

Openness in Agricultural Information and Knowledge Sharing

(10 November, 2011)



PROCEEDINGS

Global Forum
on Agricultural
Research
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Asia-Pacific
Association of
Agricultural
Research
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Indian Council
of Agricultural
Research
(ICAR)



Proceedings of the Session on

Openness in Agricultural Information and Knowledge Sharing

(10 November, 2011)

**International Conference on Innovative Approaches for Agricultural Knowledge
Management: Global Extension Experiences**

9-12 November, 2011

NASC Complex, Pusa, New Delhi, India



**Global Forum on Agricultural Research (GFAR)
Asia-Pacific Association of Agricultural Research Institutions (APAARI)
Indian Council of Agricultural Research (ICAR)**

Proceedings of the Session on Openness in Agricultural Information and Knowledge Sharing

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Foreword

Agriculture globally faces many challenges. The foremost among them are to improve farm productivity and economic returns to reduce hunger and alleviate poverty. This has to be done in a rapidly changing landscape of climate change, increasing water and arable land scarcity, threat of rapidly spreading plant and animal diseases and pests across vast regions, loss of biodiversity and volatile, global trade in agricultural commodities with significant inequities for producers. The complex challenge of ushering agricultural innovation can be considered at a very basic level as the need to improve information content and information chains of market supply chains. A core pathway to usher agricultural innovation globally is to improve availability, accessibility, applicability and ensure the relevance and usefulness of information for the intended users and enable agricultural communities to appropriate information and, through effective learning, use it as new knowledge, skills and technologies. This pathway is increasingly being recognized as crucial and central for agricultural innovation to occur and spread rapidly. It is this recognition that is leading to the consideration of “openness” in agricultural information and knowledge for all.

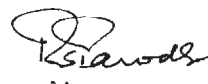
In many economically developing and even in developed countries, a large proportion of agricultural research is done by and through public funds or by public collective and/or participatory action. The outputs of this research, especially data and information, should therefore technically be “public goods” in the sense that they should not be excluded from the public which has funded the research. Thus, “Openness” of agricultural information and knowledge in the context of the emerging paradigm of agricultural innovation should mean that a large part of relevant and useful information generated by and through the public sector investment should be available and also accessible as a public good with equity to all its users.

Ushering openness in agricultural information and knowledge for all is a complex challenge to those working towards bringing innovation in farming and agriculture. The main obstacles remain with the Institutions, especially public sector and of Governmental, who need to change. The full use of the new technological advances will definitely need change in existing Institutions as also establishment of new Institutions besides addressing technologies issues and community participation in the ICT initiatives.

To promote “openness” in agricultural information and knowledge management, APAARI organized a special session on “*Openness in Agricultural Information and Knowledge Sharing*” on 10 November, 2011 at NASC Complex, Pusa, New Delhi, India in the “International Conference on Innovative Approaches for Agricultural Knowledge Management: Global Extension Experiences” jointly organized by International Society of Extension Education (INSEE), India and the Indian Council of Agricultural Research (ICAR) with the partnership of Asia-Pacific Association of Agricultural Research Institutions (APAARI), Global Forum on Agricultural Research (GFAR), Food and Agriculture Organization (FAO) of the United Nations, Trust for Advancement of Agricultural Sciences (TAAS), Maharashtra Society of Extension Education (MSEE), National Academy of Agricultural Sciences (NAAS), Alcorn State University, Iowa State University and other partners on 9-12 November, 2011. The session was focused on the core

issue of “Openness” of agricultural information and knowledge in the context of the emerging paradigm of agricultural innovation should mean that a large part of relevant and useful information generated by and through the public sector or investment, should be available and also accessible as a public good with equity to all its users. It underpins that market-linked agriculture requires new forms of knowledge, skills and technologies which can only come through information chains linked appropriately to innovation and ICTs are realized as tools for improving efficiency and effectiveness of information flows in market chains.

During the session, a total of 12 papers related to key themes of “Openness” viz., Technological issues, Institutional issues and Community participation issues were presented followed by group discussions and recommendations. I am sure that the proceedings of the session would be very useful for all the stakeholders engaged in promoting “Openness” in agricultural information and knowledge sharing for improving agricultural research and innovation systems in the Asia-Pacific region.



(Raj Paroda)
Executive Secretary
APAARI

Abbreviations

APAARI	Asia-Pacific Association of Agricultural Research Institutions
APARIS	Asia-Pacific Agricultural Research Information System
AR4D	Agricultural Research for Development
ASRB	Agricultural Scientists Recruitment Board
ATIC	Agricultural Technology Information Centers
CIARD	Coherence in Information for Agricultural Research for Development
GFAR	Global Forum on Agricultural Research
ICAR	Indian Council of Agricultural Research
ICT/ICM	Information and Communication Technology / Information and Communication Management
ICTs	Information and Communication Technologies
ILRI	International Livestock Research Institute
INSEE	International Society of Extension Education
KVKs	Krishi Vigyan Kendras
MSEE	Maharashtra Society of Extension Education
NASC	National Agricultural Science Centre
NAAS	National Academy of Agricultural Sciences
RAIS	Regional Agricultural Information System
TAAS	Trust for Advancement of Agricultural Sciences

Openness in Agricultural Information and Knowledge Sharing

Introduction

There is universal agreement that rapid innovation is needed now and in the future for farming and agricultural production. However, ushering innovation in agriculture is itself a major challenge. This is because the driving forces for agricultural progress and growth are now the increasingly complex, market based food chains which are spread over several countries and which have multiple intermediaries from farm input suppliers, farmers, processors, marketers, transporters to consumers.

