

Exploring the Practical Path of Promoting Agricultural Modernization with Agricultural Science and Technology Innovation

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Abstract— In order to accelerate the construction of a strong agricultural country, to meet the people's needs for a better life and to fully realise the modernisation of the country, we need to vigorously promote the modernisation of agriculture with agricultural scientific and technological innovation, which is an inevitable requirement for the realisation of high-quality development of agriculture, and also an important guarantee for the promotion of urban-rural co-ordination and the development of the key initiatives of intelligent agriculture. However, there are many problems in the process of promoting agricultural modernisation with agricultural science and technology innovation in China, including the lack of scientific planning of agricultural science and technology support policy, insufficient construction of agricultural science and technology personnel, and unsmooth promotion system of agricultural science and technology innovation results, etc. Therefore, it is necessary to improve the policy system of agricultural science and technology innovation, strengthen the construction of agricultural science and technology personnel, and construct the promotion system of agricultural science and technology results to solve these problems, and to promote agricultural science and technology innovation with agricultural science and technology. Therefore, it is necessary to improve the policy system of agricultural science and technology innovation, strengthen the construction of agricultural science and technology personnel team, construct the promotion system of agricultural science and technology achievements and other aspects to solve these problems, and promote the development of agricultural modernisation with agricultural science and technology innovation.

Keywords— Agricultural science and technology innovation; agricultural modernisation; problems and challenges; practical paths.

I. PRESENTATION OF THE PROBLEM

Scientific innovation is the first productive force for social development and the fundamental driving force for the modernisation of agriculture and rural areas. Agriculture and rural areas, as the most basic and particularly important parts of the national economy and society, bear multiple social and historical missions, such as providing the necessary material supplies and spiritual elements for national development, social progress and people's well-being, and they are also the important prerequisites for solving the basic contradictions of the society and answering the major issues of the times. Modern development history and social realities at home and abroad have fully proved that in order for a country or nation to achieve long-term development, its agriculture and rural areas must be revitalised, and the key to revitalisation lies in the realisation of agricultural modernisation, which is an inevitable requirement for accelerating the construction of a strong agricultural country, meeting the people's needs for a better life and realising the modernisation of the country in an all-round way. Agricultural modernisation has different connotations in different historical periods and in different social contexts, and can be broadly divided into two kinds: the narrow sense and the broad sense. In the narrow sense, it mainly refers to the modernisation of the agricultural industry, which is based on modern scientific theories, using modern industrial production methods, modern science and technology, modern economic management methods for agricultural production management, and its content includes modernisation of material, technology, operation and management, environmental protection, etc.; in the broad sense, it refers to the modernisation of the "three rural areas", which includes not only the level of rural material

production, but also the modernisation of the "three rural areas", which includes the level of rural material production. In a broader sense, it refers to the modernisation of the "three rural areas", which includes not only the improvement of the level of material production in rural areas, but also the level of development of non-agricultural industries in rural areas, the level of urbanisation in rural areas, and other socio-economic elements closely related to the development of the agricultural sector. In a nutshell, the modernisation of agriculture is the modernisation of agriculture in terms of means of production, production technology, organisation and management, as well as infrastructure. When we look back on the development history of agricultural modernisation in human society, we will obviously find that the successful realisation of agricultural modernisation in every country and nation cannot be separated from agricultural scientific and technological innovation, scientific and technological innovation is the fundamental driving force of agricultural progress and the key to promote agricultural modernisation, and it can even be said that the modernisation of agriculture is essentially the modernisation of agricultural scientific and technological innovation and the process and level of agricultural scientific and technological innovation directly affect the development of agricultural modernisation. The process and level of agricultural scientific and technological innovation directly affects the development and realisation of agricultural modernisation. Based on this, to comprehensively promote the modernisation of the country and the people's career in the new era, it is necessary to profoundly reveal the value implication of agricultural science and technology innovation to promote agricultural modernisation, analyse the problems of agricultural science and technology innovation in the process of agricultural modernisation, explore

the practical paths for solving these problems, and comprehensively promote the modernisation of agriculture with agricultural science and technology innovation.

