Study on Grain Demand Structure Change in Jilin Province and Its Contribution Rate to China's Food Security

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Abstract. In order to study the influence of grain consumption structure of Jilin province and the Chinese food security contribution rate, the research method of comparative and qualitative results show that, in Jilin Province, although a slight decrease in food consumption but relatively stable, short term will not have too much impact on food safety. But in the long run, with the increase of population, the total grain consumption will increase, which will reduce the contribution of food security in Jilin province. The rapid growth of forage and industrial food in Jilin province will have an important impact on food security contribution rate. Too much influence of grain loss and seed grain not in Jilin province food security contribution. On the basis of this, the paper puts forward some countermeasures and suggestions to ensure food security.

Introduction

In 2014, the total grain output of Jilin province reached 35 million 328 thousand T, and the grain yield per unit area reached 7065kg/hm2, which was higher than the national average of 5385kg/hm2, the grain yield of Jilin province is the first in the whole country[1]. Sustained and stable growth of grain production has important significance for people's life and social economic development .Structure of grain consumption was corresponding changes with the improvement of people's income level. Direct consumption of rations reduced, the corresponding increase in consumption of animal products, Industrial use of grain and fodder grain consumption is also increasing rapidly; the contradiction of consumption structure become increasingly prominent with the original consumption structure change. Finally, the situation of grain production and consumption in Jilin province has an important impact on the country's food security. By referring to the Jilin Province from 1998 to 2014 statistical yearbook obtain relevant data, in the collection of data, collation, analysis, based on the analysis of this period of consumption structure change, and on the basis of estimates contribution to food security rate, and finally give the corresponding conclusion and suggestions of policy choice.

Analysis on the Internal Structure of Grain Consumption

Grain Consumption Structure. According to the current China's total grain consumption demand of organic composition, grain consumption mainly includes food consumption, feed, industrial production, trade in food and seeds and loss in China [2]. In the search for data found in Jilin Province food import and export trade volume is small, the small proportion of and the deletion of part of the year data, statistics are not perfect. Based on the above reasons, so no longer consider Trade Cereals, Jilin Province food consumption structure changes measured only from the food, feed, industrial use of grain, seed Cereals, loss of grain and other five aspects.

Analysis of Grain Consumption Structure in Jilin Province. The calculation method described is adopted, In Jilin province ration, feed grain, industrial food consumption, grain and feed grain wastage is calculated, and was drawn in Fig. 1 shows changes in the consumption structure of Jilin Province Grain chart. Through the analysis of Fig. 1, it was concluded that the food consumption in Jilin Province has the following characteristics:

