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International Service for National Agricultural Research

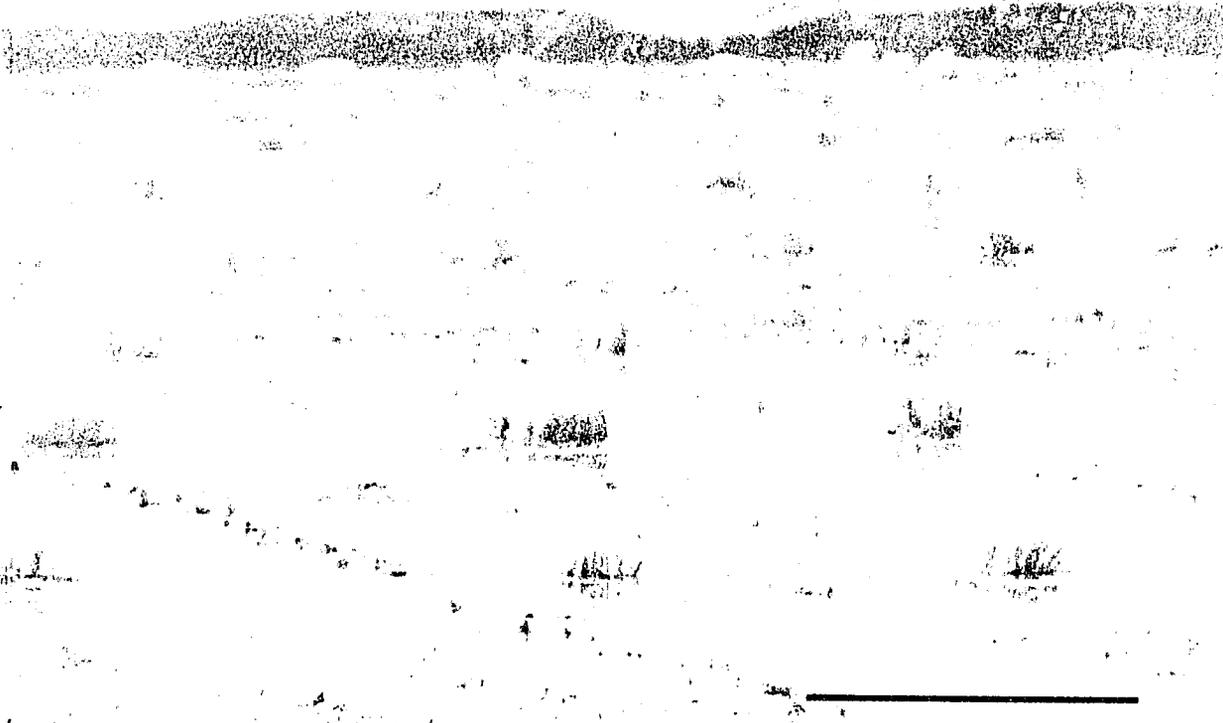
# **ISNAR** Annual Report

1993

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*Theme essay: Natural Resource Management*

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The mandate of the International Service for National Agricultural Research (ISNAR) is to assist developing countries in bringing about lasting improvements in the performance of their national agricultural research systems and organizations. It does this by promoting appropriate agricultural research policies, sustainable research institutions, and improved research management. ISNAR's services to national research are ultimately intended to benefit producers and consumers in developing countries and to safeguard the natural environment for future generations.

ISNAR offers developing countries three types of service, supported by research and training:

- For a limited number of countries, ISNAR establishes long-term, comprehensive partnerships to support the development of sustainable national agricultural research systems and institutions.
- For a wider range of countries, ISNAR gives support for strengthening specific policy and management components within the research system or constituent entities.
- For all developing countries, as well as the international development community and other interested parties, ISNAR disseminates knowledge and information about national agricultural research.

ISNAR was established in 1979 by the Consultative Group on International Agricultural Research (CGIAR), on the basis of recommendations from an international task force. It began operating at its headquarters in The Hague, The Netherlands, on September 1, 1980.

ISNAR is a nonprofit autonomous institute, international in character, and apolitical in its management, staffing, and operations. It is financially supported by a number of the members of the CGIAR, an informal group of donors that includes countries, development banks, international organizations, and foundations. Of the 18 centers in the CGIAR system of international centers, ISNAR is the only one that focuses specifically on institutional development within national agricultural research systems.

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*May 1994*

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**AGROVOC Descriptors**

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## Preface

*The rural populations of most poor countries consist mainly of farmers with limited economic resources and little political influence. Furthermore, the small scale of their individual farms and the frequent absence of producer organizations make them easy to overlook, particularly in the face of other, more immediate or sensational problems. This difficult reality has been driven home dramatically over the past few years.*

*The recent recession that has affected most countries has created serious domestic problems for many major donors. Government revenues are down significantly, social programs are stretched to the breaking point, and macroeconomic factors suggest the prosperity of the 1980s is still elusive.*

*On the international front, the end of the cold war gave cause for celebration, but ensuing events have tempered initial optimism. Geopolitical stasis in Eastern Europe and parts of Africa and Asia has given way to social and economic upheaval, further diverting donors' attention and resources from historical as well as present and future issues such as the environment, global food security, and rural problems.*

*Among the 18 international centers of the CGIAR, ISNAR is the only one fully dedicated to helping developing countries reinforce the national institutional base for the agricultural research needed to serve farmers. Without the presence and active participation of viable national research systems, the work of the rest of the CGIAR centers is largely irrelevant to national development objectives. For it is only through national research structures that developing countries can absorb, adapt, and apply the innovations made at the international level.*

*ISNAR is a small organization with an immense mission. The demand for services from developing nations has always exceeded our capacity to respond. Certainly we must keep ourselves tuned to the needs and aspirations of our clients and try to make the best use of our limited financial and human resources.*

*In addressing this Annual Report for 1993 to our partners, donors, and others interested in the state of national agricultural research,*

*we attempt to demonstrate that ISNAR, though small, can and does make a valuable contribution in several areas of research policy and management in the developing countries. In the end, however, the success or failure of the activities described in the following pages is best judged by our partners, the national agricultural research systems. If, because of ISNAR's service, national research leaders and policymakers are better able to serve poor farmers and consumers, then we will have fulfilled our mission, at least in part. We extend an open invitation to these men and women to inform us, as well as our supporting donors, whether ISNAR is on the right track, and if not, what can be done.*

*Christian Bonte-Friedheim.*

Christian Bonte-Friedheim  
*Director General*

*Nicole Sénécal*

Nicole Sénécal  
*Chairperson, Board of Trustees*

April 1994

## ISNAR Board of Trustees

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Technische Universität Berlin,  
Germany

**Berndt Müller-Haye**

Constitutionally appointed observer  
from FAO

\* Completed service in 1993

\*\* Joined the Board in 1993

*Seated, left to right: Camus, Al-Shayji, Dillon, Bonte-Friedheim, Breman. Standing: Peter Ballantyne (secretary to the Board until October 1993), Just Faaland (member-elect), Amir Muhammed (member-elect), Hemmi, Hess, Senécal, Peters, Bin Hashim, Ly, Müller-Haye, Alessandro Bozzini (member-elect).*



## Executive Summary

**H**eadquartered in The Hague, The Netherlands, ISNAR is a member center of the Consultative Group on International Agricultural Research. Its mandate is to assist developing countries in bringing about lasting improvements in the performance of their national agricultural research systems (NARS) and organizations. It does this by promoting appropriate research policies, sustainable institutions, and improved management. ISNAR's services are ultimately intended to benefit consumers and producers and to safeguard the natural environment.

In past years ISNAR's annual report has been published as separate English, French, and Spanish editions. Given the current situation of tight funding, ISNAR management decided to publish the full text of the 1993 annual report in English only, as a cost-saving measure. However, as a service to readers, this executive summary appears in English, French, Spanish, and Arabic. It highlights major 1993 activities and aims to give a sense of the key issues of concern to NARS, their managers, and policymakers. The ISNAR work described here is not exhaustive.

### *Board of Trustees*

Nicole Senécal, vice-president (multilateral branch) of the Canadian International Development Agency, was elected chairperson of ISNAR's Board of Trustees. Her term began in October. She succeeds John Dillon of Australia who joined ISNAR's board in 1986 and became its chairperson in 1990. During the year, two other trustees, having completed their terms, left the board. ISNAR's board now has 14 members, including the director general. In addition, a representative

of FAO is a constitutionally appointed observer.

### *Theme essay on natural resource management and the widening agricultural research agenda*

The 1993 report leads off with a theme essay titled *Natural Resource Management and the Environment: Widening the Agricultural Research Agenda*.

A key message of the essay is that a new paradigm, both scientific and organizational, is needed if the goals of increasing production and protecting the natural resource base are to be combined successfully. Holistic ways of approaching complex scientific problems of sustainable agricultural production have been emerging for some years now and this trend will continue. Agenda 21, the manifesto of the 1992 UN Conference on Environment and Development, has helped to identify, among other things, the new directions research will need to take and the problems it will have to solve.

Research policy-making, as well as research planning, priority setting, implementation, and evaluation, requires more sophisticated analytical tools than have been generally used in the past. Managers will need to draw heavily on systems theory, economic analysis, and other tools. The design of crop, animal, and other production systems, as well as necessary changes in policies, will increasingly have to take into account environmental and social costs and benefits not priced in the market.

Planning across sectors — agriculture, health, education, communications, water, transport, and so on — will become especially important as new factors are taken

into account in research and development projects. Agricultural research can contribute significantly to such planning.

Dealing with sustainability issues will also require changes in the structure and management of research organizations. Some reorganization may be needed to ensure integrated planning within the agricultural research system and to maintain good linkages with outside players who also have a stake in sustainable development. Training programs and human resource planning will need to respond to demands for a new mix of scientific expertise.

The essay notes recent evidence of NARS commitment to tackling sustainability concerns. However, it cautions that the task will be very difficult for countries with meager resources or pressing problems of poverty and hunger. The longer action is postponed, though, the greater the risks of famine and environmental degradation for the next generation.

For their part, donors must not lose sight of the fact that sustainable development occurs in the real-life context of farmers, other producers, and consumers, often very poor, struggling for survival. Nutritional levels in many developing countries are still inadequate and the global population will probably double in the next 100 years. Production-oriented agriculture and agricultural research, therefore, cannot be relegated to a minor role. Without them it will be impossible to significantly alleviate human poverty, a condition that inevitably leads to environmental degradation. Strong and stable investment in agricultural research is crucial to the future of the planet.

#### *ISNAR and the national systems: working together on sustainability issues*

The theme essay is accompanied by a description of recent ISNAR activities in the

area of sustainability and natural resource management (NRM) research, as it affects NARS. These include collaboration with research organizations in Bhutan and Kenya; research to develop agroecologically based methods of setting research priorities at the regional level, initially for Latin America; a workshop on the use of applied systems analysis; and the creation of a bibliographic data base on the management aspects of NRM research. To unify these and other related activities, ISNAR has set up a cross-program committee on NRM issues.

#### *Work of the programs and services*

The main body of the annual report provides details of ISNAR's advisory service, research, training, and information activities in a range of management and policy areas. These areas are divided into three broad themes around which ISNAR's program work is organized.

The programs are

- Research Policies and System Strategies (RPSS)
- Research Program Design and Management (RPDM)
- Management of Organizations and Resources (MOR)

Coordination of in-country advice and support to NARS is assured by the Collaborative Services and Training (CST) unit. CST and the three programs are supported by the seven units that make up ISNAR's Information Management Services (which also has an external function in support of NARS) and Administrative Services.

*Thematic activities***Policies and systems**

- For some years ISNAR has collected and analyzed information on staffing levels, funding trends, and other aspects of national agricultural research systems around the world. This kind of information is needed by policymakers and system planners. In 1993, work in this area continued, with the focus on sub-Saharan Africa. Statistical briefs on five countries were produced. Ten others are in progress.
- The policy program is investigating the role of regional agricultural research networks in strengthening national systems. The initial venues for this new area of work are East Africa and West Africa.
- Following a 1992 pilot study in Ghana, four country case studies on the links between structural adjustment programs and agricultural research were completed and two others launched. The Ghana study, plus one on Indonesia, were published in the ISNAR Briefing Paper series. Also, in cooperation with the World Bank's Economic Development Institute, a week-long seminar on the topic was staged for senior research leaders and government policymakers in March in Nairobi.
- Work on the links between public- and private-sector research also continued, with a case study of the situation in Jamaica. Briefing papers on Ecuador and Colombia were published.
- The Intermediary Biotechnology Service conducts studies and provides information to NARS on biotechnology issues, resources, and expertise. It pro-

duced two ISNAR Research Reports: one on biotechnology programs in 10 countries, the other on intellectual property rights. It also organized an international consultation on biotechnology research at ISNAR headquarters in November and set up a data base on international biotechnology programs.

- The manuscript of a major book on the theory and practice of research planning and priority setting, especially under conditions of scarce resources, reached the final stages of preparation. The book draws heavily on the tools of economic analysis.
- The ISNAR study of research management in 50 small countries was completed during the year. It underlines the importance to such countries of forging scientific links with outside sources of technology. It also suggests the need for further investigations of how small countries can best benefit from research networks and from technology "spillovers" between countries.

**Program design and management**

- A major project to help Latin American and Caribbean countries strengthen their capacity to plan, monitor, and evaluate agricultural research entered its final phase. Several dozen national institutions are participating in this regional project. Training materials were designed, tested, and produced, and a course was staged for project participants from the Andean countries. ISNAR also collaborated with CAB International on the publication in English of a sourcebook on monitoring and evaluation of agricultural research, which will also appear in Spanish.

■ A research report on the links between research systems and technology-transfer agencies was published. It summarizes the results of an ISNAR multicountry study. A visiting American researcher on sabbatical worked with ISNAR staff to prepare and test training materials for managers based on this and other work in the area of linkages with technology users. And in an expansion of work on this theme, the RPDM program launched a project to study research system links with farmer organizations. Three country case studies are under way: in Kenya, Ghana, and Burkina Faso.

■ The first phase of a research project on the role and contributions of universities in agricultural research began. Universities and research institutions in Benin and Nigeria are collaborating with ISNAR on the project. Efforts are also being made to secure the participation of other African countries.

■ Three European universities — Leuven in Belgium, Reading in the U.K., and Wageningen in the Netherlands — cooperated with ISNAR on the design of a master's degree program in agricultural research management. It is aimed at mid-career research managers from African, Caribbean, and Pacific nations.

#### Organizations and resources

■ A book titled *Guidelines for Planning and Designing Agricultural Research Buildings* was the first publication to appear in the new ISNAR series Research Management Guidelines. This generously illustrated practical guide is aimed at senior managers of agricultural research organizations, as well as architects, builders, lending agencies,

and others involved in research facility construction, remodelling, and maintenance. The book's main focus is offices, laboratories, and ancillary support buildings in developing countries, mainly in tropical regions.

■ With MOR staff assistance, INFORM became fully operational in ISRA, Senegal's lead institute for agricultural research. INFORM is a management information system developed by ISNAR for use in NARS. Progress was also made in implementing INFORM in the NARS of Uganda and Tanzania. An overall review of ISNAR's efforts to date in assisting 10 countries with the introduction of INFORM was also launched.

■ In the area of financial management, staff of the MOR program gave advice to four countries: Mali, Morocco, Tanzania, and Uganda. The work in Mali included ISNAR participation in a World Bank appraisal mission which paved the way for major investments to strengthen the country's agricultural research system.

■ ISNAR completed a study of women's participation in the agricultural research system of the Philippines. Fifty-three percent of scientists with MS or PhD degrees are women. This proportion is high by international standards. However, women were found to be underrepresented in senior scientific and management positions. The study, which was written up as a preliminary report, includes recommendations on practices to maximize the contribution of professional women to agricultural research.

■ MOR staff also began work in two areas of organizational performance:

assessment and benchmarking. For the first, a set of indicators is being constructed to help NARS managers measure and assess how well their institution is fulfilling its scientific mission (effectiveness) and how well the resources available to do it are being managed (efficiency). Second, examples of good management practices in NARS, so-called *benchmarks*, are being identified and described by ISNAR so that other research institutions may learn from their experience.

- Assessing the job performance of researchers is a crucial and often problematic area of human resource management for NARS. MOR staff, collaborating with institutes in Morocco and Senegal, began work on the design of new performance-assessment systems that aim to maximize and reward the contributions of scientists.

### *Cross-program collaboration*

Also worthy of mention is a major activity that drew on the subject-matter expertise of staff from several ISNAR units. Two ISNAR staff served as guest editors of the August 1993 issue of *Public Administration and Development*, an international journal of training, research, and practice. The work involved commissioning and editing 11 papers on agricultural research management in developing countries — seven by ISNAR staff and four by outside experts.

### *Country collaborative services*

ISNAR officers worked in about 40 countries during the year. In some cases, these were high-level missions to give direct advice and support to senior managers on major changes or events taking place in

their research systems — such as planning exercises. In other cases, ISNAR staff provided in-country training on individual topics, carried out country case studies, or assisted with the design and introduction of specific management mechanisms or systems.

A major area of direct country collaboration was the development of national or subnational research plans. ISNAR assisted Burkina Faso, Jordan, Lebanon, Mauritania, and Mozambique. In the case of research plan implementation, advice and support were given to Bhutan, Mali, Niger, Tanzania, Uganda, and Uruguay.

Diagnostic reviews of the research systems of Algeria, Namibia, and Yemen were also completed.

With their agreement, ISNAR designated two countries — Uganda and Ecuador — as long-term partners under its comprehensive institutional development (CID) mechanism for collaboration. Under this arrangement, ISNAR works intensively with a small number of selected countries on a range of policy and management issues. A concerted effort is made to adapt and transfer ISNAR-developed tools and methods to the country. The close relationship is also a learning experience for ISNAR, allowing it to improve service to all client countries.

In Uganda, an outposted staff member provided continuing support to NARO, the country's lead organization for agricultural research. The CID program of work calls for advice and training on a wide range of management components: institutional structure, scientific and management information systems, personnel and financial management, program planning, monitoring and evaluation, research networking, and linkages with technology transfer. These are provided by headquarters-based staff or consultants. The project in Ecuador foresees a similar program of

work with backstopping from headquarters.

In Tanzania, an outposted staff member gave broad-based support to the Department of Research and Training. A major focus of work was the introduction of INFORM, as noted above.

Finally, a special ISNAR contribution in 1993, aimed at strengthening agricultural research in Africa, is worthy of note. An ISNAR program director served as chairperson of an international task force assembled with the assistance of the Special Program for African Agricultural Research (SPAAR). The task force is charged with preparing a "framework for action" to revitalize research in West and Central Africa. Agriculture ministers in the region have endorsed the task force's interim report and recommendations.

### *Management training*

Work continued on two major training projects in the area of research management. One is a series of joint activities with KARI in Kenya. ISNAR provided direct support to three of four training events during the year. The other is a joint project of SADC, ESAMI, and ISNAR, aimed at research managers in the Southern Africa region. It has its operational base at ESAMI, a regional management institute in Tanzania. An outposted staff member supports this work.

During the year, the Training Unit continued to support the training work of many of ISNAR's program staff. In particular, it played a key role in developing training modules on research planning and priority setting.

### *Information Management Services (IMS)*

IMS staff worked with the ISNAR Publications Committee to redesign and introduce three new ISNAR publication series:

Research Management Guidelines, Research Reports, and Briefing Papers. IMS also carried out a readership survey to help ISNAR target its publications better.

A major task accomplished by IMS during the year, under the leadership of the computer unit, was the design and introduction of a new address-and-mailing data base. This will serve the daily needs of all staff.

Moving beyond its internal support work, IMS collaborated with the NARS of India and Sudan on issues of information management. In India the work centered on drafting a strategy for a nationwide "agricultural research information system" to enable Indian agricultural researchers to make the most of new computer and telecommunications technology. In Sudan, ISNAR assisted the Agricultural Research Corporation with an analysis of its computer needs and priorities.

In January, IMS also organized and staged an expert consultation on the information management needs of NARS, in cooperation with CTA and CAB International. Representatives of NARS, donor agencies, and other CGIAR centers participated.

### *Publications*

ISNAR produced a total of 58 major documents during the year for outside distribution, including restricted circulation. Among these were 26 formal, printed ISNAR publications such as Research Reports, Research Management Guidelines, Briefing Papers, the Annual Report, and ISNAR Newsletter. Most of these were produced with the direct assistance of the Publications Services unit. The total also includes grey literature (e.g., Discussion Papers), in some cases photocopied for limited circulation, in other cases printed. In addition, staff members also produced

82 papers, book chapters, and articles published by outside organizations, sometimes with joint authorship.

#### *Consultants*

During the year ISNAR drew on the services of 60 outside consultants or consulting groups.

#### *Financial situation*

In 1993, ISNAR's total operating expenditures were US\$10.323 million. Of that, \$5.989 million was funded through core-unrestricted grants and the rest through core-restricted grants, special project funding, reimbursements for services rendered, and other revenues. This represents a 3.6 percent decrease in ISNAR's overall expenditures compared with 1992. While core-unrestricted funding fell by almost 9 percent, the combination of core-restricted and other resources rose by about 3.4%.

## Résumé analytique

L'ISNAR, membre du Groupe consultatif pour la recherche agricole internationale, ayant son siège à La Haye, aux Pays-Bas, a pour mandat d'aider les pays en développement à améliorer de manière durable les performances de leur système national de recherche agricole et des organisations qui en font partie. A cette fin, l'ISNAR oeuvre à promouvoir des politiques de recherche appropriées, à renforcer les institutions et à en améliorer les méthodes de gestion. Le but final des services de l'ISNAR est le bien-être des producteurs et consommateurs des pays en développement, ainsi que la conservation de l'environnement naturel.

Depuis plusieurs années, le rapport de l'ISNAR paraissait en trois versions (anglais, français et espagnol). Compte tenu de la contraction du budget, la direction de l'ISNAR a décidé, par mesure d'économie, de ne publier le rapport annuel de 1993 qu'en anglais. Néanmoins, afin d'en faciliter la lecture, son contenu a été condensé en un résumé analytique en anglais, français, espagnol et arabe, qui met en lumière les points saillants des activités de 1993 et en fait ressortir les aspects fondamentaux pour les SNRA, les responsables de ceux-ci et les décideurs. La description du travail de l'ISNAR présentée dans ce résumé n'a pas un caractère exhaustif.

### *Conseil d'administration*

Nicole Senécal, vice-présidente (branche multilatérale) de l'Agence canadienne de développement international (ACDI), a été élue présidente du Conseil d'administration à compter du mois d'octobre. Elle a succédé à John Dillon, d'Australie, membre du Conseil d'administration depuis 1986, qui en était devenu le président en 1990. Dans le cours de l'année, le Conseil de l'ISNAR a vu le départ de deux autres administrateurs dont le mandat était parvenu à expiration. Il se compose désormais de quatorze membres, dont le directeur général. Il comprend

également, conformément à ses statuts, un observateur de la FAO.

### *Gestion des ressources naturelles et élargissement du champ d'action de la recherche agricole*

Le rapport de 1993 s'ouvre sur un essai intitulé « Gestion des ressources naturelles et environnement : élargissement du champ d'action de la recherche agricole ».

Cet essai délivre un message fondamental : si l'on entend réaliser les objectifs de l'accroissement de la production et de la protection des ressources naturelles, l'émergence d'un nouveau paradigme est indispensable, aussi bien sur le plan scientifique qu'au niveau organisationnel. Depuis quelques années, l'on voit apparaître de nouvelles approches qui appréhendent dans une perspective holistique les problèmes scientifiques complexes posés par la durabilité de l'agriculture, et cette tendance est appelée à se poursuivre. L'Agenda 21, manifeste de la Conférence des Nations Unies sur l'environnement et le développement de 1992, a aidé à définir, entre autres éléments, les nouvelles orientations de la recherche et les problèmes auxquels il lui faut s'attaquer.

La formulation de stratégies, ainsi que la planification, la définition de priorités, la mise en oeuvre et l'évaluation de la recherche nécessitent des outils analytiques plus sophistiqués que ceux qui ont été généralement employés jusqu'à présent. Les responsables de la recherche doivent faire appel à la théorie des systèmes, à l'analyse économique et à d'autres méthodologies performantes. La mise au point de systèmes de culture, d'élevage ou autres et la réorientation nécessaire des stratégies doivent se faire en tenant compte de coûts et de bénéfices environnementaux et sociaux dont la valeur n'est pas déterminée par les forces du marché.

Une planification globale sur l'ensemble des secteurs — agriculture, santé, éducation,

communication, eau, transports, etc. — devient d'autant plus importante que des facteurs nouveaux entrent dans les considérations des projets de recherche et de développement. La recherche agricole peut contribuer de manière significative à cette planification.

L'apport de solutions aux problèmes de durabilité implique également des changements dans la structure et la gestion des institutions de recherche. Une réorganisation sera sans doute nécessaire afin de créer les conditions requises pour une planification intégrée au sein du système de recherche agricole et afin de maintenir des liaisons appropriées avec les acteurs extérieurs participant à la réalisation de l'objectif du développement durable. Les programmes de formation et la planification des ressources humaines devront pouvoir satisfaire la demande d'expertises scientifiques de type nouveau.

Ainsi qu'il est souligné dans l'essai, une volonté de prendre en compte les problèmes de durabilité se manifeste depuis quelque temps chez les SNRA. Cependant, il s'agit là d'une tâche particulièrement difficile pour des pays dotés de maigres ressources ou affligés de problèmes pressants de pauvreté et de nutrition. Pourtant, plus l'on tardera à agir, et plus les risques de famine et de dégradation de l'environnement seront grands pour la génération à venir.

Les bailleurs de fonds, quant à eux, ne doivent pas perdre de vue le fait que l'objectif du développement durable se situe dans le contexte de la vie réelle des paysans, des producteurs en général et des consommateurs, c'est-à-dire de populations souvent très pauvres, qui luttent pour survivre. Le niveau nutritionnel demeure insuffisant dans bon nombre de pays en développement et l'on devrait assister à un doublement de la population mondiale au cours des 100 prochaines années. C'est pourquoi l'agriculture et la recherche agricole qui a pour vocation d'en accroître la productivité ne doivent pas être reléguées au second plan. Sans elles, il sera impossible de faire reculer la pauvreté humaine, et il en résultera inmanquablement une dégradation de l'environnement. Il est crucial pour l'avenir

de la planète que des investissements conséquents et soutenus soient consacrés à la recherche agricole.

### *L'ISNAR et les systèmes nationaux : la durabilité au centre de la collaboration*

L'essai s'accompagne d'une description des activités récentes menées par l'ISNAR en direction des SNRA dans le domaine de la durabilité et de la gestion des ressources naturelles (GRN) : collaboration avec des organismes de recherche au Bhoutan et au Kenya ; recherche sur des méthodes partant de bases agroécologiques pour définir des priorités de recherche au niveau régional, initialement pour l'Amérique latine ; atelier sur les applications de l'analyse de systèmes ; et création d'une base de données bibliographiques sur les aspects de gestion de la recherche sur la GRN. Afin d'harmoniser ces activités et d'autres projets apparentés, l'ISNAR a mis en place un comité de coordination des programmes.

### *Activités des programmes et des services*

Le corps du rapport annuel fournit des détails sur le service conseil et les activités de recherche, formation et information relatives aux divers aspects de la gestion et des politiques de recherche. Ces aspects sont regroupés en trois grands thèmes autour desquels s'articule le travail des programmes de l'ISNAR.

Les programmes sont les suivants :

- Politiques de recherche et stratégies au niveau du système (RPSS)
- Conception et gestion des programmes de recherche (RPDM)
- Gestion des organisations et des ressources (MOR).

La coordination du service conseil et de l'appui aux SNRA au niveau national est assurée par les Services de collaboration et de formation (CST). Les CST et les trois programmes bénéficient de l'appui de sept unités qui composent les Services de gestion de l'information (également investis d'une

fonction externe d'appui aux SNRA) et les Services administratifs.

### *Activités thématiques*

#### **Politiques et systèmes**

- Depuis plusieurs années, l'ISNAR a entrepris de rassembler et d'analyser des données sur les ressources humaines, financières et autres des systèmes nationaux de recherche agricole du monde entier. Ce type d'informations est indispensable aux décideurs et aux planificateurs. Ce travail s'est poursuivi en 1993, où il a été axé sur l'Afrique subsaharienne. Des « abrégés statistiques » ont été compilés pour cinq pays. Dix autres sont en cours d'élaboration.
- Le programme RPSS étudie le rôle des réseaux régionaux de recherche agricole dans le renforcement des systèmes nationaux. Dans un premier temps, ce nouveau domaine de travail est axé sur l'Afrique de l'Est et de l'Ouest.
- A la suite d'une étude pilote effectuée au Ghana en 1992, quatre études de cas sur les liens entre les programmes d'ajustement structurel et la recherche agricole ont été achevées et deux autres ont été entreprises. L'étude relative au Ghana et une étude sur l'Indonésie ont été publiées dans la série des Notes informatives. L'ISNAR et l'Institut de développement économique de la Banque mondiale ont organisé sur ce thème un séminaire d'une semaine, qui a eu lieu en mars à Nairobi, à l'intention de responsables de recherche et décideurs politiques.
- Par ailleurs, le travail sur les liens entre recherche du secteur public et du secteur privé s'est poursuivi, avec une étude de cas sur la Jamaïque. Des Notes informatives ont été publiées sur l'Equateur et la Colombie.
- Le Service de liaison en biotechnologie étudie les différents aspects de la biotechnologie, les ressources et les expertises disponibles, et fournit des infor-

mations à ce sujet aux SNRA. Il a produit deux Rapports de recherche : l'un passant en revue les programmes de biotechnologie de 10 pays, l'autre concernant les droits de propriété intellectuelle. Il a également organisé une consultation internationale sur la recherche en biotechnologie qui a eu lieu en novembre au siège de l'ISNAR, et il a établi une base de données sur les programmes internationaux de biotechnologie.

