can be a very cost effective means to enhance donor cooperation and efficiency.

Without sufficient and stable funding the local networks will not be able to operate effectively. The running costs to operate the Ecuadorian network for one year were well under 10,000.- US dollars. This may seem a marginal amount to some, but it was difficult to generate for these expenses were not contemplated in the design of the ongoing development programs.

Looking towards the future, local networks should have a bright future. The long term solution and the recommendation that can be distilled from the Ecuadorian experience is that this bright future can de secured if support for local forestry networks will be considered as an integral part of the mission of future development programs.

The network can be contacted by writing to the Red Agro-forestal Ecuatoriana, P.O. Box 17-21-0568, Quito, Ecuador, or by fax + 59 32 500 041.

List of Acronyms

CGIAR	Consultative Group on International Agricultural Research, c/o World Bank, USA
IUFRO	International Union of Forestry Research Organizations, Austria
SPDC	Special Program for Developing Countries, IUFRO
TFAP	Tropical Forestry Action Plan (published by FAO, 1985)

Decoration for Professor Oldeman.

By decision of the French Minister of Agriculture and Forests dated September 2nd 1991 Prof.Dr.Ir. R.A.A. Oldeman was knighted in the Order of Merit for Agriculture (Chevalier de l'Ordre du Mérite Agricole) at the closing-session of the 10th World Forestry Congress.

Professor Oldeman was decorated for his significant contribution to the preparation and implementation of the 10th World Forestry Congress, notably in the form of his "position paper" entitled "The Paradox of Forest Management", which formed the hub of one theme and some recommendations of the Congress.

The World Forestry Congress is held every six years. Strategical concepts are elaborated, like "multiple-use forest" (Buenos Aires, 1972), "agroforestry" (Jakarta, 1978) and "social forestry" (Mexico, 1985). The 10th World Forestry Congress was opened at 17 September by President Mitterrand. At the opening Jacques Delors, Edgar Pisani and His Royal Highness Prince Bernhard also spoke. 2500 people from 136 countries participated in the congress, among which decision-makers, including secretaries of state and ministers engaged in forestry and landuse. Under the device "The forest, heritage for the future" recommendations with a strong environmental tone were made this year, by way of contributory preparation of the United Nations Conference on Environment and Development (UNCED), planned in June 1992 in Rio de Janeiro. These recommendations are included in the "Declaration of Paris". The contribution of Professor Oldeman concerns a profile of "multivalent forest management". This should replace mere wood production management if forestry wants to keep contributing to what is called the "greening of the world by means of afforestation, reafforestation and sustainable forest management", put into words in an "urgent appeal to decision-makers" in the Declaration of Paris.

The Paradox of Forest Management.

By: Roelof A. A. Oldeman.
Chair of Silviculture & Forest Ecology, Agricultural University Wageningen, "Hinkeloord", Postbus 342, 6700 AH Wageningen, the Netherlands.

Summary

Forest management is defined. It depends on the nature of Man, tools and forests. No forests, no forest management. Hence, long-term forest survival is basic, requiring harmonisation of forests, aims and measures, complex and simple, over various timespans in a vastly changed world under environmental and human stress. The paradox is, that objectives are best achieved by forgetting them first in favour of forest survival. The concepts and means exist already to define product and service carriers better and to assess the effect of packages of many management measures, using knowledge systems based on interactive systems analysis. The aim of calculations becomes to design packages of measures combining high ecological and economical objective-hitting with low risks, low cost and healthy forests, instead of merely predicting yields. The Westoby bifurcation of social versus economic forest management can so be bridged by *multivalent management* for the implementation of real *multiple-use* forests. The world expects no less from foresters, although it will require high investments, advanced education and high technology to achieve in a nature-conforming way what forest policies have vainly tried to attain since more than 20 years. The position of forest management has been earmarked in Nancy (1990) as a second chance. This chance can only be earned by new thinking, investments, cooperation, education and hard work.

What is forest management?

Forest management is an organised and coherent series of human acts with the aim to reach a set of objectives made possible by the existence and sustenance of some kind of forest and covering a set of timespans ranging from the short to the long term.

Key concepts are:

* *organized and coherent* (philosophy: socio-economic);
* *objectives* (philosophy: socio-economic);
* *some kind of forest* (natural philosophy);
* *time-span* (philosophie tout court).

These concepts are to be harmoniously combined, otherwise the risk of sterile management is high. Sterility, the inability to bear fruits, in management originates from lip-service, paper plans, or other forms of empty activity disguised as management activity.

Nature or death

Nature is no goddess. It always is the nature *of* something: the nature of this tree or that forest, the nature of this objective or that machine. *Realistic* forest management takes into account the nature of forests, men and tools. *Unrealistic* management both overlooks and assumes aspects of forests, men and tools. It so produces a non-operational or counterproductive state of affairs which, if irreversible, equals death.

The nature of man is at the base of all objectives, organisation and coherence relating to forest management. These can be sustainably combined, but are self-defeating if mutually contradictory, i.e. neither well thought out, nor well felt. *The nature of forests* is at the base of the degree of realism of the objectives, cohesion and organisation of forest management activities. The nature of forests is complex, long-lived and large-sized. *The nature of tools* is related to the scale of time. This scale basically determines the optimal way to harmonize the natures of men and forests. Appropriate tools make harmonisation operational. Thinking from forest survival downwards has a higher degree of realism than starting from small time-spans, the latter being probably linked to people and their eating rhythms.

The forest and the long term

Long-term thinking is realistic, there being no forest management without forest. The first worry of a forest manager hence is forest sustenance. This old and venerable viewpoint dictated for instance the classical management options of nature-conforming foresters (cf. Trepp, 1989; Klepac, 10th World Forestry Congress):

* only virgin forest has proven ecosystem survival capability beyond human timespans, i.e. the primeval forest is the best muster for the essential build-up of all managed forest stands;
* the trees are to be managed because they are the long-lived carriers of major ecological *and* economical survival functions;
* other forest organisms are shorter-lived and, silently understood, barely need management as long as the trees are cared for;

* there must always be standing wood mass on the surface covered by a stand, never zero mass;
* a stand therefore should never be clearcut, always be cut selectively.

The numerous derived rules are not cited here (e.g. fire protection, Ducamp, 1927; but also see Flandez & Raymackers, 10th World Forestry Congress). The long term (forest sustenance) is linked to the short term (selective wood harvest) and to complexity by species diversity (mixed species composition enhanced by selective cutting). Moreover, nature-conforming foresters often exclude exotic trees (cf. Oldeman, 1985, 1990b).

Simplicity, complexity and tools

The above view is an adequate base for solid forest management. However, it originates from the time that mainly hand tools and animal-powered transport were used in forest operations, and brains, paper and pencil for monitoring and planning purposes. This simplicity was a virtue as long as problems and available tools were both simple. The forest never was. Biolley (see Trepp, 1989), of the "méthode du contrôle", i.e. monitored selection silviculture, met opposition in the early XXth Century because monitoring required quinquennial processing by hand of complete stand data, cost-benefit being judged prohibitive.

The problems facing tomorrow's forest managers are complex :

* the world over, forests are stressed (e.g. pollution; drought, cattle - cf. Karmouni, 10th World Forestry Congress; degraded soils; human pressure; wood-mining; excessive hunting or animal conservation ..);
* world-wide nets of influence are brought to bear on foresters (e.g. vastly expanded world commerce, media, long-distance travel, hobbies and lobbies);
* accumulation of forest knowledge is past the point of no return towards earlier, non-complex simplicity. To the dismay of some forest managers, scientific analysis of earlier successes now unmasks risks barely avoided or ecological time bombs created (Van Goor, 1985), unperceived earlier except by clever empiricists or farseeing scientists "shouting in the desert".

Fortunately, we start having tools to create a second-degree simplicity supported by calculations of great complexity (cf. Koop, 1989; Dubourdieu, 10th World Forestry Congress). The latter invisibly inform a new-style simple forest management with the nature of a user-friendly, high-investment, high-tech venture, using such tools as:

* software capable of dealing with biological stand diversity of architectural, populational and productional nature (cf. Boyce, 1978);
* selected forest-grown chemicals of relatively short half-lives and by their nature being able, in minute dosages, to steer forest processes (De Graaf, 1986; "impellors": Oldeman, 1990);
* adapted "smart" tools with minimal unhealthy side-effects (to be developed);
* automated information tools for forest diagnosis and monitoring with high refinement (Hoekman, 1990; Hägerby, De la Maza, 10th World Forestry Congress).

Forest management for the next millennium

Speaking of aims is speaking of human nature. The 6th World Forestry Congress, Buenos Aires 1966, largely promoted multiple-use forestry. Since then, this concept strongly determined the description of forest management *aims*, without changing forest management *practices* very much. In 1987, Westoby stated that no forest management handbook had appeared for some 20 years. Timber production in many eyes remained the anchor of forest management, because timber is the only large-scale money-maker for forests, i.e. the only product liable to interest powerful lobbies of businessmen and decision makers, a large platform for forest sustenance.

Unfortunately this reasoning has a flaw. Woodmining is easier and more profitable, in the short run, than forest management for timber production. Wood sooner or later attracts short-term speculators to replace managers. Even if this happens temporarily, in one year large tracts of forest can be destroyed that take decades to regenerate, if ever. Timber is certainly perceived as the exclusive business of foresters. Nearly all other crops and services can be produced without forests, truffles and timber being rare exceptions.

However, does silviculture add plus-value to wild timber, except for local concentration in stands and protected availability (cf. Mendoza & Martínez, 10th World Forestry Congress)? Storms rage, markets change or beetles tunnel the wood. Forest survival rather than tree survival determines timber production. Timber is a cash commodity, but economic value added by silviculture is as difficult to assess as value added by forestry to land protection or recreation. Foresters excel in long-term thinking, so long-term production with all its uncertainties became their privilege. The dilemma now is the choice between adding "complications" to wood-centered management models or linking wood production to some subsystem in more encompassing management models. This dilemma was apparent throughout the 10th World

Forestry Congress (cf. Baez & Montaña; Caccia; Caillez; Dubourdieu; Prieto Rodrígues & al.; Sutomo & al).

The classical link between the long and the short term is wood felling. This link may be multiplied, e.g. in European selection silviculture, yielding wood from each stand every few years. Short-term, less risky "agroforestry" production in forests tended to be overlooked. Refined systems of rotation-within-rotation are traditional tropical agroforestry systems and, less so, European farmers' forests of the type "coppice with standards". These also provide non-wood products and services regularly.

Faced with stressed sites, quantitative and qualitative human pressure and vastly increased silvological knowledge, forest management is either realistic or pursues XXth Century objectives in the XXIth Century. Excellent inspiration comes from the past. However, new *multiple-use forests* require new, *multivalent management*. Such management will not lose from sight any of the multiple objectives and use new information and technology. This requires thinking about optimization in new ways.

The classical paradox of forest management

The optimal way to start forest management activities for a specific product or service is to begin by forgetting about that specific product or service.

Of course, a manager thinking about a forest knows or guesses that it can provide the desired products or services. But the same forest also can provide numerous other products and services (cf. Krochmal & Krochmal, 1973, 1974, 1982; Siemonsma & Wulijarni-Soetipto, 1989; Hladik & al., 1989). Each product or service is linked to a carrier in the local ecosystem, often a tree, a plant or an animal (but see below). This bundled potential should be addressed, while *provisionally* forgetting the direct interests. The specific carriers we need hence must fit in a model of the universal carrier, the forest itself.

A hierarchical systems model is convenient for forest management. This is a ladder of system levels. Systems at a given level always are subsystems of a bigger system one level higher. A system is the sum of its subsystems, *plus* their cohesion. A forest on a given site is the sum of the stands, *plus* their interactions (mutual shading, windbreak, rainshadow, etc.). A forest stand is often the sum of old and young regeneration patches *plus* their interactions. A regeneration patch is the sum of many groups of organisms *plus* their interactions (figure 1A).

