



Expert Consultation to Review Progress of Agricultural Research Networks and Consortia in Asia-Pacific

8-9 October 2007
Hyderabad, India

PROCEEDINGS



Asia-Pacific Association of Agricultural Research Institutions (APAARI)
C/o FAO Regional Office for Asia and the Pacific, Bangkok, Thailand
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
Indian Council of Agricultural Research (ICAR)

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FOREWORD

The Asia-Pacific Association of Agricultural Research Institutions (APAARI), as one of its important objectives, deliberates frequently on issues that have significant bearing on agricultural research for development (ARD) in the Asia-Pacific region. Since its establishment in 1990, as an apolitical neutral forum, it has organized over 18 such consultations on themes of regional priorities in order to strengthen ARD in the region.

One of the important themes is research networking on which APAARI has been laying considerable emphasis since beginning. APAARI had initiated discussion on this activity by organizing the first research network consultation in Tehran, Iran in 1997. Over a decade since then, networks' research activities have considerably diversified to address new priorities. In addition, there have been some new initiatives such as those by CG centers on Challenge Programs (CP) and by GFAR on Global Partnership Programs (GPP). In the present scenario, therefore, activities of all these networks have impact on regional agricultural development since a number of NARS are actively involved in these collaborative programs. This consultation was, therefore, planned by APAARI jointly with ICAR and ICRISAT to review the current status of operating networks and their future role towards meeting the Millennium Development Goals (MDGs).

Current proceedings are an outcome of this meeting which included in all 25 presentations, reviewing the progress of operational networks and consortia. The different technical sessions, followed by a panel discussion and plenary session, came out with several useful recommendations. There was a clear emphasis on the benefits of networking and collaboration among R&D institutions/organizations in Asia-Pacific region. At the same time, a concern was expressed about their monitoring and impact evaluation. APAARI was asked to facilitate the process of review of the programs and their impact assessment in collaboration with the lead centers since it will help in inducing efficiency and effectiveness of such networks. APAARI feels that wider dissemination of this report will generate needed interest among NARS, involving all stakeholders.

We are thankful to the participants for their contributions to the success of this meeting and to ICAR and ICRISAT for jointly co-hosting this important event.



R.S. Paroda
Executive Secretary

ACRONYMS AND ABBREVIATIONS

AARINENA	Association of Agricultural Research Institutions in the Near East and North Africa
ACIAR	Australian Center for International Agricultural Research
AGM	Annual General Meeting
AIT	Asian Institute of Technology
ANSWER	Asian Network on Sweet Potato Research
APAARI	Asia-Pacific Association of Agricultural Research Institutions
APARIS	Asia-Pacific Agricultural Research Information System
APCoAB	Asia-Pacific Consortium on Agricultural Biotechnology
APFORGEN	Asia-Pacific Forest Genetic Resources Program
APHCA	Animal Production and Health Commission for Asia and the Pacific
APO	Asia, the Pacific and Oceania
APSA	Asia & Pacific Seed Association
ARD	Agricultural Research for Development
AREO	Agricultural Research and Education Organization (Iran)
ARI	Advanced Research Institutions
ASARECA	Association for Strengthening Agricultural Research in East and Central Africa
ASTA	American Seed Trade Association
AVNET	Asian Vegetable Network
AVRDC	Asian Vegetable Research and Development Center (World Vegetable Center)
AVRDC-RCSA	AVRDC-Regional Center for South Asia
BAPNET	Banana Asia-Pacific Network
BARC	Bangladesh Agricultural Research Council
BIOTECH	National Center for Genetic Engineering and Biotechnology (Thailand)
Bioversity	Bioversity International
BSR	Basic and Strategic Research
CAC	Central Asia and Caucasus
CAAS	Chinese Academy of Agricultural Sciences
CACAARI	Central Asia and the Caucasus Association of Agricultural Research Institutions

CALPI	Capitalization of Livestock Program Experiences India
CARDI	Cambodian Agricultural Research and Development Institute
CBOs	Community Based Organizations
CD-ROM	Compact Disk- Read only Memory
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical
CIDA	Canadian International Development Agency
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo, Mexico
CIP	Centro Internacional de la Papa (International Potato Center, Peru)
CLAN	Cereals and Legumes Asia Network
CLCV	Cotton Leaf Curl Virus
CLVNET	Cambodia Laos Vietnam Network
COA	Council of Agriculture (Chinese Taipei)
COGENT	Coconut Genetic Resources Network
CORRA	Council for Partnerships on Rice Research in Asia
CP	Challenge Program
CPWF	CGIAR Challenge Program on Water and Food
CSIR	Council of Scientific and Industrial Research, India
CSOs	Civil Society Organizations
DFID	Department for International Development
DGIS	Director General for International Cooperation, Netherlands
DOA	Department of Agriculture (Thailand)
DURAS	Promotion du Développement Durable dans les systèmes de Recherche Agricole du Sud
EA-PGR	East Asia Plant Genetic Resources Network
EGFAR	Electronic Global Forum on Agricultural Research (Homepage of GFAR)
FAO	Food and Agriculture Organization of the United Nations
FARA	Forum on Agricultural Research in Africa
FOs	Farmers Organizations
FORAGRO	Foro Regional de Investigación y Desarrollo Tecnológico Agropecuario
GCP	Generation Challenge Program
GFAR	Global Forum on Agricultural Research
GFU	Global Facilitation Unit
GM/GMO	Genetically Modified, Genetically Modified Organism

GoFAR	Group on Fisheries and Aquaculture Research
GPP	Global Partnership Program
HRD	Human Resource Development
HRDC	Hybrid Rice Research and Development Consortium
IAAS	Institute for Agriculture and Animal Science, Nepal
IARC	International Agricultural Research Center
ICAR	Indian Council of Agricultural Research
ICARDA	International Center for Agricultural Research in the Dry Areas
ICM	Information Communication Management
ICRAF	World Agroforestry Center
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICT	Information and Communication Technology
ICUC	International Center for Underutilized Crops
IFAD	International Fund for Agricultural Development
IFAP	International Federation of Agricultural Producers
IFPRI	International Food Policy Research Institute
IIT	Indian Institute of Technology
ILRI	International Livestock Research Institute
IMTP	International Musa Testing Program
INBAR	International Network on Bamboo and Rattan
INCANA	Inter-regional Network on Cotton in Asia and North Africa
INGER	International Network for Genetic Evaluation of Rice
INIBAP	International Network for the Improvement of Banana and Plantain
IPM	Integrated Pest Management
IPR	Intellectual Property Rights
IRRI	International Rice Research Institute
ISF	International Seed Foundation
ISHS	International Society of Horticultural Science
IST	International Support Team
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IWMI	International Water Management Institute
JIRCAS	Japan International Research Center for Agricultural Sciences
LFM	Linking Farmers to Market
LI-BIRD	Local Initiative for Biodiversity Research and Development, Nepal
LISF	Local Innovation Support Fund

LKR	Livestock Knowledge Resource
LoA	Letter of Agreement
MARDI	Malaysian Agricultural Research and Development Institute
MAS	Marker Assisted Selection
MDGs	Millennium Development Goals
MoU	Memorandum of Understanding
MSSRF	M.S. Swaminathan Research Foundation
NAARM	National Academy of Agricultural Research Management
NAIP	National Agricultural Innovation Project
NAIS	National Agricultural Information System
NARC	Nepal Agricultural Research Council
NARES	National Agricultural Research Institutions
NARI	National Agricultural Research Institute, PNG
NARS	National Agricultural Research System
NATP	National Agricultural Technology Project
NGO	Non-Governmental Organization
NINP	National Information Nodal Point
NRCB	National Research Center for Banana, India
NRM	Natural Resource Management
NRMDC	National Repository for Multiplication and Dissemination Center
OECD	Organization for Economic Cooperation and Development
PAPGREN	Pacific Agricultural Plant Genetic Resources Network
PARC	Pakistan Agricultural Research Council
PCARRD	Philippine Council for Agriculture, Forestry and Natural Resources Research and Development
PCS	Production to Consumption System
PGR	Plant Genetic Resources
PID	Participatory Innovation Development
PNG	Papua New Guinea
PPP	Public-Private Partnership
PROLINNOVA	Promoting Local Innovation
PROTA	Plant Resources of Tropical Africa
PVP	Plant Variety Protection
R&D	Research and Development

