Expert Consultation on

Strengthening Regional Agricultural Information System:
Role of ICT in ARD

Asian Institute of Technology, Bangkok, Thailand
1-3 December, 2003

DRAFT PROCEEDINGS

Asia-Pacific Association of Agricultural Research Institutions
FAO Regional Office for Asia and the Pacific
Bangkok, Thailand
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National Agricultural Research Systems (NARS) in the Asia-Pacific region are increasingly focusing their attention on newly emerging technologies such as information and communication technologies (ICT) and agricultural biotechnologies to fulfill their role as apex research organizations addressing problems of national food security, poverty alleviation, rural development and environmental-sustainability. Facing resource constraints due to declining public expenditure for ARD, NARS also recognize the importance of research networking at sub-regional, regional and international levels. Some of these efforts are now beginning to show results in the form of increased agricultural production in the region and fewer incidences of hunger and malnutrition. However, significant technological disparity exists in many parts of the region, posing a serious challenge to equitable development in the agriculture sector as it transforms from a sustenance activity to commercial enterprise.

The Asia-Pacific Association of Agricultural Research Institutions (APAARI), an apolitical regional forum, has been promoting judicious use of emerging technologies and tools for ARD in the region. Over the last few years, APAARI, since its establishment in 1991, has organized several expert consultations dealing with these new technologies and raised concerns on the role of the regional research networks by bringing together NARS and other diverse stakeholders on a common platform to work on addressing the problems faced by ARD. This expert consultation was the third organized by APAARI on Role of ICT in ARD, and it assessed the progress made by various NARS since the last expert consultation; looked at the existing opportunities for enhancing the role of ICT in ARD; and discussed potential improvements the Asia-Pacific Agricultural Research Information System (APARIS), an APAARI initiative, by focusing on potential user-groups and their information needs.

Also, during the expert consultation, in a parallel session, various regional research networks presented their status reports and provided recommendations on ways to further strengthen research networking. A special session discussed the issues related to the establishment of Asia-Pacific Consortium on Agricultural Biotechnology (APCoAB), a new initiative of APAARI in collaboration with Asia-Pacific NARS, FAO, GFAR, ISNAR, and several other international and regional entities representing foundations, NGO’s, and the private sector.

These proceedings report the deliberations of the Expert Consultations and the Seventh Executive Committee meeting of APAARI, which was held following the expert consultations. We express our thanks to the participants for providing their inputs and sharing information. We hope that this well synthesized report will be useful to all the APAARI stakeholders who were represented in the expert consultations as well as other concerned institutions/organizations engaged in agricultural research.

