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Effect of Environmental Protection Planning on Agricultural Productivity in Poverty-Stricken Counties

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Abstract

Taking the path of green development is the general trend of the current society. As the largest developing country in the world, China advocates the concept of green development, combines economic, social and ecological consideration, and pursues a high-quality development model, which is of great significance to protecting China's ecological environment and sustainable economic growth. This paper introduces the 13th Five-Year Plan for environmental protection, and analyzes the influence of Chinese environmental protection planning on agricultural productivity through the double difference and intermediary effect model. The results show that the implementation of the 13th Five-Year Plan has a significant positive impact on agricultural productivity, increasing the agricultural productivity in poor counties by 7.74 percentage points; the agricultural mechanization level partly between the environmental protection plan and agricultural productivity in poor counties, and the intermediary effect is cover effect. Therefore, moderate environmental regulation is the key to improve the green growth of agricultural productivity and the sustainable development of the county economy. This study aims to provide empirical evidence for the Chinese government to improve its environmental policies and measures and formulate a green agricultural development strategy.

Keywords

Environmental protection planning; Agricultural productivity; Agricultural mechanization.

1. INTRODUCTION

The long-term extensive agricultural production mode has led to the rapid development of China's agriculture, especially during the 13th Five-Year Plan period, farmers' income continued to grow rapidly, and the per capita disposable income of rural residents increased by more than 6% (from Farmers' Daily).However, while China's agricultural economy has made great achievements, it has also caused the continuous deterioration of the agricultural ecological environment.The communique of the Second National Survey of Pollution Source shows that the agricultural chemical oxygen demand of waste water and its pollutants in 2017 was 10.671,3 million tons, accounting for 49.8% of the total emission, while the use of planting mulching film was 1.419,3 million tons and the cumulative residual was 1.184,8 million tons, causing a series of agricultural non-point source pollution problems such as serious soil pollution and water nutrition.To this end, during the 13th Five-Year Plan period, China has identified "green" as the development concept, and the agricultural sector is listed as the key target of green growth in this period, and it faces the dual task of realizing green agricultural growth and environmental protection.In the report to the 19th National Congress of the CPC, it was also proposed to strengthen the prevention and control of agricultural non-point source

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pollution and improve the rural production and living environment, and promote green development.Therefore, the State Council has successively issued the Action Plan for Soil Pollution Prevention and Control and formulated stricter standards and measures for environmental regulations in the 13th Five-Year Ecological and Environmental Protection Plan, effectively strengthen the prevention and control of soil, water and air pollution, standardize and guide agricultural production behavior, and promote green agricultural growth.

At present, the research on agricultural productivity by scholars at home and abroad focuses on agricultural production efficiency and agricultural total factor productivity identification, efficiency improvement, and the analysis of agricultural labor force (Li Huishang et al., 2021; Zhang Fengying et al., 2021), land transfer (Chen Binkai et al., 2020), climate change (Yi Fujin et al., 2021), agricultural credit (Tang Yong et al., 2021), public infrastructure (Wang Yafei et al., 2020) and other factors.Only a few parts of the literature examine the impact of agricultural productivity from the perspective of environmental policy.First, environmental policies will cause obstacles to agricultural productivity, improve workers' skills, and increase individual pollution control costs for farmers (Yang Zhiqing, 2019).Second, the implementation of environmental policies has improved agricultural productivity, promoted the progress of agricultural technology, and optimized the allocation of agricultural resources (Zhanjintao et al., 2019).Third, environmental policy has non-linear effects on agricultural productivity (Ma qun et al., 2021).The existing research conclusions are divergent, but they all agree that, in addition to direct effects, environmental policy also indirectly affects agricultural productivity through technological progress.Agricultural mechanization and facility agriculture are an important way to improve agricultural productivity, promoting the progress of agricultural technology and agricultural modernization (Xue Chao et al., 2020; Zhang Zhongming et al., 2011).