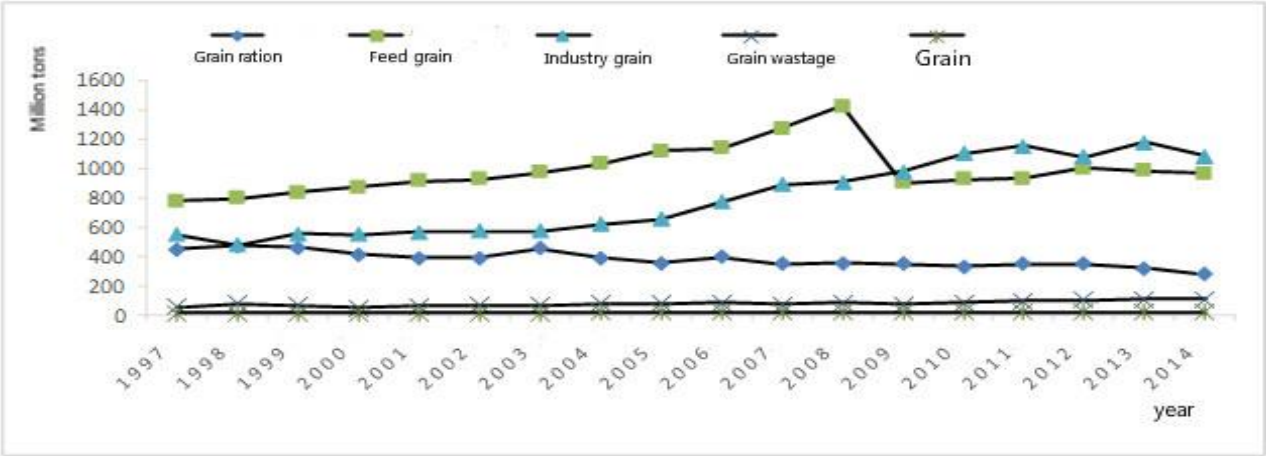

Figure 1. The Trend of Food Consumption Structure Change of Jilin Province

Industrial grain and fodder grain consumption continues to grow, is still the subject of food consumption. The total proportion of the two in food consumption was 72.04% in 1997, By 2013 it had reached 73.32%; But the two did not always maintain a synchronous growth, From 1997 to the end of 2008 the feed cereals is always higher than the industrial grain, The maximum consumption of 14.2471 million tons in 2008, But from 2009 to 2013 was higher than that of industrial grain feed grain, and consumption at the end of 2012 the two volume is very similar. In 1997 to 2014 years industrial food consumption at an average annual growth rate of respectively 4.85% Above the 4.3 average annual growth rate of 247,100 tons of grain in 1997 to 2014 years. The forage average annual growth rate of 1.47%, lower than the average grain growth rate of 4.3%.

The basic grain ration consumption remained stable, the change was smaller, and showed a downward trend. From grain consumption structure，Grain consumption from 1997 488.64 million tons of dropped to 2012 319.42 million tons, the proportion in the total grain consumption from 1997 26.44% decline to 2014. The rural rations by 1997 332.43 million tons of dropped to 18.63 million tons in 2013, at an average annual rate of decline was 3.69%，Urban food consumption is relatively small, and there is significant growth. On the one hand, the change of consumption concept with the improvement of people's living standard, the proportion of subsistence food consumption gradually decreased in grain consumption, the proportion of commodity consumption is gradually increasing in grain consumption. On the other hand, with the rapid development of the integration of cities and towns, Part of the rural population into urban population, the rural population has decreased, the urban population has increased, and the number of the urban population has exceeded that of the rural population. But in the 1997-2004years the urban population growth rate of 1.17%, the rural population showed a downward trend fell at an annual rate of 0.61%, lower than the growth rate of urban population and urban per capita food consumption is lower than food consumption in rural areas, resulting in the total food consumption decreased year by year. So food consumption trend changes steadily.

Food wastage and the seed of grain do not change significantly, up and down fluctuation. By Fig. 1 can be seen that there is a growing trend of grain loss, the grain loss is always higher than that of seed grain. Under the premise of the grain loss rate, grain loss and grain yield were positively correlated. Grain loss with the increase of total grain output in Jilin province is increasing year by year. Because of the whole grain consumption in our country leads to improper marketing and bad consumption behavior at this stage of the loss is still very large [3]. From 1997 to 2013, the annual growth rate was 4.3%.The seed grain planting area with the same direction, the planting area increased, seed grain is also increasing. But in the growing area of wheat planting area decreased continuously, it was the highest in 2000, and it was reduced to 2014.At the same time corn acreage increased. By 1997 2454.22 thousand hectares increased to 2013 3499.09 thousand hectares. Corn played a major role in grain production in Jilin province constitute the main cereal seeds, Because of the amount of per mu is lower than that of wheat, soybean and rice, Although plantings in the

expansion, but the amount of seed grain small changes, so as to maintain at a relatively stable level.

In predicting the future for a long period of time, Total grain consumption demand is rigid growth trend, food consumption structure changes with the improvement of people's income level, the population continues to grow, industrialization, urbanization process continues to advance [4], This will lead to the whole society for food indirect demand continues to grow, resulting in further expansion of the total demand for food and for China's food security. This will lead to an increase in the indirect demand for food, This cause the total demand for food to further expand, and China's food security have an impact[5]. Grain consumption structure and guarantee food security is mutually dependent and mutually dependent and it is a unified relationship. Food security is a powerful guarantee, the nature will be able to meet the needs of consumption; the reasonable grain consumption structure is conducive to the protection of food security. This will require the consumption structure of grain and the security of food security and organic unity.

Analysis on the Contribution Rate of Grain Safety in Jilin Province

Calculation of Contribution Rate of Food Security. In the < National Food Security long-term planning outline (2008 - 2020) > proposed for security of grain and other major food self-sufficiency will food self-sufficiency rate to stabilize at 95%.The food self-sufficiency rate is the total grain yield (S) accounted for the total grain demand (D) percentage (the formula is: a= (S/D * 100%)[6]. However, due to the narrow sense of food security has exceeded the 95% self-sufficiency rate of the national established standards; the feed grain demand rigid growth is an important reason for China's grain self-sufficiency rate of decline. Taking into account the current level of self-sufficiency is not clear to make changes; the food security contribution rate formula of 95% level of self-sufficiency rate is calculated on the basis of food security contribution rate. It can use the formula to calculate the contribution rate of grain security in Jilin province contribution to national food security.