(R.S. Paroda)
Executive Secretary
## List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AARINENA</td>
<td>Association of Agricultural Research Institutions in the Near-East and North Africa</td>
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<tr>
<td>ACIAR</td>
<td>Australian Centre for International Agricultural Research</td>
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<td>ADB</td>
<td>Asian Development Bank</td>
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<td>AFITA</td>
<td>Asian Federation for Information Technology in Agriculture</td>
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<td>AGRIS</td>
<td>International Information System for the Agricultural Sciences and Technology</td>
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<td>AIT</td>
<td>Asian Institute of Technology</td>
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<td>APAARI</td>
<td>Asia-Pacific Association of Agricultural Research Institutions</td>
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<td>APAFRI</td>
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<td>APAN</td>
<td>Asia-Pacific Advanced Network</td>
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<td>APARIS</td>
<td>Asia-Pacific Agricultural Research Information System</td>
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<td>APCoAB</td>
<td>Asia-Pacific Consortium on Agricultural Biotechnology</td>
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<td>APRTC</td>
<td>Asia-Pacific Regional Technology Center</td>
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<td>APSA</td>
<td>The Asia and Pacific Seed Association</td>
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<td>ARD</td>
<td>Agricultural Research for Development</td>
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<td>AREO</td>
<td>Agricultural Research and Education Organization</td>
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<td>AROW</td>
<td>Agricultural Research on the Web</td>
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<td>ASTI</td>
<td>Agricultural Science and Technology Indicators</td>
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<td>AVRDC</td>
<td>Asia Vegetable Research and Development Centre</td>
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<td>BARC</td>
<td>Bangladesh Agricultural Research Council</td>
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<td>BAR</td>
<td>Bureau of Agricultural Research</td>
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<td>CAAS</td>
<td>Chinese Academy of Agricultural Sciences</td>
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<tr>
<td>CABI</td>
<td>Centre for Agricultural Bioscience International</td>
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<td>CAC</td>
<td>Central Asia and Caucasus</td>
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<td>CARP</td>
<td>Sri Lankan Council for Agricultural Research Policy</td>
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<td>CASREN</td>
<td>Crop-Animal System Research Network</td>
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<td>CGIAR</td>
<td>Consultative Group on International Agricultural Research</td>
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<td>CIFOR</td>
<td>Centre for International Forestry Research</td>
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<td>CIMMYT</td>
<td>International Maize and Wheat Improvement Centre</td>
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<td>CIRAD</td>
<td>Centre de Coopération Internationale en Recherche Agronomique pour le Développement</td>
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<td>CLAN</td>
<td>Cereals and Legumes Asia Network</td>
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<td>COA</td>
<td>Council of Agriculture</td>
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<td>CP</td>
<td>Challenge Programmes</td>
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<td>CORRA</td>
<td>Council for Partnership on Rice Research in Asia</td>
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<td>CWANA</td>
<td>Central and West Asia and North Africa</td>
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<td>DOA</td>
<td>Department of Agriculture (Thailand)</td>
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<td>DSG</td>
<td>Donor Support Group</td>
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<td>EGFAR</td>
<td>Electronic Global Forum on Agricultural Research</td>
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<td>Food and Agriculture Organization of the United Nations</td>
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<td>FAO-RAP</td>
<td>FAO Regional Office for Asia and the Pacific</td>
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<td>FARA</td>
<td>Forum for Agricultural Research in Africa</td>
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<td>FORAGRO</td>
<td>Foro Regional de Investigación y Desarrollo Tecnológico Agropecuario</td>
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<td>GFAR</td>
<td>Global Forum on Agricultural Research</td>
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<td>GMO</td>
<td>Genetically Modified Organisms</td>
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<td>GoFAR</td>
<td>Group on Fisheries and Aquaculture Research</td>
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<td>HRD</td>
<td>Human Resource Development</td>
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<td>IARC</td>
<td>International Agricultural Research Centre</td>
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<td>ICAR</td>
<td>Indian Council of Agricultural Research</td>
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<td>ICARDA</td>
<td>International Centre for Agricultural Research in the Dry Areas</td>
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<td>ICBA</td>
<td>International Centre for Biosaline Agriculture</td>
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<td>ICIMOD</td>
<td>International Centre for Integrated Mountain Development</td>
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<td>ICLARM</td>
<td>International Centre for Living Aquatic Resources Management</td>
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<td>ICM</td>
<td>Information and Communication Management</td>
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<td>ICRISAT</td>
<td>International Crops Research Institute for the Semi-arid Tropics</td>
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<td>ICT</td>
<td>Information and Communication Technologies</td>
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<td>Acronym</td>
<td>Full Name</td>
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<td>ICT-KM</td>
<td>Information and Communication Technologies – Knowledge Management</td>
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<td>ICUC</td>
<td>International Centre on Underutilized Crops</td>
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<td>IFPRI</td>
<td>International Food Policy Research Institute</td>
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<td>ILRI</td>
<td>International Livestock Research Institute</td>
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<td>INGER</td>
<td>International Network for Genetic Evaluation of Rice</td>
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<td>INP</td>
<td>Information Nodal Point</td>
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<td>INRM</td>
<td>Integrated Natural Resource Management</td>
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<td>IPGRI</td>
<td>International Plant Genetic Resources Institute</td>
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<td>IPGRI-APO</td>
<td>IPGRI Regional Office for Asia, the Pacific and Oceania</td>
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<td>IPM</td>
<td>Integrated Pest Management</td>
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<td>IPR</td>
<td>Intellectual Property Rights</td>
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<td>IRRI</td>
<td>International Rice Research Institute</td>
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<td>ISNAR</td>
<td>International Service for National Agricultural Research</td>
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<td>ISAP</td>
<td>Indian Society of Agribusiness Professionals</td>
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<td>IWMI</td>
<td>International Water Management Institute</td>
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<td>JIRCAS</td>
<td>Japan International Research Centre for Agricultural Sciences</td>
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<tr>
<td>KISS</td>
<td>Knowledge and Information Systems networking proposal</td>
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<td>KRS</td>
<td>Koronivia Research Station (Fiji)</td>
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<td>LKS</td>
<td>Lesser Known Species</td>
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<td>MAFFM</td>
<td>Ministry of Agriculture, Forests, Fisheries and Meteorology (Western Samoa)</td>
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<td>MARD</td>
<td>Ministry of Agriculture and Rural Development (Vietnam)</td>
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<td>MARDI</td>
<td>Malaysian Agricultural Research and Development Institute</td>
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<td>NACA</td>
<td>Network of Aquaculture Centres in Asia-Pacific</td>
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<td>NARC</td>
<td>Nepal Agricultural Research Council</td>
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<td>NARI</td>
<td>National Agricultural Research Institute (Papua New Guinea)</td>
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<td>NARS</td>
<td>National Agricultural Research Systems</td>
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<td>NARS-SC</td>
<td>NARS-Steering Committee (GFAR)</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>NINP</td>
<td>National Information Nodal Point</td>
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<td>NRM</td>
<td>Natural Resource Management</td>
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<td>PARC</td>
<td>Pakistan Agricultural Research Council</td>
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<td>PCCARD</td>
<td>Philippine Council for Agriculture, Forestry &amp; Natural Resources Research and Development</td>
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<tr>
<td>PGR</td>
<td>Plant Genetic Resources</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<td>RAIS</td>
<td>Regional Agricultural Information System</td>
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<td>RDA</td>
<td>Rural Development Administration (South Korea)</td>
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<td>RECSEA</td>
<td>Regional Cooperation in South East Asia on PGR</td>
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<td>RWC</td>
<td>Rice-Wheat Consortium</td>
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<td>SAARC</td>
<td>South Asia Association for Regional Cooperation</td>
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<td>SANPGR</td>
<td>South Asia Network on Plant Genetic Resources</td>
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<td>SEARCA</td>
<td>Southeast Asian Regional Centre for Graduate Study and Research in Agriculture</td>
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<td>SPC</td>
<td>South Pacific Commission</td>
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<tr>
<td>SSA</td>
<td>Sub-Saharan Africa</td>
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<td>TAC</td>
<td>Technical Advisory Committee (of the CGIAR)</td>
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<td>TAMNET</td>
<td>Tropical Asian Maize Network</td>
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<tr>
<td>UTFANET</td>
<td>Underutilized Tropical Fruits Asia Network</td>
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<tr>
<td>WAICENT</td>
<td>World Agricultural Information Centre</td>
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<td>WANA</td>
<td>Western Asia and North Africa</td>
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BACKGROUND

