

Expert Consultation on the Development of an Asia-Pacific Agricultural Research Information System (APARIS)

6-7 November 2000

Chiang Rai, Thailand



P R O C E E D I N G S



ASIA-PACIFIC ASSOCIATION OF AGRICULTURAL RESEARCH INSTITUTIONS
FAO REGIONAL OFFICE FOR ASIA & THE PACIFIC
BANGKOK

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PROCEEDINGS



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CONTENTS

PREFACE	v
LIST OF ACRONYMS	vii
INTRODUCTION	1
INAUGURAL SESSION	2
TECHNICAL SESSION I: A FRAMEWORK FOR A GLOBAL AGRICULTURAL RESEARCH FOR DEVELOPMENT INFORMATION SYSTEM	3
The Changing Nature of Agricultural Research	3
ICT Status at ACIAR	3
The Global Vision for Agricultural Information Management (AIM)	4
Applying the Vision for a RAIS for the Asia-Pacific	5
The Role of RAIS in Building a Global Information System	6
Digital Literacy Course	7
Discussion	7
TECHNICAL SESSION II: CURRENT ICT STATUS IN THE ASIA-PACIFIC REGION	8
Regional Status Report on ICT Networking : APAARI	8
SWOT Analysis of Agricultural Research Information System in the Region	11
Logical Framework	11
TECHNICAL SESSION III: TOWARDS AN APARIS	12
PLENARY SESSION	14
Working Group Reports to the Plenary	14
Proposals for Advancing the Establishment of APARIS Under the Aegis of APAARI	16
ANNEXURES	
Annexure 1: Programme	17
Annexure 2: List of Participants	20
Annexure 3: Logical Framework	24

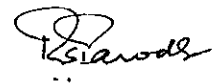
PREFACE

APAARI has been establishing and improving its capacity to facilitate information exchange and communication among its members and other stakeholders as a primary objective. There is an active programme of publication of “success stories”, meeting reports and thematic reports (e.g. on Genetic Resources); A website is operational; and an information manager with ICT skills appointed. APAARI has prepared a project proposal on Knowledge Information Systems (KISS) in collaboration with CABI and ISNAR, which aims to support further development of APAARI’s information system and provide information management training to NARS.

Concurrent with these developments, the global forum (GFAR) launched its initiatives for facilitation of development of a global knowledge system for agriculture, which aimed at coordination and strengthening of existing efforts, and providing support for new initiatives. The electronic global forum for agricultural research (EGFAR) was established and a system of regional agricultural information systems devised (RAIS). The APAARI secretariat drafted a status paper taking into account responses in a round of e-conferencing with ICT managers of NARS Members, in which a strategy was proposed for information management through an Asia-Pacific RAIS.

APAARI is grateful to GFAR for the financial support to organize this Expert Consultation and to Department of Agriculture (DOA) for hosting the meeting at Chiang Rai, Thailand from 6-7 November 2000. We are also thankful to all the members and the associate bodies for their contributions to the success of the meeting and look forward to develop close collaboration with them.

These proceedings deal with the deliberations of this consultation, proposing the establishment of an Asia-Pacific Agricultural Research Information System (APARIS) under the aegis of APAARI. Obviously, therefore, APAARI considers this to be a challenging task to put APARIS in place so as to serve its stakeholders more effectively.



(R.S. Paroda)
Executive Secretary, APAARI

LIST OF ACRONYMS

ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
APAARI	Asia-Pacific Association of Agricultural Research Institutions
APAN	Asia-Pacific Advanced Network
APARIS	Asia-Pacific Agricultural Research Information System
APHCA	Animal Production and Health Commission for Asia and the Pacific
AREEO	Agricultural Research, Education and Extension Organization
ARD	Agricultural Research for Development
BARC	Bangladesh Agricultural Research Council
CABI	CAB International
CARP	Sri Lanka Council for Agricultural Research Policy
COA	Council of Agriculture
DOA	Department of Agriculture
FAO	Food and Agriculture Organization of the United Nations
GFAR	Global Forum on Agricultural Research
ICAR	Indian Council of Agricultural Research
ICT	Information Communication Technology
INP	Information Nodal Point
IRRI	International Rice Research Institute
ISNAR	International Service for National Agricultural Research
JIRCAS	Japan International Research Centre for Agricultural Sciences
MARDI	Malaysian Agricultural Research and Development Institute
NACA	Network of Aquaculture Centres in Asia-Pacific
NARC	Nepal Agricultural Research Council
NARI	National Agricultural Research Institute
NAIS	National Agricultural Information Systems
PARC	Pakistan Agricultural Research Council
RAIS	Regional Agricultural Information System
RDA	Rural Development Administration
SWOT	Strengths-Weaknesses-Opportunities-Threats

INTRODUCTION

The five-year Perspective Plan of APAARI published during 1995, among its five strategies for strengthening ARD in the Asia-Pacific region, laid high priority on promoting information and communication among member NARS and other stakeholders for exchange of knowledge on agricultural research for development. Subsequent General Assemblies (1996, 1998) further stressed on ICT networking in the region. In this context, in 1999, ACIAR in association with APAARI and CABI had submitted a proposal "Establish Knowledge Networks to Facilitate Development and Dissemination of New Agricultural Technologies in Asia and the Pacific", to ADB. Further, independently of this initiative, based on recommendations of the General Assembly meeting held in Korea in 1998, action was initiated by APAARI with ACIAR support, to strengthen ICT needs at its secretariat at FAO-RAP Bangkok, and an Information Technology Manager was appointed and Infrastructure developed.

APAARI Vision 2025 also specifically highlighted the strengthening of ICT networking in the region, and this was deliberated upon in the APAARI General Assembly meeting at FAO-RAP Bangkok in 1999. In the ICT meeting held at Rome and that organized by GFAR 2000 at Dresden, the increased need for such activities on regional basis was advocated. The present ICT Consultation is the first one being organized in the Asia-Pacific region by APAARI, with support from GFAR. It is intended to review the current status of Information Communication in national programmes/NARS, identify crucial ICM/ICT issues and challenges for further development, elaborate the role of different stakeholders and plan a framework for further activities keeping NARS needs in view.

