



APAARI

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EDITORIAL

The changing scenario of agricultural research and development in the Asia-Pacific region necessitates that commensurate to NARS composition, structure, manpower and organizational needs, due priority is given to Human Resource Development (HRD). Also, the mechanisms that we identify need to focus on relatively more interdependence among NARS so as to make these R&D programmes more sustainable. An effective partnership mode is required to be built in a phased manner in which NARS have to co-operate. These aspects were much debated at the Fifth APAARI General Assembly and Expert Consultation meeting held at Suwon, Republic of Korea in October 1998.

As an outcome of the meeting, it became clear that the present status of scientific trained manpower available in different NARS, will have to be analysed in the regional context. Such an exercise would help facilitate identifying centres for HRD, understanding the kind of thematic expertise/infrastructure available etc. for imparting regional training for building our human resource. Thus, there is a basic necessity to develop a database on the scientific resource potential available among NARS, to identify training needs of NARS, and to develop subregional and regional HRD plans. It would be necessary to pool in the common training needs for the NARS such as those relating to management mechanisms, acquiring specific skills in biotechnology, including on-job trainings in specific institutes of excellence. Thus, NARI/NARS-NARS collaboration could be very effective in achieving these needs, besides being cost effective. Also, in this collaboration there will be a need to integrate the role of Global Forum on Agricultural Research/ NARS-SC, and also avail the existing HRD opportunities provided by the IARCs, located in the Asia-Pacific region. Specific links with ISNAR in order to use its expertise will be helpful in developing the course-modules to meet emerging training requirements and undertake joint regional training programmes in collaboration with NARS, facilitated by APAARI. Further, there is a definite need with regard to the availability of proper teaching material, to serve effectively at all levels.

For HRD and capacity building in Asia-Pacific region, APAARI plans to integrate and prioritize specific needs of the national programmes. APAARI, working in close cooperation with NARS of the region and other concerned partners, plans to coordinate, promote and strengthen these activities for greater benefit to its members aiming at greater efficiency and effectiveness so as to have in place competent human resource to meet the future challenges successfully.

Editors

APAARI'S INVOLVEMENT IN RECENT ACTIVITIES OF GFAR

In the December 1998 issue of APAARI Newsletter, information on the establishment of the Global Forum on Agricultural Research (GFAR) – its organization, mission and goals was highlighted. A brief summary of APAARI's involvements in recent activities of GFAR is given here.



Dr R.S. Paroda, Chairman GFAR, welcomes Dr Ismail Serageldin, Chairman CGIAR, at GFAR Steering Committee meeting in Washington

GFAR has already initiated a lot of activities critical for the implementation of its Plan of Action since the two secretariats have been established (some of them having been initiated even before the formal establishment of the two secretariats). Some of the most important ones are:

- In its regular meeting of last October in Washington, the GFAR decided to convene its second global meeting in May 2000 in Dresden (Germany). Then, it commissioned a working group to help shape the meeting agenda. A document (GFAR 2000/2) was circulated that summarizes the preparation process as well as the successive steps to be followed. The document proposes that the meeting agenda be elaborated on a bottom-up approach. Each regional forum will contribute to this elaboration. APAARI was one of the first constituents involved in this preparation as a discussion on APAARI involvement in GFAR took place in the last APAARI General Assembly in Suwon, Korea in October 1998.
- During the first GFAR management meeting that took place at the ICAR, New Delhi (India) on 18-19 February, 1999, it was also decided to develop a GFAR vision to be presented and amended in Dresden.
- On 29-31 March 1999, the GFAR convened a meeting at FAO in Rome to consult the key organizations that have global or regional activities in domains related to Agricultural Information and Communication. The main objectives of the meeting were to draw a better picture of who is doing what, to better assess the end-users needs and to agree on an "enabling framework" for structuring a Global Agricultural Knowledge and

Information System. Each regional forum was given an opportunity to present the current status of ICT situation in its region as well as to express ideas and concrete suggestions to make a better use of opportunities that the new ICTs can offer to the NARS. APAARI was actively represented by Dr S.S. Tomar (ICAR, India) and

Dr Brian Lee (ACIAR, Australia).

- In the context of GFAR, Europe has held its first European Forum in Wageningen on 7-8 April 1999. This important event started with an opening address by Dr R.S. Paroda in his capacity as GFAR Chairman. APAARI activities were also highlighted.
- During the MTM in May 1999 at Beijing, in the NARS-SC meeting, APAARI's activities were presented by Mr Ian Bevege, Chairman and its coordinating role in the Asia-Pacific region as a facilitator stressed.
- The brainstorming meeting to discuss APAARI Vision 2025, proposed to be held in August 1999 at New Delhi, will discuss on the preparation for GFAR 2000 to be held at Dresden, Germany in May 2000 vis-a-vis APAARI's activities to be presented as success stories.

These few events mentioned above demonstrate how active and effective is the participation of APAARI in the development of GFAR activities. This is fully relevant with the objectives of GFAR, to act as a facilitator to improve international cooperation for and through the involvement of its members.

EGFAR, the GFAR web site can be visited at the following address: <http://www.egfar.org>. Further information on the GFAR can be obtained from the contributors:

[Dr Alain Derevier, GFAR Executive Secretariat c/o World Bank 1818, H Street NW, Washington DC 20 433 USA; Fax: 1.202. 522 32 46; E-mail: aderevier@worldbank.org
Dr Fernando Chaparro, NARS Secretariat, c/o FAO/SDD, FAO via delle Terme di Caracalla, 00100 - Rome, Italy. E-mail: fernando.chaparro@fao.org].

INCREASED PROFILE FOR AQUACULTURE GENETICS RESEARCH IN GoFAR/APAARI MEMBER COUNTRIES

Fish is an important animal protein source for people in Asia, contributing as much as 70% of the animal protein intake in some countries. The region contributes 60% to global fish production and 91% to world aquaculture production. It is estimated that by the year 2020, an additional 40-50 million tonnes of food fish will be required globally to meet the needs of increasing population, mostly in the Asia-Pacific region. Since most of the natural fish stocks have been either over-exploited or reached maximum sustainable yields, the world is looking to aquaculture to bridge the gap between supply and demand.

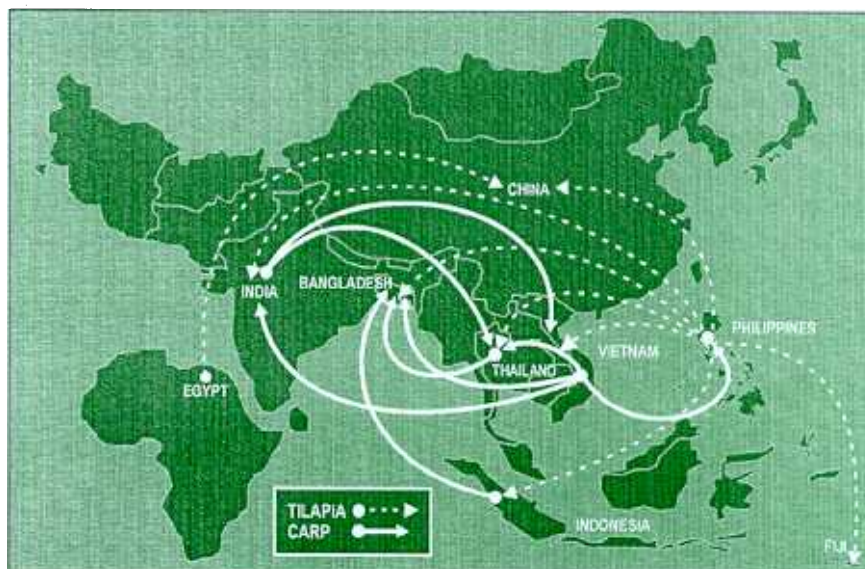
Great strides have been made in the last four decades in increasing the production of crops, livestock and poultry through genetic research and the application of breeding programmes. Though fish farming in Asia dates back to thousand of years, scientific breeding and genetic selection techniques have not been used until recently especially in the case of tropical aquaculture species. Most of the cultured species are yet to be domesticated. The pioneering work undertaken by ICLARM in collaboration with its partner institutions in the Philippines and Norway for the genetic improvement of Nile tilapia (*Oreochromis niloticus*) has indicated that conventional selective breeding techniques are effective for the genetic improvement of tropical finfish. The sixth generation of improved Nile tilapia grows 70% faster compared to the base population. Realizing the importance of genetics research for increasing production from aquaculture, the members of the Group on Fisheries and Aquatic Research (GoFAR) formed under the umbrella of APAARI in 1998, identified genetic enhancement of aquaculture species as one of the priority areas for collaborative research.

