Research on the Application of Artificial Intelligence and Computer Technology in Agricultural Modernization

Xuede Luan

Weifang University of Science and Technology, Weifang, Shandong, 262700, China

Abstract: In the construction of agricultural modernization, advanced technology and equipment system are used to replace traditional manual operation, realize high-speed development driven by technology, enhance the efficiency of resource integration, and achieve the effect of improving quality and increasing output. With the integration of artificial intelligence technology, computer technology and agricultural modernization industry, information management and control can be carried out from many aspects, and refined processing technology can explain the information of crop growth state and growth environment, and provide data support for subsequent management. Based on this, this paper discusses the application of artificial intelligence and computer technology in agricultural modernization, and looks forward to the future development trend.

1. Introduction

As an important pillar of China's economic industry, with the continuous optimization and improvement of advanced technology and advanced management concepts, China's agricultural production system has really changed from the original manual mode to the automatic and intelligent processing mode, thus accelerating the efficiency of industrial transformation. Artificial intelligence and computer technology empower agricultural modernization. Through the construction of Internet and Internet of Things, all kinds of information in agricultural production are highly integrated, and then through the association between main agricultural systems and subsystems, data sharing and real-time comparison are effectively realized, which provides data support for technicians' follow-up management and effectively promotes the development of agricultural modernization in China. This paper discusses the application of artificial intelligence and computer technology in agricultural modernization for reference only.

2. Overview of Artificial Intelligence and Computer Technology

Artificial intelligence technology is the integration of people's thinking and intelligent system, providing a perception way for the whole technical system in the process of operation, and then fitting in with people's rational operational thinking. In the mechanical production industry and the automatic manufacturing industry, the realization of artificial intelligence has really achieved the common purpose of liberating the labor force and enhancing the production efficiency. As far as the agricultural industry is concerned, with the increasing global population base, the demand for crops

also increases, and the traditional agricultural production system just can't meet people's demand for crop output and supply in the new era. With the emergence of artificial intelligence technology, intelligent management and control based on the integration of growth, maintenance, transportation and sales can be set up for crops, and the whole process and all-round technical control mechanism can effectively solve the diseases and insect pests and transportation problems in the process of crop growth, and really improve the grain output.

Compared with artificial intelligence technology, the research and development and application of computer technology are widely used in various fields, and the whole technical system is becoming more and more perfect. The realization of computer technology relies on the computer platform and software system to regulate and control all kinds of data information, enhance the docking between the main system and the terminal actuator, and improve resource allocation. As far as the development of agricultural industry is concerned, the realization of computer technology has really accelerated the agricultural modernization, which plays a role in the operation processes of various agricultural industries and provides comprehensive services for the agricultural industry from various angles.

3. The Application of Artificial Intelligence and Computer Technology in Agricultural Modernization

3.1 The Application of Artificial Intelligence in China's Agricultural Modernization

First, in the aspect of agricultural planting, artificial intelligence technology can collect all-round data for the whole crop planting situation, and list and file the data with internal intelligent processing system. Automatic processing can not only record the growth data of crops at different stages, but also provide corresponding data decision-making service content for farmers, so that rural people can know the current growth state of crops and the influencing mechanism caused by external factors and internal factors. For example, when using artificial intelligence processing technology to analyze crop information, the growth attributes of crops in normal state can be used as reference information, and the information generated by the current growth state of intelligent crops can be classified and compared, and the abnormal state of crops at the growth level can be verified in time, so as to provide information. In addition, according to the artificial intelligence technology, we can build the Internet of Things system of agricultural industry, synchronize and share the basis of different information nodes in the network field of vision, and collect the crop growth information in the whole region by external sensors, so that people can finish watering, fertilizing and maintaining regional crops through remote control, which greatly reduces the workload of farmers.

In the process of animal husbandry development, the Internet of Things is the main construction. Through the digital management of the whole farm, the data collection, transportation, storage, discrimination and other forms generated by each kind of monitoring nodes can be correctly rooted in the main system, and the current growth situation of all kinds of livestock and poultry can be analyzed by using background data, and automatic feeding processing can be carried out. For example, in large-scale broiler breeding, the traditional breeding tools are mainly artificial feeding. However, with the increasing demand for broilers in the social market, enterprises undertaking broiler breeding will inevitably introduce modern breeding machines in order to expand the scale. With the fully automatic feeding mode, the growth and eating situation of broilers can be detected in time, and the automatic feeding time can be set to finish the feeding within the specified time, or the staff can adjust the feeding rate in real time through remote control, so as to truly realize the integrated breeding and operation. In addition, temperature sensors, humidity sensors and air sensors can also be combined in the farm to collect the information inside the whole farm. If the

temperature, humidity and air pollution level inside the farm reach the preset system, the main system will automatically give a class of instructions to drive the system to complete the functions of ventilation, temperature increase and temperature decrease, dehumidification and so on, so as to provide a comfortable growing environment for livestock and poultry, and achieve the effect of increasing quality and production.

