

Report to the Ministry of
Higher Education and Scientific Research
of Cameroon

ISNAR R19

IMPROVEMENT OF AGRICULTURAL RESEARCH MANAGEMENT IN CAMEROON

ISNAR

International Service for
National Agricultural Research

PAID/CA

Pan-African Institute for
Development--Central Africa

ISNAR

The International Service for National Agricultural Research (ISNAR) began operating at its headquarters in The Hague, Netherlands on September 1, 1980. It was established by the Consultative Group of International Agricultural Research (CGIAR) on the basis of recommendations from an international task force, for the purpose of assisting governments of developing countries to strengthen their agricultural research. It is a non-profit autonomous agency, international in character, and non-political in management, staffing and operations. Most of its funds are provided by an informal group of approximately 30 donors: countries, development banks, international organizations and foundations, which make up CGIAR.

Of the thirteen centers in the CGIAR network, ISNAR is the only one which focuses primarily on national agricultural research issues. It provides advice to governments, upon request, on organization, planning, manpower development, staff matters, financial resources and infrastructure, and other aspects of research management, thus complementing the activities of other assistance agencies. Additionally, ISNAR has a training and communications program which cooperates with national agricultural research programs in developing countries. It also plays a role in assisting these national programs to establish links with both the international agricultural research centers and donors.

PAID

The Pan-African Institute for Development (PAID) is an internationally recognized non-governmental organization composed of individuals and statutory bodies, established in 1964. Its General Secretariat is in Douala, Cameroon.

PAID's main objective is to train middle- and high-level managers and administrators of development organizations and projects in methods and skills of development. PAID, in cooperation with most African countries South of the Sahara, conducts a variety of operations: training, applied research and studies, support to national and local training institutions and development projects, and consultation to private or public organizations. It stresses the diversity of conditions in Africa, and the need for integrated and participative development approaches. PAID has four regional branches, which operate as semi-autonomous institutes: PAID/CA for Central Africa, in Douala; PAID/WA for English speaking West Africa, in Buea (Cameroon); IPD/AOS for the Sahel, in Ouagadougou (Bourkina Fasso); and PAID/ESA for Eastern and Southern Africa, in Kabwe (Zambia).

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ACRONYMS

AGCD	Agence Générale pour la Coopération au Développement -- Belgique (General Agency for Development Cooperation, -- Belgium)
ARC	Agricultural Research Center
CC	Chief of Center
CDA	Cooperation for Development in Africa
CENEEMA	Center National d'Etudes et d'Expérimentations du Machinisme Agricole (National Center for Study and Experimentation in Agricultural Engineering)
CGIAR	Consultative Group on International Agricultural Research
CNRS	Center National de la Recherche Scientifique -- France (National Center for Scientific Research -- France)
CTMV	Center of Tropical Veterinary Medicine (University of Edinburgh)
CUDS	Center Universitaire de Dschang (Dschang University Center)
DGSTR	Delegation General for Scientific and Technical Research
ENSA	Ecole Nationale Supérieure Agronomique (National Advanced School of Agriculture)
FAO	Food and Agriculture Organization of the United Nations
FRC	Forestry Research Center
GDP	Gross Domestic Product
GERDAT	Groupeement d'Etudes et de Recherches pour le Développement de l'Agronomie Tropicale -- France (Group of Institutes for Study and Research for the Development of Tropical Agriculture)
HPI	Heifer Project International (Arkansas, USA)
IAR	Institute of Agricultural Research
IDRC	International Development Research Centre -- Canada
IEMVT	Institut d'Etudes de Médecine Vétérinaire Tropicale -- France (Research Institute for Tropical Veterinary Medicine -- France)
IFCC	Institut Français du Café, Cacao et autres plantes stimulantes (French Institute for Coffee, Cocoa and other stimulating plants)
IFS	International Foundation for Science
IGMR	Institute of Geological and Mining Research
IHS	Institute of Human Sciences
IITA	International Institute of Tropical Agriculture
IMRMPS	Institute of Medical Research and Medicinal Plant Studies
IMT	Institut de Médecine Tropicale -- Belgique (Institute of Tropical Medicine -- Belgium)
ISNAR	International Service for National Agricultural Research
IRAT	Institut des Recherches Agronomiques Tropicales et des cultures vivrières -- France (Institute for Tropical Agricultural Research and food crops -- France)
ITA	Institut des Techniques Agricoles (Institute of Agricultural Technology)
IZR	Institute of Zootechnical Research
MAB	Permanent Committee for Man and the Biosphere
MINAGRI	Ministry of Agriculture
MINEPIA	Ministère de l'Élevage, des Pêches et des Industries Animales (Ministry of Animal Production, Fisheries and Animal Industries)
NCDT	National Committee for the Development of Technology
NCRE	National Cereals Research and Extension Project

NSC	National Soils Center
ODA	Overseas Development Agency -- United Kingdom
ONAREST	Office National de la Recherche Scientifique et Technique (National Bureau for Scientific and Technical Research)
ORSTOM	Office de la Recherche Scientifique et Technique d'Outre Mer -- France (Office for Scientific and Technical Research Overseas)
PAID/CA	Pan-African Institute for Development -- Central Africa
SAF	1. Service for Administration and Finance (in the office of the director of a research institute) 2. Section of Administration and Finance (at the level of the research centers and stations)
SEMYR	Société d'Expansion et de Modernisation de la Riziculture de Yagoua (Company for the Expansion and Modernization of Rice Production in Yagoua)
SODECOTON	Société de Développement du Coton au Cameroun (Cameroon Cotton Development Company)
TLU	Testing and Liaison Unit
UCCAO	Union Centrale des Coopératives de l'Ouest (Central Union of Agricultural Cooperatives of the West)
USAID	United States Agency for International Development

SUMMARY

The International Service for National Agricultural Research (ISNAR) submitted to the member countries of the Cooperation for Development in Africa (CDA) initiative a proposal to determine training needs in agricultural research management through a survey in three African countries (Cameroon, Sudan, and Zimbabwe). This proposal aimed at the development of training materials, and the organization of a series of research management seminars. The proposal was accepted and is being funded by the United States Agency for International Development (USAID) and the Overseas Development Agency (ODA).

The present report deals with the survey of management training needs in Cameroon, carried out jointly by ISNAR and the Pan-African Institute for Development -- Central Africa (PAID/CA). The study was conducted for the Delegation General for Scientific and Technical Research (DGSTR) of Cameroon and its two agricultural research institutions, the Institute of Agricultural Research (IAR) and the Institute of Zootechnical Research (IZR). The Ministry of Higher Education and Scientific Research (MESRES), which was created in April 1984, includes the DGSTR. MESRES has reaffirmed their interest in this study.

The influence of the environment on the performance of managerial functions is considerable. Therefore, the term management was interpreted broadly, to cover the management of the whole system and not only the performance of the managerial functions within the research institutes. Accordingly, the recommendations deal with the improvement of the system through decisions taken by the ministries and the research institutes, and with the improvement of the performance of the managerial functions through training.

More than 90 persons in the DGSTR, the agricultural research institutes, government departments, parastatal organizations, and development projects were questioned on five issues concerning agricultural research:

- * Current strengths and weaknesses of management.
- * Ways to upgrade management.
- * The perceived need for improvement of management skills through training.
- * Critical skills required for efficient management.
- * Organization of in-career management training for different categories of personnel.

Based on the responses of the interviewees, a diagnosis was made of the strengths and weaknesses of the management of agricultural research. After a period of reorganization of the research system, the institutes are currently engaged in the development and implementation of programs throughout the country. Substantial achievements have been made. After welding the former French institutes into a national system, a large number of national researchers have been trained and recruited, a statute

for research scientists has been formulated and adopted, and a coherent planning and programming process developed. Weaknesses still exist: the organizational structure is rather bureaucratic, the efficiency of planning and programming is diminished by lengthy procedures and insufficient commitment by some of the parties involved, there is no statute for the research personnel as a whole, communication problems exist within and between the institutes, research-extension linkages are weak, and the infrastructure is inadequate for present needs.

To efficiently manage agricultural research, it was considered that six functions had to be performed. The managerial functions have been grouped as follows:

1. Strategic planning: formulation of basic research objectives, definition of the program policies and strategies.
2. Evaluation, programming, and budgeting: follow-up to the planning process, including operational feedback through evaluation of the research process and the research results, development of research proposals, identification of resource needs and time schedules, and preparation of appropriate budgets.
3. Financial management: preparation of final budget documents, management of all financial transactions, accounts, and financial reporting.
4. Personnel management: recruitment, evaluation, incentives, discipline, training, promotion, and all other administrative tasks relating to personnel.
5. Management of physical resources: purchases, allocation, maintenance, and repairs.
6. Information management: acquiring and delivering information.

Because the performance of these functions is conditioned by the way people manage human processes and inter-personal relations, for each function two dimensions were considered: (i) the technical and administrative dimensions, and (ii) the human and inter-personal dimension.

Three complementary ways of maintaining the effort to improve agricultural research management were identified: (i) management decisions at the ministerial level, (ii) management decisions at the level of the institutes, and (iii) training.

At the ministerial level, it was recommended to maintain the effort on the:

- * Organization of the research institutes:
 - Improved maintenance of existing research infrastructure, and expansion of facilities in certain stations.

- Review of administrative procedures, aimed at increased speed of communication and effectiveness.
 - Creation of the post of farm manager ("chef de culture") for the largest research stations.
- * Research policy and strategic planning:
 - Formulation of shared principal objectives for all research and extension personnel.
 - Review of the research planning process, to enhance government-researcher-user communication and increase correspondence between programs and national priorities.
 - Greater involvement of the program committee in research planning.
 - Reinforcement of the the programs follow-up service of MESRES, and creation of a programs follow-up service in each institute.
- * Agricultural research funding:
 - Increased budgetary provisions for maintenance, and provision for inflation in annual budgets.
 - Better integration of technical assistance projects into the operating structures of the national research institutes of which they are part.
- * Personnel management:
 - Consideration of a special statute for all personnel in the research institutes, or creation of a scientific, technical and administrative corps with all special advantages linked to the specificity of the research work.
 - Broadening of the criteria for evaluation for promotion of research staff.
 - Development of an overall manpower plan for agricultural research.
- * Information management:
 - Execution of a publications policy and strategy that answers both the researchers' needs and national interests.
 - Systematic collection of all publications of research staff.
- * Inter-institutional relations:
 - Reinforcement of working relationships between IAR and IZR.
 - Further strengthening of communication between the research institutes and the technical ministries.
 - Organization of technical training courses and seminars for extension personnel by, or with the assistance of, IAR and IZR.
 - Increased research cooperation with university institutions and development organizations.
 - Inclusion of elements of administration and management in the curricula of middle and higher level educational institutions.

In the institutes, the recommendations for decisions deal with five of the six groups of managerial functions. Strategic planning is not within the domain of the institutes, and the management of human processes and inter-personal relations does not require concrete decisions. The recommendations are a continuation of the present effort to better manage the research system. They are:

- * Evaluation, programming, and budgeting:
 - Regular internal program evaluation, in cooperation with the programs follow-up service of MESRES.
 - Stringent adjustment of the research programs to available means.
 - Stronger programming and budgeting guidelines for staff of research institutes.
- * Financial management:
 - Improvement of the mechanisms for regular financial reporting by administrative personnel to those in charge of research programs and sections.
- * Personnel management:
 - Internal and inter-institutional arrangements to improve the scientific coaching and supervision of young research workers.
 - Critical examination of training needs and opportunities, and additional efforts to promote professional exchanges.
- * Management of physical resources:
 - Creation of a central purchasing and customs clearance service for IAR and for IZR, to increase efficiency and reduce costs.
 - Better mechanisms for controlling the efficiency of equipment and vehicle utilization in some stations.
- * Information management:
 - Regular consultative and information meetings of center staff, and between personnel working in the same program or discipline.
 - Regular organization of field days.
 - Creation of a central documentation system.
 - Development of an improved format for reporting research progress and greater attention to the regularity of reporting.

The impact of management training depends on the continuation of the process of change in the research organization as initiated by its leaders. Therefore managerial actions and training must be interrelated, both in timing and content.

Management training was defined as the acquisition of professional knowledge, insights, and skills irrespective of the mode of delivery and the position of the recipients.

The desire for management training among the interviewees was found to be considerable. To the extent that training is followed by actions, as recommended above, it can improve the management of research.

The majority of interviewees gave priority to training at the national level. This was considered to be more effective than training at the regional level in improving the management of the agricultural research system. Understanding one's own system is a prerequisite to contributing to and learning from other national experiences.

Managerial competency has three interrelated elements: (i) knowledge of the principles and elements of administration; (ii) a set of attitudes stemming from the manager's value system and attitude toward himself, his task, and the persons with whom he interacts; and (iii) a set of skills: technical, administrative, and inter-personal.

The needed knowledge and skills are specified for each of the six research management functions and for each of the various categories of personnel. All categories of personnel have an important role to play in the management of human processes and inter-personal relations. In addition, directors play an important role in strategic planning, evaluation, programming and budgeting, personnel management, and information management. Heads of centers and stations are mostly concerned by evaluation, programming and budgeting, physical resources and information management. Researchers are involved in the same functions, but to a lesser extent. Chiefs of administration and finance are especially concerned with financial and physical resources management. Accountants need special knowledge and skills in aspects of financial management.

Training content has been developed for each of these research functions.

On the basis of the foregoing, a general strategy for implementation is proposed. It presents all recommended actions in three phases.

Phase 1 (short-term action) consists of reflection and discussion among the research system leaders. These discussions could take place in June 1984, and be on the following topics:

- * the definition and purpose of agricultural research management, as well as the relevance and urgency of improving it;
- * the priority ranking of issues at the ministerial level;
- * the priority ranking of managerial issues in the institutes;
- * the organization of a trial training seminar;
- * the budgetary implications of the desired managerial changes and the proposed training program.

Phase 2 (medium-term action) consists of:

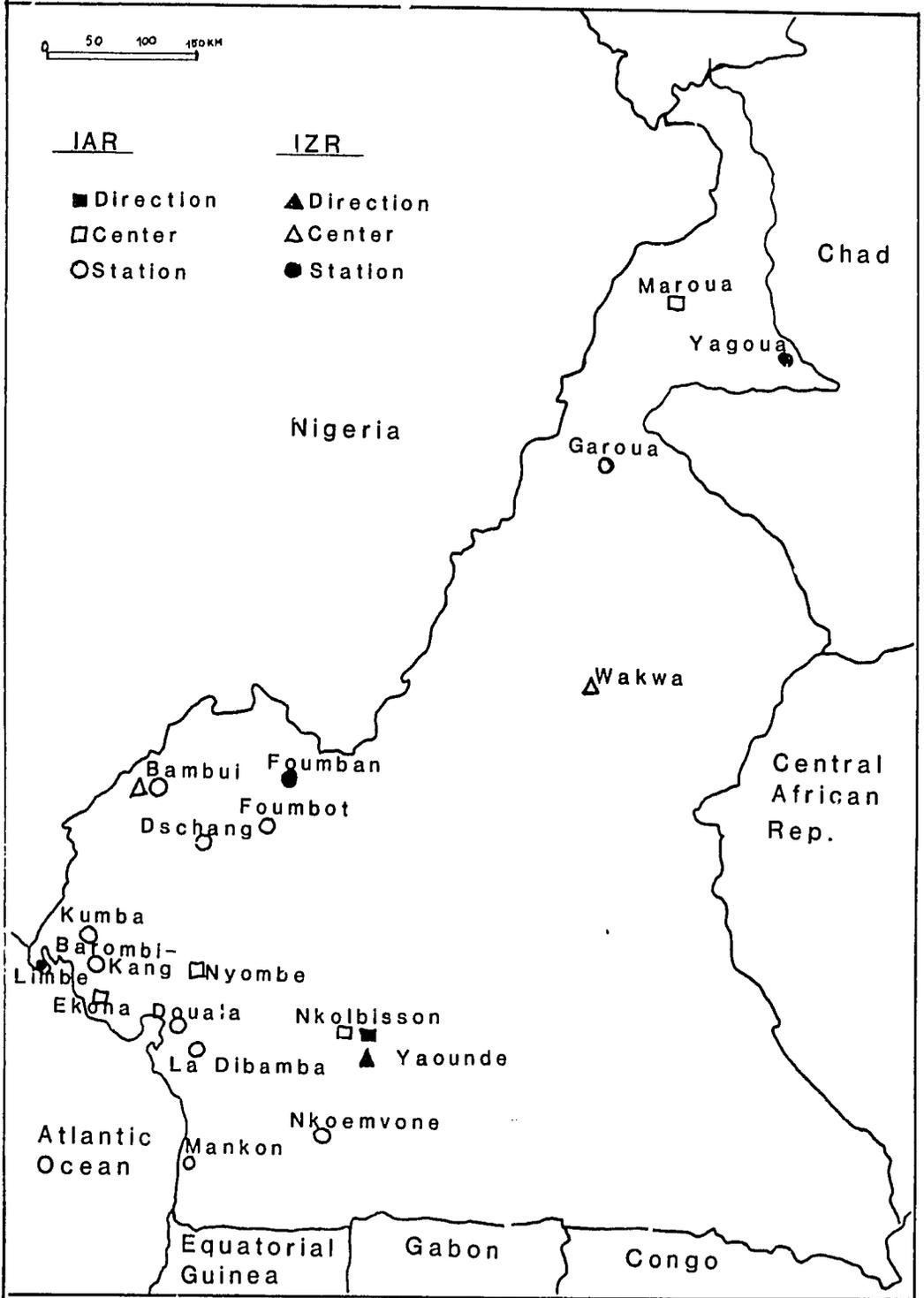
- * action on the priority problems that can be solved;
- * implementation of the trial training seminar;
- * a meeting of directors and heads of centers and stations;
- * visits of the directors of the institutes and the persons responsible for the implementation of the training program to the stations of IAR and IZR to informally begin the training;
- * preparation of a long-term in-country training program.

