

Indigenous Fallow Management Network

Update 2





Indigenous Fallow Management Network

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Cover: cinnamon/coffee-based systems of Kerinci
Inset photo: Harvesting coffee in the cinnamon coffee fallow
(Photos by Paul Burgers)

1. NEWS FROM THE IFM SECRETARIAT

It has been a turbulent time for the IFM Network and Secretariat over the past time. Not only with respect to the political situation in Indonesia, but also resulting from a growing interest in Indigenous Fallow Management Initiatives.

The increasing interest that is being generated with Indigenous Fallow Management, means that unfortunately we could not give a comprehensive “picture” of all activities going on in the region. In this update we have included some on going research and projects that the Secretariat was most closely involved in, together with contributions that came in voluntarily as a means to share information. It is this highly positive attitude of people, who are interested in sharing their experiences and results with others that form the backbone of our network. In this update, contributions have come in from individual researchers (students and scientists), institutions and organisations. Indigenous fallow management is really becoming a topic within a multidisciplinary group of practioners, for social as well as bio-physical scientists.

It is this voluntary association of scientists and practioners who are working on various IFM topics which is transforming the “on paper network” into an active forum for consultative discussions and parallel research projects.

We would like to thank all the contributors to devote their sparse time to contribute to this issue. We hope that the readers will get new inspiration, new ideas and motivations to work together, and allow the exchange of ideas and experiences from this issue.

We need your feed back!!!

As the Network evolves and members and non members express their appreciation about the role of the update, I would like to take this opportunity to start rethinking and discussing the role of this update. As we become more active in getting more persons involved in this Network, we could make it into a forum of constant learning and discussion. This means, I would like to get ideas that may exist among all of you about information exchange (like getting a more regular update, maybe twice a year).

Throughout this update, we would like to ask your ideas and suggestions on a number of topics.

- Your suggestions or ideas for improvement of the IFM update and Network,
- Should we have a more complete and more regular update of “research in progress”?
- Ideas on what the Network may be doing on top of what is in the newsletter,
- A possible electronic listserver or newsgroup on fallow issues would develop what kind of tasks in the future, if it is based in Bogor.

Any other reactions and criticisms on this issue are most welcomed.

Send your reactions to the secretariat in Bogor!! (see for addresses the backpage).

IFM network secretariat: changes...

Most of us know already that Malcolm Cairns has relocated to Australia National University in Canberra (Faculty of Anthropology) to pursue his Ph.D. studies on a comparative research on *Alnus Nepalensis*-based fallows in Nagaland (NE India) and Yunnan Province (SW China). We also know, that this is mainly a “physical” relocation as he is

still very much cooperating in guiding and developing the IFM Network.

community. (By the way, she has also developed the ideas and lay out for this update).

New staff member in Bogor...

In Bogor, Paul Burgers has been joined by an Indonesian staff member, Dede William. Dede is graduated from the Agricultural University Bogor (IPB), and has a degree in forest management. She is working with Paul as a researcher on Indigenous forest and fallow management in the bufferzones of Kerinci Seblat National Park, West Sumatra, Indonesia (see the topic for more information).

New email addresses:

The cg centres have changed the extension of their emails addresses into:

(personal address)@cgiar.org

The old cgnnet.com address will be closed down soon, so from now on the new addresses should be used, which are:

P.Burgers@cgiar.org;

L.Carmen@cgiar.org

Outputs from the IFM workshop

Publishing IFM on the internet...

As IDRC has been generous in funding the IFM Network over the past years, personnel at IDRC in Ottawa have compiled the workshop abstracts and are now available on the internet. It is part of IDRC's Programme on community-based natural resource management.

The overall goal of this IDRC Programme is to develop and transfer technical, methodological, analytical, social/ institutional and policy innovations for more productive, equitable and sustainable natural resource use by communities in ecosystems facing environmental stress and degradation in Asia.

The website where you can find the abstracts and further information on IDRC's activities is:

**[HTTP://WWW.IDRC.CA/CBNRM/
DOCUMENTS/ABSTRACT_MAIN.CFM](http://www.idrc.ca/cbnrm/documents/abstract_main.cfm)**

Brochure

Probably most of you have seen the brochure of the Indigenous Fallow Management Network, developed by Paul Burgers and Tikah Atikah (ICRAF's Desktop Publisher). The wonderful work Tikah has done in making this brochure very attractive and useful enables us to bring the IFM Network activities under attention of a much wider

Special issue

We are in the process of developing a special issue on Indigenous Fallow Management to broaden the existence of our work. We contacted several magazines to discuss the opportunities for such an issue. The editor of ICRAF's international magazine "Agroforestry Today" has come up with an exciting plan of how such an issue would look like.

For this issue we expect to publish about 12 articles that concentrate on fallow management,

from within the region in S.E Asia, most probably with a synthesis article, which gives the “scientific background”.

We plan to have articles, in which the “Farmer expert” tells his/her story about fallow management. The farmer-stories will put flair and excitement to the articles, and will make it more attractive to a wide audience.

We have already received two articles in which the farmer tells the “story” about his/her fallow management practices. As more articles and “farmers stories” come in, we hope to get a very interesting overview on why IFM fits within the rationale of the farmer.

Persons who have an exciting farmer story to tell in line with the above ideas for such an issue, please do no hesitate to contact the secretariat in Bogor, by including a small abstract (or a full article). The complete article is in general two-three pages double spaced, so it would probably not take too much time to write it up.

We can help with the style and adjusting it to the desired style.

Call for abstracts.

Articles should concentrate on:

- Farmer story (possibly with quotations from the farmer), and why he/she thinks it "works".
- Fallow Management,
- Must be exciting for a wide audience, therefore we do not aim at presenting scientific research results (these can be published in other magazines), but at more qualitative information. Preferably in (South-East) Asia.

2. COUNTRY UPDATES

Malcolm Cairns and Paul Burgers visited Laos and Vietnam in June 1998 to see how IFM activities in these countries could link up with the IFM Network and to set priorities for activities in these countries.

Vietnam

The IFM Network in Vietnam has received a modest grant as part of the VACB capacity building project in Vietnam, funded by Swedish SIDA. This grant has given us the opportunity to start developing a research agenda with National Partners in Vietnam.

The IFM Network has been linked to the Vietnam Agroforestry Capacity building project (VACB). This project is funded by swedish SIDA (Swedish International Development Agency). It enables ICRAF to collaborate with many Vietnamese institutions on a number of capacity-building and

research activities related to agroforestry and alternatives to slash and burn (ASB) agriculture.

Through this collaboration with ICRAF and relevant partner institutions in South East Asia, Vietnamese scientists, trainers and managers will enhance their capacity to do relevant agroforestry research, development and training with a focus on developing alternatives to unsustainable slash and burn systems.

Obviously, the IFM activities fit in well with this project, and a proposal has been developed by the Upland Working Group, Department of Agroecology and Environmental Sciences, Hanoi Agricultural University, to initiate IFM work in 1999. The main elements will be a planning meeting, an extensive literature review and institutional profiling, a synthesis report, all leading to a national IFM workshop in December 1999.

The IFM working group focused on:

- Refining the 1999 work plan
- Discussing how to link with the regional IFM Network
- Identifying priority topics/activities if there is a second phase of VACB.

Laos

Malcolm and I visited Laos in July last year, and looked at IFM activities in Laos.

We discussed with several government agencies, Keith Farney (one of the members of the Network in Laos and working with IRRI), Forage Smallholder Project options for intensification of shifting cultivation in Laos. Seeing the policies of the Laos Government in trying to sedentarise shifting cultivation faster than farmer communities are able to cope with, a viable option to sustain or improve livelihoods of the farming communities, is the promotion of livestock and the development of

fodderbanks (fallows). There are tremendous possibilities for cattle. Inspiration was drawn from the Amarasi System on Timor, Indonesia (see IFM working papers). Members from the Lao group joined on the exposure tour in 1997 after the workshop in Bogor, and see huge potential of some of the components of indigenous regulations developed within the Amarasi system to be introduced in Laos as well.