The above research provides important help to understand the relationship between environmental policy and agricultural productivity, but the national counties as a sample study the impact of environmental policy on agricultural productivity, and focus on environmental policy on agricultural technology progress and act on agricultural productivity literature, and involves the environmental protection " much starker choices-and graver consequences-in planning literature is less.Poverty alleviation has always been one of the focus of our Party's work.In particular, since the 18th National Congress of the Communist Party of China, poverty alleviation has been raised to a more prominent position. The Party and the state have set higher requirements for —— to win poverty alleviation and complete the building of a moderately prosperous society in all respects.By the end of 2020, the goal of poverty alleviation has been fully achieved, which means that it has entered the post-poverty alleviation era.China will continue to consolidate and expand its achievements in poverty alleviation and make solid progress in common prosperity.However, the poor people are still mainly concentrated in rural areas, and their income mainly depends on agricultural operation.As a basic industry, state-designated poverty-stricken counties have phenomena such as unreasonable industrial structure, weak driving ability of enterprises and backward farmers' ideas.

In this context, this paper in 2012 to 2019 Anhui, heilongjiang, sichuan 397 social and economic data, using measurement model to analyze the consequences of environmental protection much starker choices-and graver consequences-in plan on agricultural productivity, investigate whether the much starker choices-and graver consequences-in plan for environmental protection has the double dividend of coordinating environmental protection and agricultural green growth, and empirical testing mechanism, to evaluate the management of environmental policy implementation performance, establish long-term mechanism and promote agricultural green growth has important policy reference value.

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2. EMPIRICAL STUDY DESIGN

2.1. Data Description

This study uses the 2012-2019 County Statistical Yearbook of 2019, containing sample data from 433 state-designated poverty-stricken counties.According to the Office of the Leading Group for Poverty Alleviation and Development of the State Council issued the Notes on Publishing the List of contiguous Poverty-stricken Areas in February 2018,585 counties and districts across the country entered the list of key counties in national poverty alleviation work.Choose environmental protection "much starker choices-and choices-and graver consequences-in" planning time in 2016 for the environmental policy impact, selected in the government website public environmental protection "much starker choices-and graver consequences-in" planning, namely, anhui, henan, heilongjiang, jilin, sichuan, shanxi a total of 177 counties for experimental group, the remaining gansu, hunan, yunnan, chongqing, shaanxi a total of 256 counties for the control group.

This paper builds the main environmental index database according to the method of Yu Zhuangxiong et al. (2020), Collect official documents from the 11th Five-Year Plan to the 13th Five-Year Plan from the official websites of the central and provincial governments, Positioning to the sections describing the major objectives of environmental protection, Use the main environmental indicators to extract the binding indicators of environmental protection by the central government and various provinces; Secondly, We will compile environmental indicators for the 11th Five-Year Plan, the 12th Five-Year Plan and the 13th Five-Year Plan, Major environmental indicators unique to the central government, those upgraded and those shared to the provincial and central governments have been established, Among them, In the 13th Five-Year Plan, the pollution and emission control indicators of the air environment can receive support from the central and local governments at the same time; Finally, Capture the policy indicators "Pollution Land Land Safety Utilization (%)" and "Pollution Land Safety Utilization (%)" to be studied in this paper to assess their effects.

2.2. Model Setting

This paper takes the 13th Five-Year Plan for environmental protection released in 2016 as the treatment point of environmental policies. The quasi-natural experimental method is used to identify whether environmental policy promotes agricultural economic growth, and the double difference method is used to conduct empirical analysis.Among them, the counties implementing the 13th Five-Year Plan for environmental protection were included in the experimental group, and the counties that did not implement the 13th Five-Year Plan for environmental protection were included in the control group.In this paper, the benchmark regression model for the dual difference method is set as follows (1):

$$Y_{it} = \beta_0 + \beta_1 \mathrm{treat}^i + \beta_2 \mathrm{time}^t + \beta_3 DID + \beta_k \mathrm{Control}^{k}_{\mathrm{it}} + \lambda_t + \mu_i + \varepsilon_{it} \quad (1)$$

Among them, YitRepresents ote the explained variable; timeiRepresents a virtual variable before and after distinguishing policy time points; t reattIndicates whether the 13th Five-Year Plan is implemented as a policy processing variable representing whether the provincial environmental policy constraints; DID represents the interaction variable timei×t reatt, That is, the double difference item.ControlitRepresents control variables; considering the large differences in economic development level and geographical environment, the fixed effect is introduced to control sample selection bias, βi(i=0,1,2,3,4) indicates the regression coefficient; μiRegion fixed effect, λt indicates time fixed effect; εitRepresents a random error term.