Phase 3 (long-term program) consists of the implementation of the in-country training program, as well as giving administrative and managerial personnel the opportunity to attend specialized training. For each participating group, the training activities could consist of several cycles spread over a period of time. Each training cycle has three components: (1) a training seminar; (2) the application in the work situation of what

has been learned during the seminar; (3) an evaluation of what has been learned. The outcome of the evaluation would form the basis for a possible second training cycle to enable participants to assimilate certain points of the earlier cycle that have not been mastered, and to acquire new knowledge and skills.

To ease the implementation of the training program, a tentative curriculum for the first training seminar for each target group was designed. These seminars could be organized and coordinated by a person appointed to assist the director for this task. Management training institutions in Cameroon could also be called upon to carry out these activities on a long-term basis. Informal training will have an important role to play, and will be done by senior staff and advisers.

Map of Cameroon



IAR - Institute of Agricultural Research

IZR - Institute of Zootechnical Research

INTRODUCTION

This study is concerned with agricultural research management. The task of a manager is to maximize efficiency in relation to current objectives, and to regularly examine these objectives to ensure continuing relevance to changing circumstances. An important element of this task is to optimize the use of existing resources in relation to the organization's specific goals. It is due to increasing resource scarcity that the importance attached to good management in general, and research management in particular, has increased sharply in recent years.

Management includes giving direction and guidance to planning, programming and budgeting, project implementation, financial operations, evaluation, and other functional processes of an institution. Good management requires special knowledge, skills, and attitudes. Generally, in research, it is scientists, often the most able ones, who become managers. They have not been trained for this task and encounter many problems. As a result, both research output and management often suffer. This universal problem is particularly serious in Africa, where human, financial, and physical resources are scarce, and communications difficult.

1.1 Origin of the Study

For the above reason, the International Service for National Agricultural Research (ISNAR) submitted a project proposal for strengthening the management of agricultural research in Africa to the governments of the countries participating in the Cooperation for Development in Africa (CDA) initiative. This proposal was accepted and phase 1 is funded by the United States Agency for International Development (USAID) and the Overseas Development Administration (ODA) of the United Kingdom.

One component of this project is a program of management workshops and seminars and another is the development of the necessary training material. The third component is a field study to determine specific management development needs in agricultural research in a sample of three African countries. Cameroon, Sudan, and Zimbabwe were identified for this purpose, following consultations with and approval from the governments concerned.

The three countries are situated in very different ecological zones, have a different colonial background and administrative traditions, and possess research systems that differ substantially in their history, structure, size, and staffing. Together, they provide a unique opportunity to examine management problems in agricultural research.

Commonalities found in the comparative analysis of the three reports will provide a valid basis for generalized conclusions and recommendations, and

will facilitate the conception and organization of management training activities in Africa. Meanwhile, it is hoped that each country report will prove to be useful in the national context.

1.2 Preliminary Contacts

The first contacts between ISNAR and the research authorities in Cameroon were established in June 1983, when Dr. T. Ajibola Taylor and Ms. M. de Lattre of ISNAR visited the Delegation General for Scientific and Technical Research (DGSTR) in Yaoundé to obtain approval for a survey of management training needs in the agricultural research system of Cameroon. At the same time they visited the leaders of the Central Africa branch of the Pan-African Institute for Development (PAID/CA), and agreed that the study would be conducted jointly. Organizational details were defined in a subsequent exchange of correspondence.

1.3 Work Schedule and Composition of the Mission

The survey was carried out from September 26 to October 15, 1983 by a team composed of Dr. R. B. Contant and Ms. M. de Lattre of ISNAR and Prof. O. Cordeiro of the Pan-African Institute for Development/Central Africa (PAID/CA) (Annex 9).

1.4 Terms of Reference

The ISNAR proposal for the study, submitted to and approved by the donor countries participating in CDA, specified that the 3-country survey would make an inventory of the management skills required at each level and would propose specific training programs to develop them, and would focus on the following questions:

1. What are the current strengths and weaknesses in the management of agricultural research?
2. How can the management of agricultural research be upgraded?
3. To what extent do research officials and staff perceive a need for research management training?
4. What are the critical skills required for the efficient management of agricultural research?
5. How can in-career management training for agricultural research personnel best be organized?

In the course of the Cameroon study, the term management was interpreted in its widest sense, to include not only the performance of the managerial functions by the staff of the research institutes, but the management of the system as a whole. Right from the beginning, the justification of this wide interpretation was confirmed, as the interviewees themselves pointed out that training, if not supported by a favorable research environment, would not have much impact. Therefore, without detracting from the desired emphasis on training as a tool to improve research management, considerable emphasis was placed on managerial decisions to improve the research environment.

1.5 Methodology

In the course of the mission, visits were made to the headquarters of the Ministry of Agriculture and the Ministry of Animal Production & Fisheries, the Dschang University Center (Center Universitaire de Dschang - CUDS) and the School of Agriculture (Ecole Nationale Supérieure Agronomique - ENSA), several government and parastatal organizations, aid agencies, and especially the DGSTR as well as the centers and stations of its two institutes concerned with agriculture, namely the Institute of Agricultural Research (IAR) and the Institute of Zootechnical Research (IZR).

In each of these institutes, a sample of the staff was selected for interview in consultation with the director and heads of units. The interviewees were: directors, heads of centers and stations, researchers, administrators (heads of administration and finance, accountants), and technicians. In the other institutions, discussions were held mainly with senior officials who were able to express views about the management of research, and about research objectives in relation to development. In all, discussions were held with over 90 persons (Annexes 1 and 2). As the study was meant to be qualitative rather than quantitative, the interviews were informal, and respondents were assured of the confidentiality of everything said. The members of the mission had a list of points to cover as an aide mémoire, but the interviews were open-ended and without a questionnaire. Questions centered around six managerial functions:

1. strategic planning
2. evaluation, programming, and budgeting
3. financial management
4. personnel management
5. management of physical resources
6. information management

The interviewees talked about the way these functions were performed as well as their perceptions of the research institutes. They laid particular stress on the importance of human processes and inter-personal relations. Therefore, this dimension, which is basic to the execution of all the above functions, received special attention in this report.

Following the mission, the notes taken at interviews were compiled and analyzed. In this report, the diagnosis and recommendations are presented following the order of the terms of reference presented in section 1.3 as well as the wishes of MESRES. After describing strengths and weaknesses of the research environment and the way the research functions are performed (chapter 2), recommendations are made to improve the management of agricultural research, both through appropriate decisions and training (chapter 3). This is followed by an outline of knowledge and skills necessary to perform the above six functions in the most effective manner (chapter 4). A proposal for the organization of a long-term program for in-career management training is also made (chapter 5).

1.6 Acknowledgments

ISNAR and PAID wish to thank the Delegate General for Scientific and Technical Research and his staff for the permission to conduct this survey and for the interest shown in the mission's work. Gratitude is also warmly expressed to the directors and all staff of both IAR and IZR, and to the many staff of the Ministries of Agriculture and Animal Production & Fisheries and of several public and parastatal organizations, for their generous collaboration in the study and particularly frank answers to the many questions asked.

The creation of the Ministry of Higher Education and Scientific Research (MESRES) has not changed the relationship of ISNAR and PAID with the Cameroonian authorities. The two organizations would like to thank the representatives of MESRES for their welcome and the transformation of this study into a national program.

Chapter 2

STRENGTHS AND WEAKNESSES IN THE MANAGEMENT OF AGRICULTURAL RESEARCH IN CAMEROON

The following diagnosis of strengths and weaknesses in the management of agricultural research is based primarily on the information, insights and views gathered during the interviews, and on information found in official documents. Therefore, this chapter reflects the views of the respondents as analyzed and interpreted by the members of the mission. The recommendations for improvement are presented in later chapters.

2.1 The Research Environment

When considering the management of agricultural research, the environment or context must be examined at three different levels. First is the overall context, which is composed of elements determined by social, cultural, political, economic, and ecological factors. These elements are difficult to change, but they are extremely important, as they condition the functioning of the research system at the other levels. The overall context is not the focus of this study and is only briefly examined.

Second, operating within the first, is the ministerial level, where research policy, strategy, organization, funding, personnel, and information policies and management structures are determined. The functions performed at this level are partly political, partly managerial and partly technical. They are vital for the functioning of the research institutes. Some of the challenges and uncertainties facing research in this part of the research environment are examined, in so far as they relate to the functioning of the individual agricultural research institutes. These institutes, notably IAR and IZR, constitute the research environment at the third level, which is situated within the other two.

Managerial and scientific-technical functions are performed in the institutes. The managerial functions demand administrative, technical, and inter-personal skills, as well as knowledge of management theory and managerial aptitude. The situation within the institutes is the focus of this study.

2.2 The Overall Context

2.2.1 General information on Cameroon

Cameroon, which is often considered as Africa in miniature, covers 475,000 km². The country is marked by great ecological, ethnic,

cultural, religious, socioeconomic, and demographic diversity. In the north: dry conditions, extensive cattle ranching and cotton-based farming systems. In the south and southeast: humid tropical lowlands and middle-altitude plateaus, large estates and smallholdings; low population densities, particularly in the east. In the west and northwest: high plateaus with both tropical and temperate crops, smallholder farming, and high population densities.

In 1982 the total population was 8,600,000 and the average density 18.2 persons per km². Annual population increase averaged 2.46% between 1960 and 1980, but is expected to reach well over 3% by the end of the century.

Agriculture is the mainstay of the economy and occupies about 33% of the land. It employs almost 70% of the economically active population, provides 30%-40% of the public budgetary resources, assures about 70% of the country's foreign exchange revenues, and represents 34% of the GDP (against 22% for industry). Whereas the promotion of export crops (cocoa, coffee, rubber, oil palm, banana, cotton) has been emphasized until recently, present policy is geared to giving a new impetus to food crops (maize, millet, sorghum, rice, groundnut, cassava, yams, etc.), in line with the country's food self-sufficiency objective.

Cameroon became a federal republic in 1961, a united republic in 1972, and in 1984 the Republic of Cameroon. The structures of government and of the research system strongly reflect the traditions of the French speaking part of the country.

2.2.2 Government departments concerned with agricultural research and development

Until April 1984, all research in Cameroon was formally under the responsibility of the Delegation General for Scientific and Technical Research (DGSTR). After this date, all research activities were placed under the authority of the Ministry of Higher Education and Scientific Research (MESRES). All except the personnel recruited on contract terms are civil servants and fall under the Civil Service Ministry. As for all government structures, funds come from the Ministry of Finance after consultation with the Ministry of Planning, and following adoption of the budget by the General Assembly.

Development agencies and projects fall under any of several ministries: Planning, Agriculture, Animal Production, even Social Affairs. The responsibility for agricultural extension is primarily divided between the Ministry of Agriculture (for crops) and that of Animal Production (for animals). Some rural development agencies are responsible for extension in a particular region. The two ministries operate independently and have few functional ties. The split between the two ministries is part of the heritage of the French-speaking part of Cameroon, which was adopted for the whole country when the United Republic replaced the Federation. This cleavage poses great problems when dealing with farmers' problems as it does not reflect the farmers' situation.

The Ministry of National Education is responsible for secondary education. The Ministry of Higher Education and Scientific Research is

responsible for most agriculture schools and all higher education institutions. The Dschang University Center (CUDS) comprises a Technical Agricultural Institute (Institut des Techniques Agricoles -- ITA) and the National Advanced School of Agriculture (Ecole Nationale Supérieure Agronomique -- ENSA), which is adjacent to the headquarters of the Institute of Agricultural Research (IAR) and the Institute of Zootechnical Research (IZR). The older members of the staff of the research institutes note a lack of technical knowledge and skills at all levels. They think it is due to inadequacies in the quality of general primary and secondary education as well as in technical and higher scientific education. For these deficiencies there are only long-term remedies.

2.2.3 Scientific and technical research

Agricultural research in Cameroon has a comparatively strong tradition and is well developed compared with other francophone countries in Africa. Before independence in 1960, most research in Cameroon was carried out by non-nationals on an ad hoc basis. In 1962, the Council for Applied Scientific Research was created under the Ministry of Planning. In 1965, when there were only two Cameroonian and 61 foreign researchers, the law to set up the National Bureau for Scientific and Technical Research (Office National de la Recherche Scientifique et Technique -- ONAREST) was passed. After several structural changes, ONAREST finally started functioning in 1974. It was reorganized in 1976 and was replaced in 1979 by the Delegation General for Scientific and Technical Research (DGSTR), which became operational in 1980. In 1984, higher education and scientific research were regrouped in one ministry, the Ministry of Higher Education and Scientific Research (MESRES).

Between the creation of ONAREST in 1965/66 and the start of its operations in 1974, research activities were carried out by French research institutes, notably those now combined in the Group of Institutes for Study and Research for the Development of Tropical Agriculture (Groupement d'Etudes et de Recherches pour le Développement de l'Agriculture Tropicale -- GERDAT), as well as the Office for Scientific and Technical Research Overseas (Office de la Recherche Scientifique et Technique Outre Mer -- ORSTOM) and the Pasteur Institute. ORSTOM was charged with the more basic research and the GERDAT institutes were given responsibility for research on crops, animal production, and forestry. Between 1974 and 1976, ONAREST created its own national institutes and took direct charge of research, with the French institutes continuing to play an important role in providing French research staff as well as training opportunities for Cameroonians abroad. This participation still exists.

The DGSTR was made up of a central administration to which five research institutes and two national committees were responsible (Annex 3):

- * Institute of Agricultural Research (IAR)
- * Institute of Medical Research and Medicinal Plant Studies (IMRMPS)
- * Institute of Geological and Mining Research (IGMR)
- * Institute of Zootechnical Research (IZR)
- * Institute of Human Sciences (IHS)
- * Permanent Secretariat for Man and the Biosphere (MAB)
- * National Committee for the Development of Technology (NCDT).

MESRES comprises the institutes of the DGSTR and the institutes of higher education (Annex 4).

The institutes covering the bulk of agricultural research in Cameroon are IAR (for crops and forestry) and IZR (for animals, animal feed and fodder, and fisheries).

To understand the present structure and organization of the agricultural research system, it is important to realize that each center and station was originally created for a very specific role (e.g., high-altitude food crops; cocoa; coffee; forestry; veterinary science), and that these roles were defined in relation to the institutional separations existing in the GERDAT system of research institutes. To transform these stations into a homogeneous national network of multipurpose stations on a geographic and ecological basis is a long-term process which is still under way. It implies an expansion of several existing stations as well as a geographic dispersal of researchers and the corresponding need to increase their numbers.

Agricultural research is also conducted out at the university, in some ministry departments, and in other governmental, parastatal and private institutions. The research undertaken by some development agencies and projects is done either by staff seconded by IAR or IZR, or by their own scientific staff. For example, the parastatal CENEEMA carries out machinery trials and tests, develops small farm equipment, does research on renewable energy sources, advises the government on agricultural machinery, and provides various services. It is the only institution in Cameroon which does research in these important areas. Agreements ("conventions") relating to specific research objectives exist between the research institutes, notably IAR, and regional development organizations such as the Cameroon Cotton Development Company (Société de Développement du Coton au Cameroun -- SODECOTON) and the Central Union of Agricultural Cooperatives of the West (UCCAO).

Few agro-economic research and agro-sociological research programs are carried out in IAR and IZR. On the other hand, the Center of Economic and Demographic Research of IHS carries out research in these areas. IAR, IZR, and other national institutions do not take advantage of the results of the work done by this center. This is regrettable; the different institutes should collaborate more.

2.2.4 Rural development priorities

By the year 2000, the population will reach 13 or 14 million, 50% more than today. This is one of the main factors behind the government's dual aim of strengthening agricultural and rural development and improving equity. The Fifth Plan's main objectives for rural development are:

1. To establish a new framework of relations between the administration and the farmers.

* The Fifth-year Economic, Social and Cultural Development Plan 1981-1985, Ministry of Economic Affairs and Planning.

2. To assign responsibility for the development of each major agricultural zone to an administratively and financially autonomous structure, which will have to implement one or more integrated rural development projects in its region.
3. To achieve a significant improvement in living conditions in the rural areas.
4. To determine an agricultural pricing policy which will take into account not only the interests of the nation and of urban consumers, but also the farmers' earnings.
5. To generalize and intensify training and refresher courses for workers in the rural areas, and to reorganize farmer training so as to make it simpler and more efficient.
6. To give highest priority to productivity increases in the agricultural sector.
7. To give priority to the (qualitative) mastery of production, its processing and marketing.

2.3 The Ministerial Context

2.3.1 Organization of the research institutes

The institutes of MESRES are public institutions and are therefore subject to all civil service laws, regulations, and procedures. IRA and IRZ have the same hierarchical organizational structure. This organization facilitates the control of activities but often creates administrative obstacles and delays. At the central level, the director and his deputy are assisted by a research service, a service for administration and finance (SAF), an accounting service, a documentation service, and a secretariat. These services manage the hierarchy of research centers, stations, units (antennas), and trial sites.

Each institute is divided into centers, comprising one or several stations. The station may be administratively responsible for one or more antennas and trial sites in the region. IAR has four crop research centers (ARCs), a forestry research center (FRC), and a national soils center (NSC, created in 1983). IZR has two centers (Annexes 5 and 6). Usually the head of a center is also the head of the station where the center has its administrative base. Each center and station has a section for administration and finance * and an accountant-delegate. These operate under the direct administrative control of the head of the center or station, but under the technical supervision of, respectively, the head of the SAF and the chief accountant at headquarters. In the antennas, the officer in charge normally assumes all managerial functions.

Research activities are usually carried out in several stations by the section. The head of program is responsible for the coordination of the work done by the different sections. The head of program does not necessarily belong to the station where he has to coordinate activities.

* For these sections, the same acronym (SAF) is used as for the Service of Administration and Finance at headquarters level, and the Section for Administration and Finance in the research centers.

The institute's SAF consists of two bureaus, one for administration (general affairs, including management of equipment, infrastructure and vehicles; personnel management; settlement of disputes), the other for finance (preparation and execution of the budget). At center and station levels, the head of the SAF is the closest collaborator of the head of the center or station as far as expenditure control is concerned. But in the absence of the latter, a researcher and not the head of the SAF replaces him temporarily.