II. THE NECESSITY OF AGRICULTURAL SCIENCE AND TECHNOLOGY INNOVATION TO PROMOTE AGRICULTURAL MODERNISATION

(1) *Agricultural science and technology innovation is the inevitable requirement to achieve high-quality development of agriculture.*

Promoting the high-quality development of agriculture is a realistic need for China's agricultural development to enter a new historical stage as well as the implementation of the new development concept in the field of agriculture, and it is also the way to promote agricultural modernisation, which plays an important fundamental role in the development of the country and the people's cause. The high-quality development of agriculture is to strive to achieve green development, quality and safety, excellent efficiency, and favourable competition in all aspects of the whole process of agricultural development, which is precisely inseparable from the innovation and creation of agricultural science and technology. Green development is based on respect for nature and the protection of nature, to achieve a virtuous cycle of social resources and efficient use of sustainable development, which is the first condition to promote the high-quality development of agriculture. However, the current agricultural development in China still exists a series of thorny problems such as low resource recycling rate, flawed balance between ecological and economic benefits, insufficient contribution rate of land production capacity, and poor quality and quality safety, which urgently need to be tackled and solved by the agricultural science and technology innovation technology based on modern digital and information technology. However, there are many problems and shortcomings in the field of agricultural science and technology innovation in China, which seriously limit the high-quality development of agriculture. In the future construction of agricultural modernisation, we should take scientific and technological innovation as the first productive force, accelerate the depth of integration of science and technology and agricultural development, effectively do a good job in the original innovation breakthroughs, results transformation and talent training, to ensure food security and promote rural revitalisation to make new contributions, and above all to accelerate the transformation of the mode of agricultural development, to accelerate the pace of agricultural technological innovation, and to come out of an intensive, efficient, safe and sustainable modern agricultural development road.

(2) *Agricultural science and technology innovation is an important guarantee to promote the integrated development of urban and rural areas.*

The urban-rural dual system structure is forced to form in the historical process of China's economic and social development and temporarily insurmountable divide, is the product of China's special national conditions and specific socio-historical conditions, and its gradual formation in a

certain period of time and long-term existence. Although the dual structure of urban and rural areas has played a positive role at different historical stages and in the construction of China's modern social development, it has objectively caused a series of problems, such as slow or even stagnant development in the countryside, a continuous outflow of people from the countryside, and a gradual shrinkage of agricultural production, and has led to the "hollowing out" and "fading away" of the countryside. This has led to social phenomena such as the "hollowing out" and "fading away" of the countryside, and the formation of a situation in which urban and rural areas, as well as workers and peasants, are divided and fragmented. With decades of continuous development, the current Chinese society has entered a new stage of development to promote agriculture, to the city with the countryside, the need to start focusing on breaking down the urban-rural barriers, urban and rural co-ordinated development and other aspects of sustained efforts, in-depth advancement, and the fundamental way out lies in the progress of agricultural science and technology. Science and technology innovation, as the core driving force of modern development and the driving force of national social development, is also of great significance to the promotion of urban-rural co-ordinated development. Agricultural science and technology innovation can effectively activate the factors of production in rural areas, attract capital, talent, technology and other factors of production to the rural areas and agriculture constantly gathered, through the introduction of modern agricultural production technology and techniques, optimize the rational allocation of scientific and technological resource elements, smaller scale, single structure of traditional agriculture transformed into a high degree of intensive, commercialized modern agriculture, promote new urban-rural integration and high-quality development of agriculture, so as to realize the integrated and coordinated development of urban and rural areas.

(3) *Agricultural science and technology innovation is the key initiative for the development of smart agriculture*

