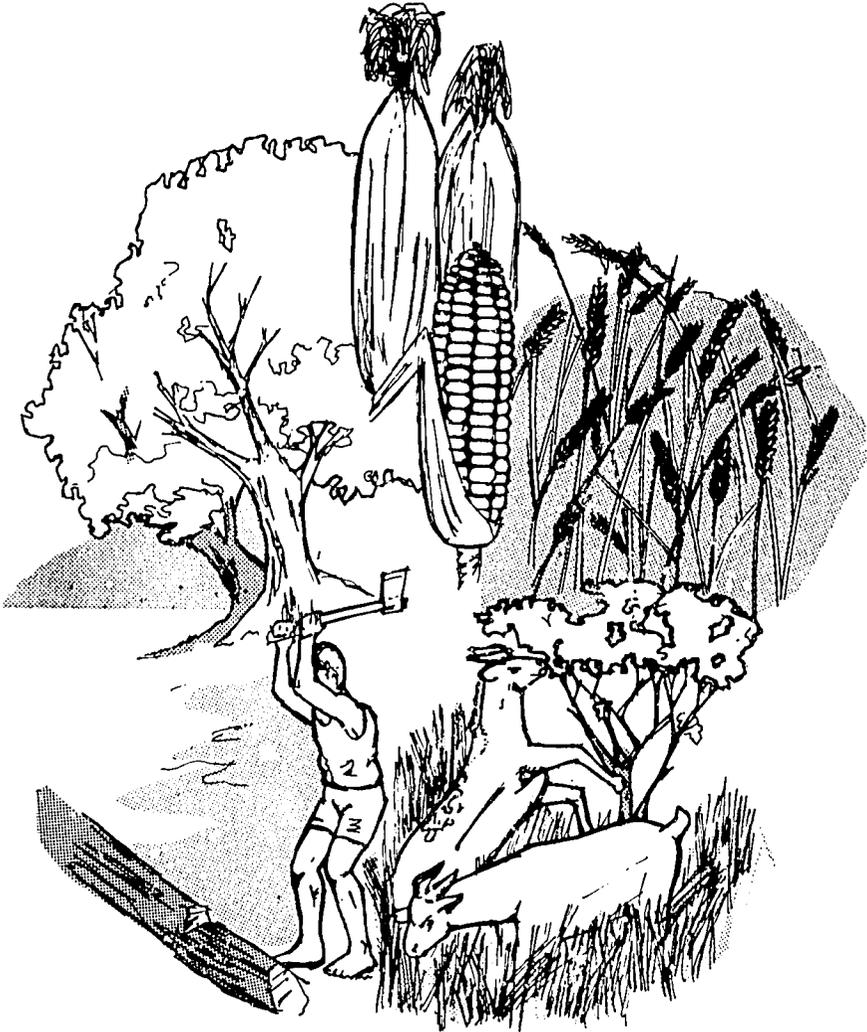


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**ICRAF**

**1983**



ANNUAL REPORT OF THE  
INTERNATIONAL COUNCIL FOR RESEARCH IN AGROFORESTRY

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**Meetings during 1983**

9th Board of Trustees Meeting, 22-25 March 1983  
 4th Executive & Finance Committee Meeting, 22 March 1983  
 7th Programme Committee Meeting, 22 March 1983  
 8th Programme Committee Meeting, 30 November - 2 December 1983

**Board decisions in 1983**

No major decisions regarding changes in programme, strategy or priorities were taken during the 9th Board Meeting. The Programme of Work and Budget were approved with only minor revisions. Some minor changes and clarifications in the staff policy and in the Charter were proposed and accepted in principle (some to be confirmed at the 1984 Annual Board Meeting). Four Board Members retired after serving their maximum 2 x 3 years as Trustees. New Trustees were nominated, all of whom have subsequently accepted the nominations (for names see list above). Dr. Walter Bosshard was re-elected Chairman for another period of two years.

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ICRAF Director Bjorn Lundgren.

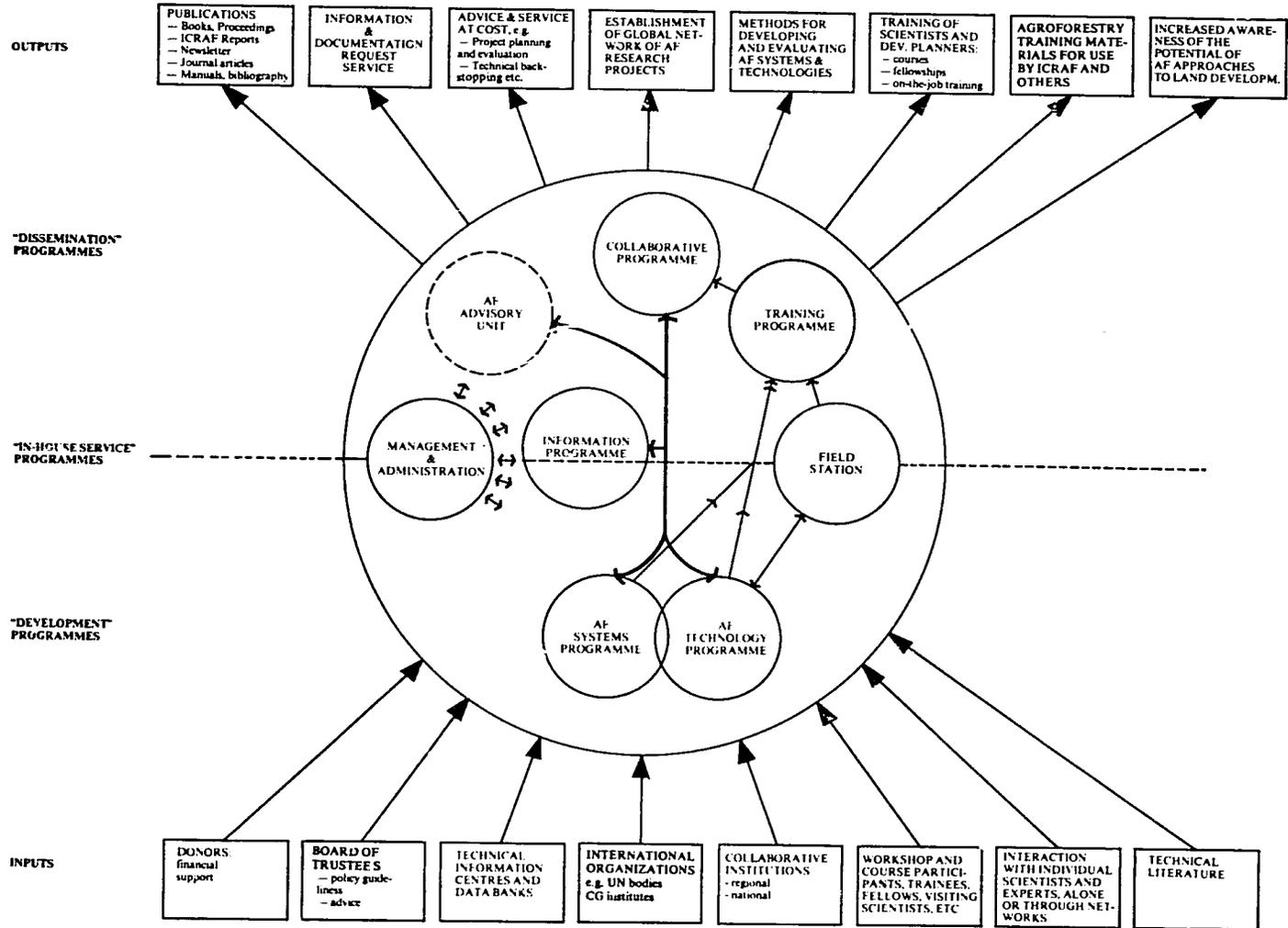
This report presents the work and achievements of the International Council for Research in Agroforestry during the calendar year 1983. Like in last year's annual report it is organized under the headings of the various work programmes. The order in which the work programmes are presented differs somewhat from previous reports in order to conform with an ICRAF presentation brochure which was produced during 1983. In this, a distinction is made between development and dissemination programmes to bring out, more logically, the structure and internal interactions in ICRAF's Programme Network (see Fig. 1). The development programmes are the ones in which original knowledge and research methods are produced (the AF Systems and Technology Programmes, respectively), and the dissemination programmes, quite evidently, those in which the knowledge and methods are used and disseminated to research and development institutions (the Information, Training and COSPRO Programmes). One new work programme has been added, the Agroforestry Advisory Unit, which became operational in September 1983.

In terms of work, the year has been characterized by a vigorous and steady implementation of projects started or planned in 1982 or earlier. Only a few new projects have been initiated. As envisaged in last year's report, 1983 has seen a significant increase in concrete outputs and

achievements. Among them are:

- at the Field Station, an agrometeorological unit was set up and several agroforestry demonstration plots were established;
- draft manuals on the use of the diagnostic and design methodology were compiled;
- MULBUD Version 3, the microcomputer software package for assessing the economic viability of agroforestry combinations, developed in collaboration with scientists of the Australian National University, became ready for dissemination;
- the draft "Research manual for multipurpose trees" was virtually completed;
- a "Workshop on multipurpose tree germplasm" was jointly organized by ICRAF, IBPGR and CFI in Washington in May (hosted by the National Academy of Sciences);
- proceedings of two workshops organized by ICRAF were published: *Plant Research and Agroforestry* and *Agroforestry Systems for Small-scale Farmers*;
- 14 Working Papers, reporting progress and preliminary results from various projects, were produced by ICRAF staff members;
- ICRAF's first three-week agroforestry training course for 22 English-speaking African scientists was successfully held in November;
- two project formulation missions were carried out within the COSPRO framework, one in Costa Rica and one in Malaysia;
- ICRAF staff participated in and contributed to agroforestry research planning meetings at ICAR (India) and REDINAA (collaborative programme between six Amazonian countries);
- the Agroforestry Advisory Unit was established in September.

**Fig 1: ICRAF programme of work structure**



All these achievements, and others, are described in more detail under their respective programme and project headings. Another development that is worth mentioning here is that 1983 has been the year of "microcomputer break-through" at ICRAF. Starting with the work on MULBUD, it soon became apparent that the small, portable microcomputers had a potentially much wider applicability in various ICRAF projects, not least in relation to information storage and retrieval. Several data bases are now being built up in different projects, which together will considerably increase our ability to respond promptly to requests for information. At the end of the year there were five such computers at the Council.

During 1983 we have experienced a most encouraging increase in interest in and support for our work. The levels of requests for information and advice, visitors, invitations to meetings, approaches for collaboration, etc., have all increased significantly. Parallel to this, financial support from donors has increased, although not quite as much as would have been desirable from the point of view of implementation of an optimal programme of work.

The growth in staff experienced in 1982 continued into 1983. On 1 January 1983 we were 12 senior and 27 support staff and others attached to ICRAF, and at the end of the year there were 17 and 42 respectively. This rapid growth will now slow down somewhat as we are approaching what can be considered an optimal staff level to implement the proposed programme of work.

The main medium and long-term operational constraints remain the same as they were last year, though they are now more accentuated and acute, viz. the need for proper office and training facilities of our own, and a better relation between restricted and unrestricted funds (the forecast for 1984 indicates that only 40% of our funds will be available as unrestricted core).

Looking back at 1983, the lasting impression is that we reached and passed a threshold in terms of global awareness of ICRAF, its work and its potential to have an impact on land development. Many scientists, development planners and organizations, both in developing countries and among donors, have increasingly come to realize that the potential of agroforestry as an approach to agricultural land development can only be realized if we stop regarding agroforestry as a narrow subdiscipline of forestry. I do not think it is an exaggeration to say that ICRAF can take a large share of the credit for starting this much needed process of re-thinking.

In these senses, it is probably right to say that 1983 turned out to be what I expressed a wish for in the last annual report, namely a year of final break-through for ICRAF. It is more doubtful whether one can argue that a final break-through

took place in terms of donor support. There have, indeed, been some very encouraging developments, e.g. the decision by the Ford Foundation to provide core support and the agreement by the Swiss Development Corporation and CIDA to contribute to the building of a headquarters. However, many donor agencies, both among those already supporting ICRAF and those which have expressed an interest in our work, still maintain a wait-and-see attitude when assessing our potential usefulness and impact. Consequently, they hesitate to provide unrestricted core funds or to make more than short-term support commitments.

Looking ahead into 1984, some lines of development, hopes and wishes, can be projected. First of all, there is little doubt that the present trend of increased activities, outputs and, eventually, impact will continue into the new year. The foundation of digested knowledge and R&D methods laid in the Systems and Technology Programmes will be further consolidated and deepened, and the dissemination of these will enter an even more active phase through expanded training activities, a more efficient information service and a larger number of collaborative projects.

