

# Quantitative Analysis of Correlation between Animal Husbandry and Planting in Northeast China based on Large-scale Data

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## **Abstract**

*Data is considered as a new kind of strategic resource, which can dig out more potential value. The concept of agricultural big data has entered people's field of vision, and agricultural informatization plays an important role in promoting the optimization of agricultural industry. In this paper, we make analysis of industrial structure by using large-scale data. According to the grey correlation analysis, the result shows that correlation degree between planting and agriculture industry is higher, so it is very important to optimize the structure of agricultural industry in the northeast region. At the same time, we should make full use of information technology to improve the agricultural efficiency, improve the agricultural education and training system, and promote the development of modern agriculture.*

**Keywords:** *Agricultural industry, Information service, Animal husbandry, Gray correlation, Big data*

## **1. Introduction**

Agricultural data is composed of structured data and unstructured data, data is large, covering a wide range of data types, are typical of large data. Agricultural information service has a wide range of targets, and strong individual needs. The large data technology is applied in the field of agricultural information service. It can not only bring revolutionary progress in agricultural information service technology, but also promote the whole progress of agricultural industry. The concept of agricultural big data has entered people's field of vision, but also some scholars put forward the idea of building an agricultural big data analysis application platform, but it is not much to deal with the agricultural big data resources and analysis technology [1]. Data is considered as a new kind of strategic resource, which can dig out more potential value. With the computing power of cloud computing revolution, for the processing of large data resources and mining and analysis, to find these data relative to the people, then these groups will be personalized analysis, summary, and in order to expand the personalized service gradually become possible. Agricultural information service should take the initiative to keep up with the pace of the big data era, adapt to the future development trend, with the help of big data technology to bring the opportunity to overcome the current problems in the field of agricultural information service, and strive to achieve agricultural information service technology innovation [2]. Before the animal husbandry industry, the industry can make the transformation of agricultural and sideline products, promote the optimization of agricultural structure, industrial upgrading, but also promote the development of leather,

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clothing, food processing, chemical and pharmaceutical industries. The development of animal husbandry in Heilongjiang province is rich in natural resources and has two advantages in geographical position. In recent years, the development of the green animal husbandry has been developing rapidly, and the effect is remarkable, thus speeding up the process of the production and management integration, reducing the risk of the production and operation of the various parties in the industry of animal husbandry. Animal husbandry industrialization plays a significant role in promoting the construction of new rural areas, adjusting agricultural and rural economic structure, promoting the increase of farmers' income and so on.

With the increasing emphasis on economic sustainable development and resources and environment, the sustainable development of animal husbandry in China has been paid more and more attention, and the sustainable development of animal husbandry has become the focus of attention and research. Since the reform and opening up, China's animal husbandry production has achieved rapid development and progress, but the rapid expansion of production scale, but also brings many outstanding problems and contradictions, has become an important factor affecting the sustainable development of animal husbandry in China. These problems have complex causes, and they are related to each other, so it is important to clarify the connotation, structure and function of animal husbandry eco economic system, which has important practical and theoretical significance.

## **2. Literature Review**

### **2.1. Agricultural Information Service**

Agricultural informatization is a dynamic concept, which means the use of modern information technology and information system to provide effective information support for agricultural production, supply, marketing and related management and service, and improve the comprehensive productivity of agriculture, and promote the strategic adjustment of agricultural structure and management efficiency. Simply speaking, it is the process of making full use of information technology in the agricultural field, the means and the process of the latest results [3]. Specifically speaking, it is in the process of agricultural production, circulation, consumption and rural economy, society, technology and other aspects of the comprehensive use of modern information technology and intelligent tools to achieve agricultural production and management, agricultural marketing, agricultural products consumption and intelligent process.

Agricultural data is based on large data analysis, the use of big data concepts, techniques and methods to deal with agricultural production and sales of large quantities of data generated in the whole chain, from which to get useful information to guide agricultural production and management, agricultural products circulation and consumption process. Barrena (2014) pointed out that the agricultural big data related to the agricultural production and marketing process in all aspects, is a cross industry cross professional data processing process [4]. The realization of agricultural big data is a very important part of agricultural informatization. Combination of data and application in the field of agriculture related scientific research can provide a new method and a new thinking for the agricultural scientific research, government decision-making, the development of agriculture related enterprise and. Mokotjo (2010) pointed out that the establishment of agricultural information technology national large data center, and strive to develop cloud computing, big data mining and other technologies, is the important means to solve the bottleneck of the development of agricultural information in china [5].