Philippines

Philippines Fallow Management Network

The Fallow Management –Philippines Network (FM-P) has been created as a result of the Bogor

Conference in 1997. Initially, there are 14 members from different institutions that have attended a workshop sponsored by CIIFAD, through Lucy Fisher, last 23-24 September 1998 at VisCA, Leyte plus the eight Philippine Working groups in Bogor. During that workshop, the members voted SEARCA as the secretariat for the initial 1.5 years.

Dr. Demi Macandog is heading the secretariat with Patrick M. Rocamora as the communication assistant.

Last May (1999) Paul Burgers attended a workshop on the use of PRA tools in research on fallow Management in Baguio City, Philippines. A synthesis report is being compiled by the group at the moment. So far the group was able to fund activities with own efforts, through enthusiasm and the huge interest from several institutions in the Philippines. We certainly keep working together on broadening their activities (additional funding has to be found), and keep you “updated” about the huge amount of work, being done and developed by them.

For further information on their activities or “reports” you can contact the Philippine secretariat below.

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3. RESEARCH IN PROGRESS

This section gives an overview of the wide range of activities that are on-going in the region. Anyone who feels to contribute to further issues, do not hesitate to do this.

We depend on your contributions. In particular I would like to stress the importance of contributions from the social and economic sciences on why Indigenous Fallow management fits well with farmer’s needs and practices.

Special focus: *Tithonia*

Tithonia Research builds further on the initiatives started by Malcolm Cairns and IDRC in the Philippines. As more scientists start to evaluate the potential of wild sunflower as an improved fallow species, ICRAF South East Asia is developing a regional research Programme through the IFM Network.

Evaluation of *Tithonia diversifolia* Fallows in the Philippines

The Montañosa Research and Development Centre (MRDC) is working with farmers in the Cordillera Region to evaluate the potential of wild sunflower (*Tithonia diversifolia*) as an improved fallow species. Land use pressures have forced shifting cultivators to shorten fallow periods, which in turn has led to land-degradation and expansion of *Imperata* grasslands. Their on-farm trials have been designed to answer questions at two levels:

- A. What is the simplest way (lowest labor cost) by which farmers can get a good *Tithonia* stand developed in a (former) *Imperata* environment?
- B. Does a well-established *Tithonia* stand indeed lead to clear yield advantages in a subsequent crop? If so, is this primarily based on increased soil nutrient supply, or increased soil biological activity and soil structure?

This work is supported by IDRC and builds on long-standing farmer practices in the highlands of Luzon to manage *T. diversifolia* as a preferred green manure / fallow crop.

For further information:

Florence Daguitan and Matthew Tauli,
 MRDC, c/o Center for Development
 Programs in the Cordillera, #16 Loro Street
 Dizon Subdivision, Baguio City, Philippines

Tithonia research with ICRAF South East Asia

Tithonia diversifolia has captured the imagination and interest of researchers around the globe. A question which arises is whether *Tithonia* differs in its properties around the globe, or still is essentially

the same as in its centre of origin in C. America. A project to check this out is coordinated by the University of Wales (Bangor, UK) with participation of CATIE and CIAT in Latin America and ICRAF in Africa and SE Asia. The project will facilitate regional comparisons (e.g. within SE Asia), as well as global comparisons of plant properties and abilities to form mycorrhizal associations. A research planning meeting was held at CIAT in August 1998. From SE Asia we contributed an overview on farmer use of *Tithonia*, a specific survey carried out in Mindanao (Philippines) comparing *Tithonia*, fern and grass-dominated fallows, and on-going experiments at Brawijaya University (Malang, E. Java, Indonesia) on the effects of *Tithonia* biomass on P availability to subsequent crops.

The paper below, which includes some initial research findings is available from the IFM secretariat on request.

Tithonia and other daisy fallow research in SE Asia

M Cairns, M van Noordwijk, Jun Mercado, Parwi, E andayanto, Sugeng Priyono, Kurniatun Hairah, DP Garrity

NORTH EASTERN INDIA

Sustaining Environmental Protection and Economic Development in Nagaland

The Nagaland Environmental Protection and Economic Development (NEPED) project was implemented in 1994 with the goal of sustainable management of the land base by the intensification of the slash and burn cultivation systems used in Nagaland. The strategy chosen was farmer-led development, testing and demonstration of agroforestry-based intensified systems. The following observations can be made.

NEPED has broadly reached down to the grass-roots level, with a large share of project benefits going directly to villagers across virtually all villages in Nagaland.

Widespread dissemination of agroforestry systems tested and demonstrated in NEPED has occurred beyond the immediate project. Tree plantation in slash and burn agriculture has been widely adopted — on average, the 6 hectares allocated to test plots in each village has been replicated at least six-fold. A conservative estimate is that over 33,000 hectares of land have been reforested by private efforts.

Emphasis has been placed on the use of indigenous tree species planted in swidden fields, along with food crops such as rice, maize and vegetables. Monoculture is discouraged and farmers have utilized erosion control measures,

such as contour trenches and physical barriers, on hilly terrain.

New Initiatives

Intensification of slash and burn agriculture through agroforestry is a long-term solution to weaning farmers from slash and burn in Nagaland because most of the benefits to villagers will only occur in the future when trees mature. Rapid population growth means that the population of Nagaland will double in less than 20 years, putting additional pressure on the natural resource base and food production capacity. Loss of plant biodiversity and wildlife remain critical concerns. With few employment prospects, population growth and urbanization will lead to increases in crime and political unrest. Immediate steps that could be taken to help ensure a healthy environment and economic development for Naga's include the following.

- Integrate additional cash and food crops into agroforestry to provide benefits in the immediate and medium terms. This will include non-timber forest products such as highly-valued medicinal plants and spice crops that thrive in the shade below trees.
- Establish marketing systems so that Naga farmers can enhance value by moving up the supply chain.
- Invest in agroforestry marketing infrastructure and facilities.
- Assist in the establishment of local-based processing capacity and support (e.g., mini-hydro, small-scale sawmills, furniture making, etc.).
- Protect the remainder of the flora and fauna in Nagaland's forests, with special attention to village forest reserves and high-altitude areas that have not yet been subjected to slash and burn agriculture.
- Encourage local-based self-help programs to establish sustainable livelihood options in Nagaland that reduce the dependence upon government transfers (Government of India to Government of Nagaland; Government of Nagaland to Village Development Boards) as development initiatives.

For further information: Dr. Merle Faminow
 Director, NEPED Project. International
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 91-11 4619411 (or 9412 or 9413)

Forging research linkages between Nagaland and Yunnan

As those attending the launching IFM workshop in Bogor in 1997 will recall, *Alnus nepalensis* was highlighted as a species common to several promising managed fallow systems in mainland montane Southeast Asia (Cairns *et al.*, 1997; Guo *et al.*, 1997; Sharma, 1997). The northern-most spur of Myanmar juts up to create a 400 km buffer between the two sites and records from the early part of this century confirm that Kachin and other tribal groups in its uplands had also discovered alder's value as an improved fallow species (R.S. Troup, 1921). The fact that isolated and disparate swidden communities have independently developed deliberate practices to integrate *A. nepalensis* into fallows suggests that this N-fixing alder offers agronomic and/or economic benefits warranting closer research attention. Its wide adoption by such a range of tribal shifting cultivators further indicates that alder-based fallows are not an overly site-specific technology – but have the potential for wide dissemination across the Himalayan foothills.

The occurrence of *A. nepalensis* in Yunnan and its management in swidden environments by Dulong, Lisu, Dai, Hui, Wa and other cultural minority groups in S.W. China was described by Guo *et al.* (1997) – while a contrasting model has been characterized across the border in Nagaland (Kevichusa *et al.*, ----; Gokhale *et al.*, 1985; Cairns *et al.*, 1997). Geographic proximity, similar ecozones and shared use of *Alnus nepalensis* as an improved fallow species make Nagaland and Yunnan natural twinning partners within the IFM Network. ICRAF is collaborating with its Naga and Chinese partners in designing and executing a secondary phase of research that builds on insights provided by these initial diagnostic papers, and tests key hypotheses that clarify our understanding of how the system functions, where its adoption is appropriate, and the potential benefits to be gained. More fundamentally, understanding the underlying processes of, influences on and trends of this type of system may help us understand more clearly the conditions under which this type of approach of improved fallow management fits into the gradients of conditions prevailing across the larger eco-region.