The development of modern society is changing rapidly, the material conditions are becoming more and more abundant, relying on scientific and technological innovation to achieve agricultural modernisation, wisdom, is quietly changing the modern agricultural production methods, smart agriculture is also approaching and gradually forming a good trend, becoming a major trend in the future development of agriculture. The so-called wisdom of agriculture, is the wisdom of agriculture in the economy, refers to the full use of modern information technology achievements, to achieve intelligent management of agricultural production, in the context of rural revitalisation is to use scientific and technological innovation to help the development of wisdom of agriculture. Scientific and technological innovation is conducive to making the agro-ecological environment healthy and improving the efficiency of agricultural production, smart agricultural production with the help of science and technology, through the agricultural information platform, you can keep abreast of the dynamic information of the agricultural environment, automatically collect the information and detect it, and carry out automatic

irrigation and sowing at the right time. Smart agriculture management is the use of advanced information management methods to achieve modern agricultural production and management, mainly involving agricultural disaster monitoring, rural e-commerce and so on. Intelligent agriculture information service is based on the network platform, which can be seen with mobile phones and computers, and its information content is generally presented in an intuitive, direct and concise way, mainly involving agricultural information and convenient information and logistics information, etc. The heart of intelligent agriculture is digital agriculture, and big data is the eyes of intelligent agriculture, without the development of big data, intelligent agriculture is the blind man feeling the elephant, intelligent agriculture needs to farmland planting, facilities agriculture, animal husbandry, etc. as the focus of the field, and gradually complete the sharing of data in phases to achieve the data of the agricultural history of the data, as well as the automation of the collection of data, data use of the intellectualisation, data sharing convenience, and so on.

III. PROBLEMS OF AGRICULTURAL SCIENCE AND TECHNOLOGY INNOVATION IN THE PROCESS OF AGRICULTURAL MODERNISATION

(1) *Lack of scientific planning of agricultural science and technology support policy*

Agricultural science and technology policy as a scientific guideline policy to promote the process of agricultural modernisation to promote agricultural innovation, to promote agricultural modernisation, improve agricultural science and technology innovation capacity and so on has great significance, its to improve the level of agricultural science and technology innovation, broaden the scope of scientific and technological application and promotion, and promote the process of modernisation of agriculture and so on has an important guiding efficacy, but China's formulation and implementation of agricultural policy have certain problems. Firstly, the subjectivity of national agricultural science and technology policy is not clear. Agricultural science and technology support policy research, development and promotion are responsible for the government, and applied to agriculture, rural areas, farmers and other aspects, but the government's individual subjects in the consideration of the problem and their own subjective interests will inevitably exist under the value of bias. Secondly, agricultural science and technology innovation support policy lacks systematic, practical operation and implementation of many difficulties. For example, the number of joint documents issued by various departments is very small, the number of documents issued by individual departments is large, and there is a lack of communication between various departments, and because China's current policy under the influence of the central policy formulated by the government departments around the world, but due to the differences between localities is large, which makes the main body of the agricultural science and technology policymaking diversified, but there is no unified, perfect framework system, resulting in the lack of correlation and coordination of agricultural science and technology policy.

(2) *Deficiencies in the construction of agricultural scientific and technological talent teams*

Talent Xing, the agricultural and rural development. Agricultural science and technology talent is the mainstay of agricultural science and technology innovation, is to promote the main force of agricultural science and technology modernisation. Grasp the key core technology of agriculture, promote agricultural science and technology innovation and application of agricultural science and technology to a new level, to train a large number of agricultural science and technology talents is the key. First of all, the national agricultural science and technology personnel training mechanism is unreasonable. Due to the traditional values and career concepts, "do not love agriculture, do not learn agriculture, do not work in agriculture" and other ideological concepts have become the value of the majority of young students, resulting in China's agricultural colleges and universities, agricultural professionals, insufficient sources of students, the ability to sustained development of weak. Secondly, the management system and assessment system of agricultural science and technology talents are not perfect. China's agricultural scientific research project indicators, funding budgets are far below the average level of other units in the country, scientific research projects and the allocation of scientific research projects are also mainly to experts and scholars, hindering the opportunity for outstanding young talent in agricultural science and technology to excel, scientific research project funding approval, issuance and reimbursement of cumbersome and time-consuming procedures, wearing down the scientific and technological innovation of scientific researchers enthusiasm. Moreover, in the assessment and evaluation of talents, the phenomenon of "four only" standard and "seniority ranking" is common in national agricultural research institutions, neglecting the construction of an academic ecology oriented by ability, achievement and innovation, which leads to difficulties in the rapid and sustainable training and development of relevant talents. As a result, it is difficult for the training and development of relevant talents to be rapid and sustainable, and it is difficult to make progress in the research and development of agricultural technology innovations.

