The role of regional fora to promote and strengthen agricultural research for development (ARD) involving National Agricultural Research Systems (NARS) is being globally recognized. These fora bridge the gap between regional and international initiatives, harmonizing the ARD programme complementarities of the CGIAR/IARCs, GFAR, FAO, IFAD and other similar organizations. These fora in general, catalyze the activities of diverse stakeholders and provide a neutral platform to discuss priority related issues and programmes. The fora are thus important for regional ARD planning and priority setting. The NARS have distinct advantage of sharing both the expertise and technology among similar agro-ecology, cropping patterns, socio-economic conditions and specific research emphasis on integrated natural resource management.

The new CGIAR Vision and Strategy also stresses on regional integration for ARD; adopting a regional approach to research planning and prioritization. TAC Steering Committee on Policy and Strategies (SCOPAS) has focused concern on such issues and an analysis has been presented in CGIAR report on “Regional Approaches to Research for the CGIAR and its Partners”. This report highlights the advantages of the regional approaches for the CGIAR and the NARS. Also, considerable thrust has been provided by the GFAR on regional ARD priority setting, with increased role of diverse partners and a bottom-up approach including NGOs, farmers’ groups, etc.

APAARI as a regional forum for the Asia-Pacific has already initiated this process, proposing three sub-regional meetings for ARD priority setting in West and South Asia with ICAR and ICRISAT; South-East Asia with PCARRD, IRRI and SEARCA and for South Pacific with NARI/Papua New Guinea, ACIAR and SPC. For the CGIAR, ICRISAT had recently organized the South Asia Regional Integration Meeting (see report in this issue) discussing research prioritization and implementation.

Other regional fora such as AARINENA for the CWANA region, CACRF for the Central Asia and Caucasus Region and EFARD for the European region; and several others in Africa and Latin America have also undertaken this exercise for sub-regional and regional priority setting, supported by GFAR, CGIAR; and in the Asia-Pacific also by APAARI.

APAARI will soon bring out reports on the three sub-regional meetings organized and is all set to hold an Expert Consultation on Regional ARD Priority Setting in Islamabad, Pakistan during its next Executive Committee meeting in November 2001. This regional document will stress on the current and future ARD needs of the NARS, addressing in overall perspective the goals to meet the challenges concerning poverty, malnutrition, food security and sustainability.
RECENT ACTIVITIES OF CARP IN SRI LANKA

The Sri Lanka Council for Agricultural Research Policy coordinates, consolidates and formulates agricultural research and development policies in the National Agricultural Research System (NARS). Some of the important activities conducted by the Council during the last six months have been highlighted.

EXPERT COMMITTEES CONSTITUTED
The Council has constituted five specialist committees to provide thrust for agricultural research in the fields of: (a) Plant Breeding, (b) Plant Protection, (c) Biotechnology, (d) Horticulture, and (e) Socio-economics. Some of the recent activities of these committees are as follows:

- The National Committee of Socio-Economists and Policy Analysts organized a workshop on the Indo-Lanka Free Trade Agreement (FTA) and discussed its implications on the agricultural sector.
- The National Plant Protection Committee has identified twelve weeds of significance in Sri Lanka and developed an “Action Plan” on strategies for weed management.
- The Steering Committee on National Plant Quarantine (SCNPQ) has amended the Plant Quarantine Act and is in the process of updating regulations to have a forward-looking set of regulations to help both importers and exporters for the horticultural and allied industries alike. These amendments were executed taking into consideration suggestions received from the NARS, universities and the farming community, on the future activities of these industries.

HUMAN RESOURCE DEVELOPMENT
Human Resource Development is a mandated activity of the Council for Agricultural Research Policy and through the Memorandum of Agreement between the Indian Council for Agricultural Research (ICAR) and CARP; several Sri Lankan scientists were provided opportunities for both long and short-term training at leading universities and ICAR institutes in India. Currently, 13 Sri Lankans are undergoing long-term postgraduate training in India, while 34 scientists have undergone short-term training in Research Management, Crop Production Systems, Agrometeorology, Technology Transfer, Mushroom Production etc.

Two members of the Secretariat staff are current undertaking higher postgraduate studies at Postgraduate Institute of Agriculture, Peradeniya with seven others have been trained locally in short term programmes relating to their disciplines.

RESEARCH INFORMATION MANAGEMENT
One of the research management tools used by NARS in Sri Lanka is ‘Information for Agricultural Research Managers’ or INFORM. Information received from the NARS institutes was collected and consolidated by the CARP Secretariat for the year ending 31 December 1999, and a publication has been released listing all research scientists at the NARS Institutes, titles of all operational research projects and budgetary details.

INFORM-R, the new “Access” based software package for the database management of INFORM introduced by ISNAR, and modified with financial assistance received from the GTZ-CARP project, was used in place of the older “Reflex” based INFORM package. Necessary training was provided to INFORM Coordinators and Assistant Coordinators by CARP.

PUBLICATION ENHANCEMENT
Also, CARP has plans to build up a database of traditional knowledge in agriculture.

Following publications produced by the National Committee of Socio-Economists and Policy Analysts working in the National Agricultural Research System, are available at CARP:

- Directory of Socio-Economists and Policy Analysts working in the National Agricultural Research System,
- Ongoing Research Projects and Directory of Databases,
- South Asian Preferential Trading Agreement (SAPTA) and its Implications on Plantation Crops Sector of Sri Lanka,
- Indo-Lanka Free Trade Agreement (FTA) and its Implications on the Agricultural Sector of Sri Lanka.

CONTRACT RESEARCH
CARP provides funds for research in priority areas of agricultural research to scientists in the NARS, universities and the private sector. The
awards recently made were on projects dealing with biological control of pests and diseases in protected agricultural systems, research in farmer's fields on testing of new varieties of paddy, and on the use of bio-fertilizers.

INTERNATIONAL LINKAGES

The CARP has taken a decision to forge international linkages with the Secretariats of the Agricultural Research Councils in the region, particularly those of the SAARC countries.

Linkages with SAARC
- Currently the MoU between ICAR in India and CARP has become operational. This agreement provides opportunities for human resource development, exchange of germplasm and consultants, as well as on joint collaborative research projects in the agricultural sector.
- MoU was signed between Bangladesh Agricultural Research Council (BARC) and CARP. National requirements were identified for 2001-2002 and the workplan will be developed.
- Both Pakistan Agricultural Research Council (PARC) and CARP have agreed on the contents of the MoA prepared by the CARP Secretariat, which is now ready for signature.
- The Nepal Agricultural Research Council (NARC) is developing an MoA with CARP.

Collaboration with ACIAR

ACIAR and CARP have expressed interest to develop linkages on collaborative research in the following projects:
- Diagnostic tests and epidemiological probes for prawn viruses,
- Spiny lobster fishery research in Sri Lanka,
- Studies on Bovine babesiosis and anaplasmosis with reference to use of five vaccines, diagnostic methods and host response to infection (VRI).

ACIAR has also assisted CARP in the preparation of the National Weed Management Strategies.

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ICAR-CIMMYT AGREEMENT FOR COOPERATION IN WHEAT AND MAIZE IMPROVEMENT

on 27 February 2001. The agreement was signed by Dr R.S. Paroda, Director-General, ICAR and Dr Timothy Reeves, Director-General, CIMMYT. The collaborative programmes include development of advanced technology for production of high yielding maize hybrids and composites for kharif, rabi and spring seasons with special emphasis on early-maturing hybrids/varieties for multiple cropping system.

In wheat, the collaborative programmes include developing super-wheat varieties/hybrids to break the yield plateau in North-West Plains Zone. Nearly 6 million hectares of area under wheat cultivation are under heat and water stress (suffer from drought and water-logging) and, therefore, suitable bread and durum wheat varieties will be developed through the partnership programme.

