NEW HORIZONS IN AGRICULTURAL INFORMATION MANAGEMENT

PROCEEDINGS

OF AN INTERNATIONAL SYMPOSIUM

MARCH 13-16, 1991

BEIJING, CHINA
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New Horizons in Agricultural Information Management

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# Table of Contents

**Foreword** ................................................................. viii

**Keynote Address**

Problems, Issues, and Challenges for Agricultural Information Systems and Services in the Developing World  
L. J. HARAVU ................................................................. 1

**Session I: Management and Development of National Agro-Information Systems**

Database Design at ICRISAT and the Experience of Using External Databases  
L. J. HARAVU ................................................................. 13

Implementation Results, Roles and Effects of the Chinese Agricultural Information Services Project  
WANG Xianfu ................................................................. 24

The AGRIS System and the Participation of China  
Helga SCHMID ................................................................. 32

Ten Years’ Progress in China’s Computerized Information Retrieval and Its Future (Abridged)  
ZENG Minzu ................................................................. 40

A Brief Introduction to the Computerized Agricultural Information Retrieval Systems in China  
Chunpei HE ................................................................. 47

Efficient Architecture and Development Strategy of Agricultural Information Systems in Developing Countries  
CHEN Qiben ................................................................. 54

**Session II: Information Management and New Technology Application**

The Infusion of Quality in Agricultural Information Services  
Syed Salim AGHA ............................................................. 58

Access Points to the Database of Bibliographies of Agricultural Documents in China and Their Retrieval Functions  
WU Zeyi ................................................................. 64

Management of the AGRIS and CARIS Regional Centers in Southeast Asia  
Josephine C. SISON ............................................................. 75

Preliminary Study on the Microcomputer-aided System for Compiling an Agricultural Thesaurus and the Establishment of a Descriptor Database Management System  
FANG Luming and WANG Caihua .................................................. 85
Digitized Image Transmission Using High Speed Telecommunications Networks
Gary K. MCCONE .................................................. 92
The Integrated System of Database Creation and Computer-based Editing
and Composition
WANG Huaihui ...................................................... 98
Expert Systems for Agricultural Use: Recent Developments and Applications
A. Mangstl and V. Troll ........................................... 103
A Study of the Khonkaen University Research Information System
Daruna SOMBOONKUN .......................................... 114
Establishment of the Chinese Agriculture Abstracts Database
GUO Jian ............................................................. 120
On the CAB Thesaurus
HOU Hanqing and XU Jia ........................................ 125
Realization and Application of Large Capacity Chinese Character Disk
Operating System (LCCDOS)
NIU Zhan Liang, BAI Juping and LIU Huifang ................ 134
The Close Associations between Indexing and Microcomputer Software
Maintenance
BJ Jinping ............................................................. 140
Program for Automatic Creation of Subject Indexes by Computer
WANG Huaihui ...................................................... 145

Session III: Management and Development of Regional Agro-Information Systems

SEAWIC: Its Organization, Objectives and Activities
Ruben C. UMALY and Soetitah SOEDOJO .................... 152
Strengthening the Establishment of a Chinese Regional Monographic
Agricultural Document Database
YAN Ming-zhi, LU Ping and MA Tao ........................... 162
Indonesian Plan for an Integrated Management Information System for
Agricultural Research and Development
Prabowo TJITROPRANOTO and Liannie K. DAYWIN ........ 169
Creation of an Information Database and a Developmental line of Agro-
Information Retrieval Techniques in Northeast China
ZHENG Yegang and XIN Huajun ............................... 173
Cybernetic Analysis of Scientific Information Services for Agricultural
Development in China
CHENG Xiaolan and CAI Jianfeng ............................... 178
Functioning of the National Agricultural Information Network (AGRINET)
D.Y. RATNAVIBHUSHENA ...................................... 190
Agricultural Information Services of Hupei Province
LI Zezhou .......................................................... 200
New Horizons in Agricultural Information Management

Some Ideas on the Tendencies of Information Services by the Regional Information Agencies of Agricultural Science and Technology
   PU Yunfeng and LI Pushen ........................................... 205
Ideas on Effective Ways of Transforming Agro-Information into a Productive Force
   SUN Tianshi and XUE Yajie ........................................... 213
Present Situation and Strategy of Development in Information for Agricultural Science and Technology in the East China Administrative Area
   CHEN Dingru .............................................................. 218
Coordination of Information Work on Agricultural Literature in Northwestern China
   MA Yingcai and ZHENG An ............................................. 224
Discussion on Elementary Assignment on Information of Agricultural Sciences and Technology at the Provincial Level
   MA Yikang and ZHOU Guangheng .................................... 231
A New Domain of Agricultural Information Service at the Provincial Level
   -- The Combination of Information Analysis and Database Building
   YUAN Zhiqing ............................................................. 237

