Nigeria, which, by their activities and through a conference organized in 32 in Ibadan, prepared the ground for this workshop.
The results of this conference, together with these proceedings, form the entific background for the IBSRAM network on Tropical Land Clearing for stainable Agriculture, which was formed during this workshop.

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Tropical Land Clearing for Sustainable Agriculture: The SMN Concept

Marc Latham*

Abstract

This workshop was organized by the International Board for Soil Research and Management (IBSRAM), the Agency for Agricultural Research and Development (AARD), the International Institute of Tropical Agriculture (IITA), the International Committee for Land Clearing and Development (ICLCD), and the Soil Management Support Services (SMSS) with financial contributions from the United States, Australia, Germany, and Indonesia. The goal was to establish a Soil Management Network on Tropical Land Clearing for Sustainable Agriculture. During this workshop three aspects were considered:

1. *Definition of the problem and its limits. Choice of land to be cleared, clearing methodology, post-clearing management, and rehabilitation of degraded lands were the major points discussed. A multidisciplinary approach was used, with representatives from soil science, agronomy, civil engineering, socioeconomics, and other areas. A realistic research agenda considered both experimental and time imperatives.*
2. *Form of the network. It was decided that the network's structure and organization must be sufficiently coherent to retain the advantages of a network and sufficiently flexible to take into account local priorities.*
3. *Sequence of events. It was discussed that network development would include:*

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a. Formation of an interim Network Coordinating Committee (NCC) and formulation of a network proposal;
b. Forwarding the network proposal to potential participants;
c. Identification of National Cooperators;
d. Preparation of national projects;
e. Reviewing and integrating projects into the network;
f. Seeking financial support for projects and the network;
g. Identifying other cooperators.

The workshop participants proposed a Soil Management Network of interest to national programs and donors, which will result in improved agricultural production and profits from farming cleared land.

ITRODUCTION

ıe aim of this inaugural workshop was to establish a Soil Management ıtwork (SMN) on Tropical Land Clearing and Development for Sustainable ;riculture. This was the third inaugural workshop held by IBSRAM during 85. The two previous workshops—Management of Vertisols and Manage-ınt of Acid Tropical Soils—resulted in formation of two networks ISRAM 1987, ICRISAT 1987).

The IBSRAM concept of a Soil Management Network (SMN) is to assist d speed the application of existing knowledge through testing, adaptation, d on-farm validation in participating countries, and to establish new owledge adapted to different local situations. An IBSRAM SMN is a ıperative way of approaching these problems and seeking practical, on-m solutions. The SMN does not envisage basic research (on erosion or soil namics, for example); rather, existing knowledge is used to find manage-ınt technologies adaptable to local situations. If some basic research is eded in some area, it is conducted through collaborating organizations.

Serious problems of land clearing in the tropics and of subsequent man-ement for sustained production demand a coordinated effort. Reasons for ch an effort arise from needs for:

Adapting and developing technologies for improved and sustained agricultural production on cleared soils;
Learning from land clearing and development experiences, and developing guidelines;
Conducting cooperative research to avoid duplication and employing practical technologies to increase food production.

IDENTIFICATION AND LIMITS OF THE PROBLEM

Development of a Soil Management Network involves delineation of common interests of the participants. Unlike networks on plant selection or diseases, whose limits are well-defined, Soil Management Networks deal with complex problems. For the SMN on Tropical Land Clearing, four main areas of interest were defined in the preproposal:

- Choice of the land to be cleared and criteria for evaluation;
- Land clearing methodology;
- Post-clearing management;
- Rehabilitation of degraded and marginal lands.

At the workshop, working groups were formed to discuss what can be done collaboratively and what the priorities are for the network in these four areas. For the results to be scientifically sound and socially well-accepted, it was recognized that these different areas of activities are approached differently. Thus, research in the network must be concerned with many interacting disciplines:

- Environmental characterization of the site is important for transferring results from one site to another. Important parameters to quantify are soils and climate.
- Agronomic characterization includes crop selection, appropriate tillage practices, liming, manuring, fertilization, pest control, etc. While making use of existing agronomic information, the network should develop appropriate cropping systems (rotation, intercropping) and evaluate the effects of these systems on the dynamics of the site.
- Engineering, including interaction between machine and soil, is also an important aspect for the network. Soil compaction, runoff management, and feasibility of terracing steep slopes are important engineering considerations.
- Socioeconomic factors are crucial for the success of new land development projects. An excellent technology will be of no use if it requires unaffordable or unobtainable inputs. Similarly, the type of work and practices to be followed must be one the farmers involved are able to perform and accept.

The Tropical Land Clearing SMN must take into consideration all these aspects and build a common research approach. A common research approach does not imply that all the procedures will be identical; it means that participants agree on the concepts of experiments and on the types of analysis and measurement to be conducted. Because these experiments are linked to local socioeconomic constraints or priorities in each country, periodic reevaluation and revision of the network program are required.