ICAR Reporter, Jan-March 2001
APARIS: A Gateway to Information Networking in the Asia-Pacific

Introduction
The Expert Consultation on the Development of an Asia-Pacific Agricultural Research Information System (APARIS) held in November 2000 in Chiang Rai, Thailand was the first one organized in the Asia-Pacific region by APAARI, with support from GFAR. Participants of the consultation were 12 Information Nodal Points (INPs) from NARS members of APAARI namely Bangladesh, India, Japan, Korea, Malaysia, Nepal, Pakistan, Papua New Guinea, Sri Lanka, Taiwan and Thailand. There were also representatives from agricultural sub-sectors and networks – APHCA, APAN, NACA, IRRI; and key players in Agricultural Research Development (ARD) information management namely ACIAR, CABI, FAO, ISNAR. Other participants were the APAARI staff and observers from the Department of Agriculture (DOA), Thailand.

The deliberations of this consultation advocated the need for an ICT-ARD strategy for APAARI to move towards an Asia-Pacific Agricultural Research Information System (APARIS). Highlights on this are presented.

The Emerging of APARIS Network
Objective: The objective is sustainable improvement in rural livelihoods and agricultural production in the Asia-Pacific through uptake of new technologies at farm level. The purpose of the project is to improve knowledge exchange and outreach, and increase efficiency in Asian agricultural R&D through provision of a framework and enabling mechanism for scientists and managers to exchange and disseminate experiences and technological developments.

Scope: APARIS will be an information resource gateway to agricultural research and development (ARD) within the Asia Pacific region. A gateway is “A resource which identifies key internet resources of relevance to the region; a navigational tool for managing information on the internet, of relevance to the region and within the scope of APARIS, and provides a meta database of targeted internet resources.”

At the Chiang Rai meeting, participants agreed on the scope for APARIS in terms of subject matter, stakeholders, geographical coverage, communication media and language. Four working group sessions we organized to further define strategies for ICT human resource development, regional databases, gateway function, and organization of APARIS, respective

Recommendations from Working Group
HRD and organizational management for ICT within NARS
- Needs assessment for IT/IM: APAARI to collect information on methodologies being used by NARS to facilitate exchange and develop appropriate methods for sub-regional needs, results of needs assessments to be posted on the APAARI website.
- Webpage development: APAARI to encourage NARS to hot link with APAARI and other sites and to provide guidelines for NARS on webpage design to enhance their regional use.
- Support to NARS for developing their ICT function: The larger NARS could provide assistance to the smaller less developed systems. APAARI could provide a clearing house mechanism to facilitate information flow among APARIS partners on where and how to get advice on ICT. It could also assemble and distribute training materials for ICT development and maintain a database on training courses etc. and backstop training events including distance learning in ICT, specialist training and training of trainers at sub-regional level.

Regional databases and information resources
The existence of numerous databases at regional and global levels was recognized. Therefor APAARI needs to set criteria for linking to them and be very selective because of cost consideration. Databases should remain operative at national level where possible and only become part of the regional system where they add value at that level; APAARI should work in partnership with like minded organizations in developing APARIS. It was highlighted that (i) in creating its own databases APARIS should build on what exists and not duplicate a meta-system rather than primary system approach may be most appropriate; (ii) important policy issues in database management include confidentiality, IPR, quality assurance; guidelines for database content...
protocol format should be developed as an APARIS standard, and existing software used wherever possible; (iii) linking to existing regional databases held by regional organizations such as APAFRI, NACA, APHCA, IARCs should be a component of the APARIS; (iv) there is potential to accommodate interactive models into APARIS e.g. E-conferencing discussion groups; (v) in developing databases within APARIS highest priority lies with institutional information and promulgation of “success stories” in ARD; next priority should be for information on training opportunities, conferences, etc. and meta databases on regional/sub-regional R&D networks and scientist contact details. There is however a privacy issue associated with the latter to be addressed; (vi) as resources permit, APARIS might consider establishment of a referral centre for ARD publications; this should be done in co-operation with FAO and CABI.

A gateway function for the regional information system ‘APARIS’

Several issues need to be considered in establishing and managing a gateway function including: (i) the role of nodal points or country level coordinators (INPs); (ii) how will the gateway perform as a regional gateway into NARS and for NARS; (iii) unity of approach – user friendly perspective to a range of users with varying needs and skills; (iv) technical requirements and search engine; (v) standards, evaluation and policy issues, and capacity to establish and maintain – cost and funding sustainability issues.

The plenary considered the proposal for a gateway as a functional unit of APARIS, one worthy of serious consideration by APAARI. To this end it recommended that a feasibility study be conducted for establishment and management of a gateway function in APARIS. FAO and CABI agreed to cooperate with APAARI in this activity and to assist with identification of funding support; the study should be conducted by an experienced information scientist from one of the participating NARS if possible. In further developing the APARIS concept, the starting point should be the preparation of a “site map” outlining the conceptual framework. The existing APAARI website provides an ideal platform from which to launch APARIS and can form the basis of site mapping.

Organization and management of APARIS

A strong consensus developed during discussion that APARIS should be an APAARI facilitated activity in partnership with other regional stakeholders relevant to the scope as agreed. APAARI is evolving into an effective regional forum and this should enable a widening partnership base with time. It was important to recognize that the system developed must be sustainable from within currently identifiable resources of manpower and financing, and should progressively develop in harmony with expanding resource availability. Identification of an APARIS coordinator was considered critical.

Proposals for advancing the establishment of APARIS under the aegis of APAARI

Dr R.S. Paroda summarized the deliberations, and proposed that: (i) The ICT expert group from NARS and regional organizations as convened for this consultation should form a Steering Committee to enable APARIS and determine its structures, standards and work programme; (ii) An APARIS support group need to be constituted comprising, e.g. APAARI, FAO, GFAR, CABI, IARC (representative), which will be responsible for raising resources from donors and others for the operation of APAARI. There should be a link between the two groups by representation of the steering committee serving on the support group; (iii) Terms of reference for these two groups should be prepared and their membership confirmed; (iv) APARIS proposal should be prepared as a project activity identifying elements which can be undertaken by the partners (including APAARI) and those for which donor support will be sought. This proposal should subsume the current KISS proposal of APAARI earlier referred to as its elements parallel to those proposed for APARIS; (v) Discussions should be held with organizations who might be prepared to provide coordinator support to APAARI for APARIS at least in the initial stages; (vi) The feasibility study on APARIS as a gateway and its site mapping using the current APAARI website as a basis should be the first activity under APARIS.

Way Forward

APARIS Concept Paper providing framework is in preparation for further review by APAARI Executive Committee, who will also decide on APARIS implementation plan.

For more details contact: Ms. Achara Jantarasengaram, IT Manager, APAARI, c/o FAO, Regional Office, 39 Phra Atit Road, Bangkok 10200 Thailand.
RECENT AGRICULTURAL RESEARCH AND DEVELOPMENT ACTIVITIES AT NARC, NEPAL

The Nepal Agricultural Research Council undertook several research and development activities during Jan-June 2001. More important among these are briefly dealt with here.

REGIONAL AGRICULTURAL RESEARCH COMMUNICATION WORKSHOP

Regional Agricultural Research Station (RARS), Tarahara, organized the First Regional Agricultural Research Communication Workshop on 13 March 2001. The workshop discussed the role of communication in agriculture technology transfer and worked out the communication strategy for the Regional Agricultural Research Station. Participants included researchers, extension workers, journalists and representatives from NGOs and farmers, who emphasized the regular linkages and coordination among research, extension and media. Stress was laid on the expansion of communication, publication and documentation activities at the regional level. The workshop concluded with the following suggestions: i) Regular organization of “Meet the Press” activity; ii) Publicity of new and proven technologies through local newspapers; iii) Agriculture Programme from Community Radio to be broadcast; iv) Interaction through meetings of farmers, researchers and journalists to be promoted; v) Information materials on new technologies to be developed and disseminated; vi) Providing rewards for best news on agriculture.