In contrast to what one finds in most countries in Africa and elsewhere, IAR and IZR do not have, at any of their stations, a farm manager ("chef de culture") or equivalent, i.e., a person responsible for the organization and programming of daily field work, recruitment of casual labor, land allocation (in conformity with established guidelines), crop and animal care and maintenance, purchases of field inputs, organization of transport. This person, whose work would be mainly in the fields and the workshops, would be complementary to the head of administration and finance. At present, the functions of a farm manager are shared between the head of station and the head of SAF, neither of whom has the necessary technical qualifications.

There is a tendency in MESRES to treat all centers and stations in a uniform manner. For instance, if a new type of post is needed in only a few stations (e.g., that of farm manager), it might not be created because of this rigidity.

In the research institutes, the programs are centered around commodities as well as scientific disciplines. In IAR, heads of programs are currently being appointed, with far-reaching responsibilities for the evaluation, programming, and budgeting of the different research programs. Their task will be to conceptualize, lead, and coordinate the program activities, to prepare program budgets and their partitioning over the different stations, and to write progress reports. This will considerably improve the planning and programming of research in IAR. These posts are not yet included in the organizational chart and the implications for the management of stations, programs, and budgets have not yet been fully studied.

In certain technical assistance projects, the director has no control over the staff and the program of work. This situation is incompatible with the director's role of representative of the national interests at the level of the institute.

Directors face administrative constraints, derived partly from insufficiently qualified personnel, partly from a heavy bureaucracy. There are delays in the treatment of files, both in the institutes and in MESRES. It has been said that the institutes, particularly IZR, have grown too rapidly, and would need reinforcement or change of their support structures. Moreover, the tasks of personnel are not defined in operational terms. This affects the willingness or courage to take the responsibility for the execution of a given task. Lastly, the need to follow civil service rules and procedures causes rigidities in the operations which are incompatible with the interests of efficient research.

Delegation of tasks would reduce the administrative workload of heads of centers and stations and would give them more time for the conceptual

aspects of management. In practice, delegation of tasks is limited by civil service regulations; it is not allowed to delegate one's signature. The research system would benefit from a greater degree of operational autonomy from civil service rules.

2.3.2 Agricultural research policy and strategic planning

Agricultural research policy

Factors identified in the Plan* as constraints to productivity increase (item 6 of 2.2.4 above) relate to the non-availability of land, the lack of chemicals and credit, the scarcity and low quality of extension advice, and lack of research results relevant to farmers' needs. The current Plan emphasizes:

1. Priority for smallholders' interests.
2. Research on food crops and agricultural mechanization.
3. The setting up of support research programs.
4. Impact studies in all agricultural development projects.
5. The creation of experimental and demonstration farms in technical support centers at the provincial level. Such centers would provide an institutional base for agricultural research in the rural areas, and thereby a better opportunity for research-extension linkages and a systems approach to agricultural research.

Within the overall Plan objectives, IAR will improve or set up multidisciplinary research centers, stations and units in all climatic zones and densely populated provinces and will work on :

1. Food crops, especially selection and genetic improvement, farming methods, and plant protection. This will be the area of concentration. Cereals research will feature prominently in all agro-ecological zones because of rising demand for rice, maize, and sorghum. Research on root and tuber crops (cassava, yams, cocoyams, and taro) will be emphasized.
2. Oil seeds (oil palm, groundnuts, coconut): genetic improvement.
3. Stimulants: resistance and tolerance to diseases.
4. Latex plants: setting up of a rubber research station.
5. Fiber plants: emphasis on cotton.
6. Fruit plants: intensification of the effort and dissemination of results.
7. Forestry and botanical research: emphasis on botanic studies (flora and phyto-geographic maps), forest development and forest management.
8. Agro-meteorological and soil research: inventory, soil erosion and soil restoration, functioning of weather stations and assessment of cropping potentials.

In the animal field, the Plan emphasizes: research on beef and dairy cattle, goats and sheep, pigs, poultry and rabbits, the various types of aquatic fauna, and on grazing lands, fodder and animal feed, as well as veterinary research. The overall objectives are :

* The Fifth Five-year Economic, Social, and Cultural Development Plan 1981-1986, Ministry of Economic Affairs and Planning.

1. Genetic work: collection, identification, multiplication, preservation, and exploitation of local genotypes, importation of foreign breeds for adaptation and exploitation under local conditions, crossing of breeds and creation of a genes pool.
2. Knowledge of livestock infections and diseases, as well as pathological organisms.
3. Distribution of animal and plant material to stock breeders.
4. Utilization of grazing lands, by-products, and feed sources.
5. Training of staff.
6. Assessment of economic impact of research.
7. Study and improvement of fishing methods.

The Plan shows clearly that government regards research as one of several elements which are essential for rural development and is committed to strengthening it. Some of the stated objectives, methods, and approaches go well beyond research and imply the need for intimate collaboration with government policy makers, rural development planners, and the extension services.

Strategic planning

Much good can be said about agricultural research in Cameroon. Both IAR and IZR put their emphasis on research that can yield practical results in the short and medium term. To safeguard long-term national interests, fundamental research should perhaps be expanded in a few areas, ensuring an appropriate division of tasks between institutions, including relevant university departments.

The research planning process and the programming that follows, is elaborate and the researchers are fully involved. Yet, there are weaknesses in strategic planning of research: first, insufficient links between policy as formulated in the Plan and the research programs; second, appa. lack of a shared primary objective for research and extension personnel; and third, insufficient rigor in the application of methods to assure that programs are implemented to achieve the organization's objectives.

The contribution of the research staff to the programming process at the level of each institution will be examined in section 2.4.1. The planning role and functions performed at the level of MESRES and the governing bodies of the institutes are described below.

In the centers, the researchers are responsible for proposing research operations in the context of the approved programs. After compilation and approval at center level, the proposals are presented to the director, who submits the combined proposals of all centers for examination by the program committee of the institute. This committee is composed of representatives of relevant ministries as well as most large user organizations, development agencies and projects. The research service in the director's office reviews the programs and budgets in the light of the program committee's comments, after which the document goes for final approval to the board of directors. This happens in July, 6-7 months after the program committee's review. The programming process encourages exchange of views within and between units and hierarchical levels, but it takes a long time, the disadvantages of which must be weighed against the benefits.

The main responsibility for ensuring that all programs and operations accord well with the government's development objectives and priorities rests with the program committee and the board of directors. Criticism of the way in which the program committee discharges its functions increases as one moves down the hierarchy. It affects the seriousness with which researchers, section heads, and heads of centers execute their programming and budgeting tasks. The program committee meets only once a year, for two days, to evaluate the past year's research results, to examine, select and classify the proposed research operations, and to verify and endorse the corresponding budget proposals. The committee's functioning (as distinct from the role individual members may play) can be criticized on at least five grounds: (i) for a major national planning body, two days a year is very little; (ii) many members only attend those discussions that are of direct interest to them, and do not contribute to a national perspective; (iii) members representing user organizations often send their subordinates; (iv) the committee only addresses itself to what it receives and rarely makes program policy proposals of its own; (v) the committee is insufficiently critical in appraising the research program in the perspective of national priorities. Shortcomings are evident when one observes the heterogeneity in the final presentation of research operations. Some researchers participate in as many as 15 operations. In such extreme cases, operations seem to become synonymous with individual trials, which is clearly not what is intended.

The general criticism of research planning in MESRES is that plans are sometimes too ambitious, given the financial, technical, and human means available to the country and the farmers, and that certain programs are of marginal practical significance. This criticism applies less to IAR than to the other institutes. But research in IAR does not sufficiently emphasize the family production unit, and certain programs or operations are insufficiently developed in particular regions.

2.3.3 Funding of agricultural research

National contribution

The funds allocated to research have increased markedly over the last ten years. In 1974, the budget for scientific and technical research was about F CFA 1 billion. In 1980-81, it was F CFA 4.7 billion.

In recent years, important efforts have been made to improve the ability of stations to function. Yet, infrastructure and equipment have not kept pace with staff increases. Several research stations, including the central IAR and IZR stations at Nkolbisson, are seriously deficient in offices and laboratories, equipment and furniture, and suffer from insufficient funds for maintenance. In some places there is a shortage of land for experiments, and there is no possibility to acquire more because neighboring land is fully occupied.

Several stations are reasonably well off for transport equipment, but many others have only very old vehicles in a poor state of repair. Shortages of funds for fuel and maintenance are common. In most stations, there is neither an adequately equipped garage nor personnel qualified to competently assure the servicing and maintenance of vehicles

and agricultural machinery. Maintenance problems, whether of laboratory equipment, vehicles, or field machinery, are said to be aggravated by a tendency by higher authorities to underestimate the importance of adequate financial provision for maintenance in the operational budget.

Research must comply with the regulations issued by the Ministry of Finance. These are not always well understood by the administrators, and especially the researchers. A combination of both these factors, plus supply problems, causes the delivery of goods often to be delayed beyond the end of the fiscal year in which they were ordered. Prices have usually increased, and there is rarely a provision for inflation in the cost estimates.

Foreign participation

Agricultural research in Cameroon benefits from foreign assistance, by GERDAT institutes, ORSTOM, USAID (operating through the International Institute of Tropical Agriculture (IITA) and other institutions), the International Development Research Centre (IDRC), the General Administration for Development Cooperation of Belgium (AGCD), FAO, the International Foundation for Science (IFS), and other parties. French and American assistance are particularly important. In 1982, GERDAT had 34 researchers working at IAR, and ORSTOM five. USAID, in addition to several development projects with a research component, finances the National Cereals Research and Extension Project (NCRE), executed by IAR with the technical assistance of IITA. This project is an integral part of the IAR cereals program. A major World Bank loan for strengthening agricultural research is being examined. It has the following specific objectives:

- * To establish a farming systems research program (including livestock) and a program of pre-extension.
- * To work closely with the extension service to improve research orientation to farmers' needs in the main agro-ecological zones.
- * To strengthen research administration and logistics so as to free research staff and increase their research effectiveness.
- * To establish a documentation system enabling better access to information by researchers and quicker communication of research results.
- * To improve research planning and programming, notably the inputs of users, policy makers, and international research institutions.

Certain donors and technical assistance organizations stipulate that financial records covering their assistance must be kept separate from other budgets and accounts and must be managed by a project administrator. This requirement easily leads to separate planning and programming as well. The USAID-funded NCRE, which is a part of IAR, is a case in point: local staff, including the NCRE national coordinator and even the IAR director participate inadequately in the decision making process. While recognizing the merits, and the potential, of the NCRE effort, Cameroonian authorities high and low regret the project's isolation.

2.3.4 Personnel management

Statute for research personnel

When it was created, DGSTR recognized the need for a special statute for

research personnel, different from that of the public administration. As a first step, it gained approval of a statute for research workers, in the expectation that a similar statute for technicians would soon follow. But this has not happened, despite hopes raised among staff since 1980. Technicians do not appear to have been consulted on this matter. A statute for technicians is currently being considered by the authorities of MESRES.

Administrative personnel, most researchers and technicians, are civil servants and, as such, are covered by the normal civil service statute applicable to their respective categories. Within MESRES, the researchers have a special statute. This makes provision for allowances, which together can be almost as much as the salary itself, thus doubling income.

While applauding the plans for a special statute for technicians, most staff members feel that a special statute should cover all personnel working in the research services, including the administrative and clerical personnel, the accountants, drivers, mechanics, and all other support personnel. Such a statute would provide for duty and responsibility allowances, a suitable promotion structure for technicians, researchers and administrators, with appropriate criteria and procedures, a personnel evaluation mechanism, as well as an operational definition of tasks and responsibilities and similar topics. The particular working conditions of the research personnel are a case for such treatment. Until this happens, frustration over perceived injustices will continue to impair the functioning of the research system.

Numbers of researchers and technicians

Many researchers and technicians consider their numbers to be inadequate. However, in judging these numbers, several factors must be taken into account. Cameroon spends about 1.3% of its agricultural GDP on agricultural and related research, a figure which exceeds that of most other African countries. The research program includes a wide range of commodities and themes, and the need for hard priority choices does not yet seem to have arisen. In these circumstances, and taking into account the existing scope for increased efficiency in research staff utilization, there is reason to doubt the validity of the complaint as far as research workers are concerned. Nevertheless, a clear justification for research staff increases is in connection with the restructuring of the research institutes, especially IAR. The replacement of some expatriate researchers by national researchers, the regionalization of the research programs and the constitution of a critical mass of researchers in the priority programs justify an increase in the number of researchers.

There is a distinct shortage of technicians, especially laboratory technicians. This is particularly so in IAR, which has about 90 technicians of all grades for 124 scientists (against 50 technicians for 32 scientists in IZR). As a rule of thumb, it is often considered that the minimum acceptable ratio is two technicians to one research worker (ratio 2:1). In IAR the ratio is 0.7:1 and in IZR the ratio is 1.5:1. Consequently, researchers do technicians' jobs, and research efficiency is affected. Moreover, technicians are of uneven quality. Lack of technicians can be explained by (i) better opportunities for promotion in the Ministry of Agriculture, parastatals, and the private sector, (ii)

the lack of technician training institutions, particularly for laboratory technicians, and (iii) the lack of a statute for technical personnel. A more aggressive technician training and recruitment policy appears to be needed.

Recruitment and posting

The recruitment process is complicated by the involvement of several ministries and departments. All graduates of ENSA, ITA, and other Cameroonian training institutions in principle become civil servants. As such, they belong to the Civil Service Ministry, which assigns them to the Ministry of Agriculture. The latter then reassigns some of them to MESRES for posting at one of the research institutes. The recruitment of all graduates of the agricultural training institutions is included in the budget of MINAGRI. The other institutions that recruit personnel (IAR, IZR, CUDS, and para-statal organizations) do not have a budgetary provision for this matter. Therefore, they are dependent on MINAGRI for the recruitment of civil servants. But MINAGRI does not have a good knowledge of the profile and the numbers of researchers and technicians the MESRES institutes need, and sometimes they fail to take into account the person's own preference. About 75% of all researchers are civil servants and are subjected to this placement process. The remaining 25% are recruited directly by MESRES, on two-year contracts that are renewable, on the basis of files presented by the director of the institute. In contrast to the people on contract, the civil servants always have a parent ministry to return to if their service as researchers is terminated, or if they wish to leave, or if the assessment boards think their results are not satisfactory. Heads of institutes are appointed by presidential decree, whereas heads of centers and stations are appointed by presidential order.

The MESRES assessment board and recruitment board (Annex 7), composed of staff of MESRES, the university, and the ministries of Public Service and Finance, fix the grade at entry in accordance with their assessment of the person's qualifications and experience. The director of the institute and his senior colleagues participate in the recruitment and grading process. There is in MESRES a sub-department of equivalence of diplomas, degrees and certificates. Nevertheless, it is sometimes difficult to determine on degree equivalences. Researchers sometimes consider that they have been recruited at too low a grade. Appeal is possible, but the process is long.

Of all the above problems, the most serious seems to be that, in the absence of a positive selection of candidates for research positions, the appointees' qualifications and motivation for research are often in doubt.

Promotion criteria and procedures

There are four research grades: "Attaché de recherche," "Chargé de recherche," "Maître de recherche," and "Directeur de recherche." Young graduates without a doctorate enter in the lowest grade. With a doctorate, one normally enters as a "Chargé". However, the statute does not specify that a doctorate is required to enter this grade. For the grade of "Maître", a "doctorat d'état" or equivalent is a de facto requirement. Within each grade, advancement at two-year intervals happens on the basis of yearly evaluation sheets and is more or less automatic. But promotion

to a higher grade depends on the judgement of the recruitment board. The main promotion criteria are research publications, diplomas, and length of service in the grade. Researchers must ask for evaluation themselves, when they think they are fit for promotion. Sometimes, the direction of the institute obliges the researcher to apply for promotion. Most requests for promotion are said to be rejected. Usually, researchers attribute this to the allegedly too academic criteria of the university staff on the committee, especially their too severe judgement of diplomas and scientific publications. They also view the largely external composition of the recruitment board which decides on changes in grades, as a lack of confidence on the part of MESRES in its own staff. They do not understand that this external participation insures impartiality. Many applications are turned down because the researchers do not fulfill the necessary conditions (length of time in the grade, new diplomas, publications...). Nevertheless, it is true that it is difficult for the researchers to meet some of the conditions. It takes a long time to publish a paper, the researcher centers are far from the training institutions, and it takes a long time to obtain results in agricultural research.

Heads of centers and stations are judged exclusively as researchers, i.e., on the basis of their own research results, whereas in fact they spend 50%-80% of their time on management. This is perceived as unfair. If the criteria for promotion of heads of centers and stations are not brought in line with their real duties and responsibilities, it is quite unlikely that management training would have the desired impact, despite the great sense of responsibility demonstrated by most center and station managers.

2.3.5 Information management

Communication

Some staff would like to see more study tours and intensified staff exchange, especially between African countries. In practice, however, North-South exchanges are better looked upon because of higher stipends, prestige, larger perspectives that they bring, supposedly higher quality, and better living conditions in Europe and the USA.

Publications

Researchers of IAR and IZR have two outlets for publication within the country: (i) research reports of centers and programs and (ii) articles published in the "Revue Scientifique et Technique" of MESRES. This magazine has just been decentralized. The series "Sciences Agronomiques et Zootechniques", which is published quarterly, is intended for the publications of researchers of IAR and IZR. In IAR, stencilled technical notes are a third possibility of publishing results locally notably for the extension agents. These notes are duplicated and distributed by the director's office. In the institutes, manuscripts intended for publication abroad or as technical notes are reviewed by a reading committee.

Before the creation of the specialized series, none of these local outlets satisfied researchers. The main objection to the Revue was that

it published articles in a wide range of subjects, which were said to range from basic and applied sciences to purely literary themes. According to the regulations of MESRES, one can not publish results outside Cameroon before publishing them in the country. The measures that have just been approved should shorten the review and publication process, thereby facilitating the diffusion of research results and evaluation for promotion. Nevertheless, it is still necessary to implement a publication policy in MESRES which is more favourable and understanding.