Session IV: Scientech Information and Productivity

The System of the PCARRD Applied Communication Division in Transferring Agricultural Technology to Farmers
   Teresa H. STUART ....................................................... 242
Discussion on Functions of Agricultural Scientific and Technical Information in the Development of a Rural Commodity Economy
   BAI Erdian, CHEN Enping and GAN Jintian ......................... 257
Information as an Economic Resource in Agricultural Development
   T. H. TAY ................................................................. 266
Scientific and Technological Information is a Potential Productive Force
   ZHU Binlong ............................................................. 274
Integrated Root Crop Program (Philippines): A Coordinated Approach in Research Development and Extension
   Perfecto U. BARTOLINI ............................................... 279
Farm Management Data for Thai Farmers
   Mrs. Kanitha SOPANON .................................................. 290
On Effective Ways for Information Research to Serve the Rural Economy
   CHEN Ming ............................................................... 292
Preliminary Study on Ways of Transforming Agricultural Science Information into Productive Forces
   CHEN Qi Rong ............................................................ 298
Studies on Agricultural Information Research for the Development of a Rural Commodity Economy
   LI Wenmao and NIE Shangqi .......................................... 305
Joining the Main Front for Economic Construction to Open Up a New Aspect of Information Research
SUN Xuequan and LIU Qingshui ................................................................. 314
Establishing a New System of Agricultural Information Technology, Production and Marketing, and Promoting the Agricultural Technological Development of China
TONG Dijuan ................................................................. 319
On the Transformation of Agricultural Scientific and Technical Information -- Thoughts on Transforming Information into a Productive Force
YUAN Weimin ................................................................. 325
An Effective Way for Transforming Scientific Information into Productive Forces
LI Lunliang and YU Ying ................................................................. 331
Broadening the Media of Communication of Agricultural Information and Its Role in Agricultural Development
LIU Shixing, LI Cuie and GONG Junjie ................................................................. 334

Session V: Development and Utilization of Agro-Information Resources

A New Approach to Information Systems Management at the International Potato Center (CIP): The Case of Information Services for National Potato and Sweet Potato Programs
Carmen SIRI ................................................................. 340
Preparing English Abstracts of Chinese Documents -- an Important Step Toward International Sharing of Chinese Information Resources
LI Kaiyang ................................................................. 351
Linking Information Resources Sharing Management and Library Training in the South Pacific
Esther W. WILLIAMS ................................................................. 354
Resources of Chinese Agricultural Documents and Their International Exchange
ZHAO Huaying ................................................................. 369
Developmental Status and Trends of the Retrieval Journal System for Agricultural Information in China
JIA Shangang ................................................................. 377
Exploitation and Utilization of Sericultural Information Resources in China
GAO Zhicheng and CHEN Xichao ................................................................. 385
The Agricultural Information Users in China and Changes in their Requirements
PAN Shuchun ................................................................. 390
BIOSIS as an Agricultural Information Resource
E. HODAS, M. O'HEARN and M. KELLY ................................................................. 398
On the Exploitation and Utilization of Agricultural Scientech Information
DING Jincheng ................................................................. 406
Exploitation and Effective Use of Scientific and Technological Information on Agriculture
LIU Yixian ................................................................. 410
Appendix 1: Supporting Papers

Opening Address
WANG Xianfu ................................................................. 451
Welcoming Address
LIANG Keyong ............................................................... 452
Welcoming Address
Clive David WING ........................................................ 454
Welcoming Address
WANG Tingjiong ............................................................ 455
Discussion ................................................................. 457

Appendix 2: Symposium Participants

List of Symposium Participants ......................................................... 466

Appendix 3: Author Index

Author Index ........................................................................ 472
Exploitation and Effective Use of Scientific and Technological Information on Agriculture

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Abstract
The most effective ways of exploiting and using scientific and technological information on agriculture in our country are to provide a pre-service for policy-making bodies, to offer information at home and abroad to scientific research projects and to supply peasants with knowledge about producing commodities. It is especially effective in serving the thousands upon thousands of peasants in the vast countryside of China to turn "soft technology" in the printed literature of science and technology into "hard technology," which are audio recordings and video tapes that peasants are willing to accept. In this way, scientific information and technology will be converted more effectively into productive forces, which will really enrich peasants with knowledge. In the future, we must increase the exploitation and utilization of scientific information, popularize agricultural technology and literature at a higher level in the countryside and pay much attention to improving the intellectual capabilities of information specialists. At the same time, we should also carry out reform in our information institutes with users as the center and the exploitation and use of informative literature as the key link and thus make our institutes real centers of collecting and distributing scientific and technological information.

