

Green Rice Cultivation Technology from the Perspective of Agricultural Economy

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Abstract: Green rice cultivation technique in China through reform and innovation for many times, from the initial short stem varieties to form a complete set of high yield cultivation technique development of super high yielding cultivation of rice technology, in the process of constantly technology innovation, green rice yield increase gradually, show that high yield cultivation technique of green rice is sustainable development in the practice again and again. The purpose of this paper is to study the green rice cultivation technology from the perspective of agricultural economy and put forward reasonable Suggestions for improving the technology according to the actual experiment. Based on this, this paper firstly analyzes the current status of green rice cultivation technology, and discusses the existing problems, and then points out the problems in the process of green rice cultivation through the technical analysis of green rice cultivation in a certain agricultural bureau. It can be seen from the experiment that the rice yield under the ecological means is always maintained above 8 tons. Based on this, this paper gives a detailed overview of the green rice cultivation technology under the agricultural economic situation, hoping to help improve the green rice cultivation technology.

1. Introduction

The time for a green ecological civilization has come. The formulation of green agricultural economy comes from a review and prospect of the development of green food industry in China over the past 20 years. The connotation of green agriculture refers to all agricultural modes and forms that are conducive to improving the protection of natural environment, increasing the quantity of agricultural products and ensuring the quality and safety of agricultural products. To set up the concept of green agriculture, not in pursuit of the rapid development of agriculture and the

agricultural economy and the green ecological split open, can't use destroy the agricultural environment for rapid progress of agricultural economy, should be the correct balance of agricultural economic growth and resource environment, makes every effort to seek development in ecological protection, appropriate to reduce the amount of chemical fertilizers and pesticides, and make agriculture not only can produce green safety of green farm produce, also can increase the income of farmers, to some extent makes agricultural green sustainable industry.

At present, China's green rice cultivation technology is mainly three-dimensional cultivation, such as rice shrimp symbiotic cultivation technology. This technique breaks the situation of monoculture in the traditional rice cultivation process, and also requires that the growth habit, cycle and breeding habit of the lobster should be fully considered in the actual rice cultivation process, which greatly enhances the difficulty of rice cultivation technology. In order to better realize green rice cultivation, it is necessary to make preparations in all aspects and combine with various practical situations to effectively realize scientific management in the field.

Bernardo Mueller analyses Brazil's shift from low-productivity, backward agriculture to international market dominance. Long-term investment in local agricultural technology is a key determinant of this shift, but the impact of agricultural policies along this path is complex and often creates more distortions than progress. Bernardo Mueller stressed the importance of the impact of basic institutional Settings on agricultural policy. Only when inclusive and sustainable institutions create a fiscal, monetary and political environment that enables these policies to succeed can Brazilian agriculture truly achieve a significant transformation [1]. Different from the capitalist agricultural development model emphasized by mainstream theories, the rise of small-scale peasant economy in China has provided a prospect for the development of small-scale peasant economy in China. In some rural areas, the main products of food crops, the appropriate scale of the intermediate farmer economy of farmland, resulting in spontaneous and mutually beneficial land transfer by farmers, and relying on the use of family labor, can achieve the spontaneous transition and development of small-scale peasant economy, expand agricultural employment, increase the income of farmers, improve the organizational capacity of farmers. Jianlei Zhang believes that if carried out on a large scale, this will fundamentally change the reality of "involvement" in Chinese agriculture, leading to the development of agriculture and the prosperity of rural society. The middle rural economy with farmers as the main body has development potential in rural society [2]. Based on the basic environment of agricultural economic and social development, the characteristics of agricultural network economic level and the operating results of leading agricultural enterprises, LU Gang constructs an index system and divides the beijing-tianjin-hebei region into three network economic zones by using complex network methods. The results show that the three-dimensional complex network related to the agricultural industry network economy belongs to the undirected weighted complex network, and the three complex networks can be divided into several subgroups, and the key network economy for the collaborative development of the agricultural industry in Beijing, tianjin and hebei is the guarantee of a strong policy support system [3].

At present, China has basically solved the problem of food and clothing, the transformation of the main social contradiction and the increasingly strict requirements of the international market for agricultural products make China's agriculture face great pressure, therefore, the research on green rice cultivation technology has become a top priority. From current situation of the development of Chinese green agriculture, this paper discusses the development of Chinese green agriculture, green agriculture industry and the development situation of green agricultural products, which focusing on the analysis of the application in agriculture bureau green rice planting technology, the analysis of its pros and cons, and for the agricultural economy under the perspective of the development of green rice cultivation techniques to provide reasonable Suggestions.