Enhanced information exchange among the Asia-Pacific national agricultural research systems (NARS) is one of the primary objectives of the Asia-Pacific Association of Agricultural Research Institutions (APAARI). In the early years of APAARI inception (1991-1995), also the pre-internet era, print publications were the primary medium of information dissemination. In 1995, APAARI prepared its Perspective Plan that emphasized the use of newly emerging technologies to further improve information management in NARS. Following the publication of the Perspective Plan, internet and digital technologies were identified as tools that can play a significant role in facilitating information networking among member NARS and other stakeholders. Subsequent General Assemblies (1996 and 1998) further stressed on ICT adoption for information management. Consequently, APAARI with ACIAR support appointed an Information Technology Manager at its secretariat who established the initial APAARI web site in 1999 and several APAARI publications were put on the web site. A compact disk (CD) containing 17 APAARI Success Stories was developed and distributed widely to serve those who lacked fast internet access. Efforts to establish research databases were initiated with significant contributions from National Information Nodal Points (NINPs) in the Asia-Pacific region. To take the ICT initiative further, in November 2000 and October 2002, APAARI organized expert consultations on development of Asia-Pacific Agricultural Research Information System (APARIS). These consultations, attended by NINPs, representatives of APAARI members and stakeholder organizations, enabled APARIS to evolve from a simple concept into a basic framework of information resources for agricultural research for development (ARD), made available through APAARI web site. Keeping these developments in view, the present expert consultation was organized to take stock of the situation and identify new activities to build capacity at the NINP level for further promotion of ICT in ARD and explore opportunities that exist to strengthen APARIS.

For the past several years, APAARI has been supporting and promoting various regional research networks for research information and material sharing among the ARD stakeholders. Concurrently with the ICT expert consultation, the coordinators of these networks were invited to present status reports and develop recommendations for further strengthening research networking in the region in a parallel session.

Following the recommendations of earlier meetings, a special session discussed the issues related to the establishment of Asia-Pacific Consortium on Agricultural Biotechnology (APCoAB), a new initiative of APAARI in collaboration with Asia-Pacific NARS, FAO, GFAR, ISNAR, and several other international and regional entities representing foundations, NGO’s, and the private sector.

The Expert Consultations on Strengthening Regional Agricultural Information System: Role of ICT in ARD and Status of Regional Research Networks and Consortia were held from 1-3 December 2003 at the Asian Institute of Technology, Bangkok, Thailand according to the program given as Annexure I and were attended by participants listed in Annexure II. There were about seventy participants from member NARS, associate member institutions and other regional and international organizations. There were representatives from other regional forums including AARINENA and FARA. Some special invitees also participated in the consultations.

INAUGURAL SESSION

Dr. Nurul Alam, Vice Chairman, APAARI initiated the inaugural session by welcoming the participants. Prof. Mario Tabucanon, Provost of AIT also welcomed all the participants and thanked APAARI for choosing AIT as the host institution for the expert consultations. Dr. Raj Paroda, Executive Secretary of APAARI presented the objectives of the expert consultations and welcomed dignitaries including Dr. Mutsuo Iwamoto, Chairman of APAARI; Dr. Mohammad Rozitalab, Chairman of GFAR; Mr. Hiroyuki Konuma, FAO Deputy Regional Representative for Asia and the Pacific; Prof. Mario Tabucanon, Provost
of AIT; Dr. Nural Alam, Vice-Chairman of APAARI; Dr. Jean-Francois Giovannetti, Senior ICT Expert of GFAR; and Heads of NARS and CG Centers.
Dr. Paroda informed that APARIS and APCoAB were the two major initiatives being taken up by APAARI as they strategically focus on two rapidly emerging technologies, information and biotechnology, both having immense potential to transform agriculture in favor of the resource-poor farmers of the region. He appreciated and thanked for the partnerships of FAO, GFAR, CGIAR institutes and other organizations with APAARI and hoped that the present consultation will result in defining a collaborative action plan, also involving various member NARS, to build capacity at the NINP level for further promotion of ICT in ARD in the region. He stressed the need for NARS to examine and revise their information and communication management (ICM) models to harness the benefits offered by new IT tools and techniques. He added that the other important objectives of the expert consultation were to review the progress of various research networks presently under operation and also to explore the possibilities of establishing a Consortium on Agricultural Biotechnology (APCoAB) to ensure that the needed benefits from new sciences reach the society.

Dr. Mohammad Roozitalab, Chairman of GFAR, in his special remarks recognized the progress made by APAARI in developing a regional agricultural information system that could potentially serve as an example for some other regions. He reiterated GFAR’s support to all regional forums for developing such systems and urged all regional forums to work together in evolving a global agricultural information system.

On behalf of the Assistant Director-General and Regional Representative for Asia and the Pacific of FAO, Mr. Hiroyuki Konuma, FAO Deputy Regional Representative for Asia and the Pacific in his special remarks cautioned that the opportunities offered by new information and communication technologies (ICTs) have yet to reach the majority of potential users in the world due to increased disparity between users who have the means to access information and those who do not such facilities. He introduced FAO’s initiatives such as WAICENT and AGRIS programs and called for greater use of these tools by NARS. He praised APAARI’s efforts and assured continued FAO-RAP support for APARIS and APCoAB initiatives.

Dr. Jean-Francois Giovannetti, Senior Expert of GFAR, remarked that GFAR is working with all regional forums to find commonalities and to build on agricultural information systems for ARD using inter-regional synergies. He emphasized the need for closer look at information and communication management in NARS as well as regional forums.

Dr. Paroda invited Dr. Mutsuo Iwamoto, Chairman of APAARI to release the publication of recently revised APAARI Constitution and Mr. Hiroyuki Konuma, FAO Deputy Regional Representative for Asia and the Pacific to release the publication of Success Story on Control of Newcastle Disease in Village Chickens, the nineteenth in the popular series by APAARI.

Dr. Mutsuo Iwamoto, Chairman of APAARI delivered the Chairman’s address in which he welcomed all the participants and thanked FAO for providing a base for APAARI at its regional office in Bangkok and acknowledged AIT for providing excellent facilities for the expert consultation. He hoped for more active cooperation from all partners so that APAARI can continue to strive hard for fostering regional cooperation through various networks and consortia for ARD. He stated that increasing agricultural productivity, while conserving natural resources and reducing the cost on input use, is a major challenge and biotechnology offers tremendous opportunity in this context. He concluded his address with a call for valuable inputs and support of all participating organizations to APAARI for further strengthening APARIS and APCoAB.