It's a new strategic subject for scientific research: How an information institute at the provincial level strengthens the exploitation of scientific and technological information resources, and provides very effective, high-quality service for society in different fields. An information institute should serve mainly agricultural policy-makers, scientific researchers and peasants. In recent years, we have shifted the focus of our work to the exploitation and use of information to provide pre-service for policy-makers, to offer comprehensive, quality service for scientific research, and advance the technique for turning information into commodities for peasants. This is the correct way of making effective use of information.

1) Providing Pre-service for Policy-makers.

In recent years, science and democracy in policy making have aroused more and more attention among leading bodies at all levels. Before determining policy, leaders have to know about achievements in related fields, and the present developments both at home and abroad. But there is so much information that it is nearly impossible for them personally to look into the sea of materials. Therefore, it is an important function to provide timely, first-hand information for leaders in order to make quick scientific
decisions and avoid losses. In the projects of "The Demonstration of the 7th five-year plan", the loan from the World Bank, the Exploitation of Hainan Island, and in some introductions of new techniques, we had information specialists collect information, investigate the research levels in related fields, and study their present conditions and developing tendencies. Thus we provided them with background material, reference data, and a documentary summary; in addition, we put forward our constructive statements, with the help of which, the perspectives of the policy-makers have been broadened, their thinking enlightened, and limitations and blind spots in their decisions avoided.

In 1986, we had a demonstration of this in whether to introduce a certain technique to produce virus-free plantlets of deciduous fruit trees. By investigating a number of reference materials, we learned that this technique is an effective means of quickening the propagation of virus-free plantlets, improving the quality and taste of fruits, and advancing the development of fruit trees in the middle-upper reaches of the Yangtze River. In this field, Italy already has well-developed techniques and advanced equipment. So the decision was made, the introduction was successful, and additionally, we were able to get international financial assistance for this project.

In the same year, a business man from Chicago came to Sichuan to promote his sales of equipment for extracting protein from leaves. Detailed information provided in time by our library showed that this kind of equipment was out-of-date, so, its introduction was rejected, and losses were avoided. At present, we are going to set up a "Reading Room of Agricultural Information in Sichuan," the purpose of which is to collect, study, catalog and demonstrate all kinds of data about natural resources, agricultural meteorology, population and economy in our province in order to offer the possibility of predicting periods of natural disaster in our province and taking appropriate measures.

2) Providing Convenient Service for Scientific Research.

Scientific research requires that the library should be a center of collecting and distributing the latest information in the world so as to provide a comprehensive and selected information service for researchers. We often analyze and study the latest scientific and technological information related to research subjects and then supply the researchers with cataloged materials. In service to seed-breeding of the six major crops, we offered timely and comprehensive information about the latest agricultural developments and selected the most valuable information and published it in pamphlet form. In 1988, our catalogs of information about rice, rapeseed and sweet potato amounted to 31 issues with 2,398 entries all together. In 1989, 38 issues with 3,876 entries all together. So, our researchers always informed with the latest information at home and abroad about new developments in their fields. We also put emphasis on information services to meet the special needs of leading researchers in various subjects. In Sichuan, researchers in the study of developing hybrid rice met with the problem of a low germination percentage among the seeds bred on Hainan Island. This problem was an obstacle to the development of hybrid rice. To help solve this problem,
our information specialists investigated many source materials. Finally, they found an experiment report about rice in western Africa, in which a way to break up the dormancy of most seeds and to raise germination percentage was reported. After the method was adopted, an additional income of about 600,000 Yuan was attained from 1977-1981. In serving the research subject of "Zn Fertilization of Rice" in our institute, our information specialists had made a summary from more than ten articles covering the theories, methods and effects of Zn fertilization in rice-growing countries, like Bangladesh, India and the Philippines. When the researchers had these references, they immediately decided on their research approach, perfected the details, and what is more, the research was accomplished ahead of schedule. We have done lots of work in providing information for some research projects, such as a new breeding of super high-yield rice; wide compatibility, photoperiod sensitive genic male sterile rice; application of tissue culture in crop breeding. Book-lending, copy-making and offering-information-to-doorsteps services can also be found in our library. Scientific workers have praised our information service as "rich in information, original in content, purposeful in selection, and very good in guidance to action." They also praised us for quickening their research process by offering timely information.