NARC-IRRI MOU SIGNED

With the common objectives to further promote and accelerate research on rice and rice-based farming systems and strengthening national and regional rice research, Memorandum of Understanding (MoU) between the Nepal Agricultural Research Council (NARC) and International Rice Research Institute (IRRI) was signed on 19 January 2001 at IRRI Office, Philippines, by Dr Dhruva Joshy, Executive Director, NARC and Dr Ronald P. Cantrell, Director General, IRRI. It was mutually agreed that collaboration between NARC and IRRI should focus on the technology generation and dissemination to alleviate poverty and enhance the management of natural resources. More specifically, collaboration will focus on: (i) Varietal development and improvement for drought tolerance, good grain quality, high yield, and pest resistance including germplasm collection and conservation; (ii) Crop and resources use in the rice-wheat system; (iii) Pest management particularly on blast, sheath blight, BLB, BPH, rice borer, and rice bug; (iv) Technology and information sharing and policy support; (v) Rice-based animal agriculture through linkages with ILRI and ICRISAT, and (vi) Human resource development.

Under the MoU, IRRI will: (i) Provide short-term consultancies to advise on and assist in the collaborative research and training programme of NARC; (ii) Arrange for Nepali scientists to undertake degree and non-degree training at IRRI or elsewhere; (iii) Invite Nepali scientists to attend IRRI-sponsored international research conferences, meetings, symposia and workshops; (iv) Make available rice seed materials and research information to support collaborative activities in Nepal; and (v) Assist in the preparation of a joint project proposal for external donor funding.

In order to facilitate the implementation of collaborative activities, the NARC will provide all cooperation. This MoU will be supplemented by specific workplans to be developed jointly every 3-4 years in accordance with the needs of NARC and IRRI.
Dr Dhruva Joshy, Executive Director, NARC and Dr Timothy Reeves, Director General, CIMMYT signing the Workplan

NARC-CIMMYT WORK PLAN SIGNED

The NARC-CIMMYT three-year workplan on Scientific and Technical Collaboration on Maize and Wheat Systems, was signed on 11 February 2001 by Dr Timothy G. Reeves, Director General, CIMMYT, and Dr Dhruva Joshy, Executive Director, NARC to develop, promote and strengthen close collaborative efforts in the field of maize and wheat improvement.

The major collaborative research activities on wheat include: crop improvement, crop protection, natural resource and crop management, socio-economics, human resources development and regional cooperation. In addition, these activities are divided into two distinct Nepal agro-ecological areas; the flat, tarai plains and the Himalayan mountain areas. Emphasis will be placed on efficient integration of the various discipline and commodity scientists and stronger linkages with extension, farmers and other stakeholders at selected sites. Linkages will also be made with other International Centres (IARCs), Non-Government Organizations (NGOs), and advanced research institutions in other parts of the World and the Regional Rice-Wheat Consortium (RWC) based in Delhi. The Director (Crops and Horticulture) in NARC will have the overall responsibility for coordinating the workplan activities with CIMMYT. The National Wheat Programme at the Regional Agricultural Research Station (RARS) Bhairahawa is the nodal centre for coordinating wheat activities in Nepal through the Coordinated Wheat Improvement Programme.

Proposed activities on maize cover GIS, socio-economic surveys, variety and hybrid development and seed production, improved cropping management practices, Small Grants Scheme, improved technology dissemination, and strengthening the capacity of NARC. The National Maize Research Programme at Rampur is the nodal centre for coordinating maize activities in Nepal.

The three-year (2001-2004) wheat systems workplan was developed in collaboration with the wheat programme, the RW coordinator, the International Maize and Wheat Improvement Centre (CIMMYT) South-Asia Regional Office based in Kathmandu, Nepal and the Rice-Wheat Consortium Facilitation Unit based in Delhi for which CIMMYT is the convening centre.

[Contributed by: Dr Dhruva Joshy, Executive Director, Nepal Agricultural Research Council, NARC Building, Singha Durbar Plaza, Ramshah Path, P.O.Box 1440, Kathmandu, Nepal].

DR. R.S. PARODA APPOINTED AS HEAD FACILITATION UNIT, CGIAR PROGRAMME FOR CENTRAL ASIA AND THE CAUCASUS

Dr R.S. Paroda, Director-General, Indian Council of Agricultural Research (ICAR) and Secretary, Department of Agricultural Research and Education (DARE), Government of India, and Executive Secretary, APAARI has been appointed as the new Head of the CGIAR Programme for Central Asia and the Caucasus. Dr Paroda will be coordinating ARD related activities in eight CAC Countries with active involvement of CG Centres.

Dr Paroda is a world renowned agricultural scientist and is the recipient of several national and international awards and honours. He successfully spearheaded for over seven years one of the strongest NARS, developing Vision 2020 for agricultural research and education system and implementing the prestigious National Agricultural Technology Project (NATP) funded by the World Bank. He has been actively involved both in regional and international programmes, having made many significant contributions to APAARI as its Executive Secretary for the last nine years.

Dr Paroda is presently providing leadership at the International level being the Chairman of the Global Forum for Agricultural Research (GFAR). He has also served as Chair of the ICRISAT Governing Board and is member of the Policy Advisory Council of the ACIAR, besides being on the Board of CABI.

APAARI members wish hearty congratulations to Dr Paroda.
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[Contributed by: Dr Dhruva Joshy, Executive Director, Nepal
Agricultural Research Council, NARC Building, Singha Durbar
Plaza, Ramshah Path, P.O.Box 1440, Kathmandu, Nepal].

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DEVELOPMENT OF NEW TECHNOLOGIES FOR SUSTAINABLE FARMING SYSTEMS IN THE MEKONG DELTA: HIGHLIGHTS OF JIRCAS PROJECT

Japan International Research Centre for Agricultural Sciences (JIRCAS) organized a mid-term evaluation meeting for the comprehensive project on "Development of New Technologies and Their Practice for Sustainable Farming Systems in the Mekong Delta (Mekong II)" at Tsukuba on 7 February 2001. The main purpose of the meeting was to evaluate the results and to examine the future research direction of the project.

THE MEKONG DELTA PROJECT

The major objective of a five-year research project (1999-2003), "The Mekong II" is to foster agricultural practices that are not only economically profitable but also ecologically sustainable as farming systems. Research includes technology development for farming systems in the areas of rice, livestock, fruit, and aquaculture production. It also aims to evaluate sustainable farming systems that employ technology for environmental conservation and practice these technologies through the establishment of model VACR (a Vietnamese acronym for fruit and vegetable, aquaculture, livestock and rice) farming and extension systems. For this purpose, the studies have been carried out in collaboration with Cantho University (CTU) and Cuu Long Delta Rice Research Institute (CLRI) from 1999 and with the Southern Fruit Research Institute (SOFRI) from 2000. So far, in the project, techniques for breeding for salt tolerant varieties and development for integrated pest management in rice and rice based farming systems have been under development. In livestock area, techniques for feeding management for pig production and pathological diagnosis for porcine diseases have been improved. A model orchard was established for improvement of fruit production at the on-farm trial site and a basic technology for prawn seed production has also been established. Methods for assessment of nitrogen cycling and evaluation are also in the development stage. In the socio-economic area, farming systems in research site were classified and cause-effect relationship of the technical and economical factors in farming systems was analyzed.

DELIBERATIONS OF THE MEETING

Prof. Tetsuo Shioya, Tokyo University of Agriculture and Technology and Dr Yoshio Akama, Project Leader, Bio-oriented Technology Research Advancement Institution (BRAIN) attended the meeting as evaluators for the project, and Dr Bui Ba Bong, Director, Cuu Long Delta Rice Research Institute, Vietnam, and Dr Nguyen Thanh Phuong, Vice Director, Institute for Marine Aquaculture, College of Agriculture, Cantho University, Vietnam, were invited as commentators/facilitators for the meeting.