Mr. Somchai Charnnarongkul, Deputy Director General, Department of Agriculture, the Royal Government of Thailand, read the speech of H.E. Mr. Newin Chidchop, Deputy Minister for Agriculture and Cooperatives, the Royal Government of Thailand, who could not attend the inaugural session due to other out-of-town commitments.
Mr. P. K. Saha, FAO Liaison Officer for APAARI, delivered the vote of thanks for the participants and the organizers.

SESSION I: Global and Regional Initiatives for ICT in ARD

Chairperson: Dr. Behzad Ghareyazie, Former Deputy Minster for Agriculture, Iran
Co-chairperson: Prof. H.P.M. Gunasena, Executive Director, CARP

A Global Agenda for ICT in ARD
Dr. Jean-François Giovannetti, Senior Expert, GFAR

The GLOBAL RAIS initiative of GFAR and its activities were explained. Under this initiative GFAR will partially support a series of five regional and one inter-regional workshops/consultations in order to develop a global agenda for ICM in ARD. Lessons learned so far through this exercise included: identification of information providers/users in a global network of information reservoirs, decentralized nature of information production/management, and essential components of a RAIS such as a relational database of institutions, experts, projects/activities and events. The need for a regional information gateway was identified as a clearing-house function and also value addition in the RAIS at the regional level.

Status Report on APARIS
Dr. Sahdev Singh, Assistant Executive Secretary, APAARI

The background, development phases, challenges encountered, and current activities of APARIS were presented. The role of NINPs in the development of APARIS was highlighted and their continuous involvement was shown to be critical to its functioning. More active intervention of the APARIS Steering Committee was sought to guide and monitor the development of APARIS. The current activities and value additions in APARIS were described. It was emphasized that APARIS, being one of the first few relatively well-structured regional systems, offered a significant learning value to other upcoming regional systems, particularly the participatory approach adopted in its development. APARIS experience thus needs to be shared by other regions.

Review of RAIS Strategy in WANA Region
Dr. Ahmed Rafea, AARINENA

The historical background, framework of action to develop the WANA/RAIS on the national and regional levels, implementation plan, collaborative programs, implementation priorities, the project proposal to implement phase one of the plan, and the current status of the AARINENA-RAIS were discussed. Planning of AARINENA-RAIS began in 2000 and its activities accelerated after the GFAR-supported RAIS Workshop in February 2003. Currently a need-assessment is being carried out at national level under phase one of the action plan approved by the Steering Committee in July 2003.

FARA’s Role in Strengthening Regional ICT
Ms. Myra Wopereis-Pura, FARA

Brief background on FARA, Africa’s ICT on AR4D, progress on ICT in Africa’s AR4D, and FARA’s approach to ICT were briefly presented. Since the FARA-RAIS is still in its planning stages, the need for greater cooperation from other regional RAIS and international organizations was considered important. GFAR-supported RAIS Workshop for the FARA region is planned for the early part of 2004.
Session II: NARS Status Reports

Chairperson: Dr. Ashraf Tanvir, Director Scientific Information, PARC
Co-chairperson: Dr. Paul Teng, Deputy Director General, The World Fish Center

BARC, Bangladesh
Mr. Mostaque Ahmed, Principal Librarian, BARC

General information about Bangladesh agriculture and government’s ICT policy was presented. Proposed initiatives include utilization of ICT in agro-based industry, information dissemination on agricultural technology, agribusiness development, and database on agricultural information. The web sites of research institutes operating under BARC, and SAIC information resources were demonstrated.

ICAR, India
Dr. A. K. Jain, Assistant Director General (ARIS), ICAR

A comprehensive presentation on ICAR’s ARIS was made. Its development strategy, components, and impact were elaborated upon. Various databases developed under ARIS were listed. ICAR’s efforts on computerization of its major activities and networking of various research institutes, universities, and extension services operating under ICAR were found to be increasing the use of e-mail communication and electronic documentation among the ARD professionals.

AREO, Iran
Ms. Aisel Gharedaghli, Computer & Networking Administrator, AREO

Government’s ICT policy was explained in general. Agricultural Scientific & Documentation Center (ASDC) was identified as the main agency offering scientific services to agricultural institutes and universities using internet and intranet.

NARC, Nepal
Mr. Bhola Man Singh Basnet, Chief of Communication, Publication & Documentation Division, NARC

Due to unique geography of Nepal, the physical networking of various research institutes and stations was cited as the main obstacle for wider application of internet-based communication mechanisms. However, NARC is working on alternative ways of communication such as agriculture-oriented TV and Radio programs and CD publications.

CARP, Sri Lanka
Prof. H.P.M. Gunasena, Executive Director, CARP

Under the new agricultural research policy of CARP, several initiative to promote ICT in ARD have been undertaken. Individual institutes have developed their own websites and work is under progress on electronic bibliographic databases, scientific personnel database, and electronic documentation of contract research abstracts for the period 1990-2000.

PCARRD, Philippines
Dr. Patricio S. Faylon, Executive Director, PCARRD

PCARRD’s ICT program components supporting R&D management, technology management, capability building, policy advocacy and awareness; commodity information network; e-governance; open academy for Philippine agriculture; and e-Libraries were demonstrated.
MARDI, Malaysia
Dr. Kamarudin Saadan, Director, Information Resources Management Division, MARDI

Knowledge-based agriculture is the main thrust of new agriculture policy of the government and dissemination of vast amount of research information to all stakeholders is considered the main challenge. The e-commerce initiatives in the agriculture sector were the main highlight of the presentation.

Session II (contd…): NARS Status Reports

Chairperson: Dr. R.N. Sapkota, Executive Director, NARC
Co-chairperson: Dr. William Padolina, Deputy Director General, IRRI

JIRCAS, Japan
Prof. Seishi Ninomiya, National Agriculture Research Organization

Technical aspects of developing agricultural information systems illustrated through relevant examples from Japanese agriculture were discussed. Suggested key points for a RAIS included: efficient data collection, avoidance of dead storage of data, efficient data sharing and utilization through a Distributed Data Grid, multilingual information exchange, effective knowledge management, user-friendly system, linkage to e-business, and easy maintenance and cost reduction.