The Expert Consultation was conducted in three technical sessions. The name Asia-Pacific Agricultural Research Information System (APARIS), as suggested by Dr Paroda, was adopted. Session I and II apprised the participants about the current status of the use of Information and Communication Technology (ICT) in Agricultural Research and Development (ARD) globally, in regional settings and within individual NARS. Status reports for all the NARS members of APAARI had been prepared and the outcome was very promising. In Session III the ICT-ARD strategy for APAARI to move towards APARIS was discussed. In a round table discussion the participants agreed on the scope for APARIS in terms of subject matter, stakeholders, geographical coverage, communication media and language. In the second part of this session participants were organized into 4 working groups to work on four aspects of the strategy:

- HRD and organizational management for ICT within NARS
- Regional databases and information resources
- A gateway function for APARIS
- Organization and management of an APARIS

In the plenary session, chaired by Dr R.S. Paroda, Executive Secretary of APAARI, the preferred options and action plan for the road ahead was collated from the results of different sessions and put together for endorsement by the General Assembly of APAARI later in the week. The following provides a brief report on the deliberations of each session.

INAUGURAL SESSION

The Expert Consultation on the Development of Asia-Pacific Agricultural Research Information System (APARIS) was held at Chiang Rai, Thailand during 6-7 November 2000. Mrs Prapaisri Pitakpaivan, Deputy Director General, Department of Agriculture and Chief Guest, inaugurated the meeting. Twenty-seven participants attended the meeting and these involved, twelve Information Nodal Points who are Information Officers in each NARS countries namely Bangladesh, Nepal, India, Iran, Japan, Korea, Malaysia, Pakistan, Papua New Guinea, Sri Lanka, Taiwan, and Thailand. There were participants from agricultural sub-sectoral networks namely APHCA, NACA; and key players in Agricultural Research Development (ARD) and information management namely ACIAR, CABI, FAO, GFAR, ISNAR and IRRI. Other seven participants were the APAARI Staff and observers from the Department of Agriculture (DOA), Thailand.

Mrs Pitakpaivan in her inaugural address welcomed all participants on behalf of DOA. She pointed out that the Expert Consultation should come up with suitable guidelines to establish and promote the agricultural information system for the Asia-Pacific region. Moreover, the issues on conservation and utilization of plant genetic resources within the Asia-Pacific Region are relevant to the breeding programmes in all NARS. She stressed on the role of information networks in conservation and use of bio-resources, including the documentation of plant genetic resources, and the development of PGR Information Systems for the region.

Dr Ian Bevege, Chairman and Dr R.S. Paroda, Executive Secretary of APAARI, highlighted the importance of joining hands in building up an Asia-Pacific Agricultural Research Information System (APARIS). Dr Paroda stressed on the role of APAARI as the neutral forum in the Asia-Pacific region, to facilitate and coordinate the use of Information Communication Technology (ICT) in strengthening agricultural research for development. He also thanked all participants specifically for their contribution in synthesizing the individual country, regional, and global ICT status papers, which provide an update of ICT situations in the region. This available well-documented information will serve as a good background for further planning of regional ICT activities in order to achieve the successful establishment of Asia-Pacific Agricultural Research Information System (APARIS) in the region.

Ms Achara Jantarasengaram, IT Manager APAARI proposed a vote of thanks to the Chief Guest, Chairman and Executive Secretary of APAARI, to DOA for hosting the meeting, and to all delegates for timely contributions of their ICT status papers and valuable suggestions.

TECHNICAL SESSION I: A FRAMEWORK FOR A GLOBAL AGRICULTURAL RESEARCH FOR DEVELOPMENT INFORMATION SYSTEM

The session was chaired by Dr Fernando Chaparro, GFAR, who stressed on the sharing of information from globally recognised Agricultural Information Service Providers who are more advanced in the setting up, using, providing, supporting, and training in the use of ICT. Presentations were made by FAO-WAICENT, CABI, ISNAR, GFAR and IRRI. They are summarised below.

The Changing Nature of Agricultural Research

Dr Stein W. Bie

Much of the national agricultural research in developing countries has been and remains commodity based, whether undertaken in public or private sector. The Consultative Group on International Agricultural Research (CGIAR), was also born out of commodity research orientation. The scientific reorientation of the CGIAR reflects growing awareness of the complexity of rural life on the edge. In universities, in farmers associations and NGOs, there are stronger traces of ecoregional research, farming systems research, and more holistic approaches to rural livelihoods than in public research elsewhere.

There are realisations both at international and national level that new tools must be found, or old tools re-employed, in order to address the intrinsically most severe rural livelihood challenges of the poor. This realisation has significant implications for the needs for information and the requirements for information processing. In the early development of information science for agricultural research much emphasis was laid on connectivity. However, the investments in connectivity cannot be carried by agriculture but by richer and arguably more dynamic sections of economic life. They will reach the last village out of considerations beyond farming.

Connectivity must be democratised to have impact on and change science. To fully utilise ICT as a valuable contributor to heightening the quality of science, institutions must develop a knowledge-sharing culture. Incentives must be designed to favour solely the individual research scientists, and also the team. Younger research scientists must have equal access to ICT facilities as their seniors do, and be encouraged to use their often superior computing skills to the benefit of the team. Supervisors must be trained in giving encouragement to new modes of communication without abandoning quality assurance criteria. In short, institutions should view investments in ICT, based on good standard platforms and good connectivity, as an essential component of building an agricultural research system. Together with these investments must come a new culture of institutional knowledge-sharing, and efficient means of quality assurance.

ICT Status at ACIAR

Dr Ian Bevege

The Centre's headquarter uses a local area network (LAN) running under Microsoft NT system software for the delivery of a wide range of computer applications to a user population of approximately 50 staff. Apart from standard commercial applications provided by Microsoft Office software, the Centre also uses a Sun System accounting package, a project management information system written in Lotus Notes and an electronic document management system called Objective 2000. The Centre is permanently

connected to the Internet running an internal mail server and web server and provides remote access to services such as E-mail. ACIAR has also installed an intranet for internal information sharing purposes.

Information management and communication is very important to ACIAR core business. Technology is used throughout the organization to assist with project and information management. The amount of electronic communication has increased dramatically in recent years and has become more important than the telephone and fax. An electronic document management system (EDMS) has recently been introduced to help organize electronic information.