Only few of these groups contain commercial trees. This changes the concept

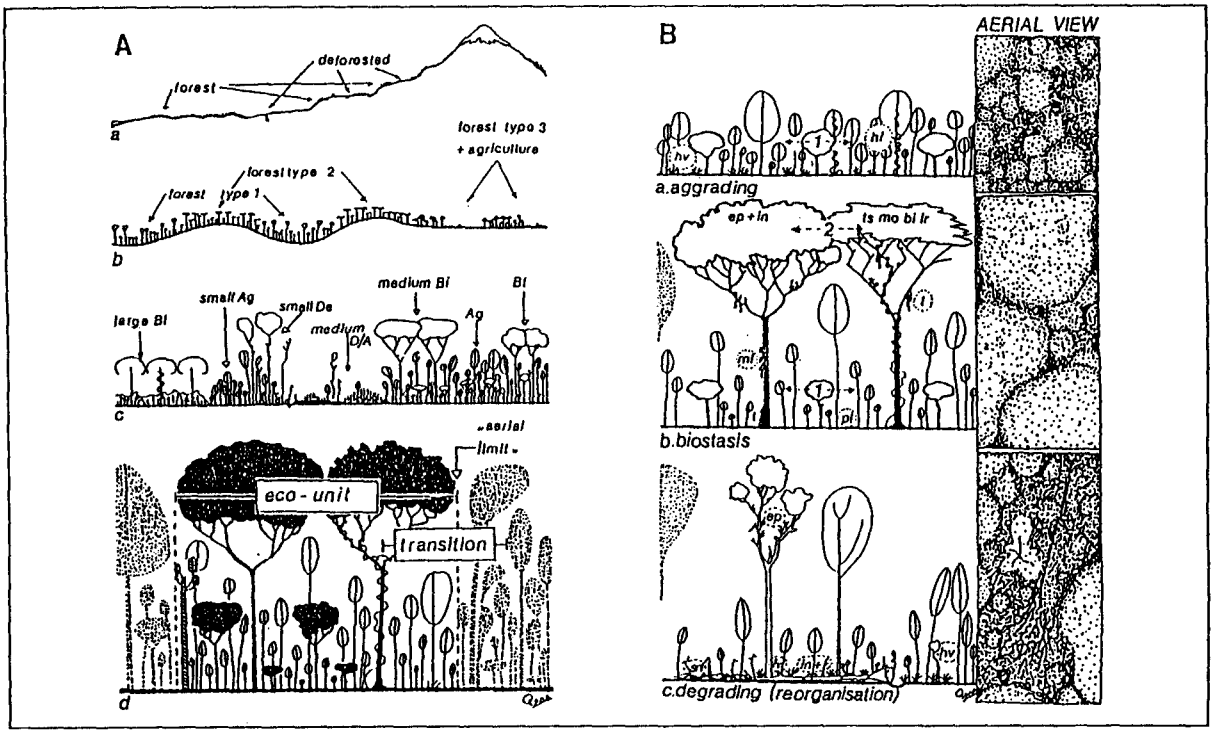


Figure 1 - Visualisation of hierarchical systems and stand compartments.

A - Systems hierarchy in space; a - Continent as a system of interacting landscapes; b - Landscape as a system of interacting forest types; c - Forest type as a mosaic system of interacting eco-units (regeneration units); d - fully grown eco-unit as a system of interacting organisms (trees preponderant).

B - Development in time of an eco-unit (regeneration unit), changing state from a - the aggradation phase to b - the ripe (biostatic) phase followed by c - the degradation phase. Note compartments associated with these forest states, e.g. lh = large herbivores; in = insects; mo = monkeys; bi = birds; ep = epiphytes, etc. Each compartment has an esthetical, protective or commercial value.

of "product carrier". For instance, the carriers of meranti wood production are not merely *Shorea* trees, but groups including a tree, a volume of soil, and certain mycorrhizal fungi (Smits & al., 1987). There are many other groups, like litter decomposers (e.g. insects and fungi), edible mushrooms, fruit shrubs (e.g. blueberry, hazel, goava), medicinal lianes, leaf-eaters (from insects to monkeys), seed dispersers (e.g. birds), or pests (figure 1B). Influencing one group is influencing all, to a certain degree. Blind emphasis on one management aim alone both increases and extends risks.

Yesterday, the numerous interactions could not be analyzed. The advent of computer-simulated models makes this possible now. Consider a forest with bees, timber trees, medicinal lianes, humus decomposers, edible mushrooms and flowering epiphytes (cf. Orchids, Millar, 1990), all interacting. Naturally, more groups of organisms are involved, and feedbacks between the forest and its environment too. Management operations provide inputs in the forest, and economical products or services are outputs.

When visualised (figure 2), such a model looks like a spider web. The knots are subsystems, e.g. groups of organisms, the threads between knots are interactions and the outside threads represent inputs and outputs. In such complex systems, there are *no straightforward causes and effects*. Energy and matter are "singing around", each subsystem influencing many others and receiving answers to its signals from these others.

If a forest ecosystem is for instance "tuned to" producing pest insects, no action will easily and cheaply eradicate them. The forest allocates resources to the production of insects as long as it remains in this state. *And the results of measures differ according to the state of the system*. To change that state, the manager has to know which threads to pull. System modellers hence have to survey all measures that the manager can imagine, and their effect upon resource allocation to different forest compartments.

Now the management paradox may be solved. Risks, products, services and silvicultural measures have become parts of one, single interaction model, showing a forest region, a forest or a stand (figure 1). A version of such a model, socio-economic and ecological, was built by a Chinese-German project (MAB-UNESCO CERP; Brünig & al., 1986). By choosing the right parameters, both forest diagnosis and management prescription become feasible. *Optimal measures are inputs stimulating the primarily desired outputs, minimizing risks, maximizing the number and quantities of secondary benefits, at the least cost and including monitoring of both forest health and economic sanity*. In simple words: the choice of only those measures that are proven cheap and adequate is a better guarantee for management success than "quantitative" yield forecasts.

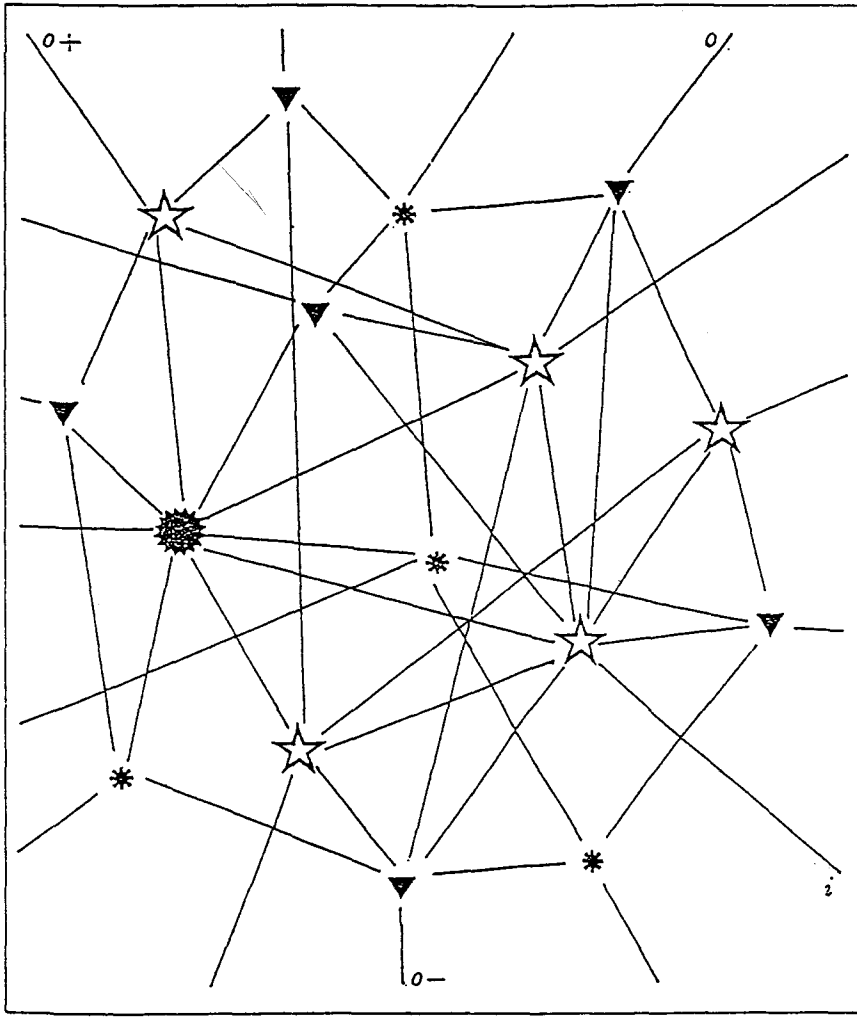


Figure 2 - Interactions and compartments in a basic model for multivalent forest management (from Oldeman, in press). Compartments as symbols indicating a species cluster. White stars = wood-producing compartments; black triangles = supplementary benefit compartments; small black stars = disease and risk producing compartments; large black star = main objective compartment. Inputs (i) are management measures that influence all outputs (o) and compartments directly or indirectly through the web. Some small interactions may be neglected. A computer can assess the force of interactions, or the force of the desirable effect, as digitized classes + +; +; ±; - or --. A whole package of measures can so be screened, optimized and monitored. The model shows how to compose a package of measures with best benefits against least cost and risk, so that one cannot go far wrong. This style of models exists in bits and pieces, the models by Brünig & al (1986), by Koop (1989) and by Boyce (unpubl.) being most complete.

Quantifying forest management?

Demand quantification is a well known problem in long term management (cf. Westoby, 1987). Nobody can say precisely how much of any product or service will be needed even in ten years from now, let alone at which price. In this aspect, forest management is somewhat comparable to a gamble. In the past, some demands were assumed to be fairly stable, e.g. mine props, sleepers or sawnwood. None represent certitudes any longer. Any word processor shows paper survival over several decades to be only a potential, be it a probable one. But what if paper survived at prices determined by added value instead of bulk? Japanese paper artwork is an example.

"Certitudes" are to be reassessed. A contemporary list of long-term valuables would probably include:

* expensive "wild" wood for luxury uses in small quantities (cf. Oldeman, 1982; Oldfield, 1988);
* medicinal drugs (e.g. cancerostatics, antivirals, anticonceptives; Krochmal & Krochmal, 1984);
* special or new forest genotypes of crops (cf. Siemonsma & Wulijarni-Soetjipto, 1989);
* cheap, fast growing bulk wood (genetic diversity to be enhanced by domestication of wild trees);
* animal products, from wildlife to game, honey and hides (Lescure & De Castro, 1990);
* touristical "wild spots" for expensive recreation (scarce "wild nature", Harou, 1981);
* forested strips, belts, hedges, to protect agriculture, also beneficial by their produce.

This list is an instant picture, proving that many more forest compartments and attributes are to be managed in the future than in the past, long-term forest survival always being basic. Is this economic? The answer is yes. Using biodiversity allows new, hard-nosed, high-tech management to emerge. This is conditioned, however, by using the stand as the basic management unit. Coherent compartments like decomposers, epiphytes, regeneration groups (cf. Benabid & Dahmani, 10th World Forestry Congress) or symbiotic pairs do not exist at the scale of a whole landscape (figure 1). Optimizing multivalent forest management for multiple-use forestry does not require average values but distribution figures. These indicate how to harvest or use a maximal and healthy quantity per specific product or service per specific stand. This emphasizes once more the necessity of management close to the living forest. Fragile forests need this most (cf. Blasco, 10th World Forestry Congress).

At whatever scale, forest managers must always calculate their inputs and outputs for the best cost-benefit ratio. Can this be done in the shifty, complex forest model accounting for biodiversity at stand level? Indeed it can, but simplification of the model then rests on new ways of calculation.

Quantifying forest management!

Precision as in bulk output forecasts, i.e. "so many cubic meters of wood expected per year per hectare per tree species in yield class 3B" has lessening priority. Forest statistics, by their very nature, hide specific risks or benefits per stand. They are useful for forest policy rather than management. This dilemma is implicitly but well illustrated by Dubourdieu or Caillez (10^{th} World Forestry Congress).

Precision for multivalent management purposes lies in precise discernment of stand compartments judged to be carriers of precise products or services, and in the assessment of interactions among compartments. These *economical* compartments are more numerous than bulk compartments and are near-identical to *ecological* system compartments. The neat coincidence of ecological and economical concepts is a classical success formula in forestry (Oldeman, 1990).

Increased precision in multiple-compartment forest models, needed to support multivalent forest management, is paid by decreasing precision elsewhere. Calculation of interactions among numerous compartments can not be exact to the joule, the gram, or the millimetre. In open fluctuating interaction forest models this kind of precision inherently can not exist, because the nature of forests excludes it. It is an illusion, certainly superfluous, perhaps sterilizing forest management.

Precision can be reached in another way. Let management measures be chosen from inputs A, B, C, etc. They directly or indirectly influence desirable forest compartment X. Now let measure A influence compartment X positively (+), B very positively (++) and C positively (+), A and C being cheap and B expensive. A and C combined then probably show optimal cost-benefit ratios. Each of many interactions so can be known only as to its general effect (++; +; ±; -; --), but taken together they can be assessed much more precisely. This is clearer when considering tens or hundreds of potential measures, the more the better. The approach is an accumulation of hints leading to solid certitudes.

Compartment types to be chosen and discerned are:

* Desired compartments (for whatever management goal);
* Undesired compartments (damaging for management goals);
* Diagnostic compartments (visible state betraying a forest development);
* Stable compartments (versus fluctuating compartments).

Interactions, inputs or outputs are characterised by their state or force, assessed in five categories from + + to --.

As a result, calculated precision is shifted towards the assessment of the effects of *packages* of measures on well-defined carrier compartments. A well-programmed computer then yields simple and straightforward answers to any management question concerning cost, benefits, and risks of measures. It so advises on optimization of packages of measures destined to boost or suppress certain forest functions while keeping healthy the forest, its owner's purse and the participation of local inhabitants, the latter providing one indispensable input (cf. Dubourdieu, 10^{th} World Forestry Congress).

