

# Research on agricultural economic development under the background of rural revitalization

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**Abstract:** In the 14th Five-Year Plan and the outline of the 2035 Vision, "giving priority to the development of agriculture and rural areas and comprehensively promoting rural revitalization" is an important part, and it is also a key topic of concern from all sectors of society. This also means that the focus of our work related to agriculture, rural areas and farmers will fully shift to rural revitalization. The challenge of globalization under the influence of the epidemic highlights that rural revitalization is a response to this profound change unseen in a century. Therefore, both in terms of concept and action, the future work should be actively shifted to rural revitalization. This investigation is divided into pre-investigation, formal investigation and field investigation. The reliability and validity analysis demonstrate correlation analysis of agricultural science and technology frequency and income satisfaction; multiple linear regression of the influence of agricultural science and technology frequency.

**Keywords:** rural revitalization, field survey, correlation analysis, multivariate linear regression

## 1. Introduction

The 14th Five-Year Plan period is at the historic juncture of the two Centenary Goals. It is the first five-year period of China's new journey to fully build a modern socialist country. It is also an important period of strategic opportunities for China's agricultural and rural modernization to rise to a new level. Comprehensively promoting rural vitalization is a historic shift in the focus of agriculture, rural areas and farmers after the victory in poverty alleviation. It is also an inevitable requirement for China's economy to shift to a stage of high-quality development[1]. In recent years, Guizhou province in the battle poverty, at the same time standing in the starting point of the new life, new struggle, adjust measures to local conditions, active planning, cultivating leading industries, developing characteristic industry, effective cohesion to consolidate expand poverty crucial achievements and promoting rural revitalization, make the province agricultural rural economy maintained a good momentum of stability.

In the context of comprehensively promoting rural revitalization, how to maintain stable agricultural production and make solid progress in common prosperity are all difficult and key issues in accelerating the modernization of rural agriculture. Agriculture is the foundation of a hundred years. In order to realize the great transformation from a big agricultural country to a strong agricultural country, it is necessary to conform to the trend of social development, follow the pace of scientific and technological development, seize opportunities and grasp policies and welfare, so as to comprehensively deepen rural reform[2], activate the vitality of rural development and stimulate the power of agricultural revitalization[3].

To understand under the background of rural revitalization of China's agricultural modernization, the research process, through questionnaires and field research, understand agricultural subsidies, agricultural machinery, rural construction, agricultural sales, agricultural services, explore how to make agricultural industrial structure adjustment, how to strengthen the quality of agricultural products, how to introduce advanced technology and innovative talents. Combined with the actual situation, analyze the data, taking the current situation of agricultural development in Fuquan city as the starting point, observe the development process of China's agriculture, so as to make a good start under the new background, start a good step, and lay a good foundation.

## 2. Data Analysis

### 2.1. Credit and validity analysis

According to the reliability analysis, both the reliability value of the original data and the standardized data are above 0.7. It is considered that the scale reliability of this questionnaire is good and the data has high reliability, as shown in Table 1.

Table 1: The reliability analysis table.

scale	Clone Bach coefficient	Clone Bach coefficients based on the standardized project
Agricultural information demand degree	0.777	0.782
Demand degree for agricultural materials services	0.845	0.796
Demand degree for agricultural science and technology	0.856	0.774
Sales promotion recognition degree	0.816	0.891
Attention to the problems to be solved	0.843	0.842
Agricultural support satisfaction	0.752	0.737
Agricultural insurance consideration factors	0.801	0.853
Overall reliability	0.926	0.929

According to the validity analysis, the KMO value of the scale and the KMO value of the overall questionnaire are greater than the minimum standard of 0.5. It is considered that the subject setting of the questionnaire scale is reasonable and the data is analyzable, as shown in Table 2.