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In order to further test the influence mechanism of environmental protection planning on agricultural economic growth in poverty-stricken counties, this paper applies the intermediary effect model to identify it on the basis of analyzing the relationship between environmental protection planning and agricultural growth in poverty-stricken counties.Drawing on the mediation effect test method of Wen Zhonglin and Ye Baojuan (2014), the following intermediary effect model was set up for testing:

$$Y_{\text{it}} = a_0 + a_1 DID_{i_t} + a_k \text{Control}_{\text{kit}} + \lambda_t + \mu_i + \varepsilon_{it} \quad (2)$$

$$M_{\text{it}} = b_0 + b_1 DID_{i_t} + b_k \text{Control}_{\text{kit}} + \lambda_t + \mu_i + \varepsilon_{it} \quad (3)$$

$$Y_{it} = c_0 + c_1 DID_{i_t} + c_2 M_{\text{it}} + c_k \text{Control}_{\text{kit}} + \lambda_t + \mu_i + \varepsilon_{it} \quad (4)$$

Where, the newly defined variable, MitFor intermediary variables, the criterion for whether the intermediary effect exists is to test the coefficients before the model (2) (3)(4): first test the a in the model (2)1The coefficient represents the total effect of the 13th Five-Year Plan for environmental protection; then check the coefficients in model (3) and those in model (4), where b1Represents ote the effect of environmental protection 13th Five-Year Plan on intermediary variables, c2It indicates the effect of the intermediary variable on the explained variable after controlling for the impact of the 13th Five-Year Plan for environmental protection; c in the model (4)1The coefficient represents the direct effect of the environmental protection 13th Five-Year Plan on the development of regional agricultural economy after controlling for the influence of intermediary variables.If the coefficient a in all models1, b1All are significant, indicating the existence of the mediation effect.In the model (4), c is met1The coefficient is not significant, then the full mediation effect; if c in the model (4)1The significant coefficient indicates the existence of a partial mediation effect or a concealment effect.Where, if the coefficient is c1Significantly, and b1, c2In the same sign, the indirect effect is the partial intermediary effect, with the mediation effect as the proportion of the total effect c (b1c2/a1) Represents ote the strength of the indirect effect; if b1c2The product and c1By ectopic sign, the indirect effect is caused by the cover effect, using |b, the absolute value of the ratio of the cover effect to the direct effect1c2/c1| indicates the strength of indirect effects, and both partial mediated and masked effects are indirect effects. If the coefficient b1, c2At least one is not significant, then the sobel test is needed to determine whether there is an indirect effect.

2.3. Variable Selection and Descriptive Statistics

(1) The explained variable

The explained variable selected in this paper is agricultural productivity, the ratio of gross primary industry product to agricultural population, represented by lnnongye after taking the natural logarithm.

(2) Interpretation variables

The core explanatory variable in the model is that DID, can also be represented as the interaction variable t reat×time.t reat said whether it is a state-designated poverty-stricken county to implement the 13th Five-Year Plan for environmental protection, As a processing variable on whether it is constrained by provincial environmental policies, Treat=1 said the sample is supported by poverty alleviation policies, Treat=0 said it was not supported by poverty alleviation policies; Since the five-year plan is a medium-and long-term plan of China's national economic and social development, The 13th Five-Year Plan will run from 2016 to 2020, So use 2016 as a policy impact variable, As denoted by the time, Where time =1 indicates the year ≥ 2016, That is, to begin to increase environmental constraints on state-designated

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poverty-stricken counties, time =0 indicates the year <2016, That is, the poor counties are still in the old stage of no environmental constraints.

(3) Control variable

In this paper, referring to the selection of control variables by Huang Shaoet al and Huang Zhiping, fixed asset investment (investment), per capita financial institution loan scale (lnfinance), education level (education), degree of government intervention and government) (were used as the control variables.Table 1 shows the descriptive statistical results of the major variables in the study.It should be noted that there are missing values in the yearbook data obtained, but the small number of these missing values does not affect the establishment of the conclusion.