Models and management plans

Forest policies are political models. They were treated in the 10^{th} World Forestry Congress (cf. position papers 3 and 19). Good policies may seem to oppose their own intentions, often by overly strict application. For instance, many Orchid species might survive if harvested from felled trees and cultivated in managed forest, instead of being left to die because "collecting" is forbidden. Extinction may so be caused by rigid application of the Convention on International Trade of Endangered Species (CITES: cf. Millar, 1990). Fortunately, local inhabitants sometimes save these plants illegaly. Another example of a rigid and self-defeating policy application is the World Heritage case in Northern Queensland (1986-1989). A total ban on logging in all but the whole forested region forfeited the best existing rainforest management existing in the world, a new management system still waiting to be developed. In the meantime, only police can safeguard forest survival in a social environment fraught with extreme and mixed feelings (cf. Hynes, 1989). Restrictive political models, rigidly applied, may sterilize promising potential forest management objectives.

Multivalent forest management will open whole new fields of contribution to human society, as well as forms of transition management (cf. Cappelli, 10^{th} World Forestry Congress). Classical management systems may be derived from multivalent management models, but the inverse is not possible. Models exist today to assess precisely the socio-economic and/or ecological potential

of any set of measures, using system analyses with different bias:

* universal ones (cf. Brünig & al., 1986; Oldeman, 1990);
* site/production/biomass (wood)/nutrients/water (e.g. Hari et al., 1985; Barreto, 1987; Van Grinsven, 1988; Bruijnzeel, 1990);
* forest architecture and structure (e.g. Geldenhuys & al., 1988; Oldeman, 1989);
* geographical information systems (GIS, e.g. Richard, 1989; Delaunay & al., 1990; Forteleoni, Dubourdieu, 10th World Forestry Congress);
* site-and-floristics analyses (e.g. Van Wijngaarden, 1985; Hommel, 1987; De Rouw in prep.).

These examples show various information systems, merging into feed-back models addressing options from general land use through agroforestry, ligniculture and silviculture to wildlife management. They prove that powerful information and knowledge systems are already available locally to expand forest management options vastly and confidently, in support of the "second chance for forest management" of Barthod & al (1990), or the "new alliance between agriculture and forestry" dear to Otto (1990).

For the moment, however, many forest managers still hesitate to enlarge their set of simultaneous objectives. Many options indeed seem weak, uncertain, derisive. For instance, the belief in minor forest products as an adequate base for economic management of certain forests needs a thorough test. Minor products alone may be an insufficient management base, but this does not at all exclude them to yield accessory benefits and help conserve both resources and nature. How much? And how?

Exemples of success and courage exist. The concept of one product-carrying compartment including Dipterocarp trees, their mycorrhizae and their soil, permitted Indonesian forest managers to develop large-scale meranti silviculture and management beyond the scale of any previous management system. Nowadays, several tens of thousands of hectares bear witness of this first success (Smits & al., 1987). A new multivalent monitoring instrument is SILVI-STAR (Koop, 1989), designed to monitor forest dynamics, tree growth, microclimate, regeneration and animal biotopes in Dutch forest nature reserves. Many more natural and manmade processes, patterns and compartments are to be monitored by further versions of SILVI-STAR, also in the humid tropics, where research is ongoing now.

Another multivalent management concept is the Brazilian *"reserva extrativista"* (Lescure & De Castro, 1990). Extraction management might be misconstrued as wood extraction, but it is developed, in our terms, as a genuine form of multivalent forest management. "Extrativismo" came from local inhabitants

and tropical American forest managers adopted it. The inhabitants' profound involvement makes the difference between management being possible or not. Regional Forest Management Centres are established in the Amazon basin to implement these and other intentions (Anonymous, 1989).

Multivalent forest management is realistic. Tools are developing fast in the field of knowledge systems, operational tools still lag behind. Forest managers locally start to book real success by practising multivalent management along the above lines, under different names.

Perspectives in multivalent forest management

Change worries people and frightens forest managers because a tiny error may lead to long, costly consequences. Change of management hence often occurs where problems are new and severe, and foresters young. Effects of European environmental pollution are so stealthy that many forest managers continue in the usual way until spectacular dieback occurs in their own forest. In semi-arid regions, renewed, social, forest management was born because people started to die for lack of fuelwood. In tropical rain forest countries alarming deforestation will let young, creative foresters rise and renew.

Successfull dispersal of the seeds of innovation in forest management requires among others :

* Priority to forest estates in great danger or financially independent, activating political and economic lobbies respectively for support;
* new high-investment tools and knowledge systems, unusual for classical forestry, normal in today's business and industry;
* high-investment scientific education of "boosted professional forest managers" of an educational level like that of medical doctors;
* high creativity for flexible management planning, including the neglected tactical and operational levels, and to combate bureaucracy.
* high-investment cheap, precise, clever monitoring methods to keep multivalent forest management on track or change course, as required;
* a clear visual image of each target forest, comprehensible to all, to present to decision makers, bankers, local populations and experts.
* young foresters with unusual responsibilities, e.g. the direction of management in forest estates, both success and fiasco being good teachers.

The above refers to tools, people and forests, with whom this paper began. Their harmonisation in realistic, multivalent forest management is clearly feasible.

Conclusion: the position of forest management

Forest management is now given second chance (Barthod & al., 1990). Its first chance was met successfully and basic forestry insights still are used worldwide. However, university sociologists, economists, geographers or biologists, and foresters from countries without clearcut forestry traditions now develop concepts and means to manage forests in the next century (cf. Karmouni, 10^{th} World Forestry Congress). Indeed, forest management needs good, new brains and ideas. Second chance dilemmas can only be solved by solving paradoxes behind the classical paradox above. One is that forest managers manage self-managing forests. This makes harmonisation between forest nature and management plans hard, sometimes illusory. The need for advanced forest science and the classical paradox both are imposed by forest nature. Another paradox is headway's deadlock. The larger one's headway, the more immobile one becomes. This pertains to human nature. Headway's deadlock often is unlocked by the young and strong with other strategies, leaving former champions bewildered. Let us rather find good, young innovative people, not to compete but to cooperate.

Recent recommendations (e.g. Hadley & Schreckenberg, 1989; Oldeman & Turenne, 1990) show ways to position forest management constructively in its second-chance situation. This requires rethinking. The second chance differs completely from the first, as shown above. Forest management has no future, for instance, unless Westoby's bifurcation between economical and social forestry (1987) is bridged. It fathers two, all-but mutually exclusive forest management styles, risking to be enemies. The existing knowledge and information systems make such schisms unacceptable. Humans and "nature" are inseparable. An encompassing management model locally exists already, based on *hierarchical systems modelling, redefined carrier compartments, effect and yield assessment by accumulation of hints which also show and prevent proliferation of aims, expression of management measures as model inputs including social factors*, and *precedence for forest survival in the appropriate land use units*.

Human society at large expects nothing less than multivalent forest management to honour its multiple mosaic of ambitions, from strict nature conservation to fuelwood or hardwood furniture. It is a general complaint that even the best forest policies of the last decades failed in their implementation. If forest management is not renewed by means of heavy investments in information and knowledge systems, educating people, well-conceived research and strong international cooperation, only resignation is left. The destiny of forestry would then be out of foresters' hands.

If it were only out of respect for that great mystery we claim to manage, the forest, les us together create ways of *multivalent forest management* which are worthy of those great vegetations and leave humans free to tackle the essential challenges, because so much routine is taken over by tools.

Position paper presented at the Xth World Forestry Congress, Paris, September 1991.

Acknowledgements

I gratefully acknowledge the help provided in discussions by many, but particularly by Ir. J. Kuper, and by timely provided documentation from Rio Doce International s.a. (Brussels), as well as the efficient distribution of papers, suggestions and instructions to authors by the Associate Secretary General of the Xth World Forestry Congress, Mr. M. Khouzami.

References

Anonymous, 1989. **Forest management centres in the eastern Amazon: reversal of the environmental degradation process.** 36 p. Available in Brussels, Rio Doce International S.A.

Barreto, L.S. , 1987. **Um novo método para elaboracão de tabelas de producão: aplicacão al pinhal.** Lisboa, Serv Nacion Parques Reservas Conserv Naturaleza, 52 p.

Barthod, C., & al. (eds), 1990. **L'homme et sa forêt.** Paris/Nancy, Plaq Comm 25 ann ENGREF, 64 p.

Boyce, S.G., 1978. **Theory for new directions in forest management.** USDA For Serv Res Paper 193: 19 p. , Asheville, NC, SE For Exp Station.

Bruijnzeel, L.A., 1990. **Hydrology of moist tropical forests and effects of conversion: a state of knowledge review.** Paris, UNESCO/ Amsterdam, Free University, 224 p.

Brünig, E.F., & al., 1986. **Ecologic-socioeconomic system analysis and simulation.** Hamburg, Inst World Forestry and Ecology, 388 p.

Delaunay, D., Godard, H.R., Maximy, R.de & Souris, M., 1990. **Les systèmes d'information géographique.** ORSTOM Actualités 30: 2-6.

Ducamp, R., 1927. **Incendies des boisements méridionaux: la sécheresse et le vent ne sont que causes secondes.** Bull Silva Mediterranea (Firenze), 4: 37-39.

Geldenhuys, C.J., Knight, R.S., Russell, S. & Jarman, M.L. (eds), 1988. **Dictionary of forest structural terminology.** South Afr Nat Sci Progr Report 147: 70 p.

Goor, C.P. van, 1985. **The impact of tree species on soil productivity.** Neth J Agric Sci, 33: 133-140.

Graaf, N.R.de, 1986. **A silvicultural system for natural regeneration of tropical rain forest in Suriname.** Wageningen, PUDOC, 250 p.

Grinsven, J.J.M.van, 1988. **Impact of acid atmospheric deposition on soils: quantification of chemical and hydrologic processes.** Wageningen, Agric Univ, Dr. thesis, 215 p.

Hadley, M. & Schreckenberg, K., 1989. **Contributing to sustained resource use in the humid and sub-humid tropics.** Paris, Unesco, MAB-Digest 3: 59 p.

Hari, P. & al., 1985. **Structure, radiation and photosynthetic production in coniferous stands.** Helsinki Univ., Dept Silviculture, Res Notes 54: 233 p.

Harou, P.A., 1981. **The economics of gene bank-wilderness areas.** Proc. 17 World Congr IUFRO, Kyoto, Div.1 - S1.01.00 (also in MAB Mitt Deutsches Nationalkomitee MAB, Bonn, 1982 repr. 1983: 24-34).

Hladik, C.M., Bahuchet, S. & Garine, I. de, 1989. **Se nourrir en forêt équatoriale.** Paris, UNESCO-MAB/CNRS, 96 p.

Hoekman, D.H., 1990. **Radar remote sensing data for applications in forestry.** Wageningen, Diss. AUW-Land Surv & Rem Sensing, 277 p.

Hommel, P.W.F.M., 1987. **Landscape ecology of Ujung Kulon (West Java, Indonesia).** Wageningen, Agr Univ, Dr thesis, 206 p. + app + map.
Hynes, R.A., 1989, Summary Report. Bisbane, Queensland Dept Env and Conserv, 320 p. mim.

Koop, H., 1989. **Forest dynamics: SILVI-STAR a comprehensive monitoring system.** Heidelberg, Springer.

Krochmal, A., and Krochmal, C., 1974. **The complete illustrated book of dyes from natural sources.** New York, Doubleday & Cy, 272 p.

Krochmal, A., and Krochmal, C., 1982. **Uncultivated nuts of the United States.** USDA For Service, Agr Inf Bull, 450: 89 p.

Krochmal, A., and Krochmal, C., 1984 (2nd ed.). **A field guide to medicinal plants.** New York, Times Books, 274 p.

Lescure, J.P., & De Castro, A., 1990. **L'extractivisme en Amazonie Centrale. Aperçu des aspects économiques et botaniques.** Doc presented to MAB-Unesco Meeting Cayenne, March 1990, 42 p.

Millar, A.N., 1990. **Conservation and preservation of our native species.** Amer Orchid Soc Bull, 59, 1: 5-12.

Oldeman, R.A.A. (ed.), 1982. **Tropical hardwood utilization: practice and prospects.** The Hague, Nijhoff/Junk Publ, 584.

Oldeman, R.A.A., 1985. **Choix d'espèces pour une forêt saine et stable.** Proc. IUFRO Div 1, Strasbourg. Les Coll de l'INRA 30: 185-201.

Oldeman, R.A.A., 1989. **Forest ecosystems: patterns, limits, systems.** In Schmidt & al. (eds), Unification of forest pattern research: 7-18. Wageningen, PUDOC, Proc. Workshop FERN/ESF Strasbourg apr. 1989.

Oldeman, R.A.A., 1990. **Forests: elements of silvology.** Heidelberg, Springer, 624 p.