## 2.2. Animal Husbandry Ecological Economy

Animal husbandry production process is essentially a process of continuous movement and changes in the process of ecological and economic technology. Ecological animal husbandry economy requires the background of animal husbandry development is placed in the human economic and social development and ecological environment, scientific and rational use of animal husbandry development needs of a variety of natural and economic resources, positive and practical science and technology to save resources, protect the ecological, scientific development of ecological animal husbandry resources utilization and organic circulation, establish a high-yield, high efficiency, high quality, low cost of ecological animal husbandry economic system and system of circular economy, animal husbandry, health, stable and sustainable development. Animal husbandry ecological economy is emphasized to the animal husbandry production system and social, economic system and the ecological system to link up to a comprehensive study, to achieve the coordinated development of economic and social and natural ecology, to achieve the optimal goal of animal husbandry ecological economy. Sustainable development theory is to promote the animal husbandry ecological economy development and ecological economy of animal husbandry is based on sustainable development, ecological economy of animal husbandry to human economic activity as the center, from whole up the relationship and interaction of animal husbandry ecological system and economic system, a reasonable and efficient use animal husbandry ecological resources, improve livestock production and livestock products consumption patterns, the establishment of high yield, high efficiency, high quality, low consumption of animal husbandry ecological economic system, sustainable development of animal husbandry.

## 2.3. Industrial Relevance Theory

Industry Association is the technical and economic relationship between the industry and the production of various kinds of inputs and products. Technical and economic contact and contact information can be in physical form of contact and contact information, but also the value of the form of contact and contact. However, considering the accuracy of the measurement methods, so in practical applications related industries analyzed, using a form of value of technical and economic links and contact information. As a result of the industry there is a product, labor relations, production technology contact, price contact, labor and employment relations, and so when the development of a certain industry changes, will inevitably affect and related to other industries. William (2014) pointed out that in the industrial chain, there is an industry which has the highest correlation coefficient between the forward and backward industries and the industry [6]. Brander (2013) make components of agricultural eco-economic system and benefits gray association. The results show that the system has a large advantage in the aquaculture industry, but less effective [7]. That the development of cash crops in this system, improve production efficiency of livestock grazing, agricultural production in order to improve overall efficiency. Perdana (2012) discusses the theory and method of gray system, the main economic indicators according to their input and output relationship, to reveal the inherent law, to reveal its structure characteristics, and to find out the main control factors and improve measures to provide reference [8]. Their analysis method is the basic data according to the input and output relations, according to the annual order of the analysis and calculation, according to the corresponding calculation formula respectively to calculate the input index and output index between the absolute value of correlation degree and rate [9].

Grey correlation analysis is used to analyze the structure of forestry industry, and make up for the deficiency of the system analysis. The method is simple and the calculation is

small, it does not appear the result of quantitative analysis and qualitative analysis. It has very high value and wide application prospect. According to the characteristics of the gray correlation analysis method and the similarity between the animal husbandry and forestry, it can be introduced into the research of the industry association of the animal husbandry.

### **3. Theoretical Model**

#### **3.1. Agricultural Industry Structure**

Agricultural industrial structure, also known as the structure of agricultural production, refers to a country, a region or an agricultural enterprise in the agricultural industry and the internal composition of the various departments and their mutual relationship [10-11]. The concept of agricultural industrial structure has narrow sense and broad sense. The narrow sense refers to the agricultural output, scale and product structure; the generalized agricultural industrial structure includes the structure of agricultural production structure, agricultural investment structure, agricultural labor structure, agricultural technology structure, agricultural structure, agricultural structure, and agricultural regional structure and so on. In this paper, by using concept of generalized agricultural industrial structure, from the perspective of agricultural industry chain, the research of agricultural industrial structure, including the basic agricultural industry, the basis of agricultural products processing industry, agricultural products processing industry, for the third industries of agriculture. Agricultural industrial structure can be divided into three levels: one is the production structure, mainly refers to the agriculture in various production departments between the proportional relationship, such as production of the proportion of agriculture, forestry, animal husbandry, fishery and other production departments; the second is structure of the products, mainly refers to the unified production departments in all kinds of production products between the proportional relationship, such as production of the proportion of food, fruits, vegetables, and so on; third is the variety structure, mainly refers to the proportional relationship between the same product in different strains, such as the proportion of high-quality soybean and soybean, early rice and late rice between proportion.