Table 2: Validity analysis table.

scale	KMO
Agricultural information demand degree	0.705
Demand degree for agricultural materials services	0.672
Demand degree for agricultural science and technology	0.711
Sales promotion recognition degree	0.799
Attention to the problems to be solved	0.851
Agricultural support satisfaction	0.757
Agricultural insurance consideration factors	0.841
Overall validity	0.659

### 2.2. Correlation analysis of the frequency of use of agricultural science and technology

The correlation analysis of the use frequency of agricultural science and technology is conducted, taking the demand for agricultural information as the variable, and four dimensions are set, respectively, namely, product price, sales channel, production technology and national policy. According to the relevant analysis, the use of agricultural science and technology frequency and sales channels and production technology related to two aspects, the correlation coefficient is 0.220 and 0.211 respectively, and are positively related, by comparing the coefficient of sales channel information demand the influence of agricultural science and technology use frequency, the farmers to sales information, they will use agricultural science and technology, improve the industry sense of science and technology, as shown in table 3.

The correlation analysis of the use frequency of agricultural science and technology is conducted, and the demand for agricultural science and technology is the variable to set six dimensions, namely, pest control technology, crop preservation technology, processing and storage technology, water-saving irrigation technology, excellent variety transformation technology and harvesting technology. According to the relevant analysis, the frequency of agricultural science and technology and processing and storage technology and water-saving irrigation technology related to two aspects, correlation coefficient is 0.211 and 0.243 respectively, and are positively related, through the comparison coefficient of water-saving irrigation technology demand impact on the frequency of agricultural science and technology is the biggest, the farmers to water-saving irrigation technology, they will use agricultural science and technology, improve the industry sense of science and technology, as shown in Table 4.

Table 3: Agricultural science and technology.

		frequency	product price	channel of distribution	technology	national policy	Provide pesticide	Provide fertilizer	Provide seeds	Provide machinery
frequency	relativity	1	.181*	.220*	.211*	.149	.165	.094	.155	.078
product price	relativity	.181*	1	.567**	.449**	.529**	.346**	.442**	.448**	.323**
channel of distribution	relativity	.220*	.567**	1	.363**	.271**	.283**	.487**	.364**	.411**
technology	relativity	.211*	.449**	.363**	1	.381**	.386**	.318**	.571**	.301**
national policy	relativity	.149	.529**	.271**	.381**	1	.418**	.339**	.215*	.270**
Provide pesticide	relativity	.165	.346**	.283**	.386**	.418**	1	.420**	.538**	.438**
Provide fertilizer	relativity	.094	.442**	.487**	.318**	.339**	.420**	1	.297**	.313**
Provide seeds	relativity	.155	.448**	.364**	.571**	.215*	.538**	.297**	1	.436**
Provide machinery	relativity	.078	.323**	.411**	.301**	.270**	.438**	.313**	.436**	1

Table 4: The correlation analysis table of agricultural science and technology.

	frequency	extermination of disease and insect pest	Crop preservation	Processing and storage	water saving irrigation	Excellent variety transformation	reap
frequency	1	.155	.173	.211*	.243*	.109	.077
extermination of disease and insect pest	.155	1	.348**	.228*	.273**	.481**	.262**
Crop preservation	.173	.348**	1	.289**	.168	.477**	.416**
Processing and storage	.211*	.228*	.289**	1	.528**	.165	.250*
water saving irrigation	.243*	.273**	.168	.528**	1	.319**	.073
Excellent variety transformation	.109	.481**	.477**	.165	.319**	1	.350**
reap	.077	.262**	.416**	.250*	.073	.350**	1

2.3. Factors affecting the frequency of agricultural science and technology use

The agricultural new technology use frequency as the dependent variable, in the related analysis and agricultural technology significantly related variables as an independent variable, respectively for the demand of agricultural information in the product price, sales channels, and agricultural technology demand technology processing storage technology and water-saving irrigation technology, the multiple linear regression, regression results are as follows:

Table 5: Summary of the models.

model	R	R square	Adjusted R square	Error in the standard estimation
1	.665	.443	.418	.59437
Predictor variables: (constant), frequency of use of new agricultural technology				

From the model summary table, it can be seen that the regression equations collectively explained 44.3% of the dependent variables, as shown in Table 5.