Table 1. Descriptive statistical results of the main variables

Variable	Definition	Observations	mean	standard deviation	Minimum value	Maximum value
lnnongye	The ratio of the gross agricultural product to the agricultural population	2784	8.413	0.532	6.391	11.40
investment	The ratio of fixed-asset investment to GDP	2920	1.127	0.654	0.0845	5.988
lnfinance	Loan balance of per capita financial institution	3428	9.231	0.753	6.436	12.09
education	The ratio of the number of students in primary and secondary schools to the total population	3464	0.117	0.0378	0	1.142
government	The sum of local budget and gdp	3458	0.537	0.379	0.0322	3.991
lnssny	Pvalue of facility agriculture	2366	4.942	1.926	0	10.24
lnnjzdl	Pair value of the total power quantity of agricultural machinery	2920	3.027	0.968	0	5.768

(4) Intermediary variables

This paper selects the total power of agricultural machinery as one of the intermediary variables, which reflects the degree of agricultural mechanization. The modernization of agricultural production mode can also greatly improve the agricultural production efficiency.

Similarly, the land area of facility agriculture is selected as the intermediary variable. Due to the characteristics of intensive technology, intensification and high commercialization, the development of facility agriculture can effectively improve the land output rate, resource utilization rate and labor productivity, and improve the agricultural competitiveness.

3. EMPIRICAL RESULTS AND ANALYSIS

3.1. Policy Effect of Environmental Protection Planning on Agricultural Productivity in Poverty-Stricken Counties

Table 2 reports the return results of the double difference of environmental protection planning on agricultural productivity in poverty-stricken counties.Column (1) in Table 2 is the regression result of no added control variables, and column (2) and (3) are those obtained from fixed asset investment, natural logarithm of per capita financial institution loans, education

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level and government intervention, respectively, where column (3) also controls the time-fixed effect.The results showed that the regression coefficient of DID in column (1) was 0.0730 (significant at the 10% level), indicating that the environmental constraint policy for state-designated poor counties in China's environmental protection planning effectively promoted the agricultural productivity in these regions.After adding the control variables, column (2) showed that the agricultural productivity of poor counties implementing environmental planning increased by 0.0929 percentage points.In addition, with the fixed time effect, the results of the (3) said that the environmental protection planning still promoted the agricultural productivity of poverty-stricken counties, increasing by 0.0774 percentage points.According to the estimation of the coefficient of the control variables, we can know that the education level has a significant effect on promoting agricultural productivity, and the degree of government intervention has a negative effect, while fixed asset investment and per capita loan from financial institutions have no significant impact on agricultural productivity.

Table 2. Influence of environmental protection planning on agricultural productivity in poor counties

Variable	(1) lnnongye	(2) lnnongye	(3) lnnongye
DID	0.0730*	0.0929**	0.0774***
	(0.0393)	(0.0417)	(0.0179)
investment		-0.0916***	-0.0189
		(0.0168)	(0.0123)
lnfinance		0.167***	-0.0255
		(0.0156)	(0.0245)
education		-1.438***	2.096***
		(0.442)	(0.321)
government		-0.0575*	-0.241***
		(0.0336)	(0.0411)
Constant	8.220***	7.041***	8.129***
	(0.0172)	(0.150)	(0.214)
Observations	2784	2366	2366
R-squared	0.092	0.156	0.424

Note: * * *, * *, and * are indicated as significant at the 1%, 5%, and 10% levels, respectively.

3.2. Impact on Total Power and Facility Agriculture of Agricultural Machinery and Intermediary Effect Test

Inspection of the total power of agricultural machinery (see Table 3).Table 3 (2) environmental protection planning has a negative impact on the total power of agricultural machinery, and the estimated coefficient is 0.0621. Through the significance level of 1%, the implementation of environmental protection planning can not promote the improvement of the level of agricultural mechanization.Column (3) reports the results of the combined effect of environmental planning and agricultural mechanization levels on agricultural productivity.In column (3), the estimated coefficient of environmental planning and agricultural mechanization level is significant at the 1% and 10% confidence level, respectively, but b1c2With c1In the opposite sign, the indirect effect is significant and manifested as the cover effect.The total effect of the effect of environmental planning on agricultural productivity was 0.0774 (a1), The direct effect was 0.0615 (c1), The indirect effect was-0.0032 (b1c2), The absolute value of the ratio of indirect to direct effects is approximately 5.20% (|b1c2/c1|). That is to say, although

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environmental protection planning improves agricultural productivity, it will also reduce the level of agricultural mechanization, and thus promote agricultural productivity, and thus weaken the direct promotion effect of environmental protection planning on agricultural productivity.