The optimization of agricultural industrial structure is a dynamic process, which includes two aspects: the height of industrial structure and the rationalization of the industrial structure. Through the adjustment of the structure of agriculture, forestry, animal husbandry, fishery, and other structures, the efficiency of agricultural resources allocation is optimized. The high degree of the industrial added value, technology, and the degree of intensification and processing have been improved, the performance of the most obvious is the high-tech content in the industry, the proportion of rapid increase, the proportion of the industry is showing a coordinated development of the dynamic trend. The main point is that the mutual development of industrial structure is mainly based on the objective proportion of industrial association technology to adjust the industrial structure, and ultimately to achieve the overall economic strength and the development of the national economic strength and the development of various sectors of the economy and related industries to promote mutual cooperation and mutual development.

#### **3.2. Industrial Structure Optimization**

Industrial structure optimization is the supply structure and demand structure, which is through the government's related industrial policy adjustment, the impact of industrial structure changes in the supply structure and demand structure, to achieve the optimal allocation of resources and re allocation, and ultimately promote the rationalization of

industrial structure and highly developed. And industrial structure optimization is different from the industrial structure optimization, and the starting point of the comparative advantage is the input factors of the industry. Whether the use of market mechanisms or policy intervention, as long as the adjustment process to promote the industrial structure tends to rationalize, or more adapted to the economic development, then this adjustment process is the industrial structure optimization process. In summary, the optimization of industrial structure includes supply structure and demand structure, including the optimization of the supply structure of production factors, capital, technology, labor and natural resources, and the optimization of the structure of government, enterprise, family and individual demand, consumption demand and investment demand.

### 3.3. Gray Correlation Degree Theory

The gray system is a system which is not entirely clear, and the information is completely clear between the white system and the information. Gray system theory is mainly used in the evaluation of the observation data of the project, the main research of gray factor analysis, grey decision-making, gray model, gray system control, gray system analysis, gray system optimization, and so on. In this paper, the grey correlation degree analysis of the relationship between the industrial and agricultural output value is used to determine the degree of the relationship between the industrial and agricultural output value. Using gray correlation degree analysis, we can find out the correlation between forestry and animal husbandry and fishery and agricultural output value, which is the impact on the total output value of agriculture, which has a small impact on the total output value of agriculture. Grey relational degree needs to complete three measurement steps in sequence.

First step is the original data initialization. Because the reference sequence  $y_t$  and the comparison sequence of  $x_t$  may not be the same as the dimension of the sequence, it is first to be initialized by the initial value of each column:

$$y(t) = \frac{y(t)}{y(1)}, x(t) = \frac{x(t)}{x(1)}$$

The second step, calculate the difference and correlation coefficient, first of all, through the reference column  $y_t$  and the comparison of the column  $x_t$ :

$$\Delta i(t) = |y(t) - x_i(t)|$$

Then calculate the correlation coefficient of each column and the reference column:

$$U_i(t) = \frac{\min_i |y(t) - x_i(t)| + \rho \max_i |y(t) - x_i(t)|}{|y(t) - x_i(t)| + \rho \max_i |y(t) - x_i(t)|}$$

In the formula respectively coefficient, this paper takes 0.5. Third step, we calculate the correlation degree calculation.