Table 6: Analysis of variance table.

model		quadratic sum	free degree	mean square	F	conspicuousness
1	regression	19.088	3	6.363	18.011	.000b
	residual	24.023	68	.353		
	Total	43.111	71			

From Table 6, the observed value of the F-test statistic of the regression equation is 18.011, and the probability p-value is approximately 0. Test of the regression equation. If the significance level  $\alpha = 0.05$ , because the probability p-value is less than the significance  $\alpha$ , the original hypothesis of the significance test of the regression equation should be rejected from the regression coefficient, the linear relationship between the dependent variable and the explanatory variable, that is, the product price, sales channel, processing and storage technology and water-saving irrigation technology combined significantly affect the frequency of the dependent variable, and a linear model can be established.

Table 7: Results of the regression analysis.

model		Unstandardized coefficients		Standardization coefficient	t	conspicuousness
		B	Standard error	Beta		
1	(constant)	1.058	.921		10.148	.014
	product price	.099	.224	.058	7.440	.001
	channel of distribution	.156	.182	.115	8.856	.005
	Water-saving irrigation technology	.197	.185	.140	11.068	.009
	Processing and storage technology	.132	.180	.093	6.730	.008
Dependent variable: 10. How often do you use the new agricultural technology						

According to Table 7, if the significance level  $\alpha$  is 0.05, the t values of product price, sales channel, water-saving irrigation technology and processing and storage technology are 7.440,8.856,11.068 and 6.730, respectively, the corresponding p values are 0.001,0.005,0.009 and 0.008, which are less than 5%, and the linear relationship with the dependent variable is significant.

2.4. Correlation analysis of income satisfaction

Table 8: Correlation analysis of income satisfaction.

	Satisfaction	Promotion of new varieties	Increase the input of chemical fertilizers and pesticides	Using new planting techniques	Improve the level of operation and management	Agricultural policy support	Agricultural product prices have risen
Satisfaction	1	.212*	.335**	.233*	.273**	.236*	.181*
Promotion of new varieties	.212*	1	.496**	.453**	.429**	.573**	.510**
Increase the input of chemical fertilizers and pesticides	.335**	.496**	1	.299**	.272**	.537**	.665**
Using new planting techniques	.233*	.453**	.299**	1	.462**	.231*	.417**
Improve the level of operation and management	.273**	.429**	.272**	.462**	1	.333**	0.111
Agricultural policy support	.236*	.573**	.537**	.231*	.333**	1	.434**
Agricultural product prices have risen	.181*	.510**	.665**	.417**	0.111	.434**	1
Seize market opportunities	.257**	.369**	.200*	.594**	.453**	0.157	0.158

The correlation analysis of income satisfaction, and the importance of what conditions for improving agricultural income as the variable, include the promotion of new varieties, increasing the input of chemical fertilizers and pesticides, adopting new planting technology, improving the level of operation and management, agricultural policy support, rising prices of agricultural products, and seizing market opportunities, as shown in Table 8.

Due to the many variables, only the variables that were significant in the correlation analysis were selected. Farmers' income satisfaction and new varieties, increase in fertilizer and pesticides, the new planting technology, improve the management level, agricultural policy support, agricultural prices, seize the market opportunity correlation is significant, the correlation coefficient is respectively: 0.212,0.496,0.453,0.429,0.573,0.510,0.369, the strongest correlation is the agricultural policy support, agricultural prices, the weakest correlation is the new planting technology. It can be seen that farmers' satisfaction mainly comes from the agricultural policy support and the rising price of agricultural products, which can improve the satisfaction of farmers' income.

2.5. Income satisfaction regression analysis

Farmers' income satisfaction was taken as the dependent variable, and multiple linear regression

was conducted by promoting new varieties, increasing fertilizer and pesticides, adopting new planting technology, improving operation and management level, agricultural policy support, agricultural product price increase, and seizing market opportunities as independent variables.

Table 9: Summary of the models.

model	R	R square	Adjusted R square	Error in the standard estimation
1	.721 a	.52	.721	.1782
Predictor variables: (constant), income satisfaction				

From Table 9, the regression equations explained a total of 52% of the dependent variables.