(3) *Agricultural science and technology innovation achievements promotion system is not smooth*

Agricultural scientific and technological achievements promotion as an important factor in the realization of agricultural modernisation, is an important means to improve the conversion rate of scientific and technological achievements, but also to promote the modernization of agricultural science and technology is an important carrier, but at present China's agricultural scientific and technological achievements in the promotion of the level of there are still some urgent problems to be solved. First of all, the main body of agricultural science and technology promotion is relatively single, the promotion of ways and means are not sound. At this stage, China's agricultural science and technology promotion system is mainly led by government departments, and by the agricultural science and technology promotion agencies and

local agricultural departments to undertake the task of agricultural science and technology promotion, but the promotion agencies, scientific research units, social organisations and agricultural colleges and universities belong to different management departments, each department into a system and the lack of effective coordination and communication between each other, resulting in poor information communication and the dispersion of resources for the promotion of the formation of the promotion of synergy. This has resulted in poor information communication and dispersed extension resources, making it impossible to form a synergy of extension. Secondly, the awareness of promoting agricultural scientific and technological achievements is weak. Compared with the construction of agricultural infrastructure and scientific and technological research and development funds, the national agricultural science and technology promotion and publicity funds appear to be seriously insufficient, so that agricultural science and technology promoters are not highly motivated, emerging agricultural science and technology achievements are difficult to popularise, coupled with the vast number of farmers in the agricultural production and management of the long-term formation of the empirical thinking of modern agricultural science and technology to produce suspicion and even resistance to attitudes and emotions It is difficult to accept modern agricultural production technology such as smart agriculture, which also greatly limits the application and promotion of agricultural science and technology.

IV. AGRICULTURAL SCIENCE AND TECHNOLOGY INNOVATION TO PROMOTE THE REALITY OF THE PATH OF AGRICULTURAL MODERNISATION

(1) Improve the policy system of agricultural science and technology innovation

Agricultural science and technology policy can effectively guide the development and reform of national agricultural science and technology in a considerable period of time, and the correct agricultural science and technology innovation policy is not only an important factor in promoting the modernisation of agricultural science and technology, but also an important measure to promote the transformation of Chinese-style modernisation of agriculture and rural areas. National agricultural science and technology policy involves science and technology innovation, subject positioning, financial taxation and other aspects, so the state must continue to strengthen the top-level design of agricultural science and technology and continuously optimise the layout of agricultural science and technology innovation. The first is to formulate a guiding agricultural science and technology policy. Relevant departments in the formulation of agricultural science and technology policy, first of all, to understand the current status of the development of agricultural science and technology and the inherent characteristics, and accordingly to gradually improve the construction of agricultural science and technology policy framework and build a complete agricultural science and technology policy support system, to create a theory of agricultural science and technology - agricultural science and technology innovation - agricultural science and technology

application promotion Agricultural science and technology innovation - Agricultural science and technology application and promotion - Agricultural science and technology achievements transformation based on the whole process of science and technology policy service chain, to promote science and technology policy to take root, improve the operability of the policy and the implementation of strength. Secondly, the relevant departments should accurately grasp the value orientation of the agricultural science and technology policy, clarify the positioning of the main body of agricultural science and technology policy, advocate the formulation of science and technology policy oriented to improve people's livelihood, and take high quality and high efficiency of agriculture, prosperous rural industry and rich farmers' life as the starting point and foothold of science and technology policy, while taking into account the reasonable concerns of other innovative subjects and other new agricultural business subjects, and promulgate specific agricultural science and technology policy to promote the development of agricultural innovative subjects. It has promulgated specific agricultural science and technology policies to promote the development of agricultural innovation subjects, and has gradually improved the relevant supporting policies for the development of agricultural science and technology.

