



CASE STUDY

China's development of CIARD and RING for Agricultural Research Information

Table of Contents

[Abstract.....](#) 3

[Introduction.....](#) 4

[Agricultural Information Systems in China.....](#) 4

[The Chinese CIARD.RING](#) 5

[Key Experiences.....](#) 6

[Conclusion.....](#) 7

[References:.....](#) 9

Abstract

China is a large agricultural country. With the rapid growth of its national economy in the past two decades, investment in agricultural research and technology development is on the increase. In 2011 China published 718 agriculture journals, 500 journals related to agriculture, with 50,135 papers and 12,849 patents. Vast quantities of grey literature were generated: conference papers, research reports, dissertations, training manuals, slide presentations; and also audio and video materials.

Agricultural information systems in China include those of the Chinese Academy of Agricultural Sciences (CAAS), the Chinese Academy of Forestry Sciences, The Chinese Academy of Fishery Sciences, 30 Provincial Academies of Agricultural Sciences, Forestry Sciences and Fishery Sciences and 60 University libraries and information services. There are more than 40,000 township level agricultural institutions, and 700,000 primary agricultural personnel who need to access quality agricultural information resources, in addition to millions of farmers and other actors in agriculture.

This case study describes the process and experiences of China's development of CIARD and a RING for agricultural research information. The approach to implementing the RING in China is multi-pronged and is based on harnessing the know-how and technologies to improve availability and access to data and information. It includes: encouraging increased and improved investment in information and communications management; the development of appropriate institutional policies, structures and organization; developing the necessary skills base across the entire agricultural information system; and promoting use of standards for contributing to and managing the RING.

The key issues being tackled initially are of advocacy and promotion of CIARD concepts and objectives, and the proposal of a China-specific RING to share and exchange agricultural information through a federated sharing platform in the country and capacity development for its use.

There is still no clear consensus on the concept and the shape the RING should take in China though the dialogue has been initiated by the CIARD working group. CIARD is a challenge to traditional agricultural science and technology information management. It can however have great influence and impact on information publishing and communication services and their innovation in the country.

The CIARD.CHINA and RING provide an appropriate avenue for a nationally and internationally federated system for more open sharing of agricultural information. There now needs to be greater advocacy for them to be recognized as policy instruments along with appropriate strategies for investment, capacity development, development of institutional and organizational structures and new work processes in information and communications management. CIARD in China has also to contribute to enabling effective participation and use of information among the vast agricultural community.

Introduction

China is a large agricultural country. China considers information to be an important economic and social resource similar to energy, and agricultural informationization an important task for national development. With the rapid growth of its national economy in the past two decades, investments in agricultural research and technology development are on the increase. As an outcome of this, research outputs in terms of publications in scientific and technical journals and other agricultural data and information are also growing rapidly. There are more than 40,000 township level agricultural institutions and 700,000 primary agricultural personnel who need access to quality agricultural information resources, in addition to millions of farmers and other actors in agriculture (Li Yuaxiang, 2012, Proceedings). To support this growth and satisfy the needs of agricultural research and innovation systems, China's agricultural information systems are also evolving rapidly in the content they manage and their use of technology.

Scientific papers authored by Chinese scientists and published in Chinese journals and International Journals are increasing steadily.

Agricultural Information Systems in China

Agricultural information systems in China include those of the Chinese Academy of Agricultural Sciences (CAAS), the Chinese Academy of Forestry Sciences, The Chinese Academy of Fishery Sciences, 30 Provincial Academies of Agricultural Sciences, Forestry Sciences and Fishery Sciences, and 60 University Libraries and Information services.

In 2011 China published 718 agriculture journals, 500 journals related to agriculture, with 50,135 papers and 12,849 patents. Vast quantities of grey literature were generated: conference papers, research reports, dissertations, training manuals, slide presentations; and also audio and video materials. CAAS also makes available a directory of more than 4000 titles of foreign open access (OA) journals in 17 agricultural disciplines to help Chinese users. (Li Yunxiang, 2012, Proceedings).

Agricultural databases and web portals in China are also growing. These now offer multiple types of data and information resource. At the national level these include the Agricultural Science data published by Agricultural Science Data Center (<http://www.agridata.cn>), the Crop Germplasm Resources by Crop Germplasm Resources Information System (<http://www.cgris.net>), and the Feed Database from *China Feed-DataBase Information Center* (www.chinafeeddata.org.cn) hosted by the Institute of Animal Science at CAAS.

