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# Issues concerning "Greenification" of Green Food Enterprises

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**Abstract** We redefine "green food enterprises" and expound the connotation of "greenification" of food processing industry. Taking the case of Heilongjiang Province, we give an overview of green food enterprises in Heilongjiang Province, and study the degree of "greenification" of food processing industry in Heilongjiang Province, through the case study of related enterprises. There are some problems in the process of pushing forward "greenification" of food processing industry, such as the high cost of production, varying quality of products, weak R & D capability and the distance limitations of raw material places and the consumer market. The following recommendations are put forth for promoting the "greenification" of food enterprises: (i) Reducing the production costs of green food, and improving the "greenification rate"; (ii) Intensifying policy support, and creating a "green" environment; (iii) Strengthening quality control, and improving consumers' trust in green food; (iv) Establishing the network of green marketing, and broadening sales channels of green food.

**Key words** Green food enterprises, "Greenification", Green food processing industry

With the economic development and improvement of people's living standards, people pay more and more attention to food quality safety, and China's green food industry has experienced rapid development. Heilongjiang Province is one of the provinces with the highest rate of development of green food industry in China, and also the country's largest standardization production base of green food. The production capacity of green food in Heilongjiang Province is very powerful, but all products produced by the certified green food enterprises at present are not all green food. We redefine "green food enterprises" and expound the meaning of "greenification" of food processing industry. Taking the case of Heilongjiang Province, we give an overview of green food enterprises in Heilongjiang Province, and study the degree of "greenification" of food processing industry in Heilongjiang Province, through the case study of related enterprises. And we put forth the recommendations for promoting "greenification" of food processing industry in Heilongjiang Province.

## 1 Definition of related concepts

**1.1 Green food** Green food means safe and high-quality esculent agricultural and processed products without being polluted, growing in excellent environment, produced according to regularized technological speculations, with quality controlled through the whole processing<sup>[1]</sup>. On the basis of foreign standard of green food and situation of China, the China Green Food Development Center divides green food into two categories, namely AA grade green food and A grade green food<sup>[2]</sup>. The origin environment, production process, product quality, packaging, transport and other con-

ditions of the reporting enterprises must comply with the standard of green food, and go through the test of corresponding agencies, to obtain the right to use the green food indication<sup>[1]</sup>.

**1.2 Green food enterprises** The current "green food enterprises" generally produce one or several kinds of green food and have access to the trademark of green food after being tested, but the enterprises may not have the right to use this trademark of green food. People generally view the enterprises producing green food as "green food enterprises", but show little concern about how many and what kind of green food the enterprises produce. The study defines the enterprise with green food it produces accounting for 50% of its total production or more as the green food enterprise.

**1.3 "Greenification" of food processing industry** Heilongjiang Green Food Forum held in 2010 in Harbin first proposed the concept of "greenification", but it was not clearly defined. From the perspective of development process of food processing industry, the study expounded the meaning of "greenification" of food processing industry. Broadly speaking, "greenification" of food processing industry is the process that with economic development, the share of safe, high-quality and nutritious food in the entire traditional food industry rises in the context of food security, and finally replace traditional food industry. In the narrow sense, "greenification" of food processing industry is "greenification" process of the green food processing enterprises, and "greenification" of food processing industry in this article is mainly from the narrow sense.

## 2 Analysis of the degree of "greenification" of food processing industry in Heilongjiang Province

**2.1 Situation of the green food industry in Heilongjiang Province** Heilongjiang Province is regarded as the country's largest green food processing base, and the growing area of green food in 2010 reached 4.2867 million hm<sup>2</sup>, accounting for nearly 25% of the acreage of green food in China. There were 520 green

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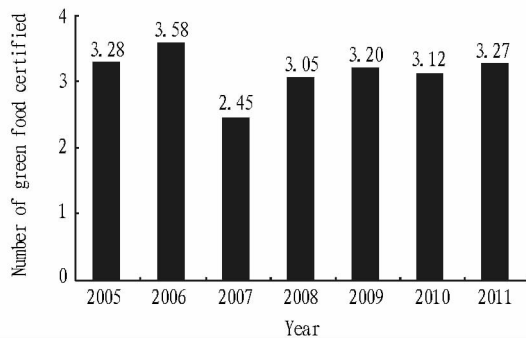
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food enterprises in Heilongjiang Province in 2011 (Table 1), with 65 enterprises with sales more than 100 million yuan and 500 types of the green food. In 2010, the total output value of food industry in Heilongjiang Province was 92.42 billion yuan, but the output value of green food processing industry was only 30.04 billion yuan, accounting for 15.6%. There were 159 000 employees in the green food processing enterprises in Heilongjiang Province, accounting for less than 10% of total employees in the food process-

ing enterprises. As can be seen from Fig. 1, each green food enterprise in Heilongjiang Province during the period 2005 – 2011 had less than 4 kinds of green food on the average. From the number, production and employees of green food enterprises, we see that there is a huge gap between the level of green food processing industry in Heilongjiang Province and that of food industry, with slow process of "greenification".