$$R_i = \frac{1}{m} \sum_{t=1}^n U_i(k)$$

## 4. Empirical Analysis

### 4.1. Gray Correlation Analysis

Grey relational analysis is one of the main contents of grey system analysis. It is not complete information, to the analysis of the factors, through a certain data processing, in the random factor sequence, to find out their relevance, found the main contradiction, to find the main characteristics and the main influencing factors. The basic idea of grey relational analysis is to judge the relation of the sequence curve geometry. The closer the curve is, the greater the correlation degree between the corresponding sequences, and the smaller the smaller. In order to carry out the correlation analysis, we must first determine the reference sequence, and then compare the degree of the other sequence with the reference sequence, so as to compare the other sequence, which is the main factor, which is the main factor, which is the secondary factor, which has a great influence on the development of the system, which has little influence on the development of the system. Using the method of grey correlation analysis, between the key elements of the ascertain of industrial agriculture in Heilongjiang Province with the time variation of the dynamic relation and its feature and analysis which factors and agricultural and industrial development more closely, which closely enough, which needs further development, to  $x_0$  is system characteristic sequences to find the correlation degree is actually similar degree is the shape of the curve is. We make Initialization firstly, so that each data column corresponding curves have a common point of intersection for easy comparison and analysis of various factors.

**Table 1. Key Elements of Agricultural Industry in Heilongjiang Province**

Year(K)	Planting X1	Animal husbandryX2	Fishery X3	Forestry X4	Total output value X0
2006	817.5	448.7	21.1	68.0	1391.1
2007	971.9	585.0	25.1	79.1	1700.6
2008	1143.3	89.6	813.1	35.0	2123.4
2009	1206.8	85.2	870.2	45.2	2251.1
2010	1369.2	95.5	965.8	53.7	2536.3
2011	1801.8	110.2	1189.9	58.9	3223.5
2012	2315.6	134.5	1350.7	77.9	3952.3
2013	2856.3	180.6	1430.1	82.5	2123.4

**Table 2. Analysis of the initial Value of the Important Component**

X1	X2	X3	X4	X0
1.0000	1.0000	1.0000	1.0000	1.0000
1.0874	1.2783	1.1964	0.8579	1.1374
1.1764	1.4348	1.2410	1.0318	1.2425
1.2136	1.6744	1.3750	3.2295	1.4450
1.4966	2.2806	1.4881	3.5956	1.8183
1.7341	2.6249	1.6309	3.6776	2.0707
1.9726	2.5536	1.2559	3.7169	2.2255
2.3454	3.3293	1.4940	4.3197	2.7205

#### 4.2. Correlation Coefficient

According to the differential sequence, we make the correlation coefficient corresponding to each k, j=1, 3, 4, 2.

$$\Delta_j(k) = |X_0(k) - X_j(k)|$$

Then we can get the maximum difference and minimum difference between  $\xi_j(k)$ , as  $\Delta_{max} = 1.7845$ ,  $\Delta_{min} = 0.0000$ , according to correlation coefficient formula:

$$\xi_j(k) = \frac{\Delta_{min} + \rho \cdot \Delta_{max}}{\Delta_j(k) + \rho \cdot \Delta_{max}}$$

In this formula,  $\xi$  as the correlation coefficient, which can be obtained from the agricultural industry in Heilongjiang province is an important component of the correlation coefficient, as shown in Table 4.

**Table 3. Analysis of the Main Elements of Agricultural Industry**

$\Delta 1$	$\Delta 2$	$\Delta 3$	$\Delta 4$
0.0000	0.0000	0.0000	0.0000
0.0500	0.1409	0.0590	0.2795
0.0661	0.1923	0.0015	0.2107
0.2314	0.2294	0.0700	1.7845
0.3217	0.4623	0.3302	1.7773
0.3366	0.5542	0.4398	1.6069
0.2529	0.3281	0.9696	1.4914
0.3751	0.6088	1.2265	1.5992

**Table 4. Correlation Coefficient Analysis**

$\xi 1$	$\xi 2$	$\xi 3$	$\xi 4$
1.0000	1.0000	1.0000	1.0000
0.9469	0.8636	0.9380	0.7615
0.9310	0.8227	0.9983	0.8090
0.7941	0.7955	0.9273	0.3333
0.7350	0.6587	0.7299	0.3342
0.7261	0.6169	0.6698	0.3570
0.7792	0.7311	0.4792	0.3743
0.7040	0.5944	0.4211	0.3581