ACIAR communicates its project research through contribution to several international agricultural online databases. These include:

- ARRIP - Australian Rural Research in Progress; to which we contribute project information from ACIAR's project information system.
- DAI - Development Activity International, run by IDRC in Canada, to which we contribute project information from ACIAR's project information system.
- ABOA - Australian Bibliography of Agriculture, ACIAR's conference proceedings and monograph series are represented here at both the individual paper and the whole project level.

ACIAR has also begun to contribute to the Australian Federal Government AusInfo publications online database.

ACIAR partner countries have limited bandwidth and a lack of technical expertise and equipment. Training of centre staff has also become very difficult, as the organization structure requires staff to be skilled in a large number of software packages. Development of a three year project with Papua New Guinea has been undertaken to build capacity in scientific communication focussed on tertiary teaching, research practice and extension. Other activities include short courses in Scientific Communication in PNG and Cambodia, and Publication of a Guide to Scientific Writing for non-English Speakers (i.e. English as a second language).

A two-year IT plan is currently in force and a new plan will be developed in conjunction with the ACIAR corporate plan. A three-year hardware and software plan has also been developed to assist planning and forecast budgetary requirements.

ACIAR is heavily dependent on its IT systems to achieve its core business goals and continually invests in technology and staff as the centre recognizes the efficiencies that can be gained from technology investment.

The Global Vision for Agricultural Information Management (AIM)

Dr E. Dodsworth, CABI

Dr Elizabeth E. Dodsworth, CABI, and Dr Stephen Rudgard, FAO-WAICENT, jointly reported on these topics; Dr Dodsworth highlighted the global aspects of Agricultural Information Management whereas Dr Rudgard focussed on the practical implications. Their presentations are summarised below:

Information does not necessarily result in improved decision making. Information properly applied can save lives and improve livelihood and ultimately contribute to agricultural development and food security.

Improved audio/visual aid to enhance R&D performance is a tool. Information should be need based and demand driven. Knowledge sharing involves issues of Intellectual Property Rights (IPR). Access to information should be related to evaluating content.

The internet is accessed by 276 million persons worldwide (150,000 new users per day). There are 220 million devices accessing the internet (200,000 added daily). There are 1.5 billion web pages

(2 million added each day). This is the scene in which agricultural information on the web should be evaluated and disseminated through proper channels.

Knowledge bases tend to be written in local languages. How to bring in other languages is something to consider.

In the internet environment one has to consider who are the end-users. Once the information is available, the end-users base spreads (unexpected users are also demanding specific information).

The following are just some features of the global scene: Publishers' information (scientific paid-for networks); Community development (e.g. CABI's www.animalscience.com); National gateways are being developed (AGRIGATE, NOVAGATE (Scandinavia), BIOME (recently launched in UK), AgNIC (US Libraries); FAO-WAICENT is having commitments to strengthen ARD. Information is paid for. Standards are applied. If one needs to achieve quality standards, funding needs to be ensured.

On the global scene we find 'supergateways' that help aggregate information. Top level domains are coming up. Dot health is being launched. Will we have a dot agric in addition to dot com in future?

The value chain, already presented on numerous occasions, points out that enabling information technology finally leads to more benefits to farmers.

At the same time we have to come from the conventional model of linear transfer of information (from research through extension to farmers) to exchange networks that connect farmers and researchers. Training of extension workers in participatory approaches is needed.

To deliver this vision you need human resources, systems, content and community development.

Human resources are needed in the fields of Strategy and Policy (Influence Decision-makers; show Cost-Benefit; Policy reforms that regulate growth of the information economy, co-ordinate training and allow free flow of knowledge.

Content is important in information flows, standards and guidelines. Specific objectives in this field are to broaden (digital) global knowledge base; foster indigenous capacity to mobilise content; move to open systems and a wider range of publication formats; key technical problems and tools should be addressed; a neutral forum/clearing house for monitoring and applying standards is required.

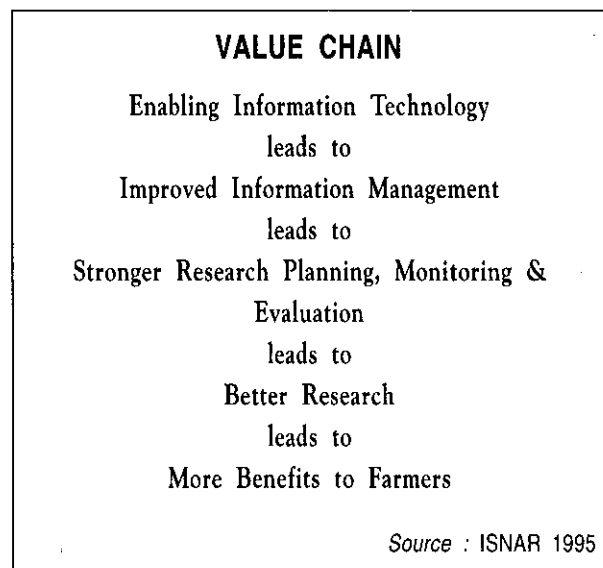
In terms of systems and applications one should consider platform independence, non-proprietary standards, decentralised for data ownership and quality and specialist applications in agriculture.

Community development involves access to rural and disadvantaged communities, appropriate mixes of technology, lower ICT costs and participation of the private sector.

Applying the Vision for a RAIS for the Asia-Pacific

Dr S. Rudgard, WAICENT Outreach Programme, FAO

The most important role of the Regional Agricultural Information Systems (RAIS) is to add value by formulating a unique region-specific resource. The system should avoid duplication of other initiatives and content and it should contribute content from the region to relevant global public sector initiatives in ARD.



The scope of a RAIS has to be defined. It should basically contain information on all aspects related to primary production. Agricultural Research for Development involves a broader public stakeholders and providers of information than Agricultural Research and Development. Sub-regional approaches could be considered.

The fundamental premise of the process is that it should be a participatory system. This means involvement of stakeholders deriving some content from National Agricultural Information Systems (NAIS). The core function of the RAIS will be handled by adequately resourced centre(s) which is/are sustainable. Extra resources may be required to start with.

The essential elements of a NAIS should have senior management support, user involvement, trained information specialists, content, information systems (tools, procedures, ICTs) and finances.