The complex challenge of ushering agricultural innovation can be considered at a very basic level as the need to improve information content and information chains of market supply chains. Improving efficiency in the exchange of information along with the commodity and money not only improves the market chain but can also bring innovation to products and activities along market chains.

The challenge of improving efficiency in information exchange in market supply chains requires a fundamental recognition by all agricultural development stakeholders that: 1) the increasingly market oriented agriculture also makes this agriculture increasingly information and knowledge intensive, 2) it is the capability to intensify information and knowledge use that defines the ability of agricultural communities to respond through innovation and participate more effectively in markets. The first reason for “openness” in agricultural information, the need to create more efficiency in market chains, calls for creation of complex information chains and the second reason, the need to tackle emerging challenges to agriculture, calls for enhanced information sharing so that it enables easier discovery and effective use of available information.

“Openness” of agricultural information and knowledge, therefore, in the context of the emerging paradigm of agricultural innovation should mean that a large part of relevant and useful information (*barring those that, when ethically considered, can harm the individual or the community*) generated by and through public sector investments, should be available and also accessible as a public good with equity to all its users. However, in spite of agricultural information being largely a public good, it is “excluded” for many across the world and has become a “club” good. This exclusion or conversion of a theoretically “public” good to a “club” good is largely through technological, institutional and community related barriers to information access and availability as also in making its effective use.

The technological barriers to availability, access and effective use of agricultural information are related to availability of hardware such as computers and cell phones, software especially tools and applications, content, connectivity and capacity of agricultural organizations and communities. The Institutional barriers include the lack of appropriate investment, policies, rules, regulation, standards, structures especially reward and accountability and organizational work processes that embed openness in data and information sharing. The most common barriers to communities sharing, exchanging and effectively using agricultural related information

are related to political, social, economic and technological empowerment. As is common globally, rural and agricultural communities are the least empowered in most societies and countries. Besides these, there are issues related to awareness, language and skills.

To those working towards bringing innovation in farming and agriculture, ushering openness in agricultural information and knowledge for all is a complex challenge. However, it does have solutions that are being tried in part and holistically together in different parts of the world. Technologically, advances in hardware such as smart phones, tablet computers, Wi-MAX, high bandwidth internet connectivity, convergence of media, cloud computing, visualization and voice based interfacing of computing devices that communicate reduce many of the barriers that have otherwise impeded information availability, access and effective use of agricultural information, especially by poor agricultural communities. The main obstacles remain with the Institutions, especially Governmental, who need to change. The full use of the new technological advances will definitely need change in existing Institutions as also the creation of new Institutions. The demands for transformation of agricultural research organizations and innovation systems are emerging to re-orient institutional approaches and policies to harness ICT/ICM for agricultural progress. Community informatics is revealing that agricultural communities have started using the potential of the new technologies and are becoming empowered to demand and usher in Institutional change so that they can access and use information more effectively and equitably.

The strategy for bringing “openness” is to enable and support the multitude of actions that lead to greater openness in sharing and exchanging agricultural information, especially in the public domain. This strategy at a generic level includes:

- ◆ Creating Awareness, Sensitization and Advocacy to enable “openness” in sharing agricultural information and knowledge in the relevant public sector institutions at national level.
- ◆ Developing the capacity in agricultural communities to generate, manage, disseminate and use information (and data) more effectively and with equity.
- ◆ Developing Institutions, Organizations and organizational structures that enable and support open sharing and exchange of agriculture related information globally.
- ◆ Improving the governance of agricultural information flows globally through greater inclusiveness in formulation of policies, regulations, rules, standards and norms related to information management and communications.

To promote “openness” in agricultural information and knowledge management, APAARI organized a special session on “*Openness in Agricultural Information and Knowledge Sharing*” on 10 November, 2011 at NASC Complex, Pusa, New Delhi, India in the “International Conference on Innovative Approaches for Agricultural Knowledge Management: Global Extension Experiences” jointly organized by International Society of Extension Education (INSEE), India and the Indian Council of Agricultural Research (ICAR) with the partnership of Asia-Pacific Association of Agricultural Research Institutions (APAARI), Global Forum on Agricultural Research (GFAR), Food and Agriculture Organization (FAO) of the United Nations, Trust for Advancement of Agricultural Sciences (TAAS), Maharashtra Society of Extension Education (MSEE), National Academy of Agricultural Sciences (NAAS), Alcorn State University, Iowa State University and other partners on 9-12 November, 2011. More than 400 participants from the fields of agricultural research, extension, information and communication technologies attended the conference. See Annexure-I for complete program.

Inaugural Session

Chairperson: Dr. Raj Paroda, Executive Secretary, APAARI

Co-Chairperson: Dr. K.D. Kokate, DDG (Agril. Extension), ICAR

The Chairman of the inaugural session Dr. Raj Paroda, Executive Secretary, APAARI in his welcome remarks highlighted immense opportunities offered by ICTs for effective and efficient sharing of knowledge in the areas of conservation agriculture, biotechnologies, hybrid varieties, genetic materials, integrated pest management etc., and dissemination of innovations through success stories for better adoption of agricultural technologies. Addressing a huge gathering of agricultural fraternity, he emphasized the need for 'openness' in sharing agricultural information and knowledge at all levels for improving adoption of agricultural innovations in the changing context of agriculture becoming more market-linked and knowledge intensive. He indicated that in order to improve "openness" in agricultural information and knowledge sharing, we need to address challenges such as increased investment, new capacities and skills, policy directions related to improved information management and intellectual property rights, data security, institutional capacities etc.