2.3.6 Inter-institutional relations

Relations between IAR and IZR

The separation between IAR and IZR and the lack of collaboration on research programs is very regrettable and seems unnecessary, especially since the two institutes operate under the same Ministry. This separation on the scientific level makes it difficult to do any research on mixed farming systems in the various agro-ecological zones. However, the institutes have two joint operations (pasture and fodder crops, and pedology), which could perhaps lead the way towards closer cooperation. The two institutes share the same building within the Center of Nkolbisson, and their administrators help each other.

Relations with technical ministries

The Ministry of Agriculture (MINAGRI) plays an important role in the yearly sessions of the program committee of IAR. It is kept informed of IAR activities through written and oral reports. The ministry is trying to respond to IAR's increasing desire to know the ministry's agricultural development priorities and farmers' needs. The contacts between the Ministry of Animal Production (MINEPIA) and IZR are of a similar nature, but they are tense because of an apparent lack of mutual appreciation.

Research-extension linkages

Research staff are not allowed to do extension work, but they can conduct multilocation trials and pre-extension activities in collaboration with extension personnel and farmers. However, research institutes and as some parastatals complain that research results fail to reach the rural areas due to lack of a transmission structure. The joint research-extension demonstration trials undertaken by a few IAR stations are rare exceptions. In an attempt to rehabilitate the extension services and to establish a point of contact between research and extension officers, MINAGRI intends to create technical support centers (at least one per province in the first instance) that will carry out experimentation, demonstration, and seed production.

Both IAR and IZR staff feel that extension officers are insufficiently trained and that training methods should be modernized. They are keen to communicate research information through regular contacts with extension agents.

Links with development organizations and agencies

The MESRES institutes, notably IAR, collaborate with or provide research

services for parastatals, integrated rural development projects, and other similar organisms. This is done against remuneration on an ad hoc basis or following a formal agreement ("convention"), usually of a larger scope. Probably the most important of these links is the relationship with SODECOTON which is responsible for the integrated development of most of northern Cameroon. IAR does all cotton research while using some of SODECOTON fields for its multi-location trials. The results of research go to SODECOTON. Thanks to excellent relationships, SODECOTON field staff help IAR researchers understand farmers' needs. Collaboration with CENEEMA does not involve a convention. Each party contributes some of its own resources to joint research. SEMRY has a research component which they have partly entrusted to IAR under a convention. IAR collaborates also with UCCAO which, among other things, is responsible for the Project "Hauts Plateaux de l'Ouest." Research objectives are specified by UCCAO, and on-farm trials are carried out by research staff in collaboration with UCCAO extension personnel.

IZR has fewer collaborative agreements. This is due on the one hand to a rather small number of organizations concerned with development of animal production and, on the other hand, to lack of qualified staff within IZR and these organizations.

Conventions funded by development organizations are important for the research institutes, but selectivity is needed to avoid distorting the institute's research program. Nevertheless, there is much scope and need for closer collaboration with other projects, for IAR, but particularly for IZR.

Links with the university

Since April 1984, the research institutes and the university institutions belong to the same ministry (MESRES). Until then, apart from mutual representation on boards and a few committees, the research institutions had few relations with the university system. Conventions exist. Right now IAR and ENSA have only one joint activity (Equipe de Recherche Associée). ENSA research suffers from covering too wide a range of themes. Some research by ENSA staff or students is funded by IAR, IZR, or IHS, or by external agencies, and some teaching staff are associate researchers of the research institutes. Research workers give occasional lectures at ENSA and assist students with their theses. But they are less than happy with the standards applied by university committees, and the working relations have a tendency to weaken. The CUDS intends to set up a Research Division, and this might strengthen the research activities of ENSA.

Since the MESRES is responsible for coordinating all research in the country, and considering also that most of its researchers and technicians have been trained in the university, it is in the best position to promote cooperation between the research institutes and the university. This by itself would promote university research, thus adding substance to the university's formally stated triple role of teaching, research, and development support. The similarity between the statute for university teaching staff and that for researchers should facilitate such collaboration.

International links.

IRA works with IITA and other institutions of the CGIAR, FAO, ORSTOM, several GERDAT institutes, and educational institutions overseas. IRZ has functional links with the French Institute for Research in Tropical Veterinary Medicine (IEMVT), Heifer Project International (HPI) in Arkansas, the Institute of Tropical Medicine (IMT) in Belgium, and the Center of Tropical Veterinary Medicine (CTVM) in the University of Edinburgh.

2.4 The Context of the Institutes

In this section, the performance of the managerial functions carried out at the level of the research institutes is assessed. The human dimension of these functions is considered separately in sub-section 2.4.6.

2.4.1 Evaluation, programming, and budgeting

Monitoring and evaluation

The programs are not properly evaluated for efficiency and effectiveness as part of the annual programming process. As a result, certain operations have been continuing for many years without being clearly assessed for progress, possible completion, or continued staff availability.

The programs follow-up service within the sub-department of programming of MESRES is in charge of checking on progress in research and its conformity with the approved programs. Unfortunately, lack of technical competence and lack of time and organization hamper the execution of this task. Furthermore, research is assessed rather ineffectually on the basis of written research reports, often incomplete and sometimes unclear. In the ministry, the follow-up service is in charge of program evaluation. The central administration is in charge of financial and personnel evaluation. No mechanism exist to coordinate these different evaluations. The institutes do not have a monitoring and evaluation service as a counterpart to the programs follow-up service of MESRES. In the research institutes, the scientific personnel and the program committee should do a detailed evaluation and monitoring of the programs, eventually with external scientific assistance.

Program preparation

A well defined research programming process is in place. The researchers participate fully from the beginning of the process. Once a year, they prepare a data sheet ("fiche opération") for each research operation, specifying the objectives, methods, mode of execution, results, the research personnel involved and additional posts needed, funds needed per budget line, and the name of the person responsible. Researchers admit that they do not know how to correctly complete the data sheets. They often guess at the information requested. This leads to a sub-optimal use of resources.

Each operation is part of a theme, a sub-program, and a program, in this

order of aggregation. Late in 1983, IAR had 20 research programs, and IZR 8 (Annex 8). Until the recent appointment of heads of programs, the definition and execution of programs (always conceived at the national level) were the joint responsibility of all heads of sections concerned, a section being the organizational unit within a station responsible for a program.

Proposed operations are either a continuation of the previous year's work or new ones resulting from users' demands or the researchers' own initiatives. Most initiatives are in line with government priorities, but sometimes they reflect personal interests. The "fiches opérations" are discussed first within the relevant section of the research station, then at the level of the whole program, then at a plenary meeting of all staff of the center concerned. A few centers carry out the programming exercise thoroughly, and hold a series of evaluation meetings throughout the year. In some centers there appears to be inadequate precision in defining operations, and the allocation of operations to research workers does not always take into account their experience, competence, and time availability. Some heads of centers admit that they do not have the necessary scientific, technical, and financial competency, nor the time, to judge all the operation data sheets.

Directors face heavy burdens related to research orientation and programming. Defining research priorities in conformity with the guidelines contained in the Plan and coordination of activities between different units within the institute, especially where foreign projects are involved, is particularly difficult.

Budget preparation

Budget preparation is linked with the annual programming exercise, as it should be. Researchers in IAR prepare a budget proposal corresponding to their research operations. They do so with varying degrees of competence, accuracy, and motivation. Many inflate their cost estimates to take care of uncertain or fluctuating prices, and to avoid adverse consequences of budget cuts. Inaccuracy also occurs through lack of familiarity with costing methods, on the part of researchers as well as certain heads of SAF. To remedy these shortcomings, stronger budget (and program) preparation guidelines, and more effective control, appear to be needed.

The multi-step nature of the process, as well as administrative delays, cause budget preparation and approval to stretch over many months. Sometimes, budget proposals must be made more than once. This careful process assures the involvement of all the researchers as well as those concerned with the application of research results. But because of its length, researchers tend to lose touch with it. They do not understand what happens at higher levels, nor the correspondence between the final budget categories and the "fiches opérations" as prepared by them.

When budget cuts are made, funds should be reassigned in such a manner that the overall program does not suffer. It is better to discontinue a whole operation and maintain the others at a reasonable level of funding than to apply even cuts across the board. Often, this type of decision is not made.

2.4.2 Financial management

Receipt, transfer, and restitution of funds

Research workers recognize the substantial funding efforts made by the government, particularly as far as equipment is concerned, and make good use of the funds. In some centers, however, the choice of acquisitions is less than careful (possibility of service), and equipment utilization is poorly organized.

The budget is divided into three main categories: equipment, operational expenditure for research, operational expenditure for administration. The first is handled entirely by the direction of the institute. The two categories of operational funds are managed in a decentralized fashion by the centers and stations. The approved annual budget is received in quarterly instalments. The fiscal year does not match the agricultural calendar, so that funds and equipment are not always received at the most appropriate time.

The Minister, at the recommendation of the director of the institute, is empowered to authorize transfer of funds between certain budget lines. In other cases, prior approval of the Minister of Finance is required. The revenues from production or services from the centers are taken into account when the operational funds are allocated. Researchers and station managers resent this and also deplore what they consider to be too limited transfer possibilities. They wish they could transfer the funds from one budget category to the other. This resentment is evidence of a lack of understanding of the need for a coherent set of principles and rules. On the other hand, politicians, government policy makers and top managers should be sensitive to the fact that the complaints derive, in part, from genuine constraints which should be alleviated as much as possible.

Some researchers poorly understand how to prepare operation data sheets for the research operations, especially the budgetary component, and this has a negative impact on the annual programming exercise and on the value of the programming system as a whole. Heads of SAF find that some researchers present incomplete purchase orders and then complain about delays. They also note a lack of care in equipment maintenance and find many researchers less than scrupulous in preparing their annual budgets.

Operating within bureaucratic constraints, research institutes understandably desire to obtain some flexibility in financial management, particularly for the equipment budget. Certain research conventions do provide some of this flexibility by bringing in funds that remain outside the budget (except for services).

Accounting and expenditure reporting

The rules of public finance in Cameroon demand a separation of powers between the person who incurs expenditure (ordonnateur) and the one who pays (liquidateur). For a purchase order to be valid, it must be signed by the ordonnateur. In the case of research institutions, it is the head of the institute, center or station. The accountant (liquidateur) countersigns after verifying both the regularity of the bill. The payment order must be signed by the ordonnateur and the accountant. The

head of SAF and the accountant control the rhythm of fund utilization and the preparation of transaction papers. They record the expenditures and balance per budget line. Regretably, for the moment there is no analytical accounting. In some centers and stations, the accountants sign the purchase orders. They make the financial process more complicated. This situation is due to a poor understanding of the accounting function.

Ideally, the accountant and the head of the center should present the exact situation for each budget line on a monthly basis, but in practice, in many stations, researchers receive this information only quarterly, or even less frequently.

In fact, the type of detailed information researchers like to receive concerning the credit balance for their operations often does not exist. This is because, except for equipment, expenditure control is done at the program or section level, i.e. at a higher level of aggregation than applies when budgets are prepared. This means that individual researchers cannot always count on funds, allocated according to what they consider to be their approved budget, being really available to them. Someone else in the same section may have spent the funds on a different operation. This risk also acts as a disincentive to economize. The researchers do not understand the budgetary process and do not sufficiently work in team under the supervision of their head of section.

In some stations the control of expenditures is carried out effectively by frequent consultation between the head of station, the researchers, the head of SAF, and the accountant. Nevertheless, there are cases where "in the interest of research" financial procedures are seriously violated, and where a posteriori regularization has become the rule rather than the exception, because researchers do not plan ahead. The problem would be much reduced if heads of sections would keep a check on the expenditure per budget line for all operations in their section and would consult with the researchers on any necessary readjustments between operations.

Accounting by operations would become technically feasible with the planned computerization of financial operations. However, it is doubtful whether expenditure control down to the level of individual research operations is really desirable. Researchers have problems estimating costs accurately, and would, in all likelihood, constantly ask for readjustments. Furthermore, expenses incurred often serve several operations at a time, and this would cause accounting problems. Irrespective of whether or not expense accounting is refined to the level of operations, the present detailed budgeting process (which is based on budgets for programs and sections) will continue to be needed. The problems underlying the existing controversies seem to be mostly a lack of understanding of accounting needs and mechanisms on the part of researchers, partly a question of insufficiently clear and standardized procedures.

2.4.3 Personnel management

Scientific and technical supervision

In September 1983, IAR had 124 researchers, of whom 70 were Cameroonians,

the other 54 being technical assistance personnel supplied by GERDAT, IITA, ORSTOM, and other institutes. Of these 70, two were "Directeur de Recherche," and one was "Maître de Recherche." All others were either "Chargé de recherche" or "Attaché de recherche." This lack of people in senior grades, which is characteristic of a very young institution, gives little opportunity for training and coaching of young scientists by senior colleagues. Similarly, most technicians need more guidance and supervision than they receive. Most senior Cameroonians have heavy management responsibilities and are not anxious to further reduce their own research by supervising others, especially because they know that with present promotion criteria there will be no reward. It should at once be added that some heads of stations nevertheless make commendable efforts in counselling young researchers.

In principle, expatriate scientists should help fill this supervisory role but, increasingly, new arrivals are themselves insufficiently experienced. Moreover, national counterparts are not always available. The staff of most foreign institutions do not seem to have formal training of nationals (as distinct from the usual demonstration by example) explicitly written into their brief, ORSTOM being a notable exception.

Training

The university training of the researchers is not always sufficient. The research institutes, at the request of MESRES, have estimated their need in scientific personnel for the next five years, in order to write a manpower and training plan. This praiseworthy training plan does not take into account several elements: (i) the replacement of researchers who have left for training; (ii) the link between the priority research programs and the disciplines and specialties chosen for training is not always insured; and (iii) five years for the training of all researchers who need training does not seem realistic.

Researchers, many of whom are graduates of ENSA, have gone abroad for advanced training on an ad hoc basis as they had the opportunity, though usually after at least two years in the field. Some have had the opportunity to attend international conferences. On the whole, there is no lack of training opportunities. However, suitable places and fellowships are more easily found for some commodities and disciplines than for others. For example, researchers specializing in perennial crops have much greater difficulties in this respect than those working on annual food crops.

Training possibilities for technicians in Cameroon are few and not altogether suitable. In the technical training institutions, the practical training is insufficient, but steps are being taken to drastically improve the situation. Cameroon has no training institutions for laboratory technicians. Apart from a course in organization and management of development projects or a similar subject during their undergraduate education, most researchers have had no training in any aspects of management or administration, including the development of program content. Research management training programs are not yet available in the country.

2.4.4 Management of physical resources

The maintenance problem mentioned in Section 2.3.4 has consequences for the institutes. Some laboratories have had no problem obtaining the equipment requested but do not know where to go when the need for repair or servicing arises. Spare parts are sometimes unavailable for certain types of equipment and machines which are uncommon in Cameroon. At least part of this problem may be due to poor purchasing decisions.

Stations face numerous problems with the speed and efficiency of customs clearance of imported goods and with the collection of and payment for goods purchased locally. These problems are due partly to long distances from Douala, partly to lack of efficiency of the junior SAF personnel at the station level. Many administrators and researchers feel that a central purchasing unit by institute would overcome these problems.

Equipment is ordered centrally, and if a piece of equipment is destined for a certain operation, this operation will actually receive it. For consumables, however, this is not necessarily so, due to the more aggregated system of expenditure control (by sections rather than operations) referred to earlier. Management of stocks is often poor and goods ordered by one section are at times used by other sections.

Management of vehicles in the centers is difficult. To ease the problem, there is now a tendency to allocate vehicles to the sections, and each head of section is responsible for the allocation and the utilization of the vehicles within his section. Vehicle allocation for distant journeys follows strict rules aimed at making optimal use of fuel and cars by combining trips in the same direction. This implies advance notice. With some exceptions, forward planning is good. Those activities involving close contact with the rural environment suffer most, because the vehicles may be unsuited to bad roads and it is difficult to combine trips. In some stations, the allocation of vehicles is poorly organized and the control of car usage quite loose.

2.4.5 Information management

Research-farmer linkages

IAR and IZR as institutions are weak on direct links with the farming community. In IAR, the researchers' main sources of information of farmers' conditions are the laborers of the research institute itself. To date, the only structured effort in promoting research-farmer communication in IAR is the Testing and Liaison Unit (TLU) of the USAID-funded National Cereals Research and Extension Project (NCRE), based at BamLui. About fifty agricultural assistants ("moniteurs agricoles") have been specially trained to extend maize recommendations in the North-West. Plans exist for expanding the TLU to other provinces. In IZR, links with the cattle breeders and the extension agents are good. The researchers seem to be aware of the problems facing the breeders.

Communication

Many researchers would like regular information exchange meetings bringing

people together by discipline or by program. They feel such meetings should include staff of development organizations and projects concerned with the subject. Periodic meetings need to be stimulated, and to some extent institutionalized, with corresponding budgetary provisions. Inter-station group visits would be another way to improve communication.

In at least one center, management looks upon regular meetings and working sessions in a different way from the researchers. The researchers deplore the absence of such meetings, which they feel would be informative, while the head of center considers them unnecessary because people work on different programs, and believes they would be difficult to arrange because staff work at different locations. Whereas long distances and limited travel budgets militate against regular inter-station contacts, research efficiency suffers if staff members hardly know their colleagues.

It is one of the special responsibilities of the higher management officials of the research institutes to increase awareness among politicians, government policy makers, leaders of development agencies and projects, and donor agencies, of the important contributions agricultural research can make to development. Opportunities for them to travel within the country and abroad are essential in this context. Researchers resent the fact that it is always the same people who travel. They stress that too much travelling by senior staff hampers decision-making in the research system.

Attracting visitors to the stations is an important tool for communicating research results and promoting understanding. Some stations have many visitors: colleagues from other stations, foreign scientists and research administrators, representatives of aid agencies, salesmen, tourists, and students. Other stations, particularly the remote ones, have only a few. Regrettably, many researchers do not recognize the importance of visitors, and do not like to spend much time with them.

Contacts with institutions abroad, within Africa and overseas, are of critical importance. Researchers and heads of centers and stations wishing to communicate in writing with institutions abroad, or even with officials or government departments and extension staff, about questions committing their institute, are obliged to address themselves to the director of their institute, who signs the letter or refers it to the Minister. Nevertheless, they are allowed to communicate with other institutions on technical matters. They do not understand the difference between technical matters and matters committing the institute and the government.