Table 3. Effects of environmental protection planning on agricultural productivity through the total power of agricultural machinery

Variable	(1) lnnongye	(2) lnnjzdl	(3) lnnongye
lnnjzdl			0.0520*
			(0.0282)
DID	0.0774***	-0.0621***	0.0615***
	(0.0179)	(0.0134)	(0.0181)
investment	-0.0189	0.0495***	-0.0201
	(0.0123)	(0.00968)	(0.0123)
lnfinance	-0.0255	0.104***	-0.0383
	(0.0245)	(0.0180)	(0.0248)
education	2.096***	0.192	2.286***
	(0.321)	(0.145)	(0.320)
government	-0.241***	0.0175	-0.152***
	(0.0411)	(0.0331)	(0.0416)
Constant	8.129***	1.903***	8.013***
	(0.214)	(0.156)	(0.219)
Observations	2366	2822	2292
R2	0.424	0.237	0.427

Note: * * *, * *, and * are indicated as significant at the 1%, 5%, and 10% levels, respectively.

Inspection of facility agriculture (see Table 4).Table 4 Table (1) environmental protection planning has a positive impact on the total power of agricultural machinery, with the estimated coefficient of 0.197. Through the significance level of 5%, the implementation of environmental protection planning can promote the development of facility agriculture.From column (2) estimates, the estimated coefficient for environmental planning and facility agriculture was significant at the 1% confidence level, but b1c2With c1In the opposite sign, the indirect effect is significant and manifested as the cover effect.Listing (3) reports the results of the joint effect of environmental protection planning and facility agriculture on agricultural productivity.The total effect of the impact of environmental planning on agricultural productivity was 0.260 (a1), The direct effect was 0.226 (c1), The indirect effect was-0.0040 (b1c2), The absolute value of the ratio of indirect to direct effects is approximately 1.77% (|b1c2/c1|). That is to say, although environmental protection planning improves agricultural productivity, it will also reduce the scale of facility agriculture operation, and thus have a promoting effect on agricultural productivity, and thus weaken the direct promotion effect of environmental protection planning on agricultural productivity.

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Table 4. Effects of environmental protection planning on agricultural productivity through facility agriculture

Variable	(1) lnnongye	(2) lnssny	(3) lnnongye
lnssny			0.0204**
			(0.00959)
DID	0.0774***	-0.229***	0.0162
	(0.0179)	(0.0539)	(0.0211)
investment	-0.0189	0.149***	-0.0229
	(0.0123)	(0.0432)	(0.0161)
lnfinance	-0.0255	0.157*	-0.0661*
	(0.0245)	(0.0881)	(0.0349)
education	2.096***	3.762**	1.934***
	(0.321)	(1.511)	(0.583)
government	-0.241***	0.116	-0.0695
	(0.0411)	(0.142)	(0.0516)
Constant	8.129***	2.661***	8.692***
	(0.214)	(0.813)	(0.322)
Observations	2366	1903	1580
R2	0.424	0.054	0.172

Note: * * *, * *, and * are indicated as significant at the 1%, 5%, and 10% levels, respectively.

3.3. Test of Robustness

This were estimated as accurately as possible using the forward dual difference (DID) method above.To ensure the robustness of the basic regression results, this section tests the robustness in two ways, the dual difference method (PSM-DID), and the dependent variable.

The first method is the propensity score matching double differential method.This paper tested the robustness of the two groups by radius matching to obtain Logit regression and found that the experimental group treatment effect (ATT) was estimated at 0.2227 and t at 9.18, with significant positive effect, indicating that the experimental and control samples and significant positive effect indirectly showed that environmental planning helps to promote agricultural productivity in poor counties.The equilibrium test was performed following the general usage principles of the PSM-DID method, as shown. The results of P-value and T-value tests showed that the control variables between the experimental group and control city samples varied greatly before using PSM matching, but after radius matching, the differences between each control variable of the experimental group and control city samples decreased, meaning that the article is appropriate to evaluate the environmental effect of environmental planning using the PSM-DID method.Based on the new sample after matching, the relationship between the 13th Five-Year Plan for environmental protection and agricultural productivity in poverty-stricken counties is re-estimated. The empirical results are shown in Table 5 model (1).The core explanatory variables all passed the positive significance test at the 1% level, and the coefficient direction did not change, indicating that environmental protection planning is steady in promoting agricultural productivity in poverty-stricken counties.

