Research on My Country's Sustainable Food Security Evaluation and Influencing Factors Based on Big Data Analysis from the Ecological Perspective

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Abstract. The investigation shows that China's sustainable food security is in a state of constant optimization with marked improvement from the ecological perspective. Although it is at a high level, there are also some problems that cannot be ignored, which needs to be deeply analyzed and solved. The lack of agricultural labor force, the large gap between urban and rural income and other negative factors have a very poor impact on the sustainable development of food. Based on this, this article will conduct in-depth research and analysis based on big data analysis of my country's sustainable food security evaluation and its influencing factors from an ecological perspective for reference.

Keywords: Ecological Perspective, Food Sustainability, Safety Evaluation, Affecting Factors, Big Data

1. Introduction

Food security has always been a matter of great concern to the government and the Chinese people. In different stages of development, food security represents different meanings. So under the economic theme of ecological sustainable development, food security has a new connotation. Based on the ecological perspective, this paper made a comprehensive evaluation of China's sustainable food security, and explored and analyzed the relevant influencing factors to provide innovative ideas for formulating scientific strategies for food security development under the new normal economic situation.

2. Brief introduction of sustainable food security

Food sustainable security mainly means that people in a country or region can get enough and safe food to meet their living needs at any time, and such needs must be maintained with the continuity of the times. [1] To ensure food security, we must start from the following five aspects: food input, food production, food supply, food access and food utilization. At present, domestic and foreign scholars'
researches focusing on food sustainable security mostly lay emphasis from the perspective of agricultural ecological development with examples to prove and analyze the impact of scientific and technological factors, resource factors, environmental problems and the influence of agricultural development on China's food security. In the process of this research, [2]we regard ecological sustainability as a small module of food security rather than a whole link of food security. Therefore, this paper attempts to integrate ecological sustainability into all aspects of food security evaluation and reconstructs a new evaluation system.

3. Analysis on the current situation and problems of sustainable food security in China from the ecological perspective

3.1. Present situation of sustainable food security in China from the ecological perspective

In recent years, China's food security has reached a high level from the ecological perspective, and some ecological indicators have been continuously optimized. Agricultural production, pesticides and agricultural plastic film and other materials that will cause environmental pollution have also been significantly reduced. In general, the energy efficiency of agricultural production is increasing, but the energy consumption rate is decreasing, and the sustainable potential of China's food security is being optimized. In the study of relevant factors of sustainable food security,[3] it can be found that the continuous progress of agricultural technology is an important driving force for the sustainable development of agriculture in China while the progress of agricultural technology also provides a driving force for the optimization and improvement of sustainable food security.

3.2. Problems of sustainable food security in China from the ecological perspective

From the ecological perspective of sustainable food security in China, the chief question is the tension of cultivated land, because China's population is numerous with limited farmland. The limited arable land limits the effective sowing area and unit area yield in our country that cause the grain output in China, which has restricted the sustainable development of grain. Secondly, the price of food is rising while the ability to buy food is limited. With the increase of domestic food price, people's purchasing power is also decreasing, so people's food access ability is threatened, which in turn affects the sustainable food security. [4]Finally, food supply security is threatened by the low profits of the companies that process food. Because the profits of the processing enterprises are less, the labor force and capital of the enterprises are on the decline, which has a very negative impact on the food supply. In addition, the issue of food security has become increasingly prominent. According to relevant reports, in recent years, there have been increasing cases of personal safety being threatened due to lack of guarantee of food security in China, which has caused panic among Chinese people and seriously affected the sustainable food security. The overall problem is shown in Figure 1.
Moreover, sustainable development and food surplus each structure production beginning security, According to the study in China's sustainable food security from the ecological perspective.

4. Study on the influencing factors of sustainable food security in China from the ecological perspective

4.1. Urbanization development

In the early stage, due to the rapid development of urbanization, rural labor force will be inclined to urban areas, which will lead to serious loss of land factors. This situation will not only greatly weaken the food production capacity, but also cause food supply imbalance and other problems, which is not conducive to sustainable food security. In the later stage of urbanization development, the new type of urbanization promotes urban-rural integration, optimizes the integration and connection between agriculture and other industries and makes grain production and supply more smooth, thus promoting sustainable development of grain. Therefore, in terms of structural effect, urbanization has the biggest impact on the sustainable security of food production and input. With the acceleration of urbanization development process, its negative impact is more and more significant.

4.2. Industrial restructuring

According to the analysis of the impact of industrial structure adjustment on China's sustainable food security, it can be found that the trend is also u-shaped. In-depth study can be concluded that at the beginning of the industrial structure adjustment, due to the reduced agricultural proportion, food production also goes down, thus affecting the sustainable food security. However, with the industrial structure adjustment and optimization of system gradually mature and specific flow distribution to each industry, the progress and development of agriculture is promoted with the effective use of rural surplus labor force, which help improve the grain output as well as the development of sustainable food security. Therefore, in terms of industrial structure, it has a significant impact on food production and input. As the industrial structure becomes more mature, its positive impact on food sustainable security will become more obvious.

4.3. Improve the ecological environment

Ecological environment is one of the important factors hindering sustainable food security development in China. In-depth analysis shows that the impact of ecological environment problems on sustainable food security development is mainly reflected in food production, input and utilization, etc. Moreover, as the level of sustainable food development increases, the demand for ecological
environment governance will increase, so the overall utilization rate will decrease.

4.4. Loss of agricultural labor force

The loss of agricultural labor represents the increase of capital factors, which is extremely beneficial to the increase of agricultural production efficiency and thus has a positive impact on the sustainable food security. In terms of its structure, the loss of agricultural labor force has a major impact on the sustainable food security in production, supply and utilization. Moreover, with the improvement of the sustainable food security, this positive impact will gradually decrease.

4.5. Urban-rural income gap

The impact of urban-rural income gap on sustainable food security is mainly reflected in the input link and the impact is also negative. If the income gap between urban and rural areas is too large, it means that important labor and capital factors in rural areas are concentrated in cities, which then leads to the imbalance of food demand and supply and also has a very adverse impact on the sustainable food security. However, with the improvement of the degree of sustainable food security, the poor impact of such negative factors will also fade. The overall influencing factors of China's sustainable food security are shown in Figure 2.

![Figure 2. Influencing factors of China's sustainable food security](image)

5. Conclusion

To sum up, from the ecological perspective, the sustainable development of food security in our country has been optimizing and upgrading, but it also has some potential problems that may affect the sustainable development of food, such as the lack of arable land area, failure to meet the needs of large population, the continuous rising food prices, the high prices for people to afford, low profit of food processing enterprises, loss of labor resources, the increasingly prominent food safety and so on. Therefore, based on the comprehensive analysis of big data, this article proposes to accelerate the development of urbanization, strengthen the governance of the ecological environment, and optimize agricultural technology.
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