Documentation

Documentation and library resources are highly decentralized, fragmented, and inadequate. There are no central records where users can check on the availability and location of a given publication within the country.

Publications

Reporting of research activities is done mostly in the form of annual reports by centers, and only in rare cases by programs. Reporting by IAR could be improved. The researchers of IZR and technical staff of MINEPIA do not seem to be in agreement concerning the adequacy of the research

articles and reports produced by IZR. In the two institutes, a scientific editor is needed. He would be in charge of report presentation and their adaptation to the different target groups.

2.4.6 Management of human processes and inter-personal relations

Management skills and attitudes

Some heads of centers and stations have proved to be able managers, who distribute routine tasks among the research staff so as to have time left to think, and to do some research of their own. Others poorly organize their work, their time, and the time of their subordinates. On the one hand they lack initiative, and on the other hand, they over-control their staff. They are said to have insufficient knowledge of procedures and processes, and to be unable to find and use relevant information. This type of deficiency hinders the functioning of the system.

Most IAR and IZR researchers are competent, dynamic, motivated, have a good perspective of the role of agricultural research in national development, and are doing a good job on priority topics. But others are inexperienced generalists, insufficiently trained in conceptual skills, who need guidance and supervision. Some tend to do research on themes of personal interest, for a higher degree or otherwise, rather than concentrating on the assigned tasks. Also, many researchers have insufficient knowledge and understanding of structural constraints and bureaucratic regulations which administrative staff can do nothing about. Shortcomings of these various kinds pose serious problems to management.

Many administrative officers, including some heads of SAF, are judged by their superiors and their peers to be insufficiently prepared for their task. They are described as slow and formalistic, and as having problems in correctly interpreting or applying rules and regulations. Some communicate little with researchers and, while complaining of not being understood, are accused of authoritarian and uncaring behavior and lack of understanding of the characteristics of research and researchers' needs. Some heads of SAF at the station level have long experience in the civil service, but no more than a clerical certificate. Not surprisingly, they find it difficult to assimilate new approaches, procedures, and methods, and to adequately handle human relations in an environment they do not understand. Problems of delegation in the administration arise partly from lack of competence at subordinate levels, partly from superiors' attitudes. In several centers and stations, accountants perform the financial operations very well, indeed, and their relations with management and research staff are excellent. But some of the accountants and accountants-delegate are deficient in accounting knowledge and skills and feel uncertain of themselves. Some do not understand the limits of their authority.

Technicians are a heterogeneous group, with widely varying qualifications (secondary school diploma, ITA diploma, university degree), and ranking from laboratory or field assistant to senior technician. The rules for grading these technicians, particularly those having attended university, are not always clear. In general terms, insufficient attention is given to the role of technicians in research, and the importance of providing financial incentives to maintain their productivity at a high level.

Many technicians lack basic knowledge, having been trained many years ago, mostly on the job. They may be excellent at the assigned routine tasks, but are difficult to reassign and promote. Some of the older ones have learned to understand scientific articles, communicate effectively with the researchers to whom they are trusted assistants, and carry considerable responsibility in all but the conceptual aspects of research. Others, especially the younger ones, find this more difficult. Many of them also feel that they are not appreciated by the researchers. Technicians at all levels are dissatisfied with their position, particularly the lack of a special statute, low salaries, inadequate opportunities for training and promotion, and the frequent lack of involvement in experiment planning.

Inter-personal relations

Generally speaking, relations between researchers and heads of centers and stations are good. But the relations between researchers and technicians, and between the researchers and administrators, are often difficult. The root cause seems to be the financially privileged position of the researchers, referred to earlier, which inevitably frustrates the members of all other groups. Technicians also resent not being properly informed by the researchers, as a result of which they often do not have an accurate perspective of their work. Apart from reducing morale and work output, these factors cause a vague inter-group animosity.

Frictions between scientists and managers on the one hand, and administrators (heads of SAF, accountants) on the other, are undoubtedly due partly to a lack of knowledge of government instructions and regulations, partly to a lack of sensitivity and skills on both sides in handling inter-personal relations. In several stations, these relationships are viewed in terms of conflict and competition for power: "which of the two, research or administration, should prevail over the other?"

Inter-personal relations between superiors and their subordinates also come in for criticism. Subordinates feel that many superiors are too severe in judging and dealing with them. On their part, superiors find that subordinates seem to hold the view that their chiefs are obliged to assist them in every conceivable way. This tends to harden relationships. Perhaps the highest educated staff should try to better understand their subordinates, who tend to be closer to the traditional village environment and values. The essential problem is perhaps not so much the hierarchical relationship per se, but rather the confrontation between "modern" and "traditional" systems of values and obligations.

Young researchers promoted to management posts sometimes have problems in getting accepted in their new role by their ex-colleagues. This makes it difficult for them to make decisions. On the one hand, a consensus is difficult to reach, on the other hand, authoritarian decision-making would be resented.

Relations between national and expatriate researchers are generally cordial, although social contacts are limited. There seem to be some difficulties in professional and personal communication between certain expatriates and their counterparts. Some persons show a certain naivety and lack of tact in their inter-group relations. On balance, and in comparison with many situations elsewhere, the overall situation appears quite good.

Expatriates belonging to different groups and coming from different backgrounds criticize each other unduly. These disagreements trouble the atmosphere, but do not prevent the execution of the research programs, because the different groups do not work on the same programs.

Chapter 3

THE UPGRADING OF MANAGEMENT3.1 General Strategy

The above diagnosis of the agricultural research system suggests three different ways of improving its management:

1. Management decisions at the ministerial level.
2. Management decisions at the level of the institutes.
3. Training.

Although the ultimate aim of this study is to determine agricultural research management training needs in Cameroon, training alone will not suffice. As demonstrated by the discussions with the staff, some of the constraints must be eliminated for training to have its full impact. Elimination of certain structural and bureaucratic constraints would ease the atmosphere, stimulate research personnel, and improve productivity.

Some managerial decisions are recommended and training proposals made. These decisions should be integrated in the effort already made by the research personnel to improve the management of the agricultural research institutes. Most of the proposed management changes could be implemented by administrative decisions at the level of MESRES or the institutes. Some would require consultation and decisions at a higher political level. As these elements will be discussed by the ministerial authorities and the directors of the institutes, it was considered inappropriate to suggest priorities in this report.

Since October 1983, DGSTR and MESRES made important decisions in order to improve the research environment. These decisions will improve the efficiency of the training in management. Nevertheless, all recommendations made at the time of the interviews were left in this report. First of all, this reinforces the decisions which are presently being made, and secondly, it directs the attention of the authorities towards some elements which are still sensitive.

3.2 Management Decisions at the Ministerial Level

At the ministerial level, it is recommended to maintain the effort on the following topics:

- * Organization of the research institutes:
 - Improved maintenance of existing research infrastructure, and expansion of facilities in certain stations.
 - Review of administrative procedures, aimed at increased internal speed of communication and effectiveness.
 - Writing of operationally useful job descriptions.

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- Creation of the post of farm manager ("chef de culture") for the largest research stations. A person holding this post should have at least a diploma from a higher technical agricultural institution and a good understanding of the special requirements of field experimentation.
- * Research policy and strategic planning:
- Formulation of shared leading objectives for all research and extension personnel.
 - Review of the research planning process, to increase correspondence between programs and national priorities, and to enhance government-researcher-user communication.
 - Greater involvement of the program committee of each research institute in research planning.
 - Clearer definition of what constitutes a research operation, and review of the distribution of operations between researchers.
 - Reinforcement of MESRES program follow-up service, and creation of a program follow-up service in each institute.
- * Agricultural research funding:
- Increased budgetary provisions for maintenance.
 - Provision for inflation in annual budgets.
 - Better integration of technical assistance projects into the operating structures of the national research institutes of which they form part.
- * Personnel management:
- Creation of a special statute for all personnel in the research institutes, or, if this cannot be done, urgent completion of the promised statute for research technicians, as well as creation of a special statute for administrative and financial personnel. Responsibility allowance could be given to the different categories of personnel to compensate for the special working conditions in research.
 - Urgent attention to the need to recruit and train more laboratory and field technicians.
 - More direct involvement of the research institutes in the selection and recruitment of research workers and technicians.
 - In addition to diplomas and publications, use of other criteria in the evaluation for promotion of research workers: e.g., participation in pre-extension and other development-related activities, such as production of technical notes for extension, and participation in training courses (including those that do not lead to diplomas).
 - Broadening of the evaluation criteria for heads of research units, to give prominence to the quality of their management, including dynamic leadership and output of relevant research results by the unit as a whole.
 - Development of an overall manpower plan for agricultural research, taking into account not only the needs in personnel, but also the research priorities and the replacement of the personnel who have left.
- * Information management:
- Execution of a publications policy and strategy that answers both the researchers' needs and national interests.

- Systematic collection of all publications of research staff, whether published locally or abroad, and arrangements for the distribution of reprints, with a MESRES (or IAR, or IZR) cover.
- * Inter-institutional relations:
 - Reinforcement of working relationships between IAR and IZR.
 - Further strengthening of communication between the research institutes and the technical ministries, notably on the setting of research priorities, the appropriateness of research activities, and the extension of research results.
 - Organization of technical training courses and seminars for extension personnel by, or with the assistance, of IAR and IZR.
 - Increased research cooperation with university institutions and development organizations.
 - Inclusion of elements of administration and management in the curricula of middle and higher level educational institutions.

3.3 Management Decisions at the Level of the Institutes

In the institutes, the effort should be maintained, and managerial decisions could be made on the following topics:

- * Evaluation, programming, and budgeting:
 - Regular internal program evaluation, in cooperation with MESRES program follow-up service.
 - Stringent adjustment of the research program to available resources.
 - Stronger programming and budgeting guidelines for researchers and administrators.
- * Financial management:
 - Improvement of the mechanisms for regular financial reporting by administrative personnel to those in charge of research programs and sections.
- * Personnel management:
 - Internal and inter-institutional arrangements to improve the scientific coaching and supervision of young research workers, e.g., by formally associating them, singly or in groups by theme or discipline, with senior scientists, locally or overseas.
 - Critical examination of training needs and opportunities, and additional efforts to promote professional exchanges, especially for researchers in isolated locations.
- * Management of physical resources:
 - Creation of a central purchasing and customs clearance service for IAR and for IZR, to increase efficiency and reduce costs.
 - Better mechanisms for controlling the efficiency of equipment and vehicle utilization in some stations.
- * Information management:
 - Regular consultative and information meetings of center staff, and between personnel working in the same program or discipline.
 - Regular organization of field days, to enhance the image of research and of the station concerned, to diffuse the latest

- research results, to promote research-development interaction, and to stimulate contacts among users of new technology.
- Creation of a central documentation system while maintaining a decentralized network of depositories for journals, books, reports, and other publications in the various research stations.
- Development of an improved format for reporting research progress and greater attention to the regularity of reporting.

3.4 Training

3.4.1 The complementary roles of training and managerial decisions

Training, which has been identified as the third means of improving research management, can only have the desired impact as part of the process of change in the research environment initiated by the leaders. For this reason, strong emphasis has been placed in this report on managerial decisions at different levels in the research hierarchy.

Such decisions are a prerequisite for successful training. On the other hand, training in management will facilitate the implementation of managerial decisions. The two must therefore go hand in hand. This view is borne out by the way the interviewees answered the training-oriented questions. Invariably, the answers focused on knowledge, skills, and insights needed by the interviewees themselves, their superiors and their subordinates, to carry out the many conceptual, organizational and administrative changes that were deemed necessary to improve the efficiency, effectiveness, and relevance of research.

Training can never be a cure all. It must always be supported by a research environment in which the trainees are able and actively encouraged to put their new knowledge and skills to the test and to gain experience. Therefore, supported by managerial actions as recommended above, training could have substantial impact. These actions are likely to come to naught if there is not at the same time considerable reinforcement of skills to perceive the environment correctly, to select, analyze, and correlate information, to design programs, to relate to others, and many other things. Knowledge and skills will come through diverse forms of training, but skills will need to be reinforced by constant practice in a conducive environment. Therefore, managerial actions and training must be interrelated, both in timing and in content. Many interviewees realized this explicitly, others felt it intuitively.

3.4.2 Definition of training

Training is defined here as the acquisition of professional knowledge, insights and skills, irrespective of the mode of delivery and the position of the recipients. The mode of delivery will vary according to the skills to be communicated, the job types, and the place in the organization. For instance, people can be sensitized to the importance of management issues through informal discussions, counselling, workshops and seminars, or guided reading. Deeper knowledge and understanding can be acquired partly in the same ways, and through formal courses. In the proposals made in chapter 5, all of these methods are included.

3.4.3 Demand for training

The interviewees were, without exception, eager for management training. Personnel at all levels, from research leaders to laborers with supervisory responsibilities, recognized the importance of good management, and said they would benefit from some form of management training. Not a single person the mission interacted with felt that he was quite able to cope with all aspects of his assignment.

With great frankness and considerable insight, people expressed their shortcomings. Persons in leadership positions, who perform a large number of administrative and personnel management tasks, admitted to using experience rather than skills acquired through formal training. One of the serious and costly shortcomings in relation to the ultimate goals of research (despite commendable organization of the processes involved) is the prevailing lack of knowledge and skills to ensure that research planning, programming, monitoring, and evaluation can fully achieve their objectives. Considerable training effort is needed in these areas. Clearly, this should not be limited to the directors and heads of research units. If the effort is not backed by good understanding and strong motivation on the part of all researchers and even technicians, the impact could be limited. It could even be negative, by disrupting established patterns of behavior and routine compliance with formalities.

3.4.4 Training at national level versus training at regional level

The question of regional training activities (for research staff from several countries) versus national activities was examined. The vast majority gave priority to national activities on the grounds that understanding one's own system was a prerequisite to contributing to and learning from other national experiences.

It was said that senior staff could benefit from regional training. They need to know what other countries are doing in order to change some constraining elements in the research system, and must be able to train their own staff. Nevertheless, regional training was seen as a drop in the ocean, with only a limited impact. Only training at the national level could really improve the management of agricultural research.

Chapter 4

TRAINING IN AGRICULTURAL RESEARCH MANAGEMENT4.1 Knowledge, Skills, and Attitudes Needed for Research Management

Management as a discipline specifically applied to research is relatively new, and its characteristics are not yet well understood. In general terms, managerial competency has three interrelated components^{*}: first, knowledge of the principles and elements of administration; second, a set of attitudes stemming from the manager's value system and beliefs toward himself, his task, and the persons with whom he interacts; and third, a set of skills: technical, administrative, and inter-personal.

The acquisition of skills depends partly on innate aptitude, partly on experience, and partly on knowledge. Any attempt to improve management through training will fail if innate aptitude is not present in those to be taught, and also if conditions are too constraining to permit sound management to have an impact.

Attitudes include those patterns of thought that determine how well both management knowledge and skills will be acquired, and how they will be used. Attitudes also demonstrate what needs are dominant in an individual at a given time, thus enabling one to predict and identify the person's managerial potential.

Technical skills (in the context of agricultural research) include (i) the manager's ability to develop and apply certain methods and techniques related to his managerial task, and (ii) a general familiarity with, and understanding of, the technical activities undertaken in his institute, center, station, or program, and their relation to other units of the organization. Clearly, these needed technical skills will differ between managers, as a function of their level in the hierarchy and the nature and character of the research for which they are responsible. The manager's technical-scientific specialization, formal education, experience, and background form a strong foundation for the development of technical skills.

Administrative skills relate primarily to the manager's ability to manage, i.e., to effectively define, plan, organize, direct, control, coordinate, monitor, and evaluate. The core elements of administrative skills are the ability to search out concepts and catalog events, the capacity to collect, appraise, and process pertinent information, the ability to distinguish alternatives and make a decision, and resource-

* M. K. Badawy, in: *Research Management*, May/June 1983, 26-31.
J. Sterling Livingston, in: *Harvard Bus. Rev.*, Jan/Feb 1971, 79-89.

fulness in motivating and directing others and communicating to them the reasons behind the decisions and actions. Superior administrative skill is, of course, related to and based on other skills such as cognitive and conceptual skills. Inter-personal skills are probably the most important of all. Managerial competency requires a superior ability to work and interact with, motivate, influence, counsel, and support people, formally and informally.

Managing people effectively is the most critical and most challenging problem for the manager today. Research personnel must work in groups, with superiors and subordinates. Relations must exist with users of research results, extension staff, research workers in other institutions, in other disciplines, of another background, and in other countries. And there must be good understanding between research staff and administrators and accountants. Good inter-personal relations demand an insight into the institutional, national, and international environment, and especially empathy with the persons with whom one interacts.

The technical, administrative, and inter-personal skills are all closely interrelated and all of them are important in determining success at all levels of management. But the relative importance of these skills varies with management level and type of responsibility, as shown schematically in Figure 1.

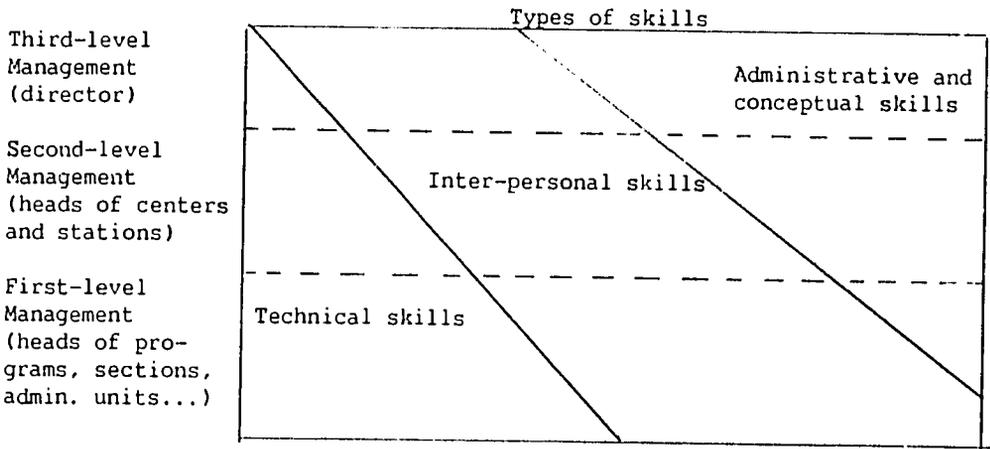


Figure 1. The "skill mix" diagram.