Oldeman, R.A.A., 1990b. **Niederlande: industriëll-städtische Naturwälder?** Allg Forst Z 45: 741-742.

Oldeman, R.A.A. (in press). **Bosarchitectuur en diversiteit: wat is er gemengd in gemengde bossen?** (in Dutch, Forest architecture and diversity: what is mixed in mixed forests?). Bosecosystemen 7.

Oldeman, R.A.A. & Turenne, J.-F., 1990. **Rapport général, atelier sur l'aménagement et la conservation de l'écosystème forestier tropical humide.** Cayenne, MAB-UNESCO/MAB-France/IUFRO/ FAO, 6 p.

Oldfield, S., 1988. **Rare tropical timbers.** Gland, Cambridge, IUCN, 37 p.

Otto, W.M., 1990. **Forestry and agriculture: an alliance for the future.** Paper ASEAN Seminar Manag Trop For for Sust Devel, Jakarta, Jan 1990, 22 p.

Richard, J.-F., 1989. **Le paysage: un nouveau langage pour l'étude des milieux tropicaux.** Paris, ORSTOM, Coll Init - Doc Techn 72: 210 p + method booklet.

Rouw, A. de, in prep. **Rice, weeds and shifting cultivation in a rain forest (prov.title).** Wageningen Agric Univ, Dr thesis.

Siemonsma, J.S., & Wulijarni-Soetipto, N. (eds), 1989. **Plant Resources of South-East Asia,** Proc 1st PROSEA Intern Symp Jakarta. Wageningen, PUDOC, 337 p.

Smits, W.T.M, Oldeman, R.A.A. & Limonard, T., 1987. **Mycorrhizae and Dipterocarpaceae in East Kalimantan Rain Forest.** The Hague, WOTRO-report 1986: 67-78.

Trepp, W., 1989. **Das Plenterprizip als allgemein gültige Waldpflegetechnik nach Schriften von Kreisoberförster Walter Ammon.** Schweiz Z Forstwesen, 140, 1: 1-22; 93-117; 233-238.

Westoby, J., 1987. **The purpose of forests.** London, Blackwell, 343 p.

Wijngaarden, W. van, 1985. **Elephants-trees-grass-grazers: relationships between climate, soils, vegetation and large herbivores in a semi-arid savanna ecosystem (Tsavo,Kenya).** ITC publ 4: 159p + maps.

Forestry on Santo Antão, Cape Verde Islands.

By: Guideon van Melle

Introduction

After a decade of technical aid to the Upper Eastern Catchment area of the island of Santo Antão, the most westerly and second largest island of the archipelago of the Republic of Cape Verde, the Dutch government has decided to leave the exploitation and management in the hands of the Forest Service of Cape Verde and to continue with financial help only.

This short article wishes to elaborate on the impact of what has been done during the period of Dutch-Cape Verdian collaboration in the field of forestry and related rural activities on the «Planalto Leste» highlands.

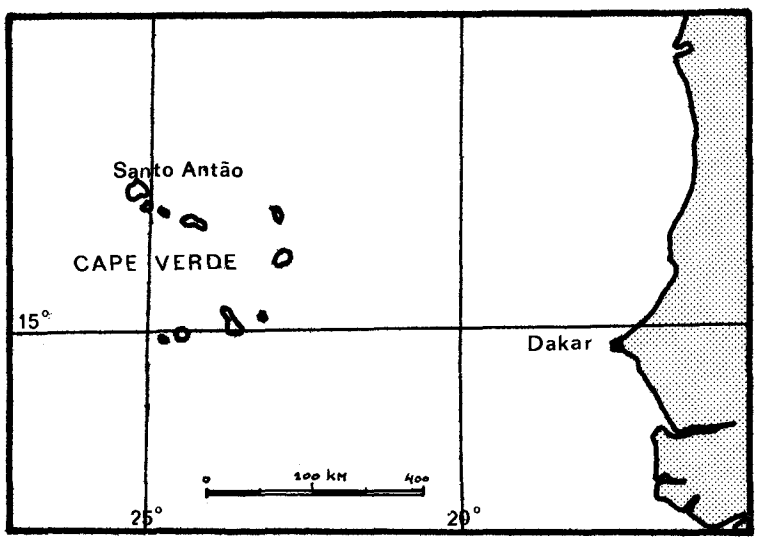


Figure 1. The location of the archipelago of the Republic of Cape Verde.

Background information

The island Santo Antão is of relative young volcanic origin, built up out of mainly pyroclastic and basaltic material, and located east of the mid-atlantic ridge, 500 nautical miles West of Cape Vert, Senegal. It consists of at least three huge extinct volcanoes, more or less welded together into a rectangular island of 20 by 40 km with an altitude of 1,900 m.a.s.l. (see figure 1).

Consolidated volcanic ashes in the form of tuffs, lapillis, bombs with ash, crossed by fissures filled with basalt lay on top of acid volcanic rock. This highly erodible material resulted into an impressive denudational[1] landscape with very steep mountains, with high cliffs and deep valleys and gorges. Natural dynamics have always been high due to the strong northwestern trade winds and high solar radiation. No evidence can be given of a formerly existence of natural forests, but certainly a dense shrub vegetation existed on the slopes and high plains of the island, while in the less exposed gorges and valleys woodlots existed of native fig trees and tamarisks.

Since the discovery of the Cape Verde Islands by the Portuguese in midst fifteenth century it took at least a century before settlers came to Santo Antão, but almost certainly they populated the island with goats, asses and game birds, as they did with the others islands of the archipelago. The goats above all must have caused immense damage to the natural vegetation, setting in motion an accelerated erosion of the topsoil on the very steep hill sides. Later, as a result of the explosive growth of the population in the twentieth century, the impact of rainfed agriculture on the slopes was equally damaging.

In the early 1950's the Portuguese acknowledged the problems caused by tilling and overgrazing of the unstable volcanic soils and started with a plan to protect the northeastern upper catchments against erosion. The main afforestation activities on the higher altitudes started in 1954 (see table 2). Many tree species were tested, many from European subtropical origin as well as from the Portuguese colonies, Brazil and Australia.

In the fifties vast areas were planted, but the trees died off during the drought in the sixties, while also a lot of stands were cut during the late seventies, when there was no control by the government after the independence in 1975.

Due to the site factors, a number of forest types can nowadays be distinguished: high, closed cover Coniferous forest; closed medium-high Acacia forest and open low Acacia forest. The first two exist on the wetter northeastern slopes, the latter on the dry interior plains. According to the type of forest, three forest-management-units were devised, with the characteristics as shown in table 1 (see also figure 2 and 3).

The actual situation is the result of natural selection of the planted exotics, i.e. their quality to survive the sometimes prolonged droughts and capability to regenerate naturally, and the extent of protection against overgrazing and the rate of replanting. Succession towards the actual situation in vegetation

---

1 Formed by erosive action of water or air.

Table 1. Forest types, coherent management and climatic zones.

Type of Forest vegetation	Type of management	Climatic zone according to Hiemstra (1986)
Coniferous forest	Wood production, firewood collecting, grass production	Humid zone, with >600 mm of rain, >1000 mm mist-interception
Acacia forest	Poles, grass and firewood	Sub-humid zone, 300-600 mm rain, 300-1000mm mist-interception
Acacia open shrub land	Firewood, little grass	Semi-arid zone, <300 mm rain, <600 mm mist-interception
Natural shrubland, very open Acacia shrubland	Protection	Semi-arid zone, <300 mm rain, no mist-interception

composition is mainly the result of a favourable micro-climate created by the forest-stands itself. One can simply say that forests which were able to maintain a closed canopy were able to make more efficient use of the precipitation and fog or mist.

Impact on the water balance

Although the forests were planted to improve protection of the topsoil and diminish surface run-off, the real impact on the total water balance is not known. In regions with an already low total amount of precipitation the quantity of water used by the vegetation cover can take so much that not much is left for sub-soil storage, to be slowly released by springs. Afforestation in countries with a semi-arid climate has demonstrated to diminish the total of water available for agriculture. In Israel e.g. hill top forest were changed into grass land, thus saving much more water for cultivation of crops in the valleys.

Although no proof can be given, the fact remains that a lot of springs dried out and formerly permanent streams nowadays only have flashfloods after heavy rainfall in the forest areas of Pico da Cruz and Pêro Dias. This of course can be the result of the overall diminishing annual rainfall in West Africa, but the influence of the forest vegetation instead of the former extensive grasslands and tuber crops is at the least suspect. Apart from this water balance problem, the protection of the top soil is of course greatly improved, which can be proven by the almost lack of surface run-off during the rainy season.

Table 2. Superficies in hectares of afforested areas per year and forest area, today still under forest cover.

Year of planting	Moroços	Lagoa	Cruz J. Herodes	Água das Caldeiras	Corda	Pico da Cruz	Total	Cumulative
1942						2.4	2.4	2.4
1954						69.8	69.8	72.2
1955						31.6	31.6	103.8
1956						70.8	70.8	174.6
1957				10.0		14.9	24.9	199.5
1958-59				16.0		70.3	86.3	285.8
1961-62			4.7	50.2			54.9	340.7
1963-64				13.0			13.0	353.7
1965				23.2			23.2	376.9
1966				15.4			15.4	392.3
1967				12.5			12.5	404.8
1968-69						25.0	25.0	429.8
1970-71				5.6			5.6	435.4
1979-80			20.1	35.2			55.3	490.7
1981			27.2	13.7		10.1	51.0	541.7
1982			27.3				27.3	569.0
1983	8.0		24.0	3.0			35.0	604.0
1984		70.6	80.7	7.8	4.0		163.1	767.1
1985	16.2	75.0	70.1	14.3			175.6	942.7
1986	39.9		10.7	1.7		6.9	59.2	1,001.9
1987	89.7	8.0	12.3	5.4		0.8	116.2	1,118.1
1988	121.7	86.5	89.6	2.0		54.1	353.9	1,472.0
1989	52.2	49.1			1.0	15.8	118.1	1,590.1
1990	unknown	unknown	unknown	unknown	unknown	unknown	0.0	1,590.1
Total	327.7	289.2	366.7	229.0	5.0	372.5	1,590.1	

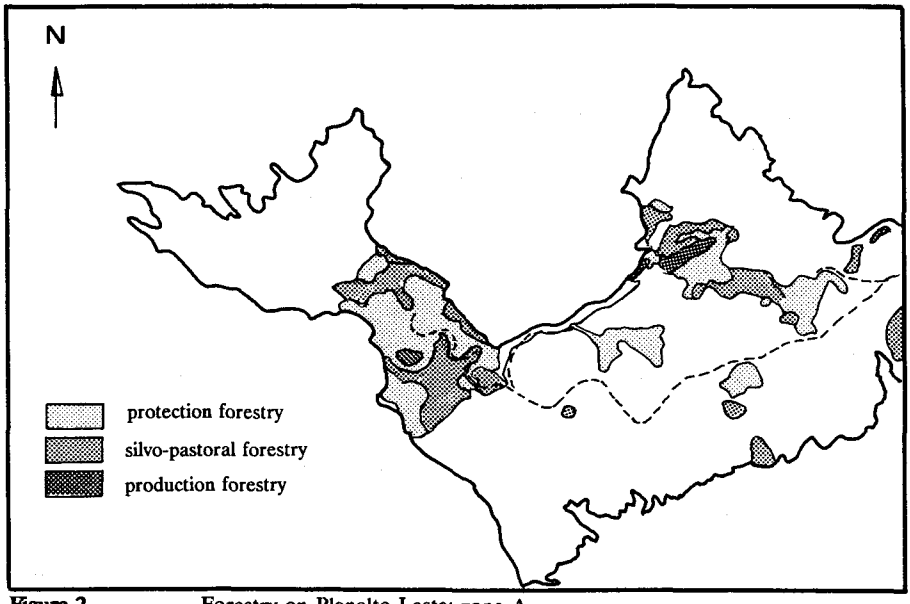


Figure 2. Forestry on Planalto Leste: zone A.

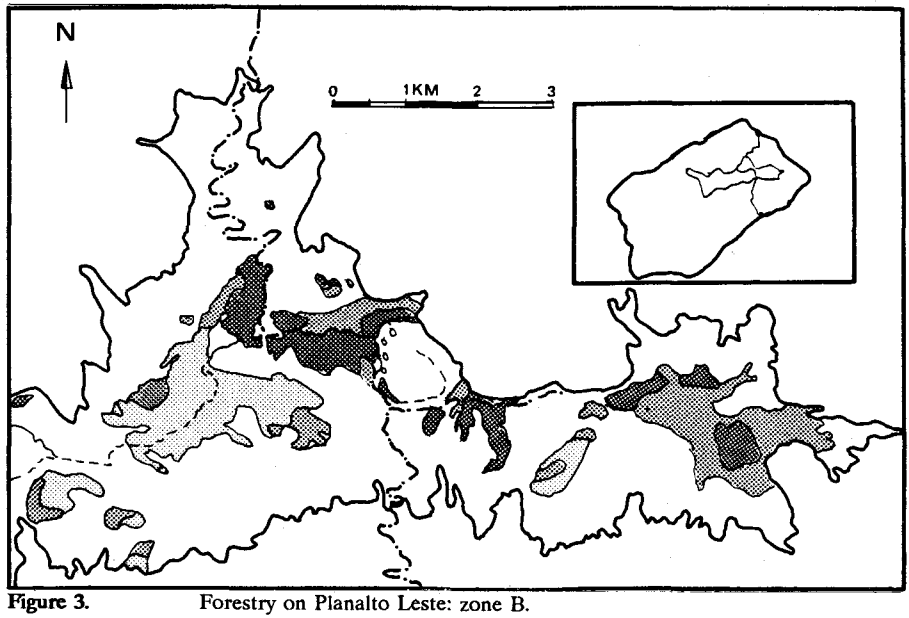


Figure 3. Forestry on Planalto Leste: zone B.