It is hoped that an independent, external evaluation/review of ICRAF's programme and performance in relation to its mandate and resources can be initiated and implemented during 1984. No such review has been carried out in the past, and having worked successfully for three years with the strategies, foci and programme of work laid down by the 1981 and 1982 Board Meetings, we strongly feel that the time for it is now ripe. It is our firm conviction that such an in-depth review would be of tremendous assistance and guidance, both for identifying long-term priorities and programme development directions, and for advising on the best internal and external institutional structures to implement an impact-oriented and efficient programme.

There seems to be a reasonably good prospect that we will finally secure funding for a permanent headquarters in 1984. On the other hand, it is probably unrealistic to expect any solution or improvement in the situation with respect to our other main constraint: the imbalance between unrestricted core and restricted project funds. We do hope, however, that a consistently high level of performance in 1984 may pave the way for improvement in 1985.

In summary, ICRAF does look forward to 1984 (and beyond it) with great confidence: we know that we have now reached a stage (in terms of staff, experience and programme) where we can and will have a strong and positive impact on research for the development of productive and sustainable agroforestry land use systems and technologies in the developing world.

### 3.1 Donors and funding

The donor support and funding picture for 1983 is shown below:

Organization	US \$'000 (Total)	Type of Support
Carry-over from 1982	101	(Core, project)
CIDA	304	Core
Swiss Development Corporation	237	Core, secondment
Dutch Ministry of Development Cooperation	200	Core, secondment
Norwegian Ministry of Foreign Affairs	140	Core
Ford Foundation	84	Project, core
USAID	350	Project
IDRC	126	Project
GTZ/BMZ	120	Project, secondment
SIDA	65	Project
Rockefeller Foundation	24	Secondment
NAS	19	Project
AU income	40	
Other income	39	
<b>TOTAL FUNDS</b>	<b>1,849</b>	

### 3.2 Senior staff changes

The following internationally recruited senior staff members joined ICRAF during 1983:

**Professor Anthony Young** (U.K.) joined ICRAF's team of senior scientists in January to be responsible for soil science and land evaluation. He was previously Dean of the School of Environmental Sciences at the University of East Anglia in Norwich, U.K. He has worked as a soil surveyor and land evaluation consultant in Malawi, Malaysia, Nigeria, Niger, Tanzania, Ethiopia and Brazil, and has been a consultant to FAO, the World Bank and private companies. He was a senior member of the team responsible for developing the FAO Framework for Land Evaluation. Among his books are *Tropical Soils and Soil Survey* (1976) and *Soil Survey and Land Evaluation* (1981).

**Dr. Dianne Rocheleau** (U.S.A.) joined ICRAF in February on a two-year secondment as a Rockefeller Foundation Post-Doctoral Fellow. She is a geographer with specialization in systems ecology. Previously she served as Director of the Research and Inventory Programme at Plan Sierra, a rural development project in the Dominican Republic. She later worked at the Centre for Latin American Studies at the University of Florida.

**Dr. Michel Baumer** (France) came to the Advisory Unit of ICRAF in September with considerable experience in range management, dryland forestry and desertification control. He has worked for almost 25 years in tropical and sub-tropical countries (mainly in Africa) and has held several senior administrative, educational, development and consultancy positions in FAO, UNEP, the World Bank and the French Government.

**Mr. Peter Wood** (U.K.) joined the Advisory Unit of ICRAF in September on leave of absence from the position of Head of the Unit of Tropical Silviculture at the Commonwealth Forestry Institute in Oxford. He is one of the world's leading experts on tropical forestry and tropical trees, and has worked for over 25 years in research, education and development in these fields. He is frequently used by FAO, ODA, the World Bank and private companies as a consultant. He has written, co-authored and edited several books and articles on tropical forestry and tree issues.

**Mr. Willem Beets** (The Netherlands) came to the Advisory Unit of ICRAF in September from the Asian Development Bank, where he was an agronomist. He has a long experience of research, training and development projects from South America, Africa and Asia. He has written books and several articles on intercropping and multiple cropping farming practices and systems.

### 3.3 Administration

The continued rapid growth of ICRAF during 1983 led, inevitably, to a situation where we outgrew our office space. In September we were fortunate in being able to take over a whole wing on the 7th floor of Bruce House. At the same time we left the two small office pockets we had on the 3rd and 4th floors. Our total office space (on the 5th and 7th floors) is now about 910m<sup>2</sup>, which is just sufficient. However, we already anticipate our next "crisis" in May/June 1984, when a new group of trainees will join us, when 3 to 5 new research assistants will be recruited and when the second training course will be held.

#### 4.1 Physical development

The development of infrastructure and physical facilities continued during the year. These included provision of electricity and telephone connections, setting up a miniature field laboratory with some essential equipment, installation of an agrometeorological unit (see the following section), and clearing and fencing of additional area, bringing the total area cleared so far to about 15 ha.

#### 4.2 Agrometeorological unit

The unit was set up on the Station in May 1983 and consists of a CR. 7 automatic measurement

and control unit and appropriate sensors. Since then, regular measurements have been made and data recorded of:

- air temperature and humidity at 3 levels;
- soil temperature and humidity at 3 levels;
- wind speed and direction;
- global radiation; and
- rainfall.

The metrologger data output is 712 data points a day (672 hourly values plus 40 daily values of the various parameters). The unit is also being used for monitoring meteorological data in other on-going trials on the Station.

A summary of the climatic data for 1983 is given in Table 1, in which the data from June onwards are based on the output from the metrologger.

**Table 1: ICRAF Field Station, Machakos: rainfall and evaporation pattern - 1983**

Month	Rainfall Aver.	Rainfall 1983	Pot. EP Aver.	Pot. EP 1983	Pot. ETP 1983	Waterbal 1983	Ratio RR/EP	Classification 1983
Jan	54.1	10.3	189.0	(208)	(166.0)	-155.7	(0.04)	arid
Feb	47.1	126.6	206.6	(227)	(181.0)	-54.4	(0.56)	sub-humid
Mar	96.3	0	218.6	(240)	(192.0)	-192.0	(0.00)	arid
Apr	166.6	103.6	165.6	(182)	145.0	41.4	(0.57)	sub-humid
May	67.1	21.4	135.3	(150)	120.0	-98.6	(0.14)	arid
Jun	10.6	7.6	112.5	123.0	99.0	-91.4	0.06	arid
Jul	6.1	4.9	106.2	120.9	99.2	-94.3	0.04	arid
Aug	4.1	15.4	124.0	148.8	124.0	-108.6	0.10	arid
Sep	9.6	1.8	161.0	171.0	145.7	-143.9	0.01	arid
Oct	40.6	3.6	201.0	213.9	179.8	-176.2	0.01	arid
Nov	156.3	75.8	156.5	195.0	159.0	-83.2	0.38	semi-arid
Dec	93.0	156.8	155.9	173.6	139.5	+17.3	0.91	humid
Year	751.5	527.8	1932.3	(2153.2)	(1750.2)	(-1222.4)	(0.24)	semi-arid

<b>Rainfall Aver:</b>	Monthly rainfall average as calculated for ICRAF Field Station, using the data from Katumani and Machakos Dam Station 1953 - 1982.
<b>Rainfall 1983:</b>	Data January to March from Machakos Dam; from April onwards measured at ICRAF Field Station.
<b>Pot. EP Aver:</b>	Potential Evaporation as measured with a Class A pan in Katumani and adjusted by dividing it with the co-efficient 0.93.
<b>Pot. EP 1983:</b>	Potential Evaporation as calculated with the Penman formula using the data measured at the ICRAF Field Station.
<b>Pot ETP 1983:</b>	Potential Evapotranspiration as calculated with the Penman formula using the data measured at the ICRAF Field Station.
<b>Waterbal. 1983:</b>	Pot. ETP 1983 minus Rainfall 1983.
<b>Ratio:</b>	Rainfall 1983, Pot. EP 1983.
<b>Classification:</b>	Ratio
	< 0.2 arid
	0.2 - 0.4 semi-arid
	0.4 - 0.75 sub-humid
	> 0.75 humid

### 4.3 Agroforestry demonstration plots and trials

#### *Multipurpose trees and shrubs for agroforestry*

This trial, initiated at the time of establishment of the Field Station in 1981, continued during the year. At the end of the year about 40 multipurpose tree/shrub species had been planted out in the field. Growth measurements and other observations have been recorded on the species, and summaries of the results are reported periodically in the Council's quarterly progress reports.

The multipurpose species are one of the major attractions for various visitors to the Station.

#### *Soil conservation technologies*

With the help of the funds made available by the Swedish International Development Authority (SIDA) in 1982 and 1983, four sets of plots have been established on the Station to demonstrate the role of agroforestry in soil conservation. These are:

- trees and grasses in rows at regular intervals across the slope so that the inter-spaces could be used for growing agricultural crops;
- contour bench terraces across the slope, the benches being stabilized by perennial grasses and woody species;
- the Fanya-juu terraces along the contour, set up with the help of the soil conservation unit of the Ministry of Agriculture, Government of Kenya; and
- a hedgerow planting of *Leucaena leucocephala* at 4m distance between the hedges across 10 to 15 percent slope.

The erosion patterns in these plots are being monitored.

#### *Soil monitoring*

A soil monitoring programme for the Field Station was designed, consisting of a comprehensive baseline sampling in 1983 and establishing a statistically solid basis for soil chemical properties over the whole area of the Station. This will be followed by annual sampling of those parts under demonstration plots. The baseline sampling was completed in July-August, when a total of 636 samples were collected, comprising samples from three depths (0-20; 20-45 and 45-55 cm) and their pretreatment (prior to analysis) was completed.

The objective is to test or, if successful, demonstrate methods by which changes in soil properties under agroforestry can be monitored.

#### *Intercropping*

In some of the multipurpose tree plots mentioned above, maize, beans and cowpea were planted



*A demonstration of alley cropping involving *Leucaena leucocephala* and maize.*

in April and November 1983 according to a systematic plan as a demonstration of intercropping agroforestry practices. The results of the trials are being recorded.

#### *Other trials and demonstrations*

- A replicated tree shelter trial was initiated in December 1982 (dry season) and April 1983 (wet season) to test the efficacy of translucent polythene tubes in facilitating quick establishment and offering protection of young tree seedlings. The trial is in progress.
- A wind-break demonstration was initiated by planting *Casuarina equisetifolia* as one of its components in the southwest corner of the farm, after conducting an analysis of wind directional patterns over the past few years.
- Arrangements were finalized to set up an appropriate plant nursery on the Station.

#### *Visitors to the Station*

Although the Station is still in its infancy, its existence seems to have been well acknowledged and its potential greatly appreciated. During the year, over 300 visitors have recorded their visits to the Station. They included individuals from far and near as well as groups who have been undertaking specific programmes in Kenya, especially participants in various internationally sponsored activities.

On the basis of this large number of visitors alone, it can be surmised that the Station is fulfilling the expectation of a training and demonstration ground for agroforestry technologies.



Changes in the project structure of the Programme during the year have included:

- a) the conclusion, at the beginning of the year, of the project on "Agroforestry and Cash Crop Based Land Use Systems", undertaken in collaboration with the British American Tobacco Company, with the publication of the workshop proceedings, *Agroforestry Systems for Small-scale Farmers* (edited by D.A. Hoekstra and F.M. Kuguru);
- b) the conclusion of the project on "Agroforestry Tree Seed", initiated in late 1981 in collaboration with CARE Kenya and other Nairobi-based NGOs, with the publication of the final report (Working Paper No. 4, compiled by L.E. Buck);
- c) the revision and inclusion of the plan of work for the planned project on "Methods to Assess the Sustainability of Agroforestry Systems" into an expanded project on "Land Evaluation for Agroforestry" (see 5.4 below);
- d) the development of a new project, in collaboration with the Land Tenure Center of the University of Wisconsin, on "Land Tenure and Agroforestry" (see 5.5 below).

## 5.1 Diagnostic and design methodology

The major accomplishment of the project this year has been the publication of a set of draft documents on the D&D methodology: *Guidelines for Agroforestry Diagnosis and Design* (ICRAF Working Paper No. 6, 25 pp.) and *Resources for Agroforestry Diagnosis and Design* (WP No. 7, 383 pp.). Following the preparation and internal review of two preceding drafts, the final draft documents were prepared (300 copies of each) for distribution to interested users outside ICRAF for comments and suggestions for revisions to be undertaken after final review in 1984. The current documentation of the methodology reflects experience gained in over 20 applications in Kenya and elsewhere around the world through COSPRO project development activities. Highlights of the expanded methodology include guidelines for larger-than-farm-scale watershed and community level diagnosis and design, a streamlined procedural framework (WP No. 6), and numerous substantive contributions from the multidisciplinary team in the form of useful diagnostic and design tools and materials (in WP No. 7).