The RAIS functions may be the following:

- Information Management - activities, people, institutions at national and regional levels.
- Regional Reference Centre.
- Collective Activities (HRD/Training, standards and guidelines development, choice of software tools and applications, observatory function for new technologies, consortia for subscriptions).
- Forum activities (as per the Regional Technical Assistance Project proposal: "Establishing Knowledge and Information Systems to Facilitate Development and Dissemination of New Agricultural Technologies in Asia and the Pacific", popularly known as "KISS-proposal" that was prepared by APAARI in association with ACIAR, CABI, Crawford Fund and ISNAR and submitted to ADB for consideration).
- Services where sub-regional and national programmes are not strong enough.

The role of international organizations will be to facilitate and collaborate in terms of capacity building, assist with information management (guidelines, standards, tools) and partly in provision of content.

The following approach could be used in developing a RAIS.

- Prepare and agree to a proposed plan of action with objectives, schedules, inputs and outputs.
- Prepare and agree to a Logical Framework (what to achieve and how to measure it).
- Determine requirement for external funds and seek support as necessary.
- Implement, monitor and evaluate plan of action.

The Role of RAIS in Building a Global Information System

Dr Fernando Chaparro, GFAR Secretariat

All the stakeholders of ARD have identified the problem of access to information and excess of information. They also expressed the need to evolve from information systems towards "knowledge systems" and the need to orient them to the user-needs and be functional as decision-support mechanisms.

In the Rome consultation of March 1999, the desire to develop a knowledge management capacity was connected with a vision of a society where knowledge empowers people and where knowledge-based agriculture can assure food security, poverty eradication and sustainable development.

The global information system is organised in four levels (Community, National, Regional and Global). On the community level the interaction with the end-user takes place. Knowledge management is used to develop and make optimal use of local innovations (examples are InterDev for capturing local knowledge, Prolinnova aimed at systematizing and understanding innovations, PolicyNet aimed at understanding its policy and institutional context). Here the system is an active tool to combine traditional and scientific knowledge.

The national levels are in early stages of development. Main constraints are connectivity, absence of knowledge sharing culture, lack of access, lack of human resources, and lack of compatibility. Positive exceptions are MIKS (Philippines) and SIAGRO (Colombia).

On the regional level the system comprises a systematic linking among information facilities. Important would be the adoption of a common Regional Information Strategy and protocols. A gateway could be developed that facilitates access to information resources. Common information services could be provided and the development of networks and virtual research communities could be encouraged.

At the global level EGFAR is a system of interrelated web-pages that provide a platform for interaction among groups of stakeholders. It has a gateway function and delivers information services through RAIS. It also provides space for electronic fora on specific topics.

The main common elements that emerged from experiences in the regions are:

- Clear delimitation of scope of RAIS.
- Build upon what exists seeking synergies.
- Most databases are kept at national level, with networking at regional level.
- High priority being attached to Gateway function (reference centre).
- High priority to web-enabling.
- Two-step strategy to make it operational: core activities through pooling of resources and additional modules externally funded.

Digital Literacy Course

Dr Paul Marcotte, Head of Information Technology and Training, IRRI (Dr Marcotte also participated in the CORRA meeting held at the same time at the same venue).

Dr Marcotte was given the opportunity to elaborate on the capacity building activities at IRRI in terms of understanding and using ICT.

IRRI trained 30,000 scientists. Some were Research Institute managers but mostly these scholars come from Asia. In 1985-1990 there was a hype of group training.

IT creates a larger divide between those who are able to use new technologies and farmers. An IT course for farmers has been designed. There are also online courses on Digital literacy, English for Agriculture, TropRice (Decision Support Tool).

The issues discussed in the training relate to connectivity/content, targeting an audience, special issues like language, culture and gender (power relations).

Discussion

Mr Bholu Man Singh Basnet, INP-Nepal, suggested that translating information should be supported by illustrations.

Dr Pedro Bueno, NACA suggested that stronger NARS should help the weaker ones in developing their systems that otherwise would lose interest. Dr Chaparro confirmed this and stressed that it is not just a matter of finances but also of ownership.

Dr Anwar Alam, INP-INDIA, asked about the perception of a gateway, being one of the functions of RAIS.

TECHNICAL SESSION II: CURRENT ICT STATUS IN THE ASIA-PACIFIC REGION

The session was chaired by Dr Stein Bie, ISNAR who commended the Information Nodal Officers for their outstanding efforts in contributing the ICT status reports that will form the core of the session. Each INP individually reported on the ICT situation in his/her NARS/NARI in this session.

Ms Achara Jantarsaengaram, IT Manager of APAARI, reported on a survey of the existing ICT for ARD in the Asia-Pacific. The report was based on the response to a questionnaire that was sent to Information Nodal Points (INP) of the member NARS as well as on an electronic conference that was conducted on the same topic with the INPs. Their presentations will be published separately.

Regional Status Report on ICT Networking: APAARI

Ms Achara Jantarsaengaram, IT Manager of APAARI

This paper aimed to promote information exchange and knowledge dissemination relating to agricultural research in the Asia-Pacific region. The suggestions presented in this draft paper were for brainstorming among the participants attending this first ICT Expert Consultation on the development of Asia-Pacific Agricultural Research Information System (APARIS). The consultation is expected to bring about a mutual conceptual framework, which will serve as a basis to harness ICT for agricultural research for development (ARD).

The Perspective Plan of APAARI recognizes partnership as a key principle for APAARI. Working with relevant partners have brought synergistic benefits. More specifically, this mechanism has enabled scientific collaboration cutting across political and economic barriers. The effectiveness of partnership is reflected in the ease and extent with which knowledge and technology are shared between partners.

In today's world of rapidly increasing information technology, the entire international scientific community can be considered as a manpower pool that can be tapped for solving region specific problems. Moreover, the recent convergence of computing technology and telecommunications means that vast amounts of knowledge can be sent anywhere quickly and cheaply, making available to the developing world the large databases, libraries, remote sensing, gene banks, and other sources that were once far too expensive or remote.

The phenomenal growth of electronic networks in the past few years can be used to create a more interactive global agricultural research system. Unlike radio or television, the Internet facilitates two-way communication, making it possible to tap into and share the innovative talents and experiences of farmers and scientists in all parts of the world.

Importance of Information Networks

Information brings about equality. It brings about a new work environment, new work ethics and new work standards. It brings objectivity and analytical capabilities to decision-making and development. It systematically focuses on performance as opposed to patronage. Some scientific organizations have made special access to electronic scientific journals freely available to the developing world, a practice likely to spread because little cost is involved. This means that the world's scientific and technical literature will be available everywhere, in developing as well as industrial countries, as soon as it is published.