PARC, Pakistan
Dr. Ashraf Tanvir, Director Scientific Information, PARC

General information about Pakistan agriculture and agriculture-related web sites developed by PARC institutes/universities were presented. A list of databases offered by PARC was also provided and current emphasis on “virtual library” concept was highlighted.

RDA, Republic of Korea
Dr. Keun-Seop Shim, Senior Researcher, Informatics Division, RDA

The Urban-Rural digital divide was analyzed using various parameters. RDA’s multi-pronged ICT strategy includes: bioinformatics, precision agriculture and mechatronics, e-AgCommerce, cyber extension and education system. Need for greater cooperation among regional NARS for the promotion of information sharing was discussed.

COA, Taiwan
Ms. Jane Lin, Chief of Information Management, COA

Promoting the computerization of agricultural wholesale market, network covering farmers’ organization, information portals on food safety, and ICT capacity building at the farm level were presented as salient features of e-agriculture initiative of COA.

DOA, Thailand
Mr. Somchai Charnnarongkul, Deputy Director-General, DOA
The components of three-year master plan of DOA were presented. The plan puts emphasis on R&D for crops to enhance commercial competitiveness, food security and safety, and basic and applied R&D in agriculture.

**IAC, New Caledonia**  
Mr. Thierry Mennesson, Director General, IAC

General information about telecommunication infrastructure of New Caledonia and IAC’s web site (available in French) were presented.

**MARD, Vietnam**  
Dr. Nguyen Van Bo, Director General, Department of Science, Technology & Product Quality, MARD

MARD web site (available in Vietnamese) provides information on research system organization, agricultural scientists, research projects and results, S&T publications, advanced technologies, and national and ministerial standards. Challenges facing ICT in Vietnam ARD were discussed.

**MAFF, Western Samoa**  
Mr. Matalavea Siaosi, Principal Research Officer, MAFF

ICT in ARD is in early stages of development in Western Samoa, an isolated Pacific Island country.

**Discussion**

Session Chair invited concluding comments/remarks on NARS Status Reports presented in Session II from Dr. Paroda and Dr. Giovannetti. Dr. Paroda congratulated the NINPs and NARS leaders for their informative presentations on status of ICT in their respective NARS and it was felt that these would serve a meaningful purpose of identifying strengths and weaknesses in the current implementation strategies for ICT/ICM in ARD. He urged NARS leaders to be more supportive of ICT initiatives and NINPs to be proactive as strengthened information exchanges both within and among the NARS of the region will benefit all the stakeholders. He also informed that the status reports prepared by NINPs of member NARS would also be of help to APAARI with, providing useful data for the upcoming APAARI publication entitled “Role of ICT in ARD: Status and Progress in the Asia-Pacific Region.” The publication is under preparation with support from FAO-RAP and ISNAR and due to be out in 2004. Dr. Giovannetti remarked that presentations reflected a healthy portfolio of information on ICT/ICM in NARS of the Asia-Pacific Region and considered it as a necessary exercise for further articulating a global agenda on ICM in ARD.

**Session III(a): Demonstrations on Existing ICT Opportunities**

*Chairperson: Prof. Gajendra Singh, AIT*  
*Co-chairperson: Dr. Jean-Francois Giovannetti, GFAR*

**FAO ICM Models and Tools**  
Mr. Michael Riggs, FAO-RAP

FAO’s strategic framework for agricultural information management and dissemination through World Agricultural Information Centre (WAICENT) was outlined. WAICENT enables member nations to access agricultural information essential for reducing poverty, achieving food security and sustainable rural development. WAICENT acts as a clearing-house for information, establishes norms and methodologies for quality; develops standard categorization schemes; implements metadata for efficient storage, dissemination, search and retrieval. WAICENT also provides an intergovernmental forum for members
and outreach for agricultural development, food security and capacity building through transfer of best practices in information management systems and tools development to national and international information providers. FAO’s AGRIS, IMARK, VERCON, Virtual Library, and various capacity building programs were also introduced.

ICT-KM Program of the CGIAR
Ms. Enrica Porcari, CGIAR

CGIAR’s vision for the next five years, which revolves around greater use of ICT in knowledge management, was presented. CGIAR envisions to be an organization without boundaries, a leading provider of educational content, one of the most authoritative and highly visible information sources on international agricultural issues, an internationally distributed but unified Knowledge Organization, an essential partner in collaborative international agricultural research by allowing all staff to have access to high capacity computing and communication. The main projects and thrusts under to achieve these objectives are ICT for Tomorrow’s Science, Content for Development, and a CGIAR without Boundaries.

ISNAR ICM Models and Tools
Dr. Ajit Maru, ISNAR

ISNAR’s information resources, available in English, French and Spanish, are classified as Products and Services, which are delivered through printed and digital media. These resources, including Databases, Catalogues, Indexes, Search Engines, Archives, and a Virtual Library, cover a wide range of topics relevant to NARS. ISNAR also offers capacity building support to NARS through training programs and materials.

Virtual Academy for Semi-Arid Tropics (VASAT)
Dr. V. Balaji, ICRISAT

The VASAT is a strategic coalition of partners with dry land farm communities and intermediaries as its core focus. The coalition includes international agricultural research centers, advanced research institutes, national open universities, national agriculture and extension systems, international development organizations, civil society organizations and community-based groups. It aims to mobilize communities and intermediaries of the dry tropics by sharing information, knowledge and skills related to climate literacy, drought preparedness, and best practices in dry land agriculture and other relevant issues. VASAT does this through an innovative interface of ICTs and distance learning. VASAT’s main focus is creating demand-driven content that can be easily utilized by rural communities and intermediaries; content that balances generic and location-specific information. The ultimate goal is to convert scientific know-how into field-level do-how.