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Table 5. Results of the robustness test

Variable	PSM-DID (1)	Because variable tapering (2)
DID	0.0774***	0.0840***
	(0.0179)	(0.0144)
investment	-0.0189	-0.0109
	(0.0123)	(0.00997)
lnfinance	-0.0255	-0.0187
	(0.0245)	(0.0198)
education	2.096***	2.104***
	(0.321)	(0.259)
government	-0.241***	-0.178***
	(0.0411)	(0.0333)
Constant	8.129***	8.033***
	(0.214)	(0.173)
Observations	2366	2366
R-squared	0.424	0.525

Note: * * *, * *, and * are indicated as significant at the 1%, 5%, and 10% levels, respectively.

The second approach is to shrink the dependent variable.In order to control the impact of outliers of agricultural productivity in state-stricken counties on the basic regression results, the samples with the maximum and minimum 1% were reduced, and the corresponding test results are reported in Table 5 model (2).It was found that all the coefficients of the core explanatory variables were all significantly positive at the 1% confidence level, verifying the robustness of the basic regression results.

4. CONCLUSION AND POLICY RECOMMENDATIONS

4.1. Conclusion

This paper with environmental protection "much starker choices-and graver consequences-in plan" natural experiment, based on 433 national counties panel data, on the basis of parallel trend test, using double difference model, empirical studied the environmental protection " much starker choices-and graver consequences-in planning on agricultural productivity results and intermediary effect test, get the following three conclusions:

First, environmental protection planning has had a positive impact on agricultural productivity in state-designated poverty-stricken counties.The implementation of the 13th Five-Year Plan for environmental protection had a significant positive impact on agricultural productivity, increasing the agricultural productivity in poor counties by an average of 7.74 percentage points.Later, the robustness of the regression results obtained by PSM-DID, variable tail reduction, which confirmed that the policy implementation significantly promoted the improvement of agricultural productivity.

Second, agricultural mechanization plays some intermediary role in the impact of environmental protection planning on agricultural productivity in state-designated poverty-stricken counties.The role of environmental protection planning in promoting agricultural productivity in poverty-stricken counties is realized through investment in agricultural mechanization.After poverty-stricken counties are subject to environmental regulations, in order to reduce or avoid the environmental protection expenditure caused by environmental

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pollution, they will reduce the investment in agricultural machinery and technology and improve the safety and utilization rate of land, thus realizing a win-win situation of environmental protection and improving agricultural productivity in poverty-stricken counties.

4.2. Policy Recommendations

First, We will continue to give full play to the positive role of education in agricultural productivity in state-designated poverty-stricken counties. The empirical research results show that the biggest influencing factor on promoting agricultural productivity in poverty-stricken counties is the education level. Constantly improving the education level of farmers can make them their ability to master new technologies and adapt to the changing production environment, and thus promote agricultural productivity. The agricultural production resources of poor counties are limited and poor land. At present, provincial governments focus on state-designated poor counties not only to increase the area of cultivated land and improve the quality of cultivated land, but also to pay attention to the utilization rate of contaminated cultivated land and safe land plots. For poor counties, to improve agricultural productivity, farmers must increase in education, their better education can improve the ability to introduce, absorb and apply new technologies, so as to improve the quality of cultivated land, improve land reproduction index, and regular monitoring and quality survey and evaluation, improve land quality of land utilization rate, and then promote the sustainable development of poor agriculture.