The welcome address was delivered by Mr Kazuyuki Tsurumi, Director of Research Information Division, JIRCAS, followed by the opening address by Dr Takasuke Ishitani, Director of Planning and Coordination Division, JIRCAS. Dr Tetsushi Hidaka, International Research Coordinator, provided an outline of the project. The researchers of JIRCAS and related institutes presented the results and future research plans. In Session 1, study-results on rice cultivation, integrated pest management, upland crops and drying technologies were presented. In Session 2, presentation of the results and future plan on fruit production were discussed. The results on pig production were presented in Session 3. Session 4 dealt with progress on aquaculture production including fish and freshwater prawn and Session 5 covered the material circulation of by-products and wastes generated in VACR farming systems. In Session 6, results and future plan on the development and evaluation of farming systems were presented.

After presentation of the results and exchange of views on the progress of the project, future research plans were discussed and the framework developed to direct the project.

During the meeting, it was also concluded that the development of sustainable farming systems which combines rice cultivation, fruit production, animal husbandry and aquaculture is definitely important and may enable the organizations involved in the project to devise new strategies for developing techniques for the improvement of farming systems in the Mekong Delta.

[Contributed by: Dr Tetsushi Hidaka, International Research Coordinator, Research Information Division, JIRCAS - Japan International Research Centre for Agricultural Sciences, Ministry of Agriculture, Forestry and Fisheries, 1-1, Ohuashi, Tsukuba, Ibarak 305-8686, Japan].
THE INTERNATIONAL CENTRE FOR INTEGRATED MOUNTAIN DEVELOPMENT (ICIMOD)

A Profile

INTRODUCTION
As the first international centre established to promote development in the mountains in an economically and environmentally sound manner, the focus of ICIMOD's interests has and is the mountain people themselves and the terrain that provides them with the products that are essential for their survival. By terrain, the Centre really means environment in a holistic sense: natural, common property resources, agricultural and land-use systems established through human ingenuity, entrepreneurship skills and barter trade that provide off-farm and non-farm activities, and the spiritual nuances that endow the mountain environment with that uniqueness that people throughout the ages have associated with the divine.

In 1981, when ICIMOD was legally established through an agreement between His Majesty's Government of Nepal and UNESCO, sponsored by the Federal Republic of Germany and Switzerland, two years of follow up through activity led to a mission statement viz.

"To help promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations in the Hindu Kush-Himalayan Region."

ICIMOD has sought to carry out this mission in the following ways:
- Documentation and information exchange;
- Applied and problem-solving research, and training - especially development of training materials;
- Advisory services.

GOVERNANCE
ICIMOD is governed by a Board made up of members from its eight regional member countries namely Afghanistan, Bangladesh, Bhutan, China, India, Nepal, Pakistan and Myanmar, and seven professional experts nominated by the ICIMOD Support Group. In turn, the Support group consists of participating regional
countries and donors and is the main linkage for interaction between the Centre and the donor community.

**RESEARCH PROGRAMMES/THEMATIC RESEARCH AREAS**

By 1989, ICIMOD was following a thematic strategy that concentrated on discretely established and organized divisions: Mountain Farming Systems, Mountain Population and Employment, Mountain Infrastructure and Technology, and Mountain Environmental Management. These were seen as thematic or research programmes. These divisions were perceived to be supported by dissemination and action programmes: Documentation and Information Exchange, Natural Resources Assessment and Monitoring, Area Development Planning and Implementation, and Institutional and Professional Development, which later basically took care of administration and finance. These divisions no longer exist and the thematic research areas have been honed down to Mountain Farming, Mountain Natural Resources, and Mountain Enterprises and Infrastructure with a GIS-RS computerized mapping and training division, Mountain Environment and Natural Resources Information Service (MENRIS and Information, Communication and Outreach (ICOD)).

**Mountains 2000 and Beyond**

Not only did ICIMOD club 8 areas into 5, it sought also to further focus its programme when it embarked on its first four-year regional collaborative programme in 1995. At the end of this period partners were asked to contribute their ideas to a new regional collaborative programme, the second, which became ‘Mountains 2000 and Beyond.’ The latter seeks to implement development strategies and techniques through five thrusts, as below.

i. Promoting sustainable livelihoods for mountain households

ii. Gender balanced mountain development

iii. Sustainable management of the mountain commons

iv. Capacity building for mountain development organizations
v. Information and outreach

This programme ends in 2002.

ICIMOD is now at crossroads in its history and is seeking to make optimum use of what it has to offer. Currently, the thinking is that ICIMOD's impacts come mostly from networks within the region that focus on priority issues, augmented by out-of-the-region expertise, and into which ICIMOD places its own, selected focused contributions. Policy aspects must be brought to the points of action: the real impacts on the ground being an important objective. Overall impact is broadened by training programmes evolving from the identified priorities that are available to substantial number of people throughout the region. Information management focuses on delivery and accessibility: accessibility not only through policymakers, planners and partners but also directly through organizations working at the actual point of delivery.

The importance of ICIMOD's mandate was legitimised by the Earth Summit in Rio. Chapter 13 of Agenda 21 is devoted to sustainable mountain development and ICIMOD played a part in putting it together. In 2002, ICIMOD will seek to strengthen commitment and legitimacy to the follow-up on the Earth Summit in South Africa.

ICIMOD AND THE LAND: NATURAL RESOURCE MANAGEMENT

The future thrust of ICIMOD will be to strengthen in-depth networks in priority areas and maintain continuing contact and commitment. In this respect, land use and land-based activities have been a priority for ICIMOD since its inception.

Mountain farms and the people who work on them are at the heart of much of ICIMOD's endeavours. It carries out work on different sloping agricultural land technologies (SALT) at sites throughout the region. Livestock in mixed farming systems and their potential for income generation have been a continual focus of both research, information-sharing and publication. The farmers themselves and resource dynamics are covered by the People and Resource Dynamics Project (PARDYP) which looks for solutions to resource management problems, the pressures on land resources, declining soil fertility, and the rehabilitation of degraded land in China, India, Nepal and Pakistan.

ICIMOD hopes to assess land use on a regional basis through testing of a methodology for assessing mountain agricultural systems within an ecoregional framework – a database and profiling system called the Mountain Agricultural Systems Information Files (MASIF).

Yet the land is not agricultural land alone, and in this respect ICIMOD's Regional Rangeland programme seeks to reduce poverty among mountain people dependant on the rangeland.
I. Core Donors:

i. Regional: People’s Republic of Bangladesh; Royal Government of Bhutan; Government of India; Union of Myanmar; His Majesty’s Government of Nepal; Government of Pakistan.

ii. Non Regional: Federal Chancellery of Austria; Government of Denmark; Government of Finland; Federal Republic of Germany; Government of the Netherlands; Government of Switzerland; Government of Norway.

II. Project Donors:

i. Countries: Australia; Austria; Canada; Germany; Japan; The Netherlands; Norway; Sweden; Switzerland; USA.

ii. Organizations/centres: Asian Development Bank (ADB); Canadian Cooperation (CECI); International Potato Centre (CIP); Food and Agriculture Organization of the UN (FAO); International Livestock Research Institute (ILRI); International Service for National Agricultural Research (ISNAR); United Nations Environment Programme (UNEP); United Nations Educational, Social and Cultural Organization (UNESCO); World Wildlife Fund (WWF); International Fund for Agricultural Development (IFAD); Ford Foundation (FORD); International Development and Research Centre (IDRC); MacArthur Foundation (MacArthur).

Role of Women in Mountain Farming Systems

Well aware of the role of women in mountain farming systems, ICIMOD has undertaken work to identify labour saving technologies for mountain women. In the last decade activity commenced with technologies selected by farm women themselves and extended to labour saving technologies and work on alternative types of energy for mountain dwellers. Clean energy is sought above all. Many eye and lung diseases are caused by smoky houses. Mountain dwellers often have no option but to burn wood, even of inferior types, during bitter cold winter nights. If one can profit from sunshine, how much better it would be not only for the women responsible for domestic chores but for their families too.

