New Horizons in Agricultural Information Management

Proceedings of an International Symposium

March 13-16, 1991

Beijing, China
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On Effective Ways for Information Research to Serve the Rural Economy

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Abstract
The paper analyzes the present status and the existing problem of agricultural information research in China. The author, according to the new demands of the development of a rural commodity economy on information work at the present stage, studied the effective ways for information research to promote the development of the rural commodity economy, including: To take serving the rural economy as its main task; To reform the jurisdictional relationship of information research institutes; To strengthen the liaison and coordination both inside and outside of the information research system; To pay attention to users’ demands; To speed the process of normalization and standardization for information research achievements; To develop commercialization products; To speed up the modernization of operation and to raise the quality of the research personnel.

Social demands are a fundamental power in promoting the development of information research work in depth and over a wide range China’s rural economy is gradually changing into a commodity economy from a natural economy as the economic system reform deepens. A new productive style and economic motive mechanism have been preliminarily formed. This new circumstance has brought along some new requirements for scientific and technical information work, especially information analysis and synthesis. How information research work suits the needs of the rapid development of China’s agricultural sciences and techniques and farming economy is a common concern for information research personnel. For this reason, it is necessary that the present status and existing problems of China’s agricultural information research work are analyzed, and effective ways and strategies for serving the rural commodity economy’s information analysis and synthesis requirements are studied.

I. The present status and existing problems of agricultural information research work in China

It is reported that about 30-40 percent of the growth in the total output value from farming were achieved by agrotechnical advances during 1981-1985 in China. Technical improvements depend on information as a medium or bridge. Information analysis and synthesis is an important part of agricultural scientific and technical information work in China. In order to suit the changed conditions, information research has become
both technical and specialized in recent years. The goal, content and method of information research have greatly changed.

1. To change from unitary agricultural scientific and technical information work to comprehensive information research.
In the past, China’s agricultural information research was confined to the range of agricultural science and technology, and only made a few investigations on the differences between home and abroad. Along with the reform of the rural economic structure, information research now conscientiously and enthusiastically combines with the modernization of agriculture and science and technology. Some large-scale, comprehensive and strategic research tasks, which were assigned by leading or policy-making bodies at a higher level, have been undertaken for example, to make macro-strategic decisions, to transform agricultural techniques, to readjust the industrial structure, to exploit and use natural resources, to reform the agricultural research system, and to draw up a long-term program for farming development.

2. To change from a simple qualitative analysis to a combination of qualitative with quantitative analysis.
In the past few years, the social demands for information have greatly increased, due to the appearance of markets and contracts for scientific and technical information. The goal of agricultural information research has gone far beyond the traditional range of affording precise and orderly information for policy makers, and is developing from a microscopic view of agricultural science and technology to a macroscopic one of economy and society. New claims are being made for information research work, including its being scientific, comprehensive, systematic, accurate, feasible, timely, practical, of economic benefits, and so on. Owing to the above changes, information research has hardly satisfied the different needs of the society by only using methods of formal logic and qualitative analysis. Mathematical statistics, applied mathematics and systems engineering have been used as analytical means for agricultural information research. Using a combination of qualitative with quantitative analysis has become an effective approach in information analysis and synthesis in China.

3. To change from independent research to cooperative research.
China is a great agricultural nation. However, agricultural information personnel make up less than one percent of the agricultural scientists and technicians in China. The combination and cooperation of multi-disciplines is one of the most important characteristics of modern agricultural science and technology. This characteristic also decides the necessity of cooperative research for information analysis and synthesis to make up for the shortage of personnel and to provide research reports of high quality within a shorter time. In the past few years, the personnel from research institutes, universities and administrative departments, joined in some large-scale information research projects. The research reports they produced have achieved long-lasting social results.
4. To change from a gratuitous information service to a combination of gratuitous with paid-for service.

Economic means have been used to manage the information activities for changing a gratuitous information service to a partially paid-for service. The initiative of research personnel is brought into play and the vitality of information departments is raised by economic levers. In recent years, most projects of agricultural information research have been listed in annual scientific research plans. The related organizations must provide relevant research funds while assigning the research projects. In substance, this style is also an embryonic form for carrying out an information research contract and paid-for transfer of information research achievements.

However, the following unadapted phenomena for information of a scientific and technical system and rural economic structure are revealed:

1. The current basic structure and managerial system of information work unadapted extremely the information research to the development. China's information systems were basically built on the basis of an administrative system that is weak in serving agricultural production. The social function of information research has failed to be brought into full play.

2. Unified policies and rules in information research work are lacking. Although it is a leading organization of our national agricultural information system, the Center of Scientific and Technical Documentation and Information of the Chinese Academy of Agricultural Sciences is neither authoritative nor its guidelines binding. It is difficult to organize and coordinate the agricultural information system of the whole nation.