This comparative research is overdue in that neither system has received much empirical research to date – but the underlying concepts of both (not necessarily the entire system package) hold promise for wider transferability, not only in the Himalayan foothills where *A. nepalensis* is endemic, but both in comparable ecological zones where it may be introduced, and for possible application to other *Alnus* species elsewhere in the tropical highlands that may be similarly manipulated to accelerate fallow functions, i.e., *A. japonica* in northern Luzon, *A. acuminata* in Uganda.

It is precisely this type of comparative analysis that the IFM Network was intended to facilitate. This work will constitute one of the series of parallel studies on variations of improved fallow husbandry that are being undertaken in the region under the

umbrella of the IFM Network. By developing these case studies in tandem and applying comparable methodologies, there should be rich opportunities for cross-pollination between sites and steepening the learning curve. The study will accommodate a transdisciplinary focus, embracing aspects of applied anthropology, forestry, ecology and agronomy.

The collaboration began with a pooling of existing literature. Dr. Supong Keitzar (SARS) and Amenba Yaden (NEPED) then represented the Naga side in visiting Yunnan in late 1998 to tour alder-based agroforestry systems. Guo Huijun and other Chinese counterparts will make a return visit to Nagaland in the near future. Then, with each camp having first-hand exposure to alder management in their counterpart's country, they will jointly identify research priorities and develop scientifically rigorous methods to test the potential of alder to enable sustainable intensification of jhum systems. This will provide the basis for undertaking parallel research projects at both sites. ICRAF is supporting this collaboration through the backstopping efforts of Malcolm Cairns. Malcolm is now based out of the ICRAF office in Chiang Mai, Thailand and as part of the collaboration, is undertaking his own academic fieldwork for his anthropology dissertation at the Australian National University. This work is funded through the generous support of IDRC of Canada. Conventional wisdom has widely regarded swidden landscapes as forestal lands – that are periodically despoiled by marauding shifting cultivators. National policies thus typically view swiddening as a primitive remnant from the past, a major causative agent in tropical deforestation, and in need of reform. Careful analysis of alder fallow management systems may suggest strong justification for turning this argument upside down; at least some of these lands should more accurately be considered as agricultural lands on which farmers intentionally encourage trees to grow on a cyclical basis as an integral phase of a sustainable farming system. This helps to

strengthen arguments that upland farmers capably manage their resources and customary tenure should be recognized and formalized by the state.

References

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INDONESIA

Sumatra

Paul Burgers and Dede William are currently conducting socio-economic research on the indigenous fallow management systems of coffee-cinnamon in Kerinci, Sumatra.

Cinnamon-coffee systems in Kecamatan Gunung Raya, Kerinci, West Sumatra

It is widely acknowledged that systems, which incorporate a fallow period, do so to rejuvenate soil fertility after a period of cropping. However, due to decreasing opportunities to leave the land fallow for a long enough period of time to restore soil fertility, crop yields are decreasing. Subsequently, many efforts have concentrated on the improvement of such biophysical fallow functions to increase crop production. However, these concepts of the functions of a fallow are mainly biased at agricultural practices in temperate climates.

In the tropics, functions of a fallow go beyond biophysical functions. With decreasing regenerative processes of the fallow, socio-economic functions of the fallow grow in importance. These cannot be assumed to be neutral, as they are social acts. Depending on the conditions in which households operate, they have developed indigenous management strategies to manipulate and modify the fallow vegetation, in order to meet social and economic needs. Consequently, understanding and analysing why and how fallow management develops must start on a household level. Such an understanding demands that we look closely at the context (the

“world”) as being dynamic and complex to analyse the development of indigenous strategies.

In Kerinci, the study is directed at these complex considerations on the role of the fallow within the total livelihood strategies of farming households. Participatory approaches are used to conduct this research.

A historical study using secondary sources from old Dutch colonial literature and maps are studied to understand reasons for land use and the factors which could have conditioned certain types of indigenous fallow development.

Fire as a land management tool in Sumatra, Indonesia. Can farmers do without it?

As most of the systems which incorporate a fallow, use the technique of slash and burn to clear the land, the following research by Quirine Ketterings gives a very interesting insight into the effects of the heat of the fire for soil fertility.

Quirine Ketterings, Ph.D. student in the Environmental Science Graduate Program, the Ohio State University, USA, under guidance of Meine van Noordwijk (ICRAF-SEA) and Jerry M. Bigham (OSU) is presently finalizing this project and will hopefully receive her doctorate from the Ohio State University in December of this year. Three students of the Agricultural University Bogor, Indonesia, graduated with sub-projects of this research as their B.Sc. or M.Sc. thesis.

Fire is still widely used as a tool in land clearing in Indonesia. The environmental problems those fires caused have been evident in the past but especially became an international issue in the fall of 1997 when smoke originating from land-clearing related fires in Sumatra and West Kalimantan blanketed not only large parts of Indonesia but also neighboring countries Malaysia, Singapore, Brunei, the Philippines and Thailand. This thick haze,

aggravated by El Niño and described as the worst in Southeast Asian history, lasted for months threatening the health of millions of people and directly influencing the economy of all above mentioned countries. Alternatives had to be found.

For alternatives to slash-and-burn to be acceptable, they should address both the problems and the benefits of burning as a landclearing method for small rubber and oilpalm farmers. A social/economic/ agronomic survey conducted in the Sepunggur area, Jambi Province, Sumatra, indicated that burning: 1) is the cheapest and easiest creation of space to plant/walk (51%); 2) adds free fertilizer as ash (23%); 3) improves soil structure allowing faster establishment of seedlings (15%); 4) reduces weed/tree competition (5%); and 5) reduces problems with pests/diseases (3%). Farmers indicated that without the use of fire both yield delay and reduction would lead to an increase in poverty.

Mulching, as an alternative, does not address either of the five benefits of burning. Slash-and-remove-wood addresses only the first advantage and requires a tremendous effort in labor. A ban on burning would hence be very difficult to enforce. A more attractive alternative could be slash-sell-and-burn. This alternative would maintain the benefits of burning while reducing air pollution. In addition, the sale of wood (if permitted) could supply the farmer with an extra source of income. Another strategy could be a reduction in the area cleared per burning event and fire management that prevents fires from becoming intense.

Before such alternatives can be promoted, it should be known what a reduction in fuel load and fire intensity mean for soil fertility and plant growth and thus for the economical situation of farmers that depend on it. Questions to be answered are: how is fire intensity related to nutrient availability and how important are the short term fertilizer addition (ash) effects versus the longer lasting changes in soil physical, chemical and mineralogical properties?

To address these questions several field experiments were established in Sepunggur, Jambi Province, Sumatra, in 1997 as part of the Rubber Smallholder Rubber Agroforestry Project and the Alternatives to Slash and Burn Project in Indonesia and in collaboration with the Agricultural University Bogor (IPB), Indonesia, and the Ohio State University (OSU), USA. To date these experiments resulted in a forest inventory (diversity, biomass estimates, and above ground biomass nutrient contents), an allometric biomass equation for secondary forests in the region, a social/economic/ agronomic survey among the farmers in the area, several studies on the short-term (4 weeks) effects of heating alone on changes in general soil fertility status (soil chemical/physical/ microbiological properties) under controlled conditions, and several microscale and macroscale (farmer's plot size) field experiments on effects of heat alone and heat and ash addition combined on soil fertility and soil mineralogy.

Results of these experiments emphasize the key role that phosphorus plays in the discussion on alternatives to slash and burn. Phosphorus is the most limiting element in the soils in Jambi Province, Sumatra. It can be supplied to the soil upon burning by the conversion of forest biomass (both above and below ground) to inorganic phosphorus, the reduction in size of organic material thus fastening the decomposition rate of organic material and subsequent release of phosphorus, and by an increased rate of weathering of phosphorus containing minerals during and after the burn when soil temperatures remain high. Phosphorus can be lost from the farmer's fields in the form of particulates in smoke and erosion. In addition, it can become unavailable for plant uptake when heat converts labile pools into occluded pools.

Field experiments in the Sepunggur area indicated that burning at low to medium intensity releases P into the soil solution. However, high intensity fires resulted in a reduced P level after the fire.