Carp and tilapia are the main species cultured in Asia. The International Network on Genetics in Aquaculture (INGA), being coordinated by ICLARM, is assisting the member countries of GoFAR in

aquaculture genetics through collaborative research in genetic improvement of carp and tilapia species, capacity building, germplasm exchange, development of national breeding programmes and information sharing. Exchange of fish germplasm for evaluation, for direct use in aquaculture or utilization in breeding programmes is being undertaken by member countries through INGA. Protocols and quarantine procedures for the transfer of germplasm, based on international codes of practice and material transfer agreements formulated by INGA are being used as guidelines by countries, organizations and individuals acquiring fish germplasm through the network. The GoFAR/APAARI member countries participating in this collaborative genetics research are: Bangladesh, China, Fiji, India, Indonesia, Malaysia, Philippines, Thailand and Vietnam.

During 3-5 March 1999, 20 network members and 11 participants representing eight advanced scientific institutions met in Kuala Lumpur, Malaysia to review the progress of genetics research, future plans and collaborations. Details of aquaculture genetics research in progress in each of the member countries of GoFAR, is given in Table 1.

From the activities in progress in different countries, it could be expected that the farmers in these countries will have access to genetically improved aquaculture species in the next few years.



Exchange of fish germplasm by member countries through INGA

Table 1: Progress of aquaculture genetics research in member countries in Asia and the Pacific

Country	Research in progress
	Genetic improvement of Catla (<i>Catla catla</i>) and Rohu (<i>Labeo rohita</i>); selective breeding, line crossing and development of monosex female population of silver barb (<i>Barbodes gonionotus</i>); ploidy manipulation in catfish, <i>Heteropneustes fossilis</i> ; selective breeding and sex reversal of the GIFT strain Nile tilapia (<i>Oreochromis niloticus</i>); characterization of Hilsa (<i>Tenualosa ilisha</i>); development of breeding techniques for endangered carp species.
China	Development of fast growing strains of silver carp (<i>Hypophthalmichthys molitrix</i>), crucian carp (<i>Carassius auratus</i>) and common carp (<i>Cyprinus carpio</i>) using gynogenesis, chromosome manipulation; selective breeding of Nile tilapia and <i>O. aureus</i> ; genetic characterization of carps; refinement of techniques for cryopreservation of carp sperm and embryo; genetic conservation and utilization of crabs in different river systems.
Fiji	Performance evaluation of the Fijian Nile tilapia (<i>Chitralada</i> strain) and the GIFT strain.
	Rohu: Selective breeding for growth improvement, evaluation of broodfish size on growth performance of progeny, characterization of improved stocks using RAPD analysis; Catla: Characterization of improved, wild and hatchery stocks, conservation and documentation of major carps, endangered species and economically important species; construction of genomic and C-DNA libraries of Indian carps and catfish; development of genetic markers for hatchery broodstocks of Indian major carps.
Indonesia	Common carp: Establishment of base population for selective breeding, diallel crossing of gynogenetic common carp; Nile tilapia: selective breeding for growth; Catfish: Characterization of <i>Pangasius</i> sp. and <i>Clarias batrachus</i> .
Malaysia	Nile tilapia: Cryopreservation of gametes, embryos and <i>in vitro</i> culture; performance evaluation of tilapia strains in integrated and non-integrated systems; development of commercial parent lines of Nile tilapia for production of hybrid progeny; genetic improvement of red tilapia and <i>Macrobrachium rosenbergii</i> ; assessment of genetic variability of Javanese carp; breeding of ornamental fish to improve colour and meristic characteristics.
Philippines	Genetic improvement of Nile tilapia adapting both the GIFT and YY technologies; selective breeding of Nile tilapia (GIFT strain) for growth and frequency of sexual maturation; selection for salinity tolerant tilapia; genetic profiling of commercially important species by karyotyping; <i>ex situ</i> conservation of freshwater fish.
Thailand	Selective breeding of common carp for growth improvement; genetic characterization of populations of tiger shrimp, banana shrimp, oyster, freshwater prawn, snakeskin gourami and silver barb; sex control and genetic manipulations of silver barb, Nile tilapia, snakeskin gourami and catfish.
Vietnam	Family selection of Nile tilapia and common carp for growth and cold tolerance; evaluation and establishment of base population for selective breeding of silver barb; induction of triploidy in catfish (<i>Clarias macrocephalus</i>); selective breeding of mrigal (<i>Cirrhinus mrigala</i>).

The meeting noted that while efforts are being made for conservation of aquatic genetic resources, albeit in a small way, no effort is being made for the conservation of habitat/environment. The meeting reiterated the need for conservation of habitats along with conservation of genetic resources. The meeting also emphasized the need for the member countries which are signatories to the Convention on Biological Diversity to have proper systems in place for acquiring and transferring germplasm. Presently, political boundaries of countries are taken into consideration while assessing introduction of exotics and improved or genetically modified germplasm. Since some of the rivers and other waters are contiguous among neighbouring states, and also

within a country, each aquatic resource system has its own identity in terms of biological diversity, the members were requested to consider the impact on the watershed and not just take a national boundary approach while transferring germplasm and undertake evaluation of impacts of introduction of species and improved germplasm on natural populations and biodiversity. Since quantitative genetics is a new area of research in many of the countries, the members requested assistance in capacity building. The advanced scientific institutions have indicated their interest in working with member institutions of GoFAR.

[Contributed by: Dr M.V. Gupta, Director, International Relations, ICLARM, MCPO Box 2631, 0718 Makati City, Philippines]

THE FOURTH INDIAN AGRICULTURAL SCIENCE CONGRESS DELIBERATES ON SUSTAINABLE AGRICULTURAL EXPORT

21-24 February 1999, Jaipur, India

The 4th Agricultural Science Congress was held at the B.M. Birla Science and Technology Centre, Jaipur from 21-24 February 1999, under the auspices of the National Academy of Agricultural Sciences (NAAS), India and was hosted by the Rajasthan Agricultural University and the Government of Rajasthan. The Congress was inaugurated by His Excellency Shri Anshuman Singh, the Governor of Rajasthan and presided over by Hon'ble Shri Sompal, the Union Minister of State for Agriculture. The theme of the Congress was, "Sustainable Agricultural Export". About 700 delegates participated in the deliberations. Foreign participants represented USA, the Philippines and some SAARC countries like Sri Lanka, Bangladesh, Nepal and Bhutan.



Shri Sompal, Union Minister of State for Agriculture, releasing the Souvenir of the Congress

In his welcome speech, Dr R.S. Paroda, President, National Academy of Agricultural Sciences, said that the Congress, would try to evolve a strategy for export and stressed on policy issues, need to establish world-class referral laboratories for testing agro-products, quarantine and the quality of the Indian agro-products in the world market. Dr M.S. Swaminathan, Founder President of NAAS, called for new initiative, accompanied by a broad vision, both at the scientific and political level for achieving new heights in sustainable agricultural development.

CONGRESS SYMPOSIA: SCIENTIFIC/TECHNICAL DELIBERATIONS

Several symposia were organized. The 'Symposium on Production, Processing and Value Addition for Sustainable Agricultural Export', under three sessions covered the 'Status of Potential of Agricultural Export from India', 'Agricultural Production for Sustainable Exports' and 'Processed Products for Sustainable Exports'. Over 15 presentations dealt with the above topics. The Second Symposium on 'Sustainable Export of Products from Arid Agriculture', had two sessions covering 'Opportunities for Support in Arid Region' and 'Policy and Management Issues for Sustainable Export'. Over ten papers were presented discussing different aspects. Overall, the deliberations

covered all aspects of sustenance of production, processing and marketing of crops, fruits, vegetables, animals and fisheries etc. The Congress provided an excellent opportunity for planners, scientists, industrialists and farmers to address issues related to various aspects of agricultural export. The symposia in particular provided a holistic comprehension of sustainable agriculture export and enabled participants to discuss and deliberate upon the R&D aspects and pros and cons of the situation in emerging trade related scenario.

Also, two very thought provoking special lectures were delivered; one by Dr M.S. Swaminathan on 'Integrated Natural Resources Management - Key to Sustainable Advances in Agricultural Productivity', and the other by Dr Ganesh Kishore on 'Role of Biotechnology in Enhancing Productivity of Crops'.

The "Poster Session" had over 350 posters displaying the theme of the Congress. Participants from SAARC countries such as Sri Lanka, Nepal, Bhutan and Bangladesh also displayed their posters. Most of the crops and livestock were represented, covering a wide spectrum of research and development aspects. These exhibits also generated enormous public awareness.

MAJOR RECOMMENDATIONS

From the presentations and discussions at the various sessions of the Congress the following recommendations have emerged:

Productivity

- Capture fisheries from marine sector have not shown significant growth in recent years. Since most central stocks are heavily exploited/over exploited, strategies should be evolved at national level for conservation of resources and implementation of a code of conduct for responsible fishing.
- Milk production in India being seasonal, attempts are needed to enhance export of milk and milk products well within the existing ceiling. Specific milk products made from buffalo milk like mozzarella cheese should be given greater thrust for export purposes.
- Low productivity in pepper, cardamom, ginger and turmeric and the need to produce quality spices and clean spices is a major concern.