- La préparation du manuscrit d'un livre exhaustif sur les aspects théoriques et pratiques de la planification et de la définition des priorités de la recherche, notamment en conditions de pénurie de ressources, est parvenue à son stade final. Cet ouvrage repose très largement sur les outils de l'analyse d'économique.
- L'étude de l'ISNAR sur la gestion de la recherche dans 50 petits pays s'est achevée durant l'année. Cette étude souligne que ces pays ont intérêt à forger des liens scientifiques avec des sources extérieures de technologie. Elle met en relief la nécessité de déterminer comment ils peuvent tirer le meilleur parti des réseaux de recherche et des « retombées » technologiques d'un pays à un autre.

#### **Conception et gestion des programmes**

- Un projet important, visant à aider les pays d'Amérique latine et des Caraïbes à renforcer leurs capacités en matière de planification, de suivi et d'évaluation de la recherche agricole, est entré dans sa phase finale. Il s'agit d'un projet régional auquel participent plusieurs dizaines d'institutions nationales. Du matériel de formation a été élaboré, expérimenté et produit, et un cours a été organisé à l'intention de participants des pays andins. L'ISNAR a également collaboré avec le CAB International en vue de la publication d'un ouvrage de référence en langue anglaise sur le suivi et l'évaluation de la recherche agricole, dont une version en espagnol paraîtra ultérieurement.

- Un rapport de recherche a été publié sur les liens entre systèmes de recherche et agences de transfert de technologie. Il synthétise les résultats d'une enquête menée par l'ISNAR sur plusieurs pays. Un chercheur visiteur américain en congé sabbatique a aidé le personnel de l'ISNAR à préparer et à tester du matériel de formation destiné aux responsables de la recherche, élaboré à partir de ce travail et d'autres études sur les relations avec les usagers de la technologie. En vue d'élargir le travail accompli sur ce thème, le programme RPDM a lancé un projet visant à étudier les liaisons entre le système de recherche et les organisations de producteurs. Trois études de cas ont été entreprises au Kenya, au Ghana et au Burkina Faso.
- La première phase d'un projet d'étude du rôle et de la contribution des universités à la recherche agricole a été engagée. Des universités et centres de recherche du Bénin et du Nigeria collaborent à ce projet. Des efforts sont faits pour y associer d'autres pays africains.
- Trois universités européennes — Louvain (Belgique), Reading (Royaume-Uni) et Wageningen (Pays-Bas) — ont collaboré avec l'ISNAR à l'élaboration d'un programme d'études de niveau maîtrise sur la gestion de la recherche agricole. Ce programme s'adresse à des cadres de recherche en milieu de carrière des pays d'Afrique, des Caraïbes et du Pacifique.

### Organisations et ressources

- Un livre intitulé *Guidelines for Planning and Designing Agricultural Research Buildings* constitue la première publication de la nouvelle série des Guides pratiques pour la gestion de la recherche de l'ISNAR. Cet ouvrage abondamment illustré est destiné aux cadres de direction des institutions de recherche agricole, ainsi qu'aux architectes, entrepreneurs, agences de prêt et autres acteurs intervenant dans la construction, l'adaptation et l'entretien des infrastructures de recherche. L'ouvrage décrit la conception des bureaux, laboratoires et bâtiments annexes dans les pays en développement, et en particulier dans les régions tropicales.
- Avec l'aide du personnel du programme MOR, le système INFORM est devenu entièrement opérationnel à l'ISRA, principal institut de recherche agricole du Sénégal. INFORM est un système d'information de gestion que l'ISNAR a mis au point pour les SNRA. Des progrès ont été par ailleurs accomplis dans sa mise en place chez les SNRA d'Ouganda et de Tanzanie. L'ISNAR a également entrepris de dresser un bilan de l'aide apportée à ce jour à 10 pays pour l'introduction de ce système.
- Dans le domaine de la gestion financière, le personnel du programme MOR a fourni des conseils à quatre pays : Mali, Maroc, Tanzanie et Ouganda. Au Mali, l'ISNAR a participé à une mission d'évaluation de la Banque mondiale devant ouvrir la voie à des investissements majeurs pour renforcer le système de recherche agricole de ce pays.
- L'ISNAR a mené à terme une étude sur la participation des femmes au système de recherche agricole aux Philippines. Dans ce pays, 53 % des chercheurs possédant une maîtrise ou un doctorat sont des femmes. Il s'agit là d'une proportion élevée si l'on en juge d'après la situation dans les autres pays du monde. Pourtant, les femmes sont sous-représentées dans les postes de cadres scientifiques et administratifs. L'étude, présentée sous forme de rapport préliminaire, inclut des recommandations sur les voies et moyens de maximiser la contribution des femmes diplômées à la recherche agricole.
- Le programme MOR a également engagé un travail sur deux aspects de la performance des organisations : l'évaluation et la définition de normes. Dans le premier domaine, il a entrepris d'élaborer une série d'indicateurs qui permettront aux dirigeants des SNRA de mesurer les résultats et d'évaluer si leur institution s'acquitte de sa mission scientifique (efficacité) et si les ressources dont elle dispose sont gé-

rées adéquatement (efficience). Dans le second domaine, l'ISNAR s'emploie à identifier et à décrire des exemples de bonnes pratiques de gestion au sein des SNRA, qui serviront de normes dont pourront s'inspirer d'autres institutions de recherche.

- L'évaluation de la performance professionnelle des chercheurs constitue pour les SNRA un domaine crucial, mais souvent problématique, de la gestion des ressources humaines. Le personnel du programme MOR, en collaboration avec des institutions du Maroc et du Sénégal, a entrepris d'élaborer de nouveaux systèmes d'évaluation des performances visant à maximiser et à sanctionner la contribution des chercheurs.

### *Collaboration entre programmes*

Il convient également de mentionner une activité qui a mis à contribution l'expertise de spécialistes de plusieurs unités de l'ISNAR. Deux membres du personnel ont été invités à collaborer au numéro d'août 1993 de *Public Administration and Development*, revue internationale traitant de formation, de recherche et de la pratique de l'administration publique. Le travail consistait à faire rédiger et à éditer 11 textes concernant la gestion de la recherche agricole dans les pays en développement (dont sept rédigés par des membres de l'ISNAR et quatre par des experts extérieurs).

### *Collaboration à travers le monde*

Dans le courant de l'année, les experts de l'ISNAR sont intervenus dans une quarantaine de pays. Dans certains cas, il s'agissait de missions de haut niveau visant à apporter des conseils et un appui directs aux dirigeants de systèmes de recherche, à l'occasion de changements ou événements majeurs tels que des exercices de planification. Dans les autres cas, le personnel de l'ISNAR a assuré des actions de formation locales sur des thèmes spécifiques, effectué des études de cas ou aidé à élaborer et à

mettre en place des mécanismes ou systèmes de gestion.

Un domaine important de collaboration directe avec des pays a été l'élaboration de plans de recherche (à l'échelle nationale ou plus localisés), pour lesquels l'ISNAR a apporté une aide au Burkina Faso, à la Jordanie, au Liban, à la Mauritanie et au Mozambique. Il a également fourni des conseils et un appui au Bhoutan, au Mali, au Niger, à la Tanzanie, à l'Ouganda et à l'Uruguay pour la mise en oeuvre de leurs plans de recherche. En outre, des études de diagnostic ont été effectuées sur les systèmes de recherche de l'Algérie, de la Namibie et du Yémen.

Avec leur accord, l'ISNAR a désigné deux pays — l'Ouganda et l'Équateur — devant collaborer en tant que partenaires à long terme à son mécanisme de développement institutionnel global (DIG). Dans le cadre de ce dispositif, l'ISNAR travaille de manière intensive avec un petit nombre de pays sélectionnés sur une série de questions ayant trait aux politiques et à la gestion de la recherche. Des efforts concertés sont déployés dans ce cadre afin d'adapter les outils et méthodes mis au point par l'ISNAR et de les transférer à ces pays. Cette collaboration constitue également pour l'ISNAR une expérience d'apprentissage lui permettant d'améliorer ses services pour l'ensemble des pays qui sont ses clients.

En Ouganda, un expert détaché par l'ISNAR a assuré un appui permanent au NARO, principal organisme de recherche agricole de ce pays. Le programme de travail du DIG consiste à fournir des conseils et une formation sur les divers aspects de la gestion : structure institutionnelle, systèmes d'information sur la recherche et sur la gestion, gestion des ressources humaines et des finances, planification, suivi et évaluation des programmes, réseaux de recherche et liaison avec le transfert de technologie. Ces services sont assurés par le personnel du siège ou par des consultants. Un projet similaire doit être mis en oeuvre en Équateur avec un appui venant du siège.

L'ISNAR a détaché en Tanzanie un expert qui a apporté un appui de nature générale au Département ministériel de la

recherche et de la formation. Ainsi qu'il est mentionné plus haut, l'un des axes de cette assistance a été l'introduction du système INFORM.

Enfin, l'année 1993 a été marquée par une contribution spéciale de l'ISNAR au renforcement de la recherche agricole en Afrique. L'un des directeurs de programme de l'ISNAR a présidé un groupe de travail international constitué avec l'assistance du Programme spécial pour la recherche agricole en Afrique (SPAAR). Ce groupe de travail a pour charge de préparer un « cadre d'action » afin de relancer la recherche en Afrique de l'Ouest et centrale. Les ministres de l'Agriculture de la région ont entériné le rapport intérimaire et les recommandations de ce groupe de travail.

### *Formation à la gestion*

Deux projets de formation à la gestion de la recherche se sont poursuivis. Le premier consiste en une série d'activités de formation menées conjointement avec le KARI au Kenya. L'ISNAR a apporté un appui direct à trois des quatre cours organisés durant l'année. Le deuxième projet de formation, mis en oeuvre en collaboration avec la SADC et l'ESAMI, s'adresse aux responsables de recherche de la région de l'Afrique australe et se déroule à l'ESAMI, institut de gestion régional basé en Tanzanie. Un expert de l'ISNAR détaché en poste assure la coordination du projet.

Dans le cours de l'année, le Service de formation a continué d'appuyer les activités de formation des programmes de l'ISNAR. Il a notamment travaillé à l'élaboration de modules de formation sur la planification et la définition des priorités de recherche.

### *Services de gestion de l'information (IMS)*

Le personnel des IMS a travaillé avec le Comité de publication de l'ISNAR au remaniement du programme de publication et au lancement de trois nouvelles séries : Guides pratiques pour la gestion de la recherche, Rapports de recherche et Notes informatives. Les IMS ont également effectué une

enquête sur le profil des lecteurs afin de permettre à l'ISNAR de mieux cibler ses publications.

Parmi les principales tâches accomplies durant l'année, une nouvelle liste de diffusion informatisée a été élaborée et mise en place sous la direction du Service de l'informatique, pour les besoins quotidiens de l'ensemble du personnel.

Au-delà de leurs fonctions d'appui purement interne, les IMS ont apporté une assistance aux SNRA de l'Inde et du Soudan dans les domaines de la gestion de l'information. En Inde, ils ont aidé à rédiger une stratégie nationale devant déboucher sur un « système d'information sur la recherche agricole » qui permettra aux chercheurs indiens de tirer pleinement parti des technologies nouvelles de l'informatique et des télécommunications. Au Soudan, l'ISNAR a aidé l'Agricultural Research Corporation à analyser ses besoins et priorités en matière d'informatisation.

Au mois de janvier, les IMS, en coopération avec le CTA et le CAB International, ont organisé et accueilli une consultation d'experts sur les besoins des SNRA en matière de gestion de l'information. Des représentants de SNRA, de bailleurs de fonds et d'autres centres du GCRAI ont participé à cette consultation.

### *Publications*

L'ISNAR a produit pendant l'année un total de 58 publications destinées à être distribuées à l'extérieur, y compris celles à diffusion restreinte. Ce total comprend 26 publications officielles imprimées : des Rapports de recherche, un Guide pratique pour la gestion de la recherche, des Notes informatives, le Rapport annuel et l'ISNAR en bref. La plupart ont été produites avec l'assistance directe des Services de publication. Le total inclue également de la littérature grise (tel: les Documents de discussion), dans certains cas imprimée, dans d'autres photocopiée en vue d'une diffusion limitée. En outre, le personnel a produit, parfois en collaboration avec d'autres auteurs, 82 documents, chapitres de livres et articles publiés à l'extérieur.

### *Consultants*

L'ISNAR a fait appel en 1993 aux services de 60 consultants ou firmes de consultation externes.

### *Situation financière*

En 1993, le budget de fonctionnement total de l'ISNAR s'est élevé à 10,323 millions de dollars. Sur ce montant, 5,989 millions

étaient financés par le budget central non restreint, et le reste par le budget central restreint, des financements de projets spéciaux, des remboursements de services rendus et des revenus divers. Par rapport à 1992, cela représente une baisse de 3,6 % du montant global des dépenses de l'ISNAR. Tandis que le budget central non restreint a diminué de près de 9 %, l'ensemble du budget central restreint et des autres ressources a augmenté de quelque 3,4 %.

## Resumen Ejecutivo

El ISNAR, con sede en La Haya, Países Bajos, es uno de los centros que forma parte del Grupo Consultivo para la Investigación Agrícola Internacional (GCIAI). Su mandato consiste en ayudar a los países en desarrollo a mejorar el desempeño de sus sistemas nacionales de investigación agrícola (SNIA) y organizaciones, promoviendo el establecimiento de políticas apropiadas para la investigación agrícola, de instituciones que se dediquen a la investigación orientada a la sostenibilidad agropecuaria, y a una mejor administración de la investigación. Los servicios del ISNAR buscan en última instancia beneficiar a los consumidores y productores de los países en desarrollo y proteger el medio ambiente natural.

En años anteriores, el informe anual del ISNAR ha sido publicado por separado en inglés, español y francés. Debido a la actual situación de escasos recursos financieros, la dirección del ISNAR ha decidido publicar el informe anual de 1993 sólo en inglés, como una medida para ahorrar costos. Sin embargo, con el fin de brindar un servicio a nuestros lectores, este resumen ejecutivo será publicado en inglés, francés, español y árabe. Este resumen resalta las principales actividades del año 1993 y aspira a hacer notar los asuntos que preocupan mayormente a los SNIA, a sus representantes, y a los formuladores de políticas. En este resumen no se describe el trabajo desarrollado por ISNAR en detalle.

### *La Junta Directiva*

Nicole Senécal, vice-presidente (oficina multilateral) de la Agencia Internacional Canadiense para el Desarrollo (CIDA), fue elegida presidente de la Junta Directiva del ISNAR. Su servicio a la junta comenzó en octubre. La Sra. Senécal, sucede a John Dillon de Australia, quien se unió a la junta directiva en 1986 convirtiéndose en presidente de la misma en 1990. Asimismo, durante este año, dos otros miembros de la directiva, finalizaron su servicio. La junta

directiva del ISNAR tiene ahora 14 miembros, incluyendo el director general. Además, cuenta con un representante de FAO, nominado constitucionalmente, que asiste como observador.

### *Ensayo sobre el tema manejo de los recursos naturales y el medio ambiente y la ampliación de la agenda de la investigación agrícola*

El informe anual de 1993 comienza con un ensayo sobre el tema Manejo de los Recursos Naturales y el Medio Ambiente: Ampliación de la Agenda de la Investigación Agrícola.

Un mensaje clave de este ensayo es que un nuevo paradigma, tanto científico como organizativo, es necesario si las metas que se desean alcanzar, tanto en el aumento de la producción como en la protección de los recursos naturales, han de combinarse con éxito. Desde hace varios años han ido surgiendo maneras integrales de enfocar los problemas científicos de la producción agrícola orientada a la sostenibilidad y aparentemente se va a continuar en esta dirección. La Agenda 21, el manifiesto de la Conferencia de las Naciones Unidas sobre el Medio Ambiente y Desarrollo, realizada en 1992, ha ayudado a identificar, entre otras cosas, los nuevos rumbos que la investigación deberá tomar así como los problemas que tendrá que resolver.

La formulación de políticas para la investigación, la planificación de la investigación, el establecimiento de prioridades, la ejecución y la evaluación, necesitan herramientas analíticas más sofisticadas que las que se han usado hasta ahora. Los administradores de la investigación necesitarán involucrarse intensamente en la teoría de sistemas productivos, el análisis económico y otras especialidades. El diseño de sistemas de cultivos, de crianza de ganado, y otros sistemas de producción, así como los cambios necesarios en las políticas, tendrán

que tomar en cuenta cada vez más los costos y beneficios del medio ambiente y del aspecto social, que no son valorizados por el mercado actual.

La planificación de los sectores - agrícola, salud, educación, comunicación, agua, transporte, y otros - será especialmente importante a medida que se consideren nuevos factores en los proyectos de investigación y desarrollo. La investigación agrícola puede contribuir significativamente a esta planificación.

Para tratar algunos aspectos de la sostenibilidad también se requerirá cambios en la estructura y el manejo de las organizaciones de investigación. Se necesitará realizar alguna reorganización, con el fin de asegurar un planeamiento integrado dentro del sistema de investigación agrícola, y para mantener buenos vínculos con los protagonistas fuera del sistema, quienes tienen también responsabilidad en el desarrollo sostenible. Los programas de capacitación y planificación de los recursos humanos deberán ser capaces de responder a las necesidades de una nueva integración de conocimientos científicos.

Este ensayo da evidencia reciente del compromiso de los SNIA en abordar los problemas de sostenibilidad. A su vez, informa que esta tarea será muy difícil para los países con escasos recursos y con grandes problemas de pobreza y hambre. En estos casos, cuanto más se posterga la toma de acción, es más grande el riesgo de hambre y degradación medioambiental para las generaciones venideras.

Por su lado, los donantes no deben olvidarse que el desarrollo sostenible ocurre en el contexto de la vida real de los agricultores, otros productores, y los consumidores, a menudo muy pobres, quienes tienen que luchar por sobrevivir. Los niveles de nutrición en muchos países en desarrollo son todavía inadecuados y probablemente la población mundial se duplicará en los próximos 100 años. La agricultura orientada a la producción y la investigación agrícola, por lo tanto, no pueden ser relegadas a un rol mínimo. Sin ellas, será virtualmente imposible aliviar la pobreza humana, una condición que inevitablemente conduce a la degradación me-

dioambiental. Una inversión fuerte y estable en la investigación agrícola es crucial para el futuro.

### *ISNAR y los sistemas nacionales trabajando juntos en aspectos de sostenibilidad*

Este ensayo comprende además una reciente descripción de las actividades de ISNAR en el área de sostenibilidad y la investigación del manejo de los recursos naturales (NRM), y su efecto en los SNIA. Esta incluye la colaboración con las organizaciones de investigación en Bután y Kenia; la investigación para desarrollar métodos para el establecimiento de prioridades a nivel regional basados en principios agroecológicos, inicialmente para América Latina; un taller sobre el uso del análisis de sistemas aplicados; y la creación de una base de datos bibliográfica sobre los aspectos de la gestión y el manejo de los recursos naturales. Para integrar éstas y otras actividades pertinentes, ISNAR ha establecido un comité inter-programas en los temas de NRM.

### *El trabajo de los programas y servicios*

La sección principal del informe anual informa sobre el servicio de asesoría del ISNAR, la investigación, la capacitación y las actividades de información en el rango de las áreas políticas y administrativas. Estas áreas están divididas en tres temas principales y amplios sobre los que el programa de ISNAR está organizado.

Estos programas son:

- Políticas de Investigación y Estrategias del Sistema (RPSS)
- Diseño y Manejo del Programa de Investigación (RPDM)
- Manejo de las Organizaciones y de los Recursos (MOR)

La coordinación de la asesoría a países y el apoyo a los SNIA se asegura a través de la unidad de Servicios de Colaboración y Capacitación (CST). CST y los tres programas mencionados anteriormente reciben apoyo de las siete unidades que conforman los Ser-

vicios de Manejo de la Información (que desempeña también un rol externo en apoyo de los SNIA) y los Servicios Administrativos.

### *Actividades temáticas*

#### **Políticas y sistemas**

- Durante varios años ISNAR ha recopilado y analizado la información sobre niveles de personal, las tendencias de financiamiento y otros aspectos de los sistemas nacionales de investigación agrícola en el mundo. Los formuladores de políticas y los planificadores del sistema necesitan esta clase de información. En 1993, el trabajo en esta área continuó con un enfoque en la región de África sub-Sahariana. Se produjo resúmenes estadísticos de cinco países, y otros diez están en proceso.
- El programa de políticas está investigando el rol de las redes de investigación agrícola regionales en el fortalecimiento de los sistemas nacionales. Las regiones identificadas para esta nueva área de trabajo son África Oriental y África Occidental.
- Continuando con el plan piloto iniciado en Ghana en 1992, cuatro estudios de caso sobre los vínculos entre los programas de ajuste estructural y la investigación agrícola fueron completados, y otros dos fueron iniciados. El estudio de caso de Ghana, además del estudio de caso de Indonesia, fueron publicados en la serie de Documentos Informativos del ISNAR. Asimismo, en cooperación con el Instituto de Desarrollo Económico del Banco Mundial, se realizó en marzo, en Nairobi, un seminario de una semana sobre este tema, orientado a los líderes principales de la investigación y a los formuladores de políticas del gobierno.
- El trabajo sobre los vínculos entre los sectores público y privado también continúa con un estudio de caso sobre la situación en Jamaica. Fueron publicados los Documentos Informativos sobre Ecuador y Colombia.
- El proyecto Servicio Intermediario de Biotecnología realiza estudios y proporciona información a los SNIA sobre la biotecnología, los recursos y los conocimientos. Este proyecto produjo dos Informes de Investigación del ISNAR: uno sobre programas de biotecnología en diez países, y el otro sobre los derechos de propiedad intelectual. Asimismo, desarrolló una conferencia sobre la investigación de la biotecnología que se realizó en la sede del ISNAR en noviembre y estableció una base de datos sobre los programas de biotecnología a nivel internacional.
- El manuscrito de un libro principal sobre la teoría y práctica de la planificación de la investigación, establecimiento de prioridades, especialmente en situaciones donde los recursos son escasos, se encuentra en su última etapa de preparación. El enfoque de este libro se centra en las herramientas a utilizarse en el análisis económico.
- El estudio del ISNAR sobre el manejo de la investigación en 50 países pequeños se completó durante el año. Este estudio sobresalta la importancia de estos países para pactar alianzas científicas con las fuentes externas de tecnología. También, subraya la necesidad de una mayor investigación en situaciones donde los países pequeños puedan beneficiarse entre ellos de las redes de la investigación y de los 'efectos beneficiosos adicionales' de la tecnología.

### *Programa de diseño y manejo*

- Se implementó la segunda fase de un proyecto principal de ayuda a los países de Latinoamérica y el Caribe para fortalecer su capacidad de planificación, seguimiento y evaluación. Varias decenas de instituciones nacionales están participando en este proyecto regional. Se desarrollaron, ensayaron y produjeron los materiales de capacitación y se organizó un curso para los participantes en los proyectos de los países andinos. Asimismo,

mo, ISNAR colaboró con CAB Internacional en la publicación de un manual de referencia sobre seguimiento y evaluación de la investigación agrícola que será también publicado en español.

- Se publicó un informe de investigación sobre los vínculos entre los sistemas de investigación y las agencias de transferencia de tecnología. Este proyecto resume los resultados de un estudio multinacional del ISNAR. Un investigador americano en licencia sabática, trabajó con el personal del ISNAR en la preparación y el ensayo de materiales de capacitación para los administradores, tomando como base éste y otros trabajos, en el desarrollo de vínculos con los usuarios de la tecnología. Además, con el fin de ampliar su trabajo en este tema, el programa RPDM inició un proyecto para estudiar los vínculos del sistema de investigación con las organizaciones de agricultores. Tres estudios de caso de países se están llevando a cabo: Kenia, Ghana y Burkina Faso.
- Se inició la primera fase de un proyecto de investigación sobre el rol y las contribuciones de las universidades en la investigación agrícola. Las universidades y los institutos de investigación de Benin y Nigeria están colaborando con ISNAR en este proyecto. Se están desarrollando esfuerzos para asegurar la participación de otros países de África.
- Tres universidades europeas - Universidad de Leuven en Bélgica, Universidad de Reading en el Reino Unido y la Universidad Agrícola de Wageningen en los Países Bajos, colaboraron con el ISNAR en el desarrollo de un programa de maestría en la administración de la investigación agrícola. Este programa está dirigido a los administradores de la investigación de África, el Caribe y los países del Pacífico.

### *Manejo de las Organizaciones y de los Recursos*

- La publicación Guías para la Planificación y el Diseño de Edificios para la Investigación Agrícola fue la primera publicación de la serie Guías Prácticas para la Administración de la Investigación. Esta es una guía práctica bastante ilustrada dirigida a los administradores principales de las organizaciones de investigación agrícola, los arquitectos, constructores, agencias donantes, y otras entidades involucradas en la construcción de instalaciones de investigación, remodelación y mantenimiento de edificios. El principal enfoque de esta guía es la correcta utilización de las oficinas, laboratorios, y los edificios auxiliares en países en desarrollo, principalmente en las regiones tropicales.
- Con la ayuda del personal del programa MOR (Manejo de las Organizaciones y de los Recursos), el sistema automatizado de información sobre administración, INFORM, comenzó a operar en su completa capacidad en ISRA, la institución líder en la investigación agrícola de Senegal. INFORM es un sistema de información desarrollado por ISNAR para el uso de los SNIA. INFORM también fue implementado en los SNIA de Uganda y Tanzania. Asimismo, se inició una revisión global de los esfuerzos desarrollados por ISNAR hasta la fecha para la introducción de INFORM en diez países.
- En el área de administración financiera el personal del programa MOR asesoró a cuatro países: Mali, Marruecos, Tanzania y Uganda. El trabajo de Mali incluyó la participación del ISNAR en una misión de evaluación del Banco Mundial que trazó el camino para mayores inversiones con la finalidad de fortalecer el sistema de investigación agrícola de ese país.
- ISNAR completó un estudio de caso sobre la participación de la mujer en el sistema de investigación agrícola de las

Filipinas. Las mujeres representan el 53% de los científicos con grados de maestría o doctorado. De acuerdo a los estándares internacionales este porcentaje es bastante alto. Sin embargo, se encontró que las mujeres estaban subrepresentadas en puestos tanto científicos como administrativos. Este estudio es un informe preliminar, comprende recomendaciones y prácticas para maximizar la contribución de las mujeres profesionales en la investigación agrícola.

- El personal del programa MOR también comenzó a trabajar en dos áreas del desempeño institucional: evaluación y puntos de referencia. En la primera, se está desarrollando un conjunto de indicadores para ayudar a los administradores de los SNIA a medir y evaluar de que manera su institución está cumpliendo con su misión científica (efectividad) y de que manera están siendo manejados los recursos disponibles para realizarla (eficiencia). En la segunda área de este programa se identifica y describe ejemplos de buena administración en los SNIA, los llamados puntos de referencia, de modo que otras instituciones puedan aprender de su experiencia.
- La evaluación del desempeño de los investigadores es un área crucial y problemática de la gestión de los recursos humanos para los SNIA. El personal del programa MOR, en colaboración con los institutos de Marruecos y Senegal, inició el trabajo sobre el diseño de sistemas de evaluación del desempeño, cuyo objetivo es maximizar y reconocer las contribuciones de los científicos.

### *Colaboración entre programas*

Cabe mencionar una actividad importante que recae en la especialización sobre un determinado tema del personal de algunas unidades del ISNAR. Dos de los miembros del ISNAR trabajaron como editores invitados en la edición de agosto 1993 de la revista internacional de capacitación, *Administración Pública y Desarrollo*. El trabajo comprendía la edición de 11 documentos

sobre el manejo de la investigación agrícola en los países en desarrollo - siete de estos documentos fueron editados por los miembros del ISNAR y los otros cuatro, por expertos externos.

### *Servicios de colaboración con los países*

Los expertos del ISNAR colaboraron con cerca de 40 países en el presente año. En algunos casos, la colaboración se realizó a través de misiones de alto nivel para dar asesoría y apoyo a los administradores de los SNIA sobre cambios importantes o eventos que deberían llevarse a cabo en sus sistemas de investigación - como por ejemplo, actividades de planificación. En otros casos, el personal del ISNAR prestó servicios de capacitación en el país sobre temas individuales, realizó estudios de caso del país, o ayudó con el diseño y la introducción de mecanismos o sistemas específicos para la gestión y el manejo.

