Research on the Present Situation of Agricultural Machinery Automation and Its Propulsion Model

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Abstract

Agriculture is the key to rural development, while agricultural machinery automation controls the development of agriculture and the direction of development. In this paper, the status of development of agricultural machinery automation in China is briefly introduced. Although the level of agricultural machinery automation in China has been greatly improved in recent years, there are still many unsatisfactory points. This paper analyzes and discusses the current situation of the development of agricultural machinery automation in our country. At the same time, it analyzes the existing problems and finally puts forward how to promote the automation of agricultural machinery.
Keywords: Agricultural Machinery; Automation; Propulsion Model

1 Introduction

Agricultural machinery automation refers to the agricultural machinery or equipment in its own operation or work state does not depend on manual or sensory and automatically to achieve. Agricultural machinery automation can greatly reduce the production cost of agricultural products, increase the labor comfort of farmers and improve the labor productivity of farmers, and can largely improve the quality of agricultural products, therefore, agricultural machinery research should be based on the reduction of production costs, labor productivity and the improvement of agricultural product quality, toward the sophisticated direction of automation, in order to achieve to save resources, production safety and optimize the purpose of human resources.

2 Current Situation of Agricultural Machinery Automation

Since the reform and opening up, both the level of science and technology and the total economy have been extremely rapid development. Followed by the agricultural machine the application of mechanical automation technology in the development of modern agriculture is brought about by the prosperity of the agricultural economy. Therefore, the development of agricultural machinery industry,

Now the level of automation of agricultural machinery is steadily increasing in China, accompanied by China's growing agricultural machinery operating area and the total power of agricultural machinery. The increasing number of agricultural machinery and equipment in the effective push under the dynamic, China to further expand the scope of application of agricultural machinery: so that the overall advancement and rapid development of agricultural machinery has become the direction of the development of automation, and agricultural development has been highlighted in the agricultural machinery of the key role, making agricultural production the quality and progress of a reliable protection. However, there are still a series of problems in the process of increasing the automation level of agricultural machinery in our country, which restricts the further development of agricultural mechanization.

Relative to the agricultural level of developed countries, China has a relatively low level of agricultural development. At the same time, automation of agricultural machinery is not related to the use of new technology tools to effectively use, for precision agriculture, such as dynamic control of the implementation of the implementation system, GPS, computer GLS and monitoring and control systems and other related hardware has not been rapid development. Although the agricultural production sector actively take measures to constantly explore the development direction of precision agriculture, but now China's precision agriculture is still in the overall relatively low development stage.

Relative to the developed countries, agricultural machinery manufacturing in China is still at a relatively low level. Now a lot of agricultural machinery is only in imitation of products of developed countries, in which some agricultural machinery automation devices, in order to promote agricultural machinery operating performance and upgrade operational level, just to improve or add some agricultural machinery, not only in this way, Making the complexity of agricultural machinery greatly improved, but also to make the corresponding increase in manufacturing costs, leading to the application of agricultural machinery and promotion of automation has been greatly limited. Therefore, China must take effective measures for China's national conditions and consistent with the agricultural machinery and equipment to vigorously develop.

Compared with developed countries, China's agricultural machinery manufacturing level is not high; a variety of agricultural machinery is currently only imitation of foreign products. In some agricultural automation devices, only some of the agricultural machinery to do to improve or add some equipment to improve the operation and control of machine performance, this will not only

increase the complexity of the structure of agricultural machinery, but also because of increased production costs agricultural machinery prices are more expensive, increased maintenance costs, limiting the application and promotion. Therefore, independent research and development in line with the actual production needs and reasonable price of agricultural machinery and equipment, agricultural machinery manufacturing industry should be the future direction of development in China.