2. Proposed Method

2.1. Green Agriculture

(1) The necessity of developing green agriculture

1) Promoting green development of agriculture is the fundamental solution to the problem of agricultural pollution

With green agriculture as the main purpose of building modern agriculture, we should not develop agriculture at the cost of destroying the environment. At present, China's agricultural environment has been seriously damaged due to the massive use of pesticides and fertilizers, so it is urgent to solve the problem of agricultural pollution.

2) Developing green agriculture is an effective way to increase farmers' income

There are 900 million farmers in China. How to get more benefits from agricultural production has always been the most concerned problem for farmers. The development of green agriculture, the development of high-quality agricultural products, improve the quality of agricultural products, can enhance the potential of agricultural income, fundamentally solve this problem, to achieve farmers' income.

3) Developing green agriculture is a necessary means to increase the international competitiveness of China's agricultural products

The increasingly strict import standards in the world put forward higher requirements on Chinese agriculture, and many of the agricultural products exported by China do not meet international standards, which means that Chinese agricultural products are weak in the international market competitiveness, will lose the international market. In order to further improve the quality of agricultural products and enhance international competitiveness, we should actively promote the development of green agriculture, strengthen agricultural management, and realize the monitoring of the whole process from the land to the table[4-5].

(2) Construction of the theoretical system of green agriculture

Green agriculture is the result of the innovation of agricultural theory. It is an important innovation in the development history of agricultural theory in China. The establishment of green theory will position the direction of agricultural development from a deeper level and lay a solid foundation for China's agricultural development in the new era. To explore the basic theory of green agriculture, we should start from various aspects, from the ideological awareness to the coordination and cooperation of various departments, and build a theoretical system of green agriculture with Chinese characteristics.

1) Enhance green awareness

Give full play to the advantages of modern media, carry out colorful publicity activities on green agriculture, cultivate consumers' green consumption ideas at multiple levels and from multiple angles, and construct external conditions conducive to the development of green agriculture [6-7]. We should pay attention to the education of farmers, carry out a large range of science and technology demonstration and technology training activities, with typical cases, remarkable results appeal to the majority of farmers, enhance the use of science and technology to get rich consciousness and ability.

2) Various departments coordinate to promote the development of green agriculture

The pollution sources that destroy agricultural environment are complex and diverse, therefore, the protection of agricultural ecological environment is bound to be related to multiple departments and industries. Under the unified leadership of the local government, local agricultural departments should make overall arrangements and cooperate with each other to minimize the damage to the agricultural ecological environment, reduce the input cost and reduce the loss.

3) Strengthening the supervision of green agricultural products

We will strengthen spot checks and market supervision of the quality of green agricultural products, and supervise the quality of green agricultural products from time to time to ensure that the quality of listed agricultural products conforms to relevant standards and regulations. At present, there is still some pesticide residue on the surface of agricultural products, which should be regularly monitored and the test results released to the public in time, so that the public can buy rest assured, with peace of mind[8-9].

(3) The role of agricultural infrastructure

1) Agricultural infrastructure construction provides land conditions for the application of green technology. Farmland infrastructure can provide excellent soil conditions for crops, while water conservancy facilities can ensure water resources for plants and animals.

2) Agricultural infrastructure construction can directly improve the production mode of green agriculture. The key to the construction of green agricultural infrastructure is mechanization and electrification. The development of mechanization of green agriculture can improve the production capacity and efficiency of agriculture.

3) The construction of agricultural infrastructure has established the material foundation for the application of new technologies in green agriculture. After the complete construction of green agricultural infrastructure such as irrigation and water conservancy, storage and transportation, agricultural machinery and processing, the fluctuation of green agricultural harvest and the risk of applying new technologies will be greatly reduced, and the production of green agriculture can be protected from drought and flood, thus benefiting the application and expansion of agricultural technology and promoting the progress of green agriculture[10].

At present, the new model of green agriculture is very close to China's national conditions. The efficient production and development mode of modern agriculture has been unable to meet the social needs of agricultural products. Green agriculture can closely link traditional agriculture with modern agriculture and improve the efficiency of agricultural economy through scientific and technological innovation. With the continuous development of the society, the two agricultural models continue to develop in coordination and promote each other, promoting the rapid progress of green agriculture.