Un área importante de colaboración directa a los países fue el desarrollo de planes de investigación nacionales o subnacionales. ISNAR asistió a Burkina Faso, Jordania, Líbano, Mauritania y Mozambique. En el caso de la ejecución de los planes de investigación, se asesoró y apoyo a Bután, Mali, Nigeria, Tanzania, Uganda y Uruguay.

Se completaron también las misiones de diagnóstico de los sistemas de investigación de Algeria, Namibia y Yemen.

A través de convenios de colaboración, ISNAR designó a dos países — Uganda y Ecuador — como colaboradores a largo plazo mediante su servicio de desarrollo institucional integral (CID). Bajo estos convenios, ISNAR trabaja intensivamente con un número de países pequeños en el rango de las áreas políticas y de la gestión. Se hará un esfuerzo conjunto para adaptar y transferir las herramientas y métodos desarrollados por ISNAR al país correspondiente. Esta estrecha relación será además una experiencia de aprendizaje para el ISNAR, la cual le permitirá mejorar su servicio a otros países.

En Uganda, un especialista de ISNAR asignado a este país prestó apoyo continuo a NARO, la organización líder de la investi-

gación agrícola. El programa de trabajo de CID comprende servicios de asesoría, capacitación en un amplio rango de los componentes del manejo: estructura institucional, sistemas de información científica y de la gestión, manejo de personal y administración financiera, planeamiento de los programas, seguimiento y evaluación, investigación de las redes y de los vínculos en la transferencia de tecnología. Estos servicios se brindan a través del personal apostado en la sede o consultores externos. El proyecto de Ecuador brinda un programa similar de trabajo con el apoyo desde la sede del ISNAR.

Un funcionario del ISNAR con base en Tanzania prestó amplios servicios de apoyo al Departamento de Investigación y Capacitación. Como se mencionó anteriormente, el objetivo principal de este trabajo fue la introducción de INFORM.

Finalmente, también es digno de mención la contribución especial del ISNAR en 1993, en el fortalecimiento de la investigación agrícola en África. Un director de programa del ISNAR, prestó servicios como presidente de una comisión especial formada con la ayuda del Programa Especial para la Investigación Agrícola (SPAAR). La comisión especial se encargará de preparar un "marco de acción" para revitalizar la investigación en África Occidental y Central. Los ministros de agricultura de la región han aprobado el informe interino y las recomendaciones de esta comisión especial.

### *Capacitación*

Se continúa trabajando en los dos proyectos principales de capacitación en el área de manejo de la investigación. Uno es una serie de actividades con KARI en Kenia. ISNAR apoyó directamente a tres de los cuatro eventos de capacitación durante el año. El otro es un proyecto conjunto de SADC, ESAMI e ISNAR, dirigido a administradores de la investigación en la región de África del Sur. Tiene su base operativa en ESAMI, un instituto regional de la gestión en Tanzania. Un miembro de ISNAR apoya este trabajo.

Durante el año, la Unidad de Capacitación continuó apoyando el trabajo en este

campo de los miembros del personal de ISNAR. Particularmente, desempeñó un rol clave en el desarrollo de módulos de capacitación, sobre el planeamiento de la investigación y el establecimiento de prioridades.

### *Servicios de Manejo de la Información (IMS)*

El personal del programa IMS trabajó con el Comité de Publicaciones del ISNAR en el rediseño y la introducción de tres nuevas series de publicaciones: Guías sobre el Manejo de la Investigación, Informes de Investigación y Documentos Informativos. IMS también realizó una encuesta entre sus lectores con el objetivo de ayudar al ISNAR a mejorar el enfoque de sus publicaciones.

Una tarea importante que el IMS logró cumplir durante el año, bajo el liderazgo de la unidad de cómputo, fue el diseño y la introducción de una nueva base de datos de direcciones y listas de distribución. Esta base de datos será usada diariamente por todo el personal del ISNAR.

En adición a los servicios internos que brinda, el IMS colaboró con los SNIA de India y Sudán en temas sobre el manejo de la información. En India el trabajo se centró en la preparación del borrador de una estrategia para el sistema de investigación agrícola a nivel nacional, con el fin de que los investigadores agrícolas de ese país puedan maximizar el uso de las nuevas tecnologías en los campos de telecomunicaciones y computadoras. En Sudán, el ISNAR ayudó a la Corporación de Investigación Agrícola con un análisis de sus prioridades y necesidades de computación.

En enero, el IMS organizó y realizó una consultoría de expertos sobre las necesidades de los SNIA en el manejo de la información, en colaboración con el Centro Técnico para la Cooperación Agrícola y Rural y CAB Internacional. Participaron en esta consultoría los representantes de los SNIA, de agencias donantes, y de otros centros del GCIAI.

### *Publicaciones*

ISNAR produjo durante el año un total de 58 documentos principales para distribu-

ción externa, incluyendo documentos con circulación restringida. Dentro de estos documentos, 26 son publicaciones oficiales del ISNAR tales como Informes de Investigación, Guías sobre el Manejo de la Investigación, Documentos Informativos, el Informe Anual y el Boletín Informativo. La mayoría de estas publicaciones fueron producidas con la ayuda directa de la unidad de Servicios de Publicación. Este total también incluye las publicaciones 'no oficiales' (por ej.: Documentos de Discusión), en algunos casos fotocopiados debido a su circulación limitada, y en otros, impresos. Además, los miembros del personal de ISNAR produjeron 82 documentos, capítulos de libros y artículos publicados por otras organizaciones, algunas veces como co-autores.

### *Consultores*

Durante el año ISNAR contrató los servicios de 60 consultores externos o equipos de consultoría.

### *Situación financiera*

Durante 1993, el total de gastos de operación del ISNAR fue de US\$ 10.323 millones. De los cuales, US\$ 5.989 millones provinieron de donaciones irrestrictas al presupuesto central y el resto provino de donaciones restringidas al presupuesto central, proyectos especiales, reembolsos por servicios prestados y otros.

Esto representa una disminución de 3.6% en los gastos totales de ISNAR comparado con el año 1992. Mientras que los fondos del presupuesto central irrestricto disminuyeron casi un 9%, la combinación de los fondos del presupuesto central restringido y otros recursos financieros aumentaron cerca de 3.4%.

## الملخص التنفيذي

مركز الخدمات الدولية للبحوث الزراعية "أسنار" عضو في المجموعة الاستشارية للبحوث الزراعية الدولية ومقره الرئيسى مدينة لاهاى- بهولندا ، أما دوره فهو معاونة النول النامية على ادخال تحسينات لها صفة النيمومة على أداء الأنظمة والمؤسسات الوطنية للأبحاث الزراعية ، وذلك من خلال تشجيع السياسات المناسبة للبحوث الزراعية ، وأيضا من خلال المؤسسات القادرة على الاستمرار ، والادارة المطورة . وتهدف خدمات "أسنار" فى منتهاها الى استعادة المستهلك والمنتج ، والى حماية البيئة الطبيعية .

وقد كان التقرير السنوى فى السنوات الماضية ، يصدر فى طبعات منفصلة بكل من اللغة الانجليزية والفرنسية والاسبانية ، ولكن بمعطيات الموت الحالى من ضيق نطاق التمويل، فقد قررت ادارة المركز ، كوسيلة لضغط النفقات ، اصدار التقرير السنوى الكامل لسنة ١٩٩٣ باللغة الانجليزية فقط .

ومع ذلك ، وكخدمة للقراء ، فان هذا الملخص التنفيذى يصدر لعام ١٩٩٣ بكل من اللغة الانجليزية والفرنسية والاسبانية والعربية ، وذلك لأبراز أهم نشاطات هذا العام ، ويهدف أضعاف معنى على القضايا الرئيسية التى هى محط اهتمام الأنظمة الوطنية للبحوث الزراعية فى النول النامية بما فيها من مدراء ومتخذى القرار . على أن عمل "أسنار" المذكور هنا لا يتضمن كل الأنشطة التى يقوم بها المركز .

### مجلس الأمناء:-

اختيرت نيكول سينيكال نائبة الرئيس لشئون التعاون متعدد الأطراف بالوكالة الكندية للتعمية الدولية ، كرئيسة لمجلس أمناء المركز . وقد بدأت مهام منصبها فى أكتوبر ١٩٩٣ ، كخليفة للرئيس السابق البروفسور جون ديلون الاسترالى الجنسية الذى انضم لعضوية مجلس أمناء المركز فى عام ١٩٨٦ وأصبح رئيسا له فى عام ١٩٩٠ . وخلال عام ١٩٩٣ انتهت كذلك مدة العضوية عضوان آخران من مجلس الأمناء بعد أن اكتملا العضوية لمدة ست سنوات . ويضم مجلس أمناء "أسنار" حاليا أربعة عشرة عضوا بما فيهم المدير العام ، بالإضافة الى ممثل عن منظمة الأغذية والزراعة التابعة للأمم المتحدة ، معين كمراتب بمقتضى الدستور .

### موضوع ادارة الموارد الطبيعية وتوسيع جدول أعمال الأبحاث الزراعية :

يبدأ التقرير السنوى لعام ١٩٩٣ بمقال موضوعى عنوانه " ادارة الموارد الطبيعية والبيئة : توسيع جدول أعمال البحوث الزراعية " ، ... والرسالة الأساسية لهذا الموضوع هى بلورة صيغ جديدة ، على المستوى العلمى والتنظيمى ، ، لذا ما أريد أن ترتبط بنجاح أهداف زيادة الانتاج بأهداف المحافظة على قاعدة الموارد الطبيعية .  
وحاليا ، ومنذ بضعة سنوات ، ظهرت - وما زالت تظهر - طرق متكاملة للتعامل مع المشاكل العلمية المعقدة الخاصة بالانتاج الزراعى القابل للاستمرار .

وقد ساهم البيان الرسمي لمؤتمر الأمم المتحدة للبيئة والتنمية لعام ١٩٩٢ المتضمن جدول أعمال القرن ٢١ - بالإضافة إلى العديد من الأمور - في تحديد الاتجاهات الجديدة التي سيحتاج البحث أن ينحى إليها ، والمشكلات التي سيضطر إلى حلها ويحتاج وضع سياسات الأبحاث - مثله مثل تخطيط الأبحاث ، وتحديد الأولويات ، والتطبيق والتقييم - إلى وسائل تحليلية أكثر حنكة وتعقيدا من تلك التي كانت تستعمل سابقا بصفة عامة ، ٠٠٠ ، وعليه ، فسيحتاج المدراء أن يتعاملوا عن كثب مع نظرية الأنظمة ، والتحليل الاقتصادي ، وما إلى غير ذلك ٠٠٠ ، وسيصبح لزاما على أنظمة المحاصيل ، والأنتاج الحيواني - وغيرها من الأنظمة الإنتاجية - وأيضا على المتغيرات اللازمة في السياسات ، أن تأخذ في الاعتبار - بصفة متزايدة - العوامل البيئية ، وعنصر التكاليف الاجتماعية والفوائد التي لا تؤخذ بالحسبان في مقياس السوق .

كما سيصبح التخطيط عبر القطاعات : كالزراعة ، والصحة ، والتعليم والاتصالات ، والمياه ، والمواصلات ٠٠٠ وغيرها ، مهما بصورة خاصة أن يأخذ بالأعتبار عوامل جديدة في مشاريع الأبحاث والتنمية ، ٠٠ ، وتستطيع البحوث الزراعية أن تسهم بالكثير في مثل هذا التخطيط .

وسيتطلب التعامل مع القضايا التي لها صفة الاستمرارية وطول البقاء ، تغييرا في الهياكل التنظيمية وإدارة المؤسسات البحثية وقد يتطلب الأمر بعضا من إعادة التنظيم الكلي لضمان أن يكون نظام البحث الزراعي متكامل التخطيط .. وللحفاظ على روابط جيدة مع المعنيين من الخارج الذين لهم أيضا نصيب في التنمية القابلة للاستمرار . وعلى برامج التدريب والتخطيط للموارد البشرية الاستجابة لمتطلبات المزيج الجديد من المهارات العلمية .

ويشير موضوع إدارة الموارد الطبيعية إلى دليل حديث لالتزام الأنظمة الوطنية للبحوث الزراعية بمعالجة ما يتعلق بفكرة القابلية للاستمرار ، غير أنه حذر من أن المهمة ستكون شاقة جدا بالنسبة للدول ذات الموارد الهامشية (الضئيلة) والمشاكل الملحة كالقفر والجوع ٠٠ ومن ثم ، فقد تم تأجيل الأنشطة طويلة الأمد ، ولو أن ذلك يزيد من خطر المجاعة والتدهور البيئي للجيل القادم .

وينبغي أن لا يغيب عن ناظر النول المعولة والمساعدة للمعونة حقيقة أن التنمية القابلة للاستمرار تتأني في محيط الحياة الفعلى للمزارعين ، والمنتجين الأخرين ، والمستهلكين الذين عانة ما يكونون شديدي الفقر ، ويصارعون من أجل البقاء . ولا تزال مستويات التغذية في العديد من الدول النامية غير كافية ، بينما يحتمل أن يزداد تعداد سكان العالم إلى الضعف في خلال المئة عام القادمة ٠٠٠ ، ومن ثم ، فلا يمكن إهمال دور الأبحاث الزراعية والزراعة إنتاجية التوجه ، وجعلها ينحدران إلى مرتبة أقل ، حيث أنه بدون ذلك يستحيل تقليل معدل الفقر والمجاعة بصورة ملموسة ، وهي حالة تؤدي حتما إلى التدهور البيئي . وعليه ، فإن الاستثمار بصورة قوية ووطيدة في الأبحاث الزراعية ، حاسم جدا لمستقبل البشرية والكون .

## "أسسنا" والنظم الوطنية:-

### العمل المشترك فيما يتعلق بمسألة "القابلية للاستمرار"

ويصحب المقال الموضوعي وصف للأنشطة الحديثة لمركز "سنار" في مجال أبحاث "الاستمرارية" و "إدارة الموارد الطبيعية" . وذلك لأنها تؤثر في نظم الأبحاث الزراعية الوطنية . ويتضمن هذا الوصف:-

١ - التعاون مع هيئات البحث العلمي في بوتان وكينيا ٠٠ البحث الهانف إلى إيجاد واستحداث طرق زراعية قائمة على أسس بيئي لتحديد أولويات البحث على المستوى الإقليمي ، ٠٠ ، بدءا بأمريكا اللاتينية

٢ - ورشة عمل ، للتدريب على تحليل النظم التطبيقية .

٣ - خلق قاعدة بيانات بيبيوجرافية ، تضم بيانا بكل المؤلفات والكتب عن جوانب الإدارة في أبحاث إدارة الموارد الطبيعية .

ولتوحيد تلك الأمور مع الأنشطة الأخرى ذات العلاقة ، شكل مركز "سنار" لجنة لتبانيل البرامج في شأن إدارة الموارد

## دور البرامج والخدمات

ويعتبر التقرير السنوى ، فى جوهره الأساسى ، بتفاصيل عن خدمات "اسنار" الاستشارية ، والبحثية ، وخدمات التدريب ، والأنشطة الاعلامية ، فى العديد من مجالات الادارة والسياسة . وقد تم تقسيم تلك المجالات الى ثلاثة موضوعات أساسية يترتب عليها عمل برنامج "اسنار" .

وهذه البرامج هى :-

- سياسات البحوث واستراتيجيات الأنظمة .
- تصميم وادارة برامج البحوث .
- ادارة المؤسسات والموارد .

ويتأكد التنسيق بين تقديم المشورة المطلوبة محليا وتدعيم نظم الأبحاث الزراعية الوطنية ، من خلال وحدة الخدمات المشتركة والتدريب التابعة لـ "اسنار" ، فى حين أن تلك الوحدة . بالإضافة الى الثلاثة برامج المذكورة أعلاه ، تدعمها الوحدات السبعة التى تتكون منها "خدمات ادارة المعلومات - آى.ام.اس" لمركز الخدمات الدولية "اسنار" التى لها أيضا وظيفة خارجية فى دعم نظم البحوث الزراعية الوطنية و"الخدمات الادارية" .

## النشاطات الموضوعية :-

### • النظم والسياسات:-

- قام مركز الخدمات الدولية "اسنار" ، منذ عدة سنوات ، بجمع وتحليل بيانات عن مستويات الماملين ، وتوجهات التمويل وبعض الجوانب الأخرى من نظم البحث الزراعى الوطنى حول العالم ، . حيث يحتاج متخذوا القرارات ومخططوا النظم الى هذه النوعية من المعلومات . وفى عام ١٩٩٣ استمر العمل فى هذه المجال ، مع التركيز على المناطق شبه الصحراوية فى أفريقيا . وقد تم عمل احصائيات موجزة عن خمسة دول . وجرى اعداد عشرة آخرين .

- يتقصى برنامج السياسات نور شبكة البحوث الزراعية الإقليمية فى تقوية وتعزيز النظم الوطنية ، . والمواقع الاستهلاكية لذلك المجال الجندى من العمل ، هى افريقيا الشرقية وافريقيا الغربية .

- تلا الدراسة الاستدلالية التى جرت فى غانا عام ١٩٩٢ ، اتمام أربعة دراسات لقضايا وطنية حول الروابط بين برامج التعديل التركيبى والبحوث الزراعية ، بينما تم البدء فى عمل اثنين آخرين ، وقد أدرج "اسنار" ، فى سلسلة نبداته التى يصدرها بالتالى ، دراسة غانا . بالإضافة الى دراسة أخرى عن اندونيسيا . وقد نظمت أيضا ندوة عن ذلك الموضوع لكبار مسؤولى البحوث الزراعية ومتخذى القرار فى الحكومات ، خلال شهر مارس ١٩٩٣ ، فى نيروبي . وذلك بالتعاون مع معهد التنمية الاقتصادية التابع للبنك الدولى .

- أيضا ، استمر العمل البحثى حول الروابط بين القطاع العام والقطاع الخاص . وقد اتخذ الوضع فى جامايكا كحالة للدراسة العملية والتطبيق ، . فى حين صدرت نبدات أرشادية عن الاكونور وكولومبيا .

- تقوم "الخدمات البيوتكنولوجية الوسيطة" بعمل الدراسات والأمداد بالمعلومات حول المسائل البيوتكنولوجية ، والموارد ، والمهارات ،... لنظم الأبحاث الزراعية الوطنية. وقد صدر لـ "اسنار" تقريرين عن الأبحاث : أحدهما عن البرامج البيوتكنولوجية فى عشرة دول ، والأخر عن براءات الاختراع .

كما نظمت أيضا - بمقر المعهد ، فى شهر نوفمبر ١٩٩٣ - ندوة استشارية دولية حول الأبحاث البيوتكنولوجية ، وأسست قاعدة بيانات عن البرامج البيوتكنولوجية الدولية .

- قارب أعداد المضمون العلمي للكتاب الهام عن "النظرية والتطبيق في تخطيط الأبحاث وتحديد الأولويات ، وخاصة في ظروف ندرة الموارد" ، على الانتهاء ، ويتعرض ذلك الكتاب بكثير من التركيز الى وسائل التحليل الاقتصادي .

- اكتملت خلال ١٩٩٣ ، الدراسة التي أجراها "سنار" حول ادارة الأبحاث في خمسين دولة صغيرة ، .. وفيها برزت أهمية صياغة روابط علمية لتلك الدول مع مصادر خارجية للتكنولوجيا ، .. كما اقترحت الحاجة الى مزيد من التقصي عن كيفية استفادة الدول الصغيرة - بطريقة مثلى - من شبكات الأبحاث ومن التكنولوجيا المتاحة والمتوفرة فيما بين الدول .

#### • تصميم وإدارة البرامج :-

- دخل المشروع الهام لمساعدة أمريكا اللاتينية ودول البحر الكاريبي ، والهادف الى تحسين قدراتهم على تخطيط ومراقبة وتقييم البحوث الزراعية ، مرحلته النهائية ، ويشارك في هذا المشروع الاقليمي ، العديد من المعاهد والمؤسسات الوطنية . وقد تم تصميم واختيار وإنتاج وسائل التدريب .. كما نظمت دورة للمشاركين في المشسروع من دول الأنديز بأمريكا اللاتينية . وقد اتفق "سنار" بالتعاون مع "المكتب الزراعي الدولي لدول الكومنولث" على اصدار مصدر أو مرجع أولى باللغة الانجليزية يتناول "مراقبة وتقييم البحوث الزراعية" .. وانذى سوف يصدر أيضا بالاسبانية .

- صدر أيضا تقرير بحثي حول الروابط بين نظم الأبحاث وكالات نقل التكنولوجيا .. يلخص نتائج الدراسة التي قام بها "سنار" لدول متعددة ، وقد ساهم باحث أمريكي (من خلال سنة تفرغ دراسية) في العمل مع فريق "سنار" لاعداد وتجربة الخانات التدريبية للمدراء ، استنادا الى ذلك التقرير ، والى غيره عن الأعمال في ذلك المجال .. مجال الروابط مع مستخدمي التكنولوجيا . وفي توسع عملي عن ذلك الموضوع ، بدأ برنامج تصميم وإدارة برامج البحث - مشروعا لدراسة روابط نظم البحث مع جمعيات واتحادات المزارعين .

وهناك أيضا ، في طور الأعداد ، ثلاث حالات للدراسة في ثلاث دول هم : كينيا وعانسا وبوركينا فاسو .

- دخلت المرحلة الأولى من مشروع بحث حول دور الجامعات ومساهماتها في البحوث الزراعية حيز التنفيذ ، وتتعاون الجامعات ومؤسسات البحث في كل من بنين ونيجريا مع "سنار" في هذا الصدد ، .. غير أن هناك جهود تبذل لتأمين اشتراك دول افريقية أخرى .

- كما تعاونت أيضا ثلاث جامعات أوروبية هي : جامعة "لوفر" ببلجيكا ، وجامعة "زيننج" ببريطانيا وجامعة "اجنيجين" بهولندا ، مع "سنار" في تصميم برنامج للحصول على درجة الماجستير في ادارة البحوث الزراعية ، ويستهدف هذا البرنامج من هم في منتصف حياتهم العملية من المدراء .. من دول افريقيا والبحر الكاريبي ودول المحيط الهادي .

#### • المؤسسات والدوائر :-

- يعتبر الكتاب بعنوان "ارشادات نحو تخطيط وتصميم بنيات البحوث الزراعية" أول منشور ظهر في مجموعة "سنار" الجديدة .. والمسماة " دليل ادارة الأبحاث" ويستهدف هذا الدليل العملي الفني بالايضاح كبار المدراء في مؤسسات البحوث الزراعية ، .. وأيضا المعماريين والقائمين على البناء ومؤسسات منح القروض ، وغيرهم من المشاركين في بناء وتجديد وصيانة المنشآت البحثية .. ويركز الكتاب بصورة أساسية على المكاتب والمختبرات والأبنية الإضافية المساندة في الدول النامية ، وفي المناطق الأستوائية بشكل رئيسي .

- صار نظام ادارة المعلومات "نفورم" ، الذي ابتدعه "سنار" للاستفادة منه في نظم الأبحاث الزراعية الوطنية (نارس) قابلا للتطبيق بالكامل في مناطق خدمات الأبحاث الدولية ، وذلك بمساعدة فريق ادارة المؤسسات والأبحاث . ويعد تطبيق نظام ادارة المعلومات "نفورم" على نظم الأبحاث الزراعية الوطنية (نارس) في كل من أوغندا وتنزانيا تطورا

أيضا . وقد بدأ ، بالإضافة الى ذلك ، عمل مراجعة وحصر شامل ، لمجهودات "اسنار" في تقديم المساعدة الى عشرة دول - حتى تاريخه - بالاستعانة بنظام "نفورم" .

- وفي نطاق ادارة التمويل قدم فريق ادارة الأبحاث المشورة لأربع دول هي : مالى والمغرب وتزانيا وأوغندا . وقد تضمن العمل فى "مالى" مشاركة "اسنار" فى بعثة تقييم جندوى تابعة للبنك الدولى - حيث مهدت الطريق لاستخدام استثمارات كبيرة لتعزيز وتدعيم نظام الأبحاث الزراعية فى البلاد .

- أنهى "اسنار" دراسة عن مشاركة المرأة فى نظام الأبحاث الزراعية فى الفلبين ، حيث وجد أن ما نسبته ٥٣٪ من العلماء الحاصلين على درجة الماجستير أو الدكتوراه ، من النساء ، وهى نسبة مرتفعة على المستوى الدولى وبالرغم من ذلك فقد وجد أن معدل تمثيل المرأة فى المراكز العلمية والإدارية العليا أقل من المفروض . وعليه ، فقد اشتملت الدراسة المذكورة ، والتي وصفت بأنها تقرير مبدئى ، على توصيات خاصة بتصحيح الممارسات ، لجعل نسبة مساهمة الكفاءات من النساء فى مجال البحث الزراعى على أكبر قدر لها .

- بدأ فريق "ادارة الأبحاث" العمل فى مجالين للأداء التنظيمى وهما : "التقييم" و"تسجيل العلامات" ، .. جارى فى أولهما وضع مجموعة من المؤشرات لمعاونة مديرى نظم الأبحاث الزراعية الوطنية على قياس وتقدير مدى نجاح مؤسساتهم فى تحقيق المهمة العلمية (عنصر الفعالية) ، وكيفية التحكم فى المصادر المتاحة لإنجاز ذلك (عنصر الكفاءة) . أما فى المجال الثانى ، فيقوم "اسنار" بتحديد ووصف أمثلة لتطبيقات حسن الادارة فى نظم الأبحاث الزراعية الوطنية (وهو مايسمى بتسجيل العلامات) حتى يتسنى لمؤسسات البحث الأخرى الاقتداء بذلك .

- أن عملية تقييم الأداء الوظيفى للباحثين عملية حرجية وحساسة ، وغالبا ماتكون عملية مليئة بالمشاكل فى ادارة الموارد البشرية لنظم الأبحاث الزراعية الوطنية . وقد بدأ فريق "ادارة الأبحاث" - بالاشتراك مع معاهد فى المغرب والسعال - العمل على تصميم أنظمة جديدة لتقييم الأداء ، تهدف الى زيادة حجم مساهمات العلماء الى الحد الأقصى . . . . . والى مقابلة ذلك بالتقدير والمكافأة .

### الاشتراك فى تبادل البرامج :-

من الحدير بالذكر أيضا ، أن نشاطا هاما أستمد من مهارات العاملين فى الموضوع المشار اليه فى العديد من وحدات مركز الخدمات الدولية "اسنار" ، فقد عمل اثنان من موظفى معهد "أسنار" كضيواف تحريبر للعند الصادر فى أغسطس ١٩٩٣

من جريدة "الادارة العامة والتنمية" - وهى جريدة دولية تعالج موضوعات التدريب والبحث ، والممارسات التطبيقية . وقد تضمن ذلك العمل الأشراف على أعداد ومراجعة احدى عشرة ورقة عن ادارة البحوث الزراعية فى الدول النامية ، سبعة من هؤلاء الأوراق أعد بواسطة العاملين فى "اسنار" بينما الأربعة الآخرون من اعداد مستشارين من الخارج .

### الخدمات التعاونية للدول :-

عمل موظفو "اسنار" فى حوالى ٤٠ دولة خلال العام، وتمثل ذلك فى بعض الحالات ، فى العمون والمشورة المباشرة الى كبار المدراء ، حول تعبيرات أو أحداث رئيسية تعرضت لها أنظمة البحث الزراعية فى تلك الدول . . . . . كالممارسات التخطيطية على سبيل المثال ، . . . . . وفى حالات أخرى ، نظم موظفو "اسنار" تدريبات محلية خاصة بموضوعات مستقلة ، وأعدوا دراسات عن

أوضاع تلك الدول ، كما قدموا المساعدة والعون فيما يختص بتصميم وتقديم آلية ادارة محددة أو نظام بعينه .  
وقد شكلت تنمية خطط البحوث الوطنية أو الإقليمية مجالاً رئيسياً في التعاون المباشر مع الدول ، حيث قدم 'اسنار' العون في ذلك الى كل من بوركينا فاسو ، والأردن ، ولبنان ، وموريتانيا ، وموزمبيق ، وفي حالات تطبيق خطة البحث ، قدمت المشورة والتعزيز الى كل من بوتان ، ومالي ، والبنجر ، وتنزانيا وأروجوأي . وقد تم الانتهاء أيضاً من عمل دراسات تشخيصية لنظم البحث في كل من الجزائر وتامبيا واليمن .

وبالتشاور مع كل من أوغندا والأكوادور ، فقد عين 'اسنار' هاتين الدولتين كشركاء على المدى الطويل ، في آلية التعاون للتطوير المؤسسي الشامل ، التي ينتهجها 'اسنار' ، والتي من خلالها يعمل مركز الخدمات الدولية ، مع عدد قليل من الدول المنتجة ، بكثافة وتغل في سلسلة من قضايا تحليل السياسات والادارة ، وهناك مجهود مضني وملحوظ يبذل لتفكيك وتنظيم وسائل 'اسنار' وطرقه المتطورة الى البلدان المقدم لها العون . كما أن العلاقات الوطيدة هي أيضاً خبرة يجب على 'اسنار' تعلمها ، لكونها سبيلاً لتحسين الخدمات لكل الدول التي تحتاج لتلك الخدمات .