Dr. Raj Paroda addressing in the inaugural session

Dr. Paroda highlighted the efforts of APAARI, as a vibrant regional association, in strengthening agricultural information systems in the Asia-Pacific region through its important program Asia-Pacific Agricultural Research Information System (APARIS), which is mandated to improve agricultural information flows at national, regional and global levels through value added services, capacity building and

advocacy programs and success stories for greater adoption of agricultural innovations.

Dr. Ajit Maru, Senior Knowledge Officer, GFAR Secretariat made a presentation on "Ushering Openness in Agricultural Information and Knowledge for All: Global Challenges and Solutions" emphasizing that complex information chains for market linked agriculture cannot operate effectively and in a sustainable manner if they are "closed" and limited in some way to other intermediary actors. He remarked that the outputs of public funded research, especially data and information should be "public goods" in the sense that they should not be excluded from the public which has funded the research. Developing Institutions, organizational structures that enable and support open sharing and exchange of agriculture related information and improving the governance of agricultural information flows globally through greater inclusiveness in formulation of policies, regulations, rules, standards and norms related to information management and communications are necessary, he said. See presentation at Annexure-II.

Dr. S. Attaluri, APARIS Coordinator made a presentation on "Regional Agricultural Information System (RAIS) for Knowledge Sharing" and explained the role of APAARI in



Felicitations to speakers

improving openness in agricultural information and knowledge sharing through awareness, advocacy, capacity building programs and dissemination of success stories on agricultural innovations besides facilitating the Coherence in Information for Agricultural Research for Development (CIARD) initiative in the region. See presentation at Annexure-III.



Co-Chair of the session Dr. K.D. Kokate, DDG (Agril. Extension), ICAR and Chairman, Organizing Committee proposed the vote of thanks and felicitated Dr. Raj Paroda and the speakers. Later the participants were divided into three groups to make presentations in concurrent technical sessions on three important themes.

Technical Sessions

Three concurrent technical sessions were organized in three groups on themes viz., Technical Issues to Usher Openness, Institutional Issues to Usher Openness and Community Issues to Usher Openness facilitated by conveners as follows:

Group-I: Technological Issues to Usher Openness

Convener: Dr. Paolo Ficarelli, ILRI

The following papers were presented followed by group discussion.

♦ Cases on Technological Issues on Mobile Devices	Dr. Paolo Ficarelli
♦ Technological Issues to Usher Openness	Dr. V.K. Bhatia
♦ Using ICT for Knowledge Generation, Refinement and Dissemination in Indian Agriculture	Dr. Bangali Baboo

♦ E-Agriculture Initiatives in Tamil Nadu Agricultural University for Accelerating Agricultural Profession and Improving Livelihood Status of Farming Community	Dr. P. Murugesu Boopathi
♦ Agricultural Research for Development (AR4D) Through Information and Communication Technologies	Dr. H. Chandrasekharan

Group-II: Institutional Issues to Usher Openness

Convener: Dr. Ajit Maru, GFAR

The following papers were presented followed by group discussion.

♦ Cases on Institutional Issues: Global Experiences	Dr. Ajit Maru
♦ Cases on Institutional Issues	Dr. S. Mauria
♦ ICTs for Agricultural Extension in India: Innovations, Lessons and Way Forward	Dr. R. Saravanan
♦ Web based Information Dissemination System for Agricultural Development in Jharkhand	Dr. B.K. Jha
♦ Envisioning e-Extension and Agricultural Knowledge Management	Dr. P. Adhiguru



Group presentations in progress

Group-III: Community Issues to Usher Openness

Convener: Mr. Rikin Gandhi, Digital Green

The following papers were presented followed by group discussion.

♦ Cases on Community Issues: Experiences of Digital Green	Mr. Rikin Gandhi
♦ Cases on Community Issues	Dr. K.D. Kokate
♦ ICT Enabled Knowledge Empowerment for Better Rural Livelihoods	Dr. Sreenath Dixit
♦ Evaluation of M-Agriculture in KAU- on ATIC's Agricultural Message Service Through Mobile Phones	Dr. Sreevalsan J. Menon
♦ Transfer of Paddy Cultivation Technology in College Development Block	Dr. V.S. Shirke

Plenary Session on Lessons Learnt and the Way Forward

Chairman: Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR

Co-Chairperson: Dr. Ajit Maru, Senior Knowledge Officer, GFAR Secretariat

In the plenary session chaired by Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR, the conveners of each group shared the issues that were discussed in the three concurrent technical sessions and put forth the following recommendations:

Technological Issues: It is noted that the emerging ICTs have potential to contribute to agricultural research and innovation systems. The rapid advances in hardware, software and telecommunications, ability to convergence (2G, 3G, 4G, Internet protocols, Wi-MAX, Mobile applications, Social Media), Open software application, Cloud Computing, Open and Linked Data etc., have great potential to transform agricultural research for development. Major barrier to openness in sharing agricultural information included rapid changes in technologies and their use, connectivity issues at the grassroots level, access to hardware and software tools, lack of capacity to use technologies, lack of relevant content etc., which need to be addressed through appropriate strategies.