The positive effects of ash addition on P availability seemed offset by the negative effects of heat exposure on soil mineralogy. These results suggest that the use of fire adds immediately available P to the soil shortly after the burn (an effect that could also be obtained with fertilizer addition) but shortens the length of time over which P levels are beyond ambient by increasing P fixation. Therefore, high intensity fires are undesirable, not only because of environmental but also because of soil fertility reasons. Alternatives to slash and burn as a method of land clearing should thus concentrate on management practices that:

1. clear the land to enable establishment of desired species;
2. add nutrients in the crop establishment phase
3. reduce the loss of nutrients during the cropping period and/or increase the speed of recovery during the fallow period.

Only when those alternatives are found and implemented, can we give a confirmative answer to the question: Fire as a Land Management Tool in Sumatra, Indonesia. Can Farmers do Without it?

For further information: Quirine M Ketterings,
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Timor

Johan Kieft, Project Manager of the following project, was one of the participants of the IFM workshop in 1997. He works with the IFM Network on fallow management and participatory nutrient cycling, through a NGO, Timor Membangun.

The Timor Integrated Rural Development Programme (TIRD-p)

TIRD-p is a programme implemented by 6 NGOs¹ on Timor. The programme is supported by OXFAM and focuses on sustainable, social and gender just development on Timor. TIRD is active in the fields of agriculture, livestock husbandry, home industry development and advocacy (especially land rights). In its development efforts TIRD uses Participatory Technology Development as its basic approach. Farmers will develop the natural resources they have access to through a process of experimenting and improving indigenous technologies. TIRD aims to look at development from a farmers' perspective. This means that the way farmer's cosmovisions (the way farmers perceive the world) is very essential.

That is the reason why TIRD has a special focus on indigenous fallow management. Fallowing is an essential part of the Timorese farming systems and farmers have showed the ability to use new species to enhance the fertility built up of the fallow. Fallows generate nutrients through organic matter built up of the soils. The fallow also supplies the household with fodder and raw materials for household industry such as dyes and fibers.

In the framework of IFM TIRD plans together with LEI (Dutch Institute of Agricultural Economics) and IFM -ICRAF SEA to develop an approach based integrated nutrient management strategies to enhance the fallow management abilities of farmers.

This central role of fallows in the farming systems makes TIRD believe that any successful development approach on Timor has to take the fallow into account as it is there that the farmers "harvest" essential "products" such as soil fertility which are essential for sustainable livelihoods.

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South Kalimantan

In South Kalimantan initial research has started through the Lambung Mangkurat University. One of the lecturers on Social Forestry there, Mahrus Aryadi is leading this initiative.

Indigenous Agroforestry Practices in Riam Kanan Watershed of South Kalimantan

Forest fire and hardly any community participation are key points for unsuccessful of reforestation and social forestry programs on Riam Kanan watershed, South Kalimantan. It was thought that the indigenous Agroforestry systems existent in the area, could guide more successful efforts in reforestation and fire management, as there are not many problems in areas where farmers have developed their own agroforestry systems".

At least three types of Indigenous Agroforestry systems are being practiced in Riam Kanan watershed by the farmers, namely reversing *Imperata* grassland-based agrisilviculture into forest garden; secondary forest-based agrisilviculture become forest garden; and home gardens. Most useful tree species for the farmers are to incorporate into their "reforestation efforts are:

¹ Timor Membangun, Tafen Pah, Tafen Tob, Haumenni, Alfa Omega and Yustisia

Rubber (*Hevea brasiliensis*), Candlenut tree (*Aleurites moluccana*), and Stink bean (*Parkia speciosa*).

Such systems could form the basis for rehabilitation of deforested areas, and for those areas that are degraded and invaded by *Imperata* grasslands through frequent (forest) fires. Problems to be addressed to develop successful indigenous systems to "problem areas" are: insecure land ownership status, shortage of quantities and quality seedlings, and an extension service which is not well equipped and trained to work on such relatively new and political issues.

For further information: Mahrus Aryadi,
Faculty of Forestry, Jl. A. Yani, PO Box 19,
Banjarbaru 70714 Kalimantan Selatan,
Indonesia. Fax/phone: 62-511 92290

PHILLIPINES

Research on bamboo

Indigenous knowledge of upland farmers in the Cordillera Region is diverse may it on food processing, seed preservation, forest management and farming systems. This wealth of knowledge which is related to swidden cultivation practices have long been undertaken but the recognition of these innovative approaches is slow.

The Ecosystems Research and Development Service (ERDS) of the Department of Environment and Natural Resources (DENR) in the Cordillera Region is at presently undertaking a study on Indigenous Bamboo-Based Fallow Farm Management in Selected Provinces in Benguet. The research was conceptualized after the workshop on Indigenous Strategies for

Intensification of Shifting Cultivation in Southeast Asia held in Bogor, Indonesia on June 22-27, 1997 with the following objectives:

1. To document the indigenous (bamboo-based) fallow farming systems adopted by the farmers.
2. To assess the biophysical components of
3. The farms both under cultivation and under fallow.
4. To produce a visual aid relative
5. Various practices for technology transfer purposes.

Preliminary observation in the Municipality of Sablan in Benguet Province shows that fallow period is 3 to 4 years before cultivation. The first year fallow is dominated with Rono (*Miscanthus chinensis*), while the second and third year fallows are dominated with bamboo species Buho (*Schizostachyum lumampao*) and Bikal (*Dinochloa* sp.) with an average culm of 12 per clump. There are 20 to 36 clumps per plot measuring 10 x 20 m.

Some species planted per cropping season are Gabi (*Colocasia esculenta*), pineapple (*Ananas comosus*), sweet potato (*Lpomoea batatas*), ube (*Dioscorea alata*), ginger (*Aceite de gingibre*) and *Albizia procera* in swidden farms are not cut because they are used for wood carving.

Data on vegetative cover, soil characteristics, cropping patterns and gender roles are also considered in the study which has a duration of two years.

VIETNAM

Development of Animal Husbandry in Tandem with Managed Fallows in Vietnam's Uplands.

The Department of Agroecology and Environmental Science (DAES) of Hanoi Agricultural University (HAU) has received Ford Foundation support in implementing a project entitled 'Research and Outreach Training to Improve Upland Resources and Management in Vietnam'. This initiative was conceived with the general objective of strengthening DAES's capacity to undertake research and outreach activities on resource management issues in Vietnam's uplands. It proposes to focus close attention on 'composite swiddening' as an example of land use that appears relatively stable and sustainable on sloping lands.

The research component of the project is situated in Upland Song Da (Black River) watershed in northwestern Vietnam, bordering with Laos and Yunnan. The work includes an investigation of 1) the role of livestock husbandry in composite swidden systems, 2) fallow management practices, and 3) potential synergies between them. With the permission of the Principal Investigator, Dr. Tran Duc Vien, the following synopsis is quoted from the proposal document:

"In terms of the livestock study, it will begin by sketching the traditional role of animal husbandry in swidden-based farming systems in the uplands. It contends that in the context of regional economic trends, upland farmers have a comparative advantage in producing livestock. Expansion of the livestock sector holds promise of increasing productivity of the rural labor force by converting available feed resources into marketable surpluses and increased cash receipts. In some cases, current trends towards intensification of swidden cultivation have the potential to dovetail neatly with increased fodder production for ruminant livestock, and the research hopes to document indigenous innovations to manage fallow vegetation to enhance its fodder value. The study proposes building on this concept in converting swidden fallow into improved pasturage/fodder banks that combine benefits of both soil rejuvenation and fodder production. The livestock become

important in accumulating nutrients which are then returned to the field through dung. Development of improved fodder resources usually encourages a parallel movement towards livestock confinement in cut-and-carry systems; as long as free-ranging continues as the norm however, fencing solutions will be critical to protect fodder banks from over-grazing and soil compaction.

In addition to the practical benefits, it is also politically astute to modify swidden cycles into what is essentially a fodder-food crop rotation. Conversion of fallow into a carefully managed fodder phase would resonate favorably with state policies to sedentarize swidden agriculture and reduce burning, and thus build a clear argument for their recognition as agricultural lands under the customary tenure of local communities.

The work will further focus research attention on the compelling array of case studies in the region where swiddenists confronted with mounting land use pressures have successfully developed their own technologies to manage fallow land more productively, thus enabling a sustainable intensification of the swidden system. The research teams will conduct a series of parallel research activities on the most promising IFM practices.