Because of the number of correlation coefficient, information is too scattered, it is not easy to compare, so it is necessary to focus on the correlation coefficient of each moment, the average value is used as a method of this kind of information processing, also known as gray correlation, we use  $R_j$  to express the relationship between planting, animal husbandry, fishery, forestry output value and agricultural output value.

$$R_1 = \frac{1}{8} \sum_{k=2006}^{2013} \xi_1(k) = 0.8270$$

$$R_2 = \frac{1}{8} \sum_{k=2006}^{2013} \xi_2(k) = 0.7604$$

$$R_3 = \frac{1}{8} \sum_{k=2006}^{2013} \xi_3(k) = 0.7705$$

$$R_4 = \frac{1}{8} \sum_{k=2006}^{2013} \xi_4(k) = 0.5409$$

The results show that the gray correlation analysis of the total output value of agriculture, forestry, animal husbandry and fishery in province from 2013 to 2006 was carried out in Heilongjiang province. The agricultural output value of Heilongjiang Province as the reference sequence, and the rest of the index constitute the comparative sequence. From table 5, the grey correlation degree of the output value of the plantation is 0.8270, which indicates that the influence of the planting industry is the largest, and the agricultural structure of Heilongjiang province is the typical structure of the planting industry. The relationship of the animal husbandry, fishery and forestry to the agricultural output value was 0.7604, 0.7705 and 0.5409 respectively, and the forestry output value was the smallest.  $R_1 > R_3 > R_2 > R_4$  is obtained by calculating the total output value of agriculture in Heilongjiang Province, and the four major industries are based on the gray correlation degree, which is a  $R_3 > R_2 > R_4$ .

**Table 5. Correlation Degree of Each Industry**

Index	Correlation degree	Sort
Planting	0.8270	1
Animal Husbandry	0.7604	3
Fisheries	0.7705	2
Forestry	0.5409	4

#### 4.3. Industrial Structure Optimization and Economic Growth

The optimization and adjustment of agricultural industrial structure will inevitably affect the one or two and three industrial structure of the national economy. Assuming that  $Y$  represents the gross national product, set  $Y = Y_1 + Y_2 + Y_3$ , then  $Y_1$ ,  $Y_2$ ,  $Y_3$ , respectively, the first industry, the second industry and the third industry added value. Then,  $y_2 = Y_2/Y$ ,  $y_3 = Y_3/Y$ ,  $y_1 = Y_1/Y$  is one or two, the structure of the three industry, the actual situation is the second industry and the third industry economic growth rate is generally higher than the growth rate of the first industry, thereby reducing the proportion of the first industry, improve the proportion of the two or three industry, can effectively promote the economic growth of the national economy.



**Table 6. Contribution Rate of the Agricultural Industrial Structure**

Year	Proportion	Change rate	Growth rate	Contribution rate
2008	62.80	-0.24	9.58	-2.46
2009	62.16	1.02	13.61	7.48
2010	64.78	-4.22	19.63	-21.49
2011	57.65	10.11	3.90	25.04
2012	59.53	-3.	26	12.83
2013	55.48	6.81	13.84	49.22

Agricultural Ministry experts said that although the farmers' income in recent years maintained a sustained and rapid growth, but the basis of income is still relatively weak, the channel is still relatively lack of income, and the long-term mechanism to promote farmers' continued income has not been fully established, the gap between urban and rural incomes is expanding. According to the analysis, the root cause of the continuing expansion of the income gap between urban and rural residents is the low income of farmers, and the impact of the existing national income distribution pattern, the growth rate of farmers' income is lower than the growth rate of the national economy and urban residents per capita disposable income growth rate. From the future, this situation has been fundamentally improved through long-term efforts, the need to take measures to curb the gap between urban and rural income from many aspects to continue to expand.