Institutional Issues: It is emphasized to transform Institutions to improve use of ICT/ICM for contributing to agricultural research and innovation systems. Managing ICT/ICM at different levels (organizational, local, national, regional and global) involves development and implementation of strategies, rules, standards, norms, information and knowledge flows, proper investments and financial flows in ICT/ICM, building capacities and skills, leadership issues, governance of ICTs in Institutions etc. Many policy makers, agricultural research leaders and managers do not have the awareness and necessary skills to lead and decide upon changes needed to bring about more openness in information and its management in their organizations. There is an urgent need for change in institutional and organization structures and even there is a need for new institutional and organizational structures at various levels from global, national to individual organizations to support "openness" in sharing agricultural information.

Community Issues: It is important to ensure participation of communities to use ICTs for effective agricultural research and innovation systems for development. The Agricultural Community includes input suppliers, farmers and producers, processors, transporters, market intermediaries including wholesalers and retailers, consumers, policy makers, scientists, extension agents, information and knowledge intermediaries and many others. Common barriers to communities for sharing, exchanging and effectively using agricultural information are related to social, economic and technological empowerment besides issues related to awareness, language and skills. New Web 2.0 and “Social Networking” technologies are bringing about new ways of information sharing and exchange. These technologies breakdown the distinction between “producers” of information and “users” of information there by enabling communities to network within themselves and share data and information. These technologies have huge potential to enable greater sharing and exchange of agricultural information and its effective use.

The plenary session provided opportunity for open discussion on the above issues related to “openness” in agricultural information and exchange. Lively discussions occurred in the plenary session with active involvement of participants in question and answer mode which affirmed need to empower farmers through ICT-enabled services, develop capacities in ICTs, create and update content, validate information, provide incentives for open initiatives, use of end-user ICT tools and devices, increase investment etc.



Plenary session in progress

Dr. Raj Paroda in his concluding remarks reiterated that “openness” in information and knowledge sharing should empower resource poor smallholder farmers with better knowledge to link them to markets to improve their incomes and livelihoods. Dr. Ajit Maru remarked that new ICTs are influencing the change of the roles of the States and Governments,

organizations and communities and stressed that “openness” in agricultural information and knowledge sharing is necessary at national, regional and global levels for transforming agricultural research and innovation systems for development.

Dr. S. Ayyappan in his concluding remarks considered that we need better ‘environment’ to make the flowers of ICT innovations bloom in the fields of farmers. In order to cultivate such environment, he suggested specific steps that are needed to be taken up to increase investments in ICT/ICM which include develop policy support from top and assessment from bottom; create quality contents and its updation; collaborate and converge ICM for agricultural innovation, mobilize communities; develop commodity-based and location-specific information and using farmers’ innovations etc. He also proposed to take up studies on impact of information in improving agricultural productivity in India lead by ICAR and status of ICT projects for agricultural research and development in the Asia-Pacific region lead by APAARI which can be used as advocacy tools for sensitization and increasing investments in ICT/ICM in agriculture.

The plenary session ended with vote of thanks by Dr. K.D. Kokate, DDG (Agril. Extension), ICAR.

Recommendations

Gathered from group presentations and discussions held in the plenary session, Dr. S. Attaluri, APARIS Coordinator presented the issues raised, recommendations and action areas (see Annexure-IV) in the Valedictory Session on 11 November, 2011 chaired by Dr. A.G. Sawant, Former Member, Agricultural Scientists Recruitment Board (ASRB) and President, INSEE with Chief Guest Shri Harish Rawat, Hon'ble Union Minister of State for Agriculture and Food Processing Industries, India and Guest of Honour Dr. Gurbachan Singh, Chairman, Agricultural Scientists Recruitment Board (ASRB). The recommendations are given below:

Technology Issues

- ◆ Encouraging access and use of information through ICTs at farmers level
- ◆ Convergence of media and information from agriculture and other areas
- ◆ Collaboration among all actors in ICT/ICM
- ◆ Validation of need-based information and its updation
- ◆ Capacity development in use of ICTs and information

Institutional Issues

- ◆ Increased and targeted investment in ICT/ICM in agriculture
- ◆ New Institutional arrangements – change in work processes
- ◆ Developing policies, strategies, rules, norms, regulations
- ◆ Recognition, rewarding and awarding systems
- ◆ Building institutional capacity
- ◆ Strengthening of *Krishi Vigyan Kendras (KVKs)*, Rural Communities and Farmers' Organizations at local levels in order to play a key role in harnessing ICT/ICM at the grassroots level.

Community Issues

- ◆ Creation of community-based organizations like Farmers' Clubs around ICT/ICM initiatives to improve community participation
- ◆ Involving community in assessment of information use
- ◆ Convergence of information related to agriculture and non-agriculture issues
- ◆ Capacity building of community on use of ICT tools and information.