RAEL	Regional Agricultural Expert Locator
RAIG	Regional Agricultural Information Gateway
RAIS	Regional Agricultural Information System
RCT	Resource Conservation Technology
RDA	Rural Development Administration, Republic of Korea
RECSEA-PGR	Regional Cooperation in South East Asia-Plant Genetic Resources
RWC	Rice-Wheat Consortium
RWS	Rice-Wheat System
SAARC	South Asian Association for Regional Cooperation
SAIC	SAARC Agricultural Information Center
SANPGR	South Asia Plant Genetic Resources Network
SAUs	State Agricultural Universities
SAVERNET	South Asia Vegetable Research Network
SHG	Self Help Group
SMTA	Standard Material Transfer Agreement
SPC	South Pacific Commission/Secretariat of the Pacific Community
SRLS	Sustainable Rural Livelihood Security
SSF	Small Scale Fisheries
TLCV	Tomato Leaf Curl Virus
ToR	Terms of Reference
TRRC	Temperate Rice Research Consortium
TU	Tribhuvan University
USDA	United States Department of Agriculture
VAAS	Vietnam Academy of Agricultural Sciences
VASAT	Virtual Academy for the Semi-Arid Tropics
VIT	Vellore Institute of Technology, India
VOs	Village Level Organizations
WFC	WorldFish Center
WISARD	Web-based Information Services for Agricultural Research for Development
YPARD	Young Professionals' Platform for Agricultural Research for Development
YPARD-SA	YPARD-South Asia

Introduction

Collaboration in agricultural research for development (ARD) among diverse stakeholders is necessary to strengthen research partnerships to address emerging issues of common concern. Based on shared vision, partnerships have been established involving scientists, other stakeholders and the institutions in the form of research networks or consortia. Such initiatives have been useful in accelerating technology generation, transfer, sharing information/knowledge, and build-up expertise/HRD. In the Asia-Pacific, a wide array of ARD networks have been established over the years in the areas of plant genetic resources/agro-biodiversity, crop improvement, fisheries/aquaculture, livestock, agricultural biotechnology and information communication management (ICT/ICM). Most of them have been facilitated by the CGIAR centers. Though many of them are quite active and have made good progress, some have faced both operational and financial difficulties.

APAARI has been striving to foster such research partnerships among institutions and other stakeholders in the region. Thus, realizing the importance of research networks and the emerging concerns about their functioning for sustainability, APAARI took the initiative to hold an Expert Consultation on this theme at AREO, Iran in 1997. Since then, the networks' priorities and research objectives have widened commensurate with emerging needs. Also, some new collaborative programs have been initiated in the recent past, such as those operating under CG system on Challenge Programs (CP) and under GFAR on Global Partnership Programs (GPP).

Considering the fact that activities of all these networks have an impact on regional ARD and that several NARS are actively involved in these collaborative programs, an Expert Consultation was organized by APAARI jointly with ICAR and ICRISAT at Hyderabad, India on 8-9 October 2007 to review the current status of various networks operating in partnership with APAARI, and also independently since all these are aimed at addressing the Millennium Development Goals (MDGs) of poverty alleviation, food security and environmental sustainability.

The meeting was opened on 8 October at the National Academy of Agricultural Research Management (NAARM), Hyderabad, India. There were over 60 participants, representing NARS, CG Centers, other international and regional organizations/fora; ACIAR, GFAR, CSOs, invitees from NAARM and ICRISAT and other dignitaries. The program and the list of participants is given in Annexures I and II, respectively.

Inaugural Session

Dr. R.D. Ghodake, Chairman APAARI in his welcome address expressed concern on global issues related to population pressure, food insecurity, biosafety and integrated natural resource management. He was happy that APAARI has been deliberating on these concerns in partnership with all stakeholders addressing agricultural research for development (ARD) in Asia-Pacific region. He pointed out that this consultation likewise is intended to discuss the role of, and expectations from, ARD networks operating in Asia-Pacific, so as to improve their functioning

and coordination. Dr. William Dar, Director General, ICRISAT pointed out that APAARI has further strengthened its partnership and appreciated its vision and working. Also that ICRISAT was collaborating with APAARI in many of its activities, he added. Dr. Raj Paroda, Executive Secretary APAARI, welcomed all participants and thanked Dr. Mangala Rai, DG, ICAR and Dr. William Dar, DG, ICRISAT for hosting this meeting and Dr. S.M. Ilyas, Director, NAARM for his excellent arrangements. He particularly thanked Dr. Carlos Sere, Director General, ILRI, for gracing the occasion. He added that APAARI provides a platform to discuss diverse issues in a partnership mode, and the expertise of NARS, CG Centers, ACIAR, GFAR, FAO, Private Sector and CSOs will ensure fruitful deliberations.

In his presentation, Dr. Paroda highlighted the achievements of APAARI as a facilitator to promote ARD programs at the regional level. The new initiatives had been in the areas of LFM, Biofuels, Biosafety etc. Two of its regional programs, namely, APARIS for strengthening ICT/ICM, and APCoAB on promoting agricultural biotechnology, have made good progress. APAARI also extended support to CLAN and INCANA. APAARI, in the recent past, also laid emphasis on prioritizing research needs, and developed its vision 2025. Considering knowledge dissemination as a priority, APAARI has produced several publications – proceedings of expert consultations/workshops, 28 success stories; CDs on NARS, and on APAARI, and has re-designed its website. He appreciated continuing support of ACIAR, GFAR and other research organizations to strengthen APAARI activities.

Dr. Carlos Sere, DG, ILRI laid emphasis on the important role of livestock in rural development. Realizing the challenges and opportunities, he strongly felt the need for a clear road map for livestock research and development in this region. Referring to the recent livestock workshops organized in Bangkok, Thailand and Kathmandu, Nepal, he stressed on the need for a shared agenda and a specific work plan – a strategic program for livestock development, utilizing the existing capabilities of different organizations to address livestock role along value chain. He pointed out that ILRI welcomes greater collaboration with APAARI and its members, sister CG centers and other concerned stakeholders.

Dr. Mangala Rai appreciated the contributions of APAARI in organizing several events of common regional/global concern. He was pleased that APAARI was facilitating/coordinating ARD activities to resolve several important issues. He felt that in-country programs equally need such networking, and ICAR operates several such coordinated research programs, which have made significant progress. He also mentioned about an ambitious National Agricultural Innovation Project (NAIP) with funding support of the World Bank. He felt that regional fora have much bigger role to play in strengthening ARD activities. He stressed on adaptation research, system-wide research, biotechnology, transgenics, thrust on biofuels, etc. He was appreciative of APAARI's timely role in taking up several emerging issues.

Three new APAARI publications were released by Dr. Mangala Rai, Dr. William Dar and Dr. Carlos Sere: Proceedings of Expert Consultation on LFM; APCoAB publication on Public-Private Partnership in Biotechnology; and APAARI on CD 2007. The vote of thanks was given by Dr. C.L.L. Gowda, Global Theme Leader-Crop Improvement, ICRISAT, who thanked Dr. Mangala

Rai, Dr. William Dar, Dr. Carlos Sere, Dr. Raghunath Godake and Dr. Raj Paroda for overall planning of this meeting, to Dr. S.M. Ilyas, for the arrangements at NAARM, and also to all the participants and dignitaries for their gracious presence.

Deliberations of Technical Sessions

The expert consultation had four technical sessions. Session I dealt with ‘Progress of Regional Programs’; Session II with ‘Partnership Through ARD Networks’; Session III with ‘Status of Some New Initiatives’ and Session IV with ‘Global Partnership/Challenge Programs: Their Relevance for Asia-Pacific’. There was also a panel discussion on ‘Strengthening Research Networks in Asia-Pacific: Stakeholders Perceptions’. The plenary session came out with several useful recommendations. The highlights of each session are briefly dealt with in this report.

Technical Session I: Progress of Regional Programs

Chair : Dr. Simon Hearn
 Co-Chair : Dr. P.S. Fylon
 Rapporteur : Dr. C.L.L. Gowda

There were three formal presentations which dealt with two regional programs of APAARI, namely, APARIS focusing on ICT/ICM and APCoAB on agricultural biotechnology. The Third presentation covered the activities of INCANA, an inter-regional network on cotton for Asia and North Africa.

Dr. Sahdev Singh, Coordinator APARIS, highlighted the role of APARIS as a knowledge sharing platform to strengthen collaboration among NARS and other ARD stakeholders for greater use of information communication/dissemination. He pointed out that APARIS coordinates ICT/ICM activity networking with the national nodal information points (NNIPs) in over twenty APAARI member countries in Asia-Pacific and participates in inter-regional activities through GFAR and other regional fora; on its efforts in capacity building with AIT and on the recently organized workshop jointly with PCARRD, on sensitizing NARS managers on ICT/ICM, and APARIS participation in e-Agriculture Week at FAO, Rome; policy advocacy, integration of information, hosting of website for APAARI, publication of status report/success story on ICT/ICM in India (e-choupal) and RDA, Korea as case studies. Focusing on the work plan for 2008, he elaborated on implementation of Regional Agricultural Expert Locator (RAEL) and Regional Agricultural Information Gateway (RAIG), redesigning of APAARI website and updating of information, developing directory of ICT research institutes, and a status report on ICT/ICM in Asia-Pacific, collaboration with SAIC - the SAARC Agricultural Information Center based at BARC, Bangladesh, for promoting agricultural information communication among SAARC countries in South Asia, collaboration with DFID and ILRI and its ongoing emphasis on training/capacity building and on widening the base of its stakeholders.