Institutions should be connected to international networks and have access to international databases and information on merging technologies. Such an information system consists of management, project, personnel, financial and library information systems.

To harness the benefit of advanced technology, to reap the benefits of economies of scale, linkages with other national and international agencies as well as private sector, will have to be established in a partnership mode.

The participants at a GFAR consultative meeting convened in Rome in March 1999 arrived at a major conclusion on the need to “build an Enabling Global Framework for Agricultural Research Information for Development”, as a first step towards the emergence of a “Global Knowledge System in ARD”. The shared vision could be summarized as : “Knowledge, and an equitable access to it, is essential to achieve food security and sustainable development”.

Four important functions were assigned to the regional/sub-regional level by the Rome Consultation Meeting, and these were to: (a) assess information needs; (b) strengthen the national information systems; (c) establish and/or strengthen key databases and information services through a regional reference centre; and (d) facilitate the access to the global information sources. These have been discussed further to develop a slightly modified structure with a set of six activity areas as follows:

1. *Regional Information Strategy*: a general framework for action, as well as specific guidelines for the establishment of a regional system.
2. *Management Information*: a selection of databases of institutions, activities and resources.
3. *Regional Reference Centre*: a virtual resource mainly comprising links to other documentary and electronic collections.
4. *Collective Activities*: a facilitative function to motivate and to assist the national information programmes to build their own capacities and activities, which in turn will assist the regional networks to gear up their own information activities.
5. *Forum-Knowledge/Development Centres*: subject-oriented groups should increase the efficiency of research by encouraging targeted exchange of knowledge and information.
6. *Services-Scientific and Technical Information*: providing direct information services for users at the regional level.

The Emerging Important Role of ICT in Asia-Pacific Region

In 1999, ACIAR in association with APAARI and CABI had submitted a proposal “Establishing Knowledge Networks to Facilitate Development and Dissemination of New Agricultural Technologies in Asia and the Pacific” to ADB stating that a major drawback for scientists in Asian NARS is the lack of coordination with their peers and they often work in isolation. Many seem to have limited access to good communication facilities that restrict an effective and efficient sharing of information with their colleagues. Such barriers to knowledge and information exchange lead to duplication of research efforts and create pockets of scientific imbalance.

The scientists in some developed NARS have been able to keep pace with the present technological advancements and are thus at an advantage in comparison with their less developed counterparts in the Asia-Pacific. In some countries, the government has paid special attention to promote and facilitate use of ICT. The application of ICT offers potential avenues to reduce/bridge the knowledge gaps. Further, the ICT will help them to identify, access, use and disseminate information more effectively and efficiently.

It is essential for the NARS in the region to equip themselves in ICT, create opportunities for their scientists and teachers and extension workers facilitating them to have access to new experiences and on going research effort and to share information and knowledge for mutual advantage. This necessitates IT network. Hence, an active way is to form “networks of learning” rather than adopting an individualistic

approach. Such networks will avoid accidental duplication and bring economy of time and effort in R&D for exploitation of field worthy results.

The APAARI General Assembly -1996 identified the necessity for a better communication and exchange of knowledge on agriculture and natural resources, improving the efficiency of the research/extension interface and the recent changes in technology uptake pathways.

Apart from being a regional forum in providing a platform of exchanging views and information to NARS, APAARI is also required to encourage the forming of networks and the APARIS initiative will support this. The major concern as stated in the discussion draft (Rome 1999) of conceptual framework/guidelines for a Regional Agricultural Information System (RAIS) for Agricultural Research for Development (ARD) is that it will have to promote information flow and exchange of knowledge between and amongst the wide range of ARD stakeholders and not just researchers.

The general context for this initiative is provided by the APAARI Vision 2025, that gives a high priority to facilitating the exchange of information and knowledge among stakeholders of ARD.

The stakeholders in RAIS at the national level in each region could be seen as a core group of academics and researchers in all sectors, and other related groups such as policy makers, extensionists, technical NGOs (development practitioners), the private agribusiness sector, commodity/crop organisations, and farmers/producers. Other interested parties include sub-regional bodies and international resource agencies (e.g. FAO, CABI, GFAR/ISNAR). The main function of APAARI in this context is to:

- review the present status of the Information and Communication Management (ICM) and ICT at the national level.
- identify existing ICT facilities/resources/services.
- identify information requirements.
- identify issues and challenges in ICM and ICT areas.
- encourage partnership formulations among diverse stakeholders.

The above mentioned activities are in consonance with GFAR Conceptual Framework that a RAIS should be seen as a set of interrelated information facilities and databases in a given region, that NARS share amongst themselves freely without any undue formalities.

Information Needs Assessment

The main objective of information needs assessment is to assess what information users currently access, what they require and what means of access (Information Technology) they currently have. There are four main areas to investigate.

- a. Different types of user – Core and Intermediate Groups, and in addition members of the international community (including donors).
- b. Different subjects – Agro-ecological and socio-economic data, completed research, current research, finance, and personnel.
- c. Different processes – Research project planning, implementation, reporting, and monitoring/evaluation.
- d. Different sources – Databases, books, articles, abstracts, and reports.

Results from questionnaire analysis are shown below. More detailed analysis will be published separately in the ICT Status Paper.

Capacity building in Information Management is a high priority, particularly in using Internet and Computer Programmes. Most of the respondents also indicated the requirement of skills for database and website development.

The desired publications are newsletters, and scientific proceedings of meetings and workshops, followed by success stories and reports specific to policy and/or management.

APAARI website is expected to contain Research projects and activities; research abstracts; Directories of agricultural Research organizations; Technology use in agricultural subjects; Directories of international organizations and available Research information; Research archives, New inventions, information technology, Contact database organised by expertise; Directories of funding agencies; Bulletin boards and Newsgroups.

The electronic conference focussed on hardware needs, skills required and topics to be discussed.

SWOT Analysis of Agricultural Research Information System in the Region

Strengths

- Availability of advanced ICT facilities in some NARS.
- Inexpensive and trained human resource.
- Support from CGIAR and International organizations.
- Adequate networks/linkages that the resources can be forged together.
- Strong collaborations in building up ICT for the region.
- Availability of success stories for technology transfer among NARS.