Social impact

The population on Planalto Leste has been living permanently in this area since the beginning of the project. Traditionally only during the rainy season people lived there to cultivate crops of potato, sweet potato, beans and maize on the slopes, with deep open top-soil, and the flat lands of Lagoa. On the rangelands they herded their flocks of goats and some cattle in a season migratory system, like the system existing in the European mountain areas. The promise of year-round work in the labour gangs, however, made permanent settlement worthwhile, especially because the project helped with the building of watertanks, houses, schools, stores and corrals. After the construction of permanent accessible roads little cement-block houses appeared alongside them. Most of the inhabitants came from denser populated areas, where arable land was scarce. The project became their main source of income, the keeping of goats for milk and cheese production their secondary source. Mostly they have a small lot were they grow maize and beans, and the wealthier have lots suitable for the cultivation of tubers. Any cultivation though is highly risky. The people speculate on the weather and invest as much as 4 to 5 monthly incomes in buying seed, tilling, planting and weeding. If they can harvest they can earn up to 200% of their investment, if they can't, they loose almost everything. Bank loans are not possible, therefore they have to borrow form private persons (mostly shopkeepers or landowners) and pay up to 90% interest. They can avoid this though by borrowing from family members working overseas or from the project if they are staff-members.

It can be concluded that the presence of the project did have a beneficial impact in the short term, but in the long term did actually worsen the situation by creating an infrastructure based on totally artificial conditions. Most labour gang works have stopped because they were engaged in repair jobs and infrastructural works, which implied that no more cash could be generated, thus cutting transportation of food and water. Also the permanent presence of people created an unhealthy situation in terms of hygiene, pressure on the surrounding vegetation caused by man's need for fuel and food for their beasts, and the absence of adequate schools for children who weren't able to walk the large distances to older settlements and therefore stayed home illegally without getting any education.

Consequently, during the last phase of the project, more emphasis has been given to a more permanent solution, concerning landuse and the related position of the resident population. It has been acknowledged that the agricultural sector could only give work to a very limited number of families.

Also in concordance with the proposed landuse of the Planalto Leste area, more importance was given to protection and conservation, thus restricting the impact of man and cattle to the more favourable sites.

As still most of the workers come from outside the Planalto Leste area, no major changes can be expected in resettling families. Just future expectations of a lot of people have to be adjusted. People already living in the Planalto Leste area can almost all be involved in the future maintenance activities of the forestry service.

Impact on women

As everywhere in rural communities with a lot of emigration problems of the male population, the women often play a very important role in the household economy. Their social status might be ignored outside the family by the male dominant society, in which an almost matriarchal social system exists and major decisions concerning household economy, welfare and upbringing are made by the mother or grandmother. In most cases a woman is head of the family, with the father working elsewhere or having cut the ties with the mother of his children. In some families the grandmother is the most important person who takes care of the children of her daughter or son who is working abroad or on other islands.

Cash money generating on Planalto Leste is done by working in the labour gangs, where, according to the law, 2 persons per family may sign up. This will give them a daily salary of about 300 Escudos[2] per day per family. Since a year the salaries of male and female are equal. Women are not considered to have specialized work in labour gangs, but are contracted to distribute water or carry material like building stones, sand, cement, fuelwood and poles. They do very heavy work on the steep slopes, but the men say they are accustomed to it because they always carry water.

Apart from this kind of work the family raises goats and chickens and sell the milk and eggs. If overproduction of milk occurs they make cheese. Most of the people living here were former day-labourers for land owners and naturally they continue this tradition, maintaining serf-landlord-like godfatherly relations, tilling the soil for sometimes long gone proprietors, who pay them partly in cash, partly in kind.

---

2 Actual change rate Cape Verde Escudo= ± US$ 0.014

Women are contracted to carry material like building stones.
Photo: Matthijs de Vreede

What has been the impact of the project? Most of all the replacement of employer, since the drought diminished work for landowners in the agricultural sector, secondly more value to work done by females by ultimately paying them the same salary as males. In some special cases the project gave a bonus in kind of 10% of the carried wood to women, in order to promote transportation of fuel wood in periods of shortage of carriers in relation to cutters. In that way the project got rid of the growing stock of cut timber and at the same time tried to promote an understanding of business and sense of self-esteem.

The problem of energy

For domestic purposes, traditionally the population of Santo Antão used vegetative material to cook their food or heat their houses. They always used what grew in the immediate vicinity of their homes and it seldom was wood. Mostly they used the dried halms of the sugarcane, remnants of maize and sub-woody herbs and shrubs, depending on the place they were living. Unfortunately in the case of the latter they did not use proper cutting tools, but just uprooted the whole plant, thus destroying the structure of the topsoil and inhibiting the regrowth of perennial plants.

The project has always been doing its best to teach the population how to cut grass with sickles or scythes (provided by the project) and branches with knives or pruning saws. These tools are relatively costly though and therefore a forest guard was made responsible for lending out proper tools to the people in a certain district.

However, the issue of fuelwood has been complicated by more modern devises as gas stoves. Camping gas is provided by a.o. Shell for very reasonable prices (subsidized) and the cooking equipment can be bought cheaply, thus providing a very good alternative for families who have access to cash.

The Forest Service is producing fuel wood and selling it to the population. The fuel wood is sold in two quality classes: primary class, with diameters above 10 cm for 5 Escudos per kg and secondary class with diameter from 2 – 10 cm for 3,5 Escudos per kg. Branches with a smaller diameter, as well as cones are free to be gathered by the local population.

The fuelwood is sold mainly in three central places within the forest, directly to the population. As transportation is a big problem, and therefore costly, in practise the poorer rural population outside the forest area can't afford to buy fuelwood, and is also unable to walk great distances to the forest in order to gather free fuelwood. As the Forest Service is obliged by law to pay 15% of the produce to the original landowners on which lands the forests grow, and because transportation is difficult and very expensive, up to now no solution of this marketing problem has been found. The project, however, has been stimulating more and more the homestead planting of multiple-use trees and for that purpose seedlings are freely distributed among the population.

For the people in the settlement who have access to shops and are more involved in a cash economy, gas is the most used commodity. It has been calculated that gas is three times cheaper than fuelwood and of course a lot cleaner. One of the most common diseases in rural areas is chronic

bronchitis, probably caused by excessive and prolonged exposure to smoke from kitchen fires. Distribution is very well organized and almost all shops have in stock 2,5 kg gas tanks. Gas costs about 55 Esc/kg, therefore it is within the budget range of most families. Fuelwood, however, is considered a commodity with an added value; i.e. for the national dish «Cachupa» the people prefer wood as fuel because of the scent. Also bakeries and restaurants highly value the local Acacia's as source of fuel and they are the main buyers of the wood sold in the forests.

Ecological impacts

As now has been understood by the Cape Verde Government, the landscape of most of the Island is very vulnerable to erosion. In the latest Forest Law, published on the 14th of September 1989, great emphasis is given to the protection of the environment. Official status has been given to the National Forest Service (NFS) and a Forestry Fund has been established, in which all benefits of the forests have to be deposited. The Fund can then locally be used for maintenance and expansion of the forest area. This is a big improvement on the former situation when almost all profits were diverted to almost anything but reforestation and afforestation. Within the middle and long term the NFS has to make a strategic and management plan, according to the land use classification maps, which proclaims terrains susceptible to erosion National Forest Reserves. Owners of such terrains are invited to lease their land to the NFS and asked to respond within a fixed time. If they do not reply the terrain will be considered leased to the NFS.

The Planalto Leste project anticipated this law long beforehand and helped to write an appendix to the then existing forest law: the «Portaria», or Ministerial decision nº 86 of 1985. In the «Portaria» a detailed description of the land use of Planalto Leste and the time-planning for the conversion of the actual land use was given.

During the last three years a significant modification of land protection has been proposed and implemented on an experimental scale. Formerly the most common practise was to construct parallel terraces or crescent shaped planting holes on the slopes, unregarded the depth of the top soil and condition of the vegetation. This often resulted in such a disturbance of the soil structure that the negative effects more than undid the positive. Also, in the real arid parts of Planalto Leste, the mortality of planted seedlings is extremely high (60-90%) and planting very costly because of absence of roads in the very rugged terrain.

As no proof could be given of an improvement of the vegetation cover[3] as result of the planting of exotics and it was suspected that it was rather the presence of forest-guards that had an overall beneficial effect on the recovery of the vegetation, it was proposed to minimize the construction of terraces and planting of exotics in favour of just protecting the natural vegetation by keeping the goats and people away.

The future of Planalto Leste

Why has the Dutch government decided to stop technical aid? Mainly because it is recognized that at present the Cape Verde Staff has grown large enough to man the various regional offices. They are slowly coming back from overseas university courses with at least a Bachelor degree. Also the efforts by the project to familiarize the population with the principles of soil conservation and sustainable agricultural production are bearing fruits and one can say that almost everybody on Planalto Leste knows how to harvest grasses, how to cut wood, how to plant seedlings, how to dig terraces and crescent shaped planting holes. Also one knows the role of trees and other perennial plants in the protection of the top soil against water and wind erosion. Problems still exist in the field of land tenure, absentee landowners, law enforcement etc., issues to be solved by the Cape Verde Government rather than by expatriate technicians.

Financial aid will continue during at least the next 5 years, but will be gradually diminished in order to stimulate the process of privatization of all maintenance and exploitation activities. Above all it is the local population, living within the forest periphery which is to reap the fruits from the land. With the proper control by the NFS they should be able as a community to maintain and even expand the forests on Planalto Leste, and earn a modest living by doing so.

Reference

Hiemstra, F. (1986). **Vegetation and range-land of Planalto Leste area (Santo Antão, Rep. de Cabo Verde).** Cour. Forsch. Inst. Senckenberg, Vol. 81, pages 165-177. Frankfurt a/M. BRD.

---

3 Trees are planted very widely apart in these arid zones, so no closed canopy can be expected in the mature plantations. This means that also the creation of a less extreme micro-climate is not to be expected.

Short News.

This column of the BOS NiEuWSLETTER is compiled to give short information of your interest. You are kindly invited to send such information, like short newspaper articles, notes about new books, meetings or symposia or courses.

Meetings

1992 January

Integrating Forest Information over Space and Time.
Canberra, ACT, Australia, 13 - 17 January.
Contact: Dr. Brian Turner or Dr. Geoff Wood, Department of Forestry, Australian National University, GPO Box 4, Canberra, ACT 2601, Australia. Tel.: 61-62/492579, Telex: AA61670 thefac, Fax: 61-62/490746.

Remote Sensing and World Forest Monitoring.
Ambassador City Jomtien, Pattaya, Thailand, 13 - 17 January.
Contact: Dr. Songkram Thammincha, Forestry Faculty, Kasetsart University, Bangkok 10903, Thailand or Dr. Risto Paivinen, University of Joensuu, P.O. Box 111, SF-80101 Joensuu, Finland. Fax: 358-73-1213590.

Workshop on Sustainable Effective Management Systems for Community Forestry.
Bangkok, Thailand, 15 - 17 January.
Contact: Dr. Somsak Sukwong, director, RECOFTC, Kasetsart University, Bangkok 10900, Thailand.

1992 January/ February

IV World Congress on Protected Areas.
Caracas, Venezuela, January/February 1992.
Contact: IUCN-The World Conservation Union, Ave. du Mont Blanc, CH-1196, Gland, Switzerland. Tel.: 22-649-114, Telex: 22-419-605 iucn ch, Fax: 22-642-926.

1992 February

International Erosion Control Association 23rd Annual Conference.
Reno, Nevada, 18 - 21 February.
Contact: David Williams, WEST Consultants, 2111 Palomar

Road #180, Carlsbad, CA 92009 USA. Tel.: (619) 431-8113, Fax: (619) 431-8220.

1992 March

International Scientific Seminar: Results of Earth Observation through Space Remote Sensing.
Havana, Cuba, 4 - 6 March.
Contact: Comision Nacional Cubana para la Exploracion del Espacio Ultraterrestre y su Utilizacion con Fines Pacificos, Academia de Ciencias de Cuba, La Habana 2, Cuba. Tel.: 53-7-626671, Telex: 511648 cosmos cu.

