

Research on application progress of agricultural big data

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Abstract: under the background of rapid development of informatization, big data plays an important role in industrial upgrading and promotes the intelligent and intensive transformation of industrial mode. In the field of agricultural development, the application of big data technology has promoted the informatization and modernization of China's agriculture and played a positive role in promoting China's agricultural development. However, the development process of agricultural informatization is still in its infancy, and the application of big data technology is still not deep enough. Based on this, this paper explores the application progress of agricultural big data, hoping to promote the deep integration of big data and the development of agricultural industry.

Key words: agricultural development; Big data technology; Application progress

With the further popularization of Internet technology, the relationship between the modernization of agriculture and the Internet is getting closer and closer. It is necessary to give full play to the practical application advantages of big data technology in a scientific way to screen and analyze the information needed for agricultural development. China is a large agricultural country. Although it is in its infancy in the application of information technology, it already has a huge database, links many data and information channels, and covers a wide range. Therefore, using big data technology to study the content related to agriculture is of great practical significance to promote the modernization of agriculture.

1 Application significance of agricultural big data

1. Improve agricultural production efficiency

Entering a new stage of development, efficient and intensive agricultural development has become the main form of agricultural developed countries. Carry out information processing for agricultural production machines, give play to the application advantages of big data technology, promote the role of artificial intelligence technology in agricultural production, and improve the information processing ability and decision-making ability in the agricultural field. Under the application of big data technology, agricultural production can achieve precision and efficiency, and improve agricultural production and production efficiency. At the same time, with the help of agricultural big data, people can also reduce the input of human and material resources, and gradually reduce the proportion of input and output. In short, with the application of agricultural big data technology, agricultural production efficiency can be improved, making full use of agricultural resources, which is the embodiment of the harmonious unity of agricultural production law and modern technology.

2. Optimizing the allocation of agricultural resources

The application of big data technology in various fields has brought unprecedented innovation and change, promoted the sharing space between various links and departments of the agricultural industry chain, realized the rapid exchange of information, and improved the degree of cooperation between different regions and departments. Under this new mode, the mobility of agricultural production factors has been improved, which provides the possibility for enterprises to optimize the allocation of resources. Compared with the traditional agricultural development model, the application of agricultural big data promotes the construction of data sharing channels in all aspects of agricultural production, realizes information sharing and resource allocation optimization, and reduces the blindness of agricultural production activities.

3. Improve agricultural management ability

China's agricultural production has made new breakthroughs, is in a new stage of transformation and development, and will remain in a state of transformation for a period of time. In order to ensure the profits of agricultural production activities, people need to pay attention to the application of big data technology, play its role in guiding and regulating the agricultural market, and timely and accurately judge and grasp the market development trend. At the same time, we should give full play to the role of the government, make macro-control and decision-making for agricultural production activities, promote the deepening of agricultural supply side structural reform, and ensure the improvement of total output and quality. At the same time, in agricultural administration, it is necessary to make management transparent and efficient, speed up the innovation of agricultural management methods, and improve the management ability in the field of agriculture.

2 Current situation analysis of agricultural big data application progress

1. The promotion scope needs to be further expanded

The application of big data in the field of agriculture provides a new way for agricultural development, and also shows some challenges in practical application. For example, the acquisition of agricultural big data is limited by the environment and requires some special equipment and machines. These hardware facilities are relatively expensive and only suitable for large-scale farms. For some small-scale farms, it is not a small financial expenditure. At the same time, in China, most farms have not yet popularized big data technology. On the one hand, affected by economic benefits, on the other hand, limited by ideas, some farmers' understanding of information technology is not comprehensive enough. in a word, due to the influence of equipment prices and business concepts, the promotion scope of big data in the agricultural field is still small, and effective measures need to be taken to further expand the promotion scope.

