Market Trend and Development Strategies for Seed Industry in Hubei Province

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Abstract  Crop seed industry is a national strategic and basic core industry, which is the foundation to promote the long-term stable development of agriculture and guarantee the national food security. Hubei is a major agricultural province in central China, and the healthy development of Hubei seed industry plays an important supporting role for the stability and prosperity of the national seed industry. Based on analyzing the scale and characteristics of Hubei seed demand, the market value of Hubei commercial seed is evaluated, the problems of Hubei seed industrial development are discussed, and some recommendations are put forward to strengthen development of Hubei seed industry.

Key words  Hubei Province, Seed industry, Market trend, Development strategies

1 Current seed demand in Hubei Province
Objective analysis of problems in seed industry and studies on development measures are of great significance to ensuring food security and promote sustainable and healthy and rapid development of agriculture in Hubei Province. Based on the data in Hubei Rural Statistical Yearbook (2015) ¹, the agricultural seeds in this study refer to the seeds required for farming, not including the seeds in forestry, animal husbandry, aquaculture, flower industry and grass industry. In 2014, the agricultural seed value reached 21 billion yuan in Hubei Province. The seed quantity of rice, vegetables, melons, wheat, potatoes, corn, cottonseeds and beans reached 1.09 million t, and the seed sum was 17.5 billion yuan, accounting for 83.40% of total agricultural seed sum.

Fig.1 Seed value structure of main crops

1.1 Rice seed use  Rice is the crop with the heaviest use of agricultural seeds in Hubei Province and is widely planted in most regions of the province. In 2014, the rice seed quantity was 0.244 million t in Hubei Province and the sum reached 6.97 billion yuan. The regions with seed sum of over 500 million yuan include Jingzhou, Huanggang, Xiangyang, Enshi, Xianmian, Shiyan and Xiaogan, with total sum of 3.3 billion yuan, accounting for 84.65% of total seed sum of the province.

Fig. 2 Comparison of rice seed value in different regions

1.2 Vegetable and melon seed use  The planting of vegetables and melons in Hubei Province mainly reflects suburban location advantages of large and medium-sized cities and mountain characteristic resource advantages. In 2014, the vegetable and melon seed quantity was 0.186 million t in Hubei Province, and the sum reached 3.92 billion yuan. The regions with seed sum of over 500 million yuan include Jingzhou, Yichang, Xiangyang, Enshi, Xianmian, Shiyan and Xiaogan, with total sum of 3.3 billion yuan, accounting for 84.65% of total seed sum of the province.

Fig. 3 Comparison of vegetable and melon seed value in different regions
1.3 Wheat seed use  Wheat is the third largest crop in terms of agricultural seed quantity in Hubei Province, and its planting is relatively concentrated. In 2014, the wheat seed quantity was 0.21 million t in Hubei Province, and the sum reached 2.335 billion yuan. The regions with seed sum of over 100 million yuan include Xiangyang, Shiyan, Jingzhou and Xiaogan, accounting for 91.52% of total seed sum of the province.

![Comparison of wheat seed value in different regions](image1.png)

1.4 Commercial seed value assessment  According to the assessment data of ISF (International Seed Federation), China’s seed market value was $9.95 billion in 2012, at that time ranked second in the world[2]. Total seed market scale in an area = Total area of cultivated land × seed quantity per ha × Commercialization rate × Average food price × Ratio of seed price to grain price[3]. As of 2014, the average seed commercialization rate of China’s main crops reached 70.07%, and the maize, cotton and rape seeds had high commercialization rate. The commercialization rate of maize seeds was 100% and the commercialization rate of potato is lowest, reaching 39.24%[4]. According to the experts’ estimate, the seed market value of peanuts, melons, vegetables and flowers is about 28 billion yuan, the seed market value of other crops is about 5 billion yuan, and the total seed market value is about 114.928 billion yuan[5]. In 2015, the annual seed turnover was over 5.3 billion yuan in Hubei Province, ranked sixth in China; the rape seed market value was ranked first in China; the hybrid rice and hybrid cotton seed market value was ranked second in China. Based on the planting scale, seed quantity per unit area and seed price of various crops in Hubei Province, coupled with national seed commercialization rate, the total crop seed value in the province is estimated to be more than 7 billion yuan.

![Seed commercialization rate of seven kinds of crops in 2014](image2.png)