This research focus on fallow management builds on and compliments the mandates of both the Mountain Rural Development Program and the Shifting Cultivation Stabilization Program, and adheres to the research and development priorities of the Vietnamese government.

It envisions a 3-phase approach:

1. Review of existing studies focusing specifically on farmer approaches to fallow management;
2. Field surveys of farmer practices and perceptions. Evidence suggests that fallow management technologies must offer more than just biological benefits to be attractive to labor-short swiddenists; there must also be direct economic dividends. The surveys will

carefully document those species that farmers associate with efficient fallow functions (i.e., weed suppression, soil-building properties, disruption of disease and pest cycles, etc.) as well as those that provide products in demand for household use or sale (i.e., food, timber, firewood, livestock fodder, etc.). This fieldwork will allow researchers to learn more about local realities and variations between sites, as well as gauge the degree of farmer interest in fallow management.

3. Participatory design and implementation of field trials to test the most promising fallow management practices. Field days will later be organized to enable a participatory evaluation by local farmers; this feedback may guide further refinements that could then be tested in a second generation of field experiments. The work will conclude with a workshop to review the findings, evaluate which of the tested technologies may have dissemination value to other upland areas with declining swidden systems, develop extension strategies, and elucidate remaining knowledge gaps that require further research.

The IFM work will help refocus the uplands research agenda in Vietnam to one that is demand-driven, builds on indigenous practices, and empowers farmers as genuine partners in the research process – while simultaneously resonating strongly with government policies to sedentarize swidden cultivation – a fortuitous (and rare) convergence of state and swiddenist objectives.” (pp. 11-12)

For further information: Dr. Tran Duc Vien,
Chair of Department of Agroecology &
Environmental Science, Hanoi Agricultural
University (HAU), Gia Lam, Hanoi, Vietnam.
Email: lenam@netnam.org.vn

Contributions from Vietnamese Students...

The following dissertations authored by Vietnamese students sound interesting:

Ly Thin Luu

Title: Rocky swidden practices and improvement of the farming systems by H'Mong people in Ha Giang province

Nguyen Danh Dan

Department of Agroecology and Environmental Sciences (DAES)

Title: Indigenous knowledge in fallow period management in Northwestern Mountain Hanoi Agricultural University, Vietnam.

Pham Van Hien

Title: Rubber-based farming systems of ethnic minorities in Dak Lak province

Tran Danh Thin

MS, Agricultural Systems

Title: Fallow period management by legume species in Northern Mountains of Vietnam
Chiang Mai University, Thailand. 1996.

PAPUA NEW GUINEA

Trialing *Casuarina oligodon* performance in montane mainland SE Asia

During a visit to the PNG highlands a few months ago, Malcolm seized the opportunity of collecting

some *Casuarina oligodon* seeds to distribute to network members in Nagaland, Yunnan and northern Laos to trial its performance under local conditions. Participants at the regional IFM workshop will remember a paper presented by Dr. Michael Bourke (ANU) entitled 'Management of fallow species composition with tree planting in Papua New Guinea'. His paper highlighted farmer use of *Casuarina oligodon* as a superior fallow species in the highlands of PNG in ways that have many intriguing parallels with alder management in the Himalayan foothills. *C. oligodon* is unique in New Guinea, thriving at altitudes of 1400-2100 m.

Although the seeds received phytosanitary clearance, we need to keep in mind that this is an exotic species and the potential ecological implications of its escape warrant impact assessment. If you decide that you need more seeds to undertake a proper trial, a colleague at Lae, PNG has graciously consented to assisting us collect more as needed.

We look forward to feedback from Amenba Yaden, Guo Huijun and Keith Fahrney on how *C. oligodon* is performing at their respective sites. Hopefully this type of exchange of germplasm and experiences is one of the roles that can most usefully be played by the IFM Network.

Proposal to study *Casuarina* in Papua New Guinea

Casuarina oligodon, in both wild and domesticated stands, is an extremely important indigenous tree species in many parts of the highlands of Papua New Guinea (PNG) and Irian Jaya (Indonesia). It is used for shade for coffee; in agroforestry systems in rotation with sweet potato and other crops; as a multi-purpose species for timber, fuel wood and fencing; and for reducing soil erosion and maintaining soil fertility. In four areas of the PNG highlands, the species is planted in a rotation with sweet potato in an agroforestry system. It is used

thus because it maintains soil fertility as well as providing timber.

Despite the importance of *Casuarina* in the highlands of PNG and IJ, there has been little systematic study of the species. The available information was summarized in the paper by R.M. Bourke presented at the workshop on Indigenous Strategies for Intensification of Shifting Cultivation in SE Asia, Bogor. The paper is titled: "Management of fallow species composition with tree planting in Papua New Guinea."

The Land Management Project at the Australian National University and the Tree Improvement and Genetic Resources Program of CSIRO Forestry in Canberra have developed a study proposal in conjunction with the PNG National Agricultural Research Institute and the PNG Forestry Research Institute. A baseline study is proposed in PNG with a number of objectives, as follows:

1. To collate and review existing literature on *Casuarina oligodon*.
2. To analyse the current distribution of agroforestry systems incorporating *Casuarina oligodon* in relation to the physical environment and to identify other locations where such systems could be used.
3. To estimate the value of *Casuarina oligodon* to the PNG economy.
4. To undertake social and farming system research in the PNG highlands to describe the traditional uses and management of *Casuarina oligodon* in and near villages, and the species's constraints as perceived by villagers.
5. To study possible pathogen problems associated with *Casuarina oligodon* in the PNG highlands.
6. To map the distributions of the wild and domesticated populations of *Casuarina oligodon* in PNG.

7. To collect seeds from new provenances of *Casuarina oligodon* from wild and domesticated populations in PNG.
8. To establish field trials of new provenances of *Casuarina oligodon* in PNG.
9. To study the genetic variations within the wild and domesticated populations of *Casuarina oligodon* in PNG through taxonomy and molecular studies, and glasshouse trials.
10. To train scientists in PNG in research methodologies for studying *Casuarina*.

The proposed study would take two years, with most of the activity in PNG and some in Canberra. Funding is currently being pursued for the project. *Piper aduncum* fallows in the lowlands of Papua New Guinea.

For further information: RM Bourke,
Department of Human Geography, Research
School of Pacific and Asian Studies,
Australian National University, Canberra ACT
0200, Australia

Research on *P. aduncum* fallow species

The shrub *Piper aduncum* L. originates from South America but has invaded aggressively in Papua New Guinea. *P. aduncum* dominates the secondary fallow vegetation in many parts of the lowlands and forms occasionally monospecific stands. In a paper to be included in the forthcoming proceedings of the IFM workshop held in Bogor in 1997, we report on its biomass and nutrient accumulation compared to *Gliricidia sepium* and *Imperata cylindrica*. After one year, above ground biomass accumulation of *P. aduncum* was 13.7 Mg ha⁻¹, 23.3 Mg ha⁻¹ for *G. sepium* and 14.9 Mg ha⁻¹ for *I. cylindrica*. Nitrogen

accumulation was 365 kg ha⁻¹ for *G. sepium* and 120 kg N ha⁻¹ for *P. aduncum*. Potassium accumulation of *P. aduncum* was highest (249 kg ha⁻¹) whereas overall nutrient accumulation of *I. cylindrica* was lowest. Soil moisture levels under *P. aduncum* were significantly lower compared to the other fallows confirming farmers' observations on this fallow species.

For further information: Alfred E Hartemink,
University of Technology, PMB, Lae, Papua
New Guinea.

Present address: ISRIC, PO Box 353,
6700AJ Wageningen, The Netherlands.
Email: soil@isric.nl

4. PROFILES OF STUDENT RESEARCH

Rattan fallows in East Kalimantan

As part of her Masters program at Cornell University, Crissy Guerrero will undertake a field study on Dayak rattan cultivation in swidden systems in East Kalimantan, Indonesia. When not studying, Crissy works with the NGO, NATRIPAL, in assisting Palawan tribal communities to claim and sustainably manage ancestral domain lands. Particularly during the hungry season, Palawan tribes rely heavily on income generation from gathered rattan and resin tapped from *Agathis philippinensis* Warb. (Araucariaceae) to purchase rice shortfalls. Crissy is keenly interested in Indonesian lessons from the Krui damar agroforests and rattan cultivation in East Kalimantan swiddens – that may have transferability to Palawan's uplands. Ultimately, she hopes that variations of these technologies my

have potential as livelihood components in ancestral domain management plans.