Preliminary work commenced toward the end of the year on the development of a data base management system for D&D case materials

which will be forthcoming from users of the methodology (both within and outside ICRAF). The objective is to place global D&D results on record in a central data bank so as to facilitate comparative analysis which will contribute to the science and practice of land use diagnosis and agroforestry design.

Major changes in the project work plan which have occurred during the year include the conclusion of collaborative activities with Wageningen University at the Kathama field research site in Machakos, resulting in draft research reports on the results of two years of D&D work and on-farm trials (Remko Vonk), and evaluation of tree species tried at the site (Remko Vonk), a study of the nutrient balance in the predominant local cropping system (Odile Nyssen), measurement of stickwood increment in the grazing lands (Eduard Boer), watershed-scale diagnosis and landscape design study (Annette van den Hoek), and the potential role of local voluntary organizations in group agroforestry activities (Jessica van Wyngaarden). Edited versions of these reports will result in a number of ICRAF publications.

Supplementary to the initial household level D&D methods, a major new emphasis has emerged in the project work plan on development of variable scale diagnostic and design methods for larger-than-farm-scale and intra-household land management problems and agroforestry interventions. This work is being led by Dr. Rocheleau and involves multidisciplinary inputs into field-work being undertaken at Kathama and other sites in Kenya, with additional experience gained in COSPRO activities around the world (e.g. watershed D&D in the Costa Rican project area). An additional new area of concentration pertains to the development of procedures and guidelines for monitoring on-site agroforestry trials as needed to implement the feedback mechanisms which are an integral part of the D&D methodology. The continuing activity is also being led by Dr. Rocheleau, with inputs from other scientists.

Inputs to the Mazingira Institute project on "Agroforestry Plots for Rural Kenya" continued during the year with a limited number of site visits and advisory meetings with the project implementation staff.

## 5.2 Agroforestry systems inventory

The project, which started operating formally in September 1982 with partial support from USAID, made considerable progress in collecting data and synthesizing available information on existing agroforestry systems and practices. Data collection is organized on the basis of geographic regions with the help of designated

Regional Coordinators, and according to a common data collection format. This format, with appropriate modifications, has been translated into other languages for use in the respective countries and regions.

In order to create a world-wide awareness about the project, cooperation of various scientific journals and other technical publications was sought and obtained. In 1983, a total of over 20 different such publications featured announcements of various types on this project. As a consequence, enquiries, correspondence and system descriptions have been received from various quarters.

In addition to the efforts of the Regional Coordinators, the headquarters staff undertook surveys in collaboration with national agencies in Brazil (northern parts), Ethiopia, Tanzania and Thailand. A special consultant prepared and submitted a report on "Agroforestry in North-east Brazil". A good account of regional AF systems was obtained from the seminar on "Present and Future Role of AF in the Pacific", held in Fiji in December 1983, which was attended by B. Lundgren.

The six Regional Coordinators were brought together to Nairobi for a mid-term appraisal meeting of the project in July, when it was decided that data collection should be completed by March 1984. The services of Prof. C.R.W. Spedding of the University of Reading, U.K. have been secured for undertaking evaluation of the data, which will be completed in October 1984.

Based on the literature search conducted by the headquarters staff, the following computerized data bases have been prepared:

- field examples of prominent agroforestry systems existing in various ecological regions in different countries;
- woody perennials found commonly in the different systems and practices, and their characteristics, adaptability, uses, role, etc.;
- types of interactions between the components in different systems;
- field data from experimental agroforestry systems in various research centres.

Some of the project announcements that have appeared in various journals included a preliminary table showing the spread of various AF systems and practices in different parts of the tropics and subtropics. In addition, the headquarters staff have prepared four papers containing various results of the project, including field examples of prominent and promising agroforestry systems and practices, the technologies and other management aspects that are adopted, the range of woody components in such systems in different ecological regions, and their characteristics and role in the respective

systems, the nature of interactions between components in different systems, and so on.

### 5.3 Economic analysis of agroforestry systems

Achievements of the project in 1983 include the development and dissemination of various economic methods and tools for the economic evaluation of agroforestry systems, application of these methods and tools in ex-ante analyses of proposed agroforestry systems, and compilation of economic data on agroforestry systems. In particular, MULBUD Version 3 was completed during the year and training in the use of this microcomputerized economic analysis package was given to staff members of SEARCA, FORI and IRRI in the Philippines, and CIMMYT and ILCA in Kenya. Arrangements were made for the production and systematic dissemination of the enhanced Version 3 software beginning in 1984. Meanwhile, over 20 requests for additional information on MULBUD were answered during 1983.

A Working Paper (No. 9) on "Choosing the Discount Rate for Analysing Agroforestry Systems/Technologies from a Farmer's Point of View" was prepared by D. Hoekstra and disseminated, along with Working Papers Nos. 2 and 3 (1982), to a network of 30 economists for comment. Suggestions received will be incorporated into a revised version of WP 2. A revised version of WP 3, entitled "An Economic Analysis of a Simulated Alley Cropping System for Semi-arid Conditions," has been accepted for publication in *Agroforestry Systems* in 1984. An appendix on farm modelling for diagnostic purposes was also produced and included in WP 7, "Resources for Agroforestry Diagnosis and Design."

Applications of the method and tools developed were made to evaluate agroforestry systems proposed for research in COSPRO projects in Costa Rica and Malaysia. The on-going work on compilation of economic data on agroforestry systems was furthered during 1983 by the preparation, in collaboration with the Beijer Institute, of an "Annotated Bibliography of Economic Analysis of Agroforestry Systems/Technologies" (WP 10).

### 5.4 Land evaluation for agroforestry

Project work commenced with the preparation of a project summary document setting out the objectives, work methods and budget of the project, which was subsequently approved by the Programme Committee of the Board. The major output of the project in 1983 was a computerized data base for environmental information relevant

to agroforestry. This programme, currently implemented on the Commodore MMF 9000 microcomputer, supports two levels of possible detail in the environmental data. Level 1 is designed to provide basic information for a general purpose classification in terms of geology, landforms, climate, soils, hydrology, vegetation and land use.

Level 2 contains a more elaborate set of descriptors for more detailed information under the above categories, as may be required for specialized purposes. The structure, rationale and use of this AFENV data base is described in Working Paper No. 5, by Prof. Young, "An Environmental Data Base for Agroforestry".

During the course of the year the Project Leader, Prof. Young, undertook approximately two months of consultancy work with FAO to review and synthesize a final draft of the FAO "Guidelines on Land Evaluation for Forest Resources" and also attended the ILCA meeting on "Land Evaluation for Extensive Grazing Systems". These activities, combined with his previous work on the FAO guidelines for rainfed agriculture, will contribute materially to the development of appropriate guidelines and methods for agroforestry land evaluation.

### 5.5 Land and tree tenure in agroforestry

With the approval of the Programme Committee of the Board, work on this project resulted, in the final quarter of the year, in the preparation

of a draft annotated bibliography on "Land, Trees and Tenure," compiled jointly by ICRAF and the Land Tenure Center of the University of Wisconsin. A consultant, Dr. Louise Fortmann, was hired by ICRAF to annotate relevant materials in the ICRAF and other libraries with the assistance of the Information Programme. Additional annotations were provided by Dr. James Riddel of the Land Tenure Center. The draft bibliography has been sent to a selected list of experts for comments and suggestions. The final version will be compiled and printed by the Land Tenure Center for joint publication with ICRAF in early 1984.

Initial plans and contacts with a potential donor have been made to lay the groundwork for a workshop toward the end of 1984. This expert consultation will endeavour to summarise the state of knowledge with respect to land and tree tenure issues affecting existing and potential agroforestry systems for the various regions of the developing tropics and to outline a priority agenda for research on this critical aspect of land use systems.



*Participants in an ICRAF training course discuss farming problems and agroforestry potentials with a farmer in the semi-arid zone of Kenya as part of a field exercise in the application of the Diagnostic and Design Methodology. 1983 saw the publication of the draft D&D methodology manuals and several COSPRO applications of the methodology to develop agroforestry projects with collaborating national and international research institutions.*



*The use of micro computers intensified in 1983 in various Systems Programme activities. A group of trainees is pictured with ICRAF's Programmer analyzing economic data from a D&D site in Kenya. The Environmental Data Base from the Land Evaluation Project and various other databases from Agroforestry Systems Inventory Project were developed in 1983.*

Two major pieces of work were brought to their final stages in 1983. The Proceedings of the Consultative Meeting on "Plant Research and Agroforestry" was edited and printed, and the compilation of a "Manual of Methodology for the Evaluation and Field Assessment of Multipurpose Trees" was finalized. These will be distributed in early 1984. In addition, a meeting in connection with the Fast-Growing Nitrogen-Fixing Trees Project of the U.S. National Academy of Sciences was held at ICRAF in January, and an International Planning Workshop on Multipurpose Tree Germplasm was held in Washington (with collaborating organizations) in June. A questionnaire on multipurpose tree information was devised and sent out as a basis for the establishment of a detailed MPT data base. The details of these activities and others are further outlined below.

### 6.1 Research manual for multipurpose trees

Work on the manual commenced in 1982 as a contract for the US National Academy of Sciences and, in part, in collaboration with the Commonwealth Forestry Institute, Oxford.

A basis for approaching exploration and assessment through field research has been established emphasizing those aspects that require special attention because of the particular nature of MPTs. This is covered in 24 parts arranged in six sections: 'Introduction', 'Exploration', 'Evaluation and Assessment', 'Further Evaluation and Assessment - with special reference to mixed cropping', 'Specialized Techniques' and 'Useful Topics and Information'. There are numerous appendices of useful information and seven staff from ICRAF, three from the CFI, and over 16 others have provided materials for the manual, so far.

After distribution of the material prepared up to the end of 1983 to NAS grantees, the intention is to circulate appropriate sections and/or parts to others for detailed comments and, then, to continue to update and expand the contents as further priority research issues emerge or revisions become necessary. A shortened overview containing a set of precise recommendations will be completed in early 1984.

ICRAF provided all the facilities for the National Academy of Sciences Fast-Growing Nitrogen-Fixing Trees Project grantees' week-long meeting in Nairobi in January, including demonstrations and a short trip. There were 26 participants from different parts of the world, and an early draft of the manual was distributed for comments. This meeting helped to cement the link with the National Academy of Sciences and to expand ICRAF's contacts with field researchers in a most useful way.

It is now vital that the ideas and methods in the manual are tested in field experimental situations; to this end, a network of research contacts is being established, initially through the NAS grantees, the contacts made at the "Plant Research and Agroforestry" meeting and selected research specialists.

### 6.2 Plant research and agroforestry

This contains 34 contributions from experienced plant scientists and forms a basis for considering the use of plants in agroforestry systems and, as such, is a complementary piece of work to the manual outlined above. The book consists of 617 pages in four sections: 'Plants and Agroforestry - some examples' (12 papers); 'Understanding Agroforestry Systems' (9 papers); 'The Application of Plant Science to Agroforestry' (13 papers); and the Report of four Working Groups which helped to define a set of priority activities that ICRAF and others should undertake.

### 6.3 Science and practice of agroforestry

Only a limited amount of work was possible during 1983 but the Project has been initiated with the revision and final editing of the first booklet, "Soil Productivity Aspects of Agroforestry" by P.K.R. Nair, and this was at the printers by the end of the year.

Some nine other titles have been identified and the text of five of these is available in draft form.

### 6.4 Agroforestry reviews

Of the five reviews projected, detailed work has progressed on only one during 1983: "A Review of the Animal Production Potential of Agroforestry" by Dr. F. Torres and Mr. P.J. Robinson (seconded from the Commonwealth Forestry Institute, Oxford). They have prepared two papers for publication which will form a basis for the final review material: "The role of woody perennials in animal agroforestry" by F. Torres, and "The fodder value of woody perennials. I. Chemical composition (PJR/FT). II. Digestibility and animal responses" (FT/PJR).

### 6.5 Workshop on multipurpose tree germplasm

The planning Workshop on Multipurpose Tree Germplasm was jointly organized by ICRAF, the International Board for Plant Genetic Resources (IBPGR) and the Commonwealth Forestry Institute (CFI). It was hosted in

Washington from 30 May to 4 June by the US National Academy of Sciences. Some 40 participants attended, representing international, regional and national scientific, development and donor organizations.

ICRAF commissioned a major background document on "The Global Needs and Problems of Collection, Storage and Distribution of Multipurpose Tree Germplasm" which was prepared by Dr. J. Burley of the CFI. Four other supplementary documents were prepared by consultants.

Working Groups reached conclusions on a number of recommendations relating to the following areas: taxonomy and co-ordination of genebanks for MPT species; the exchange of information about MPTs; the need for an immediate evaluation of present seed supplies and future needs; and a strategy for training with regard to MPT activities.