Program
International Conference on
Innovative Approaches for Agricultural Knowledge Management:
Global Extension Experiences
November 9-12, 2011

November 10, 2011

Openness in Agricultural Information and Knowledge Sharing

APAARI: Inaugural Session

14:00-14:45 hrs (Symposium Hall, NASC)

Chairperson: Dr. Raj Paroda

Co-Chairperson: Dr. K.D. Kokate

14:00 hrs	Welcome Remarks	Dr. Raj Paroda
14:10-14:30 hrs	A Global Overview	Dr. Ajit Maru
14:30-14:45 hrs	Regional Agricultural Information System (RAIS) for Knowledge Sharing	Dr. S. Attaluri
14:45 hrs	Breaking into three groups	

November 10, 2011

Concurrent Technical Session (APAARI) – 13

GROUP-I Technological Issues to Usher Openness

14:50-17:15 hrs (Lecture Hall, Ground Floor, NAAS)

Convener: Dr. Paolo Ficarelli

14:50 hrs	Cases on Technological Issues on Mobile Devices	Dr. Paolo Ficarelli
	Technological Issues to Usher Openness	Dr. V.K. Bhatia
	Using ICT for Knowledge Generation, Refinement and Dissemination in Indian Agriculture	Dr. Bangali Baboo

	E-Agriculture Initiatives in Tamil Nadu Agricultural University for Accelerating Agricultural Profession and Improving Livelihood Status of Farming Community	Dr. P. Murugesu Boopathi
	Agricultural Research for Development (AR4D) Through Information and Communication Technologies	Dr. H. Chandrasekharan
16:45-17:15 hrs	Group Discussion	
17:15-17:30 hrs	Tea Break	

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Concurrent Technical Session (APAARI) – 14
GROUP-II: Institutional Issues to Usher Openness
14:50-17:15 hrs (Committee Room-I, Ground Floor, NAAS)

Convener: Dr. Ajit Maru

14:50 hrs	Cases on Institutional Issues: Global experiences	Dr. Ajit Maru
	Cases on Institutional Issues	Dr. S. Mauria
	ICTs for Agricultural Extension in India: Innovations, Lessons and Way Forward	Dr. R. Saravanan
	Web based Information Dissemination System for Agricultural Development in Jharkhand	Dr. B.K. Jha
	Envisioning e-Extension and Agricultural Knowledge Management	Dr. P. Adhiguru
16:45-17:15 hrs	Group Discussion	
17:15-17:30 hrs	Tea Break	

November 10, 2011

Concurrent Technical Session (APAARI) – 15
GROUP-III: Community Issues to Usher Openness
14:50-17:15 hrs (Committee Room-II, Ground Floor, NAAS)

Convener: Dr. Rikin Gandhi

14:50 hrs	Cases on Community Issues: Experience of Digital Green	Mr. Rikin Gandhi
	Cases on Community Issues	Dr. K.D. Kokate
	ICT Enabled Knowledge Empowerment for Better Rural Livelihoods	Dr. Sreenath Dixit
	Evaluation of M-Agriculture in KAU- on ATIC's Agricultural Message Service Through Mobile Phones	Dr. Sreevalsan J. Menon
	Transfer of Paddy Cultivation Technology in College Development Block	Dr. V.S. Shirke
14:45-17:15 hrs	Group Discussion	
17:15-17:30 hrs	Tea Break	

November 10, 2011

Technical Session (APAARI) – 18
Openness in Agricultural Information and Knowledge Sharing
Plenary Session on Lessons Learnt and the Way Forward
17:30-18:30 hrs (Symposium Hall, NASC)

Chairperson: Dr. S. Ayyappan


Co-Chairperson: Dr. Ajit Maru

17:30-18:30 hrs	Groups' Recommendations	Conveners
	Concluding Remarks	Chair/Co-Chair

Ushering Openness in Agricultural Information and Knowledge for All: Global Challenges and Solutions


Presentation for "Openness in Agricultural Information and Knowledge Sharing"
An APAR Session Organized for
"International Conference on Innovative Approaches for Agricultural Knowledge Management: Global Extension Experiences"
10 November, 2011

Ajit Maru
GFAR Secretariat, Rome



Outline

- Driving Forces towards "Openness" in Agricultural Information and Knowledge
- "Openness": What does it mean?
- Challenges to and Solutions for ushering "Openness"
 - Technological
 - Institutional
 - Community Related
- Strategy to usher "Openness"



Driving Forces towards "Openness" in Agricultural Information and Knowledge





- Universal agreement that rapid innovation is needed now and in future in farming and agricultural production but:
- Ushering innovation in agriculture globally is a major challenge.



Driving Forces towards "Openness" in Agricultural Information and Knowledge

- Increasingly complex, market based food chains which are spread over several countries and which have multiple intermediaries

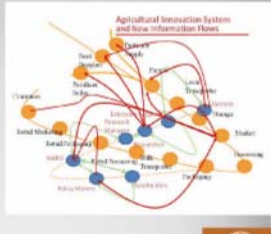

Driving Forces towards "Openness" in Agricultural Information and Knowledge

- Landscape of challenges to agricultural development:
 - ☐ Climate change
 - ☐ Increasing water and arable land scarcity
 - ☐ Threat of rapid spread of plant and animal diseases and pests across vast regions
 - ☐ Loss of biodiversity
 - ☐ Volatile, global trade in agricultural commodities




Openness: What does it mean?

The complex challenge of ushering agricultural innovation can be considered at a very basic level as the need to improve information content and information chains of market supply chains.

Openness: What does it mean?



Improving efficiency in the exchange of information along with those of the other two items, the commodity and money, improves the market chain and can also bring innovation to products and activities along market chain.



Openness: What does it mean?

The challenge of improving efficiency in information exchange in market supply chains requires a fundamental recognition by all agricultural development stakeholders that:

- The increasingly market linked agriculture also makes this agriculture increasingly information and knowledge intensive
- It is the capability to intensify information and knowledge use that defines the ability of agricultural communities to respond through innovation and participate more effectively in markets



Openness: What does it mean?

Openness is needed because:

- Complex information chains for market linked agriculture cannot operate effectively and in a sustainable manner if they are "closed" and limited in some way to other intermediary actors



Openness: What does it mean?