2. Farmers' ideas need to be reformed

In the era of big data, farmers use data and information to analyze market trends, obtain sales channels of agricultural products, and innovate agricultural management methods to improve the output rate of agricultural products. However, in the actual application of agricultural big data, some farmers, influenced by the traditional planting concept, still believe in the experience accumulated over the years and do not pay attention to the application of science and technology. Therefore, in the process of solving practical problems, agricultural big data can not fully play its role, causing adverse effects on the development of agricultural informatization. In this regard, under the background of the application of agricultural big data, farmers' ideas need to be separated from the traditional empirical and conservative state, so as to avoid the obstacles caused by traditional ideas to the application of agricultural big data.

3. Data acquisition capability needs to be improved

Agricultural big data information involves many aspects of agricultural production. It constitutes the data system of modern agricultural production and plays an important role in agricultural development. Therefore, it is an important guarantee for the development of agricultural modernization to carry out the application of agricultural big data technology and build a sharing system of agricultural production data. However, through the mobilization, we learned that at this stage, the ability to obtain agricultural big data still needs to be improved. We need to make improvements in many aspects, such as data standardization and data acquisition. By improving the ability to obtain data, we can realize the in-depth application of agricultural big data.

3 Application of big data in agriculture

1. Application in agricultural breeding

With the help of agricultural big data technology, breeding researchers can improve the efficiency of agricultural breeding work and screen out high-quality crop seeds as seeds for the next season. In the process of agricultural breeding, selecting high-quality and high-quality seeds can enable crops to show many high-quality traits. With the help of international high-throughput data resources, seed researchers are assisted to extract gene fragments that people need, and then this high-quality gene is screened by genetic engineering. In this process, researchers can carry out biological investigation through computers and find seeds that meet the needs of agricultural production from massive data information. In this way, breeding experts can carry out planting experiments on fewer seeds to determine which varieties are suitable for actual planting and which varieties have drug resistance, so as to improve the breeding efficiency and do the breeding work quickly with lower breeding cost.

2. Application in the development of agricultural intelligence

Making good use of agricultural big data can assist agriculture to achieve precise management and promote the intelligent development of agricultural production. In terms of production, big data technology can make statistics on the temperature, humidity and nutrient composition of soil, build a data information base, help farmers understand the production environment of crops, and scientifically carry out manual intervention. At the same time, with the help of advanced planting technology, farmers can plan the optimal production area, select suitable crops for planting, and maximize the yield of crops. In terms of agricultural breeding, farmers can use big data to record the growth information of livestock, such as physiological characteristics, feed intake, etc., to clarify the disease information that livestock are prone to in all links, so as to adjust the composition of feed composition and ensure the scientificity of livestock breeding. In terms of agricultural production operations, farmers can use the big data system to make statistics on weather information, temperature information, etc. as reference materials for the implementation of agricultural production operations, so as to achieve fine operations. In short, the application of big data can promote the intelligent development of agricultural production, improve the agricultural production environment and improve the efficiency of agricultural production.

3. Application in traceability of agricultural products

In recent years, food safety has become a hot topic of concern, "green", "organic", "pollution-free" and "pure natural" have become labels for high-quality video. Under the application of information technology, the traceability of agricultural products provides the possibility for consumers to understand the product situation, increases the sales of agricultural products, and also plays the role of supervising and managing agricultural products. Therefore, in this regard, agricultural big data technology can use the topic of food safety to give full play to its advantages, realize the tracking of all links from production to sales, and make consumers feel at ease when buying and eating. The safety supervision of agricultural products can not be ignored. The supervision and early warning need to be implemented synchronously, and the popularization speed needs to be accelerated, the popularization scope needs to be expanded, and the production, storage, transportation and other links of agricultural products should be supervised to control the food safety of agricultural products from the source. In specific applications, people can provide two-dimensional codes on the outer packaging of agricultural products by building a database, allowing consumers to scan the two-dimensional code and directly enter the database. The data information after scanning is all the information of the agricultural product, recording the whole process of planting, breeding and transportation and storage. For the re integration of food safety coding and database, establish a special big data platform to realize the integration of safety data of different regions and different food types, and gradually form a complete food traceability channel.