Second, Efforts will work made to improve agricultural mechanization and agricultural productivity. Agricultural mechanization is the key to China's agricultural development at present, suitable for use in agricultural production, which can promote agricultural industrialization and enhance the additional value of agricultural products. In the model analysis, it can be seen that the improvement of the total power of agricultural machinery has played a relatively weak role in promoting agricultural productivity in poverty-stricken counties, because there is no modern agricultural machinery and equipment in a large range, and the degree of mechanization is relatively low. Therefore, improving agricultural mechanization is an important supporting factor for the development of modern agriculture in state-designated poverty-stricken counties. First of all, further increase the investment of agricultural machinery technology research and development to promote the development of agricultural machinery technology, and encourage agricultural scientific research institutions to develop agricultural machinery and equipment more suitable for China's agricultural production. Secondly, in the process of realizing mechanization, relevant governments and local governments should give policies and capital support, such as providing scientific and technological subsidies and reduction policies benefiting the people and the people, adding agricultural machinery and equipment for farmers according to local conditions to improve agricultural mechanization while also increase farmers' income. Thirdly, the government should also actively improve farmers 'quality through agricultural education, implement technical support, and avoid natural risks to enhance the degree of farmers' recognition through agricultural mechanization.

REFERENCES:

[1] Chen Zhao,Matthew E.Kahn,Yu Liu,et al.The consequences of spatially differentiated water pollution regulation in China[J]. Journal of Environmental Economics and Management, 2018, 88:468-485.

[2] ZHAO X,SUN B.The influence of Chinese environmental regulation on corporation innovation and competitiveness[J].Journal of Cleaner Production,2016,112(4):1528-1536.

ISSN: 2472-3703 DOI: 10.6911/WSRJ.202111_7(11).0029

[3] Cao Jing, Wang Xin, Zhong Xiaohan.Has the restriction policy improve Beijing's air quality in Beijing?[J].Economics (Quarterly), 2014,13 (03): 1091-1126.

[4] Zeng Bing, Zheng Jianfeng, Qiu Zhiping.Study on the Role of Environmental Policy Tools in Improving Environmental Quality —— based on the analysis of China Interprovincial panel data from 2001-2012 [J].Shanghai Economic Research, 2016, {4} (05): 39-46.

[5] Zeng Qian, Zeng Xianfeng, Yue Jinxia.Industrial Structure, Environmental Regulation and Environmental Quality —— Theoretical and Positive Analysis Based on the Interprovincial View of China [J].Admin Review, 2020,32 (05): 65-75.

[6] Chen Binkai, Ma Ningning, Wang Dali.Land transfer, agricultural productivity, and farmers' income [J].The World Economy, 2020,43 (10): 97-120.

[7] Fu Jingyan, Cheng Fangfang.Effect of sulfur dioxide emission trading on the "quantity" and "quality" of economic growth [J].Journal of Jinan (Philosophy and Social Sciences), 2020,42 (06): 94-107.

[8] Ji Mengxue, Mao Xia, Qu Biao.Environmental governance, Water pollution, and Agricultural Development [J].Rural economy, 2021 (07): 58-67.

[9] Li Huishang, Hu Chenpei, Ji Yong, and Maggie Li.Agricultural labor transfer, productivity increase and macroeconomic growth —— based on international comparison of 55 economies [J].Agricultural Economy Issues, 2021 (07): 117-129.

[10] Li Xiaosheng, Shu Yunxia.Impact of Environmental Policy on Air Pollution Control and Regional Economy —— based on the demonstration of command control tools [J].Mathematical Statistics and Management, 2020,39 (04): 691-704.

[11] Liao Wenlong, Dong Xinkai, Weng Ming, Chen Xiaoyi.Economic effect of market-based environmental regulation: carbon emission trading, green innovation and green economic growth [J].Soft Science of China, 2020 (06): 159-173.

[12] Ma qun, Tan Yanwen.Study on Influence of Environmental Regulation on Agricultural Green Total factor Productivity —— based on panel threshold model [J].Agricultural Technical Economy, 2021 (05): 77-92.

[13] Ma qun, Tan Yanwen.Study on Influence of Environmental Regulation on Agricultural Green Total factor Productivity —— based on panel threshold model [J].Agricultural Technical Economy, 2021 (05): 77-92.

[14] Tang Yong, Lv Taisheng.Agricultural credit, agricultural insurance and agricultural total factor productivity growth —— is based on the interaction effect perspective [J].Proceedings of Harbin University of Business (Social Science Edition), 2021 (03): 116-128.