Considerable interest was shown by various donor organizations in the desirability of funding projects to overcome some of the restraints on the current availability of high-quality MPT germplasm, as long as these were clearly defined and would lead to immediate results.

### 6.6 Technology design and management "guidelines"

Particularly in the processes that lead to the design of improved or new agroforestry land use systems, ICRAF needs to develop methodologies ("guidelines" of one kind or another) to assist project workers and/or field investigators to select appropriate agroforestry technologies for the situation under consideration.

Some have already been finalized or drafted (and have been incorporated in the "Manual of Methodology for the Evaluation and Field Assessment of MPTs" noted above), namely:

- plant responses to the removal of parts;
- a simple tree-crop optimization procedure for field personnel;
- forecasting plant productivity/soil changes with time in tree/crop mixtures;
- considerations when experimenting with changes in plant spacing;
- systematic designs for field experiments (includes software programme for the microcomputer prepared at ICRAF);
- the tree/crop interface - simplifying the biological/environmental study of mixed agroforestry systems.

Future work in the Technology Programme will emphasize this activity, particularly in respect to guidelines for selecting species, and in relating their productivity to climate and to management in agroforestry mixtures.

### 6.7 Other activities

Some field trials carried out on multipurpose trees are reported under the Field Station, Machakos Programme. A significant amount of background work was undertaken during the year to prepare for the compilation of a Multipurpose Tree Data Questionnaire, of which an English version was prepared and some 350 forms, together with an explanatory letter and a completed example, have been sent to various potential correspondents throughout the world. Spanish and French versions are being printed for circulation in early 1984.

Several *data bases* related to multipurpose trees have been established using the Osborne I microcomputers and Dbase II software. These include:

- Plant species with anti-pest properties;
- Woody species with AF potential;
- Woody perennials with fodder value;
- Woody species used in AF systems/practices in developing countries.



*A common use of multipurpose trees and shrubs in the arid lands is temporary or seasonal "bomas" (fences) to protect cattle and crops, respectively. In many parts this is a major contributory factor to the degradation of woody vegetation.*

## 7.1 Information and documentation services

The Information Programme received 64 requests for information and advice about agroforestry in 1983. These requests were substantive ones, and are not to be confused with requests for publications, which run between 50-100 per month. Of the former, half were from developing countries. Fifteen separate retrospective searches of computer data bases were undertaken to answer some of these requests. Periodical computer updates were offered to ICRAF. Topics included agroforestry, several agroforestry tree species, smallholder farming, trees, forests and community development. These are designed to filter the contemporary literature for citations relevant to the above topics.

During 1983, Info/Doc established substantive contacts with 34 institutions, most of them in developing countries, and most through correspondence. These contacts are either new ones or are at a more involved level, i.e. either for exchanges or for specific information or advice.

In 1983, ICRAF became an international input centre in the FAO/AGRIS network. Inputted ICRAF publications now appear in the AGRINDEX and are also available on-line for computer searching. Unfortunately, key word searching is not yet possible on AGRIS but searching for agroforestry in the title field should recover most of the Council's publications that are in that data base. ICRAF publications are also abstracted by the relevant CAB offices, by the Abstracts of Tropical Agriculture and by the National Agricultural Library (USA: AGRICOLA).

All documents that have been accepted for AGRIS input will be microfiched by IDRC for ICRAF.

To increase awareness of the services offered by Info/Doc, a short description entitled "Info/Doc ICRAF: A user-friendly agroforestry information request service" has been prepared for limited distribution.

In May, the Programme Coordinator attended a conference on Agroforestry Training for Sahelian Foresters to establish contact with Sahelians. In June, he visited Canada to discuss with IDRC their continued support for Info/Doc ICRAF.

In 1983, a joint project with ILCA funded by IDRC began. The objective was to visit several African countries to microfilm the documents in those libraries of research institutions that were relevant to livestock or to agroforestry. Countries visited were Malawi, Zimbabwe, Botswana, Kenya, Upper Volta, Ivory Coast, Rwanda, Benin and Niger. A total of 3,582 documents were filmed. Unfortunately, the number of documents relevant to agroforestry

is not clear, with the exception of Botswana, from where more than 50 agroforestry-specific documents were recovered.

Work on terminology for agroforestry resulted in the preparation of ICRAF Working Paper No. 8, which will form the basis of indexing terminology for document analysis and retrieval. This also contains definitions of terms that will interest the agroforester.

During the year under review, work on annotating two specialized bibliographies continued. A bibliography on "Tree and Land Tenure Aspects of Agroforestry" was prepared in draft form by Dr. L. Fortmann and an annotation and indexing of the "Selected Bibliography of Agroforestry" was started. Both are to be completed in 1984.

As part of Phase II of the support by IDRC for Info/Doc ICRAF, the Council has received funding for a personal microcomputer and associated peripherals to manage the library holdings and other data bases. Preliminary experimentation has demonstrated that this application is feasible and an IBM Personal Computer with an external hard disk for mass storage is the configuration necessary for the library application.

## 7.2 Library

The library moved to larger quarters in September and now contains about 1500 books, about 4000 reprints, a small collection of journals, and reference documents. The library continues to be used for acquisition specific to agroforestry and is available on a priority basis to ICRAF and associated staff, and to others, upon introduction and on appointment. Access to documents has been facilitated by the classification of books under the UDC-Agricode, but the reprint collection is not yet completely indexed. Computerization will be most helpful for recovering the documents from the reprint collection and for contributions to proceedings and individually authored chapters in books. The latter is not readily recoverable. Slightly less than 200 non-ICRAF staff used the library in 1983.

A slide storage cabinet was procured in 1983, and there are now about 400 slides in the collection. They are assembled by geographic region.

The international journal *Agroforestry Systems* is made available free of charge and on an exchange basis to libraries of national institutions in developing countries. So far, 56 such subscriptions are supported by ICRAF.

ICRAF has also received, free of charge, about 200 copies of *Firewood Crops*, published by the National Academy of Sciences (USA), for distribution to interested recipients. Other titles published by NAS are actively being sought for the same purpose.

### 7.3 Publications

Compared to 1982, the year under review witnessed substantial growth in the publications activity of the Council. This is attributable to three related factors: the recruitment of a Publications Officer in November 1982, the rationalization of the Council's publications activity within a clearly defined framework, and the attainment of the minimum operational level of the senior scientific and professional staff.

As part of his orientation programme, and in order to properly situate the Council's publications activity and pitch it at the right level professionally and internationally, the Publications Officer inspected major typesetting shops, graphic arts studios and printing establishments in Nairobi and in Ottawa. He also participated in an editorial information exchange session at IDRC's headquarters in Ottawa and in a communication workshop for Communication Officers of CG institutes in Frankfurt, exhibited the Council's publications during the 35th International Frankfurt Book Fair, and examined the structure, organization and operations of FAO's Publications Division.

In addition to fly-sheets and other types of promotional materials, the following publications were produced in 1983.

- *Agroforestry Systems* Vol. 1, Number 1-3 (by Martinus Nijhoff/Dr. W. Junk Publishers, The Hague, in cooperation with ICRAF).
- *ICRAF Newsletter*; March, October, in English, French and Spanish.
- The *ICRAF Working Papers* series was started in 1983, and 14 titles were printed (see Appendix 3).
- The *ICRAF Reprints* series was started in 1983, and 4 titles were reprinted (see Appendix 3).
- Two *Proceedings* were published by ICRAF in 1983:

Hoekstra, D. and F. Kuguru (eds). *Agroforestry Systems for Small-scale Farmers*. Proceedings of a Workshop. Nairobi, 5-10 September, 1982. Nairobi: ICRAF. 304 p.

Huxley, P.A. (ed). *Plant Research and Agroforestry*. Proceedings of a Consultative Meeting. Nairobi, 8-15 April, 1981. Nairobi: ICRAF. 617 p.

All ICRAF publications were (or are being) inputted to AGRIS and deposited with the Library of Congress Office in Nairobi for citation in the AGRICOLA (National Agricultural Library) database. Other abstracting journals were also made aware of these publications (CAB, ATA).

In March 1983, IDRC instituted support for a project entitled "Dissemination of

Scientific Research Results" by hiring a full-time editing and publications specialist to work in Nairobi. The objectives of this project are to help ICRAF, ICIPE and KREMU plan and implement publications programmes; to train and provide experience to 3 East African scientific/technical editors and to introduce other African editors in eastern Africa to the techniques of scientific editing.

As part of the activities of the project, a three-week editorial information exchange session was organized by the Communications Division of IDRC in Ottawa, and the Publications Officer participated in it alongside one officer each responsible for publications at ICIPE and KREMU.

The IDRC editor/publications specialist has assisted in rationalizing the publications activity. As a non-voting member of the Publications Committee, she will have a role in the development of the Council's publishing programme during 1984.

In order to identify the best typesetting and printing firms in Nairobi to undertake the Council's work, the Publications Officer has undertaken extensive visits to typesetting shops and printing firms and has evaluated the local printing industry. At present, we have identified one reliable typesetting firm; a number of local printing firms can produce good work, but they are not always reliable in regard to delivery dates. There are several reasons for this:

- a) The more established printing firms deal in both book-work and packaging, and tend to pay more attention to the latter, more lucrative line at the expense of the former;
- b) the tendency in the industry now is to specialize in three fields: typesetting, graphic arts and printing, thus creating a situation where one has to deal with two, sometimes three, different firms in the production of one publication;
- c) the few printers who deal exclusively in book-work have formal arrangements with commercial publishers, and have little interest in the Council's type of work because of its small volume and low invoice value.

A possible solution to this problem seems to be for the Council to have endogenous capacity and capability to produce most of its publications up to camera-ready stage. This possibility will be explored with IDRC during 1984.

Translation of ICRAF publications is another area of difficulty. While good translation of texts can be obtained for English to French, there is a limited availability of Spanish translators. Although there are many such translators working for the UN institutions in Nairobi, they can only work off-hours and cannot, therefore, meet

deadlines. An effort will be made in 1984 to identify a firm of technical translators in Europe to undertake Spanish/English translation work for the Council.

The distribution of ICRAF publications is another area of concern, and a reader survey was considered a useful tool to help with the task of identifying the market for ICRAF publications and other, related products. An evaluation of reader survey methods was undertaken. The result was the creation of a "Mailing List and Reader Survey Form" based in part on the IRRRI model. This form will be distributed in English, French and Spanish in 1984.

To increase awareness of the Council's publications, ICRAF, at the invitation of GTZ, participated in the 35th Frankfurt Book Fair in October along with other international agricultural research centres. The Publications Officer, who represented ICRAF at the Fair, contributed to the compilation of the catalogue of the research centres' publications under the title "Publications on International Agricultural

Research and Development". Valuable contacts were made with CG institutes' publishing/communication staff, international publishers, international book distributors, mailing list businesses, etc. - all of which will come in handy during the consolidation stage of the Council's publishing programme in 1984.

While in Frankfurt, the Publications Officer also participated as an observer in the first Communication Workshop for the communication staff of CG institutes. Three issues were addressed: improving public awareness of the system of international agricultural research centres, the mechanics of communicating the centres' message effectively, and communication training.

In recognition of the all-important place of the publications activity in the Council's overall Programme of Work, and in keeping with the general move toward the "committee format" for discussing major issues, the Director has established the Publications Committee to advise him on policy, procedures and operations.



*ICRAF's responsibilities and output as a publisher increased considerably during the year under review, leading to the Council's admission into the ISBN and the ISSN Systems for identifying individual books and periodicals, respectively. In the picture an ICRAF editor checks the machine proofs of a full-colour publication for quality.*

### 8.1 Agroforestry training courses

The first agroforestry training course to be organized under the ICRAF/USAID Cooperative Agreement took place - as planned - from 1 to 18 November 1983 in Kenya. Twenty-two participants from thirteen African countries attended the course titled Agroforestry Research for Development: Principles, Practices and Methods.

Countries represented were Burundi, Cape Verde, Ethiopia, Ghana, Kenya, Malagasy, Malawi, Mauritius, Nigr., Nigeria, Tanzania, Uganda and Zambia. The distribution of participants by discipline was: foresters (9), agronomists (5), animal scientists (2), geographers (1), farm management specialists (1), agroforesters (1),

plant science specialists (1) and soil science specialists (2).

The course aimed to enhance the professional capabilities of research scientists and development planners from African countries for initiating and implementing agroforestry research, leading to the development of systems and technologies that are both suited to local conditions and adoptable by farmers. The programme had a specific focus on ICRAF's Diagnosis and Design Methodology. In general terms, the scope and content of the first week focused on the conceptual and technical background of agroforestry. In the second and part of the third week, it concentrated on methods to diagnose land use problems and identify agroforestry potentials, and during the last week relevant experimental approaches in agroforestry were considered.