Establishing Knowledge Bank for Mountain Development

None of this will have an impact unless ICIMOD can get the knowledge out in useful forms and packages, informing partners and donors alike. Since the original concept of ICIMOD was as a kind of ‘knowledge bank’ for mountain development, this is one part of ICIMOD’s mandate that is continually being re-examined. In future it will seek to draw its partners across the region ever more into this delivery process and into making mountain knowledge useful to those whom it seeks to serve.

The Donors

Integrated mountain development is not an easy task, and none of it would have been possible at all without help from donors. ICIMOD has both core and project donors:

Future Thrust/Coordination

Finally, it is to the mountain people themselves that ICIMOD owes its existence. There was a need and ICIMOD emerged to fill it. It is a serious trust and commitment and ICIMOD cannot afford to fail. It looks towards the United Nations Year of Mountains 2002 as an opportunity to renew its pledge to help eradicate poverty in the Hindu Kush-Himalayas and, in doing so, realises that it is only through the help of its many partners: governments, donors, government organizations, research and development institutions, NGOs, CBOs, User Groups, and, above all, the mountain people themselves, that its task can be accomplished.

[Contributed by: The International Centre for Integrated Mountain Development (ICIMOD), P.O. Box 3226, Kathmandu, Nepal].
ICRISAT ORGANIZES SOUTH ASIA REGIONAL INTEGRATION MEETING

BACKGROUND
With its foundation firmly anchored in three core planks of the CGIAR Vision and Strategy to 2010 - giving highest priority to research needs of South Asia and adopting a regional approach to research planning and integration of partnerships, a draft strategy for South Asia Regional Partnership was endorsed by CDC at ICW 2000 with ICRISAT being designated as the focal centre. Focal points were designated for 13 CGIAR centres (CIMMYT, IRRI, ICRISAT, IWMI, ILRI, IPGRI, CIP, ICLARM, ICRAE, ICARDA, IFPRI, CIFOR, ISNAR) and 3 affiliated centres (AVRDC, ICIMOD, ICBA). The draft strategy was presented at the APAARI Annual Meeting (November 2000) and was well-received. Individual centre inventories of activities and partnerships in South Asia were completed by late December 2000 and have been consolidated into a searchable database that is currently being finalized. A South Asia Regional Integration Meeting was held at ICRISAT, Patancheru, India, during 1-3 March 2001. This report presents the outcome of the meeting and the planned next steps. Each CG and affiliated centre (except CIFOR) was represented by at least one participant. Two TAC members also attended this meeting.

Objectives of the South Asia Regional Integration Meeting
The main objectives of the meeting were to:
(i) Exchange experiences on research activities in South Asia; (ii) Discuss partnerships and networks; (iii) Identify regional issues and challenges; (iv) Clarify our comparative advantage in the region; (v) Identify priority eco-geographical targets; (vi) Identify potential topics for joint activities with Centres and partners; (vii) Explore ways to harmonize research support services; (viii) Discuss the next steps including mechanisms for engaging with APAARI and other partners and priority setting processes and consultations.

Coverage of the Meeting
The first day of the meeting provided each of 13 CG and 3 affiliated centres the opportunity to make a brief presentation of their activities in South Asia. Presentations were also made on successful networks including CLAN, RWC, AMBIONET, SAVERNET, lentil, SLP, and public-private sector partnerships. A presentation was made on the consolidated, searchable database of CG activities in South Asia. Participants were asked for feedback about additional improvements prior to (a) sending a copy to all Centres and (b) placing the database on the ICRISAT web page.

The second and third days of the meeting were dedicated to group discussions and brainstorming. Topics covered included: regional issues and challenges; Centres comparative advantage; priority eco-geographical targets; potential topics for joint activities; and next steps with our partners. A brief presentation was made on initial outcome of the change design and management process as background to the discussions. The ICRISAT Delhi Office also provided information on services available to other Centres.

Outcome of the Meeting
Regional Issues and Challenges: With over 500 million poor in the region and a greater number of poor in the sub-region of eastern India, Bangladesh and Nepal than in the whole of Sub-Saharan Africa, the greatest regional challenge is clearly reducing poverty. Greater efforts must be given to poverty mapping, understanding why people are poor, and identifying how agricultural research outputs can best contribute to reducing poverty. Other major challenges were considered to be growing water scarcity in much of the region; poor seed systems; scaling-up; child malnutrition; pesticides, pollutants and natural toxins in the food chain; environmental degradation; and how the region will cope with globalization.

There was some discussion on why China had been so successful in reducing poverty whereas
South Asia had lagged behind. The key elements responsible were identified as wider use of high yielding varieties; diversification into high value crops; small enterprise development; and infrastructure investments.

**Centres Comparative Advantage:** A lively debate ensued on Centres comparative advantage. Wideranging views were put forward. These included: our advantage as neutral brokers; key role as facilitators, convenors, collaborators, and advocates to policy makers; ability to bring sound science to bear on difficult problems; ability to bring together multidisciplinary teams to tackle complex problems; potential to forge links between public and private sectors; agricultural systems perspectives allowing problems to be tackled on a sub-regional/eco-regional basis; and our ability to establish “regional challenge programmes”.

**Priority Eco-geographical Targets:** Although it was considered essential to establish criteria for selecting priority eco-geographical targets (such as incidence, breadth and depth of poverty, chances of success, availability of partners etc.), four regions were identified that could be the foci for regional challenge programmes or other integrated activities. These were: (i) **Eastern Indo-Gangetic Plains (Eastern India, Nepal terai, Bangladesh):** This eco-region has high levels of poverty, frequent floods, low levels of industrialization, and socio-political problems. Opportunities were identified namely: diversification in rabi/winter season, development of livestock enterprises, sustainable intensification, market integration, small enterprise development. (ii) **Western Indo-Gangetic Plains (Western India, Pakistan):** This eco-region suffers from salinity, water-logging, depletion of groundwater, sea water intrusion, urbanization, desertification. Opportunities were identified namely: poverty mapping, diversification into livestock (especially dairy); zero tillage, soil management, improved water use efficiency, public-private sector partnerships, market integration. (iii) **Hard rock (much of Peninsular India, Sri Lanka):** This eco-region has serious depletion of groundwater, infertile soils (alfisols), erosion, high risk, and pockets of extreme poverty. Opportunities were identified for more efficient water and soil management, diversification especially livestock and pulses, market integration, public-private sector partnerships, links with industry. (iv) **Mountains (Bhutan, Nepal hills, parts of India and Pakistan):** This eco-region has high levels of poverty and food insecurity, natural resource degradation, loss of rich biodiversity, rural migration, and lack of infrastructure. Opportunities exist for diversification into higher value activities such as livestock, tree crops, floriculture, exploitation of hydropower, and tourism.

As each eco-geographical region faces both similar and different challenges, it was suggested that the group should develop a matrix of poverty hot spots by challenges and opportunities.

**Potential Topics for Joint Activities:** The final brainstorming session attempted to focus on priority topics for joint activities that could be developed through regional challenge programmes. It was agreed that the priority criteria to be used for identifying such topics was their importance, their ability to integrate a group of centres sharing common goals, and the potential for solutions to contribute to poverty alleviation. The topics included: water, seed, environmental degradation, health and nutrition, systems diversification, post-harvest processing and commercialization, globalization, and market integration. There was a consensus that there were too many topics for the initial phase of integration and agreement that Centres in South Asia should at least initially focus on one topic. Many Centres felt that as increasing water scarcity is the most serious and pressing problem in the region, the first regional challenge programme should focus on water management. This is relevant to three of the four eco-geographical regions and could involve most Centres. IWMI volunteered to coordinate the development of a concept paper on water; IFPRI on globalization and ICRISAT on poverty mapping.