**Table 1 Situation of development of green food enterprises in Heilongjiang Province**

Year	Number of green food enterprises	Production//10 <sup>4</sup> t	Output value 10 <sup>8</sup> yuan	Number of employees 10 <sup>4</sup> people	Number of green food certified
2005	274	458.4	164.5	6.6	900
2006	294	539.7	182.3	7	1 054
2007	489	853.7	235.9	10.5	1 200
2008	492	950	232.6	13.2	1 500
2009	500	1 000	241.4	14.9	1 600
2010	520	1 050	260.1	15	1 620
2011	520	–	300.4	15.9	1 700



**Fig. 1 The number of green food certified in each green food enterprise in Heilongjiang Province**

## 2.2 Case study

**2.2.1 Green food enterprises.** Wandashan Dairy Co., Ltd. is a leading green food enterprise in Heilongjiang Province, with the degree of "greenification" more than 80%, which can produce 11 series and 220 kinds of products such as milk powder, liquid milk, beverages, soy flour, wheat, and health food. In 2011 it was chosen as one of the first batch of green food demonstration counties in Heilongjiang Province. There are about 41 products in Wandashan's processed dairy products obtaining green food certification, with the rate of greenification at 93%.

**2.2.2 Quasi-green food enterprises.** Harbin Brewery (Group) Co., Ltd. is also one of leading provincial green food enterprises in Heilongjiang Province, which now has over 40 varieties of beer with primary green food as the raw materials. Harbin Brewery Co., Ltd. was identified as the leading green food enterprise in Heilongjiang Province in 2003. From the existing data, only 4 varieties were certified at A level in 2007, and there were no new green varieties as of 2011. The certified green food types account for one fourth of 40 production varieties. Although it is leading green food enterprise, the degree of "greenification" is low. In terms of the definition of green food enterprises, it is still the qua-

si-green food enterprise. This type of enterprise is ubiquitous in Heilongjiang Province.

## 3 The problems in the process of advancing "greenification" of food processing industry

**3.1 The production cost is high and it is difficult for the enterprises to expand "green" production** The rapid development of green food industry in Heilongjiang Province is mainly due to its natural resources and environmental advantages, but the price of green food is too high, and the enterprises producing green food need to bear many other additional charges. The requirements of raw materials for green food are too high, and developing specific packaging will directly increase the green food costs<sup>[2]</sup>. In order to ensure a minimum degree of pollution, the supervision and management of the entire production process also increase the cost of management<sup>[2]</sup>. After obtaining the right to use the indication, it must also be required to pay the indication utilization fees, thus various extra costs pose a challenge to enterprises' participation and expansion in green production. So after the enterprises obtain the "green indication" of some food, they no longer research, develop and produce new green food, which makes the process of "greenification" in Heilongjiang Province slow down.

**3.2 The quality of green food is varying, affecting consumers' trust in it** Currently in the market there are some enterprises producing and marketing fake and shoddy green food, reducing consumers' trust in green food. The consumers lack the ability to identify and distinguish only through the information from product package, and distinguishing the true from the false only through the package is a common blind spot<sup>[3]</sup>. The marketing of counterfeit green food will make the consumers lose confidence in the real green enterprises. The reduced consumer groups and the decline in total consumption affect enterprise's product sales, and the "greenification" progress of the processing enterprise.

### 3.3 The level of science and technology is low and the research and development capacity of new type of green food is weak

Research and development of green food need low amount of chemical products, and the planting of greenery in Heilongjiang Province is to solve the problems of weed and pest control by the application of pesticides at present. The technology content of green product is not high, with few application results. In recent years, most of the new added green foods in the province are A-class products, but the number of products with AA grade is too small, restricting the promotion of innovation and business expansion of green food enterprises. On the one hand, due to the limitations of the technology level and the number of researchers, the green food in Heilongjiang Province is mostly sold in the form of primary agricultural products. According to statistics, the existing deeply processed products and primarily processed products in Heilongjiang Province account for 15% and 65%, respectively<sup>[4]</sup>. On the other hand, enterprises always choose some agricultural products easy to package and transport for processing. Most enterprises rely on only one kind of green food as a way to get "green indication", and fail to speed up the process of "greenification".

### 3.4 The limitations of distance between raw material places and the consumer market restrict the continuous advance of "greenification"

The raw materials for the production of green food must pass strict monitoring and production standardization to ensure environmental and product safety. The unified system of sales can not be formed due to the limitations of raw material places and the consumer market. In addition, the transportation costs are high, increasing the outlay, so companies join the green food production team. The enterprises that are producing green food are also reluctant to pay additional fees to look for other raw material places, which is the direct reason for enterprises' failure in promoting the share of green food types in total production. Few product varieties, small market share of single products and lack of competitive advantage have seriously hampered the development of logistics market of green food industry in Heilongjiang Province.