Dr. J.L. Karihaloo, APCoAB Coordinator dealt with the achievements of APCoAB – its strategic areas for ARD in biotechnology on research, capacity building, policy, biosafety related issues and information dissemination. In particular, the brainstorming sessions/workshops organized on public-private partnerships, biosafety regulations; its emphasis on the use of both new and conventional biotechnology such as micropropagation for production of quality seed potato, sugarcane micro-

propagation, case studies of GM crops such as of Bt cotton in India and in China, and of corn in the Philippines. Overall, APCoAB's focus is to address specific issues of regional, sub-regional and national importance. The publications brought out on above activities, jointly undertaken with NARS, ICRISAT and other partners, have been widely distributed. He also referred to the issues involved in marketing GM farm produce and risk management strategies.

Ms. Aisel Gharedaghli, from INCANA Secretariat, presented the activities of INCANA – Inter-Regional Network on Cotton in Asia and North Africa. This network, operating from AERO, Tehran, Iran, has eight countries as its members and is cosponsored/supported by AARINENA, GFAR, ICARDA, CAC, APAARI and AREO. Its emphasis is on strengthening collaboration for increased yield and production by adoption of new technologies, thrashing common ARD issues such as IPM; exchange of information among partners, capacity building and holding trainings and workshops. Ms. Gharedaghli pointed out that travel-workshops have been organized for Bt Cotton in India and IPM in Syria, and such knowledge sharing has proved fruitful. Three meetings of steering committee have been held since the initiation of this network during the last four years to monitor/review progress, and highlight research concerns and future priorities such as on water use efficiency, developing early high yielding varieties tolerant to drought, salinity and biotic stress, adopting IPM technology, reduced pesticide application, developing hybrids and transgenic cotton. The technical working groups have been identified to strengthen collaboration in specific research activities. The website has been designed and data base built up, stressing on information on cotton research institutes/centers in the region. Also some publications have been brought out such as the newsletter and the proceedings. The next steering committee meeting is proposed to be held in Egypt in 2010.

Suggestions/Recommendations

During discussions, much interest was expressed in the three programs. The following suggestions were made to strengthen the functioning of these activities.

APARIS:

- 1) Currently APARIS provides web-based dissemination of information to researchers and students. This needs to be extended to farmers. However, multiplicity of language is a major hurdle. APARIS needs to work with other institutions (including IARCs) to disseminate more information to farmers.
- 2) ICT should be used for development, hence there is need to downstream the dissemination of knowledge to the farming community. ICRISAT is willing to partner with APARIS under the VASAT program to ensure that scientific knowledge and technologies are disseminated to the farming communities.
- 3) APARIS has major role in catalyzing and sensitizing NARS for sharing knowledge, which has to be further accelerated.

- 4) Facilitators (IARCs and NARS) of networks and consortia should collaborate effectively with APARIS activities.

APCoAB:

- 5) Potential benefits of GM products need to be highlighted as a separate case study, for compilation/publication of this information.
- 6) Status reports and success stories on agricultural biotechnology, such as successes achieved in R&D in banana tissue culture, be attempted for wider application vis-à-vis utilization of germplasm.
- 7) Publication on biosafety regulations be expedited and widely circulated.

INCANA:

- 8) Of the several successes projected in R&D on cotton, such as on IPM in Syria and other studies in inter-regional context, results achieved may be synthesized into a status report for information dissemination.

Technical Session II: Partnership Through ARD Networks

Chair : Dr. Mangala Rai
 Co-Chair : Dr. T. Mennesson
 Rapporteur : Mr. Raul Montemayor

There were nine presentations in this session which covered major crop/commodity networks such as on cereals and legumes, rice, banana, vegetables, underutilized crops, plant genetic resources, rice-wheat system, fisheries/aquaculture and livestock. Initiating the session, Dr. Mangala Rai, Chairman, stressed that collaboration and partnership in agricultural research for development is of fundamental importance and access to knowledge and its sharing is necessary. He appreciated the efforts of APAARI in deliberating on ARD research networks currently operating in the region for the benefit of NARS in particular.

Dr. C.L.L. Gowda, CLAN Coordinator, dealt with the activities of Cereals and Legumes Asia Network (CLAN). He pointed out that CLAN facilitates coordination of research and technology exchange in Asia, on sorghum and pearl millet, chickpea, pigeonpea and groundnut, and now also includes lentil and mungbean as per APAARI recommendations endorsed by the CLAN steering committee. CLAN is co-facilitated by ICRISAT, AVRDC, and ICARDA and is also supported by APAARI. Currently, member countries represented are: Bangladesh, China, India, Indonesia, Iran, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam and Yemen. Collaboration in this program is as per NARS needs and activities with focus on crop improvement, capacity building, knowledge and information sharing. Training courses and exchange of scientists' visits have been organized by ICRISAT, ICARDA and AVRDC. CLAN has released/developed 36 varieties during 2006-07 in pearl millet, chickpea, pigeonpea, groundnut, mungbean and lentil

and germplasm shared as per NARS needs. Exchange of scientists among member-countries has been organized and workshops/meetings held. Planned research programs and their coordination/networking have proved beneficial. Dr. Gowda referred to some notable achievements/impacts such as that of pigeonpea for soil conservation in China, mungbean revolution in Pakistan and India, and its exploitation in Myanmar and Thailand, increased adoption of improved lentil varieties in Bangladesh and Nepal. He pointed out to proposal development by CLAN, AVRDC and ICRISAT (endorsed by APAARI) for IFAD support. He strongly emphasized on enhanced funding support to strength CLAN activities.

Dr. Noel Magor, Head, Training Program at IRRI, dealt with recent activities of Council for Partnership on Rice Research in Asia (CORRA) which now has 16 members. He focused on the outcome of the 11th annual meeting of CORRA. He pointed out that both Dr. Robert Zeigler, DG, IRRI and Dr. Mangala Rai, Chairman CORRA Steering Committee highlighted the strategic importance of CORRA in meeting the specific R&D needs of member-countries. Highlights were the increased role of private sector, activities related to breeding/selection of rice varieties, use of biotechnology, need for capacity building along with policy commitment to the same, post harvest and value chain approaches being used in the region, implementing ITPGRFA and the new SMTA for transfer of genetic material between countries. There was strong support amongst NARS for INGER and with this a commitment by NARS to designate lead institutes for incountry management. NARS leaders had been updated on various government programs on transgenic rice development; which included trial sites in India and field tests of insect protected rice in China and IRRI's progress with NARS, on golden rice; research on drought tolerance (referring to IRRI-India Drought Breeding Network) and submergence tolerance (some material under trial at IRRI), salinity tolerance, and aerobic rice. He informed on the establishment of Temperate Rice Research Consortium (TRRC) and the planning meeting of diverse partners held in Korea to look into problems of low temperature, cold tolerance, salt affected soils in Kazakhstan, water stress, blast disease. He also referred to the Hybrid Rice Research and Development Consortium (HRDC), in partnership with NARES and the private seed sector for hybrid rice seed production. He laid emphasis on information generation, training/capacity building, and publications produced for wider dissemination; establishing the Rice Knowledge Bank (website www.knowledgebank.irri.org) - a network of knowledge to provide information on all aspects of rice to farmers, and also the Cereal Knowledge Bank with IRRI (country knowledge banks with 13 NARS partners) and CIMMYT with Philippines as partner from this region. He referred to IRRI's 50th anniversary/golden jubilee in 2010. The celebration will account for 50 years of achievements and impact of IRRI's ARD efforts with its partners.

Dr. Patrick Dugan, Deputy Director General, WorldFish Center, based in Egypt dealt with the network group on fisheries and aquaculture research (GoFAR). He pointed out that aquaculture is the fastest growing food production sector and now accounts for 33 per cent of global fish supply. He expressed concern on the threat to Small Scale Fisheries (SSF) and the strategies/safeguards required for its security and sustainability to harness the growth potential of fisheries and aquaculture sector for rural development and its impact on meeting the MDGs: poverty reduction, food security, income generation, and addressing malnutrition. Thus, nurturing the existing partnerships with shared agenda and knowledge was necessary to attain the desired ARD

goals. Referring to future projections, he laid emphasis on the resilience of SSF, fish genetics - improvement and conservation, risk assessment and protection of wild populations, new thrust on rice-fish systems, fish-trade and policy implications and approach/strategies required to resolve such emerging issues and ARD needs through local-level governance and innovations that protect wild fisheries.

Dr. Prem Mathur, Scientist, Bioversity International, in his presentation on ‘Strengthening conservation and use of plant genetic resources (PGR) through regional and crop networks’, pointed out that in Asia, the Pacific and Oceania (APO) region, Bioversity International (formerly IPGRI) since 1990, has been involved with several crop/commodity based networks (okra, sesame, grass pea, safflower, buckwheat, taro, tropical fruits) and also PGR sub-regional networks for South Asia (SANPGR), Southeast Asia (RECSEA-PGR), East Asia (EA-PGR) and the Pacific (PAPGREN). The PGR networking in these sub-regions in collaboration with national programs has helped strengthening of PGR conservation and utilization in Asia-Pacific. Several joint activities on germplasm collection, exchange, diversity assessment, information gathering, organizing workshops, meetings, trainings/capacity building, have been undertaken in a need-based manner. Based on these activities, several publications have been brought out and were widely distributed. Such knowledge dissemination also improved PGR concerns on public awareness on biodiversity conservation and use. Thus, overall the networking approach helped promote harnessing biodiversity for human welfare.