*ICRAF's short training courses rely heavily on first-hand practical experience. During these three-week events, ICRAF staff and course participants carry out field surveys to diagnose agroforestry problems and potentials and design appropriate and adoptable agroforestry interventions.*

Training sessions included lectures, workshops, field trips, field exercises, analysis of case studies and independent study/work by participants. ICRAF's multidisciplinary team participated in the training activities covering a wide range of conceptual, methodological and practical topics. Invited speakers from the IDRC Regional Office in Nairobi and from CIMMYT presented subjects related to "Farming Systems Research".

In general, participants expressed positive comments on the course. Particularly appreciated were the friendly atmosphere and warm relationship established among participants and ICRAF staff, and the efforts made to provide a coherent and professionally stimulating programme on agroforestry research issues. As one participant put it... "with the limited time, ICRAF has made a lot of effort to acquaint us with up to date information and development in respect of agroforestry. The course was excellent for it gave the theoretical and practical aspects of agroforestry and at the same time we were exposed to the Diagnostic and Design Methodology, which is a new approach...".

## 8.2 Agroforestry training materials

Since agroforestry training is a new area, so is the development of appropriate training materials. A systematic approach is being followed by ICRAF to develop such training materials, essentially the same as in developing research methods, viz. collection and evaluation of relevant information from cognate disciplines, integration of such information into a new format and testing during the training courses.

An "Agroforestry Training Package" of existing knowledge and selected information about agroforestry principles, practices and methods was compiled for the first ICRAF/USAID training course. The material was placed in a binder to be used as a portable system, which permits addition and/or revision of information. Four dividers were established to identify modules on: ICRAF's Role and Programme, Agroforestry Conceptual and Technical Background, A Diagnostic Approach to the Design of Agroforestry Systems, and Experimental Approaches in Agroforestry. Each module included key articles or notes, practical exercises (case studies, field trips) and a list of supplementary recommended reading/references.

On the basis of this first trial of the training package, a compendium is to be prepared for subsequent ICRAF training courses on agroforestry research for development.

## 8.3 Fellowship scheme

This twelve-month project was launched in 1983. The Research Fellowship, sponsored by the Ford Foundation, was advertised in April 1983 in

about forty-five research/development institutions of eight countries in the region, mainly those covered by the Ford Foundation Regional Office in Nairobi. Applications were received from six qualified candidates. The first Research Fellow joined ICRAF in November 1983.

Two similar research/training opportunities for 1984 were announced in 1983 by means of a leaflet, *Newsletter* advertisements and other forms of communication. One of these Fellowships is sponsored by the Ford Foundation, and thus open to candidates from the region. The second one is sponsored by the German Agency for Technical Cooperation (GTZ) and can be offered to candidates from other developing regions, e.g. Latin America, Southeast Asia or the Indian sub-continent. The deadline for selecting candidates is February 1984.

## 8.4 On-the-job training

On the basis of funds committed by the Ford Foundation for 1983-1984 (two trainees per year) and the GTZ (one trainee in 1983), this six-month project has made steady progress.

The first trainees to join the programme, Dr. J. Maghembe from Tanzania and Ms. E. Kariuki from Kenya, presented their final report of activities undertaken at ICRAF during the period July-December 1982 in a seminar held on 6 January 1983. Copies of their joint final report are available on request.

On the basis of the 1982 experience, an in-house seminar was held on 7 February with ICRAF scientific staff to critically analyze the future structure and organization of this project. Two six-month internships were announced in March 1983 to institutions in the region. Six qualified candidates applied. Two new trainees subsequently joined ICRAF in May 1983 to undertake agroforestry study/work. Both presented their final report in a seminar held on 24 November 1983. Copies of their joint report of activities and accomplishments are available. A third trainee joined ICRAF in November 1983. All three on-the-job training participants attended the ICRAF/USAID Agroforestry Course held in November 1983.

## 8.5 Agroforestry education workshop

Following the ICRAF/DSE International Workshop on Professional Education in Agroforestry (Nairobi 5-10 December 1982), a report was prepared in January 1983. It contains a brief description of the workshop organization, a list of participants and a summary of the main recommendations. Copies of the report are available on request. Editorial work on the Workshop Proceedings is fairly advanced with the ICRAF Publications Unit and publication of the final document is expected in 1984.

In the course of 1983, COSPRO continued to develop projects following the designed geographical/ecological framework. One of the projects formulated in the previous year is already on the ground while another one is about to enter the implementation phase. Of the three formulation exercises planned for the year, two were completed and one was postponed to 1984.

On the technical side, 1983 has been a slight change in emphasis from the diagnosis of land management problems to the design of technological alternatives, with an increasing degree of participation of ICRAF scientists involved in technology and economic evaluation. The latter was facilitated by using MULBUD (cf. page 10), an efficient tool limited by the availability of technical information.

On institutional aspects the need was recognized to bring the implementation phase to the attention of national partners at an early stage, so that responsibilities are clearly assumed and commitments made. In this respect it appears that a successful formula should include specific roles for each participating institution, support funds being distributed accordingly.

Activities carried out in 1983 confirmed D&D as an acceptable method to identify constraints and design agroforestry alternatives, although room for improvement still exists. They also indicated that ICRAF has now assembled a team capable of applying the methodology and training others on how to do it. Discussions were then initiated with potential donors to organize collaborative activities on a regional basis, with the purpose of securing funds for all phases of project development. Such activities will be centred around projects but will also include a strong training component (in cooperation with the Training Programme) to strengthen the capability of national institutions for developing agroforestry systems. Discussions are being held with donors to support such activities in inter-tropical Africa and South Asia, while promising signals are coming from others for the remaining regions.

## 9.1 American tropics

Discussions held in October in Washington, D.C. indicate that the Interamerican Development Bank (IDB) could be interested in supporting a regional programme to strengthen the capability of national institutions for developing agroforestry systems. Given their mandate and policy, a proposal should be prepared in cooperation with a regional institution, and preferably focused on Central America and the Caribbean. The possibility got a favourable reaction from CATIE and a document will be drafted in 1984.

## *Lowland humid*

As a result of discussions held in Peru and Colombia in April and October, National (INIPA, INFOR and IVITA) and international (CIAT, NCSU and ICRAF) institutions reached an agreement on the organizational structure for the Yurimaguas and Pucallpa projects. IDRC support for Yurimaguas is at an advanced stage of discussion, and another donor is favourably considering funding Pucallpa.

As a member of the Coordinating Committee, ICRAF participated in the IV Meeting of the Agroecological Research Network for the Amazon (REDINAA), held in Lima 5-7 April. The meeting decided to develop a "Land Use Systems" project under ICRAF leadership and with support from GTZ. An outline for such a project was agreed upon by the Executive Secretary of REDINAA and Dr. F. Torres in October, and a proposal to GTZ will be submitted in early 1984.

## *Seasonally dry highlands*

A project formulation exercise was carried out in the region of Acosta-Puriscal, Costa Rica, in early March. It was organized by J. Heuvelodp, Coordinator of the CATIE-GTZ Agroforestry Project, with full support from the Regional Centre and the Forestry Division of the Ministry of Agriculture (MAG), as well as CATIE. The resulting document was fully discussed with both partners in October and an agreement was reached on the need to develop an agroforestry research project for that region, which would be supported from funds made available by the European Economic Commission. In the first quarter of 1984, a formal proposal will be submitted by the MAG to a national agency in charge of allocating those funds.

## 9.2 Sub-Saharan Africa

Based on a discussion paper on networking prepared in June, discussions were held in October with the AFNS Division of IDRC on support to collaborative activities. As a result of these discussions a proposal has been submitted and is being considered by IDRC. The proposed project aims at strengthening the capability of national institutions for developing agroforestry systems in four ecological zones of the region, including support for all phases of project development (in the form of multilateral and bilateral funds), as well as the recruitment of a junior team of scientists to strengthen ICRAF's capability for ex-ante evaluation of alternative technologies.

## *Bimodal sub-humid highlands*

Bilateral funding for the KARI/MIDP/Katumani/ICRAF research project in Kakuyuni,

Machakos, was approved by IDRC in mid-1983, and on-farm and on-station experiments were laid out in the short rains of November-December. This was achieved, thanks to the interest shown by local institutions and the untiring efforts of ICRAF's D. Hoekstra, who acted as "in-house" leader until project personnel were on site.

### *Lowland humid*

Following the initiative of the College of Agriculture and Forestry of the University of Liberia (CAF), arrangements have been made for an exploratory visit in January 1984, to identify the possibility of developing an agroforestry approach for subsistence production systems (shifting cultivators). A prefeasibility study conducted by CAF staff has identified two other interested institutions (an agricultural research institute and the Forest Development Authority), as well as six potential sites.

## 9.3 South Asia

Under the auspices of the Ford Foundation Office in New Delhi, ICRAF participated in ICAR's (Indian Council for Agricultural Research) first meeting of research institutes and universities involved in the All-India Coordinated Research Project in Agroforestry, which took place in New Delhi 19-22 April. As a result of discussions that followed, it was agreed that ICRAF collaboration should focus on assisting regional centres to develop agroforestry research projects. The Central Water and Soil Conservation Research and Training Institute (CW & SCR & TI) was chosen as the first one, tentatively scheduling a formulation exercise in the Dehra Dun area for October. Such exercise has now been officially approved and will be carried out in the second quarter of 1984. In the meantime, an expanded programme was discussed with Ford Foundation (FF) to complement activities in Dehra Dun with training of ICAR regional agroforestry teams, including D&D applications by the teams in their region and a workshop to formulate detailed experimental plans. Proposals would then be channeled through the All-India Project. The FF is agreeable to the expansion and it should now be considered by ICAR.

### *Humid sub-tropical foothills*

In the context of the ICAR-ICRAF cooperation, an identification mission was carried out in June to the site selected by the CW & SCR & TI. The Bhaitan watershed is the institute's site of an operational project. The mission explored the potential for an agroforestry approach to improve production of the subsistence farmers scattered on the steep erosion-prone terraced farms of these western Himalayan foothills.

## 9.4 Southeast Asia

### *Seasonally dry lowlands*

Contrary to earlier indications, funds from the Ministry of Natural Resources were not made available for the proposal for a project to be implemented by VISCA in Leyte, Philippines. An application was submitted by SEARCA to an USAID-sponsored Rainfed Development Programme. Recent developments at SEARCA may negatively affect its support for the agroforestry programme. Should that occur, the future of the proposal would have to be discussed directly with national partners (VISCA and PCARR).

### *Per-humid lowlands*

On the basis of arrangements made by the Faculty of Forestry of the University Pertanian Malaysia (UPM), in cooperation with the Malaysian Agricultural Research and Development Institute (MARDI) and the Forestry Department (FD), both identification and formulation exercises were carried out in the course of 1983. In addition to the local personnel, the D&D team included scientists from the Philippines and Thailand, whose participation was supported by SEARCA and IDRC. The exercise was the first of its kind to be assisted by COSPRO; the main objective is to evaluate the potential of timber-producing agroforestry systems for improving the bio-economic output of the conventional reforestation scheme being practised by the FD in a forest reserve. Conceptual models have been developed to fit the design specifications and a discussion document will be sent to Malaysia in early 1984.

### *Site for coming activities in the region*

In September, an exploratory visit was paid to a Forest Village scheme in Thailand, organized by the Faculty of Agriculture and Forestry of Kasetsart University and the Forest Industry Organization. The village scheme, a government-supported operation applying an improved taungya system, may be susceptible to improvement via a more permanent combination of agriculture and forestry enterprises, and was envisaged as a potential site for the seasonally dry highlands. However, it seems difficult to find support among donors for a project to improve the Forest Village scheme. Local institutions are now searching for alternative sources.

Another potential site is the transmigration scheme in Indonesia. Based on the interest of local institutions, and the possibility of support from the World Bank and other donors, contacts have been established (by Dr. Soekiman, an ICRAF Trustee) to organize an exploratory visit in 1984.

The Advisory Unit (AU) started operating in September 1983 following Board decisions in 1982 and 1983. The background to its establishment are the frequent requests the Council receives to provide consultancy inputs to various projects sponsored by different donor agencies, development banks and private companies. It would have been impossible to respond positively to all these *ad hoc* requests without seriously disrupting the Council's core programme of work, even if they are normally accompanied by a willingness to pay for the services requested. The idea behind the AU has therefore been to enable the Council to provide these services on a non-profit-making, but cost-recovery, basis, keeping the Unit administratively and financially separate from, but professionally integrated with, the normal programme of work.

Initially, three senior experts have been recruited to the AU, viz. Peter Wood (Forestry), Michel Baumer (Range management/ arid land development) and Willem Beets (Agriculture). Later in 1984 or early 1985, other experts will be recruited as need arises. An exchange of staff time between AU work and core work is envisaged.