Quality

- High priority should be given to quality aspects. Quality of milk and milk products must satisfy the international standards like ISO, IDF and Codex Alimentarius for the purpose of export.
- Risk analysis of food due to the presence of additives, contaminants, residues, toxins, microbes etc. should be examined scientifically through implementation of good agricultural practices, hazard analysis critical control point (HACCP) and quality assurance according to ISO standards.
- There is need for strengthening of our quality analysis laboratories as referral labs and control mechanisms. There will also be a need for effective advisory/service centres in promising areas. It is, therefore, imperative that all entrepreneurs join hands by establishing systems of operations in a harmonious manner.

Research and Development

- Research for competitive production and post-production system: export oriented varieties and their quality planting material, higher productivity, better quality of produce, harnessing off-season production, better post-harvest management, sea-transportation protocols, etc. are some of the areas that require priority research attention.

- Institutions like the institute of Foreign Trade and other agencies should analyse world markets and trends and identify areas in which research effort should be mounted to achieve export competitiveness.
- Research and technology developments must be geared to increase efficiency of production through efficient use of natural, monetary and non-monetary resources to enhance cost-effectiveness, competitiveness and assured supply of agricultural products for increasing our share in the global market. Greater emphasis should be placed on inter-disciplinary holistic farming systems research, technology development and technology transfer, encompassing both traditional and modern technologies. Research on development of efficient high yielding and high quality varieties, integrated soil, water and nutrient management, integrated pest management and rainfed production should attract high priority.
- There is a strong need for strengthening research on post-harvest handling, processing and value addition. Based on our comparative advantages and market expansion, research on production of speciality and non-conventional products must receive due attention.
- Other recommendations dealt with: infrastructure needs to boost export, institutional support to smaller units; stress on market search and new areas; policy research for dynamic adjustments in view of the liberalized global market, IPR and other regulatory measures including biosafety tariff and non-tariff barriers, balance between food security and self-reliance, and environmental cost and sustainability.

Dr R.S. Paroda, President, National Academy of Agricultural Sciences and Director General, ICAR in his concluding remarks said that in the last quarter of this century, important paradigm shifts had taken place in Indian agriculture. In view of the GATT agreement and globalization of agricultural trade, there was need for promotion of sustainable agricultural export in India. Emphasis should be laid on poultry, fisheries, horticulture and livestock sector and an integrated strategy with a long-term export perspective formulated.

[Editors' summary from the report on the highlights published by the organizers, 4th Agricultural Science Congress, NAAS, Pusa Campus, New Delhi 110 012, India]

COUNCIL FOR PARTNERSHIP ON RICE RESEARCH IN ASIA (CORRA)

The Council for Partnership on Rice Research in Asia (CORRA) was formed in March 1996 at IRRI, Los Baños, Laguna, Philippines to enhance the effectiveness of the various partnership mechanisms being employed in meeting the challenges of the global rice research system. The Council is committed to promote and support interdependence, reduce barriers, and collectively change perspectives of all partners: research workers and administrators, policymakers and donors, both inside and outside the region, as they become full partners in the global rice research community.

2ND ANNUAL MEETING

The 2nd Annual Meeting of the CORRA was held on 16 October 1998 at Suwon, Korea, in cooperation with IRRI and the Rural Development Administration (RDA) of Korea. NARS leaders from various member countries (India, Indonesia, Korea, Malaysia, Myanmar, Pakistan, Philippines, Thailand and Vietnam), and some IRRI staff, attended this important meeting to discuss major rice issues. Bangladesh, China, and Laos were also invited but were not able to send representatives due to more pressing commitments in their respective countries (addressing the harsh effects of drought and floods, caused by El Niño and La Niña). However, they expressed their support of CORRA's objectives and recognized its important role in the Asian region. As mandated by CORRA's main role as an advisory council to IRRI, several important topics, which represent the current thrust of IRRI's research and training programmes, were presented and discussed during the meeting. They are as follows:

- Rice Research Institutions as Corporate Entities (Changing Perspectives)
- Update on the yield frontier (New Plant Type Development)
- Functional Genomics
- International Network on Genetic Enhancement of Rice (INGER)—its role and sustainability
- Intellectual Property Rights (IPR)/Patenting
- Partnership with the Private Sector
- Ethics/Principles
- Emerging Partnership and Funding Arrangements

MAJOR RECOMMENDATIONS

The main recommendations were as follows:

- CORRA Chair to meet with IRRI Board of Trustees, to highlight the importance of INGER and express the views and strong sentiments expressed by CORRA relating to the gradual decrease in INGER budget.
- IRRI should approach new donors and must organize a group discussion with practical rice breeders and plant biotechnologists and conduct brainstorming sessions with stakeholders, to rationalize future directions for INGER.
- IRRI to touch base with IPGRI to revisit the design of the Systemwide Information Network on Genetic Resources, in terms of hardware and software component, to evaluate its availability to the NARS.
- Information on training courses conducted by IRRI and on database of IRRI-trained NARS should be sent to APAARI.
- IRRI to institute a training programme for modern plant breeders in 1999.
- IRRI to go ahead with its plans for functional genomics but CORRA stressed the need to maintain research and training activities in the fundamental areas of breeding and crop production. NARS can play a role in phenotyping of materials and contribute to mutant development and their testing on the proposed functional rice genomics.
- CORRA endorses IRRI's proposal to assign short IR designation to its most advanced breeding lines to identify those which are most promising from numerous breeding lines, tested internally.
- IRRI to call a small group meeting of scientists to discuss the important issue of IPR and CORRA to elevate this matter to the IRRI Board.
- IRRI to circulate information concerning the Asia Rice Foundation among the members to keep them abreast of the developments on IRRI's role/link with this Foundation.
- CORRA appreciates the initiative on the establishment of the Ethics Committee and look forward to the refinement of the elements that go into the draft guidelines.
- CORRA noted down the guidelines provided by India with respect to emerging partnerships and

funding arrangements with other donors and NARS.

- CORRA recognized the deficiencies in terms of proposal preparation and expects that training on this aspect can be provided and information be made available to NARS scientists.

LINKAGES WITH APAARI

In Asia, NARS have become increasingly involved in global rice research through several regional fora such as APAARI. APAARI aims to enhance linkages and interactions among NARS and to serve as common voices on regional priorities in agricultural research and development, thus facilitating communications with such entities as the CGIAR.

In its 2nd meeting, CORRA was honoured by the participation of the incoming APAARI Chair, Mr Ian Bevege of ACIAR, and the Executive Secretary, Dr R.S. Paroda. Thus, links between the two groups were explored and discussed extensively. It was suggested that future CORRA meetings be held before the APAARI Executive Committee/General Assembly Meeting, to be able to feed CORRA's inputs into the APAARI, for further



Participants at the Second Annual meeting of CORRA

deliberation. The following recommendations emerged from the interaction of CORRA and APAARI:

- CORRA's linkage with APAARI: APAARI will be the umbrella organization and CORRA (as a consultative council to IRRI) will be a component part. A model is the Group of Fisheries and Aquatic Research (GoFAR).
- IRRI to link the two networks, INGER and CREMNET, with APAARI.

[Contributed by: Dr Kenneth S. Fischer, Deputy Director General for Research, IRRI, PO Box 933, 1099, Manila, Philippines]

PCARRD MODEL ON COMPETITIVE RESEARCH GRANTS FEATURED IN WORLD BANK RETREAT

The Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD) model on competitive research grants has been featured in Agricultural Knowledge and Information System (AKIS) Retreat held last on 23 March, 1999 at the Airlie Center in Warrenton, Virginia, USA under sponsorship of the World Bank. Presentation of the Philippine experience was done by PCARRD Officer-in-Charge Dr Beatriz P. del Rosario. The global consultation was organized by World Bank to consolidate experiences and models on agricultural research, extension and education from developing countries. World Bank can use these as basis for strengthening its policies and programmes in supporting Third World countries. The activity was attended by 75 officials and staff of the World Bank Headquarters and field offices and 23 partners from donor agencies and related organizations. Seven selected national research systems were also invited to participate including Yemen, Nigeria, Kenya, Ghana, Nepal, Philippines and Indonesia.

Dr del Rosario shared about PCARRD-evolved system in managing competitive research grants from local and foreign sources and how these have contributed to the generation of much needed technologies in the Philippines. Dr del Rosario reported that PCARRD's initiative on competitive research grants in the Philippines has brought about the wise use of limited financial resources, strategic direction in the research and development system and promotion of excellence. She cited as R&D priorities the specific concerns on biotechnology, biodiversity, geographic information system, natural resource management, soil and water conservation, policy advocacy, impact analysis and gender concerns in agriculture and natural resources. Dr del Rosario shared about schemes evolved by PCARRD for improved R&D management relative to competitive research grants.