Openness also:

- Enables easier discovery and effective use of available information.
- Enables generation of new information outputs,
- Increases efficiency and effectiveness of research and innovation
- Reduces duplication and "market failure" (research outputs that remain unused)
- Contributes to greater global inclusiveness and participation in research and innovation



Openness: What does it mean?

Agricultural information can be categorized as being "Public" or "Private" good.

In many economically developing and even in developed countries, a large proportion of agricultural research is done by and through public funds or by public collective and/or participatory action.

Yet, this information is a "Club" Good, excludable



Openness: What does it mean?



The outputs of public funded research, especially data and information, should therefore technically be "public goods" in the sense that they should not be excluded from the public which has funded the research.



Openness: What does it mean?

"Openness" of agricultural information and knowledge, in the context of the emerging paradigm of agricultural innovation should mean that a **large part of relevant and useful information (barring those that, when ethically considered, can harm the individual or the community) generated by and through the public sector or investment**, should be available and also accessible as a public good with equity to all its users.



Openness: What does it mean?

Globalized agricultural markets need global information. A core pathway to usher agricultural innovation globally is to improve information:

- Availability,
- Access,
- Applicability, ensure its relevance and usefulness for the intended user
- Enable agricultural communities to "appropriate" it and, through effective learning, use it as new knowledge, skills and technologies

4
"A"s



Challenges and solutions to ushering "Openness"

• Technological Challenges

- Availability and Access to
 - Hardware
 - Software, especially tools and applications
- Connectivity
- Awareness and Skills
- Availability and Access to Relevant and Useful Content



Challenges and solutions to ushering "Openness"

- Availability and Access to Relevant and Useful Content
 - The CIARD Movement: bringing greater openness in availability and access to agricultural information in the public domain
 - Manifesto, Guidelines, Pathways, CIARD Fair
 - CIARD RING
 - CIARD Framework for Sharing and Exchange of Agricultural Data and Information



Challenges and solutions to ushering "Openness"

The 5 stars of open linked data

- ★ make your stuff available on the web (whatever format) under an open license
- ★★ make it available as structured data (e.g. excel instead of image scan of a table)
- ★★★ non-proprietary format (e.g. csv instead of excel)
- ★★★★ use URIs to identify things, so that people can point at your stuff
- ★★★★★ link your data using RDF to other people's data to provide context

By Tim Berners-Lee



Challenges and solutions to ushering "Openness"

• Institutional Challenges

- Investment, especially in agricultural information management and communications
- Policies, Rules, Regulations, Norms
- Intellectual Property Rights
- Standards
- Institutional and Organizational Structures especially coordination of information management and its communication, reward and accountability related to sharing of information
- Organizational work process to imbed information management



Challenges and solutions to ushering "Openness"

- Community Related Barriers
 - Empowerment: Political, Economic, Social and Technological
 - Awareness
 - Language
 - Skills and Capacity
- Enabling Communities to generate, manage and use its own information



Strategy for Ushering Openness

The strategy for bringing this openness is **to enable and support all the multitude of actions that lead to greater openness** in sharing and exchanging agricultural information, especially that in the public domain.



Strategy for Ushering Openness

This strategy includes:

- Creating Awareness, Sensitization and Advocacy to enable "Openness" in sharing agricultural information and knowledge
- Developing the capacity in agricultural communities to generate, manage, disseminate and use information (and data) more effectively and with equity




Strategy for Ushering Openness

- Developing Institutions, Organizations and organizational structures that enable and support open sharing and exchange of agriculture related information globally
- Improving the governance of agricultural information flows globally through greater inclusiveness in formulation of policies, regulations, rules, standards and norms related to information management and communications



Thank you



Regional Agricultural Information System (RAIS) for Knowledge Sharing

Presentation for APAARI Session on:
"Openness in Agricultural Information and Knowledge Sharing" in the
"International Conference on Innovative Approaches for Agricultural
Knowledge Management: Global Extension Experiences"
10 November, 2011

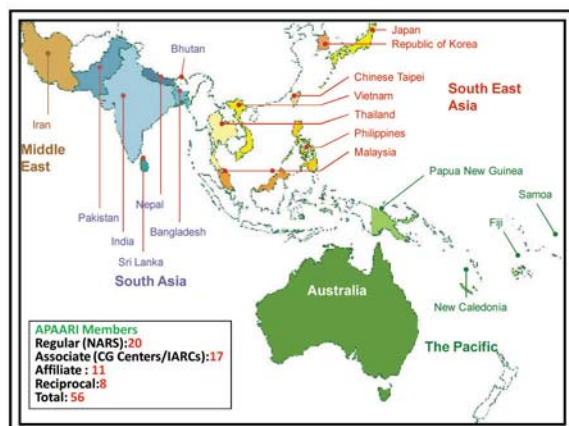
S. Attaluri
Coordinator, APARIS
APAARI, Bangkok

APAARI Objectives

- ❖ Promote the **exchange of scientific and technical know-how** and information in agriculture
- ❖ Facilitate the establishment of **appropriate research and training** programs based on regional, bilateral or national needs and priorities
- ❖ Assist in **strengthening research organization** and management capacity of member institutions
- ❖ Strengthen **cross-linkage among national, regional and international research** centers organizations including universities through jointly planned research and training programs.