**Next Step**

APAARI will hold a priority setting exercise for South and West Asia, 5-7 July 2001. CG Centres have been invited to participate. It was agreed that a small CG delegation would attend as a unified group to present the findings of the March meeting and to engage in useful discussions with APAARI on how to take the regional integration process further. The main expectations of this exercise are to reach agreement on mutually important priorities for the region and to plan how we can enhance our partnership to better address these priorities.

The need for a future meeting to bring CG Centres and the wider stakeholder community together was also agreed. This will be discussed at the APAARI meeting in July and could be held in September 2001.

[Contributed by: International Crops Research Institute for the Semi-Arid Tropics, Patancheru, Andhra Pradesh].
FISHERIES AND AQUATIC RESEARCH PRIORITY SETTING WITHIN THE ASIA-PACIFIC REGION

Participants at the meeting

EXPERT CONSULTATION ON RESEARCH PRIORITY SETTING

With funding support from the Asia-Pacific Association of Agricultural Research Institutions (APAARI), the Australian Agency for International Development (AusAID) and ICLARM – the World Fish Centre, the second meeting of the Asia-Pacific Group of Fisheries and Aquatic Research (GoFAR) and the Expert Consultation on Research Priority Setting was convened by ICLARM in Penang, Malaysia on 26-29 March 2001. The International Service for National Agricultural Research (ISNAR) provided the technical expertise. Twenty-nine research managers/planners from 14 countries (Bangladesh, China, Fiji, India, Indonesia, Iran, Malaysia, Nepal, Pakistan, Philippines, Samoa, Sri Lanka, Thailand and Vietnam) and representatives of regional (NACA, SEAFDEC) and international organizations (FAO, ISNAR and ICLARM) participated in the meeting. Representatives from Cambodia and Uzbekistan also attended as observers. Papua New Guinea could not be represented in the meeting due to reorganization of the national fisheries institution. Highlights of the meeting included discussions on:

i. available research priority setting methods and their applicability to aquatic resources management;

ii. regional research priorities for the Asia-Pacific region in coastal resource management, aquaculture and policy and social science research, respectively (see Table 1); and

iii. research collaboration and networking.

Research Priority Setting Methods

Strengthening the capacity of research planners and senior managers in research priority setting is one of the needs identified by members of GoFAR. For two days, the meeting focused on ‘Research Priority Setting Methods’ that would equip the aquatic resources managers/planners with appropriate approaches/methods on research planning and priority setting to enable them to address developmental needs and make best use of limited resources. The main resource persons were Dr Thomas Braunschweig and Dr Madan Dey of ISNAR and ICLARM, respectively.

The key elements for priority setting are decision criteria, research alternatives, participation of stakeholders and a methodological tool. A conceptual framework was outlined to help decision makers to overcome the difficulties and develop sound decision criteria. The different research priority setting methods were experienced. The choice of method is critical to the success of a priority setting exercise. Each method has its advantages and disadvantages. The various approaches available for priority setting are: rule of thumb; benefit/cost (B/C) analysis; domestic resource cost (DRC) analysis; scoring method; Analytic Hierarchy Process (AHP) mathematical programming and simulation models were also described. These methods could be used singly or in combination depending on the situation. The importance of identifying and selecting decision criteria was emphasized. The resource persons explained in detail and provided background materials for the following approaches that could be used in research...
### Table 1. Fisheries and Aquaculture Research Priorities for the Asia-Pacific Region

<table>
<thead>
<tr>
<th>Regional Issues</th>
<th>Research Topics</th>
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<tr>
<td><strong>1. COASTAL RESOURCE MANAGEMENT</strong></td>
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| Coastal/offshore fisheries assessment | • Ecosystem management and modeling  
• Contribution to and from national databases to build/test models  
• Assemblage analysis  
• Simulation to clarify management/policy direction  
• Information needed on:  
  i. how to select areas;  
  ii. their effect/impact on fisheries  
• Stock status/delineation needed to select MPAs  
• Community-based activities needed to support management of areas surrounding MPAs  
• Identification of sources of pollution and possible mitigation measures  
• Red tides control/management  
• Sedimentation |
| Marine protected areas (MPAs) | • Stock status/delineation needed to select MPAs  
• Community-based activities needed to support management of areas surrounding MPAs  
• Identification of sources of pollution and possible mitigation measures  
• Red tides control/management  
• Sedimentation |
| Pollution/environmental degradation | • Stock status/delineation needed to select MPAs  
• Community-based activities needed to support management of areas surrounding MPAs  
• Identification of sources of pollution and possible mitigation measures  
• Red tides control/management  
• Sedimentation |
| Resource/habitat enhancement/rehabilitation | • MPAs  
• Responsible restocking  
• Invasive and introduced species  
  - Ballast water  
  - Hull fouling |
| Maintenance of biodiversity | • Morphometric and genetic analysis of stocks in the region  
• Mainly a policy issue but includes diagnostic capacity of cyanide detection  
• Extent of losses due to spoilage and when/where these occur  
• Cost effective storage systems modified to suit local fleets  
• Quantification of by-catch including species composition (does it include juveniles of valuable species?)  
• Gear modification to reduce by-catch  
• Safety of seafood products  
• Product development |
| Stock delineation/management | • Mainly a policy issue but includes diagnostic capacity of cyanide detection  
• Extent of losses due to spoilage and when/where these occur  
• Cost effective storage systems modified to suit local fleets  
• Quantification of by-catch including species composition (does it include juveniles of valuable species?)  
• Gear modification to reduce by-catch  
• Safety of seafood products  
• Product development |
| Cost effective monitoring and surveillance system | |
| Reduction of post-harvest losses | |
| 2. AQUACULTURE | |
| Genetic improvement | • Genetic improvement for:  
  - growth enhancement  
  - disease resistance  
• Regional expert consultation on breeding for disease resistance  
• Capacity building in available disease diagnosis  
• Further research/standardization of techniques on disease diagnosis and control  
• Impact/interaction of non-aquaculture activities on environment of aquaculture  
• Shrimp culture systems: economics and improvement;  
• Aquaculture management and practices: improvement;  
• Aquaculture to replace live fish collections  
• Small-scale aquaculture;  
• Mariculture/seaweed farming/high value species;  
• Species introductions;  
• Aquaculture planning/typologies;  
• Post-harvest issues: quality, safety;  
• Extension/dissemination; and  
• Marginal environment use in aquaculture |
| Fish health management | • Genetic improvement for:  
  - growth enhancement  
  - disease resistance  
• Regional expert consultation on breeding for disease resistance  
• Capacity building in available disease diagnosis  
• Further research/standardization of techniques on disease diagnosis and control  
• Impact/interaction of non-aquaculture activities on environment of aquaculture  
• Shrimp culture systems: economics and improvement;  
• Aquaculture management and practices: improvement;  
• Aquaculture to replace live fish collections  
• Small-scale aquaculture;  
• Mariculture/seaweed farming/high value species;  
• Species introductions;  
• Aquaculture planning/typologies;  
• Post-harvest issues: quality, safety;  
• Extension/dissemination; and  
• Marginal environment use in aquaculture |
| Environment friendly aquaculture | |
| Other issues | |
| **3. POLICY AND SOCIAL SCIENCE** | |
| Economic and social analysis of aquatic resources in developing countries | • Analysis of employment, excess capacity and alternative livelihood  
• Economic valuation of resources and social and environmental cost-benefit analysis  
• Demand-supply and trade analysis: integration of fish into World Food Model  
• Socio-economic profiles of aquaculture technologies  
• Ex-ante analysis of potential impacts of MPAs and other measures of management  
• Development of monitoring and evaluation of criteria and indicators  
• Adoption of ex-post impact assessment  
• Multiple use of water bodies  
• Research on sustainable, equitable, efficient and responsible institutional arrangements  
• Models of co-management, CBFM and CBCRM monitoring and evaluation  
• Increased community awareness of the values of natural resources and increased understanding of resource ownership and property rights  
• Management of conflicts among resource users  
• Legal and institutional frameworks |
| Aquatic resources planning and impact assessment | |
| Legal and institutional analysis of fisheries management | |

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priority setting: (i) weighted scoring approach; (ii) economic surplus approach; (iii) combination of scoring and economic surplus approach; and (iv) simulation models.