For further information: Crissy
Email: msg22@cornell.edu

Karen fallow management practices in Northern Thailand

Prasit Wangpakapattanawong is collaborating with ICRAF's Thailand program in studying Karen swidden systems in the Mae Chaem subcatchment. A central component of the investigation is understanding if and how farmers are managing fallow lands more productively. Prasit is a PhD candidate in Forest Sciences (Ecology) at the University of British Columbia in Canada.

For further information: Prasit
Wangpakapattanawong,
ICRAF Thailand, PO Box 267, Chiang Mai
University, Dhiang Mai 50200, Thailand. Tel:
66-53 357906, 357907
Fax: 66 53 357908
Email: prasit@interchange.ubc.ca

The Amarasi system on Timor

This report by Nalan Yuksel on her study of Leuceana-based fallows in Amarasi, West Timor is now available as an Occasional Paper from the secretariat. Nalan was a Masters student at the Norman Paterson School of International Affairs of Carleton University and had an attachment to the IFM Network during her fieldwork, working together

with Paul Burgers and Malcolm Cairns. Other persons/institutions that enabled this work were the Asian Development Bank (ADB) for funding support, Dr. TP Tomich (ICRAF S.E. Asia) for supervision and the Politeknik Pertanian of Universitas Nusa Cendana for providing logistical and scientific support in Bogor and West Timor.

Abstract

Defining the predominant cause of tropical deforestation is a major issue of contention international politics. The present debate revolves around the role of indigenous slash-and-burn agriculture in propagating this destruction. This ancient system of farming has had the misfortune of being one of the most maligned agricultural systems in the world. Misinformed and politically motivated government policies have not been successful in identifying sustainable alternatives for these resource poor slash-and-burn farmers. However, indigenous farmers on the island of West Timor, in eastern Indonesia, have drawn on their intimate knowledge of the local environment and have successfully used indigenous management practices to overcome environmental degradation. The indigenous farmers in Amarasi District have altered their local institutions to tackle their ecological problems. The resulting Amarasi System of agriculture and community development is a blend of politics, economics, religion and Adat (customary) law. The success of Amarasi lies in the relationship between indigenous forms of land and resource management and the incentives provided for adopting and maintaining sustainable agriculture and practicing conservation management techniques.

For further information: Nalan Yuksel
Email: nalan_yuksel@hotmail.com
Apt. 5 - 289 Metcalfe Street, Ottawa, Ontario,

K2P 1R8, Canada

**Copies of this paper can be obtained from
the IFM Secretariat in Bogor.**

Succession dynamics of *Imperata cylindrica* and *Chromolaena odorata* in swidden fallows

Directly related to fallow management, Nipada Ruankaew is undertaking her doctorate research in northern Thailand, aimed at understanding successional dynamics between *Chromolaena odorata* and *Imperata cylindrica*.

Imperata cylindrica and *Chromolaena odorata* are two invasive perennial weeds that have become important parts of early successional vegetation in the tropics, including Northern Thailand. Their widespread distribution has cost farmers and foresters significant amounts of resources and effort in eradication and prevention of these species. Commonly, each species forms a monoculture stand that dominate an abandoned field, and the two species are rarely intermixed (personal observation). *Imperata* is highly light-demanding and fire-resistant. *Chromolaena* can grow in both full light and partial shade, and its seeds are easily destroyed by fire. What is not known is how these two species interact competitively and how this competitive dynamics might be modified by light and by fire. *Chromolaena* is said to be able to suppress and replace *Imperata* in regions with infrequent fire (de Rouw, 1991; Ivens, 1983). The questions that arise from such observations are (1) what is the potential range of *Imperata cylindrica* and *Chromolaena odorata* in Northern Thailand?, (2) what biological and land use variables determine whether a particular abandoned field will be colonized and dominated by either species?, and (3) what factors prevent or facilitate forest recovery after these weeds have invaded?

The goal of this study is to integrate knowledge from separate approaches to answer the above questions, and develop a regional model which predicts the probability of colonization by either *Imperata cylindrica* or *Chromolaena odorata*, and the probability of subsequent secondary forest regeneration in abandoned agricultural fields. Regional survey of Northern Thailand will establish a database of distribution of *Imperata* and *Chromolaena* and the associated climatic and land use parameters, which include precipitation, elevation, number of dry months, lengths of cultivation and fallow periods, frequency of weeding, frequency of burning, fertilization usage, and percentage of mature forest (Question 1). A series of experiments will attempt to understand the competitive dynamics of *Imperata cylindrica* and *Chromolaena odorata* with different light environments and presence or absence of burning (Question 2). Other transplant experiments will try to assess the influence of *Imperata* and *Chromolaena* on tree seedling establishment, and thus subsequent forest regeneration after the weeds have colonized (Question 3). The model will then combine the experimental results with the climatic and land use input parameters to predict the probability of colonization by either *Imperata* or *Chromolaena*, and the subsequent forest recovery in fields dominated by *Imperata* and *Chromolaena*.

The significance of this integrated study will be of several folds. First, it will give us more understanding of the competitive dynamics between *Imperata cylindrica* and *Chromolaena odorata*, under different light and fire conditions normally created by different agricultural systems. It will also enhance our knowledge of the inhibitory or facilitative effects of these weeds on colonization by trees and therefore subsequent formation of early secondary vegetation that is, secondly, critical to the fate of the abandoned field: whether it will eventually develop into a grassland or a secondary forest. Finally, the results will benefit the worldwide effort to manage and convert *Imperata* grasslands, considered the “most

degraded vegetational unit" (Charley 1983), into more forested land. The changing proportion and pattern of forested landscape and grassland have impacts at all local, regional and global scales because of the way the alter biophysical, biogeochemical and hydrological states and processes, especially the climatic patterns. The results of this study will hopefully contribute to the current globally cooperative attempt to understand the impacts of land use and its change on land cover and the associated global climate patterns."

For further information: Nipada Ruankaew,
Dep't of Ecology and Evolutionary Biology,
Princeton University, Princeton,
New Jersey 08544, USA

Reference

Charley JL. 1983. 'Tropical highland agricultural development in a monsoonal climate. The utilization of *Imperata cylindrica* grassland in northern Thailand'. Mountain Research and Development 3: 389-396.

5. (UPCOMING) MEETINGS

Best Practices in Shifting Cultivation for the New Millennium

As we enter the 21st Century and a new millenium, between 250 and 500 million people continue to engage in shifting cultivation (also called slash-and-burn agriculture) despite the escalating environmental concerns created by these practices. They do so often in the face of extreme poverty, social marginalization and scant alternatives.

Ironically, these same people manage vast and valuable biodiversity and non-living resources critical to the continued health of the global environment.

A workshop is being planned to document, from across the globe, best practices in shifting cultivation for the new millennium: community-level practices that are productive, equitable and sustainable. The project will draw on efforts directed to improving the lives of people while providing sustainable modifications and alternatives to traditional practices. This important initiative is in collaboration with ICRAF and others and will be managed by the International Institute of Rural Reconstruction (IIRR), The Phillipines. Experienced practitioners are now invited to register their interest to participate.

Please find below the information on the workshop for this information kit.

Best practices in shifting cultivation for the new millennium

A workshop is being planned to document, from across the globe, best practices in shifting cultivation for the new millennium: community-level practices that are productive, equitable and sustainable. The project will draw on efforts directed to improving the lives of people while providing sustainable modifications and alternatives to traditional practices. This important initiative is supported by ICRAF and others and will be managed by the International Institute of Rural Reconstruction (IIRR). Experienced practitioners are invited to register their interest and many of these are expected to come from the Indigenous Fallow Management (IFM) network and other ICRAF projects.

"Best practices" are those employed by either outsiders or insiders toward a primary goal of socio-economic upliftment of communities practicing shifting cultivation. They are the

strategies, processes and tools that:

- focus on natural resource management,
- are replicable for wider sharing,
- are participatory,
- build on existing knowledge, and
- address real community needs.