(4) Weight determination of basic index and dimension index

As shown in Table 1, the weight determination of the quality of agricultural growth in China is taken as an example to introduce the analysis process. Quality index of the four dimensions of agricultural economic growth in agriculture and rural economic structure and social development level of the first principal component comprehensive raw data information ability is very strong, the variance contribution rate is more than 85% of the general requirements, and agricultural economic growth and sustainable development of agriculture the first principal components variance contribution ratio of the two dimensions are less than 85%. Therefore, we used the first three principal components and the first two principal components to determine the corresponding weight for these two dimensions, and finally made the contribution rate of the cumulative variance exceed 85%, so that the selection of the entire principal component has a strong rationality.

From the dimension of index weights, the rural social development level, agricultural economy structure and agricultural economic growth in the three dimensions in the agricultural economic growth quality index weight is higher, were 0.742, 0.579, 0.309, this means that in 25 years from 1990 to 2014 the change of China's agricultural economic growth quality in rural social development level, the second is the agricultural economic structure and agricultural economic growth. Dimensions of sustainable development of the rural minimum weight and negative (0.136), the reason is that the weight is determined by the first principal component factor, after the characteristic root unit obtained coefficient of the relative size of the relative size of the

corresponding variance closely related to agricultural sustainable development dimension coefficient is negative, visible agricultural sustainable development level of agriculture has a lot to the inhibitory effect of economic growth quality. At the same time, from the point of each index weight basis, rural incomes, rural fixed asset investment, consumption, exports of agricultural products and farmers in rural labor productivity, forest coverage, soil erosion control measures such as contribution to the agricultural economic growth quality index is larger, and the intensity of agricultural producer price index, urban and rural duality structure, effective irrigation area of the proportion of relatively small contribution, especially in agriculture, economic growth rate, investment effect coefficient, the agricultural economy proportion, unit of fertilizer and pesticide usage basis indexes such as serious restricted the agricultural economic growth quality[11-12].

Table 1. Statistical characteristics of indicators at all levels

The dimension	The composition	Characteristics of the root	Variance contribution rate	Cumulative variance contribution rate
Agricultural economic efficiency	1	2.426	49.248	49.248
	2	1.494	30.335	79.583
	3	0.966	19.612	99.195
Agricultural economic structure	1	1.856	94.940	94.940
Rural social development level	1	3.029	97.137	97.137
Rural sustainable development level	1	0.155	81.973	81.973
	2	0.019	9.802	91.775
Quality of agricultural economic growth	1	5.466	94.482	94.482

2.2. Green Rice Cultivation Technology

(1) Problems in green rice cultivation technology

1) Application without differentiation

Different areas have great differences in climate, soil and other aspects, which has a great impact on rice cultivation. But many current status for reference when not able to fully considering the region's ecological environment and various aspects situation, will directly to use in other parts of the rice planting technology, leading to decrease in rice production quality, planting farmers to bring huge economic losses, and also make the huge loss of soil fertility, bring serious pollution to the surrounding ecological environment and destruction.

2) Lack of effective field management

Green rice cultivation technology requires farmers to carry out real-time green ecological tracking of rice planting. Once problems are found, they should be dealt with immediately. The current field management, lack of scientific management methods and technology, and then once the occurrence of duck or rice diseases, it will be difficult to timely solve, or directly use some extreme ways to deal with, resulting in more serious problems[13].

(2) Measures analysis of effective application of green rice cultivation technology in agricultural economy

1) Carry out field management of green rice cultivation technology scientifically

In order to better realize the production mode of green rice cultivation technology, it is necessary to master each technical link of rice cultivation. For example, to realize the selection of improved rice varieties, it is necessary to make the selection according to the soil conditions and climatic conditions in different regions. Now, in order to better achieve the two choices, it also needs to consider the various aspects of rice planting benefits, the selected rice seed purity needs to reach more than 97 percent, and japonica rice and germination rate needs to reach more than 93 percent. In addition, in the seedling cultivation stage, the processing of seed technology must be standardized, such as the time of basking in 9:00 ~ 15:00 is the most appropriate; Disinfection should use a certain concentration of lime water; In the process of germination, the temperature should be strictly controlled. The minimum temperature should not be lower than 10 °C and the maximum temperature should not exceed 42 °C. In terms of irrigation technology, the quality of irrigation water must be effectively guaranteed, and industrial wastewater should never be used for irrigation. Meanwhile, the height of water layer in the field should be controlled according to the different growth period of rice, and the fields should be bathed scientifically. In the rice pest control technology, the method of sparse planting can be used to solve the problem, which can promote the realization of harmless planting management and technical control. Therefore, we can know that the field management of green rice cultivation technology is mainly based on temperature control, which is mainly because the temperature is closely related to the oxygen and water required for the growth and development of rice. If the temperature is too low, the rice will lack water to form old seedlings, and if the temperature is too high, the rice will develop weak seedlings.