Changes and Analysis of the Contribution Rate of Grain Security in Jilin Province. According to the statistical data of Jilin Province, considered the need total grain consumption and the total output of grain, as a combination of above the food security contribution rate formula. Changes in rates of contribution to food security in Jilin Province was obtained.

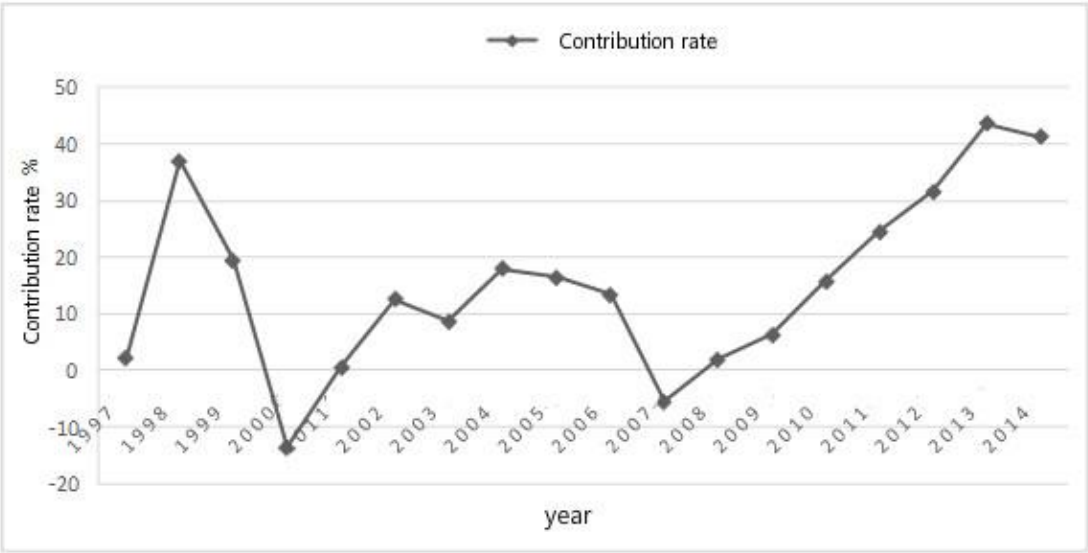

Figure 2. changes in food security contribution rate in Jilin province

According to the graph, we can divide into four stages according to the contribution rate change:

The first stage: 1997 to 1998, the contribution rate of food security is greatly increased, the curve is steep. Because the grain output in this rapid growth of grain output grew from 18.083 million tons to 25.06 million tons. At the same time, the consumption of food declined from 18.4612

million tons to 18.2977 million tons from the 1997 to the 1998, only by 0.9%.Increase in grain production and decrease in grain consumption is bound to cause a significant increase in the contribution rate of this time period.

The second stage: the contribution rate decreased and there was a negative value from 1999 to 2001, during this period, Jilin province can only meet its own food self-sufficiency or can not meet the self-sufficiency, It is difficult to realize the security of food security needs. Grain consumption has a strong negative impact on grain self-sufficiency rate [7]. Grain output was only 16.38 million tons in 2000, while food consumption has reached 18.9526 million tons, Food production can not meet consumer needs, And the impact of increasing grain yield during natural disasters, so it can not complete the national food security objectives.

The third stage: the contribution rate of wave type wave from 2002 to 2007 shows that the basic realization of the important contribution to food security and this also has a certain relationship with the national policy of the year. The phased abolition of agricultural tax benefit to Implementation of measures for agricultural development [8]. At the same time, it also greatly mobilizes the enthusiasm of farmers, Growth in food production with the planting area to expand. Negative value only in 2007, Current year's grain output of 24.54 million tons, lower than 27.2 million tons in 2006[9], But food consumption reached 25.9516 million tons, Making the negative annual rate of contribution to food security.