4. Application in meteorology and pest early warning

Meteorology is an important factor affecting agricultural production. It not only has a great impact on the growth of crops, but also affects farmers' production and labor, which is a part of farmers' keen concern. In this regard, using big meteorological data, people can predict the meteorological situation more accurately in a longer time range, give early warning of destructive extreme weather, and let

farmers take countermeasures in advance. In addition, by summarizing and analyzing the meteorological big data in previous years, these information can be provided to farmers in advance as an important reference basis for them to purchase agricultural insurance, select the appropriate insurance varieties to insure, and minimize farmers' losses. In terms of early warning of diseases and pests, people can collect data in time, establish a data center for diseases and pests, and then give early warning of the occurrence of diseases and pests in combination with environmental factors, crop growth and other factors, so that farmers can make preventive measures in advance. In a word, using big data technology, we can carry out agricultural production benchmark monitoring, establish meteorological disaster early warning system and pest early warning system, so as to minimize the threat of natural disasters and ensure the economic income of farmers.

5. Application in the development of green agriculture

Agricultural ecological environment is an important guarantee for sustainable development, and it can also ensure food safety. Agricultural big data can play a role in promoting the increasingly prominent problems of farmland pollution, pesticide pollution and farmland degradation, and has a large space in solving ecological and environmental problems. In this regard, some countries have started R & D and innovation, developed agricultural big data companies, and are committed to realizing the agricultural production mode of natural farming. Under this new mode, farmers can cultivate in a more natural way, so that crops have higher natural nutrients at a lower cost. Based on big data technology, collect data and combine it with predicted data, such as farmland, laboratory and satellite sensor data, and combine it with meteorological data. The analyzed data are integrated into the original data to provide reference for farmers to make decisions quickly. In this way, farmers can not only scientifically control the amount of water, fertilizer and pesticide, but also realize ecological planting and promote agricultural production to achieve sustainable farming. In addition, in some countries with high level of agricultural development, people also use agricultural big data to identify weeds, and use computer visualization technology to selectively distinguish crops from weeds, so as to avoid the use of pesticides and achieve the goal of developing organic agriculture. In a word, the application of agricultural big data technology in modern agriculture can promote the intelligent and automatic agricultural production, realize the harmonious development with nature on the premise of ensuring the growth of crops, and provide help for the development of green agriculture.

6. Application in optimizing agricultural market

With the help of the information provided by big data, agricultural production and circulation links can be transparent, provide references for agricultural producers, make reasonable planting planning, and avoid affecting the sales price of agricultural products. Use the sales data and market conditions of agricultural products to predict the price trend and market saturation of agricultural products, so as to effectively avoid market saturation and slow-moving agricultural products. With the help of market big data information, predict the price and market trend of agricultural products, and combined with the distribution of consumer groups, assist employees to master the performance of products after listing in advance. For example, understand the consumer groups' demand for product quality and price, so that employees can achieve a balance between supply and demand and set the most reasonable price. In terms of optimizing the agricultural market, agricultural big data technology can provide more favorable reference and help for farmers, replace the blindness and uncertainty of traditional agricultural transactions, make farmers' planting and trading based on mastering the market situation, ensure the stability of agricultural product trading price, and ensure farmers' economic benefits.

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In a word, the application of agricultural big data has become an inevitable choice for the development of modern agriculture, and plays an important role in improving crop yield, quality and ensuring food safety. With the support of agricultural big data technology, agricultural production activities will enter a new stage of development. For this, China needs to actively learn from the planting patterns of agricultural developed countries, expand the application scope of agricultural big data, guide farmers to change their planting concepts, and deeply understand the positive role of big data technology in the development of agricultural production.

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