Dr. Mathur also referred to the two very successful global networks initiated by Bioversity, namely on coconut (COGENT), and banana and plantain (INIBAP) whose regional activities in Asia-Pacific are covered by BAPNET (presented separately), and the regional networking of the Asia-Pacific forest genetic resources program (APFORGEN) initiated by Bioversity. Besides, Bioversity also had involvement with ANSWER – Asian network on sweet potato research, and with INBAR - the International Network on Bamboo and Rattan; specific to activities related to PGR conservation and use. He felt that under APAARI umbrella and the MoU between Bioversity and APAARI, there is need to assess further functioning of operational PGR networks and their sustainability; hold joint meetings such as on policy issues, implementation of ITPGRFA, SMTA and to promote capacity building. This will facilitate further strengthening of PGR program in the region.

Dr. Olaf Erenstein, Agricultural Economist at CIMMYT dealt with the achievements of the Rice-Wheat Consortium (RWC) in the Indo-Genetic plains in South Asia. He referred to conservation technologies developed, RWC paradigm shifts in coordinating activities for adequate food increase, better yield etc. He pointed out that RWC is NARS led, with four participating countries – India, Pakistan, Nepal and Bangladesh, which have strong programs on wheat and rice. Besides NARS, there is active participation of agricultural universities, farmers, private sector and several IARCs (CIMMYT, IRRI, ICRISAT, IWMI, ILRI, AVRDC). Besides, some ARIs are also involved. APAARI has already published a success story on RWC on reducing tillage for wheat, rapid spread of zero-tillage technology, and distributed it widely. For future studies, RWC’s emphasis is on enhancing resource use efficiency, conservation agriculture, addressing poverty vis-à-vis livelihood concerns, diversifying RWS’s, research-approach and increased collaboration and partnership.

Dr. Agustin Molina, Regional Coordinator, Bioversity International – Philippines, Musa Program Bioversity International and Executive Secretary BAPNET (Banana Asia-Pacific Network), briefed on the structure and functioning of the network with emphasis on its current activities and to review *Musa* R&D priorities. He discussed production constraints and research focus needed for improvement. Presently, 13 NARS and 2 institutes are members of BAPNET, namely Australia, Bangladesh, Cambodia, Indonesia, Myanmar, Malaysia, PNG, Philippines, Sri Lanka, Thailand and Vietnam; Taiwan Banana Research Institute and South Pacific Community. The role of BAPNET is to foster collaboration on *Musa* R&D aspects – technology development and exchange, knowledge sharing, capacity building, germplasm management/improvement and use. Dr. Molina pointed out that several collaborative activities are operating globally and regionally such as International Musa Testing Program (IMTP), that assesses the performance of promising materials developed by global banana breeding institutions, including their resistance to pests and diseases, successes of tissue culture technology, distribution and evaluation of *in vitro* propagated material, and need of National Repository for Multiplication and Dissemination Centers (NRMDCs) for efficient promotion and distribution of improved varieties – the work done by all member countries of BAPNET. MTAs have been signed with all members for 26 virus free IMTP improved varieties. He pointed out that there is threat to banana industry through diseases like banana bunchy top virus and serious concerns about fusarium wilt in south China, and recent occurrence of tropical race 4 (TR4) in China and the Philippines, that may threaten other countries in Asia including India, the world's top banana producing country. He apprised on the regional/international workshops, symposia organized on specific themes to share R&D concerns; on the International Banana Congress to be organized in Guangzhou, China in 2009; on more operational and effective linkages with APAARI and synergy with regional partners.

Dr. M.L. Chadha, Director, AVRDC Regional Center for South Asia based at ICRISAT, pointed out that AVRDC-RCSA was established in April 2006. Its mission is to alleviate poverty and malnutrition in the developing world through increased production and consumption of safe vegetables. Its research priorities are on improvement of selected vegetables important to this region. These include solanaceous crops (tomato, pepper, eggplant), bulbous Alliums (onion, garlic), cucurbits (cucumber, pumpkin), crucifers (*Brassica* spp., pak-choi, broccoli), legumes (mungbean, vegetable soybean). Referring to germplasm collection, he pointed out that global bank at AVRDC has 56,000 accessions of vegetables and the seeds are distributed to over 70 countries annually. Also, for crop improvement, over 325 AVRDC lines have been released and are being used by 91 countries. Dr. Chadha further dealt with the accomplishment of AVNET (participating countries: Indonesia, Malaysia, Philippines and Thailand); SAVERNET (Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka) and CLVNET (Cambodia, Laos and Vietnam). The AVNET countries exchanged and evaluated 139 accessions of cowpea, yard long bean, cucumber, tomato, chili, shallot and garlic; and also focus has been on training NARS partners. Referring to SAVERNET, he mentioned about the crop improvement efforts - exchange and evaluation of 157 varieties of 22 different crops by the six network countries. Also, 18 varieties were identified as superior in tomato, eggplant, chili, and onion. Research focus also has been on diseases and pests. IPM technology has been adopted (diamond back moth), bacterial wilt and TLCV resistant varieties developed in tomato and varieties tolerant to fruit and shoot borer in eggplant. Thus,

R&D activities focus on reducing production constraints. He referred to mungbean sub-network in South and Southeast Asia and release of 72 mungbean cultivars by NARS, and to the expansion of mungbean cultivation and production in the Indo-Gangetic Plains (IGP) of India and the successes achieved. Among other activities he told that an international conference on vegetables was organized from 12-15 December 2006, wherein 271 participants from 42 countries participated. The proceedings have been published as a special volume of *Acta Horticulturae*. The future activities will also stress on conducting training on safe vegetable production, human resource development, seed system, post-harvest, marketing and value addition. Expressing concerns on functioning of networks, he emphasized that the sustainability of networks depends on commitment of partners to exchange and share available resources, and periodic meetings of partners are necessary to accelerate collaboration. AVRDC-RCSA has identified priority areas for research and developed strategic plan for R&D. Also, a research priority document for future research has been prepared and over 20 priority crops have been identified.

Dr. Hannah Jaenicke, Director ICUC based in IWMI, Colombo, Sri Lanka dealt with more recent activities on underutilized crops. She specifically focused on the meetings organized during 2006 to clarify concepts and developing strategic framework, laying emphasis on R&D, capacity building and information sharing/communication. Several publications have been produced dealing with use, marketing, value chain etc. on underutilized species such as rambutan, issues pertaining to fruit processing and marketing in Sri Lanka and Vietnam, analyzing value chains for three underutilized species in India, effects of promoting underutilized crops on species and landscape biodiversity, and on small scale fruit processing enterprises. Bringing out ICUC news for wider distribution is an on-going activity. She referred to the international symposium on underutilized plant species for food, nutrition, income and sustainable development to be held during 3-7 March, 2008 organized in partnership with ASARECA, AVRDC, Bioversity International, FARA, GFU, Global Hort., ISHS, PROTA. APAARI's role in strengthening activities on underutilized species was appreciated. She referred to the working group on 'Underutilized Plant Genetic Resources', within the Commission for Plant Genetic Resources. It was pointed out that to strengthen ICUC activities globally, its merger with Global Facilitation Unit (GFU) has been agreed by the steering committee but existing strategic partnership will continue. Further, ICUC will organize a side event at the CGIAR-AGM regarding ICUC and GFU merging.

Dr. Iain Wright, ILRI Regional Representative for Asia, apprised with livestock knowledge resources for Asia, stressing on the importance of livestock for improving livelihood of the poor. Knowledge sharing is important for adoption of new technologies, and networking of activities. He referred to the Steering Group with ILRI, APAARI, APHCA, CALPI, and CIAT as initial partners; the meetings organized, support of APAARI and APHCA. Strategy to initiate a Livestock Knowledge Resource (LKR) for Asia to demonstrate the demand and its potential and attract wider interest, and the scoping study undertaken – innovative methods available for knowledge management and sharing. He further emphasized that there is need to establish a web platform with web-links to APAARI and APHCA sites, which should include information on institutes, policy options, technology development, highlight some case studies/successes and sharing of information and technologies.