Weaknesses

- Lack of coordination among NARS.
- Lack of trained manpower in new technologies and their application.
- Lack of time allocated for ICT and ICM related consultations/meetings.
- Poor information management skill of staff.
- Ineffective communication methods.
- Obsolete technology in some NARS.
- Poor and scattered database.
- Lack of linkages with other regional fora.

Opportunities

- Significant opportunities exist from the Internet and new publishing (e.g. e-book) medium.
- ICT Awareness of various stakeholders.
- Support from GFAR (Global Forum on Agricultural Research).
- Interactions among INPs NARS, sub-regional, regional, and international organizations in the electronic.
- Availability of less expensive ICT resources (e.g. hardware, software) and more advanced technologies.
- Available funding for ICT research and development.

Threats

- Lack of internal support for NARS.
- Perspectives towards ICT of “too costly” and “in need of skillful staff to maintain the system”.
- ICM and ICT staff have been assigned to work in isolation.
- Lack of adequate enthusiasm to participate in regional ICT activities.
- Lack of clear guidelines for collaboration with other regional fora.
- Lack of clear role and responsibilities of each concerned organization in each activity.

Logical Framework

Based on the SWOT analysis, a logical framework has been attempted and is presented in Annexure-3.

TECHNICAL SESSION III: TOWARDS AN APARIS

Dr Ian Bevege, Chairman of the session, stressed on the momentum of having all players around the table. He urged the group to agree on the scope of APARIS referring to the diversity of the region and the necessity for inclusiveness. Solutions must be SMART (Simple Modest Achievable Realistic Time bound). Several options are preferred above one solution. He elaborated on how this exercise should be an integral part of the activities of the organizations involved.

Dr Paroda laid stress on the regional need for ICT. He put on record the useful partnership that ACIAR provided to APAARI in supporting ICT activities and asked for similar support from other players like ISNAR, CABI, FAO. He also stressed that ICT's can not replace printed material. Also the limited capacity of APAARI should be considered. He suggested to form a group of the people as present and to probably meet every alternate year. He therefore asked for a time bound action plan for the coming two years.

Ms Achara presented the proposed strategy for RAIS (later modified to APARIS). The elements of this strategy are:

- Organizational Development - Needs assessment, strengthening communication.
- Manpower Planning (NARS) and capacity building needs.
- Infrastructure for knowledge and information exchange – APAARI website development linking to NARS and other Websites, and to relevant databases.
- Primary Regional Database developed by APAARI to include contacts databases..

The plenary considered it important to agree on the scope of the RAIS so as to provide a framework for considering the operational elements. It was also stressed that the RAIS be inclusive rather than exclusive and that it should focus on the needs of agricultural research (i.e. in the broad sense) for development rather than more broadly on Agriculture. A proposal to change from a "RAIS" to "APARIS", the "Asia Pacific Agricultural Research Information System" was endorsed by the group. The scope of the proposed APARIS will comprise the following elements:

Subject matter/areas: The R&D programmes of the national, regional and international partners in agriculture, livestock, fisheries, forestry and agroforestry, post harvest handling, food security and safety, natural resource management, climatic risk management and the basic sciences servicing these subsectors.

Stakeholders: The R& D providers of the region in the above subject areas, including national agricultural research institutions and systems, national agricultural education extension and technology transfer systems, regional organizations and associations and international agricultural research centres active in the region. In time, inclusion of organized farmer groups and private sector organizations willing to participate in an open access information and knowledge sharing system.

Geographic coverage: All countries of the Asia-Pacific region who wish to participate, and not limited to FAO geographic region or membership, or membership of existing regional organizations. For practical purposes countries from and including Iran and eastwards to Samoa, and from Japan southwards to New Zealand.

Communication medium: Primarily e-mail and Internet (web enabled) but use of print on paper as appropriate *i.e.* for existing materials in this medium and for partners with limited electronic communication access.

Language: Preferred language will be English but national partners may also use national languages within their systems. Language will be facilitated by development and use of multi-lingual thesauri.

The technical session working groups used this strategy document and other materials presented during the consultation as the basis for their discussions which focussed on:

- HRD and organizational management capacity for ICT within NARS.
- Regional databases and information resources.
- A gateway function for the regional information system APARIS.
- Organization and management of APARIS.

The working groups considered issues, options, work plans and recommendations. In general the discussion particularly on infrastructure was based on electronic transfer of information and knowledge utilising e-mail and internet; this reflects the interests and expertise of this ICT group. However the scope statement agreed allows for print medium as appropriate. Working group reports are appended.

PLENARY SESSION

Dr R.S. Paroda, who chaired the plenary session, asked the working groups to report to the plenary. The discussion that followed generated supplementary points, which are incorporated in the summary below.

Working Group Reports to the Plenary

HRD and Organizational Management for ICT within NARS

- Needs assessment for IT/IM: APAARI to collect information on methodologies being used by NARS, facilitate exchange and develop appropriate methods for sub-regional needs, results of needs assessments to be posted on the APAARI website.
- Webpage development: APAARI to encourage NARS to hot link with APAARI and other sites, and to provide guidelines for NARS on webpage design to enhance their regional use.
- Support to NARS for developing their ICT functions: Recognizing the limited capacity in APAARI for this and the well developed state of ICT skills and management in the larger NARS, these could provide assistance to the smaller less developed systems.
- APAARI could provide a clearing house mechanism to facilitate information flow among APARIS partners on where and how to get advice on ICT.
- Assemble and distribute training materials for ICT, develop and maintain a database on training courses etc. and back stop training events including distance learning in ICT, specialist training and training of trainers at sub-regional level.
- That APAARI's role was as a facilitator, not as an advocate for ICT; nor should APAARI undertake an operational role in ICT planning and management in support of NARS.
- In developing APAARI's work programme in this area, it will be important to consider resource issues, time for implementation, to prioritize actions and mobilize appropriate expertise across the system for implementation.

Regional Data Bases and Information Resources

- The existence of numerous databases at national, regional and global levels was recognized. Therefore APAARI needs to set criteria for linking to them and be very selective because of cost considerations. Databases should remain operative at national level where possible and only become part of the regional system where they add value at that level; APAARI should work in partnership with like minded organizations in developing APARIS.
- In creating its own databases, APARIS should build on what exists and not duplicate; a meta-system rather than primary system approach may be most appropriate.
- Important policy issues in database management include confidentiality, IPR, quality assurance; guidelines for database content, protocol format should be developed as per APARIS standard, and existing software used wherever possible.
- Linking to existing regional databases held by regional organizations such as APAFRI, NACA, APHCA, IARCs should be a component of APARIS.