2) Strengthen the relevant guidance and training on the application of green rice cultivation technology

In different regions, the application mode of cultivation technology also varies greatly, so each region should be equipped with professional personnel to guide the cultivation technology of local green rice growers and effectively control the occurrence of diseases and insect pests through scientific and reasonable methods. And it also can largely promote the knowledge level of rice farmers, effectively change their knowledge structure, so as to promote their autonomous cultivation technology innovation, to develop more suitable for the local actual situation of green agriculture economic model, so as to fully in the agricultural economy of exerting the role of green rice cultivation technique, the local rice cultivation of high quality high yield this purpose, to promote the further development of local economy.

3) Increase investment and support in all aspects of green rice cultivation technology

The government should strengthen economic and other support for agricultural economic development and provide more opportunities and channels for its innovative development. For example, economic subsidies should be given to farmers who prefer to use green cultivation techniques. Then, the government needs to promote relevant policies to support, strengthen the scientific research and development of this aspect, in order to effectively improve the scientific rationality of green rice cultivation technology, so that farmers can boldly implement; Finally, it is necessary to strengthen various infrastructure and the perfection of agricultural machinery personnel allocation, so as to provide strong support for the application and development of green

rice cultivation technology, and promote the realization of the goal of high quality and high yield of rice cultivation[14].

To sum up, the optimization and innovation of crop production mode is absolutely inseparable from the support of talents, capital and technology. And, to effectively improve the current green rice planting technology, the first is innovation of rice varieties and agricultural economic development model, and actively improve the local ecological environment, in order to effectively guarantee the agricultural economy, the rice cultivation techniques were able to get a wide range of application, the realization of the aim of high quality high yield rice[15].

3. Experiments

3.1. Experimental Background

Agricultural economic development, especially the improvement of farmers' income has long been the focus of the government and scholars in our country, is China's economic and social development in the process of facing a major issue, so for many years "number one file" about the problem of "agriculture, rural areas and farmers" documents reflect the attention of the countries, make rational from the perspective of macro policy. Most people generally disapprove of unbalanced economic development. For example, when the Soviet union forced production to move to the east, the state's behavior led to space inefficiency. The change of geographical space is closely related to the structural change of a country's economic structure from agricultural economy to industrial economy and then from post-industrial economy to service economy. China is in the historical development stage of rapid industrialization and urbanization. The theoretical significance of this study is to study the agricultural economic growth in China from the perspective of economic geography, and to enrich the contents, models and methods of this study. From the practical sense, from the problems affecting the development of agriculture, starting from the economy, analyzing how national geography, climate, etc. Will affect agricultural growth, analysis how geographic agglomeration effect and spillover effect on agricultural economic growth, and estimate factor decomposition, and spatial convergence analysis, for the country to realize the integration of regional integration and the national service, provide empirical support for the correct policy guidance to the country.

Based on behavioral economics, this paper established a "cognitive - to - behavior - recognition - policy incentive effect" of the peasant household green agriculture technology selection analysis framework, on the basis of the observation in agriculture green rice cultivation environment, in order to study the environment constraints farmers green economy mechanism of agricultural technology adoption behavior and policy incentive mechanism, will provide good for farmers in green technology adoption research research train of thought.

3.2. Experimental Steps

(1) Selection of varieties

The quality of the final product of green rice should reach the national standard (gb1354-2009) or above, and its appearance, nutrition, hygiene and other quality should meet the NY/ t419-2014 standard. The selection of rice varieties mainly includes two basic principles: the period of rice maturity and the applicability of rice varieties. Normally, need according to the geographical location and climate types of rice planting to choose the mature period, strong disease resistance of rice varieties, the local climate conditions and environmental conditions in line with the green rice growth cycle, to ensure that in the whole rice growth cycle, climate conditions are not too much of a difference, to ensure normal growth and development of rice. To ensure the quality of rice - good

taste, good cooking; It should be used in food production with certain particularity.