3 The important role of agricultural machinery automation

China is in the process of urbanization, with the rapid development of urban economy and manufacturing industry, the tertiary industry, rural population, especially young and middle-aged labor force reduction is an inevitable trend. Rural young adults are more willing to enter the city and do not want to stay in rural areas engaged in agricultural production. Many rural areas have emerged in the "empty nest" phenomenon; the reduction of agricultural labor force for agricultural production caused a great impact. At the same time, due to the impact of family planning policy and the development of science and technology, the average life expectancy has been extended; China has entered an aging society. In rural areas, the labor intensity of many agricultural production is very high, the lack of young and middle-aged labor force will cause a lot of agricultural production is difficult to carry out. Therefore, the automation of agricultural machinery is to adapt to the rural young labor force continues to decrease this trend, to fill the blank due to lack of young and middle-aged labor force.

Agricultural machinery automation is to meet the social development of the new requirements for agriculture. With the continuous improvement of grain production, China has basically solved the problem of food and clothing, the improvement of economic level to promote the concept of consumption changes. People's requirements for agriculture has not only to solve food and clothing, but the pursuit of richer varieties, higher quality, higher nutritional value, taste better agricultural and sideline products. The farmers themselves also hope to reduce labor intensity, improve labor productivity, increase production and quality. At the same time, with China’s accession to the WTO, agriculture is also facing global market competition, only by reducing production costs, improve production efficiency and quality of agricultural products, can build modern agriculture. Therefore, the automation of agricultural machinery can meet the needs of society for agricultural products, improve agricultural labor productivity, through agricultural machinery automation can reduce labor costs and improve efficiency.

Globally, automation of agricultural machinery is common in all countries development trend; the current agricultural machinery automation research has also reached a level. Every country regards agricultural machinery automation as adapting to population aging and improves the quality of agricultural products, saving resources and safe production of effective ways. In particular, the industrial and electronic industries, the continuous development of the

information industry, electronic products, lower prices for automation of agricultural machinery to provide technical support and financial support. Agricultural machinery automation with the development of the electronics industry and the information industry, the development of automation devices has been continuously strengthened.

4 Advancement of agricultural machinery automation

Including production conditions and the level of scientific and technological development, including many factors will have impact on the development of agricultural machinery automation, so to be effective of the advancement of China's agricultural machinery automation of the continuous development of these must be difficult to solve, continue to explore and try. Agricultural machinery automation of the implementation of non-day power must be sustained by the long-term advance, in stages to promote. China's current level of agricultural machinery and agricultural production conditions are not perfect, only to advance the process is divided into several stages, and gradually promote the automation of agricultural machinery.

In the agricultural machinery from the move, the first of all to the region's agricultural production technology and the actual conditions of the investigation and assessment of the effectiveness of different models of agricultural machinery to assess the effectiveness of its safety performance, energy conservation, operational accuracy and operational efficiency, etc. Meet the requirements of the region. The government can encourage farmers to buy agricultural machinery through the policy of subsidizing farmers to buy agricultural machinery, so that the application and extension of agricultural machinery will be further expanded. Agricultural subsidies will be supported through preferential policies such as tax reduction. Encourage agricultural machinery manufacturers and related Scientific research institutions to carry out research and innovation of agricultural equipment, in addition, should also avoid the introduction of policy across the board, the national government and the agricultural authorities should be an overview of the various regions of China's natural conditions, crop varieties and labor patterns, The introduction of appropriate policies in the area of agricultural economic development; Promote the agricultural socialization service and agricultural technology innovation and demonstration and promotion, promote the application of agricultural scientific and technological achievements, and strengthen agricultural machinery quality and safety supervision and management; and agricultural machinery enterprises also need to increase scientific research investment, achieve healthy competition within the industry, proactive participate in domestic competition.

The sensor is agricultural machinery automation control devices, the highest technical content, the most complex one. Agricultural sensors must be able to accurately and quickly determine and evaluate the biological traits and activities of agricultural products during the production, processing and distribution of agricultural products. In this process, they cannot destroy

agricultural products and agricultural products. At present, most important for agricultural machinery automation control system is the ability to detect the production and development of crops from the culture medium and even the land, as well as the effective parameter control device corresponding to it. Effective sensor can realize the facilities of the crops, factory production, greatly improve the crop cultivation and processing of agricultural products.