- There is potential to accommodate interactive models into APARIS e.g. E-conferencing discussion groups.
- In developing databases within APARIS highest priority lies with institutional information and promulgation of “success stories” in ARD; next priority should be for information on training opportunities, conferences, etc. and meta databases on regional/sub-regional R&D networks and scientist contact details. There is however a privacy issue associated with the latter to be addressed.
- As resources permit, APARIS might consider establishment of a referral centre for ARD publications; this should be done in co-operation with FAO and CABI.

A Gateway Function for the Regional Information System APARIS

A Gateway is “A resource which identifies key internet resources of relevance to the region; it is a navigational tool for managing information on the internet, of relevance to the region and within the scope of APARIS, and provides a meta database of targeted internet resources”. Several issues need to be considered in establishing and managing a gateway function including:

- The role of nodal points or country level coordinators (INPs).
- How will the gateway perform as a regional gateway into NARS and for NARS.
- Unity of approach – user friendly perspective to a range of users with varying needs and skills.
- Technical requirements and search engine.
- Standards, evaluation and policy issues.
- Capacity to establish and maintain – cost and funding sustainability issues.

The plenary considered the proposal for a gateway as a functional unit of APARIS, one worthy of serious consideration by APAARI. To this end it recommended that a feasibility study be conducted for establishment and management of a gateway function in APARIS. FAO and CABI agreed to cooperate with APAARI in this activity and to assist with identification of funding support; the study should be conducted by an experienced information scientist from one of the participating NARS if possible.

In further developing the APARIS concept, the starting point should be the preparation of a “site map” outlining the conceptual framework. APARIS might for example initially be restricted to being a gateway providing an efficient means of linking and pointing to NARS and their databases, relevant global information e.g. via IARCs, FAO and EGFAR but without unique content. Creation of unique content comprising primary and meta databases might come as a second step. However, the two might also proceed together as priority for unique content relating to success stories, institutions, training opportunities etc. has already been flagged by this consultation. A site map as the initial step including a phased development process is therefore important.

The existing APAARI website provides an ideal platform from which to launch APARIS and can form the basis of site mapping.

Organization and Management of APARIS

A strong consensus developed during discussion that APARIS should be an APAARI facilitated activity in partnership with other regional stakeholders relevant to the scope as agreed. APAARI is evolving into an effective regional forum and this should enable a widening partnership base with time.

It was important to recognize that the system developed must be sustainable from within currently identifiable resources of manpower and financing, and should progressively develop in harmony with expanding resource availability. Some activities within APARIS lend themselves to in-kind support of participating stakeholders while others might be conducted in project mode with donor or other external support.

Given the fundamental importance of information and knowledge exchange and the increasing level and sophistication of activity, including NARS, APAARI must demonstrate the utility of APARIS to others if it is to be effective and add value in a rapidly changing environment. It will need resources to do this and cannot do so on a shoestring budget. Hence, while initially APARIS may have small beginnings, a strategic view must be taken of on-going needs and developments in the region and how APARIS could effectively limit the increasingly complex changing needs.

Identification of an APARIS coordinator is a critical issue and an immediate need, should APAARI adopt APARIS as the preferred way of moving forward; current ICT capacity in APAARI is limited and committed and cannot take on this role without staff supplementation. Before any recruitment action is undertaken, a job specification needs to be developed which takes account of the skills required to meet the scope of the APARIS content; this links back to the site mapping so that these should go hand in hand.

Proposals for Advancing the Establishment of APARIS Under the Aegis of APAARI

Dr Paroda summarized the deliberations, and proposed that:

- The ICT expert group from NARS and regional organizations as convened for this consultation should form a steering committee to enable APARIS and determine its structures, standards and work programme.
- An APARIS support group be constituted comprising, e.g. APAARI, FAO, GFAR, CABI, IARC (representative), which will be responsible for raising resources from donors and others for the operation of APAARI - there should be a link between the two groups by representation of the steering committee serving on the support group.
- TORS for these two groups should be prepared and their membership confirmed.
- APARIS proposal should be prepared as a project activity identifying elements which can be undertaken by the partners (including APAARI) and those for which donor support will be sought. This proposal should subsume the current KISS proposal of APAARI earlier referred to as its elements parallel to those proposed for APARIS.
- Discussions should be held with organizations who might be prepared to provide coordinator support to APAARI for APARIS, at least in the initial stages.
- The feasibility study on APARIS as a gateway and its site mapping using the current APAARI website as a basis should be the first activity under APARIS.
- These proposals to be tabled at APAARI Assembly 8-10 November 2000 for discussion for endorsement. If endorsed, next step will be to prepare an action plan for establishment of APARIS within APAARI framework. This action plan will need to be coordinated with the ongoing work programme of APAARI's ICT manager.

Dr Ian Bevege gave a brief summary of the results of the consultation and closed the meeting and thanked all the participants for their valuable contributions.



EXPERT CONSULTATION ON THE DEVELOPMENT OF AN ASIA-PACIFIC REGIONAL AGRICULTURAL INFORMATION SYSTEM (APRAIS)

6-7 November 2000, Chiang Rai, Thailand

PROGRAMME

November 6, 2000 (Monday)

0830-0900	Registration	
		Inaugural Session
	Chairman	Dr Ian Bevege
0900-0910	Welcome Address	Mrs Prapaisri Pitakpaivan (representative of Dr Ananta Dalodom, Vice-Chairman)
0910-0920	Objectives of the Expert Consultation and Introduction of Participants	Dr R.S. Paroda Executive Secretary APAARI
0920-0935	Chairman's Address	Dr Ian Bevege
0935-0940	Vote of Thanks	Ms Achara Jantarasaengaram
0940-1000	Tea Break	

Technical Session I: A Framework for Global Agricultural R&D Information System

	Chairman	Dr Fernando Chaparro
1000-1015	ACIAR	Dr Ian Bevege
1015-1030	FAO-WAICENT	Dr Stephen Rudgard
1030-1045	CABI	Dr Elizabeth Dodsworth
1045-1100	ISNAR	Dr Stein W. Bie
1100-1115	ICT Initiatives -EGFAR	Dr Fernando Chaparro