(2) Strengthen the construction of agricultural scientific and technological talent team

Scientific and technological innovation is an important support for the modernisation of agriculture, scientific and technological innovation is the source of scientific and technological talent. It can be said that our agricultural scientific and technological talent team has come to a non-growth, non-strength can not be the time, must be pressed with a sense of urgency of the mission of the night, the sense of urgency of the mission of the time, the agricultural scientific and technological talent as a major task of the work of the three agricultural work to grasp the practical and good. The first is to optimise the modern talent training model, and constantly consolidate the talent base. According to the current stage of China's agricultural development and changes, comprehensively promote the deep-level changes in China's agricultural science and technology talent training mode, play out the role of universities and research institutes in cultivating agricultural science and technology research talents, the cultivation of agricultural and industrial cross-fertilisation of composite scientific research leaders as the core of talent training, optimize the multi-dimensional multi-disciplinary and multi-area agronomy curriculum system, promote the change of the data and digital-driven teaching methods, and create the industry, academia and research institutes. change in teaching methods and the creation of an industry-university-research-integrated wisdom agriculture practice teaching base, and strive to cultivate a group of high-quality scientific and technological talents with independent research and development capabilities for the country. The second is to build a reasonable talent evaluation system and improve the talent incentive mechanism. Accelerate the establishment of agricultural theoretical research, applied research and technological innovation

research and other corresponding evaluation standards and systems, scientific and technological innovation potential as well as the contribution of innovation results as the evaluation guide, the implementation of the classification of the evaluation of talents engaged in research in different agricultural fields, classification assessment. At the same time, it is necessary to introduce incentives for scientific researchers, including the conversion of scientific research and innovation results into substantive rewards such as equity and positions, so as to fully stimulate the enthusiasm of scientific researchers for their work.

(3) *Constructing the promotion system of agricultural science and technology achievements*

Agricultural science and technology promotion is necessary to achieve agricultural modernisation, and the transformation and application of agricultural science and technology innovations need to be promoted continuously to be realised. Firstly, it is necessary to clarify the functions of national professional agricultural technology extension institutions, give full play to their leading role in diversified subjects, highlight their public and public welfare functions and scientific research institutions and farmers' cooperative organisations and other diversified subjects, relying on modern information technology and sharing platforms, popularise knowledge and information on agricultural technology innovations, and create convenient conditions for the transformation and application of innovative achievements. Secondly, it is necessary to actively develop all kinds of operational agricultural technology promotion subjects to meet the diversified needs of farmers for agricultural technology. To create an integrated promotion system with the government extension department as the main body, scientific research institutions, agriculture-related universities, agricultural business units, social groups and other diversified main bodies to participate, each extension body has its own role and makes its own efforts, while building a modern information technology sharing platform to improve the diversified

agricultural science and technology promotion methods. It is also necessary to establish a classification promotion mechanism for different types of agricultural scientific and technological achievements, in order to mobilise the enthusiasm of the promotion agencies to the maximum extent possible, and provide the institutional design and construction of scientific and technological promotion through appropriate interventions such as policies and laws, enhance the overall service function of the new agricultural science and technology promotion organisations, and connect the suppliers, transmitters and applicators of scientific and technological innovations in a market-oriented way, so as to realise an organic connection between supply and demand, and improve the transformation of scientific and technological achievements. To connect the suppliers, transmitters and applicators of scientific and technological innovations in a market-oriented way, so as to realise the organic connection between supply and demand and improve the effectiveness of the transformation of scientific and technological achievements.

REFERENCES

- [1] Chen Yunping. Exploring the practical path of agricultural science and technology innovation to promote agricultural modernisation[J]. *New Agriculture*,2023(11):87-88.
- [2] JIN Lifu,WU Zhendong. Practical Path of Promoting Agricultural Modernisation by Modernising Agricultural Science and Technology[J]. *Journal of Irrigation and Drainage Machinery Engineering*,2022,40(10):1056-1064.
- [3] Xing Peng. Research on Practical Path of Agricultural Science and Technology Innovation for Agricultural Modernisation[J]. *Journal of Liaoning Administrative College*,2020(04):54-59.
- [4] Zhang Yuan,Yang Yanping. Transformation of Chinese Agricultural and Rural Modernisation: Operational Logic, Dilemma of Obstruction and Path Breakthrough[J]. *Contemporary Economic Research*,2023(12):103-110.
- [5] WANG Xiaojun,MAO Shiping. Achievements of China's agricultural science and technology innovation and development in the new era[J]. *Science and Technology Herald*,2023,41(20):25-31.