Management as a discipline has developed on the basis of practical management needs in industry and commerce. In applying its principles to research, account must be taken of the fact that the research process differs from the production process in several important respects.

In industry, the quantity and quality of inputs, intermediate products, and final products can be measured and valued in money terms. The production process itself usually is composed of a number of distinct

components, the importance of each of which can be quantified in terms of contributions to the end product. Lack of efficiency anywhere in the system can be measured as a production shortfall. Total costs can be determined and set against quantifiable benefits. Personnel operate in a functional hierarchy of line positions, and execute set tasks. By and large, their productivity can be measured.

In research, all this is rather different. Most research results are not quantifiable. The research process cannot be neatly divided into distinct operations. The tasks and nature of employees are different from those in industry: the key element is the individual researcher's creativity. His values, and hence his responses to various kinds of incentives, are not the same as those of workers in production lines. Researchers are very individualistic, work singly or in small close-knit teams, and often hardly interact with people specialized in other disciplines. They work in a protected environment, and are not used to making concessions. To bring out the best of a researcher's abilities demands special management skills and attitudes. Research managers themselves differ from those in industry or commerce: gaining knowledge and professional recognition often overrides the drive for power, and even financial reward, as a prime moving force. Many of these differences have not yet been adequately studied. Yet, in analyzing a research system's operations, one finds that many of the structural requirements as well as management skills needed for success are basically the same in research as they are in other sectors.

4.2 Training Content for Research Management

In chapter 2, the manner in which managerial functions are performed in the Cameroonian agricultural research system is described. Some of these functions are carried out effectively, others less so. Managerial tasks of one kind or another are performed by research managers and research personnel at different levels. None of them has been formally trained for these tasks. They are guided simply by their experience. To be more effective they need management knowledge and skills. The depth of knowledge and variety of technical and administrative skills required, as well as the inter-personal skills and attitudes, depend on each person's tasks and position in the hierarchy.

The research management functions are:

1. Strategic planning.
2. Evaluation, programming, and budgeting.
3. Financial management.
4. Personnel management.
5. Management of physical resources.
6. Information management.

The performance of these functions is conditioned by the way people manage human processes and inter-personal relations. Therefore, each function must be examined in two dimensions. The first is the technical and administrative dimension, the second relates to human processes and inter-personal relations.

Although details of the content of seminars, workshops, courses and other forms of training will obviously have to be determined by MESRES and the

leaders of the research institutes, the main subjects will relate to the managerial shortcomings diagnosed by the staff of the institutes themselves, as exemplified in the interviewees' comments on which this report is based. In the following, these shortcomings in each of the managerial functions are summarized in so far as they can be overcome or alleviated by training. The corresponding training objectives are enumerated, and suggested training elements listed. This training aims at teaching knowledge as well as technical, administrative, and inter-personal skills, and at developing managerial attitudes. To facilitate policy discussions, some indication of priorities will be given in section 5.2.

Human processes and inter-personal relations are part and parcel of all management functions. They require knowledge and understanding of the functioning of the organization, the role of individuals in research, techniques to motivate people of different personality types, the complexity of delegation and the differences between tasks, authority, and responsibilities, and of leadership styles. They also require skills to find the right approach to training, counseling, supporting and motivating subordinates, to supervise and control their work, and to work with and as part of groups.

4.2.1 Strategic planning

Strategic management comprises the formulation of the basic research objectives and the definition of the program policies and strategies. This function is performed at the top of the research organization, i.e., by the directors of MESRES. They must have a broad perspective of research and complement this with all relevant specialist information at their disposal, to decide what they consider to be in the best interests of national agricultural development.

To carry out effective strategic management, one needs:

* Knowledge and understanding of:

- the central significance of policy and strategy and the effects of the social, cultural, political, economic, and physical environment on the functioning of the organization;
- the interrelationships among other organizations and institutions involved in national development;
- the limits of usefulness of specialized knowledge for solving strategic problems.

* Skills:

- to identify appropriate strategies and evaluate alternatives;
- to take a large view of the subject matter and be able to judge on the basis of uncertain facts, to size up situations quickly and accurately, and to make decisions from the perspective of the whole organization;
- to analyze facts and to identify opportunities, constraints, and risks in the environment, strengths and weaknesses of the organization, and available resources;
- to make decisions to solve problems in their correct order of importance;
- to decide on specific courses of action.

In the Cameroonian research institutes, the main problems are (section 2.3.2):

- * Difficulty in setting priorities among competing research proposals, given the financial, technical, and human means available.
- * Insufficient emphasis on the rural family production unit.
- * Ineffective monitoring of research progress.
- * Insufficient awareness of user needs.

Corresponding training objectives are:

- * To enlarge the research leaders' perspective of the role and scope of research in relation to national priorities and user needs.
- * To increase policy formulation and program planning skills.
- * To increase effectiveness in utilizing current resources on research activities consistent with national objectives.
- * To increase leadership skills.
- * To increase intra- and inter-organizational communication.

Suggested training elements:

- * The strategic concept - Reasons, use, and limits. Definition of strategy. Integration of research and management. Formulation of strategy; elements to consider: environment, resources, objectives. How to formulate a strategy: the different alternatives and the best choice for meeting the objectives.
- * Priority setting - Concentration of staff and resources in key areas. Problem and opportunity identification techniques. Integrating scientific and technical planning with national social-economic planning. Combining scientific and technical policies to reach goals set in the development plan. Selecting priorities with the user in mind. Criteria for the definition of research programs and sub-programs; consequences of starting new programs. Profiting from the users' input into policy making for research and development. Linking with development institutions. Capitalizing on research done elsewhere.
- * Communicating priorities to staff. Ensuring that staff follow the strategy: controlling, monitoring, and supervising at macro and micro levels. Understanding the resistance to change and forcing it.
- * Matrix management: advantages and disadvantages of organization by scientific disciplines, by commodities, and by research centers.

Target groups:

1. Directors of MESRES, including the directors of the research institutes.
2. Senior staff of the relevant technical ministries (director of extension, studies & projects) and directors for rural development of selected parastatal organizations.
3. Members of the program committees of the agricultural research institutes.

4.2.2 Evaluation, programming, and budgeting

This complex function constitutes the follow-up to the planning process and is performed annually. Researchers, heads of SAF, heads of stations and centers, directors and members of the program committee are involved in this process.

Evaluation should be carried out as a basis for programming, and should provide operational feedback for better management of resources. There are two types of evaluations: evaluation of the research process and evaluation of the research results. The first type of evaluation should be conducted

by the heads of programs on a regular basis (monitoring), using report sheets specially designed for this purpose, together with other information. It focuses on the organization's efficiency and the good operational implementation of the programs. The second type of evaluation should be conducted by senior management staff to ensure the continued relevance of the programs. It focuses on the organization's effectiveness.

The programming and budgeting processes run parallel and include the development of the research proposals, the identification of resource needs and time schedules, and the preparation of appropriate budgets.

To carry out this function, one needs:

* Knowledge and understanding of:

- the social, cultural, and physical environment, as well as the national development policies and strategies;
- the interrelationships between other organizations and institutions involved in national development;
- evaluation and programming techniques and the successive steps in the programming process.

* Skills:

- to identify the most urgent problem and the optimum solution;
- to work within a subsystem without losing sight of the others;
- to evaluate available and future resources (manpower, funds, infrastructure, and documentation);
- to determine the various potential users of research results and to identify their needs;
- to prioritize among target groups and to adapt and orient research to their requirements;
- to develop programming and budgeting procedures and to know how to monitor their execution;
- to understand the use of computers as a tool in the evaluation, programming, and budgeting process.

The main problems diagnosed in the Cameroonian research institutes (section 2.4.1) are:

- * Programs are not evaluated regularly for efficiency, effectiveness, and continued justification.
- * Research operations are not always well defined, do not always match national priorities, and are not always well coordinated by heads of centers and programs.

- * National programs and foreign-assisted research projects are not always well linked.
- * Budgets are inaccurate.
- * Inadequate provision for maintenance, repair, and inflation in annual budgets.

Corresponding training objectives:

- * To increase skills in evaluation, programming, and budgeting.
- * To improve congruence between national priorities and research proposals.
- * To increase leadership skills.
- * To increase inter-organizational communication.

Suggested training elements:

- * Design and use of standard evaluation, programming, and budgeting guidelines. The relationship between programs and national priorities. Relationship between planners and those responsible for the design of research operations. Linking with other research projects. Setting priorities.
- * Consequences of the appointment of program heads for the organizational structure, administrative and financial management, and evaluation and reporting procedures.
- * Methods of evaluating programs, themes, and operations against current objectives, budgets, time input and other resources, emphasizing both the research process and the results. Standard reporting format; design of forms. The researcher's role in evaluating his own work and that of his peers. Role of MESRES program follow-up service, and its relationship to the research institute's internal evaluation. The "logical framework" method.
- * Transformation of strategic guidelines into programs that can be implemented.
- * Differentiation between target groups, and identification of their main characteristics. Adapting programs to needs of the target groups.
- * Scheduling of research activities. Project evaluation and review techniques (PERT). Critical path method (CPM). Labor use efficiency and work quality: alternative ways of allocating labor. Time management.
- * Measures of budgeting control. Contingency budgeting, budget corrections. Allowance for maintenance and inflation. Procedures to minimize the effect of budget cuts on the overall program.
- * Matrix management: programming and budgeting in two or more dimensions (scientific disciplines, programs, stations).
- * Working with, and as part of, groups to prepare the programs. Coordinating, supervising, and controlling the work of subordinates. Organizing meetings. Finding the right approach to training, counseling, supporting, and motivating subordinates. Delegating tasks and responsibilities.

Target groups:

1. Comprehensive training: director of the department of scientific and technical research of MESRES; director of the sub-department of

programming and heads of services; director of the sub-department of valorization and development of technology and heads of services; directors of research institutes, heads of centers and stations.

2. Training for general knowledge and understanding: researchers.
3. Basic training for general appreciation: heads of administration and finance.

4.2.3 Financial management

This function includes the preparation of budgets in their final form and the documents relating to all financial transactions, accounting, and financial reporting. It is performed mainly by the heads of SAF and the heads of centers and stations.

To carry out this function, one needs:

* Knowledge and understanding of:

- relevant government rules, regulations, and procedures;
- donor rules and procedures;
- the principles of general, analytical, and managerial accounting.

* Skills:

- to analyze past documents for the preparation of new ones;
- to prepare financial documents of various kinds;
- to report accurately;
- to understand the application of computers to financial operations.

In the Cameroonian research institutes, the problems are (sections 2.3.3 and 2.4.2):

- * Financial regulations are not always well understood.
- * Absence of separate budgeting and accounting for production activities.
- * Lack of understanding of the importance of accurate financial reporting.

Corresponding training objectives:

- * To improve financial operations.
- * To better control the use of financial resources.

Suggested training elements:

- * Financial and accounting rules, regulations, and procedures in Cameroon; the fiscal year. Understanding the special needs of research in designing financial management procedures.
- * Funds - Origin, allocation, and availability of funds. Expenditures and revenues from production activities (and services for third parties); restitution of income versus unstable budget. Allocating funds within the institute and controlling them effectively: operation data sheets, balance sheets, income and expense account, ratios, cash flow, bookkeeping, billing, depreciation, authorization to incur expenditure, use and control of petty cash, break-even

analysis, transfer of funds between budget categories and between years, historical and contemporary budgets. Reports to section heads and researchers.

- * Use of computers in cost accounting and analytical accounting.
- * Internal audit.
- * Tapping additional funding sources.
- * Working with other categories of staff. Delegation of tasks and responsibilities. Supervision. Taking pride in accuracy, punctuality and efficiency.

Target groups:

1. Comprehensive training: heads of administration and finance (SAF) and accountants at headquarters and in the research stations.
2. Training for general knowledge and understanding: directors, heads of centers and stations.
3. Basic training for general appreciation: researchers and technicians.

4.2.4 Personnel management

Personnel management is the administrative side of the management of the human resources of the institution. It includes the recruitment process, control and evaluation, incentives, training, promotion, and all other administrative functions dealing with personnel. This function is performed by the heads of SAF, the heads of centers and stations, and the directors of the institutes.

To carry out this function, one needs:

* Knowledge and understanding of:

- relevant government rules, regulations, and procedures;
- national agricultural research and development policies and targets for the institute;
- training needs and opportunities;
- methods of personnel administration.

* Skills:

- to prepare and analyze a manpower plan;
- to write job profiles, select and recruit personnel, and prepare contracts;
- to evaluate staff;
- to match training needs with opportunities;
- to know when and how to apply sanctions.

In the Cameroonian research institutes, the problems are (sections 2.3.4 and 2.4.3):

- * Absence of a clear training and recruitment policy for all categories of personnel.
- * Too narrow criteria for grading and evaluating researchers.
- * Insufficient coaching and supervision of young researchers.
- * Lack of knowledge of civil service rules, regulations, and procedures.
- * Lack of operational job descriptions.

Corresponding training objectives:

- * To make better use of the institution's human resources.
- * To improve staff motivation and dedication.

Suggested training elements:

- * Diffusing the culture of the organization.
- * Personnel classification, responsibilities, and functions. Preparing operational job descriptions. Formulation of a training and recruitment policy and strategy (manpower plan). Professional life cycle. Selection criteria and selection process.
- * Performance appraisal: criteria and procedures. Staff development and training. Compensation. Different types of incentives. Living and working conditions: housing, health, education, social amenities.
- * Coaching and supervision. Problems of delegation. Finding the right approach to training, counseling, supporting, and motivating subordinates. Supervision and control. Diffusing culture conducive to frankness, honesty, punctuality, accuracy.
- * Civil service rules, regulations, and procedures. Labor law and regulations. Labor relations.

Target groups:

1. Comprehensive training: head of the general affairs service and head of personnel of MESRES, directors of institutes.
2. Training for general knowledge and understanding: heads of centers and stations, heads of administration and finance (SAF).
3. Basic training for general appreciation: researchers.

4.2.5 Management of physical resources

This concerns the purchase of equipment, machinery, and materials, the maintenance of the infrastructure, the allocation of houses, vehicles, tools, and other items to the staff. The people primarily responsible for physical resource management are the heads of SAF. Farm managers, if and when recruited, would assume some of these responsibilities.

To carry out this function, one needs:

- * Knowledge and understanding of:
 - relevant government rules, regulations, and procedures;
 - available funds;
 - suppliers and service and maintenance agencies;
 - technical aspects of equipment, its use and maintenance;
 - principles of land utilization and agricultural production;
 - customs regulations;
 - stock management techniques.
- * Skills:
 - in a variety of mechanical and technical fields;
 - to purchase, maintain, and allocate equipment, machines, vehicles, tools, and materials.

In the Cameroonian research institutes, the problems are (section 2.4.4):

- * Injudicious and untimely purchasing decisions.
- * Difficulties in customs clearance.
- * Poor control of stocks, of vehicle utilization.
- * Lack of maintenance and repair facilities.

Corresponding training objective:

- * To optimize the utilization of physical resources.

Suggested training elements:

- * Planning, scheduling, procurement and input supply, stock and inventory control. Contingency planning. Time management.
- * Maintenance and inventory of field and laboratory equipment and furniture, buildings and grounds, management of stocks and spare parts, management of vehicles (including logbook), machinery and field equipment including irrigation, management of utilities, allocation of tools to labor.
- * Purchase orders. Purchasing and importation: procedures and formalities. Purchasing policy: joint orders, homogeneity of equipment and brands, servicing possibilities. Delivery of goods.
- * Allocation of vehicles and of land to experiments.
- * Supervising and controlling the work of subordinates. Delegation of tasks and responsibilities. Working with, and as part of groups.

Target groups:

1. Comprehensive training: heads of stations, heads of administration and finance (SAF), farm managers.
2. Training for general knowledge and understanding: researchers, technicians, workshop supervisors.
3. Basic training for general appreciation: directors of institutes, accountants.

4.2.6 Information management

Information management deals with obtaining of information from, as well as its delivery to, other researchers in the country and abroad (including international agricultural research centers), government departments and development agencies and projects, and present and potential users of research results. All researchers carry out this function, but some aspects are the special responsibility of heads of centers and stations, or documentalists.

To carry out this function, one needs:

- * Knowledge and understanding of:
 - the information needs of all groups with which the institution interacts, and of the institution itself;

- documentation sources locally and abroad;
- library and documentation organization;
- available means of communication and how to use them;
- research-extension linkages.

* Skills:

- to determine and analyze information needs;
- to present and edit information in a form that is suitable to the different target groups;
- to deal with a variety of communication problems.

In the Cameroonian research institutes, the problems are (sections 2.3.5 and 2.4.5):

- * Lack of linkages between researchers, farmers, and extension agents.
- * Lack of staff interaction within the research institutions and between researchers and staff of technical ministries, development projects, institutions abroad, and other organizations of professional interest.
- * Insufficient familiarity with existing scientific and technical literature from Cameroon and abroad.
- * Inadequate and irregular scientific and technical reporting by the research institutes.
- * Fragmentation of the existing scientific and technical documentation and lack of central records.

Corresponding training objectives:

- * To improve links within the research system, and between researchers and the different user categories, especially extension agents and farmers for pre-extension.
- * To improve communication and information exchange with the international scientific community.
- * To establish and operate a functional documentation system for agricultural research in Cameroon.
- * To improve the understanding of and ability to meet the requirements for properly targeted oral and written communication.

Suggested training elements:

- * The importance of tapping the world information base. Selecting, collecting, retrieving and using information, available locally and abroad. Alternative ways of networking. Benefits, establishing and running of reprint and copying service. Preparation and use of catalog, bibliographies, card indexes, and other types of information records.
- * Reporting by research programs as distinct from centers and stations. Identifying target groups and meeting their specific information needs. Presenting scientific and technical information to different target groups; efficient writing, editing, publishing.
- * Alternative ways of linking researchers to users; information feedback on research-based recommendations from farmers, extension agents, and other users.