في أوغندا ، تم نوب أحد موظفي 'اسنار' لتوفير العون المستمر للجهاز المعنى بالأبحاث الزراعية الوطنية في البلاد . ويتطلب برنامج العمل للتطوير المؤسسي الشامل ، المشورة والتدريب على عناصر الادارة ، بأوسع نطاق . وتلك تشمل ، التنظيم المؤسسي ، ونظم المعلومات العلمية والإدارية ، وأدارة الماليات وشئون الموظفين وتخطيط البرامج ، والضبط والتقييم ، وشبكات الأبحاث ، والروابط مع وسائل نقل التكنولوجيا . ويتولى موظفو 'اسنار' أو المستشارون الدائمون للمركز القيام بهذه المهام . أما المشروع في الأكوادور فيحمل رؤية مسبقة لبرنامج عمل مماثل ، مع المساندة والدعم من المركز الرئيسي . وفي تنزانيا كذلك ، تم نوب أحد العاملين بـ 'اسنار' لتوفير قاعدة عريضة من المساندة لادارة البحث والتدريب ، وكان أهم ما ركز عليه هو التعريف بنظام الـ 'انفورم' الذي سبق الحديث عنه آنفاً .

وحتاماً ، يسجل لـ 'اسنار' بحدارة مساهمته الخاصة لعام ١٩٩٣ والرامية الى تعزيز عمليات البحث الزراعي في قارة افريقيا . فقد عمل أحد منيرى البرامج في 'اسنار' كرئيس لفريق عمل دولي تم تشكيله بمعاونة البرنامج الخاص للبحث الزراعي في افريقيا ، حيث كلف ذلك الفريق باعداد 'نطاق للعمل' لاهياء عمليات البحوث الزراعية في غرب ووسط افريقيا . وقد اعتمد وزراء الزراعة بالمنطقة التقرير المؤقت للفريق وتوصياته .

### التدريب على الادارة:-

تركز سير العمل ، في مجال ادارة الأبحاث ، على مشروعين رئيسيين ، ويتمثل أحدهما في سلسلة من النشاطات المشتركة مع مركز البحوث الزراعية الكينية ، حيث قدم معهد 'اسنار' مؤازرة مباشرة لثلاث حالات تدريب - من أربعة - خلال العام ، بينما ثانيهما هو مشروع مشترك بين مؤسسة التنمية لجنوب افريقيا ، ومعهد الادارة بجنوب وشرق أفريقيا ، و 'اسنار' . وهو يستهدف منراء البحث في منطقة افريقيا الجنوبية . ولهذا المشروع قاعدة تشغيلية في معهد الادارة بجنوب وشرق أفريقيا - وهو معهد اقليمي للادارة مقره تنزانيا - ويساند ذلك العمل أحد موظفي 'اسنار' .  
وقد استمرت وحدة التدريب ، خلال العام ، في تقديم التعزيز لأعمال التدريب لسديد من العاملين ببرنامج 'اسنار' . وقد لعبت على وجه التحديد ، دوراً رئيسياً في تطوير مقياس التدريب ، على مستوى التخطيط للأبحاث ومستوى تحديد الأولويات .

### خدمة ادارة المعلومات (آي.ام.اس):-

عمل فريق آي.ام.اس مع لجنة 'اسنار' للنشر ، لاعادة تصميم وتقديم سلسلة منشورات 'اسنار' الثلاثة الجديدة ، وهم :-

دليل إدارة الأبحاث وتقارير الأبحاث والنذات الارشادية، كما أجرى الـ آى.ام.اس أيضاً مسحا شاملا حول مجموع الفراء لهذه المطبوعات لمعاونة اسنار لتوجيه منشوراتها بطريقة أفضل .  
وقد حقق فريق الـ آى.ام.اس مهمة عظمى خلال العام، تحت قيادة وحدة الكمبيوتر، الأولى تصميم وتقديم قاعدة بيانات عناوين المؤسسات والأفراد، وهذا مايخدم الاحتياجات اليومية لكل العاملين .

وحارج نطاق التعضيد الداخلى، تعاونت وحدة الـ آى.ام.اس مع نظام البحوث الزراعية الوطنية (نارو) فى كل من الهند والسودان فيما يختص بمسائل ادارة المعلومات . ففى الهند تركز العمل على اعداد مسودة استراتيجية لنظام معلومات للبحوث الزراعية . يشمل كل أنحاء البلاد، لتمكين الباحثين الزراعيين الهنود من الاستفادة القصوى من تكنولوجيا الاتصالات والكمبيوتر . كما عاون مركز الخدمات الدولية اسنار هيئة الأبحاث الزراعية فى السودان من خلال تحليل لاحتياجات الهيئة وأورادتها من الكمبيوتر .

وفى شهر يناير، ساعدت وحدة الـ آى.ام.اس، فى عقد ندوة استشارية من خبراء حول احتياجات ادارة المعلومات الى نظام الأبحاث الزراعية الوطنية (نارس)، بالتعاون مع كل من المركز الفنى للتعاون الزراعى والريفى والـ مكتب الزراعى لدول الكومنولث النوليين . وقد شارك فى ذلك ممثلون من نارس والوكالات المانحة والممولة، وغيرها من مراكز المجموعة الاستشارية للبحوث الزراعية الدولية .

#### المطبوعات :-

أنتج اسنار خلال العام، عددا من الوثائق الرئيسية والهامة، يصل فى مجمله الى ثمانية وخمسون للتوزيع الخارجى، بما فى ذلك التوزيع المحدود، ستة وعشرون منها خاص بمطبوعات اسنار الرسمية لتقارير الأبحاث ودليل ادارة الأبحاث، والنذات الارشادية، والتقارير السنوى، ونشرة اسنار الاخبارية . وقد تم اصدار معظم هذه المطبوعات بالمساعدة المباشرة لوحدة خدمات النشر . كما احتوى العدد الاجمالى أيضا على منشورات أخرى، بما فيها أوراق نقاشية . . . تكون فى بعض الحالات مصورة بغرض محتوية التوزيع وفى حالات أخرى تكون مطبوعة . بالإضافة الى ذلك، فقد أنتج العاملون أيضا عند ٨٢ ورقة، وأجزاء من بعض الكتب أو التقارير، ومواد نشرت بواسطة منظمات خارجية وأحيانا بتأليف مشترك .

#### المستشارون :-

وخلال عام ١٩٩٣ استقطب اسنار خدمات ٦٠ مستشارا خارجيا، أو مجموعة استشارية خارجية .

#### الموقف المالى :-

كان اجمالى رأس المال العامل للانفاق بمركز اسنار عام ١٩٩٣ : عشرة ملايين وثلاثمائة وثلاثة وعشرين ألف دولار أمريكى (-US\$ ١٠,٣٢٣,٠٠٠)، تم تمويل خمسة ملايين وتسعمائة وتسع وثمانين ألف (-US\$ ٥,٩٨٩,٠٠٠) منها عن طريق: منح غير محددة، بينما تم تمويل الباقي عن طريق منح محددة، وأموال مشروعات خاصة، ومبالغ منقوعة ردا لمبالغ منصرفة نظير خدمات تم الانتهاء منها، وعائدات أخرى . ويمثل الجزء الأخير نقص نسبة ٣٦٪ فى معادل الانفاق الشامل لمركز اسنار مقارنة بعام ١٩٩٢ . وبينما نقصت نسبة التمويل الغير محدد الى ٩٪ تقريبا، فإن ضم المبالغ المحددة الى المصادر الأخرى، قد ارتفع بنسبة ٣٪ تقريبا .

The Arabic translation was done by the Public Authority for Agriculture Affairs and Fish Resources (PAAFR), Kuwait, by courtesy of ISNAR Board member, Naima al-Shayji, who also revised the Arabic text.

## Theme Essay

### Natural Resource Management and the Environment: Widening the Agricultural Research Agenda

*Poverty and environmental degradation are reciprocal. This vicious circle not only hinders the development of poor nations but also threatens the continuity of life on our planet. Poverty is absolutely incompatible with sound environmental protection and management.*

*From an address  
by Joaquim Alberto Chissano,  
President of Mozambique,  
to UNCED, Rio de Janeiro, June 1992*

**T**he Earth Summit in Rio has come and gone. But like a "shot heard round the world," the conference's main offspring, Agenda 21, will resonate for decades to come.

Governments have committed to paper their unprecedented willingness to pursue sustainable development. Protection of the natural environment and its resource base for present and future generations now shares equal billing with the goal of producing enough food and other goods to meet the needs of the growing world population. Agenda 21 is the blueprint.

The implications of this document for global agriculture, as well as for the vast mosaic of national and international research that supports it, are profound. Of the 115 program areas for action set out in the document, some 70 are relevant to the work of agricultural researchers in developing countries.

Farmers are still the prime users of land, water, plant, and animal resources. It is primarily on their holdings and in the surrounding environment — adjacent river valleys, plains, hills, coastal regions,

and mountains — that Agenda 21 will be played out. Supporting those farmers in their formidable task of feeding a global population that will double in the next 100 years is a community of more than 130,000 agricultural researchers working at the national level. Added to this pool are a few thousand scientists in some two dozen international research centers around the world.

#### *Sustainability: an issue with a long history*

The fundamental issues raised at the Earth Summit — officially the United Nations Conference on Environment and Development (UNCED) — are not really new. Much of human history is a chronicle of the struggle for survival and how it has continuously altered the natural environment. And much of the earth's landscape, from Iceland to China, from the Amazon basin to the Nile delta, from the great plains of North America to the mountain nations of central Africa, has been indelibly transformed by human activity, especially settlement and agriculture.

What is new is that technologies for massive intervention in the environment, coupled with the forces of population pressure and poverty, have drastically shrunk the margin of error open to human beings in exploiting natural resources to meet needs and wants. There is little room for maneuver left. We need to retreat from this untenable, "unsustainable" position of consuming the earth's capital.

Collective action, then, of the kind pledged at the Earth Summit, is needed right now. But how will that be translated into concrete work programs and timetables? And what should be the priorities? Each country must decide for itself.

Economists and agricultural scientists have known for decades that rises in agricultural productivity are a prerequisite to alleviating poverty in developing countries. Increased productivity helps meet growing demand for food and other products and generates the income needed by people to buy necessities they cannot produce themselves.

Scientists have also long recognized that productivity increases on favorable lands are needed to minimize human incursion into vulnerable environments. Otherwise there is the risk of irreversible damage from widespread tree cutting, cultivation of erosion-prone land, and other acts of survival — indeed, acts of desperation — as farmers are forced by poverty into marginal areas.

Even the notion that such productivity increases must be sustainable has a long history. Justus von Liebig, a founding father of agricultural science, reflected on this in the 1860s: "The task of the farmer is not to achieve high crop yields to the detriment of the field, which only causes it to impoverish earlier. Rather it should be in his own interest, as well as society's, to achieve high yields that are constantly increasing on a permanent basis."

In the 1950s, fear of widespread famine triggered a major push to develop new high-yielding crop varieties. The resulting green revolution in the 1960s and '70s, driven largely by plant breeding work in international research centers, boosted production dramatically. It prevented a major human disaster in the developing world, especially Asia. All this has been well documented.

While the application of green revolution technologies has helped to remove, at least temporarily, the prospect of massive famine in many areas, it has not been without environmental consequences. In some developing countries, problems of soil salinity, water logging, erosion, silting, and groundwater depletion have become serious. And in the industrialized world, widespread intensification of crop and animal production based on the use of modern chemical inputs, often in an unbalanced way, has led to soil and water pollution and threats to human health.

Over the past 25 years or so, modern agricultural science has turned its attention to the more complex problems of maintaining the production base so that future famines and environmental damage can be avoided. Several domains of "environment friendly" multidisciplinary research have emerged — crop and production ecology, farming systems research, integrated pest management, and agroforestry, to name a few. And on the institutional side, the CGIAR has broadened its mandate in recent years to include forestry, agroforestry, irrigation, and aquatic resources.

But UNCED was the event to galvanize political will. It called for solutions on a global scale, taking into account not only the role of agricultural and other sciences, but of community participation, training, information, institutional change, and policymaking.

Agenda 21 sets out a daunting task for agricultural scientists. The new research agenda, in the making for many years now, can be expressed in a single phrase: the design of sustainable production systems.

### *Defining sustainable production*

A sustainable agricultural production system can be usefully defined as "one that indefinitely meets rising demand for food, fiber, and other agricultural commodities at economic, environmental, and other social costs consistent with rising per capita welfare of the people served by the system."

There are two key points to keep in mind here. First, the definition recognizes both the production-growth and environmental-protection dimensions of agriculture. Second, it implicitly recognizes that it is not good enough for people to merely survive. Instead, agriculture must bring lasting improvements to human welfare, particularly among the very poor.

ISNAR has a key part to play in helping the national research systems to incorporate sustainability concerns into their agendas and work programs. The boxed text on pages 45 to 47 provides some examples of recent ISNAR work to address the policy, organizational, and management issues implicit in the shift to sustainability research.

### *Seeing the big picture*

The design of sustainable agricultural systems requires research planners and policymakers to look at the big picture rather than production components in isolation. It means looking at all the costs and benefits of introducing new technologies or practices, not just those that are priced in the market. As the Administrator of the United Nations Development

Program, James Gustave Speth, noted in a recent speech: "economic analysis that fails to measure changes in the productivity of natural resources will make farming practices that degrade the resource base look more valuable than those that conserve it."

Here we briefly mention two examples of concepts that can help create the holistic perspective needed for research and policy work on agricultural sustainability issues.

The first is total factor productivity, or TFP for short. Borrowed from economics, it can be a powerful tool for defining, and ultimately measuring, the sustainability of either an existing agricultural production system or one that is to be altered by introducing new technologies or practices.

With TFP analysis, all the relevant outputs and inputs of production are considered. The productivity ratio includes traditional variables priced in the market, such as the value of crops and animals on the output side and the value of land, labor, and fertilizer on the input side. But it also takes into account costs to the natural resource base and damage to the wider environment that are often underpriced in the market — such as depletion of groundwater and buildup of silt downstream from farmers' fields. Similarly, enhancements to environmental and social goods such as soil fertility, wildlife habitat, or recreational potential are also factored in.

The TFP of a production system, then, is expressed as the ratio of all the "real" outputs to all the "real" inputs. If the outputs consistently outweigh the inputs and the ratio rises over time, permitting improvements in human welfare, then the production system meets the sustainability requirement. A major challenge in using TFP analysis is to assign correct values to those social and environmental costs and benefits that are not normally

priced in the market. A second problem is that the time frame in which measurable changes in total productivity take place may be rather long, perhaps a decade or more. This sets up obvious logistical hurdles for agricultural economists, research planners, and policymakers.

A second useful concept, which has been referred to as a new "land theory of value," puts the physical characteristics and use of land at the center of analysis. It provides a framework for determining which types of government policy and research are needed for agriculture on different kinds of land. Such an analysis can help both researchers and policymakers to reconcile environmental and natural resource management issues with the need to boost agricultural production.

In a land-centered perspective, levels of productivity potential and vulnerability to environmental damage can be used to classify land. The matrix on page 39 is an elegantly simple representation of research and policy strategies for four general categories of land. Research and policy may be geared to both environmental protection and productivity, productivity alone, or environmental protection alone. And for one of the four types of land, little or no intervention is required.

Research that marries environmental and productivity considerations can be referred to as sustainability research. Consider the hypothetical case of a fertile hilly area suitable for growing maize but prone to erosion. Agroforesters and agronomists might work together to identify the suitable agronomic practices and the best high-yielding variety to plant between rows of nitrogen-fixing trees that enhance water retention and soil fertility. On the policy side, the government might promote the use of this maize-tree cropping system by offering tree seedlings to farmers at low cost.

Such a production system may be physically sustainable, but is it also economically and socially viable as suggested by the definition given earlier? That is, does the technical innovation also help meet rising demand for agricultural products and improve the welfare of the affected population? Sustainability research clearly requires not only cooperation among various physical scientists but also the involvement of social scientists.

The land theory and total factor productivity are just two examples of concepts that promote a systems approach to research and policy. Other tools and models are emerging, or are being refined, as scientists gain experience with defining and dealing with sustainability problems.

#### *Implications for developing countries*

Designing technologies and practices for sustainable agricultural production will require changes in the way research is organized, coordinated, and managed. It will affect methods of research planning, priority setting, and evaluation; training and projection of staffing needs, especially by discipline; and links with other institutions and sectors that also have a stake in sustainable uses of land and resources. For some research projects, the time frame will be extended considerably.

Making these changes and coping with them will be especially demanding on developing countries that have a large and complex agricultural sector but few resources. In some cases, the effort will unfortunately have to be postponed because governments must first attend to the pressing needs of poverty-stricken, malnourished, or even starving citizens.

For both national and international research systems, the design of sustainable production systems implies an expansion of scientific objectives. Technology development requires more and better in-

*Research and Policy: Different Strategies for Different Types of Land*

|                        |      | ENVIRONMENTAL VULNERABILITY   |   |
|------------------------|------|---|---|
|                        |      | HIGH  | LOW   |
| PRODUCTIVITY POTENTIAL | HIGH | <ul style="list-style-type: none"> <li>① Sustainability research</li> <li>② Policies to promote "high-precision" farming</li> </ul> | <ul style="list-style-type: none"> <li>③ Traditional agricultural research</li> <li>④ Policies to promote use of high-yield technologies</li> </ul> |
|                        | LOW  | <ul style="list-style-type: none"> <li>⑤ Environmental research</li> <li>⑥ Penalties set for environmental damage</li> </ul>        | <ul style="list-style-type: none"> <li>⑦ Research not a priority</li> <li>⑧ Little or no policy intervention</li> </ul>                             |

(1) Sustainability research is needed to enhance yields in ways that do not deplete the natural resource base or harm the environment. Policy should promote so-called "high-precision" farming methods developed by sustainability research for this type of land.

(2) There will be a good payoff to traditional agricultural research aimed at boosting yields under these farming conditions. Environmental research is not warranted. Policy can focus on incentives to increase production.

(3) Environmental research is needed to curtail further damage. There is good reason to reduce production, so traditional agricultural research has little or no role. And policy should aim to discourage production and set penalties for causing damage.

(4) Little or no research, either environmental or agricultural, is warranted because the payoff would be very low. Likewise, little or no policy intervention is required. That is, there is no reason for a government to introduce production incentives on such marginal land or to discourage farming on it.

The matrix is adapted from one used by C. Ford Runge in "A Policy Perspective on the Sustainability of Production Environments: Toward a Land Theory of Value." In *Future Challenges for National Agricultural Research: A Policy Dialogue*. Proceedings of the international conference Challenges and Opportunities for the NARS in the Year 2000: A Policy Dialogue. Berlin, 12-18 January 1992. The Hague: ISNAR.

formation on agroecological and socio-economic factors and on the uses of land and natural resources. Institutional arrangements become more complex because agricultural researchers have to work more closely with people in other sectors and at different levels of the hierarchy.

Twentieth-century agricultural research has generally been organized around specific commodities like rice, cotton, and cattle, or around scientific disciplines. The overriding aim has been to boost yields and, more recently, to improve product quality. But we are in need of a new paradigm — both scientific and organizational — for tackling the issues of natural resource management.

With increased awareness of the interplay between various production and resource management problems, new domains of multidisciplinary research will continue to emerge, along with new methodologies for integrated problem solving. This will require adjustments to the mix of scientific expertise within national research systems. For some disciplines there will be an increase in the numbers of scientists and technicians, for others a decrease. And researchers from different disciplines will have to cooperate more closely. Soil scientists, for example, may have to work side by side with hydrologists and resource economists, or plant breeders side by side with anthropologists and ecologists.

Agricultural researchers will increasingly be called on to cooperate with other scientists on gathering, coordinating, analyzing, and packaging geographical and other data about natural resources and land use. This information is not only for their own use but also for that of policymakers, planners, and those implementing development projects. A variety of methods come into play — ground-based observation, remote sens-

ing, analysis of production statistics, and so on — in the preparation of maps and inventories. Although this work is a long-term and expensive proposition, it is a key input to the planning and design of research on sustainable production systems and natural resource management.

### *Bridging the sectoral gap*

A key theme coming out of Agenda 21 is the importance of cross-sectoral planning for development projects, as well as greater local participation in planning and decision making. This will undoubtedly require new links to be established between agricultural research organizations and outside players. Not only does planning become the shared job of all sectors involved in land and water use — agriculture, industry, transport, health services, and so on — but specific interest groups at the local level, like NGOs and farmer groups, get a bigger say.

“A farmer centered approach is the key to the attainment of sustainability in both developed and developing countries,” Agenda 21 asserts. “The decentralization of decision making toward local and community organizations is the key to changing people’s behavior and implementing sustainable farming strategies.”

Cross-sectoral planning with local-level participation of course is not new. Neither are the jurisdictional, legal, and scientific battles it often triggers. In many countries, the use and misuse of land, water, and other resources have set interest groups against one another. Farmers reliant on irrigation confront river valley authorities over water rights. Environmentalists trying to preserve wildlife habitat oppose housing or industrial developers intent on pushing out city limits. Indigenous hunters and gatherers set up blockades on roads into controver-

sial logging sites, while landless farmers push relentlessly down those roads. Community groups shout "not in my backyard" when they learn of new waste disposal sites being planned by government authorities. The drawing of such battle lines over land and resource usage is not limited to developed countries. On the contrary, it is now a global phenomenon.

The challenge to cross-sectoral planning and community participation is to harness and transform the resources and human energy spent on such confrontations into cooperative information sharing and decision making. Agricultural research systems, being a major depository of scientific knowledge and expertise on land and natural resource use, clearly

have an important contribution to make here. To do so, though, they need to have their own house in order. As one commentator on Agenda 21 put it: "A unified national agricultural research system can be a valid interlocutor in the cross-sectoral planning process; a fragmented one may not."

#### *Fine-tuning the structure and its linkages*

The move to sustainability research and cross-sectoral planning, then, will complicate institutional arrangements and research management within agricultural research systems. Agenda 21 specifically recognizes that some countries will need to restructure their research systems to ac-

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*In a rice-growing area of Kenya, health researchers discuss ways of reducing the high incidence of schistosomiasis among local farmers. The parasitic disease is transmitted by snails that thrive in the streams and ditches that irrigate the rice. Sustainable development requires better cross-sectoral planning — in this case between researchers, agriculture and health authorities, and community leaders, with direct involvement of the people affected. Understanding the interactions between human health, rice production, and freshwater ecology was crucial to the design of a community health project.*



commodate the new realities. Separate bodies may have to be merged to cut out duplication. And organizational changes will be required to unify planning and priority setting across the entire research system. Entrenched interests may vigorously resist such restructuring, making the senior research manager's job very difficult.

Another complicating factor for research is technology transfer and adoption. The shift from simple production technologies, such as the use of new varieties, to more complex practices for managing natural resources may slow down technology transfer. At the same time, the perennial problem of nonadoption by farmers will also affect the transfer of such new methods. A producer concerned with feeding her family today may be reluctant to adopt an innovation whose environmental benefit will only be felt a decade hence. Or, if the environmental benefit is one that will be felt largely in someone else's back yard, farmers may prefer not to risk a change of practice.

In dealing with these problems, researchers will need more and better feedback from farmers. One way to get this is to work more closely with extension workers and community groups, which may have a better feel for farmers' attitudes and needs.

### *Resources for research and commitment to sustainability*

Funding is a major hurdle for the national research systems. How can the developing countries cope with the added complexities of sustainability research at a time when many national treasuries are depleted? At a time when Eastern Europe and the republics of the defunct Soviet Union also require a share of development funds and technical assistance? At a time when donor countries are slashing

their own aid budgets because of economic recession at home? For research, it's a classic case of being forced to do more with less.

Agenda 21 contains a renewed pledge by the leaders of donor countries to contribute 0.7% of GNP to development assistance. This is a possible source of external funding for sustainability research. But the time frame for such scientific work clearly extends beyond the political life-expectancy of most national leaders. Will the money materialize when it is needed? If so, will it bear so many well intentioned "sustainability" conditions that the goal of increased production is relegated to a handful of overworked plant breeders operating on a shoe-string budget? Policymakers in donor countries need to address these questions.

Donors must not lose sight of the fact that the drive to preserve the environment cannot succeed in a scientific vacuum labelled "sustainability," uncoupled from the day-to-day concerns of farmers trying to produce enough food, feed, fuel, and fiber. Sustainable production implies an expansion of the research agenda, not a simple switch to pure environmental research.

Overall consumption of calories and essential nutrients is still inadequate in much of the developing world. To meet future global demand for food at nutritionally adequate levels would require food production to triple over the next 100 years or so, given the expected doubling of the population.

Clearly, traditional agricultural research still has a central, critical role in feeding the world. It would be unfortunate if research proposals were systematically rejected by donor agencies because the words "agricultural research," not so fashionable these days, appear on their title page.

What about the level of commitment to sustainable agriculture among the national agricultural research systems of developing countries? Comments by representatives of some developing countries suggest that they consider agriculture's negative impact on the environment to be a rich-country obsession that poor countries can ill afford. Unlike many industrialized nations with agricultural surpluses, they are still struggling with the production side of the agricultural equation.

It is true that many developing countries have not yet reached the intensity of fertilizer and pesticide application found in the richer countries. Thus, some of the environmental problems related to excessive chemical use are not yet a serious problem (although the health of individuals who handle chemicals is often at risk).

But as mentioned earlier, there is evidence of severe soil degradation, erosion, and groundwater depletion in developing countries. Even those poor countries facing the biggest production problems should take natural resource management issues seriously. The longer action is postponed the greater the risks of famine and environmental crisis for the next generation. Research to prevent environmental degradation in the short term is also less costly than rehabilitation a few decades down the road.

Furthermore, natural resource management research and conventional commodity research can complement each other. Research to protect the environment and its resources is not necessarily done at the expense of increased production. For instance, natural resource management research may produce methods for increasing water retention of soil in a particular area. This not only reduces runoff, erosion, and silting, but it could also pave the way for the introduction of a new high-yielding variety with high moisture

requirements, a product of traditional commodity research.

Despite substantial disagreement over the priority that should be given to natural resource management and sustainability research in developing countries, there is recent evidence of growing commitment on the part of national research systems. For example, at a global meeting of national and international researchers at ISNAR headquarters last November, developing-country participants agreed that the concept of sustainable agricultural development was being taken seriously in their countries. In fact, they felt it was no longer a controversial issue. They also noted that high-level policymaking bodies and executing agencies had been established in some countries such as Bangladesh, Kenya, and the Philippines specifically to address resource and environmental issues.

A similar expression of commitment to sustainability research came out of a September 1993 meeting in Benin sponsored by ISNAR and the governments of The Netherlands and Sweden. That meeting brought together senior representatives of 22 African national agricultural research systems to discuss, among other things, their working links with the international centers of the CGIAR. It was a "NARS only" discussion, with no donor or international center representatives present.

The African research leaders endorsed the so-called "ecoregional" approach to international agricultural research espoused by the CGIAR. Under this proposal, research would span political, administrative, cultural, and economic boundaries. It would not be based on specific commodities or disciplines. Rather, it would be organized around the needs of a geographical region whose agricultural lands share a common set of climatic and natural resource characteristics. One challenge of the ecoregional ap-

proach is to improve the institutional arrangements under which the national research systems and the international centers cooperate on sustainability problems.

To quote the research leaders' report: "The ecoregional approach benefits from the total approval of the NARS, who want to safeguard, protect, and improve the environment and its resources as the basis for agricultural productivity."

Not just in Africa but around the world, putting such words into practice will be an enormous and expensive task in the closing years of the 20th century. Unfortunately, there is also serious concern in high places that implementation of Agenda 21 is stalling. In a recent speech on food security, UNDP Administrator Speth said: "The 1992 UN Conference on Environment and Development in Rio signalled that things must be different....

Some important follow-up actions are already being taken. But, in truth, governments have not pursued the Rio agenda with the dedication and commitment it deserves."

The design and use of sustainable production systems is a task to be shared by farmers, extension workers, community organizations, research managers, and environmental and agricultural scientists at both the national and international levels. But without the commitment of the donor agencies and political leaders the world over, their chances of success will be slim. It would be a shame if the recent marriage in Rio — between agricultural production and environmental protection — soon ended in divorce for lack of commitment. Who then would take responsibility for having marooned future generations on a hungry and inhospitable planet?