### Table 1  China’s seed market value in 2014

<table>
<thead>
<tr>
<th>Crop</th>
<th>Commercial seed quantity //10^4 kg</th>
<th>Weighted unit price //yuan/kg</th>
<th>Market value //10^8 yuan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>119627</td>
<td>22.93</td>
<td>274.35</td>
</tr>
<tr>
<td>Hybrid rice</td>
<td>24440</td>
<td>48.50</td>
<td>118.54</td>
</tr>
<tr>
<td>Conventional rice</td>
<td>64720</td>
<td>7.22</td>
<td>46.73</td>
</tr>
<tr>
<td>Wheat</td>
<td>355897</td>
<td>4.65</td>
<td>165.64</td>
</tr>
<tr>
<td>Soybean</td>
<td>34026</td>
<td>7.65</td>
<td>26.02</td>
</tr>
<tr>
<td>Potato</td>
<td>97037</td>
<td>2.97</td>
<td>144.26</td>
</tr>
<tr>
<td>Inland conventional cotton</td>
<td>2364</td>
<td>26.61</td>
<td>6.29</td>
</tr>
<tr>
<td>Xinjiang conventional cotton</td>
<td>8921</td>
<td>14.99</td>
<td>13.38</td>
</tr>
<tr>
<td>Hybrid cotton</td>
<td>850</td>
<td>127.24</td>
<td>10.82</td>
</tr>
<tr>
<td>Conventional rape</td>
<td>592</td>
<td>30.14</td>
<td>1.78</td>
</tr>
<tr>
<td>Hybrid rape</td>
<td>1322</td>
<td>86.87</td>
<td>11.48</td>
</tr>
<tr>
<td>Melons, vegetables, flowers</td>
<td>–</td>
<td>–</td>
<td>280.00</td>
</tr>
<tr>
<td>Others</td>
<td>–</td>
<td>–</td>
<td>50.00</td>
</tr>
<tr>
<td>Total</td>
<td>–</td>
<td>–</td>
<td>1149.28</td>
</tr>
</tbody>
</table>

Note: Data are from China Seed Industry Development Report (2015).

2 Problems

2.1 Small business scale and low market concentration  At present, there are a total of 100 seed companies in Hubei Province, but most of companies have registered capital of less than 30 million yuan. In 2015, the annual seed turnover in Hubei Province exceeded 5.3 billion yuan, ranked 6th in China; there were only 8 seed companies with annual sales of over 100 million yuan (10^8 in 2014); the top 10 enterprises of seed industry had turnover of only 2 billion yuan[6]. 57 key credit Chinese seed enterprises were identified in September 2016, and Hubei had three enterprises in the list (Wuhan Wuda Tianyuan Biotech Co., Ltd.; Hubei Seed Group Co., Ltd.; Hubei Huimin Agricultural Science and Technology Co., Ltd.), ranked 34th, 35th and 39th, respectively. Most companies have small operating scale and low industry con-
3 Recommendations

3.1 Enhancing the seed industry mergers and acquisitions

The seed industry is an industry with high demand for funds, high technical barriers and long cycle, and the industry concentration improvement must be achieved by merger and integration. Due to the special nature of the seed industry, from the experience of the development of international seed industry, it is impossible to make the company bigger and stronger relying on its own development. Mergers and acquisitions are the only way for Chinese seed companies to become bigger and stronger. The main management departments should take full advantage of the trend of China’s seed industry mergers and acquisitions, to research and develop practical restructuring plans and measures. At the same time, it is necessary to encourage industrial and commercial capital and financial capital into the seed industry to support innovation and development of seed industry, and offer preferential support to 3–5 key enterprises by acquisitions, mergers and reorganization within three years to achieve effective integration of resources and advantages.

3.2 Further strengthening commercial breeding research

Strengthening commercial breeding research is the inevitable requirement of establishing modern seed enterprise system and also the urgent need of seed enterprise to enhance core competitiveness. Through policy control and capital guidance, it is necessary to make resources and government R&D investment concentrate in the seed companies with R&D basis and strength. It is necessary to continue to implement the "provincial special seed fund" support policy, and optimize the investment structure to support the key seed companies so as to enhance seed research, production, pro-
cessing capacity, promote the use of improved varieties and constantly enhance overall business competitiveness. It is also necessary to further strengthen the combination of production, learning and study, and encourage businesses to establish long-term strategic cooperation or alliance with agricultural colleges and provincial research institutes, in order to promote joint construction of college-business R&D platform and seed industrial technology cooperation.

3.3 Further strengthening applied basic research The basic and public welfare research is the foundation for cultivating new varieties with major breakthrough and also the premise of enhancing China’s seed industry science and technology innovation capacity as soon as possible. It is necessary to give full play to leading role of agricultural scientific research institutions in the basic and public welfare research of seed industry science and technology. By strengthening the integration of technical forces, optimizing the knowledge structure and building the research platform, it is necessary to focus on the tapping and creation of germplasm resources, exploration of important genes, breeding theory and technology breakthrough, seeding and processing technology innovation, and seed quality standards and testing technology research, so as to provide a solid technical foundation for commercial breeding research and provide support and sources of innovation for enhancing seed industry innovation capacity and market competitiveness in Hebei Province.

3.4 Improving policy control and market management By strict licensing, strict enterprise access and other policies and measures, it is necessary to guide the excellent seed companies inside and outside the province to accelerate combination, merger and reorganization. By policy support and project guidance, it is necessary to actively carry out in-depth cooperation between colleges and enterprises to enhance the capability of independent innovation. It is necessary to innovate upon the concept of "prevention first, comprehensive monitoring, full service", strengthen three links "source monitoring, circulation monitoring, after-sales tracking", and effectively prevent the use of inferior seeds, to minimize business risk and production risk and provide policy support and orderly market environment for sound development of seed companies.

References