The above theoretical exposure was followed by practical exercises with participants in groups ranking projects taken from ICLARM’s Medium-Term Plan as case studies, using the scoring approach. A detailed description of Analytical Hierarchy Process (AHP), a decision support tool and a more rigorous version of the scoring method applied for a broad range of decision problems was also provided. Chile’s National Biotechnology Programme where AHP was used was described in detail as a practical example.

Identification of Regional Research Priorities

One of the main objectives of this meeting was to identify regional research priorities based on resource systems and interact with aquatic resources research planners. As an initial step in this direction, three sessions were conducted to identify the regional priorities for research programmes relevant to the countries participating in GoFAR: (i) coastal resource management; (ii) aquaculture and (iii) social science and policy research.

Three senior scientists from ICLARM presented overviews of the developmental constraints for coastal resource management, aquaculture development and policy and social science research, respectively. These presentations, the country inputs from the participants and a broad list of research priorities drawn up during the first GoFAR meeting were used as background information for discussions and identification of research priorities in the areas where GoFAR members could work in collaboration with each other. Table 1 gives the research priorities identified for the Asia-Pacific region.

Research Collaboration and Networking

Representatives from the Network of Aquaculture Centres in Asia-Pacific (NACA), Southeast Asian Fisheries Development Centre (SEAFDEC), Food and Agriculture Organization of the United Nations (FAO) and ICLARM presented brief statements on the activities of their respective organizations. They affirmed the need for concerted efforts to find solutions to the problems besetting the region and expressed interests and continued cooperation with activities associated with APAARI/GoFAR. The participants discussed at length, various issues, pertinent to GoFAR. These are:

- **Capacity building:** The participants have identified the need for enhancing the capacity of national programmes on fish health management. Rapid disease diagnostic techniques have been developed. However, standardization and validation of diagnostic techniques are still lacking. ICLARM, FAO and NACA have expressed interest in jointly organizing a workshop/expert consultation on genetics for disease resistance and fish health management.

- **Future role of GoFAR:** Through a questionnaire, the participants were asked what GoFAR should be doing in the future. They have indicated that GoFAR as a regional forum for aquatic resources research in the Asia-Pacific region, should in the future: (i) Organize and facilitate discussions on current regional fisheries and aquaculture issues and prepare technical position papers and voice the issues in APAARI and other global fora; (ii) Organize/facilitate discussions and workshops in areas not covered by other existing networks; (iii) Exchange views, ideas and outcomes of the work related to prioritized research areas and facilitate frequent contacts among members; (iv) Carry out case studies on specific issues; and (v) Create a forum or mechanism where members can communicate and facilitate continuous exchange of information.

- **Coordinating mechanism:** For ease in coordination by ICLARM with member countries/institutions, the meeting realized the need for identifying country coordinators who will be the main contact persons for GoFAR activities. Electronic communication among members in between meetings and holding a GoFAR meeting in conjunction with the APAARI meeting was suggested.

- **Funding source:** Noting that funding is one of the constraints for sustaining the activities of GoFAR, various suggestions were made on sources of funds: (i) Request member countries to pool resources by contributing a nominal fee; (ii) Request APAARI to allocate a portion of its funds to GoFAR; (iii) GoFAR member countries to approach national donor funded projects/organizations with excess funds and explore the possibility of using them for some of the identified research priorities; (iv) Promote GoFAR to donor agencies for funding.

[Contributed by: Drs Modadugu V. Gupta and B.O. Acosta; ICLARM–The World Fish Centre, Jalan Batu Maung, Batu Maung, 11960 Bayan Lepas, Penang, Malaysia]
Achievements in crops and livestock research in Vietnam

Important S&T contributions for outlining the development strategy
Agricultural S&T has created a scientific base for regional and national development projects, reviewed plans for the optimal exploitation of regional competitive advantages, and in general for the exploitation of the Mekong River Delta, the Western Midlands, the Central Highlands and the Northern mountainous regions.

Agricultural S&T has been able to make use of many recent world successes by their effective application in Vietnam. A widening technology application has occurred in terms of varieties of many crop species (rice, maize, fruits, industrial crops, root crops, etc.), animal breeds (pig, beef cattle, dairy cattle, chicken, duck, goose, etc.), technical procedures for conservation of agricultural and forestry products, and new materials. All this has contributed to making production more effective.

Achievements in research on crops

Food Crops
New rice varieties with high productivity, high quality, pest resistance, tolerance to difficult conditions, rapid maturity to evade floods, have been introduced/hybridized, selected, multiplied as pure lines. Most of these varieties have been cultivated in the Mekong River Delta, some in the Red River Delta and the Central coastal region. The ability to maintain pure lines has been perfected, so that Vietnam is now controlling the technology for producing 3-line rice hybrids. It is also making hybrids based on two lines which also have an improved yield and quality. Very significant contribution also is of hybrid-maize varieties with high productivity. They yield over 3 tonne/ha, confirming that hybrids grown with the right inputs, are far superior to open-pollinated varieties. Hybrids now cover 60% of the country's maize area. Other notable achievements in food crops are:

- Techniques to increase rice yields, such as backyard sowing, seedling resistance to cold and heat, direct sowing, line-sowing, and integrated pest control.
- High yielding, disease-resistant varieties of cassava, adapted to regional conditions.
- Technical successes in cropping patterns.

- Replacement of an unstable one-season rice crop with low yields to a stable double (winter-spring and summer-autumn) crop in the Mekong River Delta.
- Changing in the summer-autumn crop to an early summer crop to avoid flood damage in the Central provinces.
- Increasing the earliness of the monsoon rice crop in the Northern provinces so as to develop opportunities for an additional non-rice crop in winter.
- Regional planning study of rice for export in the Red River and Mekong River deltas.

Industrial Crops

- Tea: Development of new varieties combining high yield with good quality. Techniques for multiplication by grafting, cultivation and pruning of young and old plantations, balanced fertilization, methods to control/prevent pests and diseases: red spider mite, leaf roller, grasshopper, Exobasidium vexans.

- Coffee: Selection of varieties with high yield, large bean size and rust resistance, such as three new varieties of robusta coffee for the Central Highlands; in particular, selection among imported Catimor coffee leading to material with high yield and rust resistance, now widely cultivated in some of the Northern provinces and also suited to central Vietnam. Development of disease control measures and recommended procedures per region for planting, cultivation and dry as well as wet medium- and small-scale processing.

- Rubber: Eleven national varieties and three hybrids have been developed. Planting technique for rubber KTCB, cultivation practices for the main regions, procedure for preventing pink fungus, process for shaving rubber latex and producing dope.

- Cashew: Identification of good Vietnamese selections and evaluation of varieties from India and Brazil.

- Sugarcane: World germplasm collection. Six national varieties selected. Techniques developed for planting and early care, balanced fertilization, biological pest control.
Cotton: Harvesting in the dry season to escape insects, taking full advantage of natural predators to limit the need for spraying, and widely apply irrigation.

Groundnut: Selection of eight or more varieties combining high yield and quality. Recommendations for balanced fertilization in each region; nylon covering in spring season; pre-sowing protective seed treatment.

Soybean: Rice germplasm collection. Breeding of 13 national varieties. Definition of growing season for each region, and of rotation (soybean, maize and some other crops). Methods of fertilizing, watering, maintaining humidity, harvesting, drying, and storing.