APAN Agricultural Working Group
Dr. Seishi Ninomiya, NARO

Asia-Pacific Advanced Network (APAN) is a non-profit international consortium established on 3 June 1997 with a mission to prepare high performance network services for research and education and accelerate collaborations in the Asia-Pacific research and education communities. It holds a meeting twice a year. APAN projects and programs cover Agriculture, Fishery, Forestry, Earth Monitoring & Disaster Warning, Meteorology, Bioinformatics and Biotechnology, Biological Diversity and Ecology, etc. Current participants include institutions from Australia, Bangladesh, Canada, China, Japan, India, Indonesia, Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, USA, Vietnam, IRRI, APRTC, WMO, FAO. Asian Federation of Information Technology in Agriculture (AFITA), founded in 1998, was also introduced.

Successful Global Research Databases: FishBase and ReefBase
FishBase and ReefBase were developed with an objective to create awareness of fish and provide information on various aspects of fisheries and aquaculture. Database development process faced several issues such as governance and ownership, mobilizing resources for sustained development and operation, maintaining information current, and networking and access. It also addressed challenges of data and information explosion and quality.

APRTC- A Distance Education Initiative for ARD
Dr. Robert Raab, APRTC

Using a framework of Global and Local Agricultural Knowledge Systems, Asia-Pacific Regional Technology Centre (APRTC), a non-profit organization headquartered in Bangkok, Thailand, focuses on promotion of sustainable agriculture and natural resource management through ICT-based eLearning programs (agLe@rn) to upgrade the skills and knowledge of farmers and agricultural professionals. APRTC’s partners and collaborators include CropLife, WorldView International Foundation, IFDC - International Center for Soil Fertility and Agricultural Development, Tamil Nadu Agricultural University, University of Agricultural Sciences – Bangalore, G.B. Pant University of Agriculture and Technology, Asia Pacific Advanced Network (APAN), ITC’s e-Choupal Initiative, Rockefeller Foundation, University of the Philippines Los Banos, Kasetsart University of Thailand, Punjab Agricultural University of India, and Japanese Ministry of Agriculture, Forestry and Fisheries Information Network (MAFFIN).

AIT’s ICT Capacity Building Programs
Dr. Charoon Chirapaisarnkul, Director, IT Unit, AIT Extension

AIT is an international graduate institution of higher learning with a mission to develop highly qualified and committed professionals who will play a leading role in the sustainable development of the region and its integration into the global economy. It has trained over 4,000 individuals in the region through its ICT related short-term education and non-degree training programs. It offers state of the art facilities and international resource persons specializing in a wide variety of academic fields. AIT has been associated with APAARI for the past several years and this partnership will continue to work in areas of mutual interest.

Private/NGO Initiatives in India
Mr. Sunil Khairnar, ISAP/AgriWatch.com

Indian Society of Agribusiness Professionals (ISAP), is a non-governmental organization operating 83 Information Centres throughout India to address the information needs of farmers. About 125,000 farmers have also become its members and are getting the benefit of up-to-date information on agricultural markets, weather, and best practices. ISAP is a unique experiment and its outcome makes following recommendations for increasing ICT based private initiatives:

- The government extension department should accept that they cannot reach 0.6 million villages on their own. The governments (state and center) should play the role of the enabler by harnessing the experience and expertise gained by the existing initiatives.
- Most of the successful initiatives have a critical component in its chain – the village level entrepreneur who invests in and runs the kiosks from where the services are disseminated. The government could play a decisive role here by
  - Ensuring availability of space at strategic locations (e.g., regulated markets)
  - Digitizing all available content available with Public Research Agencies
- For all the e-governance related initiatives/services, the administrative machinery at district level could play a key role by prioritizing the on-line conversion of as many services as possible and facilitating the usage of ICT delivery modes
- Providing Syndicated content from various govt. departments in the area of health, education and agriculture to the various initiatives on commercial terms
- Public Agencies should not compete with the services offered by small private entrepreneurs after they have launched their services at a particular location.
- Human Resource Training and Development on the lines of what is being executed by MANAGE in the context of Agri-clinics.
Session IV: Group Discussions on APARIS

This session was devoted to group discussions in the wider context of APARIS framework and functioning. Detailed guidelines and an APAARI working paper on APARIS were distributed to all the participants. Four groups, each focusing on one category of users, deliberated upon the following points:

1. Adequacy of APARIS framework to respond to this target audience.

2. New features/content/meta-content that could be added to APARIS to make it responsive to this target audience.

3. Role of NINPs: Features/content/ meta-content that NINPs can directly contribute to APARIS for this particular audience?

The groups were divided as follows:

Group I
ICT for Science & Technology Information
Moderator: Dr. Jean-François Giovannetti, GFAR
Dissemination (how to reach students/professionals)

Group II
ICT Networks of ARD Professionals
Moderator: Dr. Ajit Maru, ISNAR
(how to reach ARD professionals)
Members: Mohammad Reza Moghim, Seishi Ninomiya, Ipul Powsue, Delia Delfino, Keun-Seop Shim, SMP Chandra Padmini, Jane Lin, LT Hong, Paul Teng, JS Sindhu, CLL Gowda, Fulvia Bonaiuti, Aisel Gharedaghli, Satoru Miyata, Kenichi Hito, Matalavea Siaosi, Sim Heok-Choh, Sherali Numatov, PK Saha, Enrica Porcari

Group III
Extension through ICT
Moderator: Dr. Malcolm Hazelman, FAO-RAP
(how to reach farmers)
Members: Bhola Man Singh Basnet, Sunil Khairnar, V Balaji, Maria Luz, Simon Wilkinson, Kamlesh Prakash, Nicomedes P. Eleazar, Margaret Yoovatana, L. T. Hong, Erna M. Lokollo, Eric Johnson, Myra Wopereis-Pura, Khairuddin Tahir