(2) Land preparation requirements of rice planting areas

Green rice planting conditions: soil, water, fertilization, weeding, etc. Under the condition that conditions permit, can be carried out in the winter, the depth of the best to maintain about 20cm, 7~10 days before the throwing of rice planting retting borer, make the field softening, to meet the planting requirements of rice. In 1-2d before planting rice, it is necessary to apply sufficient base fertilizer to the planting area to ensure high yield of rice.

(3) Planting density planning

The experiment shows that reasonable planting density is the primary factor to ensure high yield of rice. No matter what kind of variety it is, it is necessary to plant reasonably close, sparse and dense, which will affect the yield of rice and cannot make it give full play to its advantages. Planting too densely will cause rice population too luxuriant, mutual shading will lead to a large number of diseases and insect pests invasion, affecting the normal growth and development. Planting is too loose to ensure a high yield of rice.

After 5 months of experimental observation, data collection of green rice cultivation technology of a certain agricultural bureau is shown in Table 2:

Table 2. Data collection of green rice cultivation technology

The month	The medication(t)		Administer intensity(kg)	
	Pesticide	Fertilizer	Pesticide	Fertilizer
3	84.48	351.9	5.72	213.34
4	65.73	421.6	5.21	223.82
5	45.72	376.8	5.21	212.65
6	43.65	356.2	5.43	207.53
7	40.12	326.7	4.87	205.16

4. Discussion

4.1. Research and Analysis of Green Rice Cultivation Technology from the Perspective of Agricultural Economy

As shown in Figure 1, rice is best planted on weakly acidic soil with high soil fertility, low pH value, loose and flat soil particles, and no herbicide applied. If there is no innate land planting environment, can configure for planting, configuration method is as follows, 1 a, in front of the rice in the rice planting to join concentration is about 20% or peat soil mixture concentration is 5%, completely rotten chicken manure, and mixed evenly, after 5 d, screen out the inside of the weed, gravel and clods, and blended with just the right amount of soil regulate machine bed and eventually configured to conform to the normal growth and development of green rice nutritional soil.

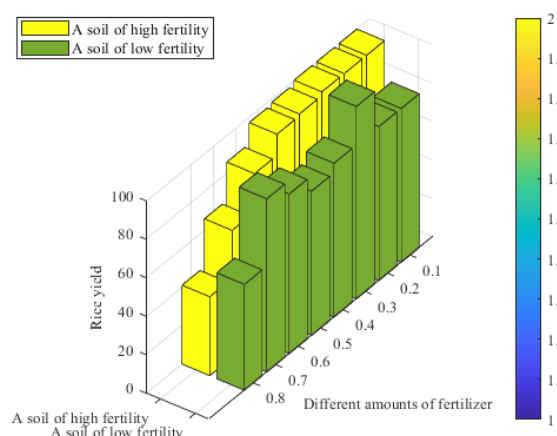


Figure 1. Rice planting yield changes under soil with different fertilizer contents

To rational application of organic fertilizers, according to the actual of rice planting the fat ability and the characteristics of rice varieties to determine the number of the organic fertilizer, also according to the type of the organic fertilizer to determine, as shown in Figure 2, suggest applying nitrogen content control in 150-175 kg, phosphate fertilizer seems suggested control in 75-90 kg, potash seems suggested control at 75-100 kg; In the process of rice planting and land preparation, 30% nitrogen fertilizer, 70% phosphate fertilizer and 80% potassium fertilizer are mixed into the basal fertilizer to ensure the fertilizer needed in the process of rice growth. After rice transplanting, 25% nitrogen fertilizer was applied. In this experiment, 25% nitrogen fertilizer, 30% potash fertilizer and 20% phosphate fertilizer were applied to the rice planting area.