To create awareness this information is published. Any suggestions or recommendations can be directed to the addresses below.

IIRR will use a participatory workshop process for the production of this information kit on shifting cultivation. The kit will provide development and community workers with practical information and approaches to the "problem" of shifting cultivation.

If you are interested in this workshop and would like to be kept informed please contact the secretariat in Bogor, or :

For further information: John Freeman,
Coordinator, Community Forestry,
International Institute of Rural
Reconstruction, Y.C. James Yen Center,
Silang, Cavite, Philippines)
Email: tsg-iirr@cav.pworld.net.ph

Fallows in tropical Africa: roles, management, alternatives

Last April an interesting conference was held in Dakar, Senegal. Find below the objectives of that conference.

Venue: DAKAR (Senegal)
Date: 13 - 16 April 1999
Seminar organized by: CORAF, The
Delegation of the European Community in
Senegal, The regional project fallows,
ISRA and ORSTOM

Objectives

In the savanna zones of sub-Saharan Africa, researchers, land developers and rural development agents have, over the past few years, undertaken research and development activities on the consequences of shortening of fallows for the rural environment and the agricultural societies which use them, as well as on ways to remedy these effects. Two projects were initiated by a research group from both North and South, with support from the European Union:

Fallows/Biodiversity (STD3/DGXII)
Fallows in West Africa (7th FED/DGVIII)

Since 1992, the regional co-operative research programme developed a network, with funds from the European Union and under the aegis of the Conference of Agronomic Research Leaders in West and central Africa (CORAF), bringing together institutions from both the South and the North around the theme of Fallows.

The different teams within the programme "Fallows in West Africa" intend to present the results of their research carried out in Burkina-Faso, Cameroon, Côte d'Ivoire, Mali, Niger and Senegal at the seminar.

The following themes will be included:

Theme 1. Roles, functions and the future of natural fallows in rural societies in tropical Africa. Their place in village lands.

Theme 2. Natural fallows play a role in the conservation of biodiversity and in production.

Theme 3. Fallows and the fertility of the environment. Biological aspects of the restoration of soil fertility.

Theme 4. Improved fallows. Current techniques that substitute for fallows (agro-forestry, forage rotations, short fallows between crops).

For further information: Secretariat of the International Seminar, Fallows in Tropical Africa, Projet Jachère, ORSTOM, BP 1386 Dakar, Senegal. Tel: 221-832 3480, Fax: 221- 832 26 98 (direct line, Projet Jachère), Email: ponpon@dakar.orstom.sn, Web: <http://www.orstom.sn/act-rech/jachere>

Of specific interest to this update is Chapter 5 on 'Fallow Management'. After defining what is meant by 'fallow', the chapter sets the stage with a general discussion of fallow functions, and the onset of degradation that often accompanies increased land-use pressures. It then goes on to discuss practical options for managing fallows in more productive ways. Interestingly, the authors conclude that there are few examples of indigenous innovations towards improved fallow management in the highlands of northern Thailand.

For further information and to order copies, please contact:
TZ Verlagsgesellschaft mbH,
Bruchwiesenweg 19, 64380 Rossdorf,
Germany)

6. USEFUL PUBLICATIONS AND DATABASES

Van Keer K, F Turkelboom, S Ongprasert and A Thirathon. 1998. Options for Soil and Farmer Friendly Agriculture in the Highlands of Northern Thailand. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH: Eschborn, Germany.

This publication is the final output of the Soil Fertility Conservation Project (SFC) and warrants a spot on the bookshelf of anyone working with upland farming systems in S.E. Asia. The authors have taken obvious care to keep the text easily understandable to a non-scientific audience, and supported with numerous illustrations, it provides a practical guide for agricultural extension workers, NGOs, projects and others working towards the betterment of farmer livelihoods.

Tithonia references now available in English

The IFM Network Secretariat recently had the following references related to *Tithonia diversifolia* translated into English:

Castano EFR and FN Molano. _____. 'Study of some of the bromathologies of mirasol (*Tithonia diversifolia* Helms V. Gray) as a possible substitute of the animal elementation'. (original language: Spanish)

Dinh LD. 1997. 'Green manure cover crops in Phu Quy area, Nghe An Province'. Paper presented at Meeting on Green Manure Cover Crops for Smallholder Upland Farms in Northern Vietnam' held in Hanoi in 1997. (original language: Vietnamese)

Vargas JE. _____. Characterization of the three coverings available in agroecosystems of Valle del Cauca' in Memorias III Seminario Internacional "Desarrollo Sostenible de Sistemas Agrarios". (original language: Spanish)

Verliere G. 1966. 'Fertilizing value of two plants utilized in coffee-shrub mulching tests: *Tithonia diversifolia* and *Flemingia congesta*' in Café, Cacao, Thé. Vol.

X, No. 3. July-Sept., 1966. (original language: French)

To request copies, contact: Malcolm Cairns, ICRAF, PO Box 267, CMU Post Office, Chiang Mai 50200, Thailand.
Email: M.Cairns@cgiar.org or mfcairns@hotmail.com)

CD database on agroforestry species

For those of you interested in screening trees as candidates for improved fallow systems, ICRAF has recently released a CD containing an 'Agroforestry Database and Tree Seed Suppliers Directory' that should prove to be a valuable tool. A revised version of the 'Multipurpose Tree and Shrub Database' is in progress.

For further information: Josina Kimotho, ICRAF, PO Box 30677, Nairobi, KENYA.
Email: J.Kimotho@cgiar.org

7. INTER-REGIONAL NETWORKING OPPORTUNITIES

South pacific network on sloping land management

The IBSRAM Pacificland network was created in 1990 with the overall goal of "contributing to poverty alleviation, food security, and natural resource conservation through the development of

sustainable farming systems for sloping lands in the South Pacific". I coordinate this regional sloping land management network in the Pacific involving Ministries of Agriculture and NGOs in Fiji, Tonga, Samoa, Vanuatu, Solomon Islands, and Papua New Guinea. One of the activities of this network is to work closely with farmers.

The network, together Extension Agricultural officers, transfers sustainable farming technologies such as contours, hedgerow crops (Vetiver), mulching and fallow management to farmers cultivating on sloping lands. Therefore, IBSRAM Pacificland is definitely looking forward to be a part of your network."

For further information: Tony Dowling, PACIFICLAND Network Coordinator, Koronivia Research Station, PO Box 13707, Suva Fiji Islands.
Phone/fax: 679 477770
Email: dowling@ibstram.org)

African network on green manures/cover crops

For those interested in the use of viny legumes as improved, short-term fallows, the CIEPCA Newsletter is ideal for tapping into the African experience. The Centre d'Information et d'Echanges sur les Plantes de Couverture en Afrique (CIEPCA) was conceived during a workshop on 'Cover Crops and Green Manure in Sustainable Agriculture in West Africa: Constraints and Opportunities' held in Cotonou, Republic of Benin on Oct. 1-3, 1996. The launching issue of CIEPCA Newsletter explains its genesis and objectives:

The workshop, funded by IDRC and SG 2000, was attended by 50 researchers and development agents from 10 African countries and elsewhere. During this workshop, participants identified the lack of information on cover crops and lack of seeds as two major bottlenecks to the development and adoption of cover crops in African production systems.

Therefore, the participants recommended the creation of a nonbureaucratic body that would facilitate information and seed exchange between West African countries. This led to the inception of CIEPCA, which will publish biannually, a newsletter to disseminate information on many aspects of cover crops.

CIEPCA Objectives

CIEPCA aims to facilitate information flow on research, development and seed availability of cover crops in sub-Saharan Africa. The specific objectives are:

1. Collect all available information on cover crops research and development in Africa and elsewhere in the tropics. Translate (English/French/English) and disseminate detailed information where necessary to immediate beneficiaries (researchers and extensionists developing and testing cover crops systems). Document efforts toward adoption and actual cases of adoption of cover crops systems in Africa.
2. Facilitate information exchange on cover crops within and between countries in Africa and elsewhere. The media of exchange are print (i.e., newsletter) and electronic (diskette, e-mail, internet). E-mail connectivity of country contact persons will be improved. The newsletter will carry abstract of reports, information on current research and development activities, and sources of additional information. Electronic information will be similar to print except that more detail

will be made available as databases (legumes, cover crops researchers, etc.) and full reports.