International Conference on Development of New Crops.
Jerusalem, Israel, 8 - 12 March.
Contact: Conference Secretariat, ORTRA Ltd., P.O. Box 50432, Tel Aviv 61500, Israel. Fax: 972-3-660952, Tel.: 972-3-664825.

Forestry and the Environment: Economic Perspectives.
Edmonton, Alberta, 9 - 12 March.
Contact: Dr. Bill White, Forestry Canada, Northern Forestry Centre, 5320 122 Street, Edmonton, Alberta T6H 3S5, Canada. Tel.: 403-435-7359, Fax: 403-435-7315.

Catchments of Green.
Adelaide, South Australia, 23 - 27 March.
Contact: 'Catchments of Green', Greening Australia, P.O. Box 232, Kensington Park, South Australia 5068. Fax: 08/332-8810.

Inter-Divisional Symposium on Non-Wood Forest Products.
Taipei, China, March 1992.
Contact: H.H. Chung, Division of Forest Management, Taiwan Forestry Research Institute, 53 Nan-Hai Road, Taipei 10728, China. Tel.: 886-2-3110061, Fax: 886-2-314-2234.

1992 April

FIME 92 (Forest Machinery).
Myrtleford, Victoria, Australia, 5 - 9 April.
Contact: C.A. Leembke, 203 Castereagh Street, Sydney, New South Wales, Australia.

Global Warming - A Call for International Coordination: Third International Conference on the Scientific and Policy Issues Facing All Governments.
Chicago, IL, USA, 6 - 9 April.
Contact: Global Warming International Conference, P.O. Box 5275, Woodridge, IL 60517-0275, USA. Tel.: (708) 910-1551, Fax: (708) 910-1561.

Twenty-sixth International Particleboard/composite Materials Symposium.
Pullman, Washington, 7 - 9 April.
Contact: T.M. Maloney, Director Wood Materials & Engineering Laboratory, College of Engineering and Architecture, Washington State University, Pullman, WA 99164-1806 USA. Tel.: (509) 335-2262, Telex: 5107741099 COLL AG PMAN, Fax: (509) 335-7237.

Second International Food Legume Research Conference.
Cairo, Egypt, 12 - 16 April.
Contact: A.E. Slinkard, IFLRC-II Chair, Crop Dev. Centre, University Saskatchewan, Saskatoon, Sask. S7N OWO, Canada. Fax: (306)966-5015.

1992 April/ May

International Conference on Forest Vegetation Management: Ecology, Practice and Policy.
Auburn, Alabama, USA, 27 April - 1 May.
Contact: Dr. Dean H. Gjerstad, School of Forestry, 108 M White Smith Hall, Auburn University, Alabama 36849-5418, USA. Tel.: 205/844-1020, Fax: 205/844-1084.

First World Congress on Tourism and the Environment.
Belmopan, Belize, 27 April - 1 May.
Contact: First World Congress on Tourism and the Environment, 15 Penn Plaza, 415 7th Avenue, New York, NY 10012 USA or Ministry of Tourism & Environment, 19 Mayflower Street, Belmopan, Belize, Central America. Tel.: 501-08-22542/22816, Fax: 501-08-22862.

International Agroforestry Symposium.
Nanjing, China, 28 April - 5 May.
Contact: Li Rongshen, Secretariat IAFS, Nanjing Forestry University, Nanjing 210037, China. Tel.: (025) 501389, Fax: (025) 502936.

Forest Sector, Trade and Environmental Impact Models: Theory and Applications.
Seattle, Washington, 30 April - 1 May.
Contact: Dr. John Perez-Garcia, CINTRAFOR, College of Forest Resources AR-10, University of Washington, Seattle, WA 98195, USA. Tel.: 206-685-2315, Fax: 206-543-3254.

1992 May

Marketing Forest Products of the Pacific Rim.
Santiago, Chile, 6 - 7 May.
Contact: Jay Gruenfeld Associates Inc., P.O. Box 66836, Seattle, WA 98166. Tel.: (206) 242-3551, Fax: (206) 242-6175.

Second International Symposium on Environmental Studies of Tropical Rainforests - FOREST'92, and the First International Seminar on the Environmental Problems of Large Urban Centres - ECO-URBS'92.
Rio de Janeiro, Brazil, 24 - 29 May.
Contact: FOREST'92-ECO-URBS'92, Organizing Committee, P.O. Box 3591, 20001-Rio de Janeiro-RJ-Brazil. Telex: (5521) 37984-FBCN-BR, Tel.: (5521) 2206913 and 2665008, Fax: (5521) 2261345.

1992 June

World Conference on Environment and Development.
Rio de Janeiro, Brazil, 1 - 12 June.
Contact: Secretariat, United Nations Conference on Environment and Development (UNCED), Case postale 80, CH-1231 Conches, Geneva, Switzerland. Tel.: 22-789-1311, Fax: 22-789-3536.

Third International Legume Conference.
Kew, UK, 12 - 16 June.
Contact: R.M. Polhill, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, UK.

Systematics and Conservation Evaluation.
London, UK, 17 - 19 June.
Contact: Peter Forey, The Natural History Museum, Cromwell Road, London SW7 5BD, UK. Tel.: 71/938-9123.

1992 June/ July

Protection of Habitat against Floods, Debris Flows and Avalanches.
Berne, Switzerland, 29 June - 3 July.

Contact: Interpraevent, Federal Office for Water Mgmt., Postfach, CH-3001, Berne, Switzerland.

1992 July

Recent Advancements of Forest Entomology in Northeast Asia.
Beijing, China, early July.
Contact: K. Kanamitsu, Nagoya University, School of Agriculture, Chikusa, Nagoya 464, Japan. Tel.: 81-52-781 5111 ext. 6861, Fax: 81-52-781 4447, Telex: 4422120 anunag j.

International Symposium on Erosion, Debris Flow and Environment in Mountain Regions.
Chengdu, China, 5 - 9 July.
Contact: Dr. Shang Xiangcaho, Institute of Mountain Disasters & Environment, Chinese Academy of Sciences, Chengdu, P.O.Box 417, Sichuan 610015, China. Tel.: 581260-562 or 583433-562, Telex: 600321 SICD CN, Fax: 582846.

International Symposium: Biodiversity in Managed Landscapes Theory and Practice.
Sacramento, CA, 13 - 17 July.
Contact: R. Szaro, Scientific Program Lead, USDA Forest Service, P.O. Box 96090, Washington, DC. 20090-6090, USA. Tel.: (202) 205-1524.

First International Crop Science Congress.
Ames, Iowa, USA, 14 - 22 July.
Contact: Kenneth Frey, Chair, International Crop Science Congress, c/o Agronomy Department, Iowa State University, Ames, Iowa 50011, USA.

First World Congress on Medicinal and Aromatic Plants for Human Welfare.
Maastricht, Netherlands, 19 - 24 July.
Contact: ISHS, Englaan 1, 6703 ET Wageningen, Netherlands. Tel.: (0)8370-21747, Fax: (0)8370-21586.

1992 August

International Association for Impact Assessment Conference (IAIA): 'Industrial and Third World Environmental Assessment: The Urgent Transition to Sustainability'.
19 - 22 August.
Contact: Robert Goodland, Environmental Assessment, The World Bank, Room S-5035, 1750 Pennsylvania Ave., Washington, D.C. 20433, USA. Fax: 202-477-0565.

Forest Management under Market Conditions.
Pushinko, Moscow Region, USSR, 23 - 29 August.
Contact: Nicolai A. Moiseev, Director-General, All-Union Research Institute for Silviculture and Mechanization of Forestry (VNIILM), Institutskaya, 141200 Pushinko-Moscow Region, USSR.

All-Division 5 Conference: Better Wood Products through Science.
Nancy, France, 23 - 29 August.
Contact: The Secretary Dr. W.G. Kauman, IUFRO All-Division 5 Conference Nancy 1992 Organizing Committee E.N.G.R.E.F., 14, rue Girardet, F-54042 Nancy Cedex, France. Tel.: 33-83351020, Fax: 33-83302254, Telex: 33-83327381.

Conference on Tropical Trees: Potential for Domestication.
Edinburgh, Scotland, UK, 24 - 28 August.
Contact: ECTF Secretariat, Institute of Terrestrial Ecology, Bush Estate, Penicuik, Midlothian EH26 0QB, Scotland, UK. Tel.: 031-445-4343, Fax: 031-445 3943, Telex: 72579.

Population Genetics of Forest Trees.
Bordeaux, France, 25 - 28 August.
Contact: Ph. Beradat, Director of the Laboratory, INRA, Domaine de l'Hermitage, Pierroton, F-33610 Cestas, France. Tel.: 33-56-680303, Fax: 33-56-680203.

Computer Supported Planning of Roads & Harvesting with Special Emphasis on Mountainous Terrain (IUFRO).
Munich, Germany, 26 - 28 August.
Contact: Dr. John Sessions, Department of Forest Engineering, College of Forestry, Oregon State University, Corvallis, Oregon USA 97331-5706. Tel.: (503) 737-4952, Fax: (503) 737-2668.

1992 August/
September **History of Sampling, Data Collection and Remote Sensing for Resource Inventory and Monitoring and Outlook on the Future.**
Berlin, Germany, 31 August - 5 September.
Contact: Giovanni Preto, Co-Chairman S4.02-02, Instituto Sperimentale per la Selvicoltura, Via delle Cascine 1, 50144

Firenze, Italy. Tel.: 55/36-0061.

International Union of Forestry Research Organization (IUFRO) Centennial.
Eberswalde-Berlin, Germany, 31 August - 6 September.
Contact: Forschungsanstalt für Forst-und Holzwirtschaft, Organisationsbüro der IUFRO, Alfred-Moeller-Strasse, D-O-1300 Eberswalde-Finow, Germany. Tel.: 37-371-650, Fax: 37-371-65213, Telex: 162445.

1992 September **Technical Session '100 Years Research in Forest Ecology - Problems of the Past, Today and in Future'.**
Eberswalde, Germany, 2 - 3 September.
Contact: Dr. Walter Kilian, Forstliche Bundesversuchsanstalt, Seckendorff-Gudent-Weg 8, A-1131 Wien, Austria. Tel.: 43-1-87838 ext. 203, Fax: 43-1-8775907.

Air Pollution and Interaction between Organisms in Forest Ecosystems.
Tharandt/Dresden, Germany, 7 - 11 September.
Contact: Organizing Committee IUFRO P2.05-00 Meeting, Technische Universität Dresden, Institut für Forstbotanik und Forstzoologie, Pienner Str.8, D-0-8223 Tharandt, Germany. Tel.: 37-5193-6231, Telex: 26424 dd.

Fifth International Conference on Apiculture in Tropical Climates.
Trinidad, West Indies, 7 - 12 September.
Contact: IBRA, 18 North Road, Cardiff CF1 3DY, UK.

Commonwealth Forestry Conference.
Kuala Lumpur, Malaysia, 13 - 18 September.
Theme: People, the Environment and Forestry-Conflict, Harmony?
Contact: Secretary General CFC-14. Forestry Dept. Headquarters, Peninsular Malaysia, Jalan Sultan Salahuddin, 50660 Kuala Lumpur, Malaysia.

Stand Inventory Technologies.
Portland, Oregon, 14 - 18 September.
Contact: Gyde Lund, USDA Forest Service/TM, P.O. Box 96090, Washington DC 20090-6090, USA. Tel.: 202-475-3747, Fax: 202-447-9161.

Mass Production Technology for Genetically Improved Forest Tree Species.
Bordeaux, France, 14 - 18 September.
Contact: Symposium Secretariat, AFOCEL, Attn. Ms. Marylise Leroy, 164 Boulevard Haussmann, F-75008 Paris, France. Tel.: 33-1-45620 497, Fax: 33-1-45620 498.

International Conference on Alley Farming.
Ibadan, Nigeria, 14 - 18 September.
Contact: AFNETA, c/o Coordinator, IITA, PMB 5320, Ibadan, Nigeria. Tel.: 234-22/400-300 to 319, Telex: 31417 or 31159 TROPIB NG, Fax: 229/30-14-66 (via IITA, Cotonou, Benin). Registration due 10 January.

Wood Expo '92.
Vancouver, B.C., Canada, 23 - 25 September.
Contact: Council of Forest Industries of B.C., 1200-555 Burrard Street, Vancouver, B.C., Canada V7X 1S7, Attn: Summit 1992: Wood Expo 92. Fax: (604) 687-4930.

Second Annual Common Property Conference.
Winnipeg, Canada, 26 - 29 September.
Contact: International Association for the Study of Common Property Conference Office, Natural Resource Institute, University of Manitoba, Winnipeg, Manitoba R3T-2N2, Canada. Tel.: (204) 474-8373, Fax: (204) 261-0038.