Strategic Thrusts →

- Building Research Partnerships
- Regional Research Networking
- Policy Advocacy for ARD
- Information Dissemination
- Human Resource Development
- Technology Transfer



APARIS

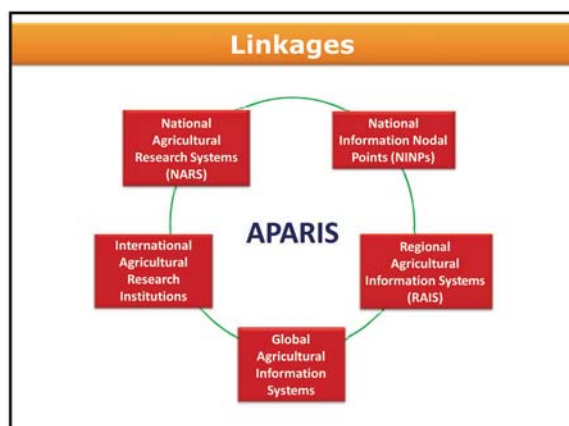
- **Regional Platform** for efficient information and knowledge sharing among ARD stakeholders in the Asia-Pacific Region
- **Improving Access** to and use of Agricultural Innovations information and Knowledge Resources and Systems
- **Promoting use of ICM4ARD** in the Asia-Pacific Region through Integration of Information Systems and Services
- **Advocacy and Capacity Building** to strengthen National Agricultural Information Systems for greater use of ICM in ARD



2000: Establishment of APARIS



2002: Identified National Information Nodal Points (NINPs)



Promoting Openness in Information and Knowledge Sharing

APARIS Thrust Areas

- **Promoting Agricultural Innovations**
Expert Consultations, Success Stories, Status Reports
- **Promoting use and application of ICT/ICM for AR4D**
Advocacy and Capacity Building
- **Improving Access to Information Systems and Services**
Communication Strategy, Facilitating CIARD initiative and Improving Agricultural Information Flows
- **Information Sharing**
Publishing, Value Added Services, Website etc.

Promoting Agricultural Innovations through Success Stories

More than 60 Success Stories on different themes



Promoting Agricultural Innovations through Success Stories

Success Stories 2011:

- Linking Farmers to Market: A Success Story of Lettuce Export from Taiwan
- Success Story on Effective Linkage of Biofuel Growers to Market
- Success Story on Jackfruit Improvement in Asia-Pacific
- Bamboo Genetic Resources and Improvement in South and Southeast Asia
- Success Stories on ICT/ICM: Open Journals in Agriculture (India); Rice Knowledge Management Portal (India); ICT-enabled services (Philippines); Farmers services (Thailand)

Capacity Building



- Sensitization of NARS Leaders
- Training of ICM Managers from NINPs / NARS
- Workshops on ICT/ICM for ICM / Communication Specialists
- Expert Consultations on ICT/ICM

Advocacy for ICT/ICM in AR4D



- Success Stories on ICT/ICM
- Status Report on ICT/ICM

- Assessment of:**
- ICT Infrastructure and Capacity
 - Information Systems
 - Policy and Strategies
 - Contents
 - ICT Applications
 - Services Channels

Highlights of Status Report 2011

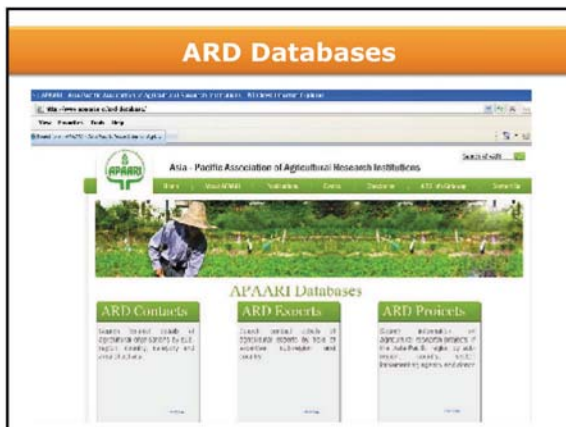
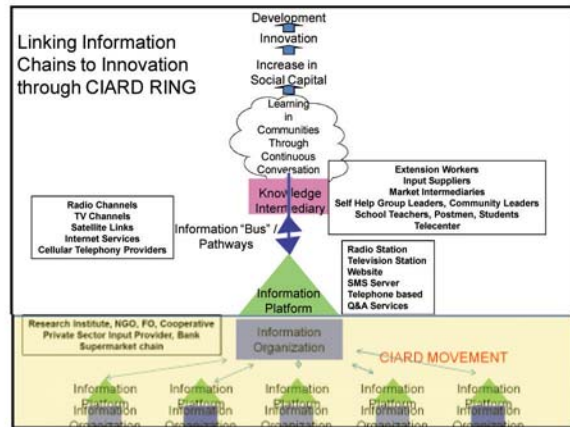
Table 16. ICM applications that enable farm advisory, extension and marketing