The first four months of the Advisory Unit's operations were characterized by a very high level of contact making to make the existence of the Unit known. Several contacts, through visits and information meetings, were made with donors, embassies, government organizations, private companies, international organizations, and other institutions based in Nairobi. A fly-sheet presenting the AU was printed and widely circulated. Through correspondence, contacts have also been initiated with several donors and other organizations' headquarters, e.g. the EEC, the World Bank, FAO, etc.

Several of these contacts have led to concrete discussions on potential AU inputs and assignments. Some contracted requests were carried out in 1983; the income generated during the period amounts to US \$39,000. This includes:

**FAO Land evaluation for forestry.**

A. Young did six weeks of compilation and editorial work on a book at FAO



*A member of the Agroforestry Advisory Unit (centre, facing camera) explains agroforestry in a BBC movie series on world agriculture. Through the Advisory Unit, ICRAF is well placed to provide the unique professional services that only a highly experienced multi-disciplinary team of experts can offer.*

headquarters in Rome.

**NORAD Assistance to agricultural project mission to Kenya.** W. Beets prepared a report on agriculture in Kenya.

**IBRD Mwanza/Shinyanga project officer training study trip to Kenya.** P. Wood organised this study tour, with inputs from several ICRAF staff.

P. Wood and D. Hoekstra spent a week in India involved (without pay) in the World Bank/ODA/USAID/SIDA Forestry Education, Training and Research Project.

Among assignments already contracted or committed for execution during the first quarter of 1984 are:

**Swiss D.C.** Nanyuki Area Development Project. All members will take part in this mission.

**FAO** Computerized Environmental Data Base for Sri Lanka.

**IBRD** Reconnaissance Missions to Rwanda and Burundi. All three AU members will spend a week in each country to identify R&D priorities and plans for agroforestry.

Other projects and assignments which have reached an advanced stage of negotiations, and which are most likely to be implemented during 1984, include:

**UNEP** Evaluation of Agroforestry in Africa.

**IUFRO** Forestry Research Workshop for Africa. This will be organized by the AU in Nairobi.

**SWISS D.C.** Agroforestry Research in Rwanda.

**USAID** Use of D&D Methodology in Malawi.

**USAID** Agroforestry Training Workshop in Somalia.

**SIDA** Curriculum Development Seminar for Zambian Agricultural Colleges.

ICRAF's staff members have travelled widely on duty during the year. Project-related work has been reported elsewhere in this review. Below is an account, in tabular form, of staff participation in professional meetings, workshops, etc., as well as a list of seminars, lectures, etc., that ICRAF staff have given outside ICRAF.

Meeting	Place/date	Staff member (see Appendix 1)	Paper
Second International Conference on Soil Erosion and Conservation	Honolulu, Hawaii 16-22 January	BL, PKRN	Agroforestry for soil conservation (BL + PKRN)
Workshop on Policies for Soil Conservation, East-West Center	Honolulu, Hawaii 25-27 January	PKRN	—
Seminar on Agricultural Research in Rwanda, ISNAR	Kigali, Rwanda 5-12 February	JR, PKRN	The agroforestry approach to land development: potentials and constraints (JR) Some promising technologies for semi-arid and hilly regions of Rwanda (PKRN)
Diagnostic Survey Workshop, CIMMYT	Harare, Zimbabwe 22-24 February	JR	Agroforestry diagnosis and design (JR)
8th Session of the Commission for Agricultural Meteorology, WMO	Geneva, Switzerland 21 February - 4 March	TD	—
Informal Expert Consultation on Alternatives to Shifting Cultivation, FAO	Rome, Italy 22-25 February	PKRN	Agroforestry as an alternative to shifting cultivation (co-authored with E.C.M. Fernandes)
Development in Africa, Society for International Development	Nairobi, Kenya 2-9 March	EZ	—
Meeting of Experts from Governments and Scientific Community to Develop a Programme of Action for Environmental Education and Training in the African Region, UNEP	Nairobi, Kenya 12-15 April	EZ	Agroforestry education in anglophone Africa (EZ)

Meeting	Place/date	Staff member	Paper
12th Session of the FAO Advisory Committee on Forestry Education, FAO	Nairobi, Kenya 27-29 April	PH, EZ	A report on the ICRAF/DSE International Workshop on Professional Education in Agroforestry
Workshop on Management of Food Research in Africa, IDRC	Nairobi, Kenya 23-25 May	RL	—
Workshop on Agroforestry for Sahel Forestry Officers, ETM/CILSS	Niamey, Niger 25 May - 3 June	RL	—
Workshop on Agroforestry, CSC	Lilongwe, Malawi 27-30 June	AY	The work of ICRAF (AY)
Consultation on Agricultural Research in Eastern Africa, ACIAR	Nairobi, Kenya 18-22 July	PH	—
Rural Afforestation Workshop	Harare, Zimbabwe 22-24 August	PKRN	Research in agroforestry (PKRN)
Workshop and International Symposium on the Future of Tropical Forests in Southeast Asia, IUCN	Kepong, Malaysia 29 August - 3 September	PKRN	—
International Symposium on Nitrogen-fixing Trees for the Tropics, EMBRAPA/NIFTA	Rio de Janeiro, Brazil 19-24 September	PKRN	Multipurpose leguminous trees and shrubs for agroforestry (PKRN, E.C.M. Fernandes, P.N. Wambugu)
Symposium on Savanna and Woodland Ecosystems in Tropical America and Africa: a comparison, University of Brasilia	Brasilia, Brazil 2-7 October	PKRN	—
6th Session of FAO's Committee on Forest Development in the Tropics, FAO	Rome, Italy 18-21 October	BL	—

Meeting	Place/date	Staff member	Paper
Conference on Land Evaluation for Extensive Grazing, ILCA/FAO	Addis Ababa, Ethiopia 30 October - 4 November	AY	—
Seminar on Use and Handling of Agricultural and Other Pest Control Chemicals in Africa, ELC	Nairobi, Kenya 30 October - 6 November	WB	Aspects of traditional farming systems in relation to integrated pest management (WB)
Conference on Strengthening Forestry Research in Kenya, USAID/Kenya FD	Eldoret, Kenya 1-4 November	PW	ICRAF's programme (PW)
Mountain Region Development Seminar, GTZ/DSE	Palampur, India 13-27 November	PvC	—
Expert Consultation on Education, Training and Extension, for Shifting Cultivation in Developing Countries, FAO	Rome, Italy 12-16 December	PH	Some thoughts and proposals for agroforestry education and training (PH)
Workshop on the Present and Future Role of Agroforestry in the Pacific, DSE	Suva, Fiji 12-17 December	BL	—

### *Seminars/lectures given by ICRAF staff*

- Dr. P.K.R. Nair gave lectures on agroforestry to the FAO Watershed Management Course held in Nairobi in January.
- A seminar on Objectives and Needs for Agroforestry Development was given by Dr. B. Lundgren at the Australian National University to staff and other interested persons from ANU, ADAB, ACIAR and CSIRO in January.
- Drs. Lundgren and Nair gave a presentation of ICRAF to staff of the East-West Center in Honolulu in January.
- Dr. F. Torres was invited to the University of Arizona to participate in discussions on their Dryland Forestry Project in February.
- While in Europe in April/May, Dr. Lundgren gave lectures on ICRAF and agroforestry to staff and students of the Department of Silviculture, University of Wageningen, and at the Danish Institute of Forest Technology in Copenhagen.
- Mr. P. von Carlowitz lectured on ICRAF and agroforestry to participants in a course on Communal Forestry at CFI in Oxford in May.
- A presentation of ICRAF was given by Dr. Lundgren and Mr. von Carlowitz to GTZ and BMZ staff in Eschborn in May.
- Dr. Lundgren presented ICRAF to interested CIDA and IDRC staff in Ottawa in October.
- Two seminars on agroforestry were given by Dr. Lundgren to staff and students at the University of Florida in Gainesville in October.
- Mr. P.J. Wood contributed lectures on Social and Community Forestry at a Forest Management Course sponsored by the British Council in Nepal in November.
- Mr. Wood and Mr. D. Hoekstra gave a seminar to USAID, World Bank and Ford Foundation staff in New Delhi on agroforestry concepts and practices and on ICRAF's programme of work in December.
- Dr. T. Darnhofer gave a seminar on "Data collection and analysis" at the East African Institute for Meteorological Training and Research in October. □

During 1983, the number of visitors that have called on ICRAF's offices and Field Station far surpasses anything we have experienced before. This is, of course, a great encouragement as it confirms the increased awareness of and interest in our work that many other signs during the year have pointed at. At the same time it has also meant that significant staff resources have had to be set aside for taking care of the visitors.

Below is a list of but a few of the visitors, mainly those from outside Kenya who have come on prior appointments to discuss concrete issues or to familiarize themselves with ICRAF and agroforestry in a more organized way.

- Prof. R.C. Agrawal, Technical University of Berlin, FRG.
- Prof. B. Amoako Atta, University of Liberia, Monrovia.
- Mr. G. Armstrong, USAID, Washington, D.C.
- Dr. E. Ariza-Nino, CRED, University of Michigan, U.S.A.
- Dr. J.A. Aronson, Institute for Applied Research, Ben-Gurion University, Israel.
- Prof. G. Aubert, ORSTOM, France.
- Mr. R.L. Audette, CIDA, Ottawa.
- Mr. J. Bedel, ENGREF, Montpellier, France.
- Mr. Berkele, Ministry of Agriculture, Soil & Water Conservation, Addis Ababa, Ethiopia.
- Dr. J. Bishop, USAID, Washington, D.C.
- Mr. C.P. Boivin, IDRC, Ottawa.
- Dr. Henk Breman, CABO, Wageningen, The Netherlands.
- Dr. C.N. Brobby, Commonwealth Scientific Council, London.
- Dr. M.R. Brown, Land Tenure Center, University of Wisconsin, U.S.A.
- Mr. N.R. Brouard, the World Bank, Washington, D.C.
- Dr. J. Bruce, Land Tenure Center, University of Wisconsin, U.S.A.
- Dr. J.F. Buerki, Swiss Development Corporation, Berne, Switzerland.
- Mr. T. Catterson, USAID, Washington, D.C.
- Prof. R.A. del Castillo, Ford Foundation, Manila, Philippines.
- H.E. Mr. G.M. Cóncha, Ambassador of Colombia, Nairobi.
- Dr. M. Day, Canberra, Australia.
- Mr. I.N. Deeng'w, HADO, Dodoma, Tanzania.
- Dr. A. Ellman, Commonwealth Secretariat, London.
- Mr. M.W. Feldman, USAID, Washington, D.C.
- Dr. Richard Felger, Office of Arid Lands Studies, Arizona, U.S.A.
- Mr. A.I. Fraser, IFSC, U.K.
- Dr. O. Fugalli, IUFRO, Vienna.
- Prof. J. Furtado, Commonwealth Secretariat, London.
- Dr. F. Geurts, Royal Tropical Institute, Amsterdam.
- Mr. C. Graham, IDRC, Ottawa.
- Ms. C. Goddard, Energy Initiatives for Africa, Washington, D.C.
- Prof. G.M. Griffin, ANU, Canberra, Australia.
- Mr. H. von Hahn, Head of Economic Department of GTZ, Eschborn, FRG.
- Dr. F. Hashemi, WMO, Teheran, Iran.
- Mr. S. Hale, Energy Initiatives for Africa, Washington, D.C.
- Prof. L.D. Harris, University of Florida, Gainesville, U.S.A.
- Mr. D. Henry, CIDA, Ottawa.
- Dr. K.D. Hodgkins, NOAA/NESDIS, Washington, D.C.
- Mr. H. Hilmi, FAO, Rome.
- IDRC Regional Directors.
- Dr. C.R. Jackson, ICRISAT, Hyderabad, India.
- JICA Team of Foresters.
- Mr. H. Kernan, USAID, Washington, D.C.
- Dr. I.N. Khoshoo, Secretary to GOI, Delhi.
- Dr. G.G. Kowalenko, Sri Lanka/Canada Dry Zone Project.
- Dr. J.M. Kramer, Forester, CARE, New York, U.S.A.
- Dr. H.N. LeHouerou, Texas A&I University.
- Dr. P. Little, Institute for Development Anthropology, New York, U.S.A.
- Prof. A. Mace, Department of Forestry, University of Florida, Gainesville, U.S.A.
- Dr. J. McElroy, NOAA/NESDIS, Washington, D.C.
- Mr. R. McIntyre, Director, Communications Division, IDRC, Ottawa.
- Dr. K. McGee, Ford Foundation Consultant.
- Mr. W.C. Mlengi, HADO, Dodoma, Tanzania.
- Dr. S. Midgley, CSIRO/ACIAR, Canberra, Australia.
- H.E. Mr. E. Mondolfi, Ambassador of Venezuela, Nairobi.
- Dr. J. Monyo, Agricultural Department, FAO, Rome.
- Prof. A. Musy, Director of L'institut de Genie Rural de l'Ecole Polytechnique, Federation de Lausanne, Switzerland.