The “Food and Nutrition Portal” (<http://www.nstl.gov.cn/NSTL/nstl/facade/hotweb.jsp#>), “Water Saving Agriculture Portal” (<http://watsagri.nstl.gov.cn/>) and “Agricultural Tridimensional Pollution Control Portal” (<http://agripollute.nstl.gov.cn/>), now integrate information and data from foreign and domestic networks.

The China Forestry Information Network (<http://www.lknet.ac.cn>) has been established and is managed by the Forestry Science and Technology Information Institute of the Chinese Academy of Forestry. It has more than 100 forestry technology information databases and over 20 domestic and international forestry full text databases. There are more than 50 million digital Chinese Forestry Science and Technology documents, more than 40 million abstracts records in foreign languages, and more than 600 online editions of academic journals. (Ma Wenjun, 2012, Proceedings) With its wide coverage it is China's most informative forestry website.

Fisheries information in China is managed by the Chinese Academy of Fishery Science and offers a similar set of services. Chinese fishery journals total 112 titles, and the digitized and networked research papers number about 260,000. The Chinese fishery document database possesses 400,000 records up to the present, including self-constructed records. (Ouyang, 2012, Proceedings)

In addition to conventional information services such as document management, and abstracting and indexing, the agricultural information systems in China are moving into managing and sharing electronically a wide variety of information media including video, audio, graphics and maps from a multiplicity of sources that are growing in number.

The Chinese CIARD.RING

To bring greater efficiencies and effectiveness to China's extensive agricultural information systems, CAAS has initiated the implementation of a RING (Route Map to Information Networks and Gateways) based on concepts and technologies advocated by the CIARD (<http://www.ciard.net>) movement. The RING objectives specific to China are to share agricultural information resources more openly throughout the Chinese agricultural research and innovation system and to bring improved access and more effective usage to all users. The level of open access to scientific information is lower in China than in many other countries.

China also recognizes that agricultural research is moving toward globalization. Joint efforts and effective cooperation among different nations are especially important in a number of research fields related to agriculture, including: global climate change, breeding of plant and animal varieties, collection, conservation and utilization of crop germplasm resources, and control of plant and animal pests and diseases of key importance. Information exchange and sharing is the basis for international cooperation. China's active participation in the CIARD.RING, to share and exchange agricultural information, supports this global vision and mission.

The approach to implementing the RING in China is multi-pronged and is based on harnessing know-how and technologies to improve the availability and access to data and information. It includes: encouraging increased and improved investment in information and communications management; the development of appropriate Institutional policies, structures and organization; developing the necessary skills base across the entire agricultural information system; and promoting the use of standards for contributing to and managing the RING.

This case study describes the experiences of establishing the RING, started in 2010, and some of the key lessons learned through this process.

Establishing the RING

The activities to establish the RING were initiated by the Agricultural Information Institute (AII) of CAAS by setting up a CIARD coordination and working group with 6 staff. The main role initially of this working group was advocacy and promotion of CIARD concepts and objectives, and necessary capacity development to enable participation in the CIARD.RING. This group also cooperates closely with the Chinese Agricultural Libraries Society (CALs), a voluntary organization of agricultural libraries in China.

Communication

The first steps in developing the RING were to translate the entire CIARD and CIARD.RING website into the Chinese language, and to develop the CHINA.CIARD (<http://www.ciard.net/zh-hans>) website. Introductory printed and electronic materials of a proposal to participate in CIARD and the CIARD RING were sent to all the Chinese agriculture related libraries and institutions in early February and April 2011, with a request for their feedback on the CHINA.CIARD activities. Almost 20 libraries and agricultural research institutes agreed to join the CIARD activities and sent feedback on the proposal. The feedback received indicated that while the vision of the proposed RING was ideal, the CIARD.RING when applied in China would need to be modified and adapted to fit the domestic users' habits of processing and using information, while also building new capacities to enable them to use international methods.

The CIARD working group started providing information to the Chinese agricultural libraries and institutions through the CIARD website, but it was observed that the participating libraries did not regularly scan the website, especially when CHINA.CIARD was initiated. The CIARD Working Group now also uses email, online discussion groups and telephone to communicate and make sure that RING participants get updated information about the activities of CIARD and the CIARD.RING in China and elsewhere. It has also established a help desk with support also from FAO and GFAR Secretariat when needed. The CIARD working group has also organized several events jointly with CALs to further discuss CIARD related issues and activities. It also advocates for CHINA.CIARD and participating in the RING to representatives from Agricultural Institutions that include policy makers, research managers and information managers.