3) Aiming at the Chinese Countryside, Providing Multi-purpose Service for Peasants.

At present, all peasants are eager to get rich. They are hungry for scientific knowledge and market information, but their disadvantages are that they are living in scattered regions with inconvenient transportation, and that their educational level is low. If they are only given very general information, it's hard for them to understand and make use of it. So, it's necessary to give them a special information service to meet their needs so that they can apply it to their production and bring about desired economic effects. The way we do this is to first collect and sort out some kinds of valuable information which are still relatively unknown and unpopularized, then we turn these materials into audio recordings or video tapes and convey them to peasants by means of radio broadcasting and television in the form of "technique lectures" and "special training," which are favored by peasants, and have good results very soon. It's very useful to lead peasants to wealth by making use of scientific and technological information.

In 1988, we took advantage of market information and our library held a course in "Growth of High Yield Strawberries" jointly with the People's Broadcasting Station of Sichuan. The peasants in the whole province learned that this can have immediate economic benefits in a short time, and many of them were active in joining the course. The specialists for the course gave detailed lectures on the growth of strawberries, its introduction, cultivation, prevention of insect pests and disease, and fruit processing techniques. As a result, the technique of cultivating strawberries was soon spread to all places in the vast countryside of Sichuan province. The following year, all markets in the towns and villages of the province were supplied with an additional 70,000 Kg. of strawberries, and peasants had an additional income of more than 400,000 Yuan.
"Rice Straw Biotic Feed" is a successful research project accomplished by our province. The technique needs little investment, but has quick results. If the biotic feed is used in pig-feeding, it can substitute for about 50% of the grain feed. The written materials describing this technique ran to about 20,000 words, which was too difficult for peasants to understand, so we turned the written materials into a twenty-minute TV show, which was easily understood and accepted by peasants, and the technique has opened up a new feed source for peasants, and relieved the shortage of feed grain to some degree.

We have another example of this kind. In the development of silkworms, Sichuan has a high gross output, but low yield per unit, low quality and low productivity. To solve this problem, the information specialists in our institute found more than 170 reference articles about silkworm development for the silkworm raisers of the county whose staple products are silkworm cocoons. We borrowed others' experiences and made "A Series of Technique in Silkworm Breeding" mainly to solve the problem of low per unit yield. Consequently, the per unit yield was raised by 16.4% in 1988. At the same time, the silkworm raisers have learned the techniques of "Preventing Silkworm Disease" and "young larvae rearing with complete leaves in three-dimensional forms," good results were obtained.

(4) The Outlook for Information Exploitation Services.

Information service is a bridge linking science and technology to society. The exploitation of scientific and technological information has found its place in social applications, but it is only a beginning. There is a lot of work to be done in serving policy-makers, in offering suggestions to scientific researchers, and in leading peasants to wealth. Particularly, the exploitation and use of scientific and technological information has a vast perspective in serving agricultural production and millions of peasants. We have to give multipurpose service according to the special needs of our customers, especially in turning "soft technology," that is, information which involves technology and techniques of material production, into "hard technology," and turning information into commodity knowledge for peasants. At present, special attention should be attached to the cultivation of new breeds, exploitation of new resources and processing of agricultural by-products in order to popularize new techniques.

To accomplish the above points, we have to:

1. Establish a network of information sources and dredge all channels for obtaining and distributive information. Agricultural scientific and technological information bodies at the provincial level should set up connections with science commissions at prefectural and county levels, with science and technology popularizing departments and cultural centers. All these units should cooperate closely to find more customers and to develop new services.

2. Pay attention to enhancing the intellectual capability of information specialists and their ability to access information so as to increase the storage capacity of scientech information.
3. Make more audio-visual materials available for countryside use in order to overcome the difficulties of low educational level among peasants, and to increase the utilization ratio of scientific and technological information by peasants.

4. Carry out customer-centered reformation in information bodies, put stress on information exploitation and use, give more consideration to customers. Relevant bodies and professionals should improve their information work of serving policy-making and scientific and technological research, and the agricultural development in the countryside.