Study on the Problems and Countermeasures of Agricultural Informatization Development in China

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Abstract. Starting from agricultural resources and environment informationization, agricultural production and management informationization, agricultural science and technology and education informatization, agricultural market and circulation informationization, agricultural policies and regulations informationization and rural social and economic informationization, this paper analyzes the problems in the development of agricultural informatization, such as the lack of infrastructure, the lack of information resources development, the backwardness of information technology education and the lagging of information policies and regulations. It puts forward countermeasures and suggestions on the healthy and rapid development of agricultural informatization in China.\textsuperscript{1}

Introduction

China is one of the largest population and agricultural countries in the world; it uses 7\% of the world’s land and 20\% of the world's population. "There is food at home, the heart does not panic", the healthy development of agricultural is the cornerstone of social stability. Since the beginning of 2004 for more than ten years, the central document will actively promote the construction of agricultural information as a priority. Agricultural informationization is an important component and technical means in the process of agricultural modernization; it is an important measure to resolve the problem of "agriculture, rural areas and farmers", speed up the construction of new socialist countryside and realize a comprehensive well-off society. It is the development strategy of informationization in our country.

\textsuperscript{1} National Natural Science Foundation of China: study on the Work-Family atmosphere of support knowledge workers innovation behavior: Cross - cultural Comparison between China and America

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Agricultural Informatization

The Meanings of Agricultural Informatization

Agricultural information is a new field that accompanied by the development of information technology, we are still in its understanding of a continuous exploration stage. Baohua Wu (2001) argues that agricultural informatization refers to the comprehensive development and application of modern information technology and information systems in the agricultural field, so as to penetrate into agricultural production, market, consumption and rural social, economic, technical and other specific links to accelerate the traditional agriculture re-election, which greatly improve the efficiency of agriculture and agricultural productivity, it’s a process that promote agricultural sustainable, stable and efficient development. On the basis of this, the paper argues that agricultural informatization is used the high and new technology like network and information technology in the fields of agricultural production, circulation, consumption, management and so on. It’s a process that fully and effectively develops and utilizes agricultural information resources and promotes the sustainable development of agricultural economy and rural social progress. In this process, production and management information is security; science and technology education information is the driving force, means of production and agricultural information market is the way, rural social and economic information is final goal.

The Main Contents of Agricultural Informatization

Agricultural Resources and Environmental Informatization

Natural resources, represented by land and water resources, are one of the basic elements of agricultural production. In order to understand the changes of agricultural ecological environment and the development and utilization of agricultural resources in a timely and accurate way, it is necessary to establish an information network system for agricultural resources and ecological environment, thus making full use of limited agricultural resources to achieve the sustainable development of agriculture.

Agricultural Production and Management Information

Effective management in the prenatal, middle and postpartum of the various processes of agricultural production, enhances the efficiency of agricultural production, and achieves the maximum reduction in resource consumption. The seasonal nature of agricultural production makes it unstable. Crops need to use the Internet-based modern information technology for scientific control from cultivation, growth, pest control, meteorological disasters, harvest statistics, product processing and so on.

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Agricultural Science and Technology Education Informationization

Agricultural science and technology improved the quality of agricultural production factors; expanded the types and scope of labor objects; transformed the traditional agricultural structure. Technology only converted into the actual productivity can play its maximum value. Agricultural science and technology promotion must use computer technology, network communication technology, optical remote sensing technology, and etc to establish agricultural science and technology information network. At the same time, the development and cultivation of senior agricultural talents, speed up the exchange and promote the use of scientific and technological achievements.

Agricultural Production Materials and Agricultural Products Market Information

Agricultural production materials and agricultural market information can make a variety of agricultural production information supply and demand information published to the network platform, through the development of agricultural means of production e-commerce, speed up the flow of agricultural production information supply and demand information\(^3\). In the past, the biggest problem of farmers is the problem of agricultural products sales. The market problem of agricultural products is directly related to the income of farmers. When agricultural "precision poverty alleviation" is to grasp agricultural efficiency and increase farmers' income, we must establish a perfect agricultural product supply and demand network system, Activate the circulation of agricultural products.

Rural Social and Economic Informatization

Rural social and economic information is a comprehensive development problem, "three rural" involves a wide range, from the basic survival needs to the pursuit of the happiness index of the residents, rural population, resources, culture, economy and so on can not ignore the content. The information technology is to rely on Internet technology and in the form of network data to show the status of rural society and economic development in all directions, get provide support to ensure the central and all levels of decision-making agencies can more quickly grasp the rural economy, science and technology development and social changes.