## 4 The recommendations for promoting the "greenification" of food enterprises

### 4.1 Reducing the production costs of green food and improving the "greenification rate"

In the process of advancing green food "greenification", it is necessary to make full use of scientific and technological achievements, introduce and develop new technologies to improve the technological level of the production base of green food and enhance market competitiveness. First, green food enterprises can cooperate with scientific research institutions, colleges and universities to establish innovative R & D system and open up new type of green food. Second, it is necessary to innovate upon the cultivation and processing technology of green food, use existing advanced equipments and processes to reduce manual physical activity, play the important role of science and technology, and use pollution-free processing, storage and

transportation technology to minimize management costs. Finally, there is a need to promote large-scale production of green food, reduce production costs and processing costs to obtain greater economic benefits, and lay a solid foundation for "greenification" of food processing industry in Heilongjiang Province<sup>[5]</sup>.

### 4.2 Intensifying policy support and creating a "green" environment

"Greenification" of food processing industry is inseparable from the government's vigorous guide and support. Government should provide a good external environment for the development of green food, and cultivate the leading green enterprises to develop green food consumer market. According to the actual situation of Heilongjiang Province, the government should introduce a number of preferential policies for the development of green food industry to promote the development of green food processing industry; reduce lending rates for the enterprises producing green food, to reduce costs of enterprises and increase market share; mobilize the enthusiasm of enterprises or individuals making outstanding contribution to green food production by incentives, so that the processing enterprises have the confidence to invest in new technologies and producers are stimulated to produce more green products.

### 4.3 Strengthening quality control and improving consumers' trust in green food

To increase consumers' trust in green food and promote the development of green food, regulatory authorities must strengthen the quality supervision work of the green food market, and creating a green food environment worthy of the public trust. First, it is necessary to prevent unsafe products from entering the market, prohibit the agricultural inputs with high degree of chemical fertilizer and pesticide residues, and implement quality safety access system in the production base and wholesale market. Second, green food testing organizations should implement strict annual inspection system for green food enterprises, and supervise the production, processing and sales process<sup>[6]</sup>. Finally, the sampling results of the green food production should be timely released to the public through television, Internet and other media, and it is necessary to inform the public of the real situation of the enterprise and green food, to improve consumers' trust in green food and expand sales market<sup>[7]</sup>.

### 4.4 Establishing the network of green marketing and broadening sales channels of green food

It is necessary to coordinate green food consumer groups and production bases of raw materials, and establish a sound network of green marketing to expand the business market and increase market share. The requirements of green food for production, transportation and storage are high, so enterprises should use pollution-free pure transport equipment to complete the supply and distribution of green food. We can establish green food wholesale market in Harbin, and establish wholesale places in other areas, to strengthen linkages between enterprises and market, reduce transport difficulties, and meet the demand of more consumer groups<sup>[8-9]</sup>. At the same time, it is necessary to broaden the market outside the province, expand the

(To page 8)

tem has gradually evolved to blended operation of real economy and monetary economy, and such process is called economic monetization. In this study, the monetization refers to the process of evaluation and changes of soil functions with money as measurement and medium.

From the above analysis, it can be known that monetization of soil functions shall have two objective conditions. Firstly, soil functions can be evaluated and measured. Secondly, soil functions should enter into economic field and participate in economic activities, in other words, soil functions should be exchangeable and transferable. At present, foreign and domestic scholars developed a series of soil function evaluation methods and systems with APF analysis as representative. Although there is still some point to be improved, it realizes evaluation of soil functions to some extent. The real condition shows that rules of transactions have filtered into changes of soil functions to some degree, and have certain degree of exchangeability and transferability.

**4.2 Monetization of soil functions** As above mentioned, one of definitions of monetization is indicating value of soil functions with symbol of money. Or perhaps, soil functions must have value, and this is the basis of monetization of soil functions. If soil functions do not have value, its monetization process will be entirely imaginary or no practical significance.

There are two difficult problems in discussing value of soil functions. Firstly, soil function is not entity, but just a function or action. Secondly, in China, traditional political economics defines the value as the average human labor condensed in commodities. However, soil functions are generated from various natural and historic factors, so it is slightly far fetched to say soil functions are condensed with average human labor. To solve these two prob-

(From page 5)

distribution range of green food, establish specialty store of green food in the country, and use the form of direct marketing to shorten the transport time for perishable foods<sup>[10-12]</sup>. Finally, it is necessary to make full use of green food expo and fair to promote green food of Heilongjiang so that more consumers understand green food, to promote green food market, and promote Heilongjiang Province leap from large green food province to strong green food province.

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lems, the definition of value in neoclassical economics can be used. It states that value is the measurement of usefulness or utility of commodities. Any thing, as long as able to participate in economic activities and play function in output and benefit, has value.

In this context, on the one hand, soil functions influence output, different soil influences output of crops, for instance; on the other hand, from the definition of value in neoclassical economics, there is no provision that things having value must be tangible. On the contrary, it is the measurement of functions, action and usefulness of things. Soil functions are functions and usefulness of soil, which is consistent with this value definition. Thus, value of soil functions is the basis of monetization of soil functions.

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