3. Multiplication and distribution of seeds of cover crops to researchers and extensionists in Africa with particular emphasis on the following countries: Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Ghana, Mali, Nigeria, Senegal, and Togo. Linkage to IITA for support on characterization, germplasm storage and phytosanitary guidelines.
4. Stimulate research on strategic issues influencing the utilization of cover crops in the region by funding adoption / impact studies, reviewing available literature, and searching for additional donor support." (pp. 1-2)

For further information: the CIEPCA
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Email: a.eteka@cgiar.org
The CIEPCA Newsletter is also available on
the internet at:
[http://ppathw3.cals.cornell.edu/mba_project/
CIEPCA/home.html](http://ppathw3.cals.cornell.edu/mba_project/CIEPCA/home.html)

Interaction with other networks

Cornell group

Currently, we are discussing the possibility to hire an additional Indonesian National Staff, who will work with the IFM Network in Bogor on developing an information exchange through electronic mail. The growing interest in sharing information and discussing fallow management issues will enable us to start up electronic information sharing and eventually some discussion from the Bogor office.

Subjects will include leguminous trees, cover crops and so on. This network will work closely together with Cornell University. The idea is to develop a newsgroup, where everyone can log in to look for information or ask questions. So no “dumping” of all kind of information in your mailboxes, but an interactive way of sharing and finding information, of which the “client” is in control. The secretariat will than help in finding the answers or contact the required persons.

If you have any ideas for other purposes of this mail server, please contact us in Bogor.

8. TRAINING AND EXTENSION

SE Asian Training Programmes on agroforestry or broader aspects of ecologically sustainable agriculture are now increasingly including a module on fallow management in their curricula. Indigenous fallow management is a module within the Capacity building project of ICRAF South East Asia. In line with this, the Training of Trainers course in Thailand this year had a module on the importance of Indigenous Fallow Management.

Paul will give present a capita selecta on Indigenous Fallow Management in July/August at the Agricultural University in Bogor (IPB).

Within academia, courses on fallow management are now taught by Eric Fernandez at Cornell University (ecf3@cornell.edu), and Dietrich Schmidt-Vogt at Heidelberg University (cp2@ix.urz.uni-heidelberg.de), and quite probably others.

9. VOICES FROM THE FIELD...

Unidentified fallow species in the highlands of West Timor

“During my trips, I came across the use of two different fallow species at higher altitudes for which I do not know the Latin/English names.

1. A small flower (diameter 1 cm), red/yellow, obviously an Asteraceae with spines. A herb

about 1m-1.20m height in the average. Leaves lightly green but a bit yellowish. Often planted in combination with *Sesbania grandiflora* and *Pinus* as an improved fallow, highly valued by farmers.

2. Yellow flower, diameter 6-7 cm, Asteraceae herb 1-1.5m high. Planted as sole crop and very impressive when the crop flowers. Very popular in the Lakmanen area east of Atambua.

For further information: Johan Kieft,
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Dutch traditional uses of Alder; a tree for all purposes

It appears that other countries have developed their own indigenous practices to manage alder. Paul Burgers supplies this post card as depicting a typical Dutch *Alnus* system – in which alders are planted to protect canal banks and other wet areas. He also explains that the branches of the tree have multiple uses, similar to rattan. Products made are baskets, breeding pens for ducks, furniture, animal traps, and mats, which are placed along the rivers and lakes to protect the banks from erosion through wind and water. Franca van de Pasch, another Dutch colleague at ANU, points out that since Holland is well-known for its winds (and hence many windmills), this alder is also commonly planted along bicycle paths as a wind break. In both cases, alders are trimmed back regularly – but respond by coppicing profusely. Meine van Noordwijk recounts his childhood when his family had an alder hedgerow in its garden as a friendly fence with the neighbors. Twice a year, he notes, it was devastated by blue 'alder beetles'.

Natural alder stands were also heavily defoliated. This is an apt reminder that in promoting alder or any other improved fallow species, we need to be mindful of the vulnerability of single species to pest/disease outbreaks and the wisdom of diversification. Meine adds that alder in Holland is profusely nodulated and a good N-fixer in very wet soils.



10. BOOKS AND PUBLICATIONS OF OUR MEMBERS

IFM working papers

As we mentioned in our first update we encourage student attachments or any other scientific collaboration with the Programme. See the amarasi paper, as written by Nalan Yuksel in cooperation with research assistance from Ali Aoetpah and Imo from the polytechnic in Kupang, Timor.

Books

Another participant of the Bogor Workshop, Dr. Dietrich Schmidt-Vogt (University of Heidelberg, Germany) has written a very interesting book on swidden farming and fallow vegetation in Thailand. The abstract of this book can be found below,

Farming and fallow vegetation in Northern Thailand. *Geocological Research* Vol. 8. Franz Steiner Verlag, Stuttgart, Germany. 1998.

Swidden farming by hill people has caused the conversion of extensive tracts of primary forests in the mountains of Northern Thailand between 700m and 1.500m altitude into secondary vegetation formations. The influence of swidden farming on vegetation development varies according to the cultivation techniques employed by different ethnic groups living in the highlands.

There exist two major categories of swidden farming systems:

- secondary forest swiddening by long-established groups, i.e. Karen and Mon-Khmer speaking groups, which is characterized by a short cultivation and a long fallow period permitting the rapid development of secondary forest mainly by coppicing and root sprouting through several stages of succession;
- primary forest swiddening by more recent immigrant peoples, i.e. Ibet-Burman groups and members of the Meo-Yao group, which is more intensive with an unspecified but usually longer cultivation period, often leading to a prolonged establishment of weeds and grasses on fallow swiddens and a retarded development of secondary forests.

The differences between the land use of the various ethnic groups is in the process of being gradually eroded in the wake of changes affecting

the northern highlands mainly through the improvement of access and transport, and the modernization of farming systems.

The objective of the treatise presented here is to study the floristics, structure, dynamics and usage of fallow vegetation within the context of the farming systems of different hill people. For this purpose, an exemplary approach was adopted and three villages selected as case studies: Ban Tun, Ban Huai and Ban Aze, inhabited, respectively, by members of the Lawa, Karen and Akha ethnic groups, and located around 1.000m within the lower reaches of the lower montane forest zone.

Research was carried out in the form of a survey of the various stages of fallow vegetation development by means of vegetation and stand structure analysis, with particular emphasis on the study of secondary forests, and in an inventory of the knowledge and utilization of plants occurring in fallow vegetation.

The villagers of Ban Tun still practiced the traditional Lawa form of swiddening with one year of cultivation on a large communally prepared swidden, and a 12 to 17 years long fallow period. Fallow vegetation was dominated by weeds in the first four years of succession, and then replaced by woody plants developing from coppices and root sprouts through a scrub stage into a secondary forest. Secondary forests were found to be extraordinarily complex with respect to species composition and stand structure, and abounding in species useful to the villagers.

A similar system of secondary forest swiddening was practiced by the Karen in Ban Huai Sai, which differed, however, with respect to the smaller size of swiddens, and a longer period of cultivation on some swiddens.

Vegetation development was also similar, but differences existed between secondary forests of the same age.

Ban Aze was more characteristic of the situation of recent arrivals in Northern Thailand, who find it difficult to settle in the overpopulated highlands, as well as more symptomatic of modern development, which is manifested in increased government control and greater economic opportunities. Fallow vegetation at Ban Aze consisted of secondary forests dating from the time of occupancy by the predecessors of the Akha in this area, and of a variety of more immature successional stages represented by weed, scrub, grass and bamboo formations, which have to be used for the establishment of new swiddens since the ban of forest-felling for agricultural purposes.

Most secondary forests on fallow swiddens that were studied in the course of this project were found to be ecologically as well as economically valuable. The intensification of farming systems in the highlands of Northern Thailand must be expected to lead to a degradation of these forests. It is suggested to preserve or even promote those swiddening systems of which the more complex secondary forests are an integral part by improving their productivity, or to convert them to related, i.e. forest-based systems, based on either the principles of agroforestry or of forest management.



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