[Contributed by: Dr Rogelio C. Serrano, Supervising Science Research Specialist, PCARRD, Los Baños, Philippines]

THE UNIVERSITY OF THE SOUTH PACIFIC (USP) AND ITS ROLE IN AGRICULTURAL RESEARCH AND RURAL DEVELOPMENT

INTRODUCTION

Agriculture is the economic backbone of many countries in the South Pacific. Within this region, agriculture is both traditional and dynamic. A mixture of subsistence-oriented agriculture, which supports most people, and commercial-orientated enterprises, many of which are export based, are the two main farming systems. The University of the South Pacific (USP) supports many of these activities by pursuing research aimed at improving subsistence farming systems by helping them adapt to increasing population and growing demand for land. Research focuses on the major constraints to agricultural production in the South Pacific such as pests and diseases and low soil fertility. Improvements in subsistence and commercial agriculture are also further promoted by the many trained personnel that USP produces.

USP STRUCTURE/SET-UP

USP is a unique regional organization. It covers an area larger than Europe and is owned not by one country but by twelve. It has major campuses in three countries and extension centres in all but one. There

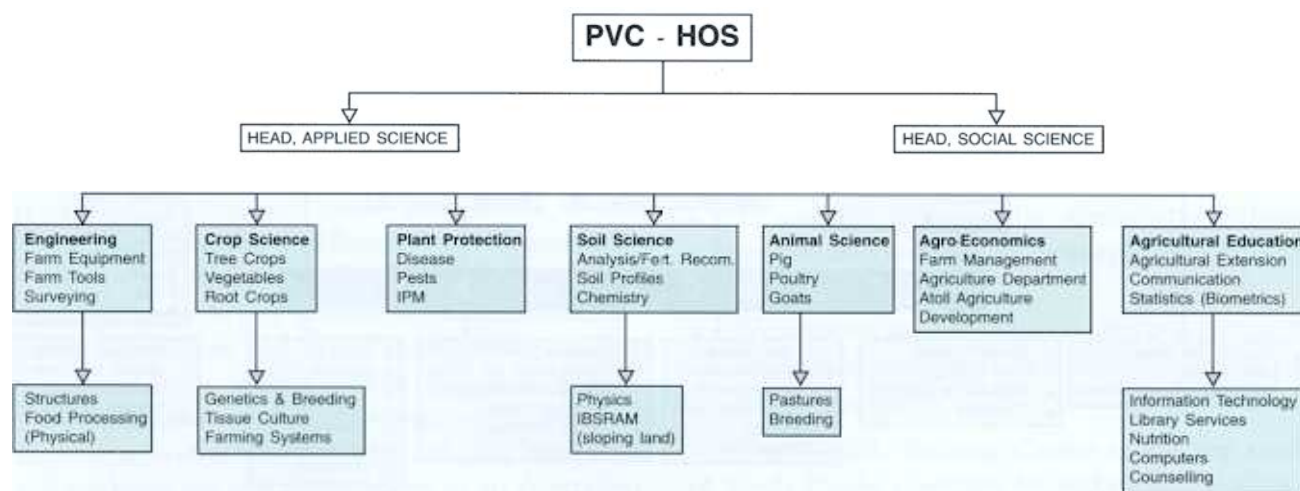


The University Campus

An Institute Profile

are about 1.3 million people and 200 languages in the USP region. As a result, it caters to the needs of a diverse range of countries, environments and cultures. From modest beginnings in 1968, with only 154 full-time enrolments, over 10,000 students are now involved in its programmes.

Agricultural activities at USP are based at the Alafua Campus, Apia, Samoa, which houses the School of Agriculture (SOA) and the Institute for Research, Extension and Training in Agriculture (IRETA). The campus is located in a pleasant valley some 6 km south of Apia, the capital of Samoa. Originally the South Pacific Regional College of Tropical Agriculture, established with assistance from New Zealand in the early 1960s, the campus was handed over to the University by the Government of the then Western Samoa in 1977. Alafua comprises a total of 31 ha and has an additional 11 ha at the nearby Moamoa estate. The University also has another 40 ha farm at Laloanea, 12 km away from Alafua, that is available for commercial agriculture, research and teaching.



Organization of School of Agriculture, USP

ACTIVITIES OF THE SCHOOL OF AGRICULTURE AND IRETA

The School has two sections for academic administration purposes. The Applied Sciences section is responsible for engineering, animal science, soil science and crop science activities. The Social Sciences section is responsible for agricultural development, agricultural economics, farm management, agricultural education and extension and statistics. IRETA was established in 1980 to carry out programmes responsive to the region's needs for agricultural research, extension and short-term training and consultancy and its activities are strongly linked to those of the School of Agriculture.

The School of Agriculture and IRETA have the mission to assist in meeting the needs and improving the well being of people in the South Pacific by:

- Providing agricultural education to a wide range of people, directly through its teaching programmes and indirectly through its training of teachers and advisers.
- Developing and adapting new technology to improve food production and extend opportunities through balanced rural development that is sensitive to long-term community needs for resource conservation and sustainable development.
- Disseminating information throughout the region by face to face contact and extensive use of print and electronic media.

TEACHING

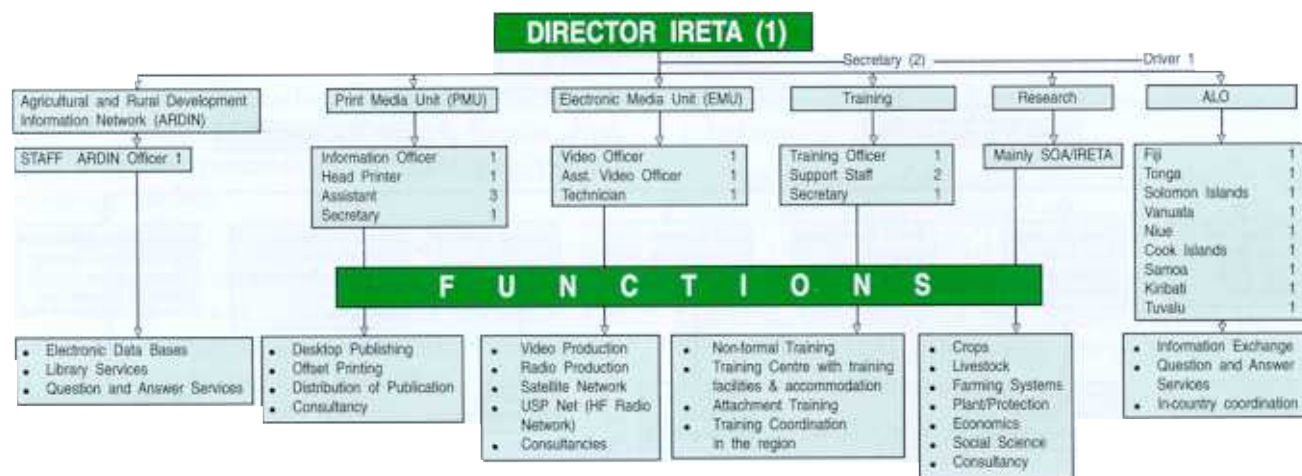
The School offers a wide range of formal courses including a one year Foundation Science Programme, a two year Diploma in Tropical Agriculture (DTA), a three year Bachelor of Agriculture (B.Agr.), a one

year Postgraduate Diploma and a two year Master of Agriculture (M.Agr.). Most students study full-time on-campus for these courses but a growing number choose to study through the School's distance education programme. Fourteen degree level courses are available via distance mode now and we expect to have the full degree programme available through distance education within a few years. Currently, the School also offers a one year Foundation Agriculture Programme but this is only available through distance education. In collaboration with the Fiji-based School of Humanities training programmes for high school agriculture, teachers are provided through the Bachelor of Education (B.Ed.) with an agriculture major, the Advanced Certificate in Teaching Agriculture (ACTA) and the Postgraduate Certificate in Education (PGCE).

In addition, IRETA offers a wide range of non-formal education programmes and packages.

RESEARCH FOCUS

Research activities are supported by both the School of Agriculture and IRETA and focus on the main constraints that farmers now face in the region. One of the most important research activities currently underway at USP is the development of strategies to overcome the problem of leaf blight, caused by *Phytophthora colocasiae*, which has devastated taro production in Samoa. Taro is a major staple for many of the countries in the region. Prior to the arrival of taro leaf blight in Samoa in 1993, taro was the country's most important staple. It has also replaced cocoa and coconut as the major export commodity. The combined total value of taro exports in 1991 and 1992 was US\$ 4.5 million. In 1993 alone it was estimated at US\$ 3.5 million, which represented



Organization of IRETA, USP

58% of Samoa's exports for that year. Within a year of the disease outbreak, the value of taro exports had fallen to US\$ 59,250.