Dr. D.S. Ngambeki, IITA, Ibadan, Nigeria.  
 Dr. Z.M. Nyiira, ISNAR, The Hague, The Netherlands.  
 Prof. Phil O'Keefe Beijer Institute, Stockholm, Sweden.  
 Dr. M. Olson, UNSO/UNDP, New York, U.S.A.  
 Mr. A. de Pury, OXFAM, London.  
 Dr. J.D. Reed, ILCA, Addis Ababa, Ethiopia.  
 Dr. A. Schirmer, DSE, Philippines.  
 Mr. El-Hadj Sene, Director of Forestry (ICRAF Board Member), Senegal.  
 Mme. C. Sere, Ministere de la Cooperation et du Developpement, Paris, France.  
 Dr. N.W. Simmonds, World Bank Consultant, Edinburgh School of Agriculture.  
 Prof. F.K. Sio, Dean, Faculty of Agriculture and Forestry, Monrovia, Liberia.  
 Dr. N. Smith, World Bank Consultant, University of Florida.  
 Mr. G. Speth, World Resources Institute, Washington, D.C.

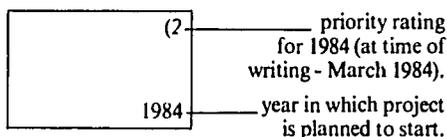
Dr. M.S. Swaminathan, Director-General, IRRRI, Los Banos, Philippines.  
 Prof. M.J. Swift, University of Zimbabwe, Harare.  
 Mr. K. Tato, Ministry of Agriculture, Soil & Water Conservation, Addis Ababa, Ethiopia.  
 Dr. F. Taylor, Veld Products Research Institute, Botswana.  
 Dr. E.R. Terry, IITA, Ibadan, Nigeria.  
 Dr. A.P. Uriyo, IITA, Ibadan, Nigeria.  
 Dr. Udo Vollmer, BMZ, FRG.  
 Mr. F. Weber, International Resources Development Conservation Services, U.S.A.  
 Mr. F. Weldon, WMO, Director, Computer Department, AGRHYMET, Niamey, Niger.  
 Mr. R.F. van de Weg, STIBOKA, Netherlands Soil Survey Institute.  
 Mr. R.P. Yonazi, Forest Division, DSM, Tanzania. □



*A visit to ICRAF is incomplete unless it is extended to the Field Station in Machakos. In the picture, a group of participants in the FAO/Finland Watershed Management Course that was held in Nairobi in 1983 listens to the leader (extreme right) of the project involving multipurpose trees and shrubs for agroforestry.*

PROGRAMME 1 Management & Administration	PROGRAMME 2 Field Station	PROGRAMME 3 Agroforestry Systems	PROGRAMME 4 Agroforestry Technology	PROGRAMME 5 Information Services	PROGRAMME 6 Training & Education	PROGRAMME 7 Collaborative and Special Projects	AF ADVISORY UNIT
Director's Office On-going (1)	Programme planning On-going (1)	Programme planning On-going (1)	Programme planning On-going (1)	Programme planning On-going (1)	Programme planning On-going (1)	Programme planning On-going (1)	Programme planning On-going (1)
Board and Committees On-going (1)	Physical development On-going (2)	Diagnostic & design methodology On-going (1)	Reviews On-going (2)	Library On-going (1)	Agroforestry training materials On-going (1)	Tropical America On-going (2)	Pairi project work dependent on demand for services
Programme planning and coordination On-going (1)	Demonstration On-going (2)	System inventory On-going (1)	Science and practice series 1984 (2)	Documentation On-going (1)	Agroforestry short courses On-going (1)	Sub-Saharan Africa On-going (2)	
Finance and administration On-going (1)	Service projects On-going (1)	Economic studies On-going (2)	Multipurpose tree studies On-going (1)	Publications On-going (1)	Fellowships On-going (1)	Southeast Asia On-going (2)	
		Land evaluation On-going (2)	Technology Design and management 1984 (2)		On-the-job training On-going (1)	South Asia On-going (2)	
		Land tenure in agroforestry 1984 (3)	AF/Soil conservation handbook 1984 (3)		Follow-up Education Workshop 1984 (1)	Mediterranean/ Middle East 1985 (2)	

## Explanation to summary chart of programmes/activities



In Programme 7 the identification and planning phases are priority 1 activities, i.e. they will be carried out as planned with ICRAF core funds. Project implementation will have to be specially funded.

## *Project/activity priority rating*

- (1) Based entirely on core funds (including staff secondments) and/or already obtained project funds; will be carried out as planned.
- (2) Based on a combination of core funds and project funds; will be carried out, although at a reduced level if additional project funds are not obtained.
- (3) Although deemed necessary, will not be implemented unless project funds are obtained (the planning phase may be initiated if available core funds permit).

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### *Senior staff (1 March 1984)*

BL = Dr. B. Lundgren, Director	(core-funded)
KG = K. Gatamah, Secretary/Treasurer	(core-funded)
PKRN = Dr. P.K.R. Nair, Agronomist	(core-funded)
PH = Dr. P.A. Huxley, Horticulturist	(core-funded)
FT = Dr. F. Torres, Animal Husbandry Specialist	(core-funded)
JR = Dr. J.B. Raintree, Sociologist/Anthropologist	(core-funded)
EZ = Dr. E. Zulberti, Training Officer	(core-funded)
RL = Mr. R. Labelle, Information Officer	(IDRC project-funded)
DH = Ir. D. Hoekstra, Farm Economist	(core-funded)
TD = Dr. T. Darnhofer, Bioclimatologist	(core-funded)
PvC = Mr. P. von Carlowitz, Forester	(GTZ-seconded)
AY = Prof. A. Young, Land Evaluation/Soil Science Specialist	(core-funded)
RN = Mr. R.C. Nturu, Publications Officer	(core-funded)
DR = Dr. D. Rocheleau, Geographer	(Rockefeller fellow)
PW = Mr. P. Wood, Forester (Advisory Unit)	(core-funded)
MB = Dr. M. Baumer, Range Management Specialist (Advisory Unit)	(core-funded)
WB = Mr. W. Beets, Agronomist (Advisory Unit)	(core-funded)
DD = Mr. D. Depommier, Forester	(French/CTFT-seconded)

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<u>Name</u>	<u>Discipline/Position</u>	<u>Date joined</u>	<u>Date left</u>
<i>Senior staff</i>			
Dr. B. Lundgren	Director	1.9.81	
Dr. M. Baumer	Range Management	2.9.83	
Mr. W.C. Beets	Agronomist	29.8.83	
Mr. P. von Carlowitz	Forester	25.6.82	
Dr. T. Darnhofer	Bioclimatologist	16.7.82	
Mr. K. Gatamah	Secretary/Treasurer	1.12.80	
Ir. D. Hoekstra	Farm Economist	1.3.82	
Dr. P.A. Huxley	Horticulturist/Agronomist	1.4.79	
Mr. R. Labelle	Information Officer	1.7.81	
Dr. P.K.R. Nair	Agronomist/Soil Scientist	8.11.78	
Mr. R.C. Nturu	Publications Officer	1.11.82	
Dr. J.B. Raintree	Ecological Anthropologist	9.1.81	
Dr. D. Rocheleau	Geographer/Systems Ecologist	9.2.83	
Dr. F. Törres	Animal Husbandry	9.5.79	
Mr. P.J. Wood	Forester	2.9.83	
Prof. A. Young	Land Evaluation/Soil Scientist	7.1.83	
Dr. E.N. Zulberti	Training Officer	1.9.82	
<i>Professional support staff</i>			
Ms. E.N. Bulwanyi	Accountant	1.4.82	
Mr. E.C.M. Fernandes	Research Assistant	3.1.83	
Ms. L. Fidaali	Computer Programmer	1.8.83	
Ms. K. Getao	Computer Programmer	20.9.82	30.6.83
Mr. S.S. Kanani	Senior Research Assistant	13.6.83	
Ms. L.R. Majisu	Documentalist	1.2.79	
Mr. D.N. Mwigie	Principal Administrative Assistant	1.5.83	1.11.83
Mr. P. K. Wambugu	Farm Manager	5.8.81	
Mr. D. Wambuguh	Research Assistant	1.12.82	
<i>Other professionals</i>			
Mr. R. Mwendandu	On-the-job Trainee	3.5.83	18.11.83
Mr. V. Nambombe	On-the-job Trainee	1.11.83	
Mr. P.J. Robinson	Research Fellow	14.6.82	
Mr. G. Sariah	On-the-job Trainee	3.5.83	18.11.83
Mr. C.K. Ssekabembe	Research Fellow	1.11.83	
<i>Administrative and field support staff</i>			
Mr. F.M. Gitau	Filing/Stores Clerk	26.6.81	
Ms. L.W. Githecha	Stenographer	1.4.83	
Mr. T.M. Ivati	Messenger/Driver	18.7.81	
Ms. C.M. Kanyeki	Administration Secretary	17.1.80	
Ms. B. Kibe	Secretary II	1.4.81	
Mr. M. Kilonzo	Permanent Labourer	14.5.82	
Ms. R. Kimotho	Bilingual Secretary	14.5.82	
Ms. T.W. Knudsen	Secretary I	1.11.83	
Mr. M. Kuria	Clerk I	19.9.83	
Ms. W. Kuria	Secretary I	15.10.79	

Ms. P. Magu	Receptionist	1.4.83
Ms. F.W. Mboya	Director's Secretary	1.9.78
Ms. S.N. Muasya	Stenographer	1.4.83
Ms. A.I. Musa	Stenographer	1.4.83
Mr. G. Mwasambu	Field Assistant	1.11.82
Ms. F.M. Ngare	Cleaner/Tea-girl	21.6.83
Ms. J.R. Ngeene	Stenographer	1.3.80
Ms. M. Odhiambo	Clerical Officer	19.9.83
Mr. S. Okemo	Library Assistant	2.1.83
Mr. E. Shitoko	Driver	1.4.83
Mr. P. Waweru	Driver	1.1.79

*Temporary employees*

Ms. L. Chege	Typist	16.8.83	
Mr. B.K. Kamba	Temporary Labourer	1.11.83	
Mr. R. Kareri	Research Assistant	5.9.83	
Mr. G.M. Kiilu	Temporary Labourer	1.11.83	
Mr. B.M. Munyao	Temporary Labourer	1.11.83	
Ms. M. Muthaka	Typist	21.2.83	29.6.83
Mr. E.M. Mutindo	Temporary Labourer	1.11.83	
Mr. P.N. Mutua	Temporary Labourer	1.11.83	
Mr. L. Mutunga	Temporary Labourer	1.11.83	
Mr. W.K. Myule	Temporary Labourer	1.11.83	
Ms. J. Ndemo	Typist	16.8.83	
Mr. P.M. Nzioka	Temporary Labourer	1.11.83	
Ms. A. Oleche	Bilingual Typist	7.11.83	
Mr. P.K. Wakaya	Temporary Labourer	1.11.83	

*Articles, chapters and papers*

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ICRAF. Info/Doc. ICRAF. An interactive, user-friendly, agroforestry information request service. ICRAF, Nairobi. Mimeo. 4 pp.

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**REPORT OF THE AUDITORS**  
to the Board of Trustees

**PANNELL  
BELLHOUSE  
MWANGI**

**CERTIFIED PUBLIC ACCOUNTANTS (K)**

Stanbank House  
Moi Avenue  
P.O. Box 44286  
Nairobi, Kenya

Telex 22554 DINCLUB  
Telephone: 338446

*International Council for Research in Agroforestry*

We have audited the financial statements which have been prepared under the historical cost convention and are in agreement with the books of account which, in our opinion, have been properly kept, using appropriate accounting and internal control procedures.

We have obtained all the information and explanations which were necessary for completion of our audit.

In our opinion, the financial statements comply with the provisions in the Council's Charter and give, under the accounting convention stated above, a true and fair view of the Council's affairs at 31 December 1983, and of its income and expenditure for the year ended on that date.