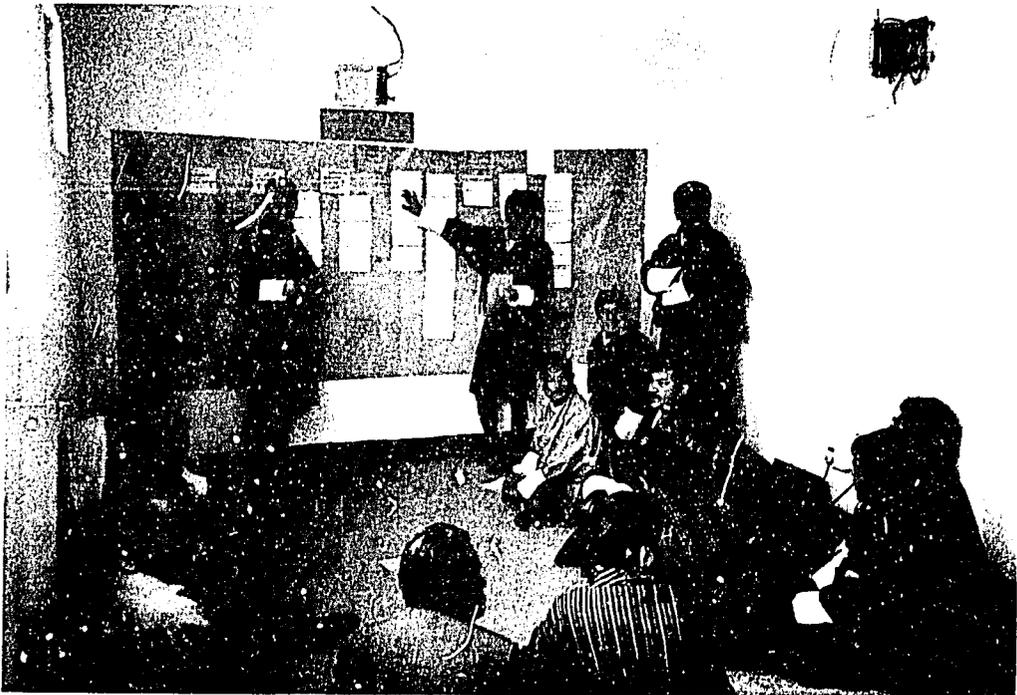
## Working with the national systems on sustainability issues

As NARS give greater priority to natural resource management (NRM) and environmental conservation, many questions of research policy and organization are arising. Here we briefly describe some of ISNAR's efforts in 1993 to understand the implications of these issues better and to help NARS adjust to the changing research scene.

It should be noted, though, that as ISNAR itself continues to incorporate these issues into its methods and collaboration with NARS, it will be increasingly difficult to distinguish "sustainability" work as a separate category of activities to be reported. In future, NRM and environmental concerns will influence most activities. This is natural and will be a sure sign that the new priorities have been fully institutionalized within ISNAR.

- ISNAR continued its collaboration with Bhutan to strengthen "renewable natural resource" research, which is based on the five major land-use patterns found in this small mountainous kingdom. Funding was provided by the Swiss Development Cooperation. The work follows up on earlier assistance to Bhutan's Ministry of Agriculture in formulating strategic and medium-term research plans.

*In Bhutan research is organized to reflect the major land-use patterns. Here, Bhutanese scientists formulate research objectives for the livestock and pastures program.*



- The Forestry Institute of Malaysia (FRIM) is responsible for national research on the conservation, management, and use of forest resources. Its mandate covers both commercial timber exploitation and alternative uses of forest products — for example, enhancing urban environments by planting trees. In 1992, ISNAR assisted FRIM with a strategic planning exercise. In 1993, we received a request from FRIM for follow-up assistance with the next step in the planning process: program formulation. ISNAR responded with a proposal for three planning workshops in Malaysia over a period of one year, for which it is now seeking funds and contacting partners with complementary expertise.
- ISNAR established an in-house, cross-program advisory committee on natural resource management issues. Its job is to ensure a holistic approach to all the institute's NRM activities with developing countries.
- Members of the NRM advisory committee drafted a proposal for a three-year program of work on incorporating NRM issues into national agricultural research agendas. Using both core and special-project funding, ISNAR will assist research managers and policymakers in identifying the main policy, institutional, and management issues and in balancing NRM concerns with the goals of higher production and productivity. Advice, management tools, and information will be provided on a number of topics. Among them: organizational options, cross-sectoral planning and priority setting, resource allocation, funding strategies, methods for integrating different kinds of research, complementarity of production-oriented and environment-oriented research, and assessment of natural resource inventories. ISNAR is now looking for donor support for this work.
- ISNAR is developing analytical methods to assist in setting priorities for research at the regional level, based on the common agroecological characteristics of countries in a region. This work grew out of earlier collaboration with AARD in Indonesia. Being a large country with numerous agroecological zones, Indonesia is in many ways a microcosm of a multicountry region. It therefore served as an ideal laboratory for developing and testing priority-setting tools that should find application at the regional level elsewhere in the world. The approach taken in Indonesia, which drew on geographical information systems (GIS) and other tools, was expanded to a pilot cross-country study in Latin America during 1993. This was done in conjunction with IICA, with technical assistance from staff at FAO and CIAT. The results will be discussed in April 1994 at a roundtable of NARS, international research centers, and donors with a stake in this activity. The discussions will take place at ISNAR headquarters.
- With funding from the Rockefeller Foundation, ISNAR outposted a resource economist to Nairobi to collaborate with the Kenya Agricultural Research Institute (KARI) in incorporating NRM issues into research priority setting. Working with KARI's National Agricultural Research Laboratory, he is linking several types of research through his social science input. First, economic

analysis is being used to help examine priorities within soil research. Second, soil modelling is being used to estimate the social costs of soil degradation that are not reflected in the market. Third, improved priority-setting approaches are being used to evaluate the contribution of soil research to commodity research. Finally, geographical information system techniques are being applied to help set cereal research priorities that respond to national goals.

- Two studies by consultants were contracted. The first was a detailed examination of Agenda 21, the manifesto of the 1992 UN Conference on Environment and Development. Because Agenda 21 is a document of great scope, complexity, and length, ISNAR thought it would be useful to identify and analyze those passages that discuss subjects of direct relevance to NARS. The second study was an analysis of what is meant by "sustainable agriculture," what its implications are for research policy, and how ISNAR can assist NARS in this area in the future. Both consultant reports have been published and distributed in summary form as ISNAR Briefing Papers Nos. 4 and 7. The studies indicated that demand for policy advice from ISNAR in the natural resource management area will become strong. They suggested that ISNAR's policy program acquire specialized expertise, particularly to assist NARS in assessing the economic importance of environmental change in the context of agricultural production.
- In November, ISNAR hosted an international workshop on the use of applied systems analysis in agricultural research in developing countries. Representatives of eight NARS and 10 regional and international organizations participated in the meeting at ISNAR headquarters, which was jointly organized with the International Consortium for the Application of Systems Approaches to Agriculture. The concern over sustainability considerably complicates analysis of proposed or existing production systems because it increases the number of variables (and interactions among them) to be considered. Systems research methods, originally developed for studying industrial processes, are a powerful tool for modelling agricultural systems. They enable researchers to simulate the environmental and other impacts of introducing or altering farming technologies and practices. This helps reduce their dependence on real-life field experimentation, which is costly.
- A bibliographic data base on management-related aspects of NRM research was set up for use by ISNAR staff. During the year about 150 abstracts were prepared. Once the data base is more fully developed, its contents will be made available to NARS managers and others.

## New Initiatives at a Glance

*This section presents, in point form, key details of major new ISNAR projects that were planned, approved, or begun in 1993. In some instances the work was also completed during the year.*

*New initiatives are divided into three groups according to the type of work:*

- *Advisory Service*
- *Research*
- *Training, Conferences, and Information*

*Where a project contains elements of all three, it is listed under the heading that best describes its content or approach.*

*Other 1993 activities that are a continuation or expansion of earlier ISNAR work are listed in the Around the World section beginning on page 79.*

### ADVISORY SERVICE

**Name:** Rehabilitation of INIA (Mozambique)

**Description:** Phase one: assistance with the preparation of a strategy and medium-term plan for the National Institute of Agronomic Research. Ministry of Agriculture approval of the document has been secured. Phase two: assistance with the preparation of an operational plan. The second document was completed and is under review by the ministry. Both to be submitted for legislative approval in March 1994. Management components covered by this work: institutional organization and structure, infrastructure planning, setting of priorities among commodities and research projects, budgeting, human resource planning, and management of linkages and information systems.

**Participating Institutions/Countries:**  
INIA (Mozambique), ISNAR

**Duration:** One year

**Funding Source:** SIDA

**Name:** Mauritania: development of an agricultural research management component

**Description:** Assistance to the Mauritanian government in preparing an agricultural research management program and structures for consideration under a World Bank-funded project. Completed in 1993.

**Participating Institutions/Countries:**

FAO Investment Center, Ministère du Développement Rural et de l'Environnement (Mauritania), ISNAR

**Duration:** Six-year implementation phase  
**Funding Sources:** Government of Mauritania via World Bank (for preparation phase)

**Name:** Chairmanship of a task force for the preparation of a framework for ac-

tion for West and Central African agricultural research

**Description:** ISNAR participation in a collaborative project to draft a framework for action for revitalizing agricultural research in the humid and subhumid zones of West and Central Africa. Task force chairperson is a senior ISNAR staff member.

**Participating Institutions/Countries:**

Benin, Cameroon, Central African Republic, CMAWCA, Congo, Equatorial Guinea, Gabon, Ghana, Guinea, Guinea Bissau, Côte d'Ivoire, ISNAR, Liberia, Nigeria, Sao Tome & Principe, Sierra Leone, SPAAR, Togo, Zaire

**Duration:** 18 months

**Funding Sources:** ISNAR, SPAAR

**Name:** Mali National Agricultural Research Project

**Description:** Assistance with the evaluation and design of financial management systems and procedures within the NARS.

**Duration:** Three months

**Participating Institutions/Countries:** IER (Mali), World Bank, ISNAR

**Funding Source:** Government of Mali via the World Bank

**Name:** ARIS — a strategy for an agricultural research information system in India

**Description:** Formulation of a strategy for a national ARIS, including assessment of information needs, evaluation of technology options, and production of proposals regarding costs and schedules.

**Participating Institutions/Countries:**

ICAR (India), ISNAR

**Duration:** 18 months

**Funding Sources:** ICAR, with World Bank funds, through the National Agricultural Research Project

**Name:** Agricultural research networks in East Africa

**Description:** Support to NARS directors as they design a joint mechanism for coordinating and managing cooperative agricultural research networks in East Africa.

**Duration:** 21 months

**Participating Institutions/Countries:**

CIAT, CIP, IAR (Ethiopia), ICRAF, IITA, INERA (Zaire), ISABU (Burundi), ISAR (Rwanda), ISNAR, KARI (Kenya), NARO (Uganda)

**Funding Sources:** USAID, French Ministry of Foreign Affairs

**Name:** Researcher performance assessment systems in francophone Africa

**Description:** Technical assistance to research organizations in designing mechanisms for assessing researchers' performance and linking it to promotion and rewards. Objective: to promote better job performance and enhance the pursuit of institutional objectives. Project designed and approved by ISNAR in 1993.

**Participating Institutions/Countries:**

ISNAR and NARS of two sub-Saharan francophone countries still to be identified

**Duration:** 17 months

**Funding Sources:** ISNAR

**Name:** Annual report production in three East African NARS

**Description:** Assistance to improve the capacity of NARS to plan and produce annual reports. Analysis of current practices, plus training and advice on production. Output to include training materials for other NARS and guidelines on annual report production. Project designed and approved in 1993. Implementation scheduled for 1994-95.

**Participating Institutions/Countries:**

CTA, ISNAR, Uganda, Tanzania, and one other African country to be identified

**Duration:** 30 months

**Funding Sources:** CTA, ISNAR

## RESEARCH

**Name:** Natural resource management (NRM) policy

**Description:** Two consultancies to study the implications for NARS of the growing importance of NRM. One was a broad examination of the issues; the other focused on the implications of Agerda 21. Purpose: to help define ISNAR's role in assisting NARS. Three publications were produced.

**Duration:** Six months

**Funding Source:** Government of Italy

**Name:** Intermediary Biotechnology Service (IBS)

**Description:** Special project, based at ISNAR, to assist NARS with biotechnology policy formulation and the management of biotechnology research programs. Includes country studies to identify priority problems amenable to solution through biotechnology, as well as collection of information on international biotechnology expertise.

**Duration:** Five years

**Participating Institutions/Countries:**

Global in scope

**Funding Sources, currently:** Government of The Netherlands, Swiss Development Cooperation

**Name:** Agricultural research networks and consortia

**Description:** Research to improve understanding of the efficiency of research networks and consortia as compared with that of individual institutions.

Project launched in 1993. Implementation to begin in January 1994.

**Duration:** Three months

**Participating Institutions:** CORAF, IITA, ISNAR, SAFGRAD, CIRAD

**Funding Source:** French Ministry of Foreign Affairs

**Name:** Universities in national agricultural research systems

**Description:** Research to analyze constraints on the contribution of universities to national agricultural research and to improve linkages between mainstream research institutions and universities. Country steering committees and study teams identified in 1993. Preparations under way for first workshop.

**Participating Institutions/Countries:**

Ahmadu Bello University (Nigeria), Côte d'Ivoire, Kenya, Senegal, Swaziland, Tanzania, Université Nationale du Bénin (Benin)

**Duration:** 18 months

**Funding Source:** Government of Germany (BMZ)

**Name:** Benchmarking for national agricultural research organizations

**Description:** Research to document examples of successful management practices (benchmarks) as a way to improve management in agricultural research organizations. Activities: preparation of benchmarks, identification of key steps for implementing successful management practices, and dissemination of benchmarks as man-

agement briefs to NARS managers and the development community.

**Duration:** Ongoing

**Participating Institutions/Country:**

Initially INTA (Argentina), ISNAR

**Funding Source:** CIDA

**Name:** Management of change

**Description:** Research on the management of change processes in research organizations. Subsequently, guidance on the subject to be given to NARS managers, ISNAR staff, and others in the development community. Work to date: formulation of a conceptual framework, drawing on perspectives from anthropology, economics, history, psychology, management, and other disciplines; presentation of conceptual framework to seminar of South American NARS managers.

**Duration:** Ongoing

**Participating Institutions/Countries:**

Global in scope

**Funding Source:** ISNAR, support from other donor(s) being sought

**Name:** Managing financial resources

**Description:** Preparation of a source book for agricultural research managers to enhance their understanding of research financing, to improve the management of financial resources, and to present strategies for attracting funds. At planning stage during 1993.

**Participating Institutions/Countries:**

ISNAR, drawing on reports from a broad range of countries

**Duration:** July 1993-December 1995

**Funding Source:** ISNAR

**Name:** Refining livestock research priority-setting procedures

**Description:** Research to improve priority setting for livestock research using ex post information.

**Participating Institutions/Countries:**

KARI (Kenya), Humboldt University of Berlin, ISNAR; collaboration planned with ILRAD, ILCA, Kenya's National Dairy Development Project, and the University of Reading (U.K.)

**Duration:** Three years

**Funding Source:** Government of Germany (BMZ)

## TRAINING, CONFERENCES, AND INFORMATION

**Name:** Master's degree program in agricultural research management

**Description:** Feasibility study and design of a master's degree program in collaboration with three European universities.

**Participating Institutions/Countries:**

African countries, ISNAR, NATURA, University of Leuven (Belgium), University of Reading (U.K.), Wageningen Agricultural University (The Netherlands)

**Duration:** 15 months

**Funding Source:** ISNAR

**Name:** ISNAR/ICASA workshop on opportunities for the use of applied systems analysis in agriculture in developing countries

**Description:** Meeting to review the use of applied systems analysis in NARS, IARCs, and developed-country research institutions; to examine opportunities for using such analysis as a decision-making aid; and to develop guidelines for establishing institutional capacity in this field.

**Participating Institutions/Countries:** AIT, Bangladesh, Bhutan, Botswana, Brazil, China, CIAT, CIMMYT, CIP, CIRAD,

CSIRO, ICARDA, ICASA, ICRAF, IITA, ISNAR, Kenya, Peru, Philippines, WARDA

**Duration:** Three-day event in November 1993, with preparations and follow-up over one year

**Funding Source:** Government of The Netherlands

**Name:** Bibliographic data base on NRM

**Description:** Preparation of a bibliographic data base on the management aspects of natural resource management research in NARS. More than 1000 titles screened and 150 abstracts prepared in 1993.

**Duration:** One year, but will remain an ongoing activity

**Funding Source:** ISNAR

## Programs and Services

### Introduction

**I**SNAR's work with national agricultural research systems (NARS) is organized around three thematic programs and three service groups working under the guidance of the Office of the Director General. Highlights of 1993 activities and accomplishments of these six units are presented in the following pages.

The three programs, each led by a director, are

- Research Policies and System Strategies (RPSS)
- Research Program Design and Management (RPDM)
- Management of Organizations and Resources (MOR)

Each program conducts research, gives advice to partner NARS, and provides training and information in its areas of expertise. As the program names suggest, ISNAR intervenes at three levels of the research hierarchy.

The first is the system level. The RPSS program's perspective is broad, taking into account the full mosaic of bodies that perform, organize, or support agricultural research in a country. These include government departments, policymaking bodies, autonomous and semi-autonomous institutes, universities, commodity organizations, foundations, networks, and regional organizations. The main interest of the RPSS program is to promote synergy — ensuring that all the parts work together to achieve national goals. Of special concern is how research systems affect, and are affected by, national policies on development, science and tech-

nology, agriculture, and agricultural research.

The second level of intervention for ISNAR is the research program (or programs) of an institution. This consists of projects, experiments, and other activities related to the actual conduct and management of research in the office, laboratory, station test plot, or farmer's field. The RPDM program emphasizes the need for high-quality, relevant science. It does this by promoting suitable methods in several areas of research management: program organization and planning, priority setting, monitoring and evaluation of scientific work, and links with the users of research results such as farmers and technology-transfer agencies.

The third level of intervention is the individual organization — the legal, social, and physical venue for research. Organizations provide scientists, technicians, support staff, and managers with the resources and professional working environment needed for creative problem solving and technical innovation. As such they are the building blocks of the publicly funded research system. The focus of the MOR program is good management practices within organizations.

Supporting the three ISNAR programs are three service units:

- Collaborative Services and Training (CST), the main contact point between ISNAR and its developing-country partners
- Information Management Services, assisting both ISNAR staff and NARS with their information and computer needs
- Administrative Services

## Research Policies and System Strategies Program

*RPSS assists policymakers and research leaders in defining the mission and goals of their research system. It also helps them design its structure, plan its development, and set macrolevel priorities in line with national development objectives. The program is organized around four major themes relating research policy to*

- *NARS organization and structure*
- *development policy*
- *science and technology policy*
- *priority setting and strategic planning*

### *Client groups*

**T**he RPSS program serves three main client groups. The first is senior policymakers whose decisions affect, directly or indirectly, the operational environment of the NARS. This group includes not only heads of NARS but also policymakers in other ministries and senior personnel in donor agencies.

Policy advisers are the second client group. These are senior technical personnel, including research and project managers from both NARS and donors. They have a strong influence on policymakers and are often the prime contact point for ISNAR.

The third set of clients is policy analysts. This small but increasingly important group consists mainly of economists in economic institutes of NARS, planning ministries, donors, and academia. They closely monitor ISNAR's quantitative work (such as studies on the numbers of research scientists in developing countries and on changes in research funding). They often provide ISNAR with expertise for further quantitative analysis.

In general, RPSS seeks to provide its clientele with four types of service or tools: data base development, new approaches to research system management,

better linkages between development policy and technology system development, and assistance in expanding the frontiers of research.

### *Data base development*

Here we seek to provide essential information so that the various inputs to a country's agricultural research system, such as the pool of scientific expertise and the research funding it receives, can be analyzed and compared with those observed in other countries. This provides a basis for subsequent monitoring of research inputs and for trying to relate inputs to the performance of the agricultural sector.

The hub of research in this area in 1993 was the second phase of the ISNAR Indicator Series project. The geographical focus was sub-Saharan Africa, where work was carried out with national collaborators in more than 20 African countries. Two Latin American countries were also included.

Five brief country reports — on Rwanda, Niger, Malawi, Botswana, and Kenya — were published in an informal statistical brief series. A further 10 country reports are expected in the first quarter of 1994.

The reports give historical background on each NARS, indicate staffing and funding trends over 30 years, describe the research system's structure, and outline its current commodity research program. The African study is expected to be completed in mid-1994. We will follow up with a regional analysis of the research policy implications of the study's findings. Both the country and the regional reports will furnish background material useful for planning at the individual NARS level.

### *New approaches to research system management*

RPSS has put considerable effort into developing new tools that allow research system managers to be much more rigorous and systematic in the way they make decisions. These tools, drawing heavily on economic analysis, help to minimize the guesswork involved in allocating resources to research and in evaluating its outcomes.

During the year, ISNAR moved forward on a collaborative project with the Chinese Academy of Agricultural Sciences. Specifically, we jointly undertook a pilot research exercise on research priority setting in the Chinese province of Jiangsu. And in Argentina, ISNAR worked with INTA to improve the institute's methodology for strategic priority setting.

We should also mention here a major undertaking that has much wider application: a comprehensive book on the use of various economic and econometric methods for research priority setting, to be published by Cornell University Press. By the end of the year, RPSS staff were in the final stages of manuscript preparation.

Part from priority setting at the national level, RPSS has also done preliminary work on regional priority setting. This is a topic of considerable current in-

terest because of the potential for resource sharing among countries. The boxed text beginning on page 45, which describes ISNAR's work on sustainability and natural resource management issues, gives more details on this new initiative in Latin America.

In recent years, ISNAR has also looked at the problems of research system management encountered by small countries. This work has centered on a study of the agricultural research systems of some 50 countries that were small either in size or in research resources. The findings point out a number of constraints on both the scale and scope of research carried out in such countries. The study underlines, in particular, the importance of establishing and cultivating links with outside sources of technology.

The findings further suggest a need to examine in greater detail how countries with scarce human and financial resources can benefit from research networks, as well as from technology spillovers from their neighbors. Conservation of research funds and scientific know-how are possible payoffs. At the same time, though, network "overload" was identified as a problem in many small countries. The study also found a general dearth of knowledge about the impact of agricultural research networks and the best ways to manage them.

The small-countries project is now complete and a synthesis of its findings is being developed. Work on the role of networks, however, is continuing in two veins. First, a joint project with CIRAD is looking at the impact of networks in West Africa. Second, with funding from USAID, ISNAR is assisting a group of NARS in East Africa to develop an internal system of management for a series of regional networks.

As part of its interest in the organization and structure of NARS, the RPSS pro-

## Making the most of structural adjustment

In the 1980s, structural adjustment became a dominant feature of policymaking in many African countries. Aimed at overcoming spiralling inflation, national indebtedness, and a general decline in productivity, it has been drastic and often unpopular economic medicine to swallow. The implementation of structural adjustment programs has altered, for better or for worse, the operation and effectiveness of public-sector institutions.

There is some evidence that national agricultural research organizations are bearing a disproportionate share of the adjustment burden. As a result, they may be unable to fully support the restoration of satisfactory, sustainable growth and development.

In response to several requests from NARS, ISNAR carried out a series of country analyses on this topic. In addition, we joined forces with the Economic Development Institute (EDI) of the World Bank in holding a regional seminar relating structural adjustment to agricultural research in Eastern and Southern Africa. This presented an opportunity to open a dialogue on structural adjustment with eight countries and to test a new approach to training in the RPSS program.

The seminar examined the process of structural adjustment as it bears on, and is influenced by, agricultural research. Two tasks were emphasized: identifying the links between changing economic policies and institutional performance, and defining ways to reorient research systems so that they better support the dual macroeconomic aims of economic efficiency and poverty alleviation. To be sure, the seminar brought together ISNAR's traditional partners in the NARS and agriculture ministries. But senior policymakers from ministries such as finance, planning, and science and technology also attended. These are branches of government whose policies also directly impinge on agriculture and agricultural research.

The participants concluded that the seminar led to a better inter-ministerial understanding of how adjustment-related policy changes affect NARS and how negative effects might be alleviated. These topics are the theme of a forthcoming ISNAR publication.

gram analyzed 35 diagnostic reviews of NARS (plus one regional and one sub-national review) that had been carried out by ISNAR over the previous 12 years. This exercise attempted to correlate the structure of those national systems (or, in some cases, individual organizations)

with their performance. However, the analysis was necessarily rather limited for two reasons. First, ISNAR's review methodology evolved during this period. Second, the objectives and methodology of the reviews were not consistent across countries, largely because the reviews

were demand-driven. Given that institutional change typically occurs at a snail's pace, the analysis suggested there would be merit in revisiting some of those countries to try to assess structural/functional relationships over the long term. In particular, it would be useful to examine those NARS in which ISNAR review recommendations has led to organizational or structural changes.

### *Linkages between development policy and technology system development*

Changes in national development policy can profoundly affect all facets of a country's technology system. Creating an enabling environment for technology development requires an understanding of the options open to the architects of national development policy and of the likely impact of different national policies on research systems.

RPSS has undertaken a review of seven developing countries' experiences with structural adjustment. The aim is to relate these experiences to changes in the agricultural research system and to identify ways to improve the participation of the NARS in the reform process. During the year, case studies in Indonesia, Sri Lanka, Mexico, and Chile were completed in collaboration with NARS personnel. And studies in Egypt and Burkina Faso were launched.

The findings of each study have been or are being published as ISNAR briefing papers. The series of studies, with relevant background material from ISNAR, the World Bank, and other collaborators, will be published jointly with the Bank's Economic Development Institute in 1994.

In many of the countries studied, governments are trying to encourage greater private-sector participation in research. RPSS has been examining the links between public- and private-sector agri-

cultural research and studying ways to make privatization a practical reality.

This topic is of particular interest to Latin America, where many countries are partially or completely divorcing their agricultural research from the public sector. RPSS has been studying public/private-sector linkages in the research systems of three countries with widely differing private-sector components. The countries are Ecuador, Colombia, and Jamaica. Strengths and weaknesses of the various types of linkages encountered have been examined and discussed at seminars in the respective countries and in meetings with donors promoting the privatization approach.

A problem faced by RPSS in its policy work relates to the multiplicity of government jurisdictions affecting national research systems. Most of the NARS and NAROs that ISNAR works with are closely linked to ministries of agriculture. However, policies that strongly influence what can or cannot be done by these research systems or organizations are often determined by other ministries, such as finance, planning, or science and technology.

During 1993, ISNAR tried to bridge this gap in anglophone Africa. Working with EDI, ISNAR brought together a group of senior personnel at the decision-making level from different ministries and institutes. At a week-long seminar participants reviewed the linkages between structural adjustment and agricultural research and set out a plan for follow-up seminars at the national level (see page 56).

### *Expanding the frontiers of the NARS*

Two areas of agricultural research that have attracted much attention in recent years are biotechnology and environmental conservation. In both cases the knowl-

edge and experience of many developing countries is extremely limited. They are major areas in which ISNAR foresees playing a new role in guiding the policy debate and investment environment.

ISNAR's work in biotechnology policy lapsed during 1992 through lack of resources. But a large grant from the Dutch government enabled us to rekindle our efforts early in 1993.

In its first phase, the biotechnology program has focused on providing user-friendly materials targeted at developing-country policymakers who may not have a strong background in science. It also brought together representatives from more than 30 international research programs, IARCs, technical and regional networks, and donor organizations that make biotechnology services available to developing countries. The results of this global exchange, along with published

and unpublished ISNAR reports, will form the core documentation for a series of regional workshops on biotechnology policy starting in 1994. The ISNAR reports cover a variety of issues and topics: intellectual property rights, biosafety, biotechnology policy in 10 NARS, and decision-making in the area of biotechnology policy.

The second new area of activity, being pursued jointly with other ISNAR programs, is natural resource management policy in developing countries. Here the initial task has been to define what role ISNAR might play. The theme essay at the beginning of this report discusses the issues of natural resource management and sustainable production systems. It is accompanied by a brief description of ISNAR's efforts in this area. See pages 45 to 47.

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*A biotechnology laboratory in Africa. The Intermediary Biotechnology Service, headquartered at ISNAR, helps to provide researchers and policymakers with advice and information on biotechnology and related expertise around the world.*



*Measurable outputs*

During the year RPSS staff published or prepared for publication eight ISNAR briefing papers, five research reports, 14 discussion papers, six country statistical briefs, 11 confer-

ence or meeting papers, five reports to donors or governments, seven books or book chapters, and 14 journal articles. Advisory visits were paid to 11 African, eight Latin American and five Asian countries. Training was provided for staff of 10 NARS.

## Research Program Design and Management Program

*The RPDM program helps national research systems to design, prioritize, and manage well-focused research programs that address users' needs and generate relevant technologies and knowledge.*

*In other words, its task within the ISNAR portfolio of services is to promote high-quality, practical agricultural science through good management. High-quality in the sense that research methodologies and practice meet international standards of scientific excellence. And practical in the sense that research concentrates on real problems, producing innovations and information useful to farmers, extension agents, policymakers, and others charged with promoting sustainable agriculture.*

*RPDM's primary clients are national research directors, program leaders and coordinators, and scientists with managerial responsibilities. The management components or topics covered by the program are research program organization; program formulation and priority setting; links with sources of knowledge and technologies; links between research, technology development, and users; and planning, monitoring, and evaluation (PM&E).*

**R**esearch programs must be properly designed, prioritized, and managed if they are to contribute to national development. If they are not, then the work of scientists, even when it is of high quality, will go unrecognized and the impact on agriculture will be minimal or negligible.