1992 September/ October **International Symposium on Management of Mycorrhizas in Agriculture, Horticulture and Forestry.**
Australia, 28 September - 2 October.
Contact: Inez Tommerup, CSIRO, Division of Forestry and Forest Products, Private Bag, P.O. Wembley, Western Australia, 6014, Australia.

1992 November **International Symposium on Forest Tree Seed Problems in Relation to Desertification.**
Ouagadougou, Burkina Faso, 24 - 28 November.
Contact: Director Centre National de Semences Forestieres, 01 BP 2682 Ouagadougou 01, Burkina Faso. Fax: (226) 301232, Telex: 5345 BF.

1992 November/
December **The IUFRO Symposium on Tree Seeds.**
Ouagadougou, Burkina Faso, 23 November - 8 December
Contact: Director Centre National de Semences Forestieres, 01 BP 2682 Ouagadougou 01, Burkina Faso. Tel.: (226) 300857 or 301233, Fax: (226) 301232, Telex: 5345 BF.

Courses

1992 March **International Short Course in Forest Tree Improvement, Concentrating on Tropical and Subtropical Regions.**
This course will emphasize forest genetics and seed orchards and will concentrate on tropical and subtropical regions. It will consist of classroom instruction, problem solving and field trips.
Date: 6 - 27 March. Place: Raleigh, North Carolina, USA.
Contact: Dr. Bruce Winston, Division of Lifelong Education, North Carolina State University, Raleigh, North Carolina 27695-7401, USA. Tel.: 919/737-7792, Fax: 919/515-7614, Telex: 575157.

1992 March/
August **University for Peace Short Courses.**
The University of Peace in San Jose, Costa Rica, announces the following scheduled training courses for 1992 within the Area of Natural Resources and Promotion of Peace:

Agroforestry: Sustainable Land Use for the Humid Tropics.
Date: 13 March - 11 April. Costs: US$2500 (plus airfare).
Course Director: Rolain Borel.
Buffer Zone Management for Protected Areas.
Date: 27 April - 16 May. Costs: US$2200 (plus airfare).
Course Director: James R. Barborak.
Raising the Value of Non-Timber Forest Products and Services for Local Communities.
Date: 3 - 22 August. Costs: US$2200 (plus airfare). Course Director: Gerardo Budowski.

The courses will be given in Spanish, by highly qualified recognized instructors. The target participants are persons involved in development, university and technical school professors, conservationists, recourse planners and specialists

in related fields.
Contact: The respective course director, Universidad para la Paz, Apdo. 199, 1250 Escazu, Costa Rica. Fax: (506)49-19-29/53-42-27.

1992 May

International Training Course on Agroforestry Research for Development: Concepts, Technologies, Practices and Methods.
ICRAFF's 15th introductory course will aim to enhance the professional capabilities of scientists, policy makers and development planners to plan and implement agroforestry research. The course consists of lectures, poster presentations, field surveys and visits, exercises, discussions and independent study. Support is available for about 40 participants, with funding provided by the Netherlands.
Date: 4 - 22 May. Place: Nairobi, Kenya.
Contact: ICRAF/DSO Course Coordinator, at ICRAF.

1992 June/ July

41st International Course on Rural Extension.
The International Agricultural Centre (IAC) offers a one month in-service training course on rural extension (ICRE) aimed at providing extension workers with insights and views on how to make extension an effective instrument for development. The course is open to those who act as higher or middle-level manager or trainer in governmental or non-governmental extension agencies and in other development oriented services (agriculture, community forestry, community health and nutrition, etc.). Female extension staff and managers and trainers of extension workers who are involved in programmes for rural women, are especially invited to apply. The course is mainly intended for persons from developing countries.
In association with the basic ICRE course, three additional and specialized courses will be organized:
- training for trainers of extension workers (ICRE-T);
- management of extension programmes (ICRE-M);
- research-extension linkages (ICRE-R).
The specialisation courses will start after the first three blocks of the basic ICRE course. Management aspects will be integrated in these specialisation courses. Attendance of the basic ICRE course is a condition for admission to a specialisation course.
Applicants should meet the following requirements:
- B.Sc. degree or equivalent;

- at least 3 years' experience in rural extension; and
- competence in the English language.

Date: 14 June - 11 July. Application should be made before 20 March, 1992. Application for ICRE-T, ICRE-M or ICRE-R should be made in combination with the application for ICRE.

Costs: 4,800 Dutch guilders (± US$ 2,500) tuition fees for the basic ICRE course. Tuition fees for each of the additional courses amount to 3,750 Dutch guilders (± US$ 1,900). For this course fellowships are available from the Netherlands Government.

Contact: Director of the International Agricultural Centre, P.O.Box 88, 6700 AB Wageningen, the Netherlands. Tel.: 8370-90111; Fax: 8370-18552; Telex: 45888-INTAS NL.

1992 June/ December **Fifth Certificate Course in Community Forestry.**

The course, organized by the Regional Community Forestry Training Centre (RECOFTC), explains the role of forestry in daily community life, its complex and sensitive interactions with other sectors of the society and will create a better understanding how forestry can promote rural development. Theory, practice, fieldstudy and visits will be well varied to promote and sharpen hands-on experience. Trainees will be required to produce various reports, including a paper on a selected community forestry activity in their home country and a community forestry action plan which will be presented in a seminar. Applicants sound have a first degree or equivalent experience in forestry, agriculture, social sciences or related fields; have direct responsibility in a community forestry program or be scheduled to join such a program upon course complemention; and have a proficiency in English.

Date: 8 June - 4 December. Applications should be received before 31 January.

Costs: US$ 9,200 including registration and tuition fees, costs of lecture materials, in-country transportation, health insurance, lodging and daily subsistence allowance.

Contact: Dr. Somsak Sukwong, Director, Regional Community Forestry Training Centre, Katsetsart University, Bangkok 10900, Thailand. Tel.: (662)5790108, Fax: (662)5614880, Telex: 21957 RECOFTC TH.

1992 July/
September **Environmental Management in Developing Countries.**
This course is designed for natural scientists, social scientists and policy makers.
Contact: Overseas Development Groups, The Course Director, University of East Anglia, Norwich NR4 7TJ, UK. Tel.: (0603) 57880, Fax: (09063) 505262, Telex: 975197 ueacpc g. Cable: UEANOR NORWICH.

1992 August/
December **5th International Course on the Design of Community Forestry.**
The International Agricultural Centre (IAC) at Wageningen organizes a course for senior staff engaged in conceptualization, planning and implementation of community forestry activities in the context of rural development. The course aims to strengthen national capacities to design, implement and evaluate community forestry activities within the framework of rural development. Different training methods will be applied to provide an effective and varied learning experience in the short time available. These include lectures, audio-visuals, discussions, group work, exercises, participants' presentations, technical field exursions and field work.
Candidates should meet the following requirements:
- academic degree (B.Sc. or its equivalent as a minimum) in forestry, agricultural and livestock development or social sciences. Preference will be given to those with M.Sc. degrees;
- at least five years' professional experience in forestry, agriculture or rural development;
- professional position with tasks related to the subject of the course and through which dissemination of the acquired knowledge can be expected; and
- competence in the English language.

Application by women is strongly encouraged.
Date: 30 August - 12 December. Applications will have to be received before 1 June, 1992.
Costs: Total tuition fees amount to 4,800 Dutch guilders (± US$ 2,400). For this course fellowships are available from the Netherlands Government.
Contact: Director of the International Agricultural Centre, P.O.Box 88, 6700 AB Wageningen, the Netherlands. Tel.: 8370-90111; Fax: 8370-18552; Telex: 45888-INTAS NL.

1992 November/
December **2nd International Course on Fodder Tree Legumes - Multipurpose Species for Agriculture.**
University of Queensland organizes a six-week short course of lectures and field visits to commercial properties and experiment stations in tropical and sub-tropical Australia. Objectives are to inform participants of the range of fodder trees available to agriculture, review their environmental adaptions, and examine their role in animal production, soil fertility improvement, and erosion control. Official language of course is English. Participants should have a university degree or equivalent.
Costs: A$ 12,000, covering all tuiton costs, field studies, all ccourse materials, all course related transport within Australia, single accommodation during the period of lectures in Brisbane, an establishment allowance, a daily allowance to cover meals and incidentals, accommodation on field trips on a share basis and 10 kg unccompanied baggage allowance.
Contact: Course Coordinators R.C. Gutteridge and H.M. Shelton, University of Queensland, St. Lucia, Queensland, Australia. Tel.: 61-7/365-4037; Fax: 61-7/365-4433; Telex: AA 40315.

Publications

* **Forest Economics and Policy Analysis. An Overview.**

By: William F. Hyde and David H. Newman, with a contribution by Roger A. Sedjo.
Reviewed by Peter Sips.

This paper identifies the essential features of the forestry economics literature emphasizing what is different about forestry and what are forestry's important features for project and program analysis.

The paper begins by overviewing the conceptual issues underlying:

1) forest production of wood and fibre, and
2) other forest resource services.

The second part of the paper puts emphasis on seven special topics that are important to forestry and economic development:

1) timber production, including both plantation and planned natural management;
2) smallholder forest management, including social, community and agroforestry;
3) forestry research, education, and extension;
4) tenure, which can include Forest Ministry management, private commercial plantations, and some smallholder issues, as well as contracts between forest land managers and concessionaires;
5) policy spillovers from other sectors of the economy that can substantially alter forest and forestland management;
6) non-timber multiple use values, and
7) deforestation, timber famine or its counter, sustainable forest management.

In a final section the authors give their own summary statement of the critical issues in world forest management and relevant foci for economic evaluation of the issues.

(World Bank Discussion Papers, no. 134, The World Bank, Washington, D.C. 20433, USA. ISBN: 0821319396. 92 pages).

* **Forest pricing and concession policies.** *Managing the high forests of West and Central Africa.*

By: Mikael Grut, John A. Gray and Nicolas Egli
Reviewed by Mark Postma

The actual forestry departments in West and Central Africa are weak, under-funded and under-equipped, and thus unable to enforce regulations, supervise revenue collection or manage the forests.

Forest revenues are usually very low compared to what they could be. All possible methods of forest pricing are discussed. If concessionaires have to pay more they will also be more careful. To improve forest management and increase forest revenues the following concession policies are eventually suggested:

1) An annual concession rent, which should be the major revenue source, to replace the present multiplicity of forest fees, that are often not collected.

2) Where competition is adequate, the level of the annual concession rent should be set by competitive bidding. The annual concession rent in other areas should be based on that established by bidding. Competitive bidding will help to reflect the values of concessions, collect revenues and discourage acquisition of large concession areas and speculative holdings.

3) Logging concessions should be replaced by forest management concessions. The forest management plan for each concession area should be the main forest management tool. It should be prepared in consultation with local communities. Poor forest management performance should lead to fines or cancellation of the concession contract. Until forestry departments are strengthened, inspection of logging and forest management performance should be carried out by an independent "inspection service", perhaps a private firm, working on behalf of the government, selected by international competitive bidding.

Having greater resources and being on the spot, at present, concessionaires will be better able to protect and improve the forests in their area, and carry out regeneration where necessary, provided a good system of incentives and inspections is in place. Forests are better protected against slash-and-burn cultivators if given in concession than forests where "nothing happens". Via pilot concessions the ideas should be tested.

The study has some refreshing point of views, in its effort to create a new way of how forests can be managed without the weak forest departments.

However, it seems doubtful to me whether concessionaires are capable and willing to manage their concessions in a sustainable way. It is not clear what the costs of this sustainable forest management will be.
Protection by exploitation (in a sustainable way), will that be the new slogan in tropical forestry?

(World Bank technical paper, ISSN 0253-7494; no. 143. Africa Technical Department series, 77 pages).

* **Making haste slowly,** *Strengtening local environmental management in agricultural development.*

By: A. Huijsman and H. Savenije
Reviewed by Rik Delnoye

This volume of the Development Oriented Research in Agriculture series of the KIT (Royal Tropical Institute) is a result of a two-day workshop held at the KIT on November, 1990. Almost 40 Dutch specialists in the field of environmental management and agriculture participated, representing a number of organizations and divers disciplinary backgrounds. The aim was to identify and analyse constraints to and potentials for new approaches; to facilitate, in the long term, improved policy and implementation, and to indicate priorities for research.

The book gives guidelines for strengthening environmental management systems. Part 1 is an impression of current thinking on the subject (from several disciplinary perspectives) and part 2 gives a number of examples of how environmental management is being operationalized in field situations. Throughout the book, emphasis is given to the small scale agricultural sector in marginal areas, where environmental degradation is most evident.