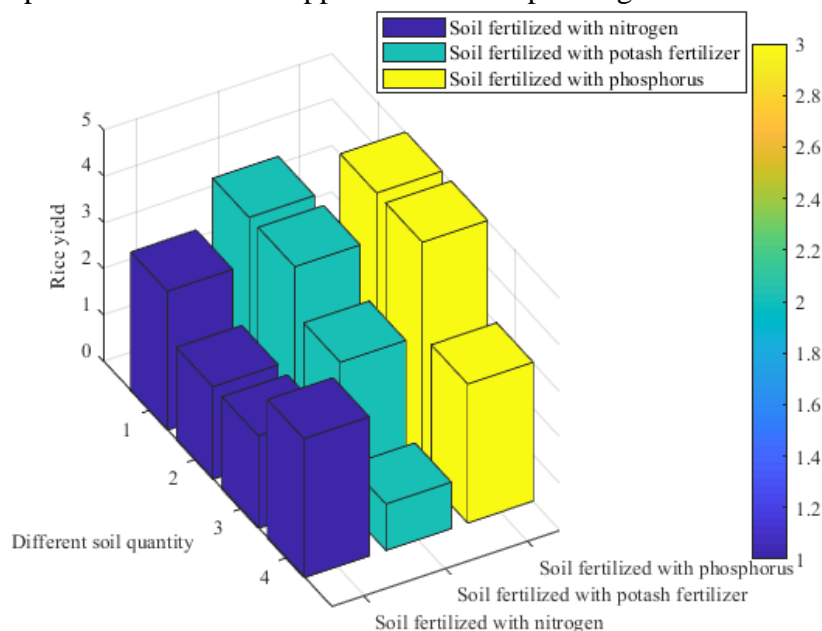


Figure 2. Changes of rice planting yield under different fertilizers

As shown in Figure 3 and Figure 4, in the process of effective prevention and control of pest control, can follow the biological control is given priority to, biological control and chemical control with the combination of prevention and cure principles, when choosing qualified chemical control, must be in strict accordance with the rule of green food pesticide use (NYT393-2013) and

drug use, in order to avoid because of excessive chemical residues and affect the quality of green rice. The use of herbicide, to choose the appropriate type of herbicide, strictly control its use dose, so as not to affect the normal development of rice growth.