The RPDM program works with NARS to build their capacity to develop and manage research programs. It provides advice, develops tools and methodologies, and organizes training. It

also promotes the management of essential linkages — both between components of the research system and between the research system and outside actors — to improve overall performance and accountability.

In 1993, the RPDM program made significant progress in four areas: PM&E; links between, on the one hand, the research and technology-transfer system and, on the other hand, farmers and farmer organizations; program organization as it is affected by the growing im-

portance of natural resource management research; and research's links with sources of knowledge.

More than 60 publications and other documents were produced in these thematic areas to strengthen ISNAR's work with developing countries.

### *Planning, monitoring, and evaluation*

Building on 1992 achievements, RPDM staff launched the final phase of a PM&E project titled "Strengthening Agricultural Research Management in Latin America and the Caribbean." (See the shaded text starting on page 61 for an overview of the project.) Collaborating with national and regional organizations, they focused on the design, development, testing, and refinement of training materials. They also began efforts to institutionalize PM&E training in the region.

Here are some of the year's highlights:

- preparation of a manual for the training of trainers
- preparation, testing, and use of four training modules
- delivery of a training course in the Andean countries
- the revision and completion of Spanish-language training materials

Parallel work in research and documentation resulted in the preparation and publication of a sourcebook, *Monitoring and Evaluating Agricultural Research*, in cooperation with CAB International.

Arrangements were completed to translate and adapt the training materials for English-speaking countries and to publish the M&E sourcebook in Spanish. The project also formulated a strategy to make PM&E training a permanent activity of the participating NARS through an-

nual subregional training courses. Funding is being sought for these.

### *Links between research, technology transfer, and users*

The program continued its long-standing work in the important area of linkages between research and technology users, including farmers and farmers' organizations. Staff and collaborators conducted research, tested results and guidelines, and gave advice to NARS.

ISNAR launched its RTTL study on linkages in 1988. The results and lessons from the seven country case studies were summarized in a major research report published in 1993, titled *Partners in Agricultural Technology: Linking Research and Technology Transfer to Serve Farmers*.

In 1992 the program embarked on a supplementary study to enable the project team to focus on research system links with farmers and farmer organizations. Case studies were begun in three countries: Kenya, Ghana, and Burkina Faso. Good headway was made in 1993. Upon completion early in 1994, the studies should provide ISNAR with valuable knowledge to improve the advice and assistance it gives.

A major collaborative study with ODI titled "Farmers' Organizations and Research as Partners" was approved for 1994. It will be the next major thrust of our in-depth analysis of linkages between research and technology users.

Collaborative work with a visiting researcher (working at ISNAR on a six-month sabbatical leave) resulted in the first draft of a training module on identifying linkage problems. This, plus another module on managing linkages with technology users, which was completed and tested earlier, will be further field-tested and approved in 1994. The two will form

## **Planning, monitoring, and evaluation: Making them a permanent feature of research in Latin America and the Caribbean**

Major improvements in the way agricultural research is planned, monitored, and evaluated are becoming evident in many countries of Latin America and the Caribbean. Much of this progress can be attributed to a collaborative project between ISNAR, several national, regional, and international organizations in the region, and the Inter-American Development Bank (IDB), which provided most of the funding.

By the end of 1993, the project team had analyzed various country experiences, prepared practical guidelines, disseminated new methods, and improved research managers' understanding of the principles and processes of planning, monitoring, and evaluation (PM&E). Through participation, collaboration, diversification, learning by doing, and synthesizing information, a conceptual framework was developed and is now widely used in Latin America and the Caribbean.

The project has so far gone through six phases: planning, case studies, preparation of training materials, training courses, preparation of reports and publications, and dissemination of findings. In the final phase, participants will discuss and evaluate the project results at a regional workshop and prepare for the institutionalization of PM&E training and improvement in the region.

At the first regional workshop, in 1992, participants planned the project. This was followed by 13 case studies in North, Central, and South America and in the Caribbean. The second regional workshop served to synthesize findings and allowed for an assessment of training needs and opportunities. Subsequent phases concentrated on the design of training modules and sub-regional training courses.

So far, the project outputs, featuring 29 publications, have included

- a sourcebook on monitoring and evaluation
- 13 case studies on PM&E in the region
- four training modules
- a manual for trainers
- proposals for institutionalizing training in the region

Perhaps more important, a group of skilled and experienced trainers has been formed and many research managers trained in PM&E.

The lion's share of funding for the project was provided by IDB with a grant of US\$690,000. Expenses for supplementary and related activities have been

covered by grants from IDRC (Canada), SDC (Switzerland), several collaborating countries and organizations, and by ISNAR's core budget. The contribution of staff time from national and regional organizations also represents a major investment in this partnership.

The lessons learned should help ISNAR in promoting PM&E as an integral part of agricultural research management in the other developing countries of Africa and Asia.

the nucleus of ISNAR training materials in this thematic area.

Analysis of research findings and lessons from the program's previous work on linkages (RTTL and OFCOR projects) highlights several important points about linkages:

- obtaining farmer feedback is a chronic weakness in NARS
- the performance of technology systems is often undermined because essential tasks are not being performed
- structural intervention is not the only solution to linkage problems
- resources need to be explicitly allocated to support linkages
- linkage mechanisms need to be put in place at multiple levels

Our future work will consolidate and package research findings to support our advisory and training work in this area. And our orientation to farmer organizations should help bring these essential partners into the mainstream of agenda setting, technology development, and transfer.

#### *Linkages with knowledge systems*

Late in the year the RPDM program launched the first phase of a German-funded project on the role of universities in national agricultural research systems.

A research associate was appointed to further develop and test the conceptual framework and methodology.

This is a collaborative project with research and university institutions in Benin and Nigeria. The first workshop with national and international consultants and the national steering committees is scheduled for early 1994.

Funds are being sought for a second phase that would secure the participation of other countries. This would enrich the project, giving it the range and diversity of country experiences needed to formulate widely applicable guidelines and strategies for strengthening universities' roles in NARS and their links with other research institutions.

A special activity under the theme of "linkages with knowledge systems" has been the development of a master's degree program in agricultural research management. ISNAR is doing this in cooperation with three members of the Network of European Agricultural Universities and Scientific Complexes (NATURA): Wageningen (the Netherlands), Leuven (Belgium), Reading (U.K.).

A nine-month curriculum has been designed in modules to be offered in the three universities. A special ISNAR/NATURA project to cover the training program, fellowships, and related activities has been prepared for possible funding by the European Community.

The master's program is aimed at mid-career research managers from the African, Caribbean, and Pacific nations of the Lomé Convention, which have historic links with Europe. Field dissertation work will be carried out in the student's own or a similar country.

### *Natural resource management and program organization*

RPDM's work under this theme is focused on how to broaden or reorient agricultural research agendas to address the sustainable use of natural resources in agriculture, forestry, and fisheries. Special consideration is given to the policy, institutional, program, and managerial implications of such broadening.

With the assistance of external consultants, our analysis has created a solid base for the evolution of a NARS-oriented ISNAR strategy and program in the area of natural resource management research. See pages 45 to 47 for more on this.

### *Other activities*

RPDM provided a senior staff member to chair a task force charged with preparing a "framework for action" to revitalize agricultural research in the humid and subhumid zones of West and Central Africa. The work is sponsored by the Special Program for African Agricultural Research (SPAAR) and the Conference of Ministers of Agriculture in West and Central Africa (CMAWCA).

During the year the task force prepared the major building blocks for the

*At a workshop in Abuja, Nigeria, the Honorable Alhaji Abubakar Hashidu (left), then Nigeria's Federal Minister of Agriculture and Natural Resources, is greeted by T. Ajibola Taylor of ISNAR. Taylor chairs a regional task force looking into the revitalization of agricultural research in West and Central Africa.*



framework and presented its interim report to a meeting of the college of ministers in Accra, Ghana, in December.

The ministers endorsed the thrust of the framework for action. It calls for bolstering national and regional capability in agricultural research to be , strategic planning of research at the national level, building coalitions for the benefit of research, and creation of an umbrella mechanism to promote regional collaboration. Upon completion, the framework will be subjected to scientific validation at a re-

gional workshop and to political endorsement at the next conference of ministers.

RPDM staff also gave continuing assistance and advice to many NARS in the areas of strategic planning, program formulation and priority setting, linkage management, and planning, monitoring and evaluation. Among the countries counselled were Bhutan, Benin, Bangladesh, Uganda, Morocco, Mauritania, Niger, Kenya, Ghana, and many Latin American and Caribbean countries.

## Management of Organizations and Resources Program

*Within ISNAR's overall assistance to developing countries, the point of intervention for the Management of Organizations and Resources (MOR) program is the very heart of science-driven agriculture: the research organization.*

*MOR's aim is to help research organizations to become more conducive work environments — through better management, stimulating work conditions, and adequate resources. The program strives to meet this objective by devising management tools, training managers, and assisting them with transforming their organizations into sustainable units, responsive to the needs of their stakeholders.*

**T**he MOR program is built around three themes. The first is institution building. Topics include leadership, guiding values, governance, and structure. The second is the management of resources: people, funds, physical assets (such as equipment, land, and buildings), and the information needed to properly manage research activities. The third theme is management processes. This covers operational planning and monitoring institutional performance.

The program also supports the management of ISNAR's own human and financial resources. These internal functions

account for 10 to 15 percent of the program's resources.

### *Research on the management of organizations*

During the year, the MOR program presented the results of two major research projects.

The first project was a study of the management of physical resources, specifically the planning and design of research facilities. The results were published in ISNAR's Research Management Guidelines series (see page 67). This prac-

tical guide is aimed at senior managers of national agricultural research organizations. It is intended to help them make decisions about the planning of new buildings or remodeling of existing ones.

The second project was in the area of human resource management. We completed a major case study that addresses the issue of women's participation in national research organizations. The final report is being revised.

Women now make up a significant proportion of professional staff in many NARS. In the Philippines, where the case study was done, 53 percent of scientists with MS or PhD degrees are women. This high level of female participation reflects several factors: the rise of educational opportunities for women, the relative gender neutrality of science, the lower status of science compared with some other professions, and access to jobs in government and universities that tend to provide hospitable, flexible, and nondiscriminatory environments for women. Such conditions are found throughout the developing world. So issues raised in this case study may find wider applicability.

The ISNAR study shows that, in spite of their overall numbers, women researchers are still underrepresented in senior scientific and management positions.

The Philippine study report, produced in preliminary form as an ISNAR discussion paper, concludes with recommendations on practices to increase the entry, retention, and achievement levels of professional women in NARS.

### *Advice to NARS*

ISRA in Senegal is the first institute in Africa to fully implement INFORM, a management information system designed by ISNAR for use in agricultural research. Following a pilot phase in one of

ISRA's departments, INFORM was extended to all departments in 1993. The institute now has a data base covering all its experiments and scientists, complete with a set of analytical tables that should facilitate the next research planning exercise. ISRA is considering using INFORM to monitor its research programs.

In Uganda, INFORM was implemented in NARO's research institutes and the three faculties of Makerere University that have agricultural research programs. Eight of these nine centers have their own INFORM data base of research scientists and research activities as well as a copy of the national data base. They plan to use it in the next round of research program planning in January 1994.

In the area of financial management, several NARS are modernizing their control systems. This makes sense given the size of investments and the impact these systems will have on the management of research. Three countries — Tanzania, Uganda, and Morocco — called on ISNAR for advice on services being offered by private consulting firms. ISNAR responded by analyzing proposals and reports submitted and by providing a second opinion on such services.

MOR program staff also took part in a World Bank appraisal mission to set the basic parameters of the financial management systems to be implemented in IER, Mali's umbrella agricultural research organization.

At the request of IER, MOR program staff also advised the institute's management on organizational changes that are part of a major project to strengthen agricultural research in Mali. The advice covered a variety of activities and topics: defining a "consolidated funding mechanism" (to coordinate financial support from various sources), contract research, decentralization of research management to the project level, the conditions and re-

quirements of employee service, and revision of IER's bylaws.

### *Evaluating ISNAR training*

ISNAR has been concerned for many years about the impact of its training efforts.

In December 1992, ISNAR staff participated as resource persons in a training workshop for 27 new or soon-to-be appointed research managers in Asia. It was organized in collaboration with our sister institute IRRI in the Philippines. Participants were asked to prepare an action plan for improving the way they work. Time was set aside throughout the course for this purpose.

The extent to which participants put their action plans into practice when they returned home to their jobs became the criterion for a 1993 evaluation of the workshop's impact. Training did appear to influence the way participants performed tasks — in managing people, information, and linkages, and in planning, programming, and priority setting.

ISNAR has recorded the results of this follow-up exercise in its discussion paper series. Through such evaluations, ISNAR hopes to improve its future training efforts.

### *Yardsticks of organizational performance*

In assessing organizational performance, both effectiveness and efficiency should be considered. Effectiveness refers to how successful an organization is in fulfilling its mission. Efficiency relates to the amount of resources it consumes in doing so.

ISNAR is conducting research to develop a set of indicators that will measure the performance of an institution. These will help research organization managers monitor progress from year to

year and provide insights about the management components that need to be strengthened.

### *Review of INFORM*

Many NARS around the world have implemented INFORM over the last three years with support from ISNAR. Field conditions have varied widely and different implementation tactics and strategies have been followed.

It is still too early to attempt a full impact evaluation of such information management procedures on decision-making in NARS. However, it is appropriate to review these experiences to determine their current use, strengths, and weaknesses and to record any innovations made by the NARS. Such a review also serves to identify modifications to be considered in future implementations. This review has been completed and the results are being written up as an ISNAR discussion paper.

### *Setting a good example through benchmarking*

In its simplest form, benchmarking for national agricultural research organizations is a way to foster change in management methods by bringing to light and promoting the best observed practices in other NARS of the developing world. An analogy can be made with agricultural extension that spreads the best farmer practices throughout a surrounding region. With the assistance of national staff, ISNAR is documenting successful management practices in various NARS. These will become models for other countries facing similar management problems and constraints on the research environment.

One interesting practice, observed at INTA in Argentina, relates to the recruitment of managers. Within the institute,

managers are given short-term appointments, making for a healthy measure of competition and allowing rotation based on performance. This practice, now being

written up for publication, has served as a test case for the ISNAR approach to preparing benchmarks.

## A practical guide to planning and designing research buildings

Planning and designing agricultural research buildings is an intricate process to which research scientists promoted to management positions have had little exposure.

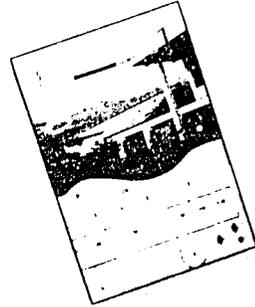
They can rely on professionals such as architects and engineers to help them in this task. But unless they understand and take an active role in the planning of a building or a retrofit, as well as in the various steps from concept to finished product, they may not reap the full benefit of these professionals.

Furthermore, the design and materials that research managers eventually choose may have a dramatic impact on construction and maintenance costs, as well as recurring costs for utilities.

*Guidelines for Planning and Designing Agricultural Research Buildings* (ISNAR Research Management Guidelines No. 1, 132 pages) steers the uninitiated research manager through a variety of issues and decisions. These include the selection of an architect, identification of user needs, choice of materials, design of the building to minimize utility and maintenance costs, bidding processes, supervision of contractors, and disbursement of funds to the contractors. The user should find here useful information, ideas, and practical advice on many aspects of research facility planning.

The main focus of the guidelines is the design of offices, laboratories, and ancillary buildings in developing countries, primarily in tropical regions. However, a whole chapter is devoted to maintenance because this is a major consideration in the design of facilities. Special consideration was given to low-cost maintenance that significantly extends the useful life of buildings.

Research managers, although the prime target, are not the only professionals who can benefit from the information presented. Others associated with planning and developing agricultural research facilities — such as administrators, architects, agriculturalists, engineers, builders, lenders, and other funding agencies — will also find these guidelines useful.



### *Managing change*

ISNAR has had a wealth of experience in guiding and promoting change in national agricultural research organizations in developing countries. The MOR program has begun research to integrate ISNAR's own experience with the available international literature on change. This will help identify the perspectives, procedures, and steps that organizations can take to plan and implement change. The concepts generated by this MOR project will be field-tested in collaboration with agricultural research organizations. The conceptual framework was presented in Ecuador in a joint ISNAR/IICA/FAO regional workshop on the management of change in NARS that are facing downsizing.

### *Assessing researchers in Africa*

Researchers are clearly the most valuable resource that an agricultural research institution has. But motivation sometimes wanes because of disillusionment with the conditions of employment or other factors. When that happens, scientists often look for jobs with other national or international organizations or resort to moonlighting to boost their incomes.

Improving performance is a complex process involving the introduction of incentives, promotion mechanisms, and procedures for rewarding good work. But these measures must ensure that the performance being rewarded meets the organizational objective of service to farmers rather than academic interests. This calls for the design of an appropriate scheme of service and a system for assessing researcher performance.

For several years now ISNAR has been receiving requests for assistance in this area, especially from francophone Africa. The requests have come both from scien-

tists concerned with promotion and from managers wishing to encourage their researchers to focus more on serving users' needs and less on getting scientific articles published. In collaboration with INRA in Morocco and ISRA in Senegal, MOR has begun work on the design of a new performance assessment mechanism.

### *New directions*

The sustainability of research organizations is being challenged by at least two sets of forces over which they have no control.

The first is fiscal stringency in developed and developing countries alike. Research organizations find it increasingly difficult to obtain additional funds or even maintain current levels. Consequently, they need to be more efficient in the use of resources and may even have to downsize to adjust to the new realities. Moreover, as they attempt to change, they need clear indications of performance to demonstrate that they are progressing toward development objectives.

Second, research is faced with the difficult task of increasing the productivity of physical resources so as to meet the growing demand for food, feed, and fiber. As noted in the same essay in the opening pages of this report, such a challenge will require a broadening of the research agenda to include, among other things, natural resource management. In the changing scientific environment, current organizational structures will be called into question. Research will increasingly become the domain of highly multidisciplinary teams working on longer-term horizons. In some cases, it will lead to less tangible results than in the past. Clearly, research leaders will be presented with serious management problems.

Recognition of these forces has led the MOR program to focus its activities for the years to come around two central themes: management of resources and organizational change. Research has begun in both directions.

In addition to the activities described above, the program is initiating research projects to articulate realistic responses to the new trends. As a result of its participation in ISNAR's working group on natural resource management research, MOR is

## Collaborative Services and Training

*Collaborative Services and Training (CST) serves as a central contact point between ISNAR and its national and regional partners. In doing so, it enables the institute to harmonize its collaborative work with developing countries and their institutions — work that takes the form of advice, research, training, and information exchange in the areas of policy and management. While CST coordinates such relationships and implements cross-program activities such as the long-term “comprehensive institutional development” (CID) projects, it is the three ISNAR programs described earlier that take responsibility for much of ISNAR's in-country advisory work.*

*CST's small Training Unit does not, nor is it able to, actually carry out training courses and programs. Rather, it has the dual task of supporting ISNAR's other operational groups in their training work and of advising and assisting NARS in the management of their own training programs.*

### COLLABORATIVE SERVICES

In 1993, ISNAR continued to provide collaborative services to countries in all the five regions: Western and Central Africa, Eastern and Southern Africa, Asia, Latin America and the Caribbean (LAC), and Western Asia and Northern Africa (WANA).

The program's scope remained wide, ranging from complex activities like the CID projects to more specific, short-term ones. Unfortunately, the scale of the program was limited by worsening budget constraints. This made prompt response

to country demands impossible if funds had not already been clearly earmarked.

The overall structure of Collaborative Services remained unchanged from that prevailing in 1992. However, the year saw one major staffing change. Our regional coordinator for Eastern and Southern Africa, a 12-year veteran of ISNAR, left the institute for a well-earned retirement. He was replaced through internal recruitment. The situation afforded the opportunity to make some minor changes in the allocation of country responsibilities between ISNAR's two regional coordinators for Africa. The new country assignments

reflect the capacity of the coordinators to work in English- and French-speaking countries.

### *Country collaboration: key achievements*

ISNAR carried out collaborative work in 36 countries during the year. Key details are provided in the "ISNAR around the World" section beginning on page 79. In the following pages, we focus on a few of ISNAR's major country activities in 1993, including the work of outposted staff and activities classified as CID projects.

Among the milestones reached in 1993 was the completion of diagnostic reviews of the agricultural research systems of Namibia, Algeria, and Yemen. The review of Namibia is expected to lead to assistance in strategic planning during 1994.

Also to be highlighted is ISNAR's assistance to Mozambique with research program planning and restructuring of the country's management of its key agricultural research institute, INIA. This was a particularly demanding task. After years of war and inadequate investments by the government and donors, INIA is weak in human resources, infrastructure, and management. The government recognizes that the country's socioeconomic recovery depends upon the broad-based development of the rural sector. To help achieve this, successful and efficient agricultural research is indispensable.

In Egypt, a particularly noteworthy ISNAR-supported activity has been the introduction of data bases on researchers and research activities to serve the information needs of management. This was followed by research planning exercises for five universities and the central national research agency (see page 71).

Finally, we make brief mention of ISNAR collaboration with our sister center ICARDA to assist the NARS of Jordan. With the support and participation of the

two international centers, the country's lead organization for agricultural research and technology transfer, NCARTT, organized a management workshop in Amman in late February and early March. It introduced 13 key Jordanian research managers to various concepts and tools for strategic planning as well as program design and management. This was followed by a major exercise, also with ISNAR support, to formulate a national strategic plan for Jordanian agricultural research and a medium-term program plan for NCARTT.

### *CID program: in-depth partnerships with Uganda and Ecuador*

Comprehensive institutional development, or CID, is a key form of ISNAR service, as outlined in our strategy and medium-term plan. Long-term intensive partnerships — over five to 10 years — are being set up with a few selected countries. The program thus allows for a concerted effort in transferring ISNAR-developed management technologies to a partner NARS and in helping it to become institutionally sustainable.

But ISNAR also benefits. The CID program provides an invaluable opportunity to develop or improve management tools under the actual conditions faced by NARS and to test certain hypotheses.

The program made considerable progress during the year. Full projects were developed by NARS leaders in Uganda and Ecuador with the assistance of ISNAR staff.

The Ugandan project sets out specific activities, some already completed or in progress, but most expected to be implemented by the end of 1994:

- the development of a research management system for the recently created research agency, NARO; an

## Information for better management in Egypt

With ISNAR's assistance, the Agricultural Research Center (ARC) of Egypt has developed a system of data bases to provide information on scientists and their research activities. Data for 1993 have been collected and entered. The system will now be updated annually.

The data bases are used by scientists, research managers, and policymakers to assist with planning, programming, monitoring, and evaluating agricultural research.

With the help of this management information system, ARC is designing and improving its research strategy and formulating a research program. ISNAR and CEMARP, a joint Canadian-Egyptian project, are continuing to assist with further development of the data bases and with the planning and programming exercises.

*His Excellency Dr. Yousef Wally (right), Egypt's deputy prime minister and minister of agriculture, meets with staff of the Canada-Egypt-McGill Agricultural Response Program (center) and ISNAR (left). He is being briefed on the introduction of research-related data bases at Egyptian universities.*



outposted ISNAR staff member directly supports this ongoing work

- a workshop on the role and operation of NARO and on the implementation of the Agricultural Research and Training Project supported by the World Bank: this was held in October
- introduction of the ISNAR-developed information system for managers, INFORM: the initial data-gathering work, the most costly and time-consuming phase of this activity, was successfully completed in July and August 1993. It was followed by a full introductory workshop on INFORM in November and December
- improving personnel management and methods of assessing scientists' performance
- improving research program formulation at the research-station level
- improving library and information services
- introduction of a system of planning, monitoring, and evaluation of agricultural research at NARO
- setting up financial management procedures
- improving links between research and extension services
- formulating guidelines for participation in research networking arrangements
- short-term training courses in different aspects of research management

The project in Ecuador foresees similar activities:

- administrative restructuring of the autonomous research agency INIAP: work is ongoing

- strategic research planning
- human resource development and planning
- improvement of links between research and technology transfer
- design of an information management system
- support to the process of institutional change

It must be remembered that the activities listed above are by no means all-inclusive. Other activities will be started as the projects mature.

#### *In-country service*

Throughout the year, two outposted staff members assisted the NARS in Uganda and Tanzania. In each case this support was linked to ongoing World Bank-assisted projects. In Uganda, work started some years ago. The ISNAR staff member there has been assisting the director general and senior management of NARO in developing and establishing an improved research management system. He is also a key figure in the implementation of the CID project in that country.

In Tanzania, an ISNAR staff member took up duties in early January 1993. His terms of reference are broadly similar to those of the outposted adviser in Uganda. However, there is greater and more specific emphasis on supporting the Department of Research and Training's Project Implementation Unit and in assisting with the introduction of an information management system.

Assistance to the Bangladesh Agricultural Research Council, described in last year's annual report, ended in June. Collaboration with BARC continues, however, in a rather less structured and less intensive way.

### *Associate experts*

Associate experts are young graduates assigned to international organizations for one to three years of in-service training under the direct guidance of senior staff. Through the UN, the Government of Germany provided assistance for an associate expert to join ISNAR's staff in 1993. This is the second such position created at ISNAR. During the year, he worked primarily with the two regional coordinators for Africa. In 1994, he will be assigned full-time to assist with ISNAR's work in Uganda and support our outposted staff member there.

### *Links with regional organizations*

ISNAR cooperation with regional organizations helps create the conditions for so-called spillover effects — that is, the sharing and application of research management knowledge and expertise among member countries. It is also a means of assisting regional entities with the development or reinforcement of their own agricultural research management policies and programs.

ISNAR maintained contact with the African Development Bank in 1993 and there is now an ongoing dialogue with that important development body. Similar contacts have been established or reestablished with the Asian Development Bank and with the Inter-American Development Bank; a number of areas of mutual interest have been identified.

ISNAR also strengthened its contact with the Southern African Development Community and the Institut du Sahel. It is expected that a collaborative program with INSAH will be designed in 1994.

In Latin America, ISNAR intensified its contacts with subregional groupings such as PROCISUR, JUNAC, and PROCANDINO. Likewise for its links with

AARINENA, AOAD, and CIHEAM in the WANA region.

### **TRAINING**

After a hiatus of 16 months, the Training Unit welcomed its new coordinator. She took up her duties in early November. However, the unit also lost its training materials specialist, who returned to the USA.

The year began with the formulation and refinement of a new strategy for the unit. This calls for three types of service. First, the unit will support other ISNAR units involved in training NARS managers. Second, it will be responsible for organizing composite training events that cut across ISNAR program lines. And third, the unit will contribute to building ISNAR's capacity to help NARS manage their own training activities.

### *Two training modules*

In line with the training strategy, 1993 saw the development of a number of comprehensive training modules. Working closely with ISNAR subject-matter specialists, the unit produced modules on research project planning and monitoring and on program planning and priority setting. These were field-tested — for example, during a workshop in Kenya. Further work on the modules will be undertaken before they are made available to NARS and interested training organizations. The unit also assisted ISNAR staff with the preparation of a variety of other training materials.

### *African training projects on track*

The five-year training project with Kenya's lead organization for agricultural research, KARI, continued during the year. Four training events took place. One

of these was organized and presented entirely by KARI itself. The other three were implemented with the assistance and participation of ISNAR. The project ends in 1994.

Phase 2 of the SACCAR/ISNAR/ESAMI training project began in 1993. It is based in Arusha, Tanzania, at the Eastern and Southern African Management Institute, and aims to strengthen research management in that region of Africa. Problems in recruiting a project manager, as well as other administrative hurdles, resulted in some delays in getting this phase of the project up and running. However, the project management is now fully established.

The work is financially supported by USAID and assisted by an outposted ISNAR staff member who serves as project adviser. The project design emphasizes the transfer of responsibilities to the target

countries, their NARS, and to ESAMI, the regional training and management institution. In addition to assisting ESAMI in establishing training capacity in agricultural research management, the project organized a regional train-the-trainer course. Also, a national workshop on priority setting was held in Zambia.

### *A growing responsibility for NARS*

Finally, the Training Unit prepared a paper on the Devolution of Training from IARCs to NARS. It was submitted to the directors of the CGIAR centers during International Centers Week in October 1993. The paper looks at the implications for NARS of cuts in funding for scientific training at IARCs. It is to be revised to take account of comments received from the international centers.

## **Information Management Services**

*Information Management Services (IMS) has two mandates. First, it operates inside ISNAR to assist staff in the collection, management, use, presentation, and dissemination of information. Second, it operates outside ISNAR to assist NARS in developing appropriate scientific and management information practices.*

**I**n 1993, about 80 percent of IMS resources went into internal operations and 20 percent into direct support for NARS. Over the course of ISNAR's medium-term plan period (1994-98), IMS intends to move closer to a 50-50 allocation between these categories.