3. Information research cannot effectively serve agricultural production and the rural commodity economy because it is limited by the concept of "scientific and technical information."

4. The information research personnel are lacking in both quantity and quality. According to a findings report for 64 agricultural information units in China, there are an average of 3.3 information research personnel in each unit. Most of them were previously engaged in agricultural research, and have been working in information research work for less than five years. The organizational structure is one of the important factors impairing the quality of information research.

II. Effective ways and strategies for information analysis and synthesis work to serve the rural economy

Along with the reform of the rural economic system, the traditional natural economy has been seriously pounded and is gradually being replaced by a commodity economy in the vast countryside. It is forecast that China's countryside will soon become another highly concentrated area of information specialists in addition to scientific research and industry.
In order to meet the extensive needs of a rural commodity economy for information research and to promote the development of information research of superior quality and high applied value, the author suggests that it is necessary to adopt the following effective methods and strategies.

1. **Information research work must take serving the rural commodity economy as its main task.**

   In 1988, the Fifth National Working Conference of Agricultural Scientific and Technical Information and Documentation stated that agricultural information research work should not only follow the advancing tracks of agricultural science and technology at home and abroad but also launch macro information research for serving policy-making during the next several years. It is imperative to carry out technological information research in the light of specific technical problems and to provide a scientific basis for evaluating achievements and developing the rural commodity economy.

   Nowadays, the rural commodity economy is particularly brisk, and competition is very sharp, too. Obviously, agricultural information research which serves the rural commodity economy can’t also suit the speedily developing situation unless its mode is changed and its domain is expanded. Agricultural information research work should take serving the rural economy as its main task. This should include providing comprehensive and predictive research reports for leading organizations at all levels, to furnishing reliable information to make decision-making democratic and scientific, and serving the technical transformation of agriculture and the development of export-oriented agriculture.

2. **The jurisdictional relationship of information research organizations must be reformed.**

   Although the system of China’s agricultural scientific and technical information has preliminarily changed, the fact that agricultural information organizations depend on their higher administrative departments or institutes has not been transformed. The present situation is unfavorable to the development of information research. Therefore, the information research system must transform from a dependent research unit relying on administrative departments to an independent one. A national bureau of agricultural information and a unified management system from central to local authorities should be set up. They should play both administrative and vocational leadership roles.

3. **Strengthen the liaisons and coordination both inside and outside the information research system.**

   In recent years, various advisory organizations related to agriculture have been established. This situation impels the agricultural information units to strengthen their horizontal connections and to prove their superiority in competitive conditions. The professional information contingent must combine with the amateur, and the information research work must be in close agreement with national demands to enlist the support of leading departments. This working method can improve the quality of research reports and the prestige of information research organizations.
4. We must pay attention to the users' demands to improve the optimum seeking ratio of research projects. Information users are the core of the whole process of information research and the key to raising the optimum seeking ratio for projects. The users of agricultural information research mainly include the personnel of policy-making offices, management departments, research institutes, technical extension stations and educational bodies for agriculture at different levels and township enterprises in China. They need not only information of their own professions but also of the developments in management, commodity circulation and related sciences.

5. To speed the process of normalization and standardization for research achievements, management formalities must be enforced as strictly for information research projects as for scientific research projects. The standard for judging research achievements should be laid down scientifically. This would serve to affirm and extend the achievement, to kindle the researchers' enthusiasm and creativity, and to raise the level and quality of the research.

6. The commercialization and paid-for service in information products should be implemented. An information product is a commodity property. It is an intellectual commodity. Commercialization of information products is the only way that information work can serve society. The reports on information analysis and synthesis also would be brought into the category of information commercialization.

An information product ought to carry out the paid-for transfer and exchange according to the law of value of commodity production. It is necessary that we make a thorough study about the cost and price of information products.

While advocating the commercialization of information products and putting into practice paid-for service, we can't ignore the fact that an information organization is a public welfare body. The relationship of paid-for service to gratuitous service must be handled correctly.

7. Speed up the modernization of operations for information research. From a long-term point of view, it is necessary to found automated office systems. Information research organizations must pay attention to the accumulation of data to form one’s small-scale fact base and vocational records. Computers and sufficient modern equipment should be provided.

All problems involved with information research could probably be solved by expert systems. Once demand combines with possibility, the information expert system, based on artificial intelligence, will be developed.
8. **Raise the quality of the information personnel and train the 'T' model talent who combine information research with economic construction.**

The level of information research achievements depends on the quality and ability of the personnel who are working on it. However, most of them graduated from agricultural universities and are short in knowledge of informatics, systems science, management science, computer science and economics. It is necessary to establish training centers for agricultural information research at both national and local levels so that a contingent of information researchers is built to meet the needs of modern information work and to serve the rural economy.

The emphasis must be placed on the intellectual structure of the integral "T" model both in the depth and range of professional knowledge inside the information organization, because the ideal talent of 'T' model is in short supply at present.