Capacity Development

With support from GFAR Secretariat and CAAS, the working group organizes RING related training in different provinces in the country. At these training programs participants from nearby provinces also participate. So far 3 training courses have been conducted and 60 trainees have been trained. The training has been successful in solving problems of understanding the system, technical issues and language difficulties in participating in the RING. From the initial 20 Institutes there are now more than 60

Institutes participating in CHINA.CIARD and the RING, which creates a lot of demand on the CIARD Working Group.

Key Experiences

The initial experience was in obtaining, through continuous advocacy and promotion, the necessary commitment of senior policy makers and managers in CAAS. In this way support and investment were gained, through the Agricultural Information Institute (All) of CAAS, to apply CIARD concepts through the establishment of the CIARD coordination and working group. While this has been achieved with partial success in CAAS more effort in advocacy is needed among the other National and Provincial Academies and Universities.

Following the establishment of the CIARD working group, communicating about CIARD and the RING was the next big task. The key issue was in translating the documents, the CIARD website and the registration process for the CIARD.RING from English to Chinese. This still remains a difficult area as clear definitions of many technical terms are not available. Resources are also limited especially for generating the needed advanced information in the Chinese language.

The technical skill sets necessary for managing more open sharing and exchange of agricultural information in agricultural information systems, especially in adherence to internationally recognized practices and standards, needs to be more widespread and continuously developed and upgraded in China. It is felt that there is significant difficulty in rapidly developing and upgrading new skills in a fast developing area of information and communications management as new technologies are introduced. This is an area where greater financial investment and cooperation with International agencies and other more developed countries is needed.

With the increase to now almost 100 organizations participating in CHINA.CIARD and the RING the current CIARD working group is overwhelmed. The time has come to envisage the development of a National CIARD Center that manages all CIARD related activities and further develops and coordinates the RING at the National level, along with the Provincial CIARD Centers, and manages CIARD and RING activities with participating organizations at the Provincial level.

Conclusion

As China increases investments in agricultural sciences and research, its agricultural information systems will also grow. Effective information management is a key to efficient and effective agricultural research and innovation in the country. Information sharing and exchange within the country, and globally, is required for appropriate use of scientific and technological resources and making China's agriculture more knowledge intensive.

There is a greater need for more financial investment and new capacities in enabling Chinese Agricultural Research, Education and Extension organizations to share and

exchange information nationally and internationally using the most advance know how and technologies. This will need better fine tuning of policies, strategies, organizational structures including some new structures, infusion of new concepts and technologies, and encouraging participation of the entire agricultural community in sharing, exchanging and effectively using information.

There is still no clear consensus on the concept and shape of the RING in China, though a robust dialogue has been initiated among information specialists by the CIARD working group. CIARD is a challenge to traditional agricultural science and technology information management, especially behavior in managing and using information. It has however been agreed that it can have great influence and impact on information publishing and communication services and its innovation in the country.

The CIARD.CHINA and RING provide an appropriate avenue for a nationally and internationally federated system for more open sharing of agricultural information. It now needs greater advocacy to be recognized as a policy instrument within the already recognized 12th Five year plan of agricultural science and development in China. This needs to include appropriate strategies for investment, capacity development, development of institutional and organizational structures, new work processes in information and communications management, and enabling effective participation and use of information among the vast agricultural community.

References:

Chen Wenyong. The Principles of User Behavior in Building CIARD RING CN. Proceedings of the national symposium on further development of CIARD and CIARD RING for agricultural research and innovation in China. Hangzhou, Zhejiang, China, May 8-10, 2012, 21-24p.

Li Yunxiang. Study on the Development of CIARD in China. Proceedings of the national symposium on further development of CIARD and CIARD RING for agricultural research and innovation in China. Hangzhou, Zhejiang, China, May 8-10, 2012, 25-30p.

Ma Wenjun. Forestry Information Resource Sharing, Co-construction Experience and Suggestions for CIARD. Proceedings of the national symposium on further development of CIARD and CIARD RING for agricultural research and innovation in China. Hangzhou, Zhejiang, China, May 8-10, 2012, 5-10p.

Ouyang Haiying. Fishery Information Resource Co-construction and Sharing and the Challenge of CIARD China. Proceedings of the national symposium on further development of CIARD and CIARD RING for agricultural research and innovation in China. Hangzhou, Zhejiang, China, May 8-10, 2012, 11-15p.