Support to the national systems centers on two major types of activity. The first is cooperation with NARS on overall information planning, including both assessment of needs and evaluation of ap-

propriate technologies to meet those needs (see page 76). The second is participation in NARS efforts to develop specific components of national information systems. Examples here include work on the collection and use of both scientific and management information, the planning and production of publications, and the acquisition and maintenance of new information technology.

IMS consists of three units: Publications Services, Library and Documentation Services, and Computing Services.

### *Publication Services*

For 1993, the Publications Services unit can point to five major accomplishments, in addition to the production of 26 official ISNAR publications.

First, the unit inaugurated a new publications program designed in 1992. This consists of five regular series, in addition to corporate publications such as the Annual Report and Newsletter. Three new series are Research Management Guidelines (projected at about three per year), Research Reports (about six per year), and Briefing Papers (about 12 per year). Two series that continue from before 1993 are Country Reports, which are diagnostic reviews of particular NARS, and reports of meetings on agricultural research management.

Second, the unit carried out a readership survey. Late in the year, readers of the ISNAR Newsletter received a questionnaire about their interests within the field of agricultural research management. Data from these questionnaires will be used to develop more specialized mailing lists.

Third, the unit introduced improved internal management procedures. ISNAR now awards contracts for printing on a multiyear basis. The inventory of publications in stock has been computerized, as has been information on budgets, costs, and projects in progress.

Fourth, the head of Publications Services co-authored a report assessing constraints, needs, and priorities within the information program of the Institut d'Economie Rurale in Mali. This was the main product of his participation in an ISNAR mission to Bamako in October 1992.

Finally, a joint ISNAR/CTA project was prepared with the aim of helping several East African NARS to improve the planning and production of their annual reports.

### *Library and Documentation Services*

ISNAR's library and documentation unit continued to improve services to staff and to add to its holdings. Requests to other libraries for materials not held at ISNAR averaged more than 30 per month, almost double 1992 demand. Requests for on-line bibliographic searches increased similarly. Additions to the catalog averaged about 150 per month, about the same as in 1992.

Two external activities were especially significant.

In cooperation with CIA and CAB International, the unit organized an expert consultation at ISNAR in January on Information Management Needs in NARS. The meeting was attended by representatives of NARS, donor agencies, and other CGIAR centers. The objective was to identify issues in information management for which NARS and international agencies could develop joint initiatives.

The unit head also participated in an ISNAR/ICAR team to analyze information needs in the Indian NARS (see following page).

### *Computing Services*

ISNAR continued to develop its internal PC-based network. Each scientist, administrator, and secretary is a member of that network via a personal computer on his or her desk. Many staff also have a PC at home and are connected via remote email. Outposted staff in Tanzania and Uganda are similarly linked to the network. ISNAR is still a long way from becoming an "institution without walls," but it is an evolving community extending well be-

## **Building a national information system for agricultural research in India**

In early 1993, the Government of India began work on a major project to bring the power of new information technology to its NARS. It dubbed the project "ARIS," an agricultural research information system. It asked ISNAR to take the lead in formulating a strategy.

This process had two parts: assessing needs and identifying appropriate technologies. Each was carried out by a team consisting of ISNAR staff and NARS leaders. In the course of about two months in India, the teams had established contact with more than 400 NARS staff and more than 150 information specialists. The entire operation was based on three assumptions:

- that the lack of access to information is, and will continue to be, a serious constraint on both management and scientific decision making in the Indian NARS
- that new technology has the potential to strengthen information management, thereby improving decision making
- that early action is required if information management in the NARS is to be improved. Too much technology and too much data may actually weaken rather than strengthen decision making. The challenge is to strike a balance between three interrelated considerations: the need for information, the willingness of NARS managers and scientists to use it, and their capacity to manage new information technology

The needs assessment team worked to develop a consensus on four subjects: the main features of information management procedures currently in place, the strengths and weaknesses of these procedures, judgments about the benefits to be had by improving these procedures, and a list of issues that developers of an ARIS would have to face (e.g., data content, data collection and compatibility, organization and management, and resources required).

The resulting consensus became the starting point for the technology identification team. What technology was most appropriate to meet the identified needs? This second team also worked to develop agreement on four subjects: the main features of existing national telecommunications networks; the suitability of available (and planned) land line, radio, and satellite technologies for an ARIS; details about the computer and communications hardware and software that the NARS would need to acquire to implement ARIS; and judgments about the timing and schedules required for ARIS development.

As far as ISNAR knows, the effort by the Government of India to develop a national NARS information strategy is a "first." ISNAR expects similar exercises to occur in other NARS in the years ahead.

yond the headquarters building in The Hague. Much of the editorial work for this annual report, for example, was done in Ottawa, with support from The Hague via daily email messages and file transfers.

Network highlights of the year included the introduction of email-based fax and telex capability. In addition, the Computing Services unit achieved three important internal objectives and participated in two activities of direct service to NARS.

First, it introduced the new ISNAR address-and-mailing data base. The software is a commercially available product developed in The Netherlands and now being marketed internationally. The data base itself is used daily by ISNAR staff to locate addresses quickly, by the Publications Services unit to target printed materials, and by ISNAR's Central Files unit.

By the end of the year, it contained nearly 12,000 records, of which 4,700 make up the publications mailing list.

Second, it developed a new data base for fixed assets. This allows ISNAR management to identify and locate assets such as equipment and furniture, as well as plan for maintenance and replacement. In 1994 the data base will be linked to the ISNAR accounting system for depreciation calculations.

Third, the unit expanded ISNAR's in-house computer training program. In 1993, it ran more than 15 courses for staff.

Fourth, the unit head participated in an ISNAR mission to Sudan to analyze computer needs and priorities in the Agricultural Research Corporation (ARC). He was also a member of the ISNAR/ICAR team that recommended information technologies for the Indian NARS.

## Administrative Services

*Administrative Services supports the day-to-day operations of all program and support groups. It comprises four units: Accounts, Central Files and Telecommunications, Personnel and Administration, and Services and Supplies.*

**H**ere we highlight three Administrative Services activities aimed at improving ISNAR's internal management of resources.

First, ISNAR's external auditors, Moret Ernst & Young, reviewed ISNAR's accounting procedures and systems of internal control as part of the routine annual audit of ISNAR's accounts early in the year. Their recommendations, aimed at providing strong and stable administrative controls within ISNAR, have been implemented. The review was done as a

follow-up to the introduction of a new computerized financial system during the previous year.

Second, we conducted an internal audit of the procurement of consumable supplies for office use. This was part of an ongoing examination of policies, systems, and procedures in place within specific ISNAR work units, aimed at improving accountability and management. Although no major flaws were noted, several recommendations were made and implemented to further improve control

and transparency of the procurement process.

Third, a working group of ISNAR staff, drawn from various job categories and work units, made proposals for a new employee performance assessment and enhancement (PAE) system. Following en-

dorsement of their proposals by management and the Board of Trustees, an information and training program was launched to ensure smooth implementation of the new PAE system. This was done with the aid of a consultant.

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*The Services and Supplies unit procures, stocks, and distributes office supplies, keeps an inventory of ISNAR equipment, and operates the ISNAR reception desk and canteen. Here, Services and Supplies clerk Sarah Neal fills an order from an ISNAR staff member.*



## ISNAR around the World: Research, Advisory, and Training Activities

*The following pages present, in point form, ISNAR's 1993 activities around the world. Included are global, regional, and national events that ISNAR either organized alone, conducted jointly with other organizations, or contributed to by providing resource people.*

*For a number of major projects launched by ISNAR in 1993, additional information is provided in the New Initiatives at a Glance section, beginning on page 48.*

### GLOBAL

- Promoted national participation in international agricultural biotechnology programs through the ISNAR-based Intermediary Biotechnology Service (IBS). (See New Initiatives section.) Carried out a survey of international agricultural biotechnology programs. Set up the "Bioserve" data base to provide IBS clients with easy access to survey information. Organized an international IBS meeting at ISNAR headquarters in November attended by participants from both developing and developed countries. Organized regional working groups to examine issues pertaining to the management of biotechnology research.
- Continued research on key links between structural adjustment (national economic policy reform) and the operation of agricultural research, following a 1992 pilot country study in Ghana. Completed country studies in Chile, Indonesia, Mexico, and Sri Lanka. Launched country studies in Egypt and Burkina Faso. Published briefing papers on two study countries: Ghana and Indonesia. Project funding provided by CIDA, SPAAR, and the World Bank's EDI.
- Participated in and presented papers at a conference titled The Future of the Land, marking the 75th Anniversary of Wageningen Agricultural University, The Netherlands. ISNAR's work with NARS on integrating natural resource management issues into agricultural research agendas was presented to a PhD "master class."
- Participated in a conference in The Hague titled Development and Strengthening of Research Capacity in Developing Countries, organized by the Dutch Advisory Council for Scientific Research on Development Problems (RAWOO).
- Conducted field work for a review of ISNAR's efforts to assist 10 client countries with the implementation of its INFORM management information system.

## AFRICA

### REGIONAL ACTIVITIES

- Continued research for the ISNAR Indicator Series, an on-going project to quantify changes over time in funding and staffing levels in national agricultural research. Completed statistical briefs on Rwanda, Niger, Malawi, Botswana, and Kenya. Prepared drafts on Ethiopia, Ghana, Namibia, Mali, Burkina Faso, and Senegal for review by officials in the respective countries.
- Collaborated with FDI to organize and stage a one-week training seminar on the links between structural adjustment and agricultural research, in Nairobi, March 21-26, 1993. Participants: policymakers from African ministries of finance, planning, science policy, and agriculture. Purpose: to review the impact of structural adjustment programs on NARS and identify how NARS might productively provide input to such programs.
- Gave support and advice to the organizers of a conference of sub-Saharan NARS leaders, held in Cotonou, September 8-10. Participants in this "NARS-only" meeting discussed ecoregional approaches to agricultural research, funding, and links between NARS and IARCs.
- Began work on a project to assist East African NARS in developing a joint mechanism for regional cooperation (Burundi, Ethiopia, Kenya, Madagascar, Rwanda, Uganda, Zaire), i.e., in organizing and managing several agricultural research networks. Participated in the Eastern Africa Framework for Action Workshop held by SPAAR, in Kampala, in November. (See New Initiatives.)
- Presented papers on priority setting for research and on links between research and technology transfer at a workshop in Washington, D.C., which brought together representatives of institutions collaborating with USAID in African NARS.
- Led discussions during a conference titled *Africa in the Face of Biotechnology Challenges: The Case of Yam*, held in Côte d'Ivoire for sub-Saharan policymakers and scientists. Helped formulate recommendations for the host organization IIRSDA on the topic of biotechnology-related decision making for regional institutes.

### BURKINA FASO

- Continued long-standing collaboration with INERA. In particular, helped organize the first regional workshop on research planning, programming, and budgeting held in the Eastern Region.
- Continued work with a national researcher on a case study of the linkages between research, farmers, and farmer organizations.
- Launched a country study under the Structural Adjustment and Agricultural Research Project.

### CENTRAL AFRICAN REPUBLIC

- At the request of the country's UNDP office, assisted in a review of plans to establish an agricultural research entity, with particular emphasis on the management structure.
- Provided advice to the government in anticipation of its discussions with the World Bank regarding an agricultural development project.

### GHANA

- Continued work with a national researcher on a case study of the linkages between research, farmers, and farmer organizations.

**GUINÉE**

- Continued to provide IRAG with advice and assistance in the area of human resource development, as part of a World Bank-funded project. Field surveys of human resources were completed, data analyzed, and recommendations made on how to organize personnel services. Training was also given on several topics, including internal and external communications and human resource planning.

**KENYA**

- Continued with the implementation of the KARI/ISNAR agricultural research management training project. Direct assistance was provided for three of the four 1993 workshops: scientific writing; planning, monitoring, and evaluation; and soil and water research.
- Collaborated with KARI and the Humboldt University of Berlin on a project to improve priority setting for livestock research. The project will have active ties with the National Dairy Development Program, an extension arm of the Ministry of Agriculture, Livestock, and Marketing, with Reading University, U.K., and with two CGIAR sister institutes: ILRAD and ILCA. (See New Initiatives.)
- Continued work with a national researcher on a case study of the linkages between research, farmers, and farmer organizations.

**MADAGASCAR**

- Engaged a consultant to assess the following: the overall condition of agricultural research in the country, progress on executing a research-development project supported by the World Bank, measures needed for FOFIFA to meet the Bank's requirements, and, very broadly, ISNAR's

potential role in assisting with the implementation of related activities.

**MALI**

- Collaborated with IER on a reformulation of the institute's livestock program, including identification of 14 research projects, constituent activities, sites, and human resource requirements.
- Advised IER's director general on general management issues and, specifically, on organizational issues in preparation for a major World Bank project to reinforce agricultural research.
- Evaluated IER's financial management systems and procedures as part of a World Bank appraisal mission. (See New Initiatives.)
- Assisted with a review of IER's management information system and recommended improvements.

**MAURITANIA**

- Assisted the Mauritanian government in drafting the agricultural research management component of a national development project to be submitted to the World Bank. (See New Initiatives.)

**MOZAMBIQUE**

- Undertook two major missions to assist INIA with the preparation of a research strategy and medium-term plan and, later, an operational plan. (See New Initiatives.)

**NAMIBIA**

- Report of a 1992 diagnostic review of the NARS submitted to the government in May 1993. Findings and recommendations were discussed with the government, and agreement in principle was reached on ISNAR assistance with a follow-up research planning exercise.

## RWANDA

- Continued to work with staff of ISAR in research planning, priority setting, and budgeting. Helped to define indicators of performance and impact. Assisted with the introduction of monitoring and evaluation procedures.

## SENEGAL

- Continued to provide technical assistance to ISRA in the implementation (phase two) of management information systems. Completed an INFORM data base for each of ISRA's research departments. Funding provided through the World Bank.

## SIERRA LEONE

- Reviewed and commented on a strategic plan for agricultural research drafted by a national working group

appointed by the National Agricultural Research Coordinating Council.

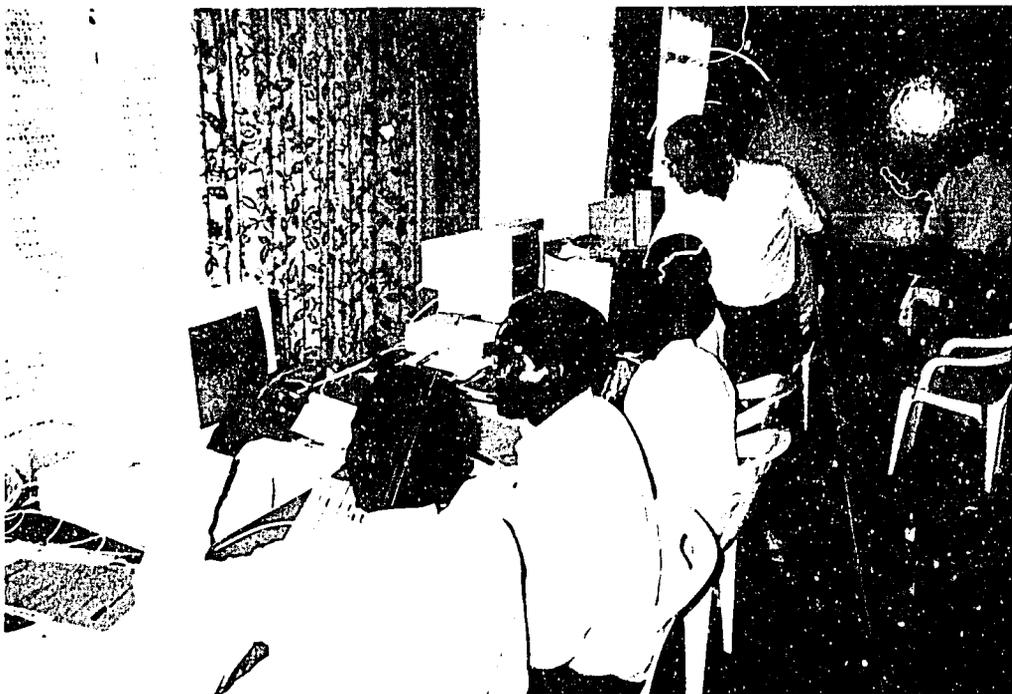
## TANZANIA

- Through an outposted officer, advised the commissioner and senior staff of the Department of Research and Training in the Ministry of Agriculture and Livestock Development on ways to improve agricultural research management. Assisted with several reviews of the World Bank-supported Agricultural and Livestock Research Project. Launched an INFORM-based information management system.

## UGANDA

- Worked with NARO to design a Comprehensive Institutional Development (CID) project, which establishes a long-term partnership with ISNAR, and mapped out a program of activities for the first year.

*Scientists and managers from research institutes in Uganda participate in a December workshop to implement INFORM, an ISNAR developed management information system*



- Through an outposted officer, assisted with the implementation of INFORM by guiding the collection and analysis of data and organizing training. Work included familiarizing senior managers with the ISNAR-developed management information system; training staff at six research institutes to collect, process, and present information on research activities and resources; and integrating INFORM with other information systems used by the NARS.
- Continued to assist with the development and implementation of administrative, management, and operational guidelines for the recently created National Agricultural Research Organization (NARO).
- Organized a national workshop on issues arising from the reorganization of the Ugandan NARS and the implementation of the World Bank-funded agricultural research and training project.
- Contracted a consultant to assist staff at NARO in determining research priorities at the station level.
- Contracted a consultant to assist in operating the research-extension liaison unit in NARO.

#### ZAMBIA

- Conducted a national workshop on research planning and priority setting under the aegis of the SACCAR/ISNAR/ESAMI agricultural research management training project.

## ASIA

### REGIONAL ACTIVITIES

- Organized a series of seminars and discussions to introduce management issues facing leaders of national biotechnology programs in Malaysia, Thailand, and Indonesia.
- Conducted an impact evaluation of the ISNAR-IRRI training workshop on research management issues in Asia held in 1992.

### BANGLADESH

- Completed a four-year USAID-funded collaborative project with BARC. (During most of this period, ISNAR had a staff member outposted in Dhaka.) Project aim: to improve and strengthen BARC's management, especially research planning and priority setting, human resource planning, and information management. A major initiative was assistance to BARC with strategic planning.

### BHUTAN

- Continued collaboration (phase three) with the Ministry of Agriculture to strengthen research on renewable natural resources (RNR). Assisted with implementation of the strategic (1992-2002) and medium-term (1992-1997) plans for RNR research, both of which were prepared during phase two of ISNAR support. Focus in 1993: review of ongoing research projects and setting research priorities based on five principal land-use systems. Funding provided by Swiss Development Cooperation.

### CHINA

- Collaborated, at headquarters during several weeks in April-May, with a member from the CAAS Institute of Agricultural Economics and a consultant (a former ISNAR staff member) on the priority-setting study for Jiangsu

Province. The final report, titled "Agricultural Research Priorities for Jiangsu Province: An Evaluation of Rice, Wheat, Rapeseed, and Cotton," is expected to appear in 1995.

#### INDIA

- Assisted ICAR with the design of a strategy for setting up a national agricultural research information system (ARIS). (See New Initiatives.)

#### INDONESIA

- Completed a country study under the Structural Adjustment and Agricultural Research Project and published the findings in a briefing paper.

#### PHILIPPINES

- Carried out a study of gender-related staffing and management issues in the Philippine NARS.

#### SRI LANKA

- Continued work with CARP on the uses of INFORM for planning, monitoring, and evaluation. Agreement reached with CARP to carry this work forward into 1994 and 1995, with financial support from the German government.
- Completed a country study under the Structural Adjustment and Agricultural Research Project.

#### VIETNAM

- Undertook a mission to establish contact and working relations with the Ministry of Agriculture and the agricultural research system. ISNAR subsequently received a request for assistance in reviewing agricultural research management.

## LATIN AMERICA AND THE CARIBBEAN

#### REGIONAL

- Held several training seminars on planning, monitoring, and evaluation (PM&E) as part of a regional project begun in 1992 titled Strengthening Agricultural Research Management in Latin America and the Caribbean. (See pages 61 and 62.) Two workshops were held at CIAT headquarters in Cali, Colombia; two subregional training courses in Uruguay and Ecuador. Training materials were also produced with assistance from CIAT's instructional materials unit. Participating institutions and countries: APROSCHELLO (Venezuela), CENIAP (Venezuela), CIAT (Bolivia), FONAIAP (Venezuela), FUNDAGRO (Ecuador), IBTA (Bolivia), ICA (Colombia), ICTA (Guatemala), IDIAP (Panama), INIA (Chile), INIA (Peru), INIA (Uruguay),

INIAP (Ecuador), INIFAP (Mexico), EMPRAPA (Brazil), INTA (Argentina), ISNAR, Ministry of Agriculture (Costa Rica), Ministry of Agriculture (Paraguay), SENMA (Bolivia), IAPAR (Brazil), PROCADI (Colombia), Universidad de la República-Uruguay, Universidade do Brasilia (Brazil). Project funding provided by IDB, IDRC, SDC, GTZ, PROCISUR, PROCIAN-DINO, INIA (Uruguay), INTA (Argentina), and PROTECA.

- Co-organized the seventh annual workshop on the management of change associated with decentralization of agricultural research in Latin America and the Caribbean. Jointly sponsored by ISNAR, IICA, FAO, and INIAP, in collaboration with PROCIAN-DINO and PROCISUR/PRIAG. Participating countries: Argentina,

Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

- Participated in an IICA/IDB regional meeting in Bolivia on mechanisms for research consultation, coordination, and resource allocation in Latin America.
- Presented ISNAR's work on agroecological dimensions of regional priority setting for agricultural research.
- Participated in meetings of Latin American cooperative research programs, held in Bolivia and organized by PROCISUR, PROCIANDINO, and PROCITROPICOS.

#### **BOLIVIA**

- Assisted with the development of INFORM in IBTA's potato program as a model for institutionalizing the management information system throughout IBTA. Provided training in Spanish. Project funding provided by COTESU.

#### **CHILE**

- Completed a country study under the Structural Adjustment and Agricultural Research Project.

#### **COLOMBIA**

- Participated in three World Bank missions to develop a new project for agricultural research and technology transfer. The project will take into account changes in the Colombian economy, partial privatization and decentralization of research, and the establishment of a competitive funding mechanism for research.
- Formulated a framework for the training of ICA personnel in the use of INFORM and for the establishment of INFORM within the institute in 1994.

#### **ECUADOR**

- Continued intensive collaboration with INIAP following the signing of a memorandum of understanding to establish a Comprehensive Institutional Development (CID) program with the NARS of Ecuador. Formulated a framework for the program and began the implementation phase through a number of component projects.
- Gave a seminar to present INFORM to INIAP staff and laid the basis for training and establishment of the management information system within the institute in 1994.
- Participated in a SPARLAC (USAID) workshop held in Quito and presented a paper on interactions between the public and private sectors in agricultural research in Ecuador.

#### **JAMAICA**

- Collaborated with CARDI to design a country case study of the roles and interactions of the Jamaican public and private sectors in the area of agricultural research. (During the year, ISNAR published results of two other related studies, in Colombia and Ecuador.)

#### **MEXICO**

- Reviewed INIFAP's progress in implementing INFORM.
- Completed a country study under the Structural Adjustment and Agricultural Research Project.

#### **PARAGUAY**

- Undertook an exploratory visit in response to a request by the government to discuss areas of possible collaboration. Reached agreement in principle, subject to the availability of funding, to work with national counterparts on a strategic review of the national agricultural research system.

## URUGUAY

- Continued collaboration with INIA to strengthen various components of its management following the signing of a memorandum of understanding in May 1993. Prepared a program of action in support of research planning. Gave advice with regard to INIA's new legal status. Held a seminar to introduce the concept of a research management information system based on

INFORM, as well as options for its development.

## VENEZUELA

- Assisted with the preparation of a methodology and strategy for restructuring FONAIAP. Carried out an analysis of FONAIAP's strategic research priorities as a final component of the assistance with agricultural research priority setting.

## WEST ASIA AND NORTH AFRICA

### REGIONAL ACTIVITIES

- Launched an initiative in collaboration with ICARDA to draft two project proposals: to assist agricultural libraries in the region in establishing an agricultural information network and to improve the management of physical resources in the NARS of the region.
- Participated in CIHEAM regional workshops held in Istanbul and Malta.
- Participated in AOAD regional workshops on structural adjustment, held in Damascus and Cairo.
- Participated in joint ICARDA/FAO/ISNAR activities to support AARINENA.

### ALGERIA

- Completed a draft review report of the country's agricultural research system in collaboration with AOAD and UNDP.

### EGYPT

- Assisted 21 ARC research institutes and central labs as well as five of the country's 13 universities in setting up data bases containing information on researchers and their activities. (See page 71.)

- Launched a country study under the Structural Adjustment and Agricultural Research Project.

### JORDAN

- Jointly with ICARDA, organized a workshop in Amman to introduce concepts, methods, and tools for strategic planning and research program design, as well as to discuss priority setting between and within research programs and a computerized program budgeting system.
- Collaborated with staff at NCARTT to review four national task force reports on research strategy and a medium-term research plan. Subsequently assisted with the preparation of a research strategy.

### LEBANON

- Contributed to the drafting of a project proposal to formulate a national strategic plan for agricultural research and later helped to launch the project.

### MOROCCO

- Collaborated with GTZ, at its invitation, on a review of a Moroccan request to Germany for funding for the reorganization and strengthening of INRA through a special project.

- Worked with USAID on a review of the dry-farming program at the Settat research center, paying special attention to decision-making processes and research strategy formulation.
- Continued to assist INRA's human resource programs, emphasizing the need to develop an individual performance assessment system, a career development system, new personnel services, and training programs.
- Introduced members of key organizations (INRA, Université Hassan II, Ecole nationale d'agriculture de Meknès, Ecole nationale d'ingénieurs de foresterie, and the Ministry of Agriculture) to different approaches to research system reviewing and diagnosis.
- Assisted the steering committee of a study on agricultural research directions and coordination. The study was conducted by a unit within the agriculture ministry responsible for agricultural education and research.

## SUDAN

- Helped ARC lay the groundwork for a computerized data base on researchers and their activities, followed by preparation of a national agricultural research strategy.
- Advised ARC on information systems and communications, particularly the acquisition, introduction, and deployment of computer equipment.

## YEMEN

- Published and distributed a review report of the country's agricultural research system that had been drafted in collaboration with AOAD and UNDP.
- At the request of the Ministry of Agriculture and Water Resources for assistance with implementing the review recommendations, drafted a project proposal to help AREA in the field of data-base development, strategic planning, and program formulation. A data base for AREA researchers and their research activities was completed.

## ISNAR Publications and Other Major Documents

### Publications about ISNAR

Annual Report 1992.

Rapport annuel 1992.

Informe Anual 1992.

ISNAR Newsletter No. 21, including a 6-page insert: Highlights of an Action Plan, ISNAR's presentation to International Centers Week of its new medium-term plan (1994-98).

ISNAR Newsletter No. 22.

ISNAR Newsletter No. 23.

L'ISNAR en Bref N° 3.

L'ISNAR en Bref N° 4.

L'ISNAR en Bref N° 5.

Servicio a través de la colaboración. Resumen de la estrategia.

### Research Management Guidelines

No. 1. Guidelines for planning and designing agricultural research buildings.

### Research Reports

No. 1. Partners in agricultural technology: Linking research and technology transfer to serve farmers. By Thomas Eponou.

No. 2. Agricultural biotechnology in developing countries: A cross-country review. By John Komen and Gabrielle Persley.

No. 3. Intellectual property rights for agricultural biotechnology: Options and implications for developing countries. By Jeroen van Wijk, Joel I. Cohen and John Komen.

No. 4. Concerns for sustainability: Integration of natural resource and environmental issues in the research agendas of NARS. By Pierre Crosson and Jock R. Anderson.

No. 5. (REPRINT) Biosafety: The safe application of biotechnology in agriculture and the environment. By G.J. Persley, L.V. Giddings and C. Juma.

### Briefing Papers

No. 1. Agricultural research in China. By Shenggen Fan and Philip Pardey.

No. 2. Ecuador: Agricultural research in the public and private sectors. By Cesar A. Falconi.

No. 3. Ghana: Structural adjustment and its impact on agricultural research. By Steven R. Tabor, H.K. Quartey Papafio and K.A. Haizel.

No. 4. Agenda 21: Issues for national agricultural research.

No. 5. Structural adjustment and agricultural research in Indonesia: The 1980s experience. By Alirahman and Steven R. Tabor.

No. 6. Information management needs in national agricultural research systems.

No. 7. Integration of natural resource and environmental issues in the research agendas of NARS. By Pierre Crosson and Jock R. Anderson.

### Reporte Informativo

No. 1. Colombia: Relaciones entre los sectores público y privado en la investigación agrícola. By César A. Falconi.

### Small-Country Study Paper

No. 10. Linking science and the farmer: Pillars of the national agricultural research system in Sierra Leone. By M.T. Dahniya.