In the agricultural machinery automation research and development and the manufacturing industry development process, must pay attention to enhance the agricultural machinery automatic control technology maturity degree, namely the agricultural machinery automation reliability. To further improve the maturity of automatic control technology of agricultural machinery, we need China's scientific research institutions, agricultural production enterprises to take into account the current peasants of the purchase price of agricultural machinery to buy the ability to use agricultural automation technology in the field operations, improve the quality of agricultural products and other processes.

Compared to industrial machinery, agricultural machinery working environment is more complex, and the distribution is also more dispersed, if there are some difficulties to repair it. As the agricultural automation machinery using microprocessors and semiconductor integrated circuits, maintenance is more difficult. Therefore, to improve the durability of agricultural machinery is necessary.

Agricultural machinery is to adapt to the needs of agricultural production. Automatic Agricultural Machinery the basic purpose of the plant is to meet the needs of agricultural production, the use of a few farmers; the role of the object is the soil and crops. In previous studies, the performance and automation of agricultural machinery has been improved through continuous improvement of mechanical structures or the addition of automation devices. However, this will make agricultural machinery more and more expensive and complex, but also to the maintenance of the greater difficulties in raising the level of automation but at the same time reducing its practicality. The development of agricultural machinery must start from the needs of farmers themselves, the development of reasonable prices, simple operation, and durability and can meet the actual needs of farmers in agricultural automation machinery. In view of China's terrain conditions are complexes, strong agricultural machinery in the actual operation of certain difficulties, can be appropriately developed for small-scale farmers to use small-scale agricultural machinery, the price to be more affordable, and more comprehensive function. At the same time, in the process of research and development of agricultural machinery automation, it is necessary to fully consider the farmers' purchasing power of agricultural machinery and control the production cost of agricultural machinery, so as to effectively promote agricultural machinery automation.

China's precision agriculture development is not yet ripe, compared with the gap between developed countries, to further promote the development of precision agriculture, not only conducive to the promotion of China's agricultural machinery automation technology development and improvement of sophisticated technology, is China's agricultural science and technology level,

International competitiveness and the right to speak. At present, the international community focused on the development of precision agriculture in water saving, fertilizer and other agricultural technology system, automatic control, water conservation, fertilizer can be achieved through precision irrigation and fertilization, in order to reduce waste of water resources and improve the use of chemical fertilizers Rate of purpose, which is China's establishment of resource-intensive and environment-friendly society, a concrete manifestation. Therefore, in learning foreign first into the experience at the same time, we must focus on scientific and technological research and development efforts, improve scientific and technological research, precision irrigation and precise fertilization technology to achieve continuous breakthrough in precision agriculture to achieve continuous progress. In addition, with the continuous development of intelligent technology, artificial intelligence will be the new era of the development of agricultural machinery automation focus, at present, agricultural robot and intelligent system has been in some developed countries, agricultural production has been applied in China's agricultural machinery intelligence Of the party and started late, compared with developed countries, there has been no small gap, therefore, to rise from the chase, seize new opportunities and new opportunities, adhere to scientific and technological innovation and independent research and development, and further promote the agricultural automation and control technology to the development of intelligent technology.

5 Conclusion

China is a large agricultural country; agricultural machinery automation is social development for the higher requirements of agriculture. Implementation of agricultural automation can be effective to improve the efficiency of agricultural production, reduce the cost of agricultural production, improve product quality and safety, the only way to improve China's agricultural development level and enhance China's agricultural competitiveness in the world. In the background of intelligent era, artificial intelligence technology will be more widely used in agricultural machinery, and ultimately to promote China's agricultural level to achieve better and faster development.

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