Taro Leaf Blight: Breeding for Resistance

Research on taro leaf blight at USP has focussed on two main areas, the introduction and screening of exotic taro cultivars and the improvement of taro through breeding for resistance to leaf blight. Both activities are carried out in collaboration with the Ministry of Agriculture, Fisheries, Forests and Meteorology (MAFFM) in Samoa and other interested organizations. The taro breeding programme for resistance to taro leaf blight in Samoa was initiated by Dr Param Sivan in 1996. The work is now part of a regional project funded by AusAID entitled 'Taro Genetic Resources: Conservation and Utilization (TAROGEN)'. Since the initial outbreak of the disease many exotic taro cultivars have been introduced and some have useful levels of resistance. One cultivar in particular, PSB-G2 (from the Philippines Seed Board), has been found to be acceptable to local farmers and is now being promoted throughout the country. The search for additional sources of resistance is continuing and currently thirteen cultivars from Palau are being multiplied and evaluated.

Other Research Areas

USP staff are involved in several other research activities, and some of these are:

- Developing cheap locally available feeds for pigs and poultry using copra, cassava, brewer's waste, etc.
- Sustainable mixed cropping systems
- Evaluating machinery for cleaning root crops
- Evaluating new varieties of vegetables
- Analysing farm product marketing data to help forecast weekly future trends.

COLLABORATION WITH OTHER ORGANIZATIONS

USP has strong research links with many organizations within Samoa and overseas. Within Samoa, linkages have been developed with MAFFM. Soil science researchers at USP are major participants in the International Board for Soil Research and Management (IBSRAM) co-ordinated PACIFICLAND project. The objectives of this project are to determine the extent of soil loss and runoff from sloping land in Samoa and to develop viable soil management techniques and cropping systems to sustain and improve agricultural production on sloping land. USP soil scientists are also collaborators in an Australian Centre for International Agricultural Research

(ACIAR) project to diagnose and correct mineral nutrient disorders of root crops in the South Pacific. This project involves collaboration between USP, MAFFM and the University of Queensland, Australia.

To overcome the problem of taro leaf blight in the region on the TAROGEN project, current activities in this area involve USP working closely with MAFFM, Hort Research (New Zealand), NARI (PNG) and the governments of other countries in the region through a project implemented by the Secretariat of the Pacific Community (SPC) and funded by AusAID with additional support from the New Zealand Overseas Development Administration (NZODA). Complementing this work will be an imminent ACIAR-funded project entitled "Virus indexing and DNA fingerprinting for the international movement and conservation of taro germplasm". This project involves USP plant protection staff collaborating with the Queensland University of Technology and University of Queensland, Australia, University of Technology, PNG, Department of Agriculture and Livestock, PNG, MAFFM and SPC.

For eight years, the European Union (EU) has been funding agricultural research and development in the region through their Pacific Regional Agricultural Programme (EU-PRAP). USP implemented 5 projects in Phase I (1990-94) and two projects in Phase II (1995-98) of this programme. These two projects, PRAP Project I (Farming Systems for Lowlands) and 7 (Provision of Tissue Culture Services for the Region), are now being implemented and administered by SPC.

USP also has strong links with US Land Grant Institutions under the Agricultural Development in the American Pacific (ADAP) programme.

THE ROLE OF IRETA IN USP ACTIVITIES

Although IRETA contributes to the areas of research and teaching, it also has other objectives that are important in helping countries of the region to attain sustainable development. Two of these objectives are:

- To provide high quality agricultural training programmes relevant and responsive to identified regional needs.
- To maintain and develop strategies to disseminate information on agriculture technology to countries in the region.

The IRETA Training Centre serves the needs of South Pacific countries for technical agricultural training through short, non-formal trainings and

workshops. These workshops are an excellent forum for exchange of information. Examples of recent workshops in 1997/98 include:

- Production of indigenous nuts
- Basic video production training in agriculture
- Cutflower production and marketing
- Organic agriculture in the South Pacific
- Pesticide Management in the South Pacific

The Electronic Media Unit (EMU), Print Media Unit (PMU), Agricultural and Rural Development Information Network (ARDIN) and the Agricultural Liaison Officer Network (ALO), all facilitate the dissemination of agricultural information in the region. IRETA has established strong links with the Technical Centre for Agricultural and Rural Cooperation (CTA) which has helped to strengthen these areas involved in information dissemination and training within the Pacific region. This association has also contributed substantially to capacity building within IRETA. IRETA continues to develop links with other organizations within the region such as EU-PRAP and SPC to build on the initial work that has been done in collaboration with CTA.

The EMU's function is to provide video, radio and PEACESAT services to facilitate and implement IRETA programmes. The production of training videos on new technologies developed through IRETA/USP research and workshops is an important component of EMU activities. The video library currently contains over 400 titles.

The PMU produces and disseminates agricultural publications to strengthen national agricultural development activities of USP member countries. Currently, the PMU regularly produces two serials, IRETA's South Pacific Agricultural Newsletter (SPAN) and the Journal of South Pacific Agriculture (JOSPA). Relevant and topical news items are covered in SPAN while research articles highlighting research activities by USP and other organizations are covered in JOSPA. The PMU is also responsible for publishing the IRETA Annual Report and Annual Research Report, Agri-facts, workshop proceedings, technical manuals and extension leaflets.

The ARDIN Centre's main functions are to collect, organize and catalogue agricultural information and to disseminate it to South Pacific countries. The Centre has important links with other information services in the region and elsewhere, which helps to collect and disseminate relevant information. The Centre has collected and documented over 5,000 entries of relevant literature known as the Pacific Regional Resource File (RRF).



Workshop in progress

IRETA also maintains units in nine countries of the region through its ALO network. ALOs are the basic information and organizational links between USP and national ministries, education ministries, private enterprises, NGOs and other information users and providers.

USP through its School of Agriculture and IRETA is well placed to meet many of the agricultural-related needs of the region. Facilities for teaching and training are excellent and among the best in the region. It continues to attract funding from donors to facilitate the implementation of workshops. It is a major centre for the documentation and dissemination of information, which is of the highest quality. USP also contributes to meeting the research, advisory and consulting needs of the region. Within the region it is strongly placed to carry out relevant and topical research. Over the years many important linkages have been developed with other organizations working on similar problem areas. Many important findings have resulted from these collaborations and it is vital that such partnerships are maintained and strengthened. With this in mind, the School of Agriculture and IRETA continue to encourage other organizations and institutes to consider future collaborative work with USP.

For more information contact: School of Agriculture, Alafua Campus, University of the South Pacific, Apia, Samoa, Tel: (685) 21671, Fax: (685) 22933, Email: uspsa@samoa.net; and IRETA, Alafua Campus, University of the South Pacific, Apia, Samoa, Tel: (685) 21882, Fax: (685) 22347/22933, Email: uspireta@samoa.net.

[Contributed by: Mr Danny Hunter, School of Agriculture, Alafua Campus, University of the South Pacific, Samoa and Mr Mohammed Umar, IRETA, Alafua Campus, University of the South Pacific, Samoa]

AGRICULTURAL RESEARCH PLANNING FOR THE THIRD SOCIO-ECONOMIC PLAN OF IRAN (2000-2004) - SOME RECENT ACTIVITIES AT AREEO

The most outstanding recent activity of Agricultural Research, Education and Extension Organization (AREEO) relates to the planning of the Third Research Development Plan which commenced from June 1998 with due attention to the 25 years Development Plan (Vision 2020). In agricultural development plan of Iran which is expected to be implemented as from March 2000 for a period of 5 years, agricultural research has been assigned a very important position in the overall plan. In the long-term agricultural research development plan, increase in yield and quality of agricultural crops, under the framework of sustainable production has been considered as the principle and foremost objective. This plan which is named as "Plan 2000" is inclined towards the objective of attaining increase in yield, enhancing production of agricultural crops by about 60-70% and in some instances increase to more than 100% is observed in the 2020 horizon.

For example to attain production of 119 million tonnes of agricultural crops by the year 2019 in the aforementioned plan, in comparison with 55 million tonnes in 1996, obtaining yield of 6 tonnes/ha of irrigated wheat (70% increase), 7 tonnes/ha rice (52% increase), 5.5 tonnes/ha barely (80% increase), have been taken into consideration as an agreeable quantitative goal.

THIRD SOCIO-ECONOMIC PLAN

In order to achieve the aforementioned objectives, the following policies and strategies have been earmarked in the agenda of the Third Development Plan.