Technical Session II: Current ICT Status in the Asia-Pacific Region

	Chairman	Dr Stein W. Bie
1115-1200	Regional Status Reports on ICT Networking : APAARI	Ms Achara Jantarsaengaram
1200-1300	Country ICT Reports	Country representatives (ICT nodal officers) (10 minutes each)
1300-1400	Lunch	
1400-1600	Country ICT Reports (Contd.)	
1600-1630	Tea Break	
1630-1730	Agricultural Sub-sectors: Regional Status Papers (APAN, NACA, APHCA, IRRI)	

November 7, 2000 (Tuesday)

Technical Session III: Developing an Asia-Pacific Agricultural Research Information System (APARIS)

	Chairman	Dr Ian Bevege
8:30-8:40	Introduction	Dr Ian Bevege
8:40-8:50	Proposals for a Strategy	Ms Achara Jantarsaengaram
8:50-9:00	Clarification on Strategy	
9:00-9:30	Scope	Dr Stephen Rudgard
	<ul style="list-style-type: none"> ● Stakeholders/Countries ● Subjects : Agriculture/Forestry/Fisheries/Livestock ● R for D / R&D ● Language 	

0930-1100	Working Groups	
		<ul style="list-style-type: none">• HRD and Organizational Management for ICT within NARS• Regional Databases and Information Resources• A Gateway Function for the Regional Information System APARIS• Organization and Management of APARIS
	Facilitators	Dr Stein W. Bie Dr Fernando Chaparro Dr Elizabeth Dodsworth Dr Stephen Rudgard
	Resource Materials	<ul style="list-style-type: none">• Keynote papers• Country papers• APAARI Strategy Document• Discussions
1100-1130	Tea Break	
1130-1210	Feedback to Plenary on Discussions (10 minutes per group)	
1210-1430	Working Groups Reconvene	

PLENARY SESSION

	Chairman	Dr R.S. Paroda
1430-1500	Final Presentations of Working Groups (A and B)	
1500-1530	Tea Break	
1530-1600	Final Presentations of Working Groups (C and D)	
1600-1715	General Discussion	
		<ul style="list-style-type: none">• Preferred Options• Action Plan for Way Forward
1715-1740	Summary and Concluding Remarks	Dr Ian Bevege
1740-1750	Final Address	Dr R.S. Paroda
1750-1800	Vote of Thanks	Reinier van Hoffen
1800-1900	Synthesis group of facilitators and APAARI staff to prepare recommendations to APAARI General Assembly	



EXPERT CONSULTATION ON THE DEVELOPMENT OF AN ASIA-PACIFIC REGIONAL AGRICULTURAL INFORMATION SYSTEM (APRAIS)

6-7 November 2000, Chiang Rai, Thailand

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LOGICAL FRAMEWORK – STRENGTHENING REGIONAL ICT FOR DEVELOPMENT

FRAMEWORK	NARRATIVE SUMMARY	MEANS OF VERIFICATION	ASSUMPTIONS
Goal	To establish Regional Agricultural Information System through communication and collaboration of ARD stakeholders	Asia-Pacific Agricultural Research Information System (APARIS) Concept Note has been drafted based on mutual understanding and meet the required needs of stakeholders, and sent to concerned organisations for review.	APAARI is able to finalize APARIS Framework which is to be used as a guideline for action plan.
Purpose	APARIS will be a regional agricultural information hub that provides useful, up-to-date, and accurate information relating to agricultural R&D.	NARS, Sub-regional, Regional, and International Organisations are able to access agricultural information at anywhere anytime.	Availability of APARIS as Agricultural R&D information source to ARD stakeholders (access via the internet and CD-Rom).
Expected Results	1. Existing ICM/ICT in the region are identified and documented	Presentation of each INP NARS to the Expert Consultation meeting is done	NARS effectively participate
	2. Existing ICT Strategies/Proposals in the region both from NARS, Regional, and International Organizations are identified and documented	Presentation of each INP NARS and Regional and International Representatives to the Expert Consultation meeting are done	All partners/organisations co-operate
	3. Barrier of collaboration and block of information exchange are decreased	Action plan is endorsed by each organization, Implementation tasks are separated by mutual acceptance in the meeting	Organisations agree to exchange of information
	4. Information requirements disclosure among stakeholders is increased	Every participant of the Expert Consultation is asked to disclose what information are in the requirements and in which priorities	Effective Mechanism in place for sharing of information
	5. Information dissemination regarding funding sources and available resources are widely distributed	Information of funding sources and available resources are gathered, exchanged and distributed to all concerned stakeholders	Stakeholders will share the information available
	6. Regional Contacts Database is established and widely announced to all stakeholders	Mailing list of each organization has been pooled at the regional body to merge together as well as separate contacts by keywords	National partners will supply all information for Database
Proposed Activities	Review existing National ICT Status Papers in order to draw lessons from various organizations' experiences in order to develop effective regional agricultural information system	Success and failure stories are reviewed as case studies in the Expert Consultation	Status papers are made available for review
	Define clearly the tasks, and responsibilities of each organization in follow-up on the workshop	Each concerned organization is given a clear task and responsibility to perform	Concerned organisations accept the responsibilities
	Identify information needs priorities	Needs assessment has been done and is documented	Resources are available for assesment
	Identify gap of existing information and requirements	Gap study is done and distributed to all concerned people	Existing records are available to undertake this task
	Survey the competencies of each organization and what more is required for capacity building	Questionnaires are widely distributed, and analyzed	Partners co-operate to send the information
	Training to INPs in the region to be Trainers in their organizations	Training Course assessments record and report on the progress of the participants	Availability of funds for Training
	Training of Policy Makers in the region	Post course reports are documented	Willingness of Policy Makers for training
	Create virtual community for discussion among interest groups – INPs Group – Policy Makers Group – Researcher & Scientific Group – Mutual Interest Group	Electronic discussion is done as post-meeting mechanism	ICT facilities are available; internet access, connectivity secured
	Evaluation of APARIS – Usefulness – Reliability – Implication of Research – Implication on Organization Development	Evaluation survey has been done and analyzed for further improvement	All stakeholders co-operate