3.2 The Application of Computer Technology in China's Agricultural Modernization

The realization of computer technology in the agricultural field is to provide a transmission and storage way for all kinds of data information, automatically list and process data by combining internal intelligent algorithm and independent optimization algorithm, etc., and provide data services for agricultural operators for subsequent agricultural scientific research. For example, when cultivating hybrid rice, a series of hybrid rice growth information can be queried on the network platform by computer equipment. Combined with computer simulation software, the growth of hybrid rice in the whole region and different varieties can be simulated and measured, and the possible yield of hybrid rice under different influencing factors can be analyzed, which can provide feasible data for the subsequent research and development of hybrid technology. In addition, through computer technology, data mining can be realized, and the information of the whole farm can be efficiently stored and converted, so as to ensure that the value of each kind of information is in line with the demands of agricultural development, thus reducing the loss rate of computer resources.

In addition, in the application process of computer technology, it can manage the whole regional environment in a fine way, so as to truly achieve internal and external collaborative control. First, computer technology can be used to predict the weather conditions in the region, for example, data analysis of cloud images collected by satellites, measurement of external influencing factors combined with big data technology, and prediction of weather conditions in the next few days, such as heavy rain, strong wind, blizzard weather, etc., can alert farmers in time, and carry out relevant protective treatment to avoid damage to crops during their growth. Secondly, computer technology can provide early warning for the help of farming life, adjust the resources of the whole data information, and confirm the natural disasters that may be caused by the environmental information in the region through data ring ratio and data year-on-year, so as to provide more comprehensive data services for rural personnel to carry out pest control and so on. Thirdly, computer technology can analyze the current growing environment of crops, and according to the soil information, water quality information and air information collected by external sensors, the environmental change information of current crop growth attributes can be measured from multiple angles. When people choose planting areas, they can combine the information presented by the system to predict whether the geology and various links of this place can meet the demands of normal growth of crops, and then effectively avoid the problem of crop yield reduction in the later period.

4. The Development Trend of Artificial Intelligence and Computer Technology in Agricultural Modernization

The construction of agricultural modernization has become the main trend of social development in the future. Through the integration and application of advanced technology and advanced management concepts, it can provide a role of restraint and guidance for all links of agricultural industry production, and accelerate the transformation and development of agricultural industry.

4.1 Precise Construction

Agricultural precision construction is a systematic analysis of planting forms and crop growth states in the whole region. The integrated application of computer technology and artificial intelligence technology needs to define all kinds of image information and digital information in crop growth from various angles, so as to ensure that each kind of data can accurately explain the growth mode of individual crops, and then construct a growth space suitable for crops to improve the actual management quality. Therefore, in the follow-up development process, it is necessary to evaluate the directional output of crops in the region, and combine the standardized processes of water application, fertilization, pest control, etc., to ensure that the fine management of each vehicle can play a role in regulating the growth of crops. In addition, the harm to the ecological environment caused by crop growth is continuous, and it is necessary to make rational use of resources in the subsequent development period, reduce the consumption of various resources in crop production, and standardize treatment in combination with regional geological environment and ecological environment to avoid the environmental pollution caused by crop growth, which is in line with the national sustainable development strategy.

4.2 Intelligent Construction

With the continuous improvement of people's living standards, the demand for out-of-season food is also gradually increasing, which requires agricultural personnel to build a greenhouse growth environment according to the growth attributes of crops and provide sustainable operation space. The construction of intelligent greenhouse is to endow the whole computer system with artificial intelligence processing technology to realize unmanned control and management. Intelligent treatment plays an important role in every growth process. Through effective supervision of air temperature and humidity, the sustainability of crops in the growth process can be ensured. For example, in the greenhouse environment, it belongs to a semi-enclosed space, and the carbon dioxide produced during the growth of crops will gradually accumulate in the enclosed space. For example, if the carbon dioxide exceeds the standard, it will slow down the production of crops. At this time, based on computer technology and intelligent processing technology, we can analyze the concentration of carbon dioxide in the growing space of crops. Once there is a problem of exceeding the standard, it will be uploaded to the main system in time. At this time, the instructions given by the computer will drive the fresh air system to carry out ventilation treatment to ensure the normal growth of crops.

5. Mechanized Construction

The development of agricultural mechanization is based on the modern technology, which endows the mechanical production mode with the functions of automation and intelligence, and ensures that the agricultural production process is truly transformed from the labor mode to the scientific mode. For example, for the artificial intelligence processing system, program setting, automatic cultivation, automatic seeding, automatic fertilization, automatic pesticide spraying and harvesting in the region, etc., its own automatic operation system greatly reduces the participation of workers, and at the same time, digital control can effectively avoid various error problems and really improve the growth quality of crops.

6. Conclusion

To sum up, artificial intelligence and computer technology empower the agricultural industry to

realize digital management and control. Under the construction of agricultural Internet of Things and Internet, all kinds of information resources will be centrally processed, and the effect of data regulation and control will be strengthened, so as to achieve the precise docking between the top-level system and the terminal control mechanism and avoid the information asymmetry and transmission errors. It is expected that in the future development process, local departments will increase their support for modern technology, combine policies and systems, provide effective assistance for the transformation of agricultural modernization and informatization, and give full play to the productive value of agriculture.

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