Suggestions/Recommendations

Based on the discussions, the following suggestions/recommendations were made:

- 1) There are clear benefits of networking among different R&D institutions in the region. Major gains have been achieved through germplasm exchange, sharing of both in-kind and cash resources, joint trainings and exchange visits, and collaborative research and technology dissemination. These benefits acquire greater significance in the light of limited funds for agricultural R&D, the relatively low importance accorded by donor institutions to networking activities, changes in the donor behaviour, and the shrinking intellectual base for research work. At the same time, climate change and emerging market and consumer demands impose new challenges to the R&D sector to develop new varieties/species of crops, fishery, and livestock that are more stress and disease tolerant, higher yielding, of improved quality and food safety, and lead to higher income and lower costs to producers. Hence, there is full justification for institutions like APAARI to facilitate effective operation of the R&D networks and consortia in the region.
- 2) However, the success of any network depends to a large extent on the commitment and willingness of partners and especially of the lead organization to invest time and resources, provide secretarial support, and provide leadership. This implies that networks and consortia must evolve out of real felt needs and objectives that are commonly shared among members.
- 3) While collaborative work may need to focus on specific crops, commodities or sectoral activities, an integrated system-wide approach to agricultural R&D needs to be adopted to ensure that research outputs respond to the whole array of needs and limitations of small-farmer beneficiaries. For example, deeper study and more collaborative and multi-disciplinary research is needed to develop effective rice-fish, crop-livestock, agro-forestry, agri-horticulture and other income diversification farming systems. In this respect, the role of APAARI as an orchestrator of diverse and independent research efforts leading towards a “total” product for farmers and other stakeholders is indeed crucial.
- 4) There is a clear need to link agricultural R&D to poverty alleviation and development. Production-oriented programs need to increasingly give way to interventions that improve farmers’ income in a sustainable way. In this regard, more efforts are needed for impact assessment exercises to gauge the real value of such R&D efforts. APAARI can take the lead in developing a uniform and commonly accepted impact assessment methodology for R&D projects. Success stories need to be highlighted in order to focus on best practices that can be replicated in the region.
- 5) Additional attention is also needed to ensure that proven technologies reach small farmers and other stakeholders much faster without dissemination losses, particularly in the light of declining government support for extension/ dissemination activities.
- 6) Sustainability and environmental concerns need to be integrated more concretely into the research agenda of these networks.

- 7) Agricultural R&D must involve key stakeholders, particularly small farmers, in as many stages of research work and dissemination as possible. A value-chain framework will help ensure that research work corresponds to actual market needs and involves all key players.
- 8) The private sector is playing and will continue to play an increasing role in technology development and dissemination. More efforts are needed to establish synergistic relationships with private sector R&D institutions even as steps are taken to ensure that stakeholders and small farmers continue to enjoy choices on what technologies and related services to avail of.
- 9) IPR concerns may increasingly influence collaborative work among network participants. Hence, steps need to be taken so that there is no hindrance for the exchanges of information, genetic material and research outputs. Fortunately, there is growing appreciation by all stakeholders that the sharing of knowledge yields concrete benefits that cannot be generated if research is undertaken in an exclusive and proprietary manner. The role of PGR networks in access and benefit sharing needs to be further appreciated and promoted in view of recent global developments (ITPGRFA, SMTA). APAARI and Bioversity International need to jointly deliberate on such policy issues and other concerns with enhanced collaboration involving all concerned.

Session III: Status of Some New Initiatives

Chair : Dr. H.P.M. Gunasena
 Co-chair : Dr. Zueng-Sang Chen
 Rapporteur : Dr. Sahdev Singh

The three presentations in this session dealt with very different approaches adopted in coordinating R&D activities. The National Agricultural Innovation Project (NAIP) being implemented by ICAR; activities of Asia & Pacific Seed Association (APSA) and the new ARD initiative - the Young Professionals' Platform for Agricultural Research for Development (YPARD).

Dr. Mruthyunjaya, National Director, National Agricultural Innovation Project (NAIP), ICAR, enlisted details of 'NAIP for strengthening partnership' and highlighted the role of public and private sectors. He pointed out strengths of the private sector such as: managing resources, efficiency, competence, experience, flexibility, decentralized decision making, efficient product delivery system, better upscaling skill, access to international developments, etc. The public sector strength includes: accountability, long term perspective, social interest, state-of-art facilities, skilled and efficient manpower, significant research results, ability to absorb uncertainties of pay off etc. Both sectors add on to partnership through build up of mutual trust, clarity on and commitment to common interest, and enabling policy. He referred to fruitful experience in ICAR and the activities carried out such as: germplasm evaluation, seed production and testing, animal feeding studies, biosafety studies, pesticide testing, product testing and disease diagnostic and vaccines. Work is also in progress on value addition and processing in cereals, pulses, oilseeds, milk, meat, fish etc. He also highlighted successful collaboration in technology development for

hybrid rice between ICAR and Mahyco Research Foundation. Such partnership has created enabling conditions in ICAR such as: brought out changes in mind set, commercialization of products and processes, establishment of IPR cells and guidelines, commercialization of transgenics, private sector research funding under NATP/NAIP, intensive interface meetings, etc. He referred to NATP experiences and the need for shared vision, governance for speedy technology adoption and dissemination, application of new knowledge through partnership with private sector, VOs, SHGs, CSOs etc., ensuring increased focus on partnership with NGOs.

Dr. Mruthyunjaya further elaborated on the networking, collaboration being established with partners based on activities/programs, kind of team-work and interaction involved and inter-institutional synergies and complementarities required. So far, 49 Public-Private Partnerships have been developed under NAIP. NAIP projections for 2006-12 were highlighted as these lay emphasis on accelerated and sustainable transformation of Indian agriculture for poverty alleviation and income generation. The key component of NAIP is to introduce management changes in the Indian agricultural research system, concern on Consumption and Production Systems (PCSs), research on Sustainable Rural Livelihood Security (SRLS), and Basic and Strategic Research (BSR) in the future areas of agricultural science. Partnership building in cooperation mode has been integrated within the program projections emphasizing on its relevance and stressing effectiveness. Elaborate guidelines have been developed for project formulation in the above research and development priority areas and also involving diverse institutions (ICAR, SAUs, Private Sector, NGOs and others such as CSIR, IITs). In conclusion, he emphasized that the several collaboration implemented so far amply demonstrate the relevance and effectiveness of partnership for ARD.

Dr. Sampan Campiranon, Director, Asia & Pacific Seed Association (APSA) dealt with the activities of the association. APSA is the world's largest regional seed forum with 440 members from 44 countries, the top 5 member countries are China, India, Japan, USA and Thailand. It has collaboration with FAO, ISF, IRRI, CIMMYT, GFAR, OECD, AVRDC and other regional and international organizations including APAARI. The global focus is to contribute to sustainable agriculture through production and trade of quality seed and planting material. As a regional forum, it formulates recommendations for seed policy issues and exchange of information on various aspects of seed. Global seed sales accounted for US\$ 30 billion, and among the global seed industry's 10 top countries, China, Japan, India, figure out well. The seed market size in Asia-Pacific is well projected by China, Japan, India and Korea, and several multinational companies are engaged in seed research and development.

Dr. Campiranon pointed out that APSA is engaged in research on germplasm traits, seed technology, production, consumer acceptance, IPR and PVP system, international treaties, phytosanitary measures, and value chain involving farmers and consumers. APSA collaborates with IRRI (Rice traits), CAAS (Hybrid rice, germplasm), CIMMYT (hybrid corn, germplasm traits) and AVRDC (vegetable germplasm traits). Among the APSA activities during this year are: workshops with AVRDC and IRRI, hybrid rice training with IRRI/PhilRice/CAAS, public private sector workshop on phytosanitary and PVP with ASTA/USDA; and workshop on ITPGRFA with FAO. Also, a seed health workshop with Danish Seed Health Center and several other activities will be organized. The Asian Seed

Congress 2007 will be held from 6-10 November at Edsa Shangri-La, Manila, Philippines. He also highlighted scope for collaboration with research networks and programs operating under APAARI umbrella.

Dr. Manish Kumar representing YPARD - the Young Professionals' Platform for ARD, as the regional focal point for South Asia, provided an update on activities undertaken. The major focus is on exchange of information and knowledge among young professionals. YPARD-SA jointly hosted an International Convention on Globalization and Rural Development in February 2007 in Mumbai. It is networking with Wagenigen University Alumni in India, and also exploring joint research opportunities with MSSRF, Chennai. In February 2007, YPARD signed an MoU with VIT University, Vellore in India to host YPARD office and support its activities locally. It was involved in awareness campaign in Bangladesh; and natural focal points are being identified in other countries of South Asia. Regarding collaborative activities, concept note has been developed on the role of young agricultural professionals in ARD and on South Asia curriculum development. He also stressed on joint collaboration with APAARI.

Suggestions/Recommendations

The following are the major recommendations that emerged from the presentations and as a follow up on discussions:

Public-Private Partnerships (PPP) in ARD:

- 1) Honest communication is needed among the partners to build mutual trust.
- 2) Critical analysis of relative strengths and weaknesses of both public and private partners is necessary.
- 3) Complementary role of partners involved should be defined in the beginning for better synergy of resources.
- 4) IPR issues need priority attention and proper dialogue in building such partnerships.
- 5) Within initiatives such as NAIP, there could be mechanisms developed to include young professionals using also a gender-balance approach.

Seed Producers:

- 6) Networks should be demand-driven, APSA evolution over the last 15 years is an excellent example.
- 7) Small and medium scale seed producers need research network support as they cannot afford capital investment on R&D. NARS and other ARD partners should extend such support.

