Approaches to solve the plight of the Guangxi cane-sugar industry in the context of economic transition and international trade

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Abstract Guangxi Province is the largest cane and sugar producer in China, providing over 60% of the country’s annual cane and sugar output. This paper sets out the prominent problems of the sugar industry, such as weak farm infrastructure and poor production conditions, high production costs, low mechanization application, poor structural diversity in sugar products, small-sized cane-crushing capacity on average, and little impetus for upgrading technology in sugar enterprises. The approaches to solve these issues are presented and include acceleration of programs to modernize sugarcane production through technological innovation, development of a recycling economy by industry transformation innovation, establishment of a scientific and efficient management mechanism by reforming the cane-price system, and creating a conducive development environment for the sugar industry though policy innovation.

Key words Guangxi, cane sugar industry, challenges, innovation

INTRODUCTION

Sugar is one of the most important strategic agricultural products in China, along with grain, cotton and oil crops. China is the world’s third-largest sugar producer and second-largest consumer. Guangxi Province is the largest cane and cane-sugar producer and consumer in China - since the 1990s it has been called the ‘sugar capital of China’ (He et al. 2014).

In the 2012/13 crushing season, sugarcane was grown on about 1.1 Mha in Guangxi producing 67.1 Mt of millable cane and 7.915 Mt of sugar. The income of cane growers reached 33 billion yuan (He et al. 2014). More than 15 million farmers are engaged in sugarcane production in 56 countries of Guangxi Province, and there are 35 sugar enterprises and 103 sugar mills with capacity of 620,000 tonnes of cane per day (He 2014a).

Average production cost is 5300 yuan per tonne, while the domestic sugar price has fallen to 4700 yuan per tonne. China’s sugar industry lost money for two consecutive years from 2013 to 2014, and the total loss for the milling industry was 3.1 billion yuan in 2013. The need for change is obvious.

CHALLENGES

The shortcomings of Guangxi sugar industry are the slow process of developing new varieties, the low level of mechanization, weak infrastructure of farmland, unaccomplished specialization of production and intensification, lagging-behind in sugar-refining technology, and limited deep processing and integrated utilization of sugar (He 2014a).

There are too few main cane varieties in Guangxi - the dominant variety is ROC22, which is grown on 79% of the area (Table 1) (He et al. 2014).
Table 1. Varieties of sugarcane grown in the main ecological zones in Guangxi (2013).

<table>
<thead>
<tr>
<th>Area</th>
<th>Area ('000 ha)</th>
<th>ROC22 Area ('000 ha)</th>
<th>Proportion (%)</th>
<th>New varieties</th>
<th>Area ('000 ha)</th>
<th>Proportion (%)</th>
<th>Major new varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>South area (Nongken)</td>
<td>73.3</td>
<td>44.0</td>
<td>60</td>
<td>29.3</td>
<td>40</td>
<td></td>
<td>TT89-1626, TT25, LC03-1137, TT89-133, GT32</td>
</tr>
<tr>
<td>Central area (Liuzhou)</td>
<td>111.3</td>
<td>89.1</td>
<td>80</td>
<td>22.3</td>
<td>20</td>
<td></td>
<td>ROC1, LC03-1137, LC05-136, GF98-296</td>
</tr>
<tr>
<td>Central area (Laibin)</td>
<td>173.3</td>
<td>147.3</td>
<td>85</td>
<td>26.0</td>
<td>15</td>
<td></td>
<td>YT00-236, YT94-128, ROC16, GT03-2287</td>
</tr>
<tr>
<td>South (Beihai)</td>
<td>66.0</td>
<td>29.7</td>
<td>45</td>
<td>36.3</td>
<td>55</td>
<td></td>
<td>TT28, YT00-236, LC05-136, FN39</td>
</tr>
<tr>
<td>Southwest (Chongzuo)</td>
<td>280.0</td>
<td>25.2</td>
<td>90</td>
<td>28.0</td>
<td>10</td>
<td></td>
<td>YT60, YT55, LC05-136, GT29</td>
</tr>
<tr>
<td>Southwest (Youjiang River valley)</td>
<td>86.7</td>
<td>6.33</td>
<td>73</td>
<td>23.3</td>
<td>27</td>
<td></td>
<td>ROC16, YT00-236, YT60, FN38, GT30, GT31, GT03-2287</td>
</tr>
<tr>
<td>Total</td>
<td>790.7</td>
<td>625.4</td>
<td>79</td>
<td>165.2</td>
<td>21</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOLUTIONS

Technology innovation to accelerate sugarcane production modernization

Sugarcane production tends to be high cost, low income and the last two years have seen higher costs of labour, pesticides and fertilizers. The average cost of production was 26,340 yuan per hectare during 2012-2013. Technological innovation should be focused on accelerating sugarcane production modernization to change this situation. Firstly, optimal varieties with high cane yield, high sugar content, wide adaptation, strong ratooning ability and strong stress resistance should be vigorously popularized (Zhang 2013). Secondly, large-sized cane plantations with higher cane and sugar yields need to be established. The provincial government has initiated a program to build 330,000 ha of high cane- and sugar-yielding sugarcane plantations with resultant cost savings and lower inputs (Guangxi 2013). The advanced technologies must be focused on deep ploughing to loosen soil, one-time fertilization, intelligent fertilization, water-saving irrigation, film-mulching, trash retention, virus-free seed cane, intercropping, and integrated control of insect and pests (He et al. 2014). Thirdly, the sugarcane area layout should be optimized. The industry should focus on developing optimal sugarcane areas in the southern, southwest and middle parts of Guangxi and the Youjiang River Valley Area, and localized emerging areas on the basis of traditional sugarcane area development (Guangxi 2013).