Problems in the Development of Agricultural Informatization in China

The Agricultural Infrastructure Is Not Perfect

The lagging development of agricultural infrastructure has been a stumbling block to the development of China's agricultural industry. The lack of grassroots sites has seriously hindered the process of agricultural informatization. Unbalanced construction investment to create the gap between urban and rural

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\(^3\) Zhao Jihai, Zhang Xiangbai, Shen Ying. Theory and Practice of Agricultural Informatization.[M]. Beijing: China Agricultural Science and Technology Press, 2002.
areas, "Matthew effect" in the urban and rural development gap reflected in the most vividly. China currently more than 1,500 agricultural sites, government-sponsored sites at all levels accounted for about 40% of the proportion, but the number of agricultural grass-roots sites less than 4%. Although the "million farmers online project", "information to the countryside" have been carried out, but the underdevelopment of Information hardware equipment and communications network making the farmers "last mile" of the data transmission network fault.

**Insufficient Development of Agricultural Information Resources**

If the agricultural information market is likened to a "store", then the "store" is missing, the “goods” is scarce, and the function is incomplete. First, the establishment of agricultural information collection system is not perfect, the collection standardization is low. Second, the network information resources are duplicated, the effectiveness is poor. Third, the information processing method is backward, the analysis and processing of information is not deep enough to reduce the information titer. Fourth, there is no formation of targeted agricultural database, there is the lack of organic combination of other media In the process of information dissemination and transmission.

**Agricultural Information Technology Education Backward**

The conversion rate of agricultural research in China is very low, and the agricultural production is weak in the application of information technology. The scientific research level of agricultural information technology is not high and there is a repeat phenomenon. In the existing agricultural system, not only the total amount of information personnel is low but also lack of high level of Information talent. In the final analysis, the lack of talent so that the construction of agricultural information database and information update is not timely, agricultural information dissemination efficiency is low, the low used of information technology or even blindly carry out agricultural production led to the development of agricultural information slow.

**Agricultural Information Policy and Regulations Lag**

In the construction of agricultural information, the government not only as a producer but also users of information products, standing in the public service point of view, the government should provide institutional guarantee for the development of agricultural informatization. Reality is that China's agricultural information policy and regulations are not perfect, leading to agricultural information lack of the necessary soft environment. The government lacks subsidies, support and regulation of agricultural information service organizations, did not play a good "helm" role in the agricultural information construction.
Development Trend and Suggestion of Agricultural Informatization in China

Agricultural Production and Management Information

The agricultural production management information needs scientific control for Internet-based modern information technology, remote sensing, aerial surveying, geographic information system and global positioning system and so on are important means of agricultural resources and environmental information, all of their use requires Internet technology as a prerequisite to support. "Internet + agriculture" has promote the integration and innovation with agricultural and the new generation of information technology that based with cloud computing, Internet of things, large data, it is an important opportunity for the development of traditional agriculture and provides a direction for China's agricultural modernization.

Agricultural Science and Technology Education Information

Social economic development and social information must rely on people's knowledge. Most of the farmers for the lack of knowledge of information processing capacity, partly due to their own too little contact with the computer, plus "small farmers thinking" imprisonment. To improve their scientific quality, just solve the equipment problem is not enough, we should take a attention on rural basic education and farmer's technical training, from knowledge conservation and operation skills to improve the quality of farmers. In order to solve the problem of "last mile" of information dissemination, the "precision poverty alleviation" for the upgrading of communication infrastructure in rural areas, especially in poor areas, eliminating the bottleneck brought by the digital divide is the focus of work.

Agricultural Resources and Environment Informatization

The development and utilization of agricultural information resources is an important task for agricultural information workers and the basis for the survival and development of agricultural information departments. The result of agricultural science and technology is the potential productivity, to transform it into real productive forces for agriculture to increase production, farmers increase income. We should teach the applicable technology to the farmers, strengthen the communication of agricultural scientific research and production activities, and speed up the exchange and popularization of new agricultural technology achievements.

Agricultural Market Circulation Information

The biggest obstacle to the flow of information in the agricultural market is that there is more contradiction between the supply and demand, the supply and demand information is inconsistent, farmers have difficulty in grasping the demand for agricultural products, and it is difficult for processors to master the
supply of agricultural products, which urgently requires the use of new generation of information technology. The development of rural e-commerce is the main development direction of "Internet + agriculture", and it is also one of the fastest growing industries. Through the network information platform to connect a variety of services with rural resources, such as agricultural products warehouse information and agricultural products transportation and distribution information.

**Agricultural Policies and Regulations Information**

China is a big agricultural country, agricultural information, whether in demand or supply is a huge market. agriculture is a weak industry in the three major industries, we must strengthen the support of agricultural information development efforts. The government should strengthen the construction of laws and regulations on agriculture, improve the legal support system of agricultural informatization, restrict the behavior of network operators and users, improve the credibility and utilization efficiency of the network, and guarantee the legitimate interests of agricultural producers and operators.

**Conclusion**

For 13 consecutive years, Agricultural Information Policy in China has made agricultural information had a lot of progress in agriculture production management, agricultural resources and environment, agricultural science and technology education, agricultural market circulation and other aspects, the policy that strong farmer and benefit farmer policies continue to strengthen, so that agriculture-related funds continue to increase, agricultural science and technology information service personnel has grown, all of this will inevitably make China's agricultural information development to a deeper level of progress.

**References**