#### 4.4. Result Analysis

Heilongjiang province is a big agricultural province, with rich agricultural resources, fertile soil, flat terrain, abundant water resources, with the development of agricultural production of good natural conditions. The province's arable land area of 9601000 hectares is the country's largest arable land, the per capita possession of 7.7 acres of arable land. Heilongjiang province is also the implementation of agricultural mechanization earlier, a higher level of mechanization of the provinces. Rich resources and excellent soil is the biggest advantage of the development of agriculture in Heilongjiang province. From 1978 to 2013 in Heilongjiang Province, planting industry output value accounted for the proportion of agricultural output declined from 83.7% to 57.2%, but still constitutes the main part of the total output value of agriculture, fishery and the proportion of total agricultural output in 2013 reached a peak of 2.8%, then the fishery total agricultural output value accounted for the proportion dropped to 1.5%, although the proportion is not high but, grey correlation degree and fishery output value of total agricultural output value has reached 0.7705, the reason is that with the fishery science and technology progress and market demand pull, the rapid development of modern fisheries in Heilongjiang Province, especially Heilongjiang Provincial Committee of the ten plenary session of the five proposed "to people, since the majority of industrial water, fish" a user enthusiasm unprecedented development of aquaculture, aquaculture with regional characteristics of rapid rise, at the same time, and comprehensively promote the healthy culture, and constantly improve the quality of aquatic products. At present, the province has 8 Ministry of agriculture, the Ministry of agriculture for the demonstration area of aquaculture, 30 provincial-level aquaculture demonstration zones and a number of cities, county health culture demonstration area. Heilongjiang Province no pollution-free aquatic products breeding area has expanded rapidly to 354 million mus, accounted for 80.1% of the fish and water area, the province's non polluted aquatic habitats identified area has reached 20.54 million mu.

Animal husbandry output value accounted for slightly less than the proportion of total agricultural output, from 1978 to 2013, the proportion of total output value of agricultural output from 11.8% to 34.4%, and the total output value of agriculture, the gray correlation degree is 0.7604, only to fisheries, ranked third. Heilongjiang is one of the ten major pastoral areas, grassland area. Songnen Plain is the main production bases for animal husbandry in Heilongjiang, the area of flat, 150-300 meters above sea level, grassland resources, rich, big grass area, herbage varieties, high yield of grass, especially rich in *Leymus chinensis* nutrient rich, also in the area is producing grain, large amount of agricultural by-products can be used as feed, is conducive to the development of animal husbandry. Heilongjiang Province is one of the world dairy and corn belt, and is the main producing areas of national soybean, wheat, sugar beet, feed resource adequacy, it's by-products such as bran, soybean meal yield of nearly one million tons, suitable for the development of cattle and sheep production, provide a reliable guarantee for the development of feed industry and various types of livestock and poultry.

Since 2000, Heilongjiang Province in order to promote the industrialization of agriculture, the province to support agricultural and rural economic structure adjustment and promote the increase of farmers' income, giving leading agricultural enterprises strong financial support, mainly to take loans, loan guarantees, loans and other measures, will continue to increase capital investment, a total investment of 3.3 billion, the agricultural industrialization leading enterprises in Sichuan Province has been rapid development in the size, number, affects the, made the business efficiency and increase farmers' income, financial tax increase of remarkable results. In 2013, Heilongjiang province began to carry out planting industry and livestock owners' auxiliary transposition strategy so far, animal husbandry development momentum is good, animal husbandry sustainable development, and achieved gratifying results. 2013 in Heilongjiang reclamation area has 300 thousand head dairy farm, 1640 a variety of breeding area, 2.1 million family ranch, dairy group average per unit area yield 5.16 tons of, which 8511 farm 2 cows average yield reached 7.3 tons. Another number of dairy processing enterprises in the new production line, the province's fresh milk processing capacity have more than 13000 tons.

## 5. Conclusion

Take full advantage of Heilongjiang Province, to market oriented, from the emphasis on quantitative, quality, effectiveness of the three bit of a transformation, on this basis to further optimize the structure and regional layout of livestock breeding, and vigorously develop professional large, modern pasture and standardized farming community, and strive to improve the level and efficiency of animal husbandry. The development of fine varieties, so that the structure of animal husbandry products more in line with market demand, so as to achieve the goal of increasing production and income. On the other hand to strengthen the livestock farmers' service guidance, and enhance their risk prevention awareness. At present, the price of livestock products and feed prices are in a higher state, in a certain extent, increased the risk of breeding should be increased to the general livestock farmers to provide animal husbandry information services, to provide timely information on market supply and demand and epidemic prevention information, and to achieve a good docking.