Industry transformation should be focused on the entire value chain

Different sugar and similar products should be developed, extending the mill and not just depending solely on sugar product. The production process should be improved through ‘resources-products-renewable resources’. A systematic eco-cycle industry chain of sugar, wine, paper and biochemical using modern technology and equipment should be used to transform the traditional sugar industry (He 2014b). Advanced recycling technology should be widely popularized to broaden the development of the sucrose industry circulation economy, by including comprehensive utilization of by-products sugar production technologies. What is needed is standardization of technology, clean production technology, co-generation of sugar and energy, fuel ethanol technology, cane spirits fermentation technology, sugarcane biomass power-generation technology, biological-engineering technology and other supporting technologies (He 2014b).

Reform to establish scientific and efficient management systems and mechanisms

Firstly, the system should be constructed so that central sugar management is built on the basis of the establishment of a scientific and efficient mechanism for the management of the sucrose industry. Secondly, the purchasing control system of sugar should be further established and improved. Thirdly, the subsidies (direct subsidies) system for sugarcane production should be implemented as fast as it can be. In addition, ‘the regulations on the administration of Guangxi sugar industry’ should legislated quickly to promote the sustainable development of the Guangxi sugar industry (Guangxi 2013).
Management innovation to push forward the implementation of a price-control system

Management innovation is the key to solve the plight of the Guangxi sugar cane industry (Guangxi 2013). Firstly, the establishment of a sugar target price should accelerated as the core of the system to drive the establishment of a scientific and efficient management system in sugar industry. Secondly, provincial purchasing and storage control systems should be established and improved. Thirdly, national supporting policy and implement sugarcane production subsidies (direct subsidy) system also should be implemented. Additionally, an export-import management system should be established and implemented, and the wholesale sugar market should be supervised and administered.

Policy innovation to create a good development environment for the sugar industry

Firstly, innovation in production and business operations of sugarcane production should be encouraged and supported. This requires financial support to improve production and intensive management especially on agricultural technological progress and innovation. Secondly, policy instrument such as subsidies, rewards and preferential taxation should be applied to promote the development of sugarcane industry. In addition, the policy of sugarcane planting insurance should be expanded, and the development of a future policy for the sugar industry should be intensified (Guangxi 2013).

DISCUSSION

This paper presents an overview of the difficulties that the Guangxi sugar industry is facing by analyzing the developing situation and current status, and then recommends possible approaches that can be applied to solve the problems. The message is clear - the cane sugar industry in Guangxi will have to work hard to maintain and expand its place in China and, more broadly, within the global industry.

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REFERENCES


Moyens pour résoudre la situation critique de l’industrie de canne à sucre de Guangxi dans le contexte de la transition économique et du commerce international

Résumé. Guangxi Province est le plus grand producteur de canne à sucre en Chine, fournit plus de 60 % de la production de canne à sucre et de sucre annuelle du pays. Cet article définit les problèmes importants de l’industrie sucrière, tels que les infrastructures agricoles faibles et des conditions faibles de production, coûts élevés de production, faible mécanisation application, pauvre diversité structurale dans les produits de sucre, petit capacité de broyage de canne en moyenne et peu d’impulsion pour la mise à niveau de la technologie dans les entreprises de sucre. Les moyens pour résoudre ces problèmes sont présentés et comprenant l’accélération des programmes de modernisation de la production de canne à sucre par le biais de l’innovation technologique, développement d’une économie de recyclage de l’innovation industrielle transformation, mise en place d’un mécanisme de gestion efficace et scientifique par la réforme du système de canne-prix et créant un environnement de développement propice pour l’industrie sucrière par l’innovation politique.

Mots-clés: Guangxi, industrie du sucre de canne, de défis, de l’innovation
Enfoques para solucionar la situación de la industria azucarera de Guangxi en el contexto de transición económica y comercio internacional

Resumen. La provincia de Guangxi es la mayor productora de caña y azúcar en China, contribuyendo con más del 60% de la producción anual de caña y azúcar del país. Este trabajo presenta los problemas principales de la industria azucarera, tales como la débil infraestructura cañera y pobres condiciones de producción, elevados costos de producción, baja utilización de la mecanización, pobre diversidad estructural en los productos azucareros, baja capacidad de molienda en promedio, y poco interés para mejorar la tecnología en las industrias azucareras. Los enfoques para solucionar estos temas son presentados aquí e incluyen implementación acelerada de programas para modernizar la producción azucarera a través de la innovación tecnológica, desarrollo de una economía de reciclado a través de la innovación y transformación de la industria, establecimiento de un mecanismo de administración científica y eficiente a través de la reforma al sistema de pago de la caña, y creando un desarrollo ambiental conduce para la industria azucarera a través de políticas de innovación.

Palabras clave: Guangxi, industria azucarera, desafíos, innovación