After the research program has been clearly defined, the research agenda must be prepared, and the experimental imperatives will be determined by the research approach and methodology adopted. Shortcuts must be avoided because these may later adversely affect the interpretation and transfer of results. A good network research program must ensure that results obtained in different ecologies are comparable. To ensure comparability and transferability of data, regional training seminars are envisaged. One of these seminars is scheduled for Cameroon during January 1985 to address the issues of site selection, soil characterization, and experimental design.

Because timing for project implementation is important for donors and national administrations that support the projects, practical results must be obtained on schedule. Establishment of provisional guidelines at different stages of the program are visualized; however, scientific precision must not be compromised for the sake of time.

STRUCTURE OF THE NETWORK

An IBSRAM network is an association of three kinds of participants:

- National Cooperators represent research and development organizations that conduct research according to plans of the network working groups. National Cooperators may also work with other national and international centers.
- Funding organizations and donors take an active part in planning and implementing the research program.
- IBSRAM, through a coordinator and other staff, helps the National Cooperators in development and execution of the research programs. Where necessary, IBSRAM also acts as a link between National Cooperators and donors.

A network thus entails three organizations that work toward a common objective. Each organization provides an important input toward the success of the network.

Many existing networks serve agricultural development by supporting either individual participants or an international organization. IBSRAM's approach is to assist national organizations in achieving their goals, which makes it flexible. The approach is also realistic, however, as the strong link between IBSRAM and the National Cooperators ensures that each cooperator obtains the full benefits of the network.

SEQUENCE OF EVENTS

Formation and implementation of the Soil Management Network on Tropical Land Clearing for Sustainable Agriculture should follow the sequence of events outlined below:

1. An interim Network Coordinating Committee (NCC), comprised of participants, donors, and scientists, oversees the activities of the network. The NCC consists of:
   - 3 representatives of the potential National Cooperators;
   - 1 or 2 scientists;
   - 1 or 2 donor representatives;
   - The IBSRAM director and a member of the Board of Trustees of IBSRAM.

   The NCC drafts the network proposal on the basis of the recommendations of the working groups and helps the Network Coordinator implement the scientific program.
2. The proposal developed by the NCC is reviewed and implemented by the respective countries and national representatives as National Cooperators of the network.
3. Each cooperator is associated with a national research organization, which is already involved in some way in research on land clearing and development for sustainable agricultural production. The research organization thus selected to represent the country has necessary laboratory facilities and staff engaged in land clearing and development and will lead the national project as National Cooperator.

   There are three types of possible participation in the network:
   - Simple partaking of different network activities (receiving newsletter and attending workshops and training courses) without conducting a national research program;
   - Collaborating as an active cooperator and having an approved field program;
   - **Participating as an approved program and, in addition,** conducting **basic research related to the objectives of the network.**

   The most common participation in the network will be the second option, although the first and third options are also envisaged.
4. Depending on the network proposal, each potential National Cooperator is required to prepare a national project proposal and provide information on:
   - An agroecological description of the region proposed for siting the experiments;

- Socioeconomic background of the area concerned;
- Identification of the national agency responsible for the national project;
- Available research facilities—in terms of experimental field and equipment, vehicles, laboratories, office space, and personnel;
- Planned cooperation with national or international research agencies, universities, etc.;
- Any additional information of interest to the project.

5. Once the proposal of a National Cooperator is completed and approved by the government concerned, the following steps are taken toward its implementation:
   - The project proposal is forwarded to IBSRAM who, with the help of the interim NCC, will review it and may suggest changes or consider integration of this proposal with another ongoing project. For example, there may be three separate requests of a similar nature for conducting training programs. These requests may be combined to serve three countries.
   - Once IBSRAM has approved the program, funds are sought by both IBSRAM and the National Cooperators. Some donors may provide funds to IBSRAM, but may specify the activities and designate the recipient countries. Other donors may provide support directly to National Cooperators on a bilateral basis.
   - Once funds are available to implement the program, one proceeds according to the plans of the National Cooperators.

   If the financial support is not forthcoming, the NCC may have to meet and formulate alternate strategies.
6. Once the network is established and funded:
   - IBSRAM provides and arranges for a Network Coordinator to assist the individual National Cooperators during the initial 1 to 3 years;
   - Provided the necessary funds are available, arrangements are made for the NCC to make field visits to one National Cooperator per year to review the work in progress and evaluate the results obtained.
7. When the network is established and operational, additional National Cooperators wishing to join the network have the opportunity to do so. In addition, network newsletters and other IBSRAM publications are available to interested countries wishing to receive such information.

CONCLUSION

The Soil Management Network on Tropical Land Clearing for Sustainable Agriculture is an important activity of IBSRAM. It meets an urgent need and many donors are interested in financing its activity. IBSRAM and the NCC seek the cooperation of all participants in establishing this network.

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