### 5.1. Optimize the Agricultural Structure System

Adjustment and optimization of agricultural industrial structure under the condition of socialist market economy, we must play the basic role of market mechanism. The function of market mechanism is to realize the economic activities of rural industries and

agricultural sectors, to meet the requirements of the value of the economic activities, and to adjust the production scale, promote production and demand of rural industries and sectors. In order to make the market mechanism to play a full role, guide farmers to optimize the structure of the market needs to strengthen the construction of rural market system. According to the traffic conditions, resource conditions, product structure and distribution characteristics and other factors, the development of urban and rural distribution market, based on the active construction of a number of large and medium-sized agricultural products wholesale market in the country has a greater impact on the farmers sell products and feel the market information fast channel, the agricultural regionalization, specialization, industrialization has an important driving role.

### **5.2. Establish Agricultural Products Quality Standards**

Only by establishing strict, scientific and reasonable quality standards, can we truly achieve the high quality of agricultural products, in order to promote the improvement of agricultural product quality. At present, the quality standard system of agricultural products in Heilongjiang province is not perfect; some agricultural products quality standards cannot meet the needs of market diversification and product specialization. In the province to establish rural collective economic organizations as the basis, to professional and technical departments to rely on, farmer's self-management as the supplement of various economic compositions, multi form and multi level rural social service system. Through the development of all kinds of service system, many of the scattered farmers, the farmers and the market, to solve the small production and large market shield. Establish and perfect the agricultural social service system, the first is the government to provide social services, and the second is the socialization service of the agricultural cooperative organization. Will legalization of the agricultural cooperative organization, establish and improve the agricultural cooperative organization network system, give full play to the advantages of scale, improve the ability of competition; make full use of tax, credit and subsidies and other economic means to support the development of the agricultural cooperative organization. Finally is to improve enterprise management level of service, its business include: agricultural machinery, fertilizers, pesticides, seeds, plastic sheeting, *etc.* agricultural means of production and supply of the agricultural products marketing and processing.

### **5.3. Strength Government's Macro Regulation and Control**

Because of the limitations of market regulation, it is necessary for the government to carry out the macro adjustment and control of the role of the market mechanism in order to achieve the expected goal of agricultural and rural economic structure optimization, and to give full play to the role of the market mechanism. Developing rural economy, increasing farmers' income, the government should give full play to the adjustment function of the optimization of industrial structure in rural areas, and to improve the basic policy of rural areas. At present, the focus is to continue to support and improve the household contract management system and the management system, and actively explore the cooperative system of farmers' shares as the focus of the property rights system and economic policy. Under the premise of not changing the collective ownership of land, the farmers set up a flexible land transfer mechanism, and regulate their transfer behavior and interests relationship. To strengthen the construction of rural laws and regulations, standardize the economic behavior, and ensure the seriousness and continuity of the rural economic policies and industrial policies. First, we should formulate guidelines for rural economic development and rural industrial policy, and clear the direction and tasks of agricultural industry structure optimization, to establish and improve agricultural

information network, in particular, to grasp agricultural products production, technology, price, supply and demand and commodity circulation and other information, to provide timely and accurate information to farmers. To optimize the structure of agricultural industry, the government must deal with the relationship between the financial burden and the income of the farmers.

#### **5.4. Pay Attention to Technology and Develop Modern Agriculture**

Strengthen agricultural product quality and efficient production technology research, innovation and promotion, organization and scientific and technical personnel jointly tackle key problems, actively research, cultivate, introduce and promote a number of fine varieties. To take the market as the guidance, to improve agricultural efficiency and improve the environment as the main target, focusing on the development of good quality, high yield and high efficient technology, agricultural products deep processing and comprehensive utilization technology, agricultural products storage, preservation, packaging technology, to water-saving irrigation as the focus of energy efficiency technology, to biological measures for the key technology in the construction of ecological environment, agricultural industrial structure of Heilongjiang province implementation of strategic optimization provide strong technical support. Gradually establish the scientific and technological innovation system of modern agriculture, the technology promotion system of scientific research results, perfect the agricultural education and training system, and promote the development of agricultural science and technology.

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