- **Development of high yielding field and horticultural crops of superior quality, resistant to biotic and abiotic stresses:** Course of action in this direction is reliance on basic crops (namely, cereals, oilseed crops, cotton, sugar beet, potato, pulses and onion) and exportable agricultural crops (mainly horticultural crops).
- **Emphasis has been placed on taking biodiversity indices into consideration and safeguarding natural resource base:** In all research activities, especially research related to optimal use of chemical fertilizers and reduction of pesticides use, safeguarding natural enemies from damaging factors and utilization of biological methods under

the framework of Integrated Pest Control (IPM) as well as perusal and verification of research implemented with ecological indices controlling the ecosystems, is the mainstay of the plan.

- **Compilation of standards and utilization criteria of resource base (water, soil, plant foliage and genetic resources) and agricultural inputs:** In this regard the framework laid down in the "Agenda 21", will be the basis of operation. In addition, convention on Biological Diversity (CBD) and the FAO Global Plan of Action (GPA) will be given special attention.
- **Execution of research in all fields related to basic crops to eliminate their local production constraints and consequently sufficient production to reduce import:** Since, in the past 20 years, despite the increase in production, the import of above mentioned crops has taken an upward trend, due to the tremendous increase in population, placing tremendous pressure on the balance of payments of the country, adoption of this strategy as a priority becomes absolutely vital.
- **Development and guidance of research in those fields of agricultural crops that enjoy comparative advantage in the world markets:** In this field enhancement of exportable crop quality and compilation of information related to marketing and quality needs of consumable markets in particular related to horticulture, possess special importance.
- **Research on methods reducing agricultural crops losses:** Agricultural crop losses particularly from harvest to consumption, show extremely high figure. For the same reason one of the priorities of agricultural research programme is the expansion of research activities to find methods for reducing agricultural crop losses with due attention to the problems related to post-harvest technology namely, storage, processing and packing. For the same purpose, the research institute for agro-industries and localizing the related technology has been included in the list of research policies.
- **Promotion of technology in the agricultural sector:** Emphasis has been placed on the execution

of Experimental Development and on Applied Research in order to select and disseminate appropriate technology as well as making imported technology indigenous. The aim is to design and manufacture prototypes and optimize tillage implements from cultivation to harvest and post-harvest and/or new machinery conforming with the conditions and needs of the agricultural sector.

Optimal use of water: Optimal use of water in the long-term research and its follow-up in the Third Development Plan has been specifically emphasized. Research regarding the manner of resources use (water and soil) with undesirable quality such as sodic soils, with high and medium salinity, city and industrial waste water and determination of suitable methods of irrigation to increase the ratio of crop yield to the unit of water used, calls for top priority confirming with the long-term research programme, the increasing water-use efficiency from 32% in 1995 to 52% in 2020 has been taken into consideration. From another side, strengthening and supporting research on field and horticultural crops could also assist in alleviating the difficulties related to water shortage by augmenting exploitation of rain water.

Organizational development and international relations: Research activities will be pivoted around crops under the framework of increasing number of crop specific research institutes. Promotion of partnership of private sector in the

execution of part of research activities and calling for greater and more expanded partnership of local universities and promotion of scientific and research collaboration with reputable international scientific institutes is under consideration. It has been foreseen to create necessary facilities for the establishment of liaison offices of institutes affiliated to the Consultative Group on International Agricultural Research (CGIAR) in particular the IARCs - ICARDA, CIMMYT, IRRI, CIP, ICRISAT, CIAT, and IPGRI in Iran. Establishment of new basic commodity oriented institutes (namely oilseeds, cereals, horticulture, corn, and forage crops, biotechnology and genetic engineering, biological control, seed and plant technology and biology materials and genetic diversity) have also been foreseen. For transfer of some of research activities such as soil and water testing laboratories, pest and diseases laboratories, soil survey and classification and production of parental seeds, necessary steps and provisions have already been made.

Transfer of research findings: To make the system of transfer of research findings efficient, training of end users and active participation of farmers in priority-setting is emphasized and in this context, the promotion of information system is also given careful consideration.

[Contributed by: Dr Abbas Keshavarz, Deputy Minister of Agriculture, and Head of Agricultural Research, Education and Extension Organization (AREEO), Tehran, Iran]

INDIA'S B.R. BARWALE, FIRST SEEDSMAN TO RECEIVE WORLD FOOD PRIZE

DES-MOINES, IA - The 1998 World Food Prize has been awarded to Badrinarayan Ramulal Barwale, Chairman of the Maharashtra Hybrid Seeds Company, a company he founded in 1964. Through a combination of employing innovative research techniques and providing the best quality seed to India's marketplace, the company, better known today as Mahyco, became the largest of the nearly 100 seed companies operating in India today.

The annual award, the foremost international prize recognizing the achievements of Individuals who have advanced human development by improving the quality, quantity, or availability of food in the world, was presented at a symposium and award ceremony held in Des Moines, Iowa, USA, 15-17 October 1998. Norman Borlaug, winner of the Nobel Peace Prize for his work in world agriculture, views the prize as a means of establishing role models who would inspire others. The World Food Prize Foundation sponsors the \$250,000 award, established

in 1986, and now housed at Iowa State University College of Agriculture which serves as secretariat to the Prize.

The U.S. Seed industry was quick to recognize the significance of the first WFP award to a seedsman and the vital role the seed industry plays in agricultural production. Bill Whitacre, Chairman of the Board of the American Seed Trade Association, commented, "Seedsmen everywhere can salute Barwale for a vision that ultimately helped his countrymen achieve what is fundamental to every culture desiring freedom and prosperity - food security".

"Congratulations to Mr Barwale on his achievements," praised Whitacre, "Seedsmen everywhere acknowledge his accomplishments in transforming not only the science of the seed, but the business of the seed."

[For more information, contact: The World Food Prize Foundation, 601 Locust Street, Suite 350, Des Moines, Iowa 50309 USA]

RECENT NARS ACTIVITIES IN SRI LANKA

The NARS in Sri Lanka has great diversity and is spread over five Cabinet rank Ministries comprising of four sub-sectoral activities, which may be identified as:

- Crop production
- Fishery and aquatic resources development
- Livestock development
- Conservation and sustainable use of natural forests.

The components of NARS are as follows:

- **Plantation crop research**— Ministry of Public Administration, Home Affairs and Plantation Industries.
- **Non-Plantation crop research**— Ministry of Agriculture and Lands.
- **Fishery and aquatic resources research**— Ministry of Fisheries and Aquatic Resources Development.
- **Livestock development research**— Ministry of Livestock Development and Estate Infrastructure.
- **Forestry research**— Ministry of Forestry and Environment.

The Sri Lanka Council for Agricultural Research Policy (CARP), coordinates agricultural research dispersed within these five ministries.

WORKSHOPS ORGANIZED

SAPTA and its Applications on the Plantation Crop Sector

A workshop on South Asian Preferential Trade Agreement (SAPTA) and its implications on the plantation crop sector in Sri Lanka was organized by the National Committee of Socio-Economics and Policy Analysis in the National Agricultural Research System of Sri Lanka. The purpose of this workshop was to provide awareness to the scientists about SAPTA and its implications to the Sri Lankan plantation crop sector. Crops under consideration were tea, rubber, coconut, sugarcane and export agricultural crops.

Tea: The present import tax is 35% of the tea imports. Sri Lankan tea has been in the "Negative List" for all three rounds of discussions under the agreement. Tea is one of the commodities which has not been considered for tariff concessions by any of the member countries of the SAARC under SAPTA. Under the Indo-Sri Lanka Free Trade Agreement it was considered for tariff concessions.

Tea industry uses some of the imported raw material (inputs) in the production system. The major

imported inputs are inorganic fertilizers, tea machinery and raw material for tea machinery, and packing materials for tea. None of the SAARC member countries is involved in the fertilizer trade with Sri Lanka. But India is involved in the supplying of tea machinery and tea chests. It is evident from the available information that the South Asian Region is currently playing a minor role for tea trade of Sri Lanka.

Rubber: Sri Lankan raw rubber has been in the "Negative List". Raw rubber is having least potential, because international market for raw rubber is largely concentrated in non-SAARC countries (European Union, USA, Japan and other countries). India produces raw rubber and mainly uses for domestic consumption. If the rubber-based products are not included in the sensitive list, Sri Lankan rubber-based industries will be affected in due course.

Coconut: Existing trade structure reveals that the trade of coconut products among member countries of SAPTA is substantially less as compared with that of the trade with the rest of the world. Tariff concessions granted on coconut products by member countries might result in intra-regional trade expansion of these products, but pronounced impacts may not be expected as the traditionally established bigger markets for most of the coconut products are non-member countries of SAPTA.

Sugarcane: Sri Lanka is a net importer of sugar. Sugar, sugar industry by-products and machinery have not been included in the negative list. Therefore, exporting countries of these products can request for tariff reductions from Sri Lanka.