- 8) It must be explored as to how APAARI and APSA could work more closely to address issues related to seed networking.

YPARD:

- 9) YPARD can contribute significantly in ARD by attracting and associating young professionals with agricultural research institutions and senior scientists in the region.
- 10) Such networks need to be encouraged and supported by NARS and other ARD stakeholders.

New Networks:

- 11) Network on Agro-forestry is being established by ICRAF. APAARI could consider having this new network further strengthened involving NARS in the region.
- 12) GPP on Linking Farmers to Market (LFM) be formally launched soon by GFAR involving actively the regional fora with facilitation role of CIAT.

Session IV: Global Partnership/Challenge Programs: Their Relevance for Asia-Pacific

Chair : Dr. Toshihiro Senboku
 Co-Chair : Dr. Tae-San Kim
 Rapporteur : Dr. Ajit Maru

The Session had five presentations; three on CG Challenge Programs dealing with: Water and Food; Generation: Cultivating plant diversity for the resource poor; HarvestPlus: Breeding crops for better future; and two on global partnership programs – GPP on ICM4ARD, and GPP on PROLINNOVA. This was followed by general discussion, emanating in suggestions/recommendations for a possible follow-up.

Mr. Kim Geheb, CPWF Basin Network Coordinator, presented activities of the Challenge Program on Water and Food. This program focuses on the need to improve the productivity of water in a manner that is environmentally sustainable. Among the nine river basins, three are in Asia, namely, the Indo-Gangetic (India), the Yellow river (China), and the Mekong (Vietnam). He referred to the developmental interventions and knowledge sharing on water productivity. Such networks integrate partnership efforts among CG centers, NARES, ARIs, NGOs, CBOs and the private sector. He presented some case studies and expressed concerns on making partnership more meaningful. He also informed that impact studies are being undertaken based on work undertaken by this challenge program.

Dr. Rajeev Varshney, Leader for SubProgram 2 of GCP, located at ICRISAT dealt with the Generation Challenge Program (GCP): Cultivating Plant Diversity for the Resource Poor - a multinational, multi-sector program that aims at multidisciplinary collaboration in plant sciences, to bridge the gap between basic and applied research to produce new tools for plant breeding. Explaining the GCP Network, he pointed out to its composition involving CG centers, NARS,

ARIs and other partners. He referred to the GCP consortium of 6 ARIs, 9 CG centers and 7 NARS; and GCP network of 28 ARIs, 9 CG centers and 29 national programs/NARS. He also explained GCP strategy framework operational structure and research priorities. The research partners specialize in germplasm characterization, selection/improvement, biotechnological applications, crop improvement techniques, value added products. Thus, the stakeholders role is to work jointly to develop improved germplasm for use of the farmers. GCP work was highlighted with focus on some case studies presenting research progress in Asia, such as on salinity tolerance in rice in Bangladesh; drought tolerant rice in north China and South/Southeast Asia; phosphorus uptake studies on rice in Indonesia; trainings workshops organized on low cost gene-based marker assays for South, Southeast Asia at the National Center for Genetic Engineering and Biotechnology, Thailand; and use of molecular techniques (MAS) for genetic improvement. Program support on capacity building was also highlighted.

Dr. J.V. Meenakshi, Impact and Policy Coordinator dealt with CP on HarvestPlus: Breeding Crops for Better Nutrition. She explained the primary objective of biofortification to improve micronutrient status in staple crops using the best traditional breeding practices and modern biotechnology to achieve pro-vitamin A, iron and zinc concentrations that can have measurable effects on nutritional status. She pointed out that the extent of malnutrition is high in Asia-Pacific. She apprised with HarvestPlus research on several crops with priority assigned (Phase I crops: rice, wheat, maize, cassava, sweet potato and beans; Phase II crops: potato, barley, cowpea, groundnut, lentil, millets, plantain, sorghum, pigeonpea, yams), and the involvement of diverse partners as per their specialization. She referred to the management team with CIAT and IFPRI, and research coordination with multi-disciplinary approach, networking among NARS, CG centers and others involved. The program has assigned research responsibilities dealing with breeding, biotechnology, policy, food processing, human nutrition; with results/ impact of study reaching end-users. The CG centers involved are: IRRI-rice; CIMMYT-maize and wheat; CIAT-cassava; CIP – sweet potato and ICRISAT-millets. She expressed concerns on consumer acceptance of such new healthier, nutritional food; on the impact pathways in R&D and the set milestones; crops involved and participatory efforts/coordination of activities necessary for achievable goals such as studies on golden rice in Asia, a high beta carotene transgenic rice; on high nutrient wheat in Asia, on orange-fleshed sweet potato and high mineral beans in Africa.

Dr. Pratap K. Shrestha, Country Coordinator, PROLINNOVA Nepal Program, dealt with this global network/GPP that focuses on promoting local innovations and is supported by GFAR, IFAD, DGIS Netherlands and is spearheaded by NGOs. PROLINNOVA's goal is to develop and institutionalize partnerships and methodologies that promote processes of local innovations for environmentally sound use of natural resources. It lays emphasis to integrate participatory Innovation Development (PID) to enhance local innovations covering diverse topics as per local needs.

He apprised with its activities as relevant to Asia-Pacific: involvement of Nepal, LI-BIRD, IAAS, TU/DOA, and in Cambodia of NGOs, DoA, educational and farmers' institutions. An International Support Team (IST) looks into its management. Representatives from country programs duly plan international activities; share and analyze experiences through exchange, cross-visits and learning workshops. IST supports coordination and networking, capacity building, website management, documentation, publication and policy dialogues. It was pointed out that more than 250 local

innovations have been identified and documented by multiple stakeholders. He referred to the Local Innovation Support Fund (LISF), exploring with farmers possible ways of funding locally relevant R&D but more support is required for systematic study including NARS and IARCs partnership with NGOs.

Dr. Ajit Maru, representing GFAR, dealt with GFAR's Global Partnership Programs (GPPs) - present collaborative efforts involving wide range of stakeholders committed to ensure that research they are engaged in has a strong development impact, ICM4ARD is one of such programs currently in operation. He referred to its phases of development/network building. The use of ICT for information management and communication for ARD is a GFAR priority and hence, GFAR is an ideal platform to coordinate this activity. He dealt with several technical issues related to effective use of agricultural information and knowledge exchange. Several regional fora are engaged in this activity in Asia-Pacific such as AARINENA, APAARI/APARIS, CACAARI. He referred to the regional consultation for development of APARIS in 2003, NARS surveys by FARA and FORAGRO in 2004, regional workshops organized under global RAIS Program, inter-regional consultation in Rome, proposed development for ICM4ARD, and its funding by DURAS; annual inter-regional consultations on ICM4ARD GPP. He highlighted outcomes of global RAIS consultations, stressed on the four pillars of interventions, namely, advocacy and awareness building; capacity development, integration/easy access to agricultural information; and governance of information sharing and exchange.

He emphasized that for coordination, the nodal points are ICM managers and its clients are diverse groups - ARD scientists, policy makers, NARS managers, and other public and private sector organizations, NGOs, CBOs, FOs and individual farmers. The emphasis is on agricultural information and its flow within the user community and designing NAIS to be user driven. It has resulted in improving ICM for ARD globally and regionally, strengthening of RIAS, EGFAR platform and ICM4ARD. He pointed out to several lessons learnt - the need for strong coalition, commitment of individuals/team-build up and partnerships.

Suggestions/Recommendations

The discussions on the presentations made led to several suggestions/recommendations. The major emphasis was on the following:

- 1) There is no "one" way to develop the networks. The networks have been developed around topics and consensus identified through "top-down" and "bottom-up" approaches. There are issues in planning, implementation, monitoring and evaluation of networks. Many are "soft" issues of human attitudes and behaviour. Their implications need to be looked into.
- 2) The central theme of all presentations was how to develop networks of partners and the difficulties in presenting outcomes and impact of these networks.
- 3) Funds are important for partners to get engaged but "moral commitment" is even more important for networks to function and be successful. Hence, it is important to identify such committed and knowledgeable partners in the beginning.

- 4) Transaction costs of developing networks and sustaining them are rather high, and hence, need both time and committed facilitation by concerned institution. There is a need for “believers”: committed actors who believe that the problem can be tackled through partnerships. These “believers” are invariably difficult to find. Appropriate choice of network-teams is, therefore, necessary for effective functioning of the networks.
- 5) A more important issue is of demonstrating “impact” of networks through innovative partnerships in agricultural research for development. There does not seem to be any accepted approach to measure the success of existing networks. Hence, there is need to analyze some successful operational networks.
- 6) It is often difficult to demonstrate tangible impacts of the networks to those who are actually not participants in the network. Accordingly, there is need to project and disseminate the benefits of networks to all stakeholders.