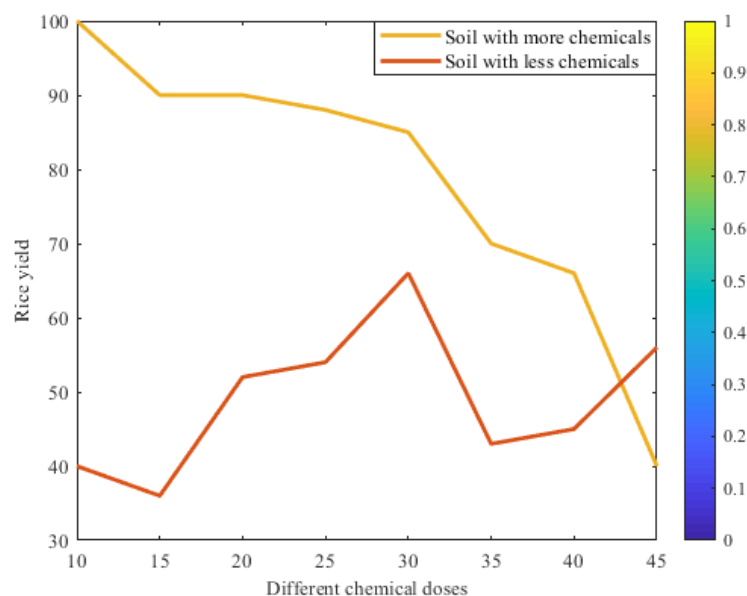


Figure 3. Changes of chemical dosage and rice planting yield

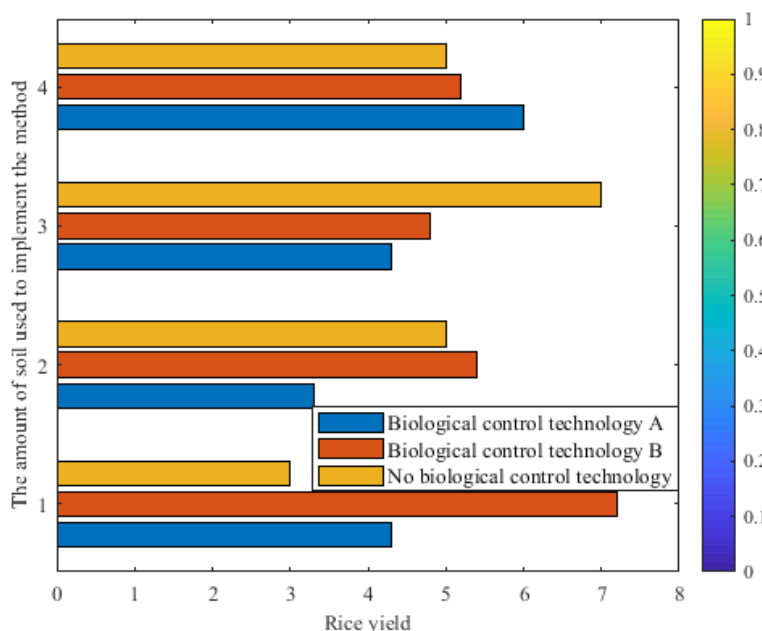


Figure 4. Changes of rice planting yield under biological control technology

Green rice planting technology in our country has experienced many times innovation, from the initial short rod form a complete set of rice varieties of high yield cultivation technique of development to the later, the super high-yielding rice cultivation techniques in the process of constantly technology innovation, green rice yield increase gradually, showed that high yield cultivation technique of green rice during the sustainable development in practice. For such a rice

base, the yield of green rice is still far from the expected standard, so it is necessary to reform and innovate the cultivation technology of high yield green rice. It is possible to improve rice yield by introducing advanced foreign high-yield cultivation techniques, improving experimental cultivation techniques and holding seminars of green rice experts.

4.2. Suggestions on Green Rice Cultivation Technology from the Perspective of Agricultural Economy

In theory, farmers to adopt green agriculture technology will be sustainable agriculture has great economic and environmental effects, but compared with the general agricultural technology, farmers need to spend more energy and cost to learn and adopt green agriculture technology, and because of factors such as the market mechanism is not perfect in our country pollution-free agricultural products are difficult to reflect quality, these factors all can inhibit the green agricultural technology diffusion. From the previous analysis, we know that on the one hand, psychologically, farmers' willingness to adopt green agricultural technology is not high, and farmers' weak operational ability and anti-risk ability hinder their adoption of green agricultural technology. On the other hand, from the perspective of effect, single green agricultural technology (pest and disease green prevention and control) has a negative impact on rice production performance, while integrated green agricultural technology (pest and disease green prevention and control and soil test formula fertilization) has a positive but insignificant impact on rice production performance. As economic people, farmers naturally tend not to adopt green agricultural technology, which is consistent with the actual research results. Therefore, in order to promote the spread of green agricultural technology, the government, as the spokesman and promoter of public interest, should start to encourage farmers to actively adopt green agricultural technology through various incentives. Therefore, the government should implement the incentive mechanism in the policies of education, subsidy and law, so as to lay the foundation for the government to effectively promote green agricultural technology.

5. Conclusion

To promote farmers' adoption of green agricultural technology driven by scientific and technological innovation, we need to: first, establish an agricultural scientific and technological innovation system guided by farmers' needs. Technical usefulness, ease of use and compatibility are the innovation goals of green agricultural technology. From the perspective of supply matching demand, the green process of agriculture is promoted through the path of "increasing the added value of agricultural products -- increasing farmers' income -- enhancing the willingness to adopt green agricultural technology". Second, the economic value index of green agricultural technology is included in the performance appraisal of scientific researchers. The economic value of technology should be included in the performance evaluation index, which can effectively stimulate researchers to consider more farmers' needs when innovating, and provide guidance for the innovation of green agriculture technology. Third, we will increase financial support for technological innovation in green agriculture. In view of the social and public nature of green agricultural technology, the state can encourage enterprises, institutions of higher learning, research institutes and other agricultural science and technology research institutions to actively participate in the research and development of green agricultural technology and its supporting technology innovation through tax reduction and subsidy policies, so as to solve the difficult problems in the application of technology.

Rice production safety is directly related to public health. But until now, due to the constraints of science and technology and production conditions, except for a small number of organic rice varieties, most rice production is still dependent on high intensity of fertilizers and pesticides. Based

on this, this paper studied the green rice cultivation technology from the perspective of agricultural economy, combined agricultural economy and technical research closely, and analyzed the feasibility of green rice cultivation technology through field observation and experiment.

Taking the green development of agriculture in China as the background, this study studied farmers' cognition, adoption intention, behavior effect and government incentive of green agriculture technology from the perspective of agricultural economy. This paper first system combing the concept of green agriculture and green rice planting technology and specific methods, sums up the paper's main conclusions, then through experimental observations in the field of green rice planting technology, the analysis of factors affecting rice yield, to suggest the cultivation of rice, based on the research conclusion is put forward to promote the policy Suggestions on the development of green agriculture technology in our country, points out that the research of deficiency, and prospects the direction of further research.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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