The fourth stage: the contribution rate of grain in Jilin province increased rapidly, and showed a linear growth from 2008 to 2014.As of 2014, Jilin Province, the grain output has achieved a "ten increase", Annual rate of 4.3, while the average annual consumption rate of 2.17, Food consumption although in growth, but lower than the grain yield growth, so as to contribute to national food security. By calculation during this period Jilin Province the average annual contribution to food security reached 13.69,And much higher than the annual average consumption growth rate of 2.17.Jilin province not only to achieve food self-sufficiency, but also made an important contribution to food security of the country[10] .

Conclusions and Recommendations

Conclusions. Through the research of the food consumption structure change and its contribution to food security, the following conclusions are reached：

First, Jilin province food consumption despite a slight decline but relatively stable, short-term will not have much impact on food security. But in the long run, total grain consumption will increase with the growth of population and will reduce the Jilin Province food security contribution degree. Second, the rapid growth of feed grain and industrial has an important effect for Jilin province food security contribution rate. The demand of Industrial grain and feed grain is increasing. And the average annual growth rate of feed grain is higher than the annual average growth rate of grain yield. This will produce a certain threat to food security, food security in Jilin province will make the contribution rate will decline. Third, from the loss of grain and seed grain proportion, will not have much impact on Jilin province's food security contribution. Third, from the loss of grain and seed grain proportion will not have much impact on Jilin province's food security contribution. But cannot ignore the proportion of the two, in the long run, to stabilize the proportion of the two.

Recommendations. In order to stabilize the contribution rate of food security in Jilin Province, the following suggestions are put forward:

First, continue to improve the country's support for agriculture protection system. From the encourage of national policy level continues to increase its food production and protection. Effectively improve the enthusiasm of the farmers, so as to improve the comprehensive grain production capacity. Second, improve the infrastructure construction of irrigation and water conservancy, carry out science and technology to the countryside, to strengthen the training of farmers, to speed up the popularization of agricultural technology, improve the comprehensive quality of farmers, efforts to achieve the goal of increasing grain output, Ensure adequate food consumption, In order to meet the needs of long-term production and consumption. Third,

accelerate the comprehensive development of rural industrialization, reasonable adjustment of grain consumption structure; to ensure the effective demand and other food rations, at the same time, we should improve the protection of urban and rural ecological environment, development of ecological agriculture and green agriculture, to improve the safety level of grain production. Realizing the sustainable and effective safe use of grain in the industrial production, mitigate the threat to food security. Fourth, improve the level of agricultural science and technology. the grain can increase investment in science and technology for seeds, to speed up the industrialization of science and technology, and strengthen the scientific breeding, extension of excellent varieties, ensure seed safety, This can reduce the seed grain consumption in a certain extent.

References

[1] The National Bureau of statistics. The National Bureau of statistics on 2014 grain output announcement[EB/OL].http://www.gov.cn/xinwen/2014-12/04/content_2786682.htm, 2014-12-08. (In Chinese).

[2] Zhiqiang Li, Jianzhai Wu, Dongjie Wang, et al. Characteristics and future demand of grain consumption in China J. Chinese food and nutrition in China, 2012,18 (3): 38-42.(In Chinese).

[3] Xiaoping Xia, Yanying Sui, Binglong Li. Analysis of Chinese urban residents' consumption of animal products -- Based on the income gap and the food security from the perspective of Jinyang J. journal, 2011 (2): 41-45.(In Chinese).

[4] Zhongye Sun. A new view on food safety issues: to simultaneously -- Henan household grain consumption status and Countermeasures of J. Journal of Henan University of Technology: Social Science Edition, 2009, 5 (3): 1-4(In Chinese).

[5] Yue Wu, Wentao Zou. Current situation and trend of grain consumption in China and Its Countermeasures J. agricultural modernization research, 2011, 32 (2): 130-133.(In Chinese).

[6] Ding Ding. Food science consumption and guarantee food security J. China Grain economy, 2011 (11): 11-13. (In Chinese).

[7] Chengsheng Yao, Huang Lin, Lu Wei. Analysis of agricultural modernization research J.2014, 35 rate changes in food consumption structure in Henan province and its contribution to China's food security (2): 163-167. (In Chinese).

[8] Jikun Huang, Yang Jun, Chou Huanguang. Thinking about the [J]. problem of agricultural economy during the new period of national food security strategy and policy, 2012 (3): 4-8.(In Chinese).

[9] Tiesheng Gao. Our food security situation and policy suggestions for reference J. economic research, 2013 (28): 17-39. (In Chinese).

[10] Qinghai Guo: Construction and Development of Main Grain Producing Areas (China Agriculture Press, China2016), p.309.(In Chinese).