Export Agriculture Crops: SAARC region provides the major market for betel and arecanut. Trade concessions are given already for these two products. Further concessions provide high potential for these two crops. Clove, pepper and nutmeg are having considerable trade interest in the region. By lifting some of the existing trade barriers, export volume of these products can be increased. Cinnamon and cardamom are having least potential, because international market for cinnamon is largely concentrated in non-SAARC countries (Latin American countries). Cardamom production is still marginal. Further trade concessions are requested by Sri Lanka from other SAARC countries.

Seminar on Intellectual Property Rights

A seminar on Intellectual Property Rights for Plant Breeders sponsored by the National Intellectual



Workshop on IPR organized by Sri Lanka Council for Agricultural Research Policy (CARP)

Property Office and organized under the aegis of the Sri Lanka Council for Agricultural Research Policy was held in the Auditorium of the National Science Foundation on 2 March 1999. The seminar was attended by 40 participants drawn from a number of agricultural research stations. The resource persons for the seminar included scientists as well as specialists from the legal profession.

The brief inaugural session was marked by the addresses of welcome by the Director of the Intellectual Property Office, Dr D.M. Karunaratne and the Executive Director of CARP, Dr D. Kirtisinghe, who highlighted on the concept, approach and concerns; Dr Karunaratne later presented an overview. This was followed by other prominent presentations; Mr Prasanna Goonetilleke, Senior State Counsel from the Attorney General's Department spoke on the Enforcement of Intellectual Property Rights in national context. Prof. Athula Perera of the University of Peradeniya, spoke on "Issues Relating to Biotechnology and New Plant Varieties - A Scientists Perspective", while R. Dinal Phillips, Attorney-at-law covered the subject "Patents in Sri Lanka-Procedure and Practice". The last presentation "Some Legal Aspects of Biotechnology and New Plant Varieties" was by Mr K. Kanag-Isvaran Attorney-at-Law, which was presented in his absence by Ms. Dilshan Wijayawardana. Ms. Wijayawardana dealt broadly with the various biological and legal concerns in the field of genetic engineering and biotechnology, and explained the significance of the achievements in biotechnology, and the consequent ethical issues in the protection of the rights of researchers who labour in evolving biological material useful to society.

Ms. Wijayawardana said that the Minister of Trade has recently appointed an Advisory Commission to study and recommend amendments to the Intellectual Property Code of Sri Lanka, in compliance and conformity of the provisions of the TRIPS Agreement.

Contract Research: A new activity to strengthen research on the perennial crops in the non-plantation sector was launched on 12th March, 1998 through a workshop for participants in the NARS, including the university sector. This programme which commenced in January 1999 will continue for a 6-year period with financial assistance from ADB.

National Workshop on Entomology: This was held in May 1999 to address immediate constraints in the agricultural scenario.

CAR-CARP on MoA: To be held in June 1999, the workshop will look into the requirements requested by both the contracting parties to finalize measures to derive the best benefits.

SAARC Trade Agreements: This was held in May by the socio-economic group to discuss trade agreements with special reference to SAPTA.

TRAININGS

Human Resource Development is given high priority this year and is included in the foreign and local training programmes.

INTER-INSTITUTIONAL AND INTERNATIONAL COLLABORATION

Inter-Institutional Collaboration: Issues of national importance such as the present coconut mite problem and constraints relating to inadequacy of equipment and human resources at Institutes are addressed through Inter-Institutional collaboration.

MoA between ICAR-CARP: Workplans and country requirements have already been formulated.

Collaboration with CIMMYT: Assistance to upgrade maize production in Sri Lanka has been offered by CIMMYT.

AGRICULTURAL RESEARCH PLAN

A ten-year plan for the Department of Agriculture, primarily dealing with food crop agricultural sector is being formulated.

Plant Protection: Work is in progress to produce directories of all personnel/projects in Sri Lanka for the period 1994-1999 respectively.

Compilation of Abstracts: This has been taken up in the areas of Entomology and Nematology, Plant Pathology and Weed Science.

Socio-Economic Aspects: It is intended to address issues of national importance pivoting around the agricultural sector.

[Contributed by: Dr D. Kirtisinghe, Executive Director, Sri Lanka Council for Agricultural Research Policy, Wijerama Mawatha, Colombo 07, Sri Lanka]

AGRICULTURAL SCIENCE AND TECHNOLOGY DEVELOPMENT IN TAIWAN

Agriculture is the basic industry of a nation and a major link in overall economic development. Research and innovation in agricultural technology are the motivating forces behind agricultural development of the Republic of China (ROC). Thus, agricultural technology is intimately related to agricultural development. Agricultural technology includes experimental research and technical development for crops, forestry, fishery, animal husbandry and food processing. Agricultural technology has a decisive influence not only on raising the productivity of agriculture and improving the quality of products, but also on developing each sector of agriculture, protecting the natural ecology and environment, and adjusting the production and marketing structure.

Over the past 50 years, the ROC's clear policy guidance and the cooperation of the various experimental and research organizations have made possible great strides in production for farming, forestry and animal husbandry, and this has improved national nutritional standards. In recent years, as a result of changing economic and trade circumstances, Taiwan's agricultural sector has been faced with stiffer international competition. At the same time, the natural environment has deteriorated to some extent due to highly industrial development, and also because of the consumer habits among Taiwan's residents that have been changing noticeably. The pursuit of high quality and healthy foods has generally replaced traditional notions about the importance of three square meals a day. Thus, agricultural technology has a crucial role to play in increasing operational efficiency and market competitiveness, producing value-added goods of high-quality and protecting the ecological environment, as well as pursuing a suitable degree of balanced growth through a course of adjustments to the production structure.

Agriculture is an industry that combines production, livelihood and ecology. In addition to making full use of limited water and soil resources, the Council of Agriculture (COA), the highest organization in charge of agriculture in the Republic of China, has been active in protecting the ecology and environment, and establishing a system of sustainable agricultural production. At the same time, the COA has worked in concert with the "Six Year Programme for National Development" actively pouring its energies into high-technology research to

attain a balance between the development of agricultural production and the ecology.

In order to raise the level of agricultural technology, set forth the direction and goals, and strengthen the management and assessment of technology programmes, the COA has set up an "Agricultural Research and Development Working Team". The main duties of the Team are: Drafting policies and regulations for the development of agricultural technology; Planning evaluation and budgeting of programme; Promotion, management, final analysis and evaluation of programme; Planning, promotion and management of personnel training and international cooperation; Planning and preparation for scientific conferences, the promotion of the conclusions and suggestions of such conferences; and Coordination and contact with relevant government academic and research organizations on agricultural technology programmes.

Taiwan's research and development programmes for agricultural technology are jointly planned and promoted by the Council of Agriculture and National Science Council. Each organization utilizes its own funding to commission the agriculture, forestry, fishery and livestock research institutes under the Taiwan Provincial Department of Agriculture and Forestry, private research organizations, colleges and universities. Academia Sinica and other research organizations involved in agricultural technology (in total 44 institutions) carry out such research programmes. Generally speaking, the National Science Council concentrates on supporting basic agricultural research and experimentation. The Council of Agriculture, on the other hand, focusses on assisting applied research and technical development, as well as demonstration and extension work. Additionally, the Taiwan Sugar Corporation, in concert with the corporation's multi-faceted operations and through its Sugar Research Institute and Livestock Research Institute, carries out experimental research to strengthen the promotion of the sugar industry, sugar by-products and livestock.

[Contributed by: Dr Te-yeh Ku, Director General, International Cooperation Department, Council of Agriculture, Executive Yuan, Nanhai Road, Taipei, Taiwan 100, Republic of China]

NARS are requested to send brief contributions highlighting agricultural research and development activities of regional importance.

CIMMYT'S ASIAN REGIONAL MAIZE PROGRAMME

- RECENT TRAINING ACTIVITIES

Maize SEED PRODUCTION COURSE IN INDIA

A successful advanced maize seed production course was jointly organized by the Indian Council of Agricultural Research (ICAR) and the International Maize and Wheat Improvement Centre (CIMMYT) and held at Hyderabad, India from 8-13 March, 1999. The Central Research Institute for Dryland Agriculture (CRIDA) provided the logistical support for conducting the course attended by 80 participants representing public and private institutions from all over the country. In addition 8 participants from the neighbouring countries of Nepal, Bangladesh, Sri Lanka and Myanmar also attended the course. The inaugural session was brief with Dr Mangala Rai, Deputy Director General (Crop Sciences), ICAR as the Chief Guest. CIMMYT was represented by Dr Fernando Gonzalez and Dr S.K. Vasal, Distinguished Scientist and Team Leader of Asian Regional Maize Programme, Thailand.