Group IV
ICT in Research Policy Formulation
Moderator: Dr. R.D. Ghodake, PNG
(how to reach ARD institutions)
Session V: Recommendations of APARIS Discussion Groups

Chairperson: Dr. Mangala Rai, Director General, ICAR
Co-chairperson: Dr. P.S. Faylon, Executive Director, PCCARD

The moderated discussions resulted in defining the essential components of an agricultural information system at national, sub-regional, regional, and global levels; information exchange protocols among different levels; set of activities to be performed at various levels to have a functioning regional agricultural research information system; tools/technologies needed/available to have such a system, or how existing ICT initiatives of other ARD organizations can also be integrated with APARIS; and nature and level of commitment from individual NARS participating in APARIS and APARIS support group organizations, including GFAR, ISNAR, ACIAR, AIT, other CG Institutes, and FAO. Each group presented its outcome as follows:

Group I: ICT for Science & Technology Information Dissemination

The group considered promotion of regional capabilities through APARIS for e-learning to target undergraduate students, graduate students, non-degree students, instructors, and professionals. The identified information needs of this audience were access to existing national agricultural universities resources and access to existing e-learning resources at national and sub-regional levels. It was emphasized that APARIS stakeholders could help development of E-Course contents using English in the very beginning and translating these contents into local languages at a later stage. The potential of machine translation was also discussed.

APARIS could collect and/or update APARIS database related to universities and e-learning initiatives in the region, facilitate scaling up of successful e-learning initiatives, identify students and teachers demands for e-learning, develop guidelines for teachers to use APARIS in their courses, facilitate financial resources mobilization for developing and/or training on e-learning packages and technologies.

The suggested role of NINPs in this proposed initiative was to supply information to APAARI related to the universities, training institutes, and e-learning initiatives in the country, provide calendar of training events, and transfer of expertise of strong NINPS to other NINPS.

The group proposed the following action plan and the related means:

- Build an inventory of existing Agricultural Universities within the region
- Build an inventory of existing e-learning initiatives
- Work as a platform for identifying students, teachers and professional demands. This may be done through creating an e-forum on this subject and/or developing an on-line questionnaire
- Facilitate financial resources mobilization for developing and/or training on e–learning packages and technologies
- Facilitate e-learning technical packages identification

Group II: ICT Networks of ARD Professionals

The group agreed that ICT enables new forms of collaboration such as alliances, consortiums, on-line communities and networks of ARD professionals and the role of APARIS is primarily of intermediation with suitable value addition. The principles and frameworks for NAIS/RAIS/GAIS assume equity and homogeneity in contribution, availability, access, usefulness and relevance of information. This not the reality of the Asia-Pacific region. The parameters of inequity and heterogeneity must be considered for the success of APARIS.

Discussion point 1: Is APARIS Logical framework (2000) adequate to respond to this target audience?
No, it is inadequate. The APARIS role requires cooperation and collaboration from its members. The framework does not include this vital role. APARIS is to intermediate information sharing and exchange between its Institutional members and has to add value to the information shared and exchanged to be useful in the intermediation process. The APARIS role is not only technological and in content sharing and exchange but of advocacy and in creating political will to use ICT to communicate and use agriculture related information effectively and efficiently among its members and their stakeholders in the Asia-Pacific Region effectively and efficiently. The suggestion put forward was that APAARI/APARIS should enable, foster and advocate collaboration, cooperation and coordination for effective and efficient agriculture related information flows in the Asia-Pacific region; capacity for information and communications management and content development; and capital investment in agricultural information systems at National, Regional and Global levels.

**Discussion point 2: What new features/content/meta content could be added to APARIS to make it responsive to this target audience?**

In addition to Institutes, Experts and Projects databases APARIS has to facilitate and mediate to foster cooperation in sharing and exchange of information on new technologies; access to Asian Scientific and Technical Information and “harvesting” of information not “hunting.” It should represent its stakeholders to discuss, mediate and negotiate data exchange standards; create an information repository for SPF (Specific Pathogen Free) and similar standards for Asia-Pacific region; enable collaboration for georeferenced, weather/climate data, expert systems, decision support systems and models in the Asia-Pacific region; and enable collaboration to utilize capacity within APAARI members to generate content for the region.

**Discussion point 3: What features/content/meta-content NINPs can directly contribute to APARIS for this particular audience?**

NINPs must have greater exposure within their systems as representatives of APARIS and need further support from their systems to enable sharing and exchange information through APARIS. With introduction of ICT, there are new information flows and new ways to manage content in the NARS. This needs new capacity within the NARS to restructure. APARIS has to examine how NARS can be enabled with these capacities. With regard to the commitment of APARIS support group, the group felt that there is commitment by representatives of members and stakeholders. However, there is a very serious issue of diminishing funds to support existing information systems and networks to maintain and renew them. APAARI must raise this issue at all stakeholder/donor events. There will be a need for a well documented brief on this issue.

**Group III: Extension through ICT**

The discussion started with identification of farmers’ information needs and ICT based delivery channels for meeting these needs. In this context the group suggested that APARIS cannot address localized needs due to language, specificity, and resources. It should address needs related to Experts, Production and Post Harvest Technology with a focus national, regional and international issues. It can facilitate digitization and aggregation of content in usable formats. Further, it should study and share best practices across the region.