Panel discussion: Strengthening Research Networks in Asia-Pacific: Stakeholders Perceptions

Chair : Dr. Mohamed Roozitalab
 Co-Chair : Dr. Raj Paroda
 Rapporteur : Dr. P.N. Mathur

During this session, there were five presentations, one each for NARS, CGIAR, ARIs, Private Sector, and CSOs. NARS views were presented by Dr. Abdul Rashid, CGIAR concerns by Dr. William Dar; Advanced research institutions’ views by Dr. Simon Hearn; Private Sector views by Mr. Raju Barwale and CSOs concerns by Mr. Raul Montemayor.

Beginning the session, the Chairman opined that based on the presentations made so far, it is clear that the networks can be of three levels: (i) Thematic – addressing thematic regional or global issues; (ii) Commodity networks, and (iii) Networks for system-wide approach. He also laid emphasis on the issues to be addressed during the panel discussion, such as: (i) How the networks can be effectively managed; (ii) Impact of network activities and outputs; (iii) Ownership of the networks and their activities; and (iv) Funding and sustainability issue of the networks.

Dr. Abdul Rashid, Director, NARC reported on agricultural research networking in Pakistan, through a Federal Agricultural Research System comprising Provincial Agricultural Research Stations, Agricultural Universities, Colleges and Agro-based industry (fertilizers, agro-chemicals etc.) Referring to the NARS set-up, he pointed out that research institutes are located in different ecological zones and there are also separate commodity and discipline-based institutes. Pakistan Agricultural Research Council (PARC) is the apex organization for agricultural research to promote and coordinate ARD activities including human resource development and a separate Livestock and Dairy Development Board with separate institute for livestock dairy research (which also covers fish and aquaculture). PARC has wider international linkages with CGIAR, IARCs, USDA, CIDA, ACIAR, FAO and other organizations and with other NARS and regional fora such as APAARI. He also stressed on in-country coordination. He referred to R&D achievements, new research initiatives in biotechnology-research on Bt cotton, CLCV; on wheat salinity and drought,

chickpea pod borer, vaccines developed (Avian influenza), biofuels, hybrid seed (maize, sunflower, canola, tomato), climate change and other environmental concerns and build up of further linkages through APAARI on the above emerging ARD initiatives.

Dr. Simon Hearn stressed that ACIAR believes in research networking. This involves elaborate discussion with partners for planning and execution of activities proposed. Approach could be bilateral and multilateral. Regular informal discussions with research managers/team are important. Dialogue-survey is initially undertaken as per needs proposed including the sub-regional priorities, with a mix of research and extension emphasis. Priorities are identified such as: climate change, biofuel, biotechnology, value chain etc. He further pointed out that networks should specifically address capacity building. He stressed on monitoring and evaluation of network activities to gain and learn from experiences which are helpful for future directions.

Dr. William Dar laid emphasis on Public-Private-Partnership to enhance agricultural research for development. He referred to peoples' involvement. He pointed out that the alliance of CG centers will like to network more in strategic areas identified as system's priorities with regional and international fora, ensuring greater involvement of all stakeholders.

Mr. Paul Montemayor, National Business Manager, Federation of Free Farmers, Philippines and Vice President for International Federation of Agricultural Producers (IFAP), in his presentation, dealt with activities of farmer's organizations. He pointed out that IFAP has 110 national farmers' organizations in 75 countries. He emphasized that networking/coordination in ARD was beneficial and must start at grassroots level by involving farmers, so that results reach the end-beneficiaries. He suggested that farmers' involvement must be institutionalized. There was need for stronger market orientation with focus on small farmers. Agricultural research and development must focus on farmers' profitability and sustainability. He referred to commonality of R&D priorities of IFAP and APAARI such as: emphasis on linking farmers to market; sustainable development concerns; initiatives on biofuels, water, climate change, food safety and quality. He pointed out that IFAP is seeking formal membership of APAARI and that its regional restructuring shall enhance both regional and national collaboration involving APAARI members.

Suggestions/Recommendations

All the five presentations by panel members were followed by lively discussion. The following suggestions/ recommendations emerged from this session:

- 1) Prioritization of the networks is essential. Presently, there are several networks, some of which are very effective; whereas some are either not functioning or their activity level is low. It was, therefore, recommended that a review of existing networks would help in assessing the impact of these networks. Such a study would help in identifying the most effective networks and provide an insight into reasons for their success. Also, it will help in initiating new networks according to the priorities.
- 2) In the context of sustainability and impact of the networks, the group felt the need for widening the participation of network stakeholders. Most of the existing network partners are from public sector and there is need for effective participation of grassroots level

stakeholders such as farmers and CBOs (Community Based Organizations) as well as of the policy makers. The group also felt that concerned stakeholders should all be involved right from planning to their implementation.

- 3) Participants felt it necessary to encourage more and more involvement of the private institutions. This will only be possible if:
 - Mutual trust is built up and benefits shared.
 - Enabling environment is provided to private partners to carry out joint activities- on principle of equal partnership and responsibilities.
 - Private sector becomes integral part of the national agricultural system.
- 4) Cross-cutting issues and holistic system oriented approach would require multi-disciplinary focus in order to make the existing networks more meaningful.
- 5) It was agreed that capacity building is very important component to strengthen national programs and, therefore, HRD should be an integral part of each network.
- 6) Accountability being an important issue, it was suggested that each network should have a monitoring and evaluation component for assessing the real impacts and possible benefits to end users.
- 7) Need for sub-regional grouping for some of the networks was also suggested to address specific issues and priorities of that sub-region. This may also lead to more effective participation of member countries for identified priorities to be addressed.
- 8) In order to address income generation and improved livelihood, the network activities should also address value addition and market chain analysis linking farmers to potential markets or producers to consumers.
- 9) It was recognized that sustainability of the network is possible only if the network activities are owned by the partners/members, with some initial support from donors. In the context of funding constraints, donors can only consider supporting coordination component of the network, whereas members could support their respective activities both through cash and in-kind contribution. Thus, there is a need to develop some good proposals for funding of the network activities i.e. program based activities for which the national partners have constraints to support such activities which otherwise are of high priority.
- 10) Scientific backstopping and expert advice from advanced research institutions and international organizations (FAO, GFAR, CG Centers) will help in better planning and coordination of network activities.
- 11) Following priority areas were suggested where networking involving international centers and organizations can help NARS of the developing countries in the Asia-Pacific region.
 - Biofuel
 - Biosafety and Biosecurity

- Climate change and sustainable agricultural production
 - Biotechnology and role of public-private partnership
- 12) It was also suggested that APAARI membership be widened to include private sector institutions, NGOs and the farmers so as to ensure their effective participation in research networks.

Plenary Session

Chair : Dr. William D. Dar
 Co-Chair : Dr. Raghunath D. Ghodake
 Rapporteur : Dr. J.L. Karihaloo

The session was chaired by Dr. William Dar and co-chaired by Dr. Raghunath Ghodake. Rapporteurs of the five technical sessions made brief presentations of proceedings and recommendations of their respective sessions. During the discussion on recommendations, important interventions were made by the Chair, the Co-Chair, Dr. Raj Paroda, Dr. Patricio Faylon, Dr. Abdul Halim, Dr. Teodoro Solsoloy, Dr. Simon Hearn, Dr. Mohamed Roozitalab, Dr. David Spielman and several other participants.

Recommendations:

The following recommendations were finally adopted for further follow-up:

- 1) There was general consensus that clear benefits are evident from networking and collaboration among R&D institutions in the region. Major gains had been through germplasm exchange, sharing of resources, joint trainings and exchange visits, collaborative research and technology dissemination. These benefits acquire greater significance in the light of limited funds for agricultural R&D, relatively low importance accorded by donor institutions to networking activities, and the shrinking intellectual base for agricultural research. At the same time, climate change, emerging market and consumer demands, new opportunities such as biofuels etc. impose new challenges before the R&D sector to develop new varieties of crops, fish, and livestock that are more biotic and abiotic stress resistant, higher yielding, of improved quality and safety, and result in lower costs and higher incomes to producers. There is, therefore, full justification for institutions like APAARI in partnership with IARCs to facilitate/coordinate the activities of crop commodity/based R&D networks and consortia in the region.
- 2) While collaborative work may need to focus specifically on crops and commodities, an integrated farming system-wide approach be henceforth adopted to ensure that research responds to the whole array of needs and addresses specific problems of the small scale farmers. In this context, greater attention needs to be given to inter-disciplinary research to develop holistic network activities such as: rice-fish, crop-livestock, agro-forestry, underutilized crops, diversification in farming systems, etc. Other emerging

areas include biofuels, biotechnology, biosafety and biosecurity, mitigation and adaptation to climate change for sustainable agriculture. In this respect, APAARI must catalyze the facilitators of existing networks/potential new networks/potential new networks to ensure adoption of integrated systematic approach for yet better outputs.

