

AGRICULTURE DIGITAL TRANSFORM IN THE CONTEXT OF BIOECONOMY DEVELOPMENT IN CHINA

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With the development of economy and technology, all walks of life are undergoing digital transformation. China has been a big agricultural country since ancient times, and it is particularly important for the agriculture digital transform in the context of bioeconomy development. These areas of research are combined into articles.

Keywords: bioagriculture; agricultural products; bioeconomy; China's Bioeconomy Development Strategy; smart agriculture.

ЦИФРОВАЯ ТРАНСФОРМАЦИЯ СЕЛЬСКОГО ХОЗЯЙСТВА В КОНТЕКСТЕ РАЗВИТИЯ БИОЭКОНОМИКИ В КИТАЕ

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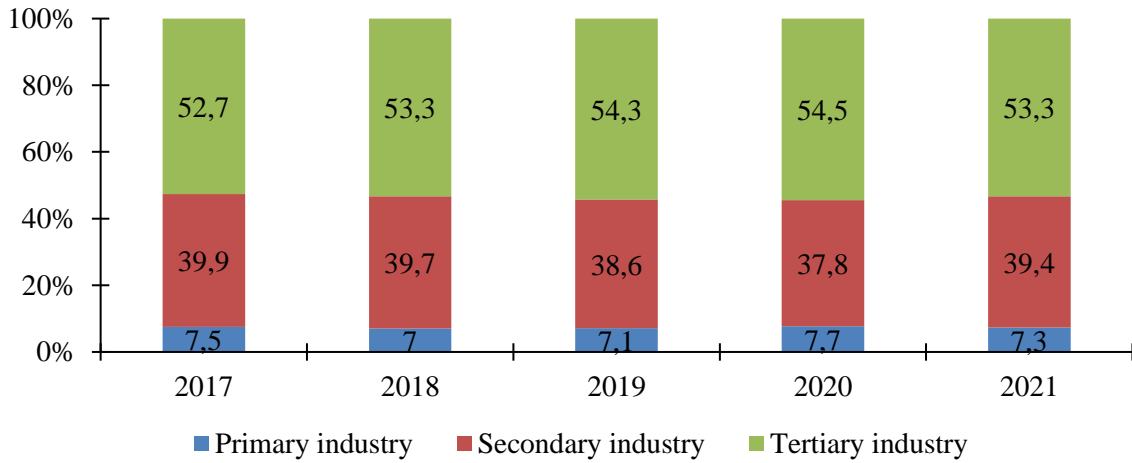
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С развитием экономики и технологий все сферы жизни претерпевают цифровую трансформацию. Китай с древних времен был крупной аграрной страной, и это особенно важно для цифровой трансформации сельского хозяйства в контексте развития биоэкономики. Данные направления исследований соединены в приведенной статье.

Ключевые слова: биоземледелие; сельскохозяйственные продукты; биоэкономика; Стратегия развития биоэкономики Китая; умное сельское хозяйство.

The development of social production begins with agriculture, and only based on agricultural development can industry arise and develop, and only based on agricultural and industrial development can there be development of the tertiary industry. The status and role of agriculture can be summed up in one

sentence as «the foundation of the national economy». Economic, political, and social importance of agriculture illustrated in figure.



The added value of primary, secondary, and tertiary industries from 2017 to 2021, a percentage of China's GDP

Agricultural digital transformation Digital agriculture is an advanced stage of agricultural modernization. It is an effective means to innovate and promote the development of agricultural and rural information. It is also the road that China must go through from a large agricultural country to an agricultural power.

In recent years, China's digital agricultural technology has developed rapidly, and several practical digital agricultural technology products have been developed and a dedicated network digital agricultural technology platform has been established. In this process, only by actively adapting to the trend and improving digital productivity can we accelerate the pace of agricultural digital development, help the agricultural industry reduce costs, improve quality, and increase efficiency, and promote high-quality agricultural development (table).

The strategy of smart agriculture

Year	Main direction
2012	<ol style="list-style-type: none"> 1. Clarify the direction of agricultural technology innovation 2. Highlight the key points of agricultural technology innovation 3. Improving the Agricultural Science and Technology Innovation Mechanism 4. Improving Conditions for Agricultural Science and Technology Innovation 5. Cultivate and support new agricultural socialization service organizations 6. Speed up agricultural mechanization
2013	<ol style="list-style-type: none"> 1. Strengthen agricultural materials and technical equipment 2. Stabilize rural land contract relationships 3. Innovative service methods and means