The contents and the diversity of themes for this course were carefully chosen. In total 27 different topics were covered. A few of the topics covered were of general nature providing an overview of maize research and seed production efforts in India with an in-depth review and evolving trends of maize seed industry growth in India. These topics discussed various types of germplasm products in maize and strategies for exploiting strengths and weaknesses of maize reproductive system for facilitating various aspects of seed production. Other topics covered several broader categories including maintenance and seed production OPVs, tactical considerations and improving efficiency of seed production fields, various classes of seeds and the maintenance and breeder seed production of parental lines, seed production aspects of conventional and non-conventional maize hybrids, agronomic management of seed production fields including diseases and insects, issues relating to harvest and post-harvest technology, seed quality concepts and systems of seed quality control, seed quality evaluation for viability and vigour, marketing strategies for promoting improved maize seed and last but not the least, the increasing use of

biotechnological tools in seed production. Two field visits/guided field tours were conducted at Amberpet maize research station on March 10 and March 13.

MAIZE TRAINING COURSE IN VIETNAM

A refresher course on 'Hybrid technology and seed production in maize', was conducted at National Maize Research Institute (NMRI), Dan Phuong, Ha Tay in Vietnam from April 12-16, 1999. Dr Ngo The Dan, Vice Minister, Ministry of Agriculture and Rural Development, greeted the participants and conveyed his thanks to CIMMYT for conducting this course for the benefit of Vietnamese researchers. The course was attended by 44 participants from NMRI, agricultural universities, maize research and seed production centres, southern agricultural research institutes, six national seed companies and a multinational bioseed company. The resource persons delivering the course included CIMMYT scientists-Drs. S.K. Vasal and Fernando Gonzalez and some of the Vietnamese scientists such as Drs. Tran Hong Uy, Ngo Huu Tinh, Phan Xuan Xao and Nong Van Hai.

The course was quite comprehensive and covered 39 different topics. These covered hybrid maize technology; hybrid oriented source germplasm; hybrid development concepts and procedures; inbred line development and evaluation as well as modification and improvement procedures; recycling of maize inbred lines; inbred base maize germplasm available worldwide; strategies for developing productive inbreds, and improvements in maize inbreds. Several fragile areas in hybrid maize research were also covered including combining ability, inbred-hybrid correlations, heterotic groupings and patterns and tester concept and its use in hybrid maize technology. Breeding of stress tolerant and QPM hybrids was also emphasized. Increasing interest in two-parent hybrid maize technology, biodiversity, and increasing use of exotic germplasm were also discussed. Efficiency aspects of hybrid development, cytoplasmic sterility systems and the role of new bioscience technologies were also covered. One



Participants of the Maize Training Course held at NMRI, Dan Phuong, Vietnam

session was devoted to agronomic management and seed production of various classes of seeds of inbreds, conventional and non-conventional hybrids. The course also included a field visit to experimental maize plots to look at inbreds and hybrids and to discuss maintenance and seed increase of inbreds in small and large plots.

[Contributed by: Dr S.K. Vasal, Team Leader, Asian Regional Maize Programme, P.O. Box 9-188, Bangkok 10900, Thailand].

SMALLHOLDERS LIVESTOCK DEVELOPMENT PROGRAMME FOR POVERTY ALLEVIATION IN BANGLADESH

- A Short Success Story

Livestock particularly small animals like sheep, goat, chicken and duck contribute significantly in production of specialized food (animal protein) and income generation in Bangladesh. Rearing of small animals requires very little capital and land. Women or even children can take care of them. Therefore, the large portion of the rural people, those who cannot afford to purchase large animals and cannot spare land for feeding them, can easily keep a goat or a few chicken or ducks to earn some money to alleviate their poverty and improve nutritional status.

Black Bengal Goats are native to Bangladesh and are very famous for their unique flavoury meat and high quality skin. Black Bengal goats can survive under scavenging condition with little care and management. Hence the goats are very popular to the rural poor of Bangladesh. They keep their goats in their dwelling houses and let them graze in the bushes, open fields and road side slopes, thus requiring very little or no cost for feed. These are also a potential source of earning through selling offsprings and milk.

To encourage goat rearing and to alleviate poverty Black Bengal bucks were distributed free of cost to the destitute women, and also distributed at a very minimum price to the farmers. Further more, interested farmers were given soft loans to establish goat farms. Consequently the number of goat farms in the country have been found to increase from 3,470 in 1991-92 to more than 20,000 in 1996-97.

Poultry rearing is the most popular livestock activity being practised widely among the rural

households. About 89% of the rural livestock households rear poultry. Homestead poultry production plays an important role in Bangladesh in promoting nutritional status of the destitute women and children directly through providing animal protein in their diet and indirectly through creating job opportunity and increasing household income, which in turn facilitates increased access to wider variety of food items.

It was observed that when a group of women, after training, were supplied with high yielding varieties of birds, their consumption of chicken meat was increased from 0.11 to 0.50 number and eggs from 0.37 to 15.48 number per family per month. The mortality rate of the birds with those families also decreased from 18.3% to 7.6%.

In the small holder poultry production system a good number of models with encouraging results involving destitute women, landless and marginal farmers have been developed in the country during the last 10 years. Commercial poultry farming has also been encouraged by various ways and means with the consequence of increase in the number of poultry from 109.8 million during 1990-91 to about 154 million during 1996-97. The number of poultry farms has also shown tremendous growth in the private sector. During the year 1990-91 there were only 9,757 poultry farms in the country whereas, during 1996-97 the number grew to about 65,000.

[Contributed by: Dr G.M. Shahjahan, Member-Director (Livestock), BARC, Farmgate, Dhaka 1215, Bangladesh and Dr K.A. Fattah, Director General, Department of Livestock Services, Farmgate, Dhaka 1215, Bangladesh].

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OTHER PUBLICATIONS

- Directory of Agricultural Research Institutions in the Asia-Pacific Region : South Asia, 1995.
- Directory of Agricultural Research Institutions in the Asia-Pacific Region : Southeast Asia, 1997.
- Proceedings - Fourth Executive Committee Meeting of APAARI and Expert Consultation on Management and Strengthening of Regional Research Networks in the Asia-Pacific Region, October 19-21, 1997, Tehran, Iran.
- Proceedings - Fifth General Assembly of APAARI and Expert Consultation on Research Management Mechanisms of National Agricultural Research Systems (NARS), October 13-15, 1998, Suwon, Republic of Korea.

FUTURE CONFERENCES

- | | |
|---------|---|
| Title | : The 6th Annual Conference of the Asia and the Pacific Seed Association (APSA) |
| Venue | : Bangkok, Thailand |
| Period | : 14-16 September 1999 |
| Contact | : APSA P.O. Box 1030, Kasetsart Post Office, Bangkok 10903, Thailand |
| Phone | : +662-9405664; Fax: +662-9405467 |
| E-mail | : apsa@apsaseed.com |
| | |
| Title | : International Conference on Biodiversity Conservation and Sustainable Development |
| Venue | : Kunming, China |
| Period | : 15-19 October 1999 |
| Contact | : Prof. Pei Shenji, President, Centre for Biodiversity and Indigenous Knowledge, 1st Floor, Zhonghuandasha, Yanjiadi, Kunming, Yunnan |
| Phone | : 0086-871-4123519; Fax: 871-4124871 |
| E-mail | : taro@ms.tamb.ac.cn and Xuje@public.km.yei.cn |
| | |
| Title | : International Workshop on Effective and Sustainable Partnerships in a Global Research System: Focus on Sub-Saharan Africa |
| Venue | : Bouaké, Côte d'Ivoire |
| Period | : 7-11 November 1999 |
| Contact | : WARDA/ADRAO, Office of the Director General, 01 BP 2551, Bouaké, Côte d'Ivoire |
| Phone | : +225-634514; Fax: +225-634714/227865 |
| E-mail | : warda@cgiar.org |
| | |
| Title | : International Symposium on Citriculture |
| Venue | : National Research Centre (ICAR), Nagpur, 440010, Maharashtra, India. |
| Period | : 23-27 November 1999 |
| Contact | : Dr Shyam Singh, Director, NRC Citrus and Convenor, International Symposium on Citriculture, P.B. 464, Shankar Nagar, P.O. Amravati Road, Nagpur 440 010. |
| Phone | : 091-0712-527813; Fax: 091-0712-527813 |
| E-mail | : citrus@nagpur.dot.nic.in and nrccitrus@x400.nicgw.nic.in |
| | |
| Title | : Global Conference on Potato |
| Venue | : IARI, New Delhi, India |
| Period | : 6-10 December 1999 |
| Contact | : Dr G.S. Shekhawat, Chairman, National Organizing Committee, Global Conference on Potato, and Director, Central Potato Research Institute (CPRI), Shimla 171 001, H.P., India. |
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| | |
| Title | : International Conference on Science and Technology for Managing Plant Genetic Diversity in the 21st Century |
| Venue | : K.L. Hilton International, Kuala Lumpur, Malaysia |
| Period | : 12-16 June 2000 |
| Contact | : Ms Patti Sands, Programme Assistant to Deputy Director General (Programmes), IPGRI, Via delle Sette Chiese 142, 000145 Rome, Italy |
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