- 3) It was felt that some of the existing networks may operate better at the sub-regional level in order to address specific challenges facing the sub-regions within Asia-Pacific. This approach may enable more effective participation of member countries involved to yield yet better results.
- 4) Small and medium scale seed producers need specific research networking support as they cannot afford big capital investments on R&D. NARS and other ARD partners can certainly extend such support. APAARI and APSA could work jointly to address these issues more effectively.
- 5) In the context of sustainability and expected impact of the networks, it was expressed to widen the participation of all stakeholders. In addition to public sector/NARS, and IARCs, network partners must include private sector institutions as well as grassroots stakeholders such as farmers and CBOs (Community Based Organizations). Alongwith policymakers, all stakeholders be involved right from planning to implementation stage. Involvement of some agricultural universities would expand the partnership base of networks while creating awareness among young researchers. Similarly, young professionals' platform such as YPARD could be involved both in research networking and vocational training.
- 6) General consensus emerged that the private sector will play an increasing role in technology development and dissemination. More efforts are, therefore, needed to establish synergistic relationships with private sector R&D institutions even as steps are taken to ensure that stakeholders and small farmers continue to enjoy choices on what technologies and related services to avail of. Some basic requirements for successful public-private partnerships discussed emerged as:
 - i. Honest communication and understanding between both public and private sector partners is critical to build much needed mutual trust.
 - ii. An analysis of relative strengths and weaknesses of both public and private sector partners would enable better understanding.
 - iii. Complementary role of partners be defined for better synergy and faster results.
 - iv. IPR issues to be addressed through mutual dialogue and benefit sharing right in the beginning.
 - v. Innovative ways to have capital investments through joint efforts.
 - vi. Enabling environment and policies to include private sector as an integral part of the national system.
- 7) IPR concerns may increasingly influence collaborative work among network participants. Hence, steps need to be taken to ensure that they do not unduly hinder much needed exchange of information, genetic materials and the research results.

- 8) The network facilitating organizations need to reflect their full commitment in terms of time and resources, provide secretarial support, and scientific leadership in running the network activities. Network members in turn must cooperate actively and contribute both in cash and kind towards entire effort. This implies that networks and consortia must evolve out of real felt needs which are shared commonly among partners.
- 9) Evaluation and prioritization of the network programs is very essential. Presently, there are a number of networks, some of which are either non-functional or their activity levels are relatively insignificant. It was, therefore, considered appropriate to have a review of all existing networks in terms of their impact. Impact assessment exercises are important to ensure network efficiency and attract donor support. APAARI could take the lead in developing a commonly accepted impact assessment methodology, similar to the CG model of performance evaluation, and facilitate this process including prioritization of research networks and initiation of new networks such as those on agro-forestry, inland aquaculture, medicinal plants etc.
- 10) Currently, APARIS targets researchers and students for the dissemination of web-based information on agricultural technologies. While there is an obvious need to extend its reach to the farmers, multiplicity of languages becomes a major hurdle. APARIS, therefore, needs to work with other institutions (including IARCs) to facilitate down-streaming of knowledge dissemination. ICRISAT expressed its willingness to partner with APARIS under the VASAT program to ensure that scientific knowledge and technologies are disseminated fast to the farming communities.
- 11) APCOAB is an excellent initiative which could eventually become an inter-regional or global partnership (GPP) program. It was felt that beside current efforts, it could work more towards biosafety, biosecurity and use of GM food crops or livestock species while generating much needed public awareness and acceptance.
- 12) Inter-regional or global networks, such as the one on cotton (INCANA), conservation agriculture etc. can be more cost-effective and beneficial. Such initiatives in the field of biotechnology, medicinal plants, underutilized species etc. can be of great benefit and hence be promoted involving other regional fora, ARIs/IARCs and global forum (GFAR). These initiatives will not only foster partnership among stakeholders but would also help in capacity building.

Concluding the meeting, both Dr. R.D. Ghodake and Dr. Raj Paroda thanked the participants for contributing to the successful deliberations that have resulted in pinpointing future needs/concerns of network programs in a partnership mode, with APAARI providing the facilitation role. Dr. Paroda, in particular, thanked Dr. William Dar and Dr. Mangala Rai for the facilities provided and for their overall support for promoting ARD coordination with wider participation of diverse stakeholders in Asia-Pacific region. He also thanked Dr. Ghodake for his effective role and guidance in organizing this meeting and to APAARI Secretariat staff for their support.

Annexure I

Expert Consultation to Review Progress of Agricultural Research Networks and Consortia in Asia-Pacific

8-9 October 2007

NAARM Campus, Rajendranagar, Hyderabad &
ICRISAT Campus, Patancheru (India)

PROGRAM

Monday, 8th October 2007

Venue: NAARM Campus, Rajendranagar, Hyderabad

0900–0930 **Registration**

Inaugural Session

Chair : Dr. Raghunath D. Ghodake
Co-Chair : Dr. Abd. Shukor Abd. Rahman
Rapporteur : Mr. P.K. Saha

0930–0940	Welcome Address	Dr. Raghunath D. Ghodake
0940–0950	Special Remarks	Dr. William D. Dar
0950–1000	Special Remarks	Dr. Carlos Sere
1000–1030	Special Address	Dr. Mangala Rai
1030–1050	Agricultural Research Networking – Role of APAARI	Dr. Raj Paroda
1050–1055	Release of Publications	
1055–1100	Vote of Thanks	Dr. C.L.L. Gowda

1100–1130 *Coffee/Tea Break and Group Photograph*

Technical Session I: Progress of Regional Programs

Chair : Dr. Simon Hearn
Co-Chair : Dr. P.S. Faylon
Rapporteur : Dr. C.L.L. Gowda

1130–1155	APARIS	Dr. Sahdev Singh
1155–1220	APCoAB	Dr. J.L. Karihaloo
1220–1245	INCANA – An Inter-Regional Initiative	Dr. Aisel Gharedaghli
1245–1300	General Discussion	
1300–1400	<i>Lunch Break</i>	

Technical Session II: Partnership Through ARD Networks

Chair : Dr. Mangala Rai
 Co-Chair : Dr. T. Mennesson
 Rapporteur : Mr. Raul Montemayor

1400–1420	CLAN	Dr. C.L.L. Gowda
1420–1440	CORRA	Dr. Noel Magor
1440–1500	GoFAR	Dr. Patrick Dugan
1500–1520	PGR	Dr. Prem Mathur
1520–1540	RWC	Dr. Olaf Erenstein

1540–1600 *Coffee/Tea Break*

1600–1620	BAPNET	Dr. Agustin Molina
1620–1640	AVRDC Vegetable Research Networking	Dr. Madan L. Chadha
1640–1700	ICUC	Dr. Hannah Jaenicke
1700–1720	Livestock R&D Information Network	Dr. Iain A. Wright
1720–1745	General Discussion	

1800–1900 Cultural Program

1900 Reception Dinner Hosted by ICAR
 (NAARM, Rajendranagar, Hyderabad)

Tuesday, 9th October 2007

Venue: ICRISAT Campus, Patancheru

Technical Session III: Status of Some New Initiatives

Chair : Dr. H.P.M. Gunasena
 Co-Chair : Dr. Zueng-Sang Chen
 Rapporteur : Dr. Sahdev Singh

0830–0915	NAIP for Strengthening Partnerships	Dr. S. Mruthyunjaya
0915–0945	APSA	Dr. Sampan Campiranon
0945–1015	YPARD	Dr. Manish Kumar
1015–1030	General Discussion	
1030–1100	<i>Coffee/Tea Break</i>	

Technical Session IV: Global Partnership/Challenge Programs: Their Relevance for Asia-Pacific

Chair : Dr. Toshihiro Senboku
 Co-Chair : Dr. Tae-San Kim
 Rapporteur : Dr. Ajit Maru

1100–1120	CP on Water and Food	Dr. Kim Geheb
1120–1140	CP on Generation	Dr. Rajeev K. Varshney
1140–1200	CP on HarvestPlus	Dr. J.V. Meenakshi
1200–1220	GPP on ICM4ARD	Dr. Ajit Maru
1220–1240	GPP on PROLINNOVA	Dr. Pratap Shrestha
1240–1300	General Discussion	
1300–1400	<i>Lunch Break</i>	

1400–1530 **Panel Discussion: Strengthening Research Networks in Asia-Pacific: Stakeholders Perceptions**

Chair : Dr. Mohamed Roozitalab
 Co-Chair : Dr. Raj Paroda
 Rapporteur : Dr. P.N. Mathur

Panelists (*10 minutes each*)

NARS	:	Dr. Abdul Rashid
CGIAR	:	Dr. William D. Dar
ARIs	:	Dr. Simon Hearn
Private Sector	:	Mr. Raju Barwale
CSOs	:	Mr. Raul Montemayor

General Discussion

1530–1600 *Coffee/Tea Break*

1600–1730 **Plenary Session**

Chair : Dr. William D. Dar
 Co-Chair : Dr. Raghunath D. Ghodake
 Rapporteur : Dr. J.L. Karihaloo

General Recommendations

Rapporteurs of
 Technical Sessions

Vote of Thanks

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1900–2100 Reception Dinner Hosted by APAARI
 (Swimming Pool, ICRISAT Campus)

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