"Making haste slowly" wants to tackle the dilemma that in many areas in the developing world the local environment is threatened so badly that direct action appears essential. While urgency and scale of the problems seem to legitimate large scale, nation wide, top down operations, experience from the field (past and present!) show the failure of such large operations. The basic idea of "making haste slowly" is that the quality and effectiveness of environmental management for sustainable agriculture is more than just technical factors. According to the authors, a "people centred approach" is necessary to achieve sustainable results in local environmental management. Entrusting responsibilities to local level institutions -the direct users- is considered a prequisite for succesful management and control of the environment. The actions taken must be based on traditional structures and

concepts and must have the support of the population. It is crucial in sustainable development, that it is socially and politically accepted among rural land users, that the environment requires management and concerted action and that this is in their interest. So the first thing to do is investing time in people as well as in their organizations. Empowering local management systems will require time for gradually forming a basis for common decision making, which means building or strenghtening local institutions, organizations and management capacaties. The authors give guidelines for how to incorporate this "slowness" in the process of planning interventions. As such "making haste slowly" means to take the patience to formulate and implement solutions together with the rural people.

Discussed are some constraints and potentials for a community based approach in local environmental management:

- The "poverty gap" describes the conflict beween income and environment (short term priorities against long term considerations). The need for production forces people to overexploitation of natural resources. Measures to protect the environment from degradation should be combined with, and are at the basis of, sustainable productivity enhancement. Future policies and strategies must aim to contribute not only to livelihood of present generations but also must enable them to preserve and enhance the basis for future generations.

- Implications of including time and space dimensions in agricultural policy formulation, planning and management. To take into account the degree to which a management system is functional with respect to the overall land use (spatial and in time) requires joint decision making and integrated management. These new dimensions to the criteria for development are complex, both as a concept and in their numerous interrelations with socio-economic factors. New methodologies like rapid rural appraisal and agro-ecosystems analysis are still seen as non-adequate analysis. It is not enough to introduce or integrate environmental concerns as a new criterion into economic decision making and management. Environmentally sound management interacts with society on all fields and levels.

- Strenghtening the local organizations needs a government that favours conditions directly and indirectly. Rather than acting as an controller and presciber the government has to act as an facilitator, coordinator and integrator of local initiative. Effective support demands political awareness at all levels of the need to share responsibilities with landusers. The recognition of the importance of gender issues is part of this awareness, (as women are the major users and managers of

natural resources). Non Governmental Organizations are seen as important contributers to the process of empowering local communities. In strenghtening local organizations a distinction has to be made between organizations having a regulating function (district or watershed level) and organizations aimed at actual implementation of environmental management activities (village level or functional groups). The challenge is to envision institutions for decision making, cooperation, regulation and control that will be able to deal with both, the existing environmental problems and the (often conflicting) interests of the various land users and owner groups, government bodies and other parties.

- Technology development should be relevant to the land use system as a whole. Attention should be focussed on the whole range of technical options. A set of technological options for sustainable production must be developed which is profitable to and feasible for farmers. Technologies that make maximum use of the bio-physical potentials of agro-ecosystems to maintain land quality, regulate nutrients, conserve water and control pests are preferable. Technical and institutional changes have to come together.

Part 2 provides cases based on a number of projects, (Burkina Faso, Indonesia, Kenya, Mali, Peru and Sri Lanka), which focus on approaches to environmental management in various geographical, ecological and socio-economic situations. All projects in the case studies have been confronted with the limitations of technocratic and sectoral "top down" approaches. Presently all are exploring a more comprehensive process approach to environmental management that is locally based, interdisciplinary and participatory in nature.

The studies from Indonesia and Sri Lanka concentrate on the planning process for achieving improved land use, the four other cases focus more on analyzing the experiences gained during the execution of field activities. All implementation projects focus primarely on one specific activity: controlling overgrazing (Burkina Faso), erosion control (Mali), reforestation (Peru), availability of water resources (Kenya). The case studies give a good view on the great variety of projects executed under the general aegis of improving environmental management in agriculture. However the results concentrate mostly on criteria of social acceptibility in terms of local organizational and institutional arrangements, while ecological criterias and economic profitability of the activities are not discussed.

The book brings together the current viewpoints of different disciplines on, and the gained experiences in, environmental management systems. As such

the book is a real contribution to the discussion about this subject. The descriped concept of a people oriented approach in environmental management is still developing. This development has to be based on experiences, which are not available yet. Gaining and learning by experience takes time. As such the book has a temporary value.

(Making haste slowly, Strengthening local environmental management in agricultural development, 239 pages, ISBN 90-6832-040-8, Development Oriented Research in Agriculture, Royal Tropical Institute, Amsterdam, The Netherlands).

Encountered Vacancy Announcements

* **Team Leader/Forest Inventory Specialist.**

Societé d'Eco-Amenagement (SECA), a French consultant, will start a mangrove forest inventory project (EEC funded) in Guinea (Africa) and is seeking a team leader/forest inventory specialist.

Type of work: he/she will lead the inventory and will also be involved in organizational and data processing, connected to forest inventories.

Qualifications and experience: Unknown, but probably academic education with several years of working experience.
A good command of French is essential.
A knowledge of mangrove ecosystem would be an advantage.

Starting date: As soon as possible.
Duration: 18 months.

Location: Conakry, Guinea.

Contact: Bernhard Bousquet, SECA, 7 Esplanade de l'Europe, 34000 Montpellier, France. Tel.: (33) 67.65.98.00, Fax: (33) 67.64.68.38.

* **Forestry/Agroforestry Coordinator.**

The European Tropical Forest Research Network (ETFRN) is seeking the Head of the coordination unit.

The EFTRN supports coordination of research in various aspects and components of forest ecosystems in the humid and dry tropics, including human impact, his living conditions and recultivation/regeneration of devastated areas. Its objective is to increase reserach cooperation and thus to improve reserach in releveant topics, and to provide a forum for advising decision makers on policy questions.

Responsibilities: The head of the coordination unit will manage the network according to directives given by the Board and the General Assembly. In collaboration with national focal points, he/she

will organize meetings, publish a newsletter, and distribute information.

Qualifications: Ph.D. in forestry, agriculture, or a related subject and at least 3 years of working experience. Good knowledge of tropical forest ecosystems, considerable management experience combined with good organizing ability and the capacity to work well in a team, flexibility and readiness to travel as required. Fluency in English and either French, Spanish or Portuguese is required; some knowledge of German would be favourable. Working knowledge of word processing and electronic mail would be welcome.

Starting date: As soon as possible.
Duration: 3 years.

Applicants are invited to send their curriculum vitae, date of availability, and names and addresses of three referees (including telephone, telex and facsimile, if available) to the following address:
Arbeitsgemeinschaft Tropische und Subtropische Agrarforschung (ASTAF e. V.), Hans-Böckler-Str. 5, D-W-5300 Bonn 3, Germany.

* **Implementation Adviser; Forestry Extension Expert; Tree Improvement/Silviculture Expert; Experts Feasibility Study.**

Atlanta Consultant is seeking:

-an expert for the long-term assignment (36 months) "Implementation Adviser Pakistan" and a forestry extension expert and tree improvement/silviculture expert (6 and 3 months respectively). URGENT!

-experts for feasibility study on mangrove and coastal zone management Sulawesi, Indonesia: a mangrove management specialist (2 months), natural resource economist (team leader) (6 months), land use planning and soil conservation specialist (2 months) and an extension and training specialist (2 months).

For further information and application: Atlanta Consult, Industrie- und Unternehmensberatung GmbH, Stormarner Str. 30, D-2000 Hamburg 70, Germany. Tel.: (49) 040-687851; Fax: (49) 040-687854.

Terms of reference also available at the BOS-Secretariat.

Advertisements.

Agro-Forestry Adviser: Tanzania

In cooperation with Iringa District and Regional Authorities in Tanzania Danida has since 1989, through Iringa Soil and Water Conservation Project (HIMA), supported soil and water conservation and afforestation activities in Iringa District in the south-western highlands of Tanzania.

The objectives of the project is to strengthen the capacity of district and regional authorities in promoting soil and water conservation in the district. Institutional development, participation of the communities, men and women, in planning, executing and monitoring of the project activities are key elements of the project, which aims at improving agricultural practices among small scale farmers.

The position as Agro-Forestry Adviser for the project will become vacant. There will be 4 Danida advisers and two DVS (Danish Volunteer Service) volunteers attached to the project.

In close cooperation with Hima staff and relevant government officers the adviser will assist in planning, implementation and evaluation of agricultural and treeplanting activities in HIMA villages, particularly with respect to extension, training, soil and water conservation and agro-forestry.

Duties
- Participate in planning and implementation of a comprehensive training programme for extension staff, including subjects on agro-forestry practices and soil and water conservation methods;
- participate in planning, implementation and monitoring of a trial and demonstration programme in villages in collaboration with the extension service, the community development unit, the village committees and contact farmers and assist in related extension activities such as field days;
- assist in planning and implementation of a monitoring and evaluation system;
- participate in planning and preparation of workshops for involved local government/party leaders, village committees and farmers;
- assist in planning and implementation of agro-forestry and soil conservation activities in HIMA villages;
- assist in administration and budgeting of activities in relation to agriculture and forestry units;
- participate in surveys of forest resources in the villages and advise on better and sustainable utilisation of the resources;
- advise on design and lay-out of multipurpose tree species trials in the various agro-ecological zones;
- advise on and monitor nursery supporting activities.

Qualifications
- M.Sc., M.A. or Ph.D. in agro-forestry, forestry, agronomy;
- experience from intersectoral projects with emphasis on community participation;
- experience from agro-forestry and extension projects, preferably in East Africa;
- ability to work and cooperate with a wide range of people. Adaptability, social sensitivity, and respect for other cultures are important qualities;
- fluency in written and spoken English essential. Knowledge of Kiswahili an advantage.

Duty Station
Iringa Town.

Duration of Employment
2 years with possibility of extension.

Date of Availability
As soon as possible.

Employment Conditions
Tax-free salary based on qualifications, seniority and family status. Benefits include housing, education, health services, travel expenses, insurance and pension scheme.

Applications
The closing date is **7 february 1992.**

The Danida Application Forms and additional information on the position can be obtained from Danida through our 24-hour automatic telephone answering service, telephone No. +45 33 92 09 88, or through telefax No. +45 33 92 09 82, by quoting your full name, address, title of position applied for, and

Danida File No.: 104.Tanz.146.d.
Recruitment No.: 1992/TAN.01/LTA

Applications should be sent to:

Danida
Ministry of Foreign Affairs
2, Asiatisk Plads
DK-1448 Copenhagen K
Denmark

Danida Udenrigsministeriet Asiatisk Plads 2 1448 København K

Changing Personal Circumstances?

SURNAME:
FORENAME(S):
INITIAL(S):
TITLE (Ir/Ing/Dr(s)/etc.):
COUNTRY IN WHICH YOU WORK:

For members working in Europe the homeaddress will be used as mailing address. For members outside Europe, the workaddress will in general be the mailing address. Nevertheless, for specific reasons the use of the homeaddress for those members might be neccessary to register. If so, Please motivate!

DATE OF CHANGE (DD/MM/YY): ...../...../.....

HOME
ADDRESS:
CODE + CITY:
TELEPHONE:

WORK
ORGANIZATION:
DEPARTMENT:
ADDRESS:
CODE + CITY:
KOERIER BUZA:
ADDRESS:
CODE + CITY:

TELEPHONE:
TELEX/FAX:

Dutch members living in the Tropics are asked to fill in a dutch contact address.

CONTACTADDRESS
ADDRESS:
CODE + CITY:
TELEPHONE:

TYPE OF EMPLOYER (tick only one)

[ ]	01	International or national development agency (e.g. FAO, WHO, UNDP, DGIS)
[ ]	02	Government
[ ]	03	NGO
[ ]	04	University/Research institute/etc.
[ ]	05	Library/Documentation/Publication
[ ]	06	Commercial consultancy
[ ]	07	Student
[ ]	08	Others: .....

TYPE OF EMPLOYMENT (e.g. fieldworker, researcher, etc., but fill in one type!):

DO YOU HAVE/KNOW POSSIBILITIES TO ACCOMODATE STAGIARES?
[ ] Yes [ ] No

If Yes, we will send you a seperate questionaire for more information.

The Board of Foundation BOS is composed as follows:

Name	Representing Organization/Group
Dr. Ir. A.G. Voorhoeve (Chairman)	
Ir. D. de Groot	Scientific Information Division (IKC), Department of Nature, Forests, Landscape and Wildlife, Ministry of Agriculture, Nature Management and Fisheries, Utrecht.
Ir. K.F. Wiersum (Treasurer)	Department of Forestry, Agricultural University Wageningen (AUW).
(The three above mentioned persons form the Daily Board)	
Dr. Ir. A. de Gier	International Institute for Aerospace Survey and Earth Sciences (ITC), Enschede.
Ir. P.J.M. Hillegers (Consultant of the Board on behalf of IBN-DLO)	Research Institute of Forestry and Nature IBN-DLO (De Dorschkamp), Wageningen.
Ir. P. Laban	International Agricultural Centre (IAC), Wageningen.
Dipl. Ing. Ph.C.J. Hulsebosch	Students of the AUW.
Ir. J.D. Lemckert	International Agricultural College Larenstein (IAHL), Velp.
M. Vonk	Students of the IAHL.

Honorary Member of the Board: Prof. Dr. Ir. R.A.A. Oldeman.