### On-Farm Client-Oriented Research (OFCOR) Discussion Papers

No. 3. Strengthening farmer participation through groups: Experiences and lessons from Botswana. By Geoffrey M. Heinrich.

### Discussion Papers

*Discussion papers are preliminary reports of work in progress at ISNAR. They are neither formally reviewed nor edited and their circulation is limited.*

No. 93-2. Natural resource management and sustainable agriculture: Policy implications

- for research systems in small developing countries. By J. Arntzen.
- No. 93-3. Improving effectiveness of agricultural research in Africa: Partnership with farmers. By T. Eponou.
- No. 93-4. Agricultural research in Spain: Experiences relevant to Latin America. By A.C. Ferruzo and R.G. Echeverría.
- No. 93-5. La place de la recherche sur les systèmes de production dans les systèmes de recherche et de vulgarisation. By T. Eponou.
- No. 93-6. An economic analysis of research and technology transfer of millet, sorghum and cowpeas in Niger. By V. Mazzucato and S. Ly.
- No. 93-7. Analysis of agricultural research priorities in Bangladesh. By M. Dey and G.W. Norton.
- No. 93-8. Planning, monitoring and evaluation in the research branch of agriculture Canada. By C. Ayres.
- No. 93-9. Planning, monitoring and evaluation in CARDI: The Caribbean Agricultural Research and Development Institute. By L.B. Rankine and E.J. Weber.
- No. 93-10. Planning, monitoring and evaluation in EMBRAPA, Brazil. By J.E. Borges Andrade and D.E. Horton.
- No. 93-11. Planning, monitoring and evaluation in INIA, Chile. By J.E. Borges Andrade.
- No. 93-12. Planning, monitoring and evaluation in SIRI, Jamaica. By L.B. Rankine and E.J. Weber.
- No. 93-13. Planification de la recherche agricole au Rwanda 1982-1992. By G. Ndamage, L. Gahamanyi and R.B. Contant.
- No. 93-14. Public and private sector interactions in agricultural research in less developed countries: The case of Colombia. By C.A. Falconi.
- No. 93-14S. Interacciones entre el sector público y privado en la investigación agrícola en países en desarrollo: El caso de Colombia. By C.A. Falconi.
- No. 93-15. Agroecological dimensions of evaluating and prioritizing research from a regional perspective: Latin America and the Caribbean. By S. Wood and P.G. Pardey.
- No. 93-16. Natural resource management and environmental issues: An agenda for ISNAR. By P. Crosson and J.R. Anderson.
- No. 93-17. Structural adjustment and agricultural research in Indonesia. By B. Alirahman and S.R. Tabor.
- No. 93-18. Assessing organizational performance: Indicators and procedures. By W. Peterson.
- No. 93-19. Policy conditionality in agricultural research projects. By S.R. Tabor and P.G. Balantyne.
- No. 93-22. Issues of professional women in agricultural research in developing countries. By E.G. Brush and A.R. Rao.
- No. 93-23. Impact evaluation of a training workshop. By E.G. Brush.
- No. 93-24. Women scientists and managers in agricultural research in the Philippines. By E.G. Brush, D.P. Gapasin, D. Merrill-Sands and V.L. Mabesa.

### Statistical Briefs

*Statistical briefs are informal publications with limited distribution. Single copies are available on request, at no charge. Multiple copies are available at a small charge to cover photocopying, handling, and postage.*

- No. 1. Statistical brief on the national agricultural research system of Rwanda. By J. Roseboom and P.G. Pardey.
- No. 2. Statistical brief on the national agricultural research system of Niger. By V. Mazzucato and S. Ly.
- No. 2F. Abrégé statistique sur le système national de recherche agricole du Niger. By V. Mazzucato and S. Ly.
- No. 3. Statistical brief on the national agricultural research system of Malawi. By J. Roseboom and P.G. Pardey.
- No. 4. Statistical brief on the national agricultural research system of Botswana. By J. Roseboom and P.G. Pardey.
- No. 5. Statistical brief on the national agricultural research system of Kenya. By J. Roseboom and P.G. Pardey.

No. 6. Statistical brief on the national agricultural research system of Colombia. By C.A. Falconi and P.G. Pardey.

### Other ISNAR documents

Uribe, B. and D.E. Horton. Planeación, seguimiento y evaluación de la investigación agropecuaria: Experiencias en las Américas — Informe del taller regional, CIMMYT, México, 15-22 octubre, 1992.

Cheaz, J., D.E. Horton, J. Reyes and V. Zapata. Formación de capacitadores en la administración de la investigación agropecuaria: Informe del taller, Cali, Colombia, 10-28 mayo 1993.

Cheaz, J., D.E. Horton, V. Zapata, G. Hareau and J. Londoño. Planificación, seguimiento y evaluación de la investigación agropecuaria — Informe del primer curso, Montevideo, Uruguay, 16-20 agosto, 1993.

### External publications by ISNAR staff

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Alston, J.M., J.A. Chalfant and P.G. Pardey. 1993. Structural adjustment in OECD agriculture: Government policies and technical change. CIEAP Working Paper 93-3. St. Paul: University of Minnesota, Center for International Food and Agricultural Policy.

Ballantyne, P.G. 1993. Managing scientific information in agricultural research. *Public Administration and Development* 13(3): 271-280.

Ballantyne, P.G. 1993. Management of scientific information for agricultural research in small countries: Introduction and overview. *Quarterly Bulletin of IAALD* 38(2-3): 65-68.

Ballantyne, P.G. and B. Uribe. 1993. Bibliometrics. (See Horton et al. 1993.)

Ballantyne, P.G. 1993. Sources of information on research monitoring and evaluation. (See Forton et al. 1993.)

Ballantyne, P.G. 1993. Information systems and communication. (See van der Zijpp et al. 1993.)

Bonte-Friedheim, C.H. 1993. Die FAO im Umbruch? *Echo aus Deutschland* 30(2): 11-14.

Bonte-Friedheim, C.H. 1993. Landtechnik auch in den Entwicklungsländern? *Landtechnik* 47(7/8-92): 311.

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Bonte-Friedheim, C.H. 1993. Statement by the director general of the International Service for National Agricultural Research (ISNAR). (See van der Zijpp et al. 1993.)

Bonte-Friedheim, C.H., E.G. Brush and S.R. Tabor. 1993. Human resources in African national agricultural research systems: Management issues for the 1990s. In *Sustainable food production in sub-Saharan Africa, 2: Constraints and opportunities*. Ibadan, Nigeria: International Institute of Tropical Agriculture.

Brush, E.G. 1993. Human resources for agricultural research: Issues for the 1990s. *Public Administration and Development* 13(3): 295-305.

Brush, E.G. 1993. Human resource planning. (See Horton et al. 1993.)

Cohen, J.I. 1993. An international initiative in biotechnology: Priorities, values, and implementation of an A.I.D. project. *Crop Science* 33: 913-918.

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- Julian Alston**, University of California, Davis, California, U.S.A.
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- B.H. Jajoo**, Indian Institute of Management, Ahmedabad, India
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**Dennis Wood,** Senior Officer (based in  
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<sup>1</sup> (Africa 1) = Broadly covers francophone and  
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<sup>2</sup> (Africa 2) = Broadly covers anglophone Africa

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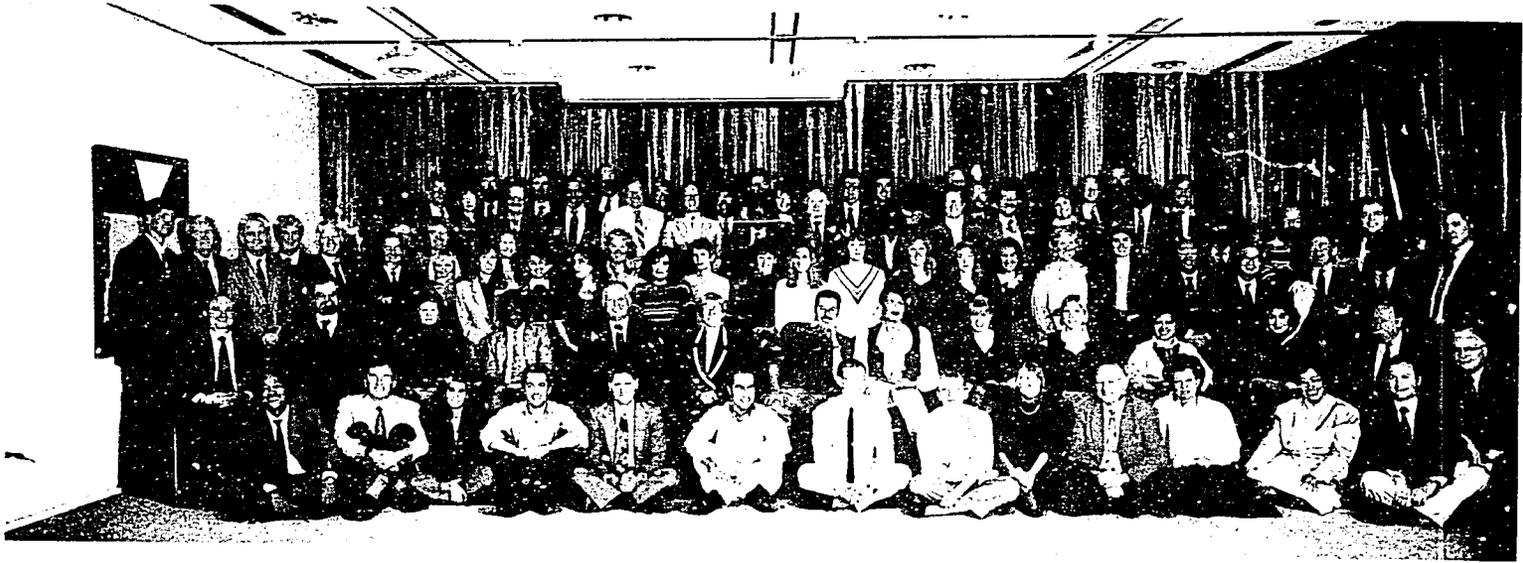
**Martha Vonk**, Library Clerk

\* Left during 1993

\*\* Joined during 1993

\*\*\* Transferred or promoted to this post during 1993

ISNAR staff 1993



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\* Special project funding and reimbursement of services rendered

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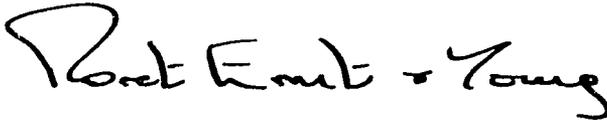
■ Telephone 31-70-3 28 66 66  
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### AUDITORS' STATEMENT

We have audited the Accounts of the International Service for National Agricultural Research ("ISNAR") for the year ended December 31, 1993 and have issued an unqualified favourable opinion thereon.

The Statement of Financial Position and Statement of Activity included in the ISNAR Financial Summary on pages 103 and 104 of this Annual Report are extracts from these Accounts. The "pie-chart" of 1993 Operating Expenses by Program/Service, also included in the Financial Summary, is compiled from the accounting records of ISNAR and our review of this does not lead us to doubt that it has been properly prepared.

May, 1994



Moret Ernst & Young Accountants

■ Partnership of private limited liability companies  
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## ISNAR Financial Summary

### Statement of Financial Position (as of December 31, 1993, in thousands of U.S. dollars)

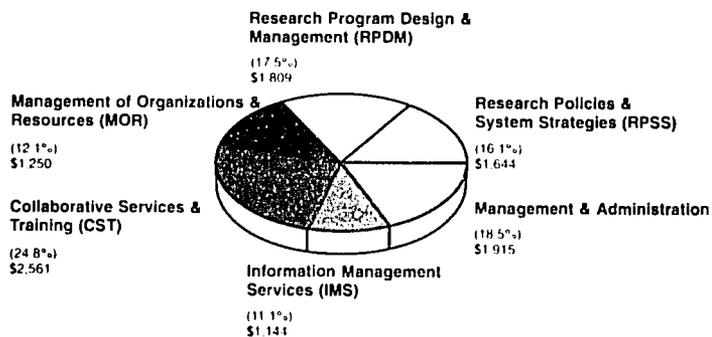
ISNAR's operating budget for 1993 was \$10.460 million, of which \$5.989 million was core-unrestricted grants. The remainder was core-restricted grants and "complementary" (i.e., special project) funding.

| <u>Assets</u>                             | <u>Current Year</u> | <u>Prior Year</u> |
|---|---------------------|-------------------|
| <b><u>Current Assets</u></b>              |                     |                   |
| Cash and Cash Equivalents                 | 2,634               | 2,333             |
| Accounts Receivable:                      |                     |                   |
| Donors                                    | 1,522               | 2,131             |
| Employees                                 | 52                  | 111               |
| Others                                    | 171                 | 149               |
| Prepaid Expenses                          | 23                  | 35                |
| Total Current Assets                      | <u>4,402</u>        | <u>4,759</u>      |
| <b><u>Fixed Assets</u></b>                |                     |                   |
| Property, Plant and Equipment             | 2,106               | 2,083             |
| Less: Accumulated Depreciation            | <u>(1,809)</u>      | <u>(1,559)</u>    |
| Total Fixed Assets - Net                  | <u>297</u>          | <u>524</u>        |
| <b>Total Assets</b>                       | <b>4,699</b>        | <b>5,283</b>      |
| <b><u>Liabilities and Net Assets</u></b>  |                     |                   |
| <b><u>Liabilities</u></b>                 |                     |                   |
| Accounts Payable                          |                     |                   |
| Donors                                    | 1,402               | 2,260             |
| Employees                                 | 335                 | 216               |
| Funds In-Trust                            | 126                 | 302               |
| Others                                    | 209                 | -0-               |
| Accruals and Provisions                   | 145                 | 160               |
| Total Liabilities                         | <u>2,217</u>        | <u>2,938</u>      |
| <b><u>Net Assets</u></b>                  |                     |                   |
| Capital Invested in Fixed Assets          |                     |                   |
| Center owned                              | 297                 | 524               |
| Capital Fund                              | 335                 | 71                |
| Operating Fund                            | <u>1,850</u>        | <u>1,750</u>      |
| <b>Total Net Assets</b>                   | <b>2,482</b>        | <b>2,345</b>      |
| <b>Total Liabilities &amp; Net Assets</b> | <b>4,699</b>        | <b>5,283</b>      |

## Statement of Activity (as of December 31, 1993, in thousands of U.S. dollars)

| <u>Revenue Year</u>   | <u>Core Unrestricted</u> | <u>Core Restricted</u> | <u>Complementary</u> | <u>TOTAL</u>  | <u>Prior Year</u> |
|---|--------------------------|------------------------|----------------------|---------------|-------------------|
| Grants  | 5,989                    | 76                     | 4,159                | 10,224        | 10,614            |
| Other Revenues  | <u>236</u>               | <u>-0-</u>             | <u>-0-</u>           | <u>236</u>    | <u>321</u>        |
| <b>Total Revenue</b>  | <b>6,225</b>             | <b>76</b>              | <b>4,159</b>         | <b>10,460</b> | <b>10,935</b>     |
| <b><u>Operating Expenses</u></b>                              |                          |                        |                      |               |                   |
| RPSS Program  | 849                      | 76                     | 719                  | 1,644         | 2,015             |
| RPDM Program  | 988                      | -0-                    | 821                  | 1,809         | 1,587             |
| MOR Program   | 1,068                    | -0-                    | 182                  | 1,250         | 1,525             |
| Collaborative Services and Training                           | 1,227                    | -0-                    | 1,334                | 2,561         | 2,326             |
| Information Management Services                               | 952                      | -0-                    | 192                  | 1,144         | 1,112             |
| Management & Administration                                   | <u>1,004</u>             | <u>-0-</u>             | <u>911</u>           | <u>1,915</u>  | <u>2,148</u>      |
| <b>Total Operating Expenses</b>                               | <b>6,088</b>             | <b>76</b>              | <b>4,159</b>         | <b>10,323</b> | <b>10,713</b>     |
| Excess of Revenue over Expenditure                            | 137                      | -0-                    | -0-                  | 137           | 222               |
| <b><u>Allocated as follows:</u></b>                           |                          |                        |                      |               |                   |
| Deficit Previous Year   |                          |                        |                      |               | 116               |
| Capital Fund  | 37                       |                        |                      | 37            | 106               |
| Operating Fund  | <u>100</u>               |                        |                      | <u>100</u>    | <u>-0-</u>        |
|   | 137                      |                        |                      | 137           | 222               |
| <b><u>Operating Expenses<br/>By Object of Expenditure</u></b> |                          |                        |                      |               |                   |
| Personnel Costs   | 4,500                    | 60                     | 1,447                | 6,007         | 5,986             |
| Supplies and Services   | 837                      | 14                     | 1,851                | 2,702         | 2,781             |
| Operational Travel  | 449                      | 2                      | 861                  | 1,312         | 1,655             |
| Depreciation of Fixed Assets                                  | 250                      | -0-                    | -0-                  | 250           | 271               |
| Write-off 1992 Grant  | <u>52</u>                | <u>-0-</u>             | <u>-0-</u>           | <u>52</u>     | <u>20</u>         |
| <b>Total Operating Expenses</b>                               | <b>6,088</b>             | <b>76</b>              | <b>4,159</b>         | <b>10,323</b> | <b>10,713</b>     |

### 1993 Operating Expenses by Program/Service



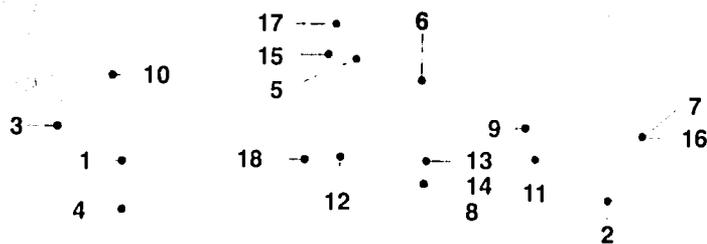
## Acronyms

|                    |   |
|--------------------|---|
| <b>AARD</b>        | Agency for Agricultural Research and Development--Indonesia   |
| <b>AARINENA</b>    | Association of Agricultural Research Institutions in the Near East and North Africa                     |
| <b>AIT</b>         | Asian Institute of Technology   |
| <b>AOAD</b>        | Arab Organization for Agricultural Development  |
| <b>APROSCHELLO</b> | Asociación de Productores de Semilla Certificada de los Llanos Occidentales--Venezuela                  |
| <b>ARC</b>         | Agricultural Research Center--Egypt   |
| <b>ARC</b>         | Agricultural Research Corporation --Sudan   |
| <b>AREA</b>        | Agricultural Research and Extension Authority --Yemen   |
| <b>ARIS</b>        | agricultural research information system  |
| <b>BARC</b>        | Bangladesh Agricultural Research Council  |
| <b>BMZ</b>         | Bundesministerium für Wirtschaftliche Zusammenarbeit--Germany   |
| <b>CAAS</b>        | Chinese Academy of Agricultural Sciences  |
| <b>CARDI</b>       | Caribbean Agricultural Research and Development Institute   |
| <b>CARP</b>        | Council for Agricultural Research Policy --Sri Lanka  |
| <b>CEMARP</b>      | Canada-Egypt-McGill Agricultural Response Program   |
| <b>CENIAP</b>      | Centro Nacional de Investigaciones Agropecuarias--Venezuela   |
| <b>CGIAR</b>       | Consultative Group on International Agricultural Research   |
| <b>CIAT</b>        | Centro Internacional de Agricultura Tropical  |
| <b>CIAT</b>        | Centro d'Investigacion Agrícola Tropical--Bolivia   |
| <b>CID</b>         | comprehensive institutional development program--ISNAR  |
| <b>CIDA</b>        | Canadian International Development Agency   |
| <b>CIHEAM</b>      | Centre International de Hautes Etudes Agronomiques Méditerranéennes                                     |
| <b>CIMMYT</b>      | Centro Internacional de Mejoramiento de Maíz y Trigo  |
| <b>CIP</b>         | Centro Internacional de la Papa   |
| <b>CIRAD</b>       | Centre de Cooperation Internationale en Recherche Agronomique pour le Développement--France             |
| <b>CMAWCA</b>      | Conference of Ministers of Agriculture in West and Central Africa                                       |
| <b>CORAF</b>       | Conférence des Responsables de la Recherche Agronomique Africains                                       |
| <b>COTESU</b>      | Swiss Technological Cooperation Agency  |
| <b>CSIRO</b>       | Commonwealth Scientific and Industrial Research Organization  |
| <b>CST</b>         | Collaborative Services and Training -- ISNAR  |
| <b>CTA</b>         | Technical Centre for Agricultural and Rural Cooperation--European Community and Tomé Convention members |
| <b>EDI</b>         | Economic Development Institute--World Bank  |
| <b>ESAMI</b>       | Eastern and Southern African Management Institute   |
| <b>DSE</b>         | Deutsche Stiftung für Internationale Entwicklung--Germany   |
| <b>EMBRAPA</b>     | Empresa Brasileira de Pesquisa Agropecuária--Brazil   |
| <b>FAO</b>         | Food and Agriculture Organization--United Nations   |
| <b>FOFIFA</b>      | Centre National de la Recherche Appliquée au Développement Rural--Madagascar                            |
| <b>FONAIAP</b>     | Fondo Nacional de Asistencia y Investigación Agropecuaria--Venezuela                                    |
| <b>FUNDAGRO</b>    | Fundación para el Desarrollo Agropecuario--Ecuador  |
| <b>GIS</b>         | geographical information system(s)  |
| <b>GTZ</b>         | Deutsche Gesellschaft für Technische Zusammenarbeit--Germany  |
| <b>IAPAR</b>       | Instituto Agronómico do Paraná--Brazil  |
| <b>IAR</b>         | Institute of Agricultural Research--Ethiopia  |
| <b>IARC</b>        | international agricultural research center  |
| <b>IBS</b>         | Intermediary Biotechnology Service, ISNAR-based   |
| <b>IBTA</b>        | Instituto Boliviano de Tecnología Agropecuaria  |
| <b>ICA</b>         | Instituto Colombiano Agropecuario   |
| <b>ICAR</b>        | Indian Council of Agricultural Research   |
| <b>ICARDA</b>      | International Center for Agricultural Research in the Dry Areas   |
| <b>ICASA</b>       | International Consortium for Application of Systems Approaches to Agriculture                           |
| <b>ICRAF</b>       | International Centre for Research in Agroforestry   |

|                       |   |
|-----------------------|---|
| <b>IDB</b>            | Inter-American Development Bank   |
| <b>IDIAP</b>          | Instituto de Investigación Agropecuaria de Panamá   |
| <b>IDRC</b>           | International Development Research Centre—Canada  |
| <b>IER</b>            | Institut d'Economie Rurale—Mali   |
| <b>IICA</b>           | Instituto Interamericano de Cooperación para la Agricultura   |
| <b>IIRSDA</b>         | Institut international de recherche scientifique pour le développement en Afrique                         |
| <b>IITA</b>           | International Institute of Tropical Agriculture   |
| <b>ILCA</b>           | International Livestock Centre for Africa   |
| <b>ILRAD</b>          | International Laboratory for Research on Animal Diseases  |
| <b>IMS</b>            | Information Management Services — ISNAR   |
| <b>INERA</b>          | Institut d'Etudes et de Recherches Agricoles—Burkina Faso   |
| <b>INFORM</b>         | information for agricultural research managers (ISNAR-developed management information system)            |
| <b>INIA</b>           | Instituto Nacional de Investigación Agropecuaria—Chile  |
| <b>INIA</b>           | Instituto Nacional de Investigação Agronómica—Mozambique  |
| <b>INIA</b>           | Instituto Nacional de Investigación Agraria—Peru  |
| <b>INIA</b>           | Instituto Nacional de Investigación Agropecuaria—Uruguay  |
| <b>INIAP</b>          | Instituto Nacional de Investigación Agropecuaria — Ecuador  |
| <b>INIFAP</b>         | Instituto Nacional de Investigaciones Forestales y Agropecuarias—Mexico                                   |
| <b>INRA</b>           | Institut National de la Recherche Agronomique — Morocco   |
| <b>INSAH</b>          | Institut du Sahel   |
| <b>INTA</b>           | Instituto Nacional de Tecnología Agropecuaria — Argentina   |
| <b>IRAG</b>           | Institut de Recherche Agronomique de Guinée   |
| <b>IRRI</b>           | International Rice Research Institute   |
| <b>ISABU</b>          | Institut des Sciences Agronomiques du Burundi   |
| <b>ISAR</b>           | Institut des Sciences Agronomiques du Rwanda  |
| <b>ISRA</b>           | Institut Sénégalais de Recherches Agricoles   |
| <b>JUNAC</b>          | Acuerdo de Cartagena  |
| <b>KARI</b>           | Kenya Agricultural Research Institute   |
| <b>LAC</b>            | Latin America and the Caribbean   |
| <b>MOR</b>            | Management of Organizations and Resources — ISNAR   |
| <b>NARO</b>           | National Agricultural Research Organization—Uganda  |
| <b>NARS</b>           | national agricultural research system(s)  |
| <b>NCARTT</b>         | National Center for Agricultural Research and Technology Transfer—Jordan                                  |
| <b>NRM</b>            | natural resource management   |
| <b>ODA</b>            | Overseas Development Administration—United Kingdom  |
| <b>ODI</b>            | Overseas Development Institute — United Kingdom   |
| <b>OFCOR</b>          | On-Farm Client-Oriented Research Project—ISNAR  |
| <b>PRIAG</b>          | Programa Regional de Reforzamiento a la Investigación Agronómica sobre los Granos en Centro America       |
| <b>PROCADI</b>        | Programa Colombiano para el Avance de la Investigación  |
| <b>PROCI SUR</b>      | Programa Cooperativo de Investigación Agrícola del Cono Sur   |
| <b>PROCIANDINO</b>    | Programa Cooperativo de Investigación y Transferencia de Tecnología Agropecuaria para la Subregión Andina |
| <b>PROCI TROPICOS</b> | Programa Cooperativo de Investigación y Transferencia de Tecnología para los Trópicos Suramericanos       |
| <b>PROTECA</b>        | Programa de Desarrollo Tecnológico Agropecuario—Ecuador   |
| <b>RAWOO</b>          | Raad van Advies van het Wetenschappelijk Onderzoek/Ontwikkelings-samenwerking—The Netherlands             |
| <b>RNR</b>            | renewable natural resources   |
| <b>RPDM</b>           | Research Program Design and Management— ISNAR   |
| <b>RPSS</b>           | Research Policies and System Strategies—ISNAR   |
| <b>RTTL</b>           | Research-Technology Transfer Linkages Project—ISNAR   |
| <b>SACCAR</b>         | Southern African Centre for Cooperation in Agricultural Research  |
| <b>SAFGRAD</b>        | Semi-Arid Food Grain Research and Development   |
| <b>SDC</b>            | Swiss Development Cooperation   |
| <b>SENMA</b>          | Secretaría Nacional del Medio Ambiente—Bolivia  |

|                |  |
|----------------|--|
| <b>SIDA</b>    | Swedish International Development Authority                                  |
| <b>SPAAR</b>   | Special Program for African Agricultural Research—World Bank                 |
| <b>SPARLAC</b> | Sustainable Private Agricultural Research in Latin America and the Caribbean |
| <b>UNDP</b>    | United Nations Development Programme   |
| <b>USAID</b>   | United States Agency for International Development                           |
| <b>WANA</b>    | West Asia and North Africa   |
| <b>WARDA</b>   | West Africa Rice Development Association                                     |

## CGIAR-Supported International Agricultural Research Centers



1. **CIAT** Centro Internacional de Agricultura Tropical, Cali, Colombia
2. **CIFOR** Center for International Forestry Research, Bogor, Indonesia
3. **CIMMYT** Centro Internacional de Mejoramiento de Maíz y Trigo, El Batán, Mexico
4. **CIP** Centro Internacional de la Papa, Lima, Peru
5. **IBPGR** International Board for Plant Genetic Resources, Rome, Italy  
(International Plant Genetic Resources Institute, IPGRI, as of February 1994)
6. **ICARDA** International Center for Agricultural Research in the Dry Areas, Aleppo, Syria
7. **ICLARM** International Center for Living Aquatic Resources Management, Manila, Philippines
8. **ICRAF** International Centre for Research in Agroforestry, Nairobi, Kenya
9. **ICRISAT** International Crops Research Institute for the Semi-Arid Tropics, Hyderabad, India
10. **IFPRI** International Food Policy Research Institute, Washington, D.C., U.S.A.
11. **IIMI** International Irrigation Management Institute, Colombo, Sri Lanka
12. **IITA** International Institute of Tropical Agriculture, Ibadan, Nigeria
13. **ILCA** International Livestock Centre for Africa, Addis Ababa, Ethiopia
14. **ILRAD** International Laboratory for Research on Animal Diseases, Nairobi, Kenya
15. **INIBAP** International Network for the Improvement of Banana and Plantain, Montpellier, France
16. **IRRI** International Rice Research Institute, Los Baños, Philippines
17. **ISNAR** International Service for National Agricultural Research, The Hague, The Netherlands
18. **WARDA** West Africa Rice Development Association, Bouaké, Côte d'Ivoire

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