**Group IV: ICT in Research Policy Formulation**

For agricultural policy formulation, planning and projection, R&D priority setting, and science & technology (S&T) management, the group identified information requirements, including macro level data, agricultural S&T indicators, social and environmental data. It was suggested that the information should be frequently updated, processed, formatted and summarized in a uniform language. APARIS could play a role of intermediary among NINPs (including Institutions), universities, ministries, statistical agencies, private sector and national and international agencies.
The group felt that the APARIS framework is adequate but requires more links and updating. It should have more information on research priorities at regional, sub-regional and national levels in a standardized format. The group highly recommended nomination of one full-time person for APARIS in each member institution.
Final Recommendations on Strengthening APARIS

Dr. Giovannetti presented the final recommendations of the four discussions groups, which are as follows:

- Agriculture is becoming more knowledge-intensive as it becomes more market-oriented in a globalized world. The use of ICT is vital in this agriculture.
- In the Asia-Pacific region, there are several hot-spots of rural poverty (dominated by smallholders), information and knowledge sharing using conventional and new ICT together has great potential for improving agricultural productivity and alleviating poverty.
- APARIS, as a RAIS and regional information intermediary, and APAARI as a regional organization, have critical roles in improving the efficiency and effectiveness of information and knowledge flows related to agriculture in the Asia-Pacific region.
- Further enhance relations between NARS represented by NINPs and APARIS for greater collaboration in information exchange.
- Build capacities among NINPs in ICT/ICM.
- Improve APAARI’s advocacy role in the area of ICM for ARD.
- Identify ICT indicators and status of the NARS and member institutes.

It was stressed that a draft action plan based on above recommendations be reviewed by APARIS Steering Committee and modified accordingly before submission to APAARI Executive Committee for endorsement.

Concluding Remarks

Dr. Iwamoto, as APAARI Chairman, was invited to offer some concluding comments. He endorsed the recommendations made in the plenary session. He further informed that JIRCAS will consider ways to support APAARI’s ICT initiative through APAN.

Dr. Paroda thanked all the participants for their active participation and inputs. He remarked that diverse participation is APAARI’s strength and the present gathering is an evidence of that. He informed that APAARI has come a long way in its core initiatives on ICT, research networking, and agricultural biotechnology though a focused and collaborative approach. He hoped that APARIS Steering Committee and NINPs will be more active in future and the APAARI collaboration with NARS, ACIAR, JIRCAS, APAN, and CG Centers will be further strengthened in near future. He concluded with thanks to Dr. Iwamoto, the APAARI Chairman; Dr. Beltagy, the Session Chair; the NARS leaders; the heads of CG Centers present; AIT administration and staff, particularly Prof. Gajendra Singh; NINPs; invited participants; and the APAARI Secretariat staff.

Dr. Beltagy, the session chair, in his concluding remarks that the participants have made significant contributions through their technical inputs. He suggested that the CG Centers will continue to work with NARS. He expressed satisfaction that the representatives from GFAR and other regional forums were also invited and presented their valuable inputs. He reiterated continued ICARDA support to APAARI in future.

Finally, Prof. Gajendra Singh thanked all the participants and his staff for making the meeting a success.
APARIS Steering Committee Meeting

The 2nd Steering Committee Meeting of APARIS was held at the Asian Institute of Technology on 3rd December 2003. Dr. R.S. Paroda chaired the meeting. The following were present:

Dr. A. Tanvir (NINP, Pakistan as Vice Chairman), Dr. P. Faylon (Member), Dr. J. Giovannetti (GFAR), Dr. M. Hazelman (FAO), Dr. Gajendra Singh (AIT), Dr. A. Maru (ISNAR), Dr. Sahdev Singh (Secretary). The meeting observers included Dr. A.K. Jain (NINP, India), Mr. B.S. Basnet (NINP, Nepal), and Mrs. S. Padmini (NINP, Sri Lanka).

Dr. R.S. Paroda welcomed all the Steering Committee members and invited comments on the draft agenda of the meeting. The approved agenda of the meeting was:

1. Review the TORs of the APARIS Steering Committee
2. Reform the Steering Committee in view of vacancy of Chairman
3. Review the APARIS Framework and prioritize activities from a list of ideas, concepts and recommendations that emerged at the 3rd Expert Consultation to develop an action plan for APARIS
4. Any other matter, by permission of Chair

Proceedings: The deliberations focused on the following:

1. The TORs of the Steering Committee were reviewed. The TORs were found to be quite adequate. However, it was felt that the Steering Committee should be more active in its oversight role in monitoring the progress of APARIS. This was accepted by the members and they agreed to be more regular in their communication and advisory role.

2. In view of the vacancy left by ACIAR, Australia as Chairperson and member of the Steering Committee, the Chair invited suggestions to fill the gap. After deliberations it was decided to invite Dr. Seishi Ninomiya of APAN to be the member of the Steering Committee and also to Chair the Steering Committee. Dr. Ninomiya has distinguished himself as being member-secretary of Asian Federation of Information Technology in Agriculture and as a representative of APAN. The nomination and decision to invite Dr. Ninomiya was accepted unanimously. It was also agreed that the term of the Steering Committee be for two years and be approved by the General Assembly of APAARI. Since next General Assembly will take place in December, 2004, it was agreed that same Steering Committee may continue for another one year, except for the change in Chairmanship.

3. The APARIS framework was reviewed and an action plan was developed as follows:

   National Level:
   - Ensuring assignment of responsibilities to NINPs through NARS leaders – NARS Leaders.
   - Redesign of NARS websites for information sharing and exchange - NINPs
   - Needs Assessment and Formulation of National ICT/ICM Proposals – NINPs to inform
   - Facilitating Mobilization of Funds for ICT and ICM – NINPs to inform

   APARIS Level:
   - ICT Status Report – Dr. Sahdev Singh, Dr. Ajit Maru and Dr. Jean Francois Giovannetti
   - Brochure on ARD Information – APAARI Secretariat, ISNAR, FAO
   - Training of NINPs especially for least developed NARS – APAARI Secretariat
   - Orientation program for NARS Leaders – APAARI Secretariat and AIT (Dr. Gajendra Singh)
   - Regional proposal for seeking donor support – APAARI Secretariat

It was agreed that the Steering Committee will monitor the progress on each activity as listed in the framework and periodically report to APAARI Executive Committee. Dr. Paroda, as Chairman, thanked the members and observers to the meeting for their participation and valuable suggestions.