Fruits and Vegetables

- Import of new fruit varieties as well as selections among traditional varieties, thus creating and diffusing to growers a whole series of new very good fruit varieties suitable for the full range of requirements from home-garden to conditions of high economic efficiency; notably 3 varieties of pineapple, 4 of orange-mandarin, 3 of banana, 2 of orange, 2 of litchi, 3 of mango, 2 of tomato, 1 of cucumber, 1 of watermelon, 2 of chilli.
- Cultivation techniques for banana, orange, and pineapple; method for grafting of litchi, longan, and persimmon; technique for producing out-of-season flowering of pineapple and rambutan.
- Techniques for out-of-season vegetables.
- Successful study and manufacturing of pineapple peeling machine, equipment for automated bottling and pouring; processes for producing canned plum, litchi and pineapple; recommended storing regime for fresh litchi and banana.

AchEVIEmEnTS IN RESEARCH ON LIVESTOCK

- Outstanding results have been achieved in animal breeding research and selection, bringing about increases in outputs of meat, milk, and eggs; notably:
  - Hybrid pigs with 45-54% lean meat (1/2 to + exotic blood);
  - Hybrid beef cattle from crossing local yellow cow with Zebu;
  - Hybrid dairy cow from crossing yellow cow with Holstein Friesian, resulting over 3000 litre/lactation (3/4 to 5/8 exotic blood);
- Chicken and duck breeds for meat and eggs; scavenging chicken TamHoang; Khaki Campbell duck; CV-Super M duck for meat; CV-layer-2000 duck.
- Identification, conservation and use of local genetic resources, such as: Mong Cai Pig, domestic buffalo, Bach Thao cow, Mia chicken.
- Domestic plant collections and import for selection of plants as provender for animal rearing.
- Suitable rations for pig, cow, and chicken; recipes for concentrate feed.
- Successful artificial insemination of pig, buffalo, cow, horse, goat; promising initial cow embryo culture.
- Successful procedures for breeding early-warning piglets, fattening beef animals, incubating poultry.
- Cage design for all animal species, adapted to Vietnamese conditions.
- Methods to control pig cholera, swine fever, buffalo-cow fever, anthrax, trypanosomiasis, liver fluke, duck cholera.
- Epidemiology of several diseases, such as pneumonia in pigs caused by mycoplasma, and foot-and-mouth disease; and measures for preventing them.
- Creation of many vaccines, such as: Pasteurella suspension, Eryssipelas Pasteurellosis vaccine, attenuated Pasteurellosis vaccine, Salsco vaccine, coughing respiratory vaccine, piglet Edema vaccine, heat-resistant Lasota vaccine, fowl cholera vaccine, Parrovil vaccine against reproductive disorders, anthra strain Sterin, V4 vaccine, Gumboro vaccine, haemorrhagic Septicaemia vaccine with adjuvant aluminium hydroxide for cattle and buffalo, goat Pasteurellosis vaccine.
- Manufacture of several preventive medicines; Destran Fe, Sacharomises enzyme, Lestospira serum.
- Application of immunization, measures; rapid diagnosis of viral, bacterial, parasitic and fungal diseases.

[Contributed by: Dr Nguyen van Bo, Director, Department of Science, Technology and Product Quality (MARD) – Ministry of Agriculture and Rural Development, N. 2, Ngoc Ha Street, B Dinh, Hanoi, Vietnam].
APAARI PUBLICATIONS

SUCCESS STORIES

- Baby Corn Production in Thailand (1994/1) by Dr Chamnan Chutkaew and Dr R.S. Paroda
- Tilapia Farming in the Philippines (1994/2) by Dr Rafael D. Guerrero III
- Hybrid Rice in China (1994/3) by Mr Lou Xizhi and Dr C.X. Mao
- Dairying in India (1994/4) by Dr R.P. Aneja
- Hybrid Cotton in India (1995/1) by Dr A.K. Basu and Dr R.S. Paroda
- Palm Oil Industry in Malaysia (1995/2) by Dr Y.B. Basiron
- Transformation in Korean Farming – A Success Story of Effective Linkages (1996/1) by Dr Chae Yun Cho
- Cotton Production in Pakistan (1996/2) by Dr Badaruddin Soomro and Dr Parvez Khaliq
- Orchids in Thailand (1997/1) by Dr Kanchit Thammasiri
- Wheat Production in Iran (1997/2) by Dr Abbas Keshavarz and Dr M.J. Mirhadi
- Agro-Tourism in Australia (1997/3) by Dr Tom Connors
- Direct Seeded Rice in Malaysia (1998/1) by Dr Cheong Ah Wah
- Groundnut in China (1998/2) by Dr Duan Shufen, Dr Hu Wenguang and Dr Sui Qingwei
- Oilseeds in India (1999/1) by Dr Mangala Rai
- Integrated Pest Management in Rice in Indonesia (1999/2) by Dr Soejitno
- Bivalve Mariculture in India (2000/1) by Dr V.N. Pillai et al.
- Farming of Carrageenophytes in the Philippines (2001/1) by Dr Rafael D. Guerrero III

OTHER PUBLICATIONS

- Proceedings – Expert Consultation to Develop APAARI Vision 2025 & Fifth Executive Committee Meeting of APAARI, November 29-December 1, 1999, FAO Regional Office for Asia and the Pacific, Bangkok.
- APAARI – A Decade of Progress, reprinted in 2001.

FUTURE CONFERENCES

Title : Symposium on Plant Genetic Resources Management: Advances and Challenges
Venue : National Bureau of Plant Genetic Resources
New Delhi, India
Period : 1-3 August, 2001
Contact : Dr B.S. Dhillon, General Secretary, Indian Society of Plant Genetic Resources, NBPGR, Pusa Campus
New Delhi-110012, India
Phone : 011-5783697
Fax : 011-5851485; 011-5716074
E-mail : ssaxena@nbpgr.delhi.nic.in

Title : 8th International Symposium on Buckwheat
Venue : Chunchon, Republic of Korea
Period : 30 August to 2 September 2001
Contact : Dr Cheil Ho Park VIII ISB Organizing Committee, College of Agriculture and Life Sciences
Kangwon National University, Chunchon 200-701
Republic of Korea
Fax : 82-33-242-6497
E-mail : chpark@u.kangwon.ac.kr

Title : Asian Seed: 8th Annual Conference
Venue : Chiba, Japan
Period : 17-20 September 2001
Contact : The Asia & the Pacific Seed Association
P.O. Box 1030 (Kasetsart), Bangkok 10903, Thailand
Fax : 66(2) 9405467
E-mail : apsa@apsaseed.com

Title : International Conference on the Development of Agricultural Information Management: Technology and Markets in the 21st Century and 2001 International Exhibition on Agricultural IT
Venue : Beijing, People’s Republic of China
Period : 3-6 November 2001
Contact : Ms Meng Pei, Economic Development and Marketing Department, China Centre for Agricultural Technology (CECAT), 55 Nongzhen Beilu, Chaoyang District, Beijing, PR China 110026
Phone : 86(0) 10 65026343/1064195588-2210
Fax : 86(0) 10 650263012
E-mail : cecatic@public.bta.net.cn
Website : www.cecat.org

Title : 3rd International Conference on Biodiversity (ICOB-3)
Venue : Antalya, Turkey
Period : 3-8 November 2001
Contact : Conference Secretariat, ICOB-3, P.O. Box 143 06572 Maitpe, Ankara, Turkey
Phone : 90-312 212 2267
Fax : 90-312 213 3921
E-mail : bigserer@tr.net.net.tr

Title : 6th ISRR Symposium Roots: The Dynamic Interface between Plant and the Earth
Venue : Nagoya, Japan
Period : 11-15 November 2001
Contact : Dr Shigenori Morita, Graduate School of Agricultural and Life Sciences, The University of Tokyo
Tokyo, 113-8657, Japan
Phone : 803358415070
E-mail : anatomy@mail.ecc.uotokyo.ac

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