- * Organization of meetings, workshops, and seminars: definition of objectives, planning, organization, reporting. The importance of field days, and how to organize them.
- * Financial and staffing implications of efforts to improve information flow.
- * Supervising, counselling, supporting, training, and controlling subordinates. Working with, and as part of, groups. Effective group communication.

Target groups:

1. Comprehensive training: directors, heads of centers and stations, and librarians.
2. Training for general knowledge and understanding: researchers.
3. Basic training for general appreciation: technicians.

The management functions and training needs of the different categories of personnel are summarized in Table 1.

Table 1. Managerial knowledge and skills needed by different categories of personnel

<u>Knowledge and skills</u>	<u>Directors</u>	<u>Heads of center & station</u>	<u>Researchers</u>	<u>Chiefs SAF</u>	<u>Accountants</u>	<u>Technicians</u>
a. <u>Inter-personal</u>						
Human Processes	XXX	XXX	XXX	XXX	XXX	XXX
b. <u>Administrative and technical</u>						
Strategic planning	XXX	XX	X			
Eval, Progr & Budget	XXX	XXX	XX	X		
Financial Mgt	XX	XX	X	XXX	XXX	X
Personnel Mgt	XXX	XX	X	XX		
Physical resources Mgt	X	XXX a)	XX	XXX a)	X	XX
Information management	XXX	XXX	XX b)			X

XXX: Comprehensive knowledge and understanding
 XX : General knowledge and understanding
 X : General appreciation

a) The existence of a "farm manager" in certain centers and stations could reduce the workload of the chiefs of centers and stations as well as the chiefs of SAF for the management of physical resources.

b) For Librarian: XXX

5.1.1 Phase 1: short-term action

This phase is the most important one, as it will influence the course of action for the whole program. It is proposed that phase 1 consist of reflection and discussion among the higher authorities of MESRES and the directors of the agricultural research institutes, on further actions to improve the management of agricultural research in Cameroon. This should include discussion of the various problems identified in this report, possible decisions on managerial problems and the financial, organizational and institutional requirements of a long-term training program. These deliberations could take place during a high-level policy meeting of three or four days, possibly in June 1984. ISNAR and PAID/CA would assist in organizing such a meeting if so requested.

The following topics could be discussed:

1. The definition and purpose of management as it relates to agricultural research.
2. The relevance and urgency of improving agricultural research management.
3. Agricultural research management issues at the ministerial level (Section 2.3). Problems could be classified according to their impact on management, their easiness to solve, and the interest of the relevant authorities. A strategy could then be developed to solve the easiest problems without delay. In some cases, a supplementary document setting out the importance of the problem in question and alternative solutions might be necessary.
4. Management issues in the institutes. These could be classified into issues requiring managerial decisions and those that are best addressed through training. Using the six research management functions described in Section 4.2 as a basis for discussion would facilitate the design of a training program.
5. The possibility of organizing a trial training seminar in one of the research stations, in which personnel at all levels would participate. This seminar would be a tool for the development of training approaches and methods to be used in subsequent seminars. An evaluation of impact would be carried out later.
6. Budgetary implications of the desired managerial changes and the proposed training program: increased operational costs (new posts, training seminars, consultancies, communication tools, housing, transport, etc.) and investments.

This meeting should enhance the awareness, perception and knowledge of existing problems, and should increase communication within MESRES. This is a necessary first step towards improving of the functioning of the system. It should logically culminate in a priority ranking of the problems, followed by decisions on (i) new measures to improve the research environment and strengthen management and (ii) a long-term training strategy.

5.1.2 Phase 2: medium-term action

Phase 2 starts as soon as the conclusions of the proposed June 1984 meeting have been adopted. It is the beginning of the activities for improving management. This phase could consist of:

1. Action on the priority problems that can be solved at the level of ministries and the agricultural research institutes.
2. Implementation of the trial training seminar referred to under section 5.1.1 above. To meet the purpose of this seminar, the chosen station should be as typical as possible for the system as a whole. The curriculum could be designed by senior staff in the institutes in consultation with ISNAR and PAID/CA. A draft outline of a curriculum is presented as a basis for discussion (Table 2).
3. A meeting of directors and heads of centers and stations of IAR and IZR, organized by MESRES, to exchange views on proposed changes and to obtain feedback on the design of the training program.
4. Visits to the stations of IAR and IZR to discuss the proposed training program with all staff, to obtain comments, and to informally begin the training.
5. Preparation of a formal long-term in-country training program for the technical, scientific, and senior administrative personnel of the institutes. This should be done with the assistance of a team of management training specialists. The program would specify all activities and their timing, the organizers and participants, the subjects to be covered and methods used, evaluation procedures, and cost estimates.

5.1.3 Phase 3: long-term program

Phase 3 would consist of the implementation of the in-country training program specified in section 5.1.2 above. Another type of activity in phase 3 could be the organization of inter-station visits, especially for technicians, who might not benefit as much as researchers from the management training seminars. Such visits would allow technicians to exchange information on their experiences, work methods, opportunities, and problems.

In phase 3, administrative and research personnel could also participate in training courses organized elsewhere on managerial subjects relevant to their work (e.g., accounting, use of computers in administration).

In all likelihood, but depending on the outcome of phase 2, each training cycle or activity in phase 3 would be designed for a homogeneous category of personnel. The sample training seminar would have made it possible to test assumptions on training needs at each level in the hierarchy and to identify how people respond to new ideas and knowledge and to different training methods. The research management functions to be covered (see Table 1), the intensity of exposure, and the methods would vary with the target group.

Table 2: Tentative curriculum for a trial training seminar

<u>Sessions</u>	<u>Activities</u>
2	<u>Reception of participants</u> (1/2 day)
1	<u>Opening of the seminar</u> (1/4 day)
	<u>Module 1: Human relations and group dynamics</u> (2 days)
2	Perception of individuals by the group
2	Perceptions between groups
2	Styles of leadership
1	Relationships between research and environment
	<u>Module 2: Planning, programming, and budgeting (PPBS)</u> (3 3/4 days)
1	Programming process in Cameroon
2	Case study: Budgeting at Ekona
1	Presentation: From planning to programming
4	PERT method: theory and exercises
3	Bart charts: theory and exercises
4	Elements for budgets: presentation and exercises
2	Case study: L'approche du Programme National pour l'Amélioration de la Pomme de terre (Rwanda)
	<u>Module 3: Evaluation</u> (1 1/2 days)
1	Presentation: The different methods of evaluation
3	The method Logical Framework: theory and exercises
2	Case study: Cashewnut research in the Tanzanian Agricultural Research Organization
8	Case study: problem identification - programming - evaluation - budgeting
	<u>Conclusion of the seminar</u> (1/2 day)
2	Evaluation of the seminar, feedback and future course of action for the training program.
1	<u>Closing</u> (1/4 day)

• One session: 1 H 15.

A second cycle will ensure that knowledge is retained, skills continue to be applied, and new knowledge acquired. Newcomers to the system and people promoted must also be trained to their new function. It is very important, therefore, to ensure (1) that these training cycles are given regularly, and (2) that training materials are available for the different categories of personnel.

5.2 Implementation of the Training Program

5.2.1 The first training cycle

As explained in section 5.1.3, it is proposed that each category of personnel participate in several training cycles spread over a long period of time. Each cycle will consist of a seminar, a period of application in the work situation of what has been learned, and an evaluation to serve as a basis for the design of the second cycle.

Typically a seminar can be organized around the examination of two functions. Details on each function have been presented in chapter 4 of this report. The study of each function could consist of:

- a. An introductory lecture or presentation. This session concentrates on the definition of the management function and its purpose.
- b. Practice. This session concentrates on acquiring practical experience on how to use the management tool in a particular situation. Depending on the topic, a case study can be made, a role game played, a paper discussed, a film shown.
- c. Application to the work situation. This session consists of the examination of the Cameroonian situation, and the application of some of the elements just examined.

The first seminars to be organized could be:

<u>Target group</u>	<u>Length of 1st cycle</u>	<u>Subject matter (tentative)</u>
Directors	3 days	1 <u>Strategic planning:</u> * The strategic concept: how to integrate agricultural research planning with national social/economic planning. * Priority setting: how to prioritize and organize research so that it is congruent with development plans. 2 <u>Evaluation, programming, and budgeting:</u> * Design of standard evaluation, programming, and budgeting guidelines. * Coordination and control of the evaluation, programming, and budgeting process.
Heads of centers and stations	5 days	1 <u>Evaluation, programming, and budgeting:</u> * The use of standard evaluation, programming, and budgeting guidelines:

		<ul style="list-style-type: none"> setting priorities, scheduling activities, preparing budgets. * Coordination and control of the evaluation, programming and budgeting process at the levels of centers and stations. * How to plan, organize and chair meetings.
		<ul style="list-style-type: none"> 2 <u>Physical resource management:</u> <ul style="list-style-type: none"> * Purchase orders: when, where, and how to order? * Contingency planning. * Allocation of vehicles.
Researchers	3 days	<ul style="list-style-type: none"> 1 <u>Evaluation, programming, and budgeting:</u> <ul style="list-style-type: none"> * The relationship between programs and the national priorities. * The use of standard evaluation, programming, and budgeting guidelines; setting priorities, scheduling activities, preparing budgets. 2 <u>Management of physical resources:</u> <ul style="list-style-type: none"> * Purchase orders: when to order? how to order?
Heads of administration and accountants	3 days	<ul style="list-style-type: none"> 1. <u>Financial management:</u> <ul style="list-style-type: none"> * Working with researchers and understanding their needs. * Cash flow. * Expenditures and revenues from production. * Allowing for inflation. 2. <u>Physical resources management:</u> <ul style="list-style-type: none"> * Contingency planning. * Allocation of vehicles.
Technicians	3 days	Visit by a group of technicians from one station to their colleagues of another station.

After the seminar, the participants would return to their work situation and apply what they have learned. All the research personnel would have studied the same functions with a different perspective and with a different intensity. Nevertheless, the environment should be conducive to change and improvement. After six months to one year (depending on the groups) impact would be evaluated. The evaluation would determine what changes in managerial efficiency have occurred, what elements of training have been mastered, which should be re-examined, and what new elements should have priority for further study. This evaluation would be the basis for designing the second training cycle for each category of personnel.

5.2.2 Institutionalization of the training program

The effectiveness of efforts to improve the management of the agricultural research system through training is determined by the implementing structure. It is recommended that a person be appointed specifically to assist the Minister in organizing of the formal management training program. A committee composed of representatives of the various staff categories could be appointed to advise this person. Specialist consultants could be recruited as the need arises.

It is important for MESRES and the research institutes to obtain local support in order to be able to continue these activities on a long-term basis. Staff members of other Cameroonian institutions: Ecole Nationale Supérieure Agronomique (ENSA); University of Yaoundé (Faculty of Law and Economics and Faculty of Letters and Human Sciences); Ecole Supérieure des Sciences Economiques et Commerciales (ESSEC); National School of Administration and Magistracy (ENAM)) should be asked to participate as teachers in the seminars. It seems reasonable to expect these institutions to take a lead role in agricultural management training in Cameroon. Details of institutional, logistic, and financial arrangements will have to be studied.

Parallel to the formal training program, informal training will have an important role to play. Appointees to counselling positions, together with the senior management staff of the research institutes, will help the less experienced staff in the performance of the managerial aspects of their tasks, by enhancing their awareness of the many relevant elements in their environment, and by explaining the processes.

5.3 Concluding Remarks

This report reflects the interest of MESRES in improving the management of its agricultural research programs. It also reflects the interest of both ISNAR and PAID/CA in assisting MESRES to even more effectively manage its resources and meet its objectives.

In this report a management improvement plan is presented in three phases. The recommendations deal with both strategic and operational changes, and they offer suggestions in the area of management training. It is hoped the national research leaders will regard these as a basis for making decisions on:

- the suggested managerial changes;
- the principle of training for research management;
- the approach to and methods for this training;
- the means necessary to carry out the envisaged actions.

Management of research is not a goal in itself. It is a means for improving the effectiveness of the use of available resources in producing research results that are applicable and transmissible to the country's users.

List of persons interviewed
(October 1963)

DGSTR	Delegate General	M. N'GU, Victor
	Director of programs	M. NYA NGATCHOU, Jean
	Deputy director of programs	M. NCHOJI NKWI, Paul
	Head of project execution control service	M. KIKI AMBASSA, Raphael
IAR - Nkolbisson	Director	M. ECHEBIL, Jacques Paul
	Deputy director	M. MAIMO, Anthony Mapri
	Deputy head of SAF	M. OUMALE, Jean Claude
	Chief of party, project NCRE	M. ATAYI*, Emmanuel
	Administrator, NCRE	M. CHAMBERLAIN*, Toby
	Researchers:	M. REY*, Jean Yves
		M. PARTIOT*, Michel
		M. NGEVE MBUA, Jacob
	Technician	M. NYEMB TSHOMB, Etienne
IAR - Forestry Research Centre	Head of centre	M. GRISON*, François
IRA - National Soils Centre	Researchers:	M. PONTANIER*, Roger
		M. MOUKOURI KUOH, Henry René
	Technician	M. OHANDZA, Joseph
IRA - Maroua	Head of centre	M. BOLI, Zachée
	Researchers:	M. DAMGI*
		M. TA'AMA*, Moffi E.
		M. ROSSET*, Jean Michel
	Technician	M. NTOUKAM, Georges
IAR - Garoua	Researchers:	M. TALLEYRAND*, Henri
		M. NGOUMOU
	Technician	M. HAMIDOU ALIOUM
IAR - Njombe	Head of centre	M. FOYET, Michel
	Researchers:	M. NUMFOR, Festus
		M. LASSOUDIERE*
		M. SAKWE, Pierre
	Technician	M. ONOUKOU, Alphonse

* Expatriate

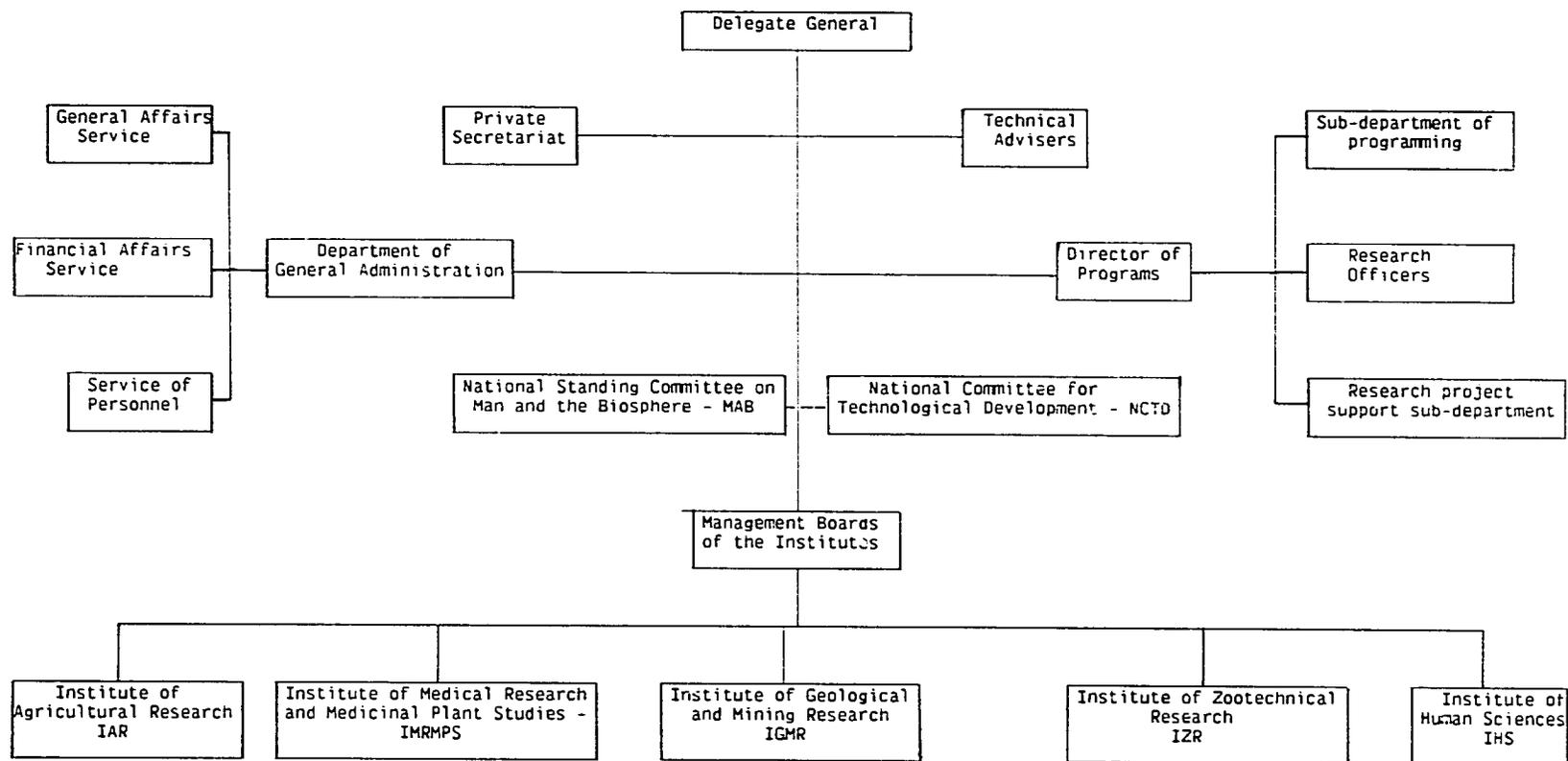
IAR - Nkoemvo	Head of station	M. NGAMBI NDJAMA, Jean Marie
IAR - Dschang	Head of station	M. NZIETCHUENG, Samuel
	Researcher	M. TCHATCHOUA, Joseph
	Deputy head of SAF	M. MPANDE MAP, Laurent
	Technician	M. TCHENDJI, Raymond
IAR - Foubot	Head of station	M. MONTIÈ, Ernest
	Researcher	M. SALLEE*, Bertrand
IAR - Bambui	Researcher	M. FONCHO, Peter A.F.
IAR - Ekona (some were met in June 1983)	Head of centre	M. LYONGA, Simon
	Head of SAF	M. JIOMENECK, Paul
	Accountant	M. DJOMO, Emmanuel
	Researchers	M. AMBE TUMANTEH, Jerome
		M. NKOONKAM, Bernard
		M. ROUSSEL*, Dominique
		M. NGU NGWA, Vincent
		M. AWAH TAH, Emmanuel
		M. HOF*, J.
		M. SHALK*
		M. NDOUMBE NKOTTO, Honoré
		M. MUSENJA, John I.
		M. IGWACHO, Joseph
		M. LANGLOIS*, S.J.C.
		M. MUKOKO GOBINA
		M. MOUTON*, G.
		M. MOUKAM, Appolinaire
		M. ZAMBO
		M. GRIESBACK*, D.
		M. KIPS*
		M. DELVAUX*, Bruno
		M. DJOB BIKOI, Jean
		M. FAWTY FONDJO, Mathew
		M. KAMGA FONDJO, Frédéric
	Technician	M. EFITE, J. Ngomba
IZR - Nkolbisson	Director	M. TEBONG DOH, Emmanuel
	Deputy director	M. NGOU NGOUPAYOU, Jean-Daniel
	Director of programs	M. NDUMBE, R. Dia
	Head of SAF	M. MOTAZE, Emmanuel
IZR - Bambui	Head of station	M. MBANYA, Justin
	Head of SAF	M. DOOK, Georges
	Researcher	M. AGU-DABA, Emmanuel
IZR - Limbe	Head of station	M. NJOCK, Jean-Calvin