Table 10: Analysis of variance table.

model		quadratic sum	free degree	mean square	F	conspicuousness
1	regression	14.487	7	2.070	2.237	.040
	residual	70.323	76	.925		
	amount to	84.810	83			

From Table 10, the observed value of the F-test statistic of the regression equation is 14.487, and the probability p-value is approximately 0. Test of the regression equation. If the significance level  $\alpha = 0.05$ , because the probability p-value is less than the significant  $\alpha$ , should reject the regression equation significant hypothesis, the regression coefficient is 0, the explanatory variable and independent variable all linear relationship is significant, namely new varieties promotion, increase chemical fertilizer and pesticides, using new planting technology, improve the level of management, agricultural policy support, agricultural prices, seize the market opportunity combined significantly affect the dependent variable farmers' income satisfaction, can establish a linear model.

Table 11: Results of the regression analysis.

model	Unstandardized coefficients		Standardization coefficient	t	conspicuousness	
	B	Standard error	Beta			
1	(constant)	.872	.848		1.028	.007
	Promotion of new varieties	-.099	.226	-.065	-.435	.105
	Increase the input of chemical fertilizers and pesticides	.364	.183	.307	1.994	.030
	Using new planting techniques	.060	.175	.051	6.339	.35
	Improve the level of operation and management	.153	.174	.117	6.881	.31
	Agricultural policy support	.98	.197	.069	4.498	.020
	Agricultural product prices have risen	.91	.192	-.076	7.476	.036
	Seize market opportunities	.181	.179	.138	1.009	.16
Dependent variable: 11. How satisfied do you are with your agricultural income						

According to Table 11, The p-values corresponding to the t-statistics of new variety promotion, increasing fertilizer and pesticide inputs, adopting new planting techniques, improving management, agricultural policy support, rising agricultural prices, and seizing market opportunities were 0.105, 0.030, 0.35, 0.31, 0.020, 0.036, and 0.16, respectively. At a significant level of 5%, only increased investment in fertilizers and pesticides, agricultural policy support, and rising agricultural prices had an impact on income satisfaction. It can be seen that Fuquan City farmers, is the hope of the relevant favorable agricultural policies. And that food prices can rise, to increase the earnings, thus increasing its income.

### 3. Conclusion

Agricultural material equipment is an important symbol of agricultural modernization. Guizhou has many mountainous areas, so the local area should continue to strengthen the construction of agricultural infrastructure. We will vigorously carry out land improvement projects, irrigation and drainage projects, and field roads, and accelerate the improvement of facilities for sorting and packaging, keeping and drying agricultural products, and storing agricultural products, so as to comprehensively improve the quality of land and output. We will accelerate the modernization of the agricultural production system and make it more modern agriculture[4]. Encourage and support relevant technical personnel to carry out training at the grass-roots level. Systematic technical

theoretical training can be provided to villagers in various forms such as dam meetings, recording short videos, issuing technical materials and field site lectures, etc. A Q&A guidance platform for the application of relevant new technologies to agriculture can also be set up to consolidate the scientific foundation and attach importance to the cultivation of practical rural talents[5].

Actively popularize the relevant national agricultural assistance and encouragement policies, so that farmers can understand more about the national policy information, and also better improve the enthusiasm of farmers to develop agriculture. In addition, we should keep up with the development requirements of The Times, cultivate a new development system, promote the use of agricultural machinery, and promote the development of agricultural mechanization. At the same time, we should also promote mechanization to intelligent and digital development[6]. Increase investment in science and technology, promote practical agricultural science and technology such as water-saving irrigation, enhance farmers' attention to agricultural science and technology, and improve the utilization rate of agricultural science and technology[7]. Build strong agricultural scientific research base, improve agricultural scientific research innovation system, build a number of key laboratories in agricultural field, support universities and research institutes; build an incentive mechanism for science and technology innovation, strengthen scientific and technological breakthrough and achievement transformation, and provide strong support for the promotion of agricultural economic science and technology.

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