Table continuation

Year	Main direction
2014	1.Promote Agricultural Science and Technology Innovation 2.Speed up the development of modern seed industry and agricultural mechanization
2015	Strengthen the driving role of agricultural science and technology innovation
2016	1.Strengthen the construction of modern agricultural science and technology innovation promotion system 2.Speed up the development of modern seed industry and the application of remote sensing technology
2017	1.Further optimize the layout of agricultural regions 2.Build a modern agricultural industrial park 3.Strengthen agricultural science and technology research and development 4.Strengthen the promotion of agricultural science and technology
2018	Consolidate the foundation of agricultural production capacity
2019	1.Accelerate breakthroughs in key agricultural technologies 2.Implementing the Digital Village Strategy
2020	1.build agricultural and rural big data centers relying on existing resources and accelerate the application of modern information technologies such as the Internet of Things, big data, blockchain, artificial intelligence, fifth-generation mobile communication networks, and smart weather in the agricultural field." 2. Carry out national digital village pilot projects.
2021	1. Agriculture effectively combines the Internet of Things and cold chain to help accelerate the construction of smart agriculture
2022	1.1. Vigorously promote the construction of digital villages 2. Promote the development of smart agriculture 3. Promote the integration and application of information technology and agricultural machinery and agronomy

Digital channels for agricultural products: establish an agricultural data resource library to realize online management of core digital assets such as capital chains, agricultural product categories, and output; use IOT technology to realize product traceability and enhance crop brand competitiveness; expand logistics links to achieve integration of production and sales.

Digital management of agricultural product production: use computer simulation technology to establish different agricultural ecological simulation models and derive a scientific crop management system to help farmers scientifically plant and breed crops and increase production.

Animal husbandry health management: use sensors to monitor animal body temperature, voice, and daily activity data, and based on model analysis, timely detect patients, block the spread of animal infectious diseases in advance, and control the survival rate and health level of animals.

Intelligent equipment operation: use the «AI+» agricultural production equipment model to replace manpower in agricultural production operations, such as automatic seeding, automatic drug spraying, automatic feed feeding, etc.

Currently, farmers in China are actively using several applications that Intelligent Greenhouse, Plant protection drone, Water and fertilizer integrated sandy soil cultivation system, Factory nursery, LED ecological planting cabinet, Smart fertilizer machine, Smart incubator, Smart farm [1].

Bio-agriculture is of particular importance, but before talking about biological agriculture, let's first look at what is biological economy. Bioeconomy mainly includes bio agriculture, bio manufacturing, biomedicine, bio energy, bio services, bio resources, bio safety, bio information and other industries. It is the fourth economic form after agricultural economy, industrial economy, and digital economy.

Bio agriculture refers to modern agricultural production methods that transform and improve the performance of crop varieties and agricultural products and maintain good productivity of the agricultural system through modern technological means, including biological breeding, biological fertilizers, biological feeds, and biological pesticides.

Empowering agricultural production with biotechnology will help improve the production capacity and quality of important agricultural products such as grain and promote the quality and efficiency of agricultural production. China has preserved abundant seeds and soil resources and is at the world's leading level in research on crop stress tolerance and efficient nutrient utilization.

Strategic Analysis of Developing Bioeconomy in China. One is resource endowment advantages. In the era of bioeconomy, ecosystems and genetic resources will become the most valuable strategic resources.

The second is the advantage of market potential. with the continuous advancement of national strategies such as Healthy China and Beautiful China, the people's demand for extending life and improving the quality of life is increasing, which provides a broader market for the development of bio-economy field space.

The third is the advantage of human resources. China's large-scale and high-level talent supply has provided a steady stream of professional technology and industry management talents for the development of the bioeconomy.

The fourth is the advantage of industrial base. Several innovative vaccines independently developed by China are leading the world. Some biotechnology products and services such as super rice and genetic testing are in the first echelon in the world. Important breakthroughs have been made in core technologies such as cell factory construction and green bio manufacturing processes, and biotechnology and artificial intelligence are accelerating. Integration, a new form of economic and social development based on biotechnology is taking shape.

China's Bioeconomy Development Strategy 2035. The first five years (to 2025) are the stage of making up for shortcomings and consolidating the

foundation. It is necessary to coordinate the prevention and control of the new crown pneumonia epidemic and economic and social development, strengthen top-level design and strategic deployment, and clarify the main direction and breakthrough. The development of the bioeconomy has become a new growth pole of the modern industrial system, promoting the modernization of the industrial chain and supply chain, the construction of ecological civilization, and the improvement of people's livelihood and well-being to new heights.

The second five-year period (to 2030) is the stage of cultivating demand and optimizing the environment. It is necessary to actively cultivate demand, promote development through application, and continuously optimize the system and policy environment. Build an important pole of the global bioeconomy, and some fields and links rank among the first phalanx. The third five-year period (to 2035) is a stage of innovation and ecological prosperity. It is necessary to mobilize all forces to jointly promote the deep prosperity of the bioeconomy, support the construction of a socialist modernized country, and write a new chapter in the development of the bioeconomy with the people of the world. Build a strong bio-economy country with a solid foundation, distinctive features, wide application, safety and order, and a sound system.

From the descriptions in the above chapters, we can see that agriculture, digital transformation and bioeconomy are very important development goals for China. It is very important for China's development to manage and control the three goals as a whole and cooperate with each other.

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