NARS	Info. needs of extension agents	Info. needs of farmers	Info. needs of agri. extension personnel	Networking	Market info.	Linking farmers to markets	Input-output markets	Online markets	e-Auctioning	Commodity exchanges	Traceability applications
1. Bangladesh	+	+	+	+	+	+	+	+	+	+	+
2. Bhutan	+	+	+	+	+	+	+	+	+	+	+
3. Cambodia	+	+	+	+	+	+	+	+	+	+	+
4. Chinese Taipei	+	+	+	+	+	+	+	+	+	+	+
5. Fiji	+	+	+	+	+	+	+	+	+	+	+
6. India	+	+	+	+	+	+	+	+	+	+	+
7. Indonesia	+	+	+	+	+	+	+	+	+	+	+
8. Japan	+	+	+	+	+	+	+	+	+	+	+
9. Korea	+	+	+	+	+	+	+	+	+	+	+
10. Malaysia	+	+	+	+	+	+	+	+	+	+	+
11. Myanmar	+	+	+	+	+	+	+	+	+	+	+
12. Nepal	+	+	+	+	+	+	+	+	+	+	+
13. Pakistan	+	+	+	+	+	+	+	+	+	+	+
14. Papua New Guinea	+	+	+	+	+	+	+	+	+	+	+
15. Philippines	+	+	+	+	+	+	+	+	+	+	+
16. Samoa	+	+	+	+	+	+	+	+	+	+	+
17. Sri Lanka	+	+	+	+	+	+	+	+	+	+	+
18. Thailand	+	+	+	+	+	+	+	+	+	+	+
19. Vietnam	+	+	+	+	+	+	+	+	+	+	+

Legend: + = Developed, - = Emerging, 0 = Poor, . = Not exist

Improving Agricultural Information Flows in the Region

- Increased Investment – Advocacy and Sensitisation Programs
- Content and Content Management- Integration, Standards, Value added services.
- Collaboration- ARS, Regional Fora (AARINENA, FARA, CACAARI, FORAGRO), ADB, AIT, SEARCA, SAC, SPC; FAO, GFAR and CG Centres
- Capacities and Human Skills – Training ICM Managers of NINPs
- Partnerships in ARD – Networking PGR Networks, ARD Consortia, Sharing information.





APAARI Session on Ushering “Openness” for Agricultural Information and Knowledge Sharing

Issues Discussed
Recommendations
Action Areas

Preamble

- Driving force for agricultural innovation is the increasingly market-linked agriculture
- Market-linked agriculture require new forms of knowledge, skills and technologies which can only come through information chains linked appropriately to innovation
- ICT are realised as tools for improving efficiency and effectiveness of information flows in market chains

There are many flowers here and there. How do we make them into a bunch of flowers?

Ushering ‘Openness’

“Openness” of Information access relates to equitable access and effective use of information in the public domain by all in agricultural communities

Ushering Openness in Agricultural Information Sharing

- To improve agricultural information chains, we need to consider:
 - Technological issues
 - Institutional issues
 - Community issues

Technology Issues

- | | |
|---|--|
| <ul style="list-style-type: none"> • Issues Discussed: <ul style="list-style-type: none"> – Change in technology – Change in technology use – Connectivity – Access to hardware / software – Lack of relevant, high quality contents – Lack of capacity to use technologies – Ability to use information effectively | <ul style="list-style-type: none"> • Recommendations: <ul style="list-style-type: none"> – Encourage access and use of information through ICTs at farmers level – Convergence of media and information from agriculture and other areas – Collaboration among all actors in ICT/ICM – Validation of information, need-based information, its updation – Capacity development – Strengthen KVKs, Rural Communities and FOs at local levels |
|---|--|

“Empower resource poor smallholder farmers with better knowledge to link them to markets to improve incomes and livelihoods” – PadmaBhushan Dr Raj Paroda

Institutional Issues

- | | |
|---|---|
| <ul style="list-style-type: none"> • Issues discussed: <ul style="list-style-type: none"> – Change in the role of Institutions – Sustainability of ICT initiatives – Mind set in organizations – Work processes towards ‘Openness’ – ‘Openness’ while maintaining IPR – Lack of capacity – Public good vs Private good | <ul style="list-style-type: none"> • Recommendations: <ul style="list-style-type: none"> – Increased and targeted investment – New Institutional arrangements – change in work processes – Policies, strategies, rules, norms, regulations – Recognition, rewarding and awarding – Building Institutional Capacity |
|---|---|

“New ICTs are influencing the change of the roles of the States and Governments, Organisations and Communities” – Dr Ajit Maru, GFAR

Community Issues

<ul style="list-style-type: none"> • Issues discussed: <ul style="list-style-type: none"> – Socio-economic and political issues related to information access – Accessibility, relevance and applicability and effective use of information by all in agricultural community – Role of community in creating and managing information – Information needs for agricultural innovations and satisfying them effectively – Lack of awareness on 'openness' of agriculture knowledge in community – Lack of capacity 	<ul style="list-style-type: none"> • Recommendations: <ul style="list-style-type: none"> – Creation of community-based organizations: Farmers' Clubs etc. – Involving community in assessment of information use – Convergence of information related to agriculture and non-agriculture issues – Capacity building of community on use of ICT tools and information
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"We need better 'environment' to make the flowers of ICT innovation bloom in the fields of farmers" – Dr Ayyappan

Action Areas and Programs

<ul style="list-style-type: none"> • Creation of 'Environment' for 'Openness' in Agricultural Institutions • Increasing Investment in ICT/ICM • Effective management of Information resources • Policy support from top and Assessment from bottom • Creation of quality content and its updation • Collaboration and Convergence in ICM for agricultural innovation 	<ul style="list-style-type: none"> • Mobilization of Communities • Development of Commodity-based and location-specific information • Preparedness for 'Openness' and ICTs in Agriculture • Impact and Assessment of Information on Agricultural Production • Status of ICT use / projects • Farmers innovations
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- Study on Impact of Information in Improving Agricultural Productivity [and Incomes] in India / ICAR
- Status Report on ICTs for Agricultural Innovations in the Asia-Pacific Region/ APAARI

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