IZR - Wakwa		
	Head of centre	M. MBA, David
	Deputy head of centre	M. OTTOU, Jean François
	Head of SAF	M. AMBAM, François
IMRMPS - Nutrition Centre		
	Head of centre	Mme. MARTIN, Alice Ejami
Ministry of Agriculture		
	Deputy Director, DEP	Mme. BALEPA, J.
Ministry of Animal Production, Fisheries and Animal Industries		
	Director of studies	M. ATEKWANA, J.A.
	Head of service, DAPHPA	M. SIPOWO, Thomas
Dschang University Centre		
	Chief of service of teaching, research and documentation	M. MOUZONG, Boyomo
ENSA		
	Director	M. ONGLA, Jean
	Head, dept. of rural education	M. TCHALA ABINA, François
	Head, dept. of agric. economics	M. KAMAJOU, François
UCCAO - Bafoussam		
	Chief, trials & demonstr. service	M. SIMON*, André
	Co-chief, trials & demonstr. service	M. KAMGA, Célestin
SODECOTON		
	Deputy director general	M. GRUSON, Hervé
	General secretary	M. MIGNIER, Jean Paul
	Director, management and finance	M. WADDEL, Alain
	Delegate for rural development in the South	M. ESCARGUEIL, Jacques
	Chief of service trials	M. JOFFRE, Joël
	Attache development projects	M. BERROUD, François
CENEEMA	Deputy Director	M. BALO, Marcel Roger
SODEBLE - Wassandé		
	Deputy director for crops	M. ABAH, Philippe
Office Céréaliier		
	Director	M. MBON, Ruben
Experimental Farm of Karewa		
		M. AKOUBAKAR
		M. GOODBODY, Swithun
World Bank		
	Deputy resident representative	M. HOUSTON, James
USAID		
	Director	M. LEVIN*, Ronald
	Chief, agric. & rural devt. bureau	M. LITWILLER*, William
	Liaison officer	M. SLOCUM, William

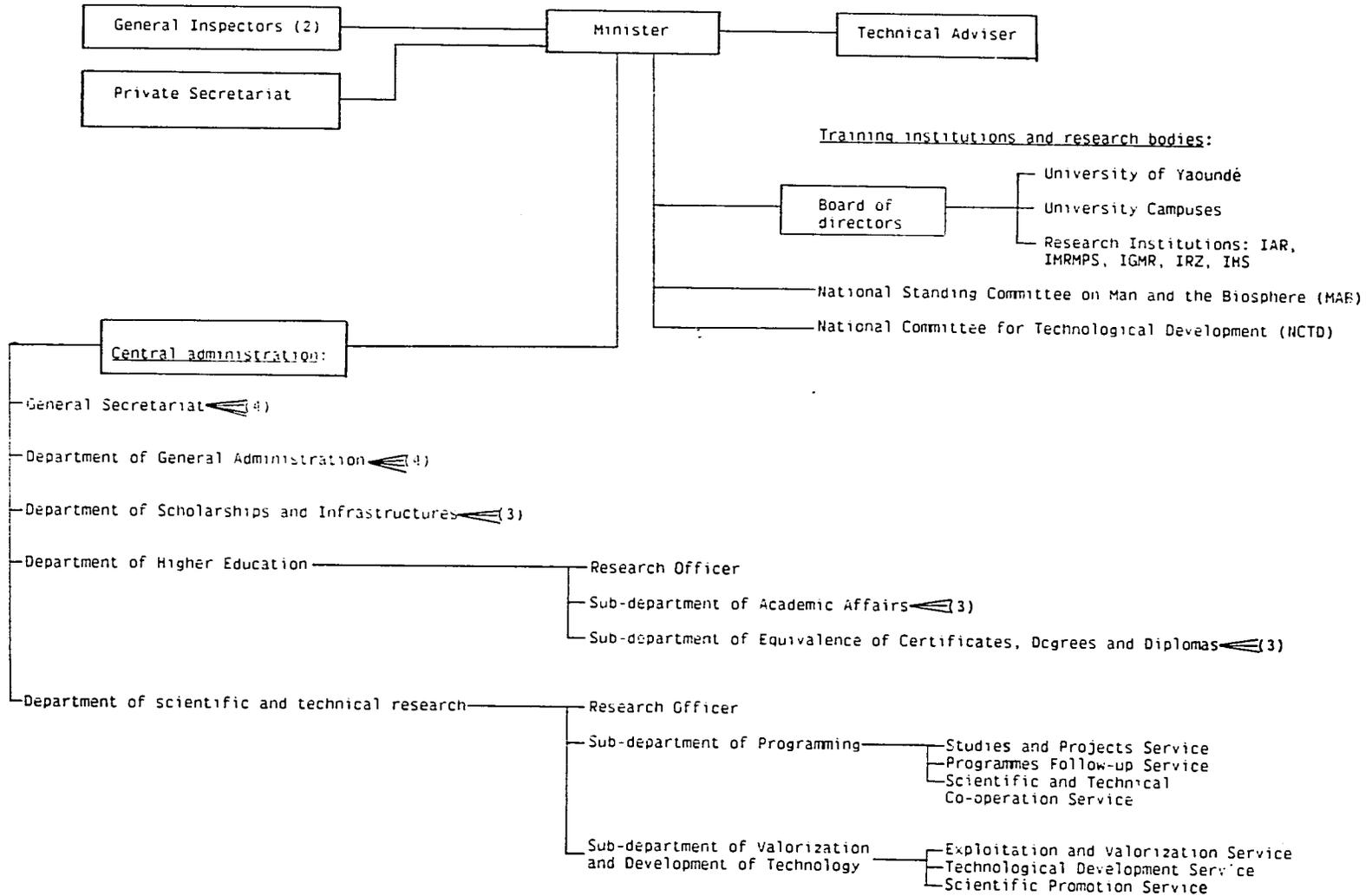
Breakdown of interviewees by categories of personnel
DGSTR - IAR - IZR
 (October 1983)

<u>Inst.</u>	<u>Directors</u>	<u>Heads of centers and stations</u>	<u>Researchers</u>	<u>Technicians</u>	<u>Administ.</u>
DGSTR	4				
IAR					
Nkolbisson	2	2	6	1	2
Maroua		1	3	1	
Garoua			2	1	
Njombe		1	3	1	
Nkoemvoné		1			
Dschang		1	1	1	1
Foumbot		1	1		
Bambui			1		
Ekona		1	21	1	2
IAR Total	2	7	39	6	5
IZR					
Nkolbisson	3				1
Bambui		1	1		1
Limbe		1			
Wakwa		2			1
IZR Total	3	4	1		3
GRAND TOTAL	9	10	41	6	8

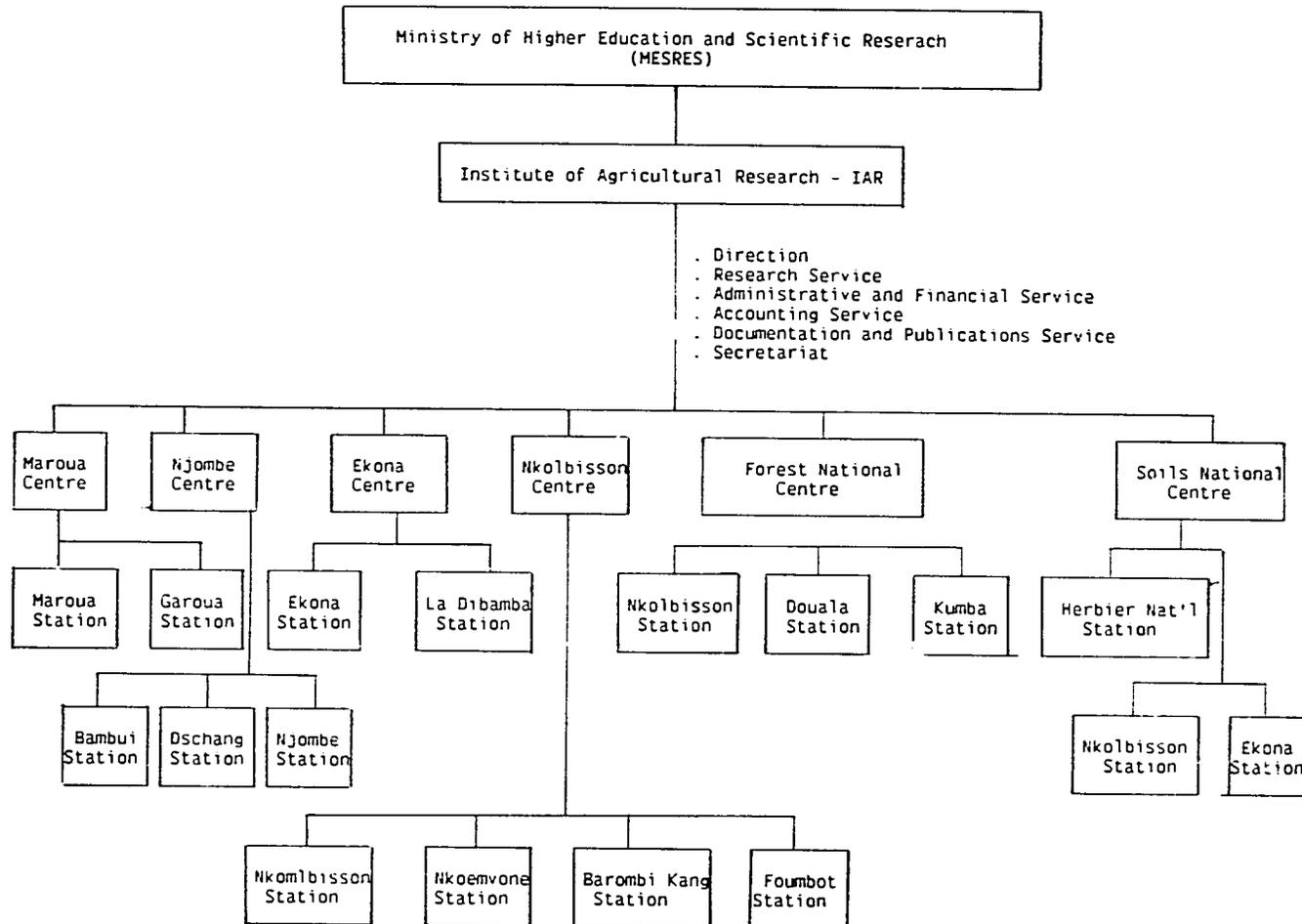
Organizational chart of the Delegation General for Scientific and Technical Research (October 1983)

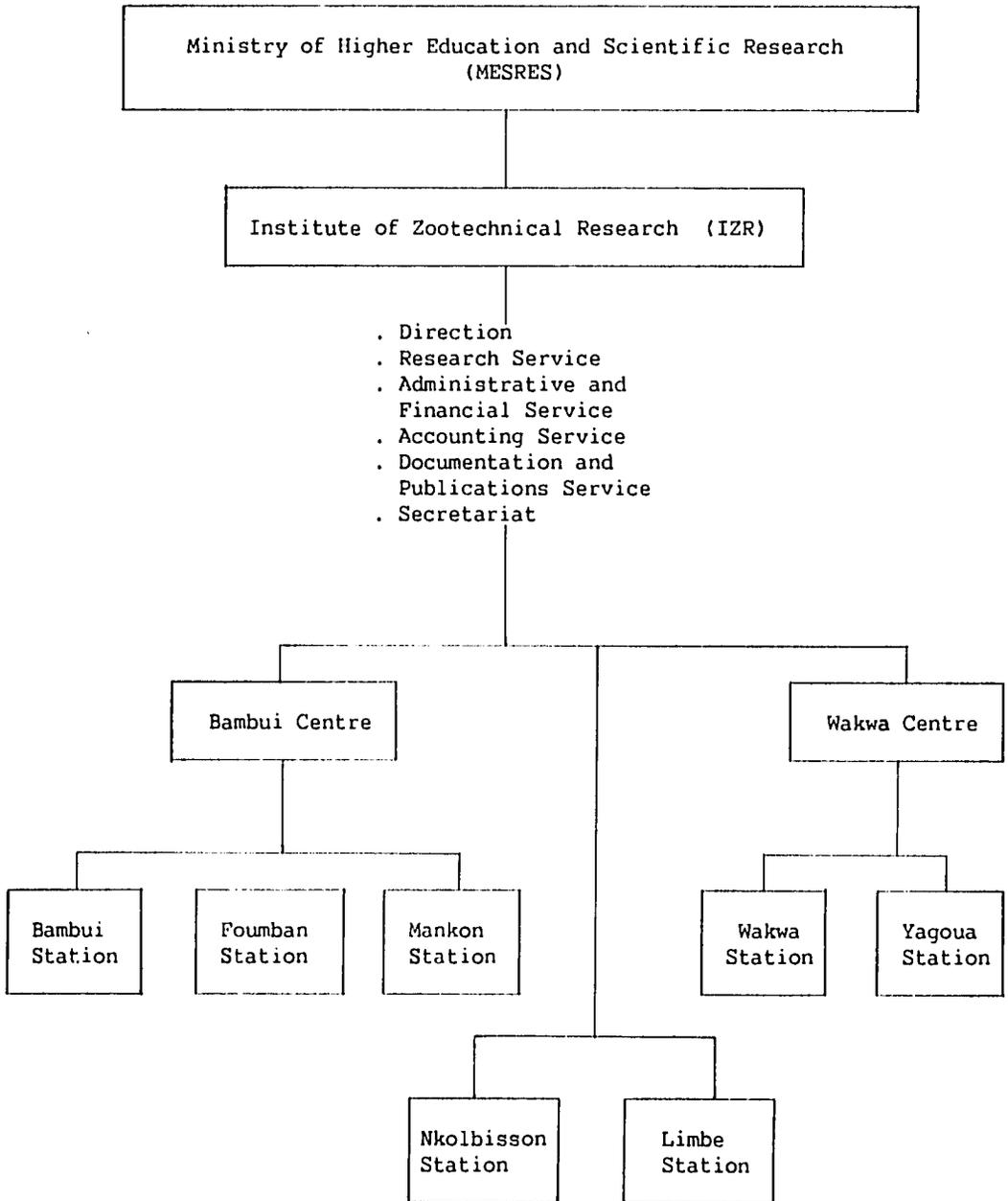


Organization chart of the Ministry of Higher Education and Scientific Research (April 1984)



Organizational chart of the Institute of Agricultural Research



Organizational chart of the Institute of Zootechnical Research

MESRES Recruitment Board
and
MESRES Assessment Board

MESRES Recruitment Board

The Minister of Higher Education and Scientific Research	Chairman
The Vice-Chancellor of the University of Yaounde	Member
The Director of Scientific and Technical Research of MESRES	Member
The Director of the Institute concerned	Member
A professor or senior lecturer of the University institution under which falls the area of studies in which the candidate specialized	Member
The Director of Higher Education	Member
A representative of the Minister of Public Service	Member
A representative of the Minister of Finance	Member

MESRES Assessment Board

The Director of the Institute concerned	Chairman
The chief and senior researcher under whose authority the researcher is carrying out his activities	Member
Two lecturers (professor or senior lecturer rank) of university institution under which falls the area of studies in which the candidate specialized	Member

The programs of IAR and IZR

The programs of the Institute of Agricultural Research are:

01. Cereals (rice, maize, millet, sorghum)
02. Root and tuber crops (cassava, yams, cocoyams, taro, sweet potato, potato)
03. Leguminous plants (groundnuts, beans, cowpea)
04. Vegetable crops
05. Bananas
06. Fruit plants (pineapple, avocado, mango...)
07. Food technology
08. Cocoa
09. Coffee
10. Oil seeds (oil palm, coconut)
11. Latex plants (rubber, guayule)
12. Fiber plants (cotton)
13. Dense forest
14. Sudanese savanna areas
15. Botany
16. Pedology
17. Plantains
18. Medicinal and miscellaneous plants
19. Wood technology
20. Farming systems

The programs of the Institute of Zootechnical Research:

01. Research on beef cattle
02. Dairy research
03. Research on goats and sheep
04. Research on pigs
05. Research on poultry and rabbits
06. Research on grazing lands, fodder and animal feed
07. Research on various types on fisheries and aquatic fauna
08. Veterinary research
09. Fauna

Composition of the mission

Dr. Rudolf B. Contant
Ms. Marie de Lattre
Prof. Oscar Cordeiro

Senior Research Officer - ISNAR
Research Fellow - ISNAR
Researcher - PAID/CA (Pan-African Institute for
Development / Central Africa)