[15] Tong Jian, Liu Wei, Xue Jing.Environmental regulation, factor input structure and industrial industry transformation and upgrading [J].Economic Research, 2016,51 (07): 43-57.

[16] Wang Hongmei, Wang Zhenjie.Environmental governance policy tools compare and select —— Take Beijing PM2.5 governance as an example [J].China Administration, 2016 (08): 126-131.

[17] Wang Hongmei, Wang Zhenjie.Environmental governance policy tools compare and select —— Take Beijing PM2.5 governance as an example [J].China Administration, 2016 (08): 126-131.

[18] Wang Yafei, Liao Meng, Wang Yafei.Has the opening of high-speed rail promoted the growth of agricultural total factor productivity?Empirical evidence of —— from quasi-natural experiments in the Yangtze River Delta region [J].Statistical Study, 2020,37 (05): 40-53.

[19] Wen Zhonglin, Ye Baojuan.Intermediation effect analysis: Methods and model development [J].Progress in Psychology, 2014,22 (05): 731-745.

ISSN: 2472-3703 DOI: 10.6911/WSRJ.202111_7(11).0029

[20] Wu Mingqin, Zhou Shimin, Chen achang.—— is based on the empirical study of China's "two control zones" in China [J].Contemporary Economic Science, 2016,38 (06): 44-54 + 124.

[21] Xiong Bo, Yang Biyun.Did ordered-controlled environmental policies improve China's urban environmental quality?—— is from the "quasi-natural experiment" of the "two control zones" policy [J].Journal of China University of Geosciences (Social Sciences Edition), 2019,19 (03): 63-74.

[22] Xue Chao, Shi Xueyan, Zhou Hong.Study on the Impact of Agricultural Mechanization on the Improvement of Total factor Productivity in Planting Industry [J].Agricultural Technical economy, 2020 (10): 87-102.

[23] Yang Zhiqing.How Education Impact Agricultural Green Productivity —— Based on empirical analysis of different forms of education in rural China [J].China Soft Science, 2019 (08): 52-65.

[24] Yi Fujin, Zhou Tiantian, Chen Xiaoguang.Climate change, investment in agricultural scientific research, and agricultural total factor productivity [J].Journal of Nanjing Agricultural University (Social Sciences Edition), 2021,21 (04): 155-167.

[25] Yu Zhuangxiong, Chen Jie, Dong Jiemin.Road to low-carbon economy: the perspective of industrial planning [J].Economic Research, 2020,55 (05): 116-132.

[26] Zhan Jintao, Xu jiao.Environmental regulation, agricultural green productivity, and Food security [J].China Population · Resources and Environment, 2019,29 (03): 167-176.

[27] Zhang Fengbing, Wang Huizong.Labor return home, factor allocation, and agricultural productivity [J].Proceedings of South China Agricultural University (Social Science Edition), 2021,20 (03): 73-84.

[28] Zhang Jinxin, Wang Hongling.Environmental regulation, agricultural technology innovation, and agricultural carbon emissions [J].Journal of Hubei University (Philosophy and Social Sciences), 2020,47 (04): 147-156.

[29] Zhang Ke, Nie Yangjian.Empirical analysis of the impact of water environment policy on agricultural growth and non-point source pollution [J].Statistics and Decision Making, 2017 (14): 118-121.

[30] Zhang Li.Effect of Environmental Policy and Environmental Expendpending on Regional Carbon Reduction —— on the Role of Government Execution [J].Price Theory and Practice, 2018, {4} (06): 38-41.

[31] Zhang Zhongming, Zhou Lijun, Qian Wenrong.Study on facility agriculture operation scale and agricultural productivity —— based on investigation and analysis in Zhejiang Province [J].Agricultural Economy Issues, 2011,35 (12): 23-29 + 110.

[32] Zheng Shiming.How does environmental policy affect environmental quality?Evidence of —— based on provincial panel data [J].China Soft Science, 2019, {4} (02): 49-61 + 92.

[33] Zhu Zhiyong, fortunately Hanlong.The relationship between environmental regulation and China —— is based on environmental Kuznetz inverted U curve [J].Journal of Yunnan University of Finance and Economics, 2017,33 (04): 64-72.