Nairobi  
23rd March 1984

**FINANCIAL STATEMENT FOR 1983**

*International Council for Research in Agroforestry*

**Balance sheet as at December 31, 1983**

	1983 US\$	1982 US\$
<b>Assets</b>		
Bank and cash balances	393,149	211,885
Debtors and prepayments	<u>100,834</u>	<u>37,312</u>
	<u>493,983</u>	<u>249,197</u>
<b>Liabilities and Surplus</b>		
Accruals and other payables	338,129	148,206
Surplus	<u>155,854</u>	<u>100,991</u>
	<u>493,983</u>	<u>249,197</u>

**Summary Income & Expenditure**

**Account for the year ended December 31, 1983**

	1983 US\$	1982 US\$
Funds available during the year (Schedule A)	2,192,368	1,363,200
Expenditure during the year (Schedule B)	<u>2,036,514</u>	<u>1,262,209</u>
Surplus for the year (Schedule C)	<u>155,854</u>	<u>100,991</u>

O.M. Mburu - Trustee  
B.O. Lundgren - Director

K. Gatamah - Treasurer

Pannell Bellhouse Mwangi (Certified Public Accountants)

March 23, 1984

## Income & Expenditure Account

### Funds available for the year ended December 31, 1983

<b>CORE SUPPORT</b>	1983 US\$	1982 US\$
Funds brought forward from previous year	<u>110,345</u>	<u>82,700</u>
<i>Received during the year</i>		
Ministry of Foreign Affairs - Netherlands	88,667	125,000
Cooperation au developpement et aide humanitaire - Suisse	144,439	127,291
Canadian International Development Agency	304,175	245,143
International Development Research Centre - Canada	—	120,724
Norwegian Ministry of Foreign Affairs	139,870	—
Ford Foundation	<u>250,000</u>	<u>—</u>
	<u>927,151</u>	<u>618,158</u>
 <b>OTHER RECEIPTS</b>		
Agency and office services fees	14,910	12,144
Interest earned	<u>7,297</u>	<u>10,985</u>
	<u>22,207</u>	<u>23,129</u>
<b>UNRESTRICTED FUNDS AVAILABLE US\$</b>	<u>1,059,703</u>	<u>723,987</u>
 <b>RESTRICTED SUPPORT</b>		
<i>Senior Staff Secondments</i>		
Balance b/f	4,355	—
International Development Research Centre - Canada	26,000	53,000
Rockefeller Foundation - United States	24,000	—
German Agency for Technical Cooperation (GTZ)	85,000	50,000
Cooperation au developpement et aide humanitaire - Suisse	93,001	42,015
Netherlands Ministry of Foreign Affairs	<u>44,333</u>	<u>75,000</u>
	<u>276,689</u>	<u>220,015</u>
 <b>PROJECT SUPPORT</b>		
	1983 US\$	1982 US\$
Balance brought forward from previous year	<u>(13,709)</u>	<u>52,900</u>
<i>Received during the year</i>		
Fund for International Development (DSE) - Germany	—	46,600
National Academy of Sciences - USA	19,000	21,750
United States Agency for International Development	620,249	—
Ford Foundation	52,380	31,000
Beijer Institute	—	5,000
BAT - Cash Crop Based AF Systems Workshop	6,647	26,476
CIDA/CARE - Seed Project	—	12,296
International Development Research Centre - Canada	90,185	81,499
Swedish International Development Authority	50,704	80,000
German Agency for Technical Cooperation (GTZ)	15,003	54,288
Wageningen University	5,517	7,389
Netherlands Ministry of Foreign Affairs	10,000	—
	<u>869,685</u>	<u>366,298</u>
Sub-total restricted support available	<u>1,132,665</u>	<u>639,213</u>
<b>TOTAL FUNDS AVAILABLE DURING THE YEAR</b>		
<b>US\$</b>	<u>2,192,368</u>	<u>1,363,200</u>

#### Notes

- 1 The Government of Kenya contributed various facilities, waiver of customs duties and taxes, etc., and offered to grant land for development of permanent headquarters.
- 2 Various institutions seconded staff, students, etc., to ICRAF to work on various joint or collaborative projects, e.g. Commonwealth Forestry Institute (P. Robinson - Research Fellow), Wageningen University (R. Vonk and other students).  
ICRAF appreciates this contribution.

**Income & Expenditure Account**

**Actual expenditure for the year ended December 31, 1983**

	Actual 1983 US\$	Budget 1983 US\$	Actual 1982 US\$
International staff (including secondments)	970,626	982,700	659,816
Support staff	177,210	218,400	108,714
Office rent and utilities	79,750	78,000	60,597
Communications	49,952	46,000	47,127
Printing, duplicating & photocopying	12,350	20,000	14,793
Insurances - vehicles, buildings, etc.	11,148	10,000	2,843
Legal, audit and other professional fees	1,016	3,500	1,075
Purchase and maintenance of equipment	39,304	18,000	1,338
Furniture, fittings and office renovations	41,398	40,000	5,855
Transport, fuel and vehicle maintenance	10,779	12,000	4,288
Purchase of vehicles	58,614	50,000	157
Office supplies and operations	37,780	42,000	15,595
<i>Planned Programme Activities (Direct Costs)</i>			
Travel - Director & Treasurer	12,349	20,000	4,566
Official functions & hospitality	4,617	3,000	3,643
Board & Committees	32,753	40,000	20,851
Library supplies	32,365	20,000	13,618
Publications — Newsletter, etc.	19,368	14,000	6,081
Information & documentation	2,773	2,500	—
Education workshop	209	—	61,424
On-the-job training	7,723	7,500	14,577
Fellowships	1,544	6,000	—
Training courses	26,559	30,000	—
D & D methodology	10,293	10,000	5,777
Systems inventory	110,372	80,000	4,530
Economic studies/modelling	26,290	25,000	49,893
CIDA/CARE tree seed project	131	—	20,357
AF cash crop based systems workshop	3,546	3,500	1,882
Mazingira rainbow project	—	—	2,958
Land tenure	2,850	—	—
Plant aspects seminar proceedings	23,650	10,000	1,800
1980 Kenya AF seminar	—	—	833
Agroforestry reviews	995	—	—
NAS - F. Nitrogen-fixing trees	2,237	3,000	10,799
Germplasm workshop	32,084	20,000	2,209
Field Station development & maintenance	18,793	20,000	46,064
Field Station - research and demonstration activities	45,281	30,000	9,430
COSPRO - Tropical America	13,662	10,000	—
Sub-Saharan Africa	363	—	—
Southeast Asia	6,379	5,000	34,054
South Asia	13,233	10,000	—
Advisory Unit	80,526	97,200	—
Professional travel - scientists	15,542	32,000	14,625
Contingency allowance	—	101,000	—
	<u>2,036,514</u>	<u>2,120,300</u>	<u>1,262,209</u>

**Management Information Schedule A**

**Source and use of funds year ended December 31, 1983**

	Funds Available 1983 US\$	Expenditure 1983 US\$	Available Balance 1983 US\$
<b>CORE SUPPORT</b>			
Funds carried forward from previous year	110,345	110,345	—
Ministry of Foreign Affairs - Netherlands	88,667	88,667	—
Norwegian Ministry of Foreign Affairs	139,870	139,870	—
Canadian International Development Agency - Canada	304,175	304,175	—
Ford Foundation	250,000	51,243	198,757
Co-operation au developpement et aide humanitaire — Suisse	<u>144,439</u>	<u>144,439</u>	—
	<u>927,151</u>	<u>728,394</u>	<u>198,757</u>
<b>OTHER RECEIPTS</b>			
Agency and office services fees	14,910	14,910	—
Interest earned	7,297	7,297	—
	<u>22,207</u>	<u>22,207</u>	—
<b>SUB-TOTAL CORE FUNDS</b>	<u>1,059,703</u>	<u>860,946</u>	<u>198,757</u>
<b>RESTRICTED SUPPORT</b>			
<i>Staff Secondments</i>			
Balance brought forward from previous year	4,355	4,355	—
International Development Research Centre - Canada	26,000	26,000	—
Rockefeller Foundation - United States	24,000	24,000	—
Deutsche Gesellschaft Technische Zusammenarbeit (GTZ) - Germany	85,000	85,000	—
Co-operation au developpement et aide humanitaire - Suisse	93,001	93,001	—
Netherlands Ministry of Foreign Affairs	44,333	75,200	(30,867)
<b>SUB-TOTAL STAFF SUPPORT</b>	<u>272,334</u>	<u>303,201</u>	<u>(30,867)</u>
<b>PROJECT SUPPORT</b>			
Funds carried forward from previous year	(13,709)	(13,709)	—
United States Agency for International Development	620,249	568,225	52,024
International Development Research Centre - Canada	90,185	89,035	1,150
Deutsche Gesellschaft Technische Zusammenarbeit (GTZ) - Germany	15,003	15,003	—
Swedish International Development Authority	50,704	13,204	37,500
Ford Foundation (Nairobi & Delhi Regional Offices)	52,380	46,380	6,000
Netherlands Ministry of Foreign Affairs	10,000	10,000	—
BAT - Cash Crop Based AF Systems Workshop	6,647	6,647	—
Wageningen University	5,517	5,517	—
National Academy of Sciences - USA	19,000	34,000	(15,000)
<b>SUB-TOTAL PROJECT FUNDS</b>	<u>869,685</u>	<u>788,011</u>	<u>81,674</u>
Consultancy/advisory services	—	93,710	(93,710)
<b>TOTAL RESTRICTED SUPPORT</b>	<u>1,132,665</u>	<u>1,175,568</u>	<u>(42,903)</u>
<b>TOTAL 1983 SUPPORT</b>	<u>2,192,368</u>	<u>2,036,514</u>	<u>155,854</u>

## Management Information Schedule B

### Expenses for the year ended December 31, 1983

	1983 US\$	1982 US\$
Board and Committees	84,888	48,300
Administration services	269,556	190,352
Scientific programme activities	1,467,404	803,895
Information services	27,186	193,830
Equipment, furniture, fittings and vehicles	139,316	—
Audit fees	1,016	1,080
Other activities	47,148	24,752
	<u>2,036,514</u>	<u>1,262,209</u>

#### DETAILED PROJECT EXPENDITURES

##### *Management and Administration Programme*

Director's Office	109,605
Board and Committees	84,888
Programme planning	69,816
Finance and administration	90,135
	<u>354,444</u>

##### *Information Services Programme*

Planning	12,543
Library project	67,817
Publications project	116,540
Documentation project	74,962
Information research project	—
	<u>271,862</u>

##### *Training and Education Programme*

Planning	21,804
Education workshop	8,717
Training materials	21,366
Training courses	85,274
Agroforestry fellowships	11,689
On-the-job training	32,688
Agroforestry curricula development	—
	<u>181,538</u>

##### *Systems Research and Evaluation Programme*

Planning	10,716
Diagnostic methodology development	106,542
Systems inventory	201,204
Economic modelling	74,716
BAT cash crop based agroforestry systems	7,663
Land evaluation	36,222
Land tenure	5,328
	<u>442,391</u>

**Management Information Schedule B**

**Expenses for the year ended December 31, 1983**

	<b>1983</b>
	<b>US\$</b>
<i>Agroforestry Technology Research and Evaluation Programme</i>	
Planning	16,590
Plant aspects seminar	69,082
Kenya agroforestry seminar	—
Germplasm workshop	77,171
Agroforestry reviews	30,876
Science and practice series	17,370
NAS nitrogen-fixing trees	44,793
	<u>255,882</u>
<i>Field Station, Machakos Programme</i>	
Planning	15,294
Physical development	43,695
Demonstration	85,344
	<u>144,333</u>
<i>Collaborative and Special Projects Programme</i>	
Planning	17,548
American Tropics	67,177
Sub-Saharan Africa	26,442
Southeast Asia	68,829
South Asia	30,308
	<u>210,304</u>
<i>Advisory Unit</i>	
Establishment and other related costs	177,006
Less recoverable	48,394
	128,612
<i>Other Activities</i>	
Staff professional travel and attendance at relevant meetings/seminars, etc.	47,148
	<u>2,036,514</u>

**Management Information Schedule C**

**Surplus as at December 31, 1983**

	Core support US\$	Restricted support US\$	Total US\$	Budget/income projection US\$
Surplus at January 1983	110,345	(9,354)	100,991	101,000
Add: 1983 contribution received	927,151	1,142,019	2,069,170	2,175,000
Other receipts	22,207	—	22,207	15,000
Total funds available	<u>1,059,703</u>	<u>1,132,665</u>	<u>2,192,368</u>	<u>2,291,000</u>
Deduct: expenditure for the year	<u>860,946</u>	<u>1,175,568</u>	<u>2,036,514</u>	<u>2,120,000</u>
Surplus for the year	<u>198,757</u>	<u>(42,903)</u>	<u>155,854</u>	<u>171,000</u>

6 The objects of the Council are to increase the social, economic and nutritional well-being of peoples of developing countries through the promotion of agroforestry systems to achieve better land use in developing countries without detriment to their environments, to encourage and support research and training relevant to agroforestry systems, to facilitate the collection and dissemination of information relevant to such systems and to assist in the international coordination of agroforestry development .... 9

— from the Council's Charter  
ARTICLE IV — OBJECTS

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