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Discussion On Mechanization Technology of Sugarcane Production in Guangxi

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ABSTRACT

Sugarcane is one of the main cash crops planted by farmers in Guangxi, The output is larger in Guangxi, It is one of the main economic incomes of farmers in Guangxi. Sugarcane mechanization technology is used for production, Can save a lot of manpower and labor, increase efficiency, And the yield of sugarcane can be improved,Achieve the purpose of increasing revenue. This paper mainly introduces that sugarcane mechanized production is of great significance to farmers, and gives some suggestions to improve sugarcane production efficiency and promote the development of sugarcane mechanized technology, which can provide reference for related scientific research of sugarcane machinery.

Keywords: *Sugarcane, Farmers, Mechanization, Develop*

I. INTRODUCTION

Sugarcane is one of the main cash crops planted by farmers in Guangxi, From the 2015/2016 squeeze season to the 2019/2020 squeeze season, the planting area of sugar cane in Guangxi accounts for more than 60% of China, From the 2015/2016 squeeze season to the 2019/2020 squeeze season, In harvesting, cultivating, planting and other links, Mechanization rate is lower in harvesting and higher in cultivating[1]. With the development of mechanization technology of sugarcane production, the use of machinery instead of human labor in sugarcane planting, intertillage, harvesting and other links has an increasing impact on farmers in Guangxi.

II. RESEARCH METHOD

The main design idea of this study is the influence of mechanical production instead of farmer's labor on sugarcane production efficiency and output. The research focuses on the benefits of using mechanical production. This study takes sugarcane production in Guangxi as an example to discuss the importance of mechanization technology of sugarcane production.

III. DISCUSSION

Guangxi is one of the main sugarcane planting areas in China, with a large sugarcane planting area and high sugarcane yield. The pie chart of total sugar cane output distribution in China's provinces and cities in 2020 [2], as shown in Figure 1.

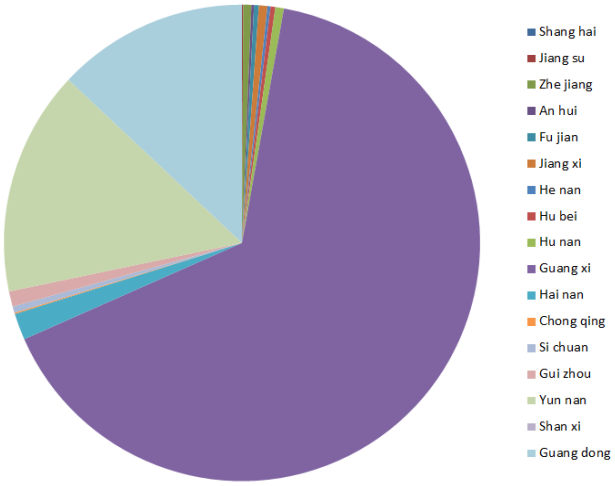

Fig. 1 The pie chart of total sugar cane output distribution in China's provinces and cities in 2020

As can be seen from Figure 1, sugar cane has a large output in Guangxi, which is one of the main economic incomes of farmers in Guangxi, so farmers pay more and more attention to the production efficiency of sugar cane.

3.1 Sugarcane planting

In terms of sugarcane planting, there are many kinds of sugarcane planting machinery at present, mainly including three kinds of sugarcane planting machinery. The whole stalk sugarcane planter has a high level of mechanization and less seed feeding workload; Real-time seed cutting sugarcane planter needs to feed sugarcane seeds manually, which is labor intensive；Pre-cutting sugarcane planter pre-cuts sugarcane seeds by machine or manually, which has high working efficiency [3]. The above three kinds of sugarcane planting machines can effectively reduce labor and increase work efficiency. According to the survey, the cost of sugarcane mechanization operation in Guangxi was compared with that of conventional operation，The average planting cost of mechanized operation of sugarcane is lower than that of conventional operation by about 800 yuan /hm^2 [4].

3.2 Sugarcane intertillage

In the aspect of sugarcane intertillage, there are hanging type sugarcane intertillage fertilizer applicator-cum-hiller and small type sugarcane intertillage fertilizer applicator-cum-hiller. For example, 3ZFS-2 sugarcane intertillage fertilizer applicator-cum-hiller can work in medium and large-scale sugarcane fields; 3ZFS-1 sugarcane intertillage fertilizer applicator-cum-hiller can work in small plots [5]. Compared with manual tillage, mechanical tillage with sugarcane intertillage fertilizer applicator-cum-hiller saves time, has high working efficiency and can reduce manual labor. And the yield of sugarcane has increased. At the same time, applying fertilizer by machinery has a better effect than applying fertilizer by manpower, which can achieve proper amount of fertilizer to avoid waste of fertilizer and soil pollution caused by excessive fertilization.

3.3 Sugarcane harvest

In terms of sugarcane harvesting, there are whole-stalk sugarcane harvesting machinery and cut sugarcane harvesting machinery. At present, there are many kinds of sugarcane harvesting machinery, For example, Guangxi 74-2 sugarcane combine harvester, KALTOR-80 sugarcane combine harvester, 4GZQ-260 sugarcane combine harvester, 4GZ-180 sugarcane combine harvester, etc[6].

According to the survey, the harvest cost of mechanized operation is lower than that of conventional operation, and cutting sugar cane by manpower is about 0.8t per person per day on average [7], which is inefficient. Using mechanical harvest instead of human harvest can reduce human labor, improve work efficiency and save costs. If we don't use machinery to harvest sugarcane and rely on manpower to harvest sugarcane, we will need a lot of manpower, and the cost of hiring manpower will increase, which will result in higher cost of harvesting, increase the production cost of sugarcane, reduce the economic benefits of farmers, and not conducive to the development of sugarcane planting and sugar industry.

From the 2015/2016 squeeze season to the 2019/2020 squeeze season, the mechanization rate of sugarcane harvest in Guangxi is gradually increasing, but the mechanical harvest rate of sugarcane in Guangxi is still not very high. The main limiting factors are generally high impurity rate of sugarcane harvested mechanically, scattered harvest areas, complex terrain, small-scale planting, row spacing of sugarcane planting which is not conducive to mechanical harvesting and other factors [8-9].

IV. CONCLUSION

By comparing the mechanized production of sugarcane with the manpower production, it is found that the mechanized production has a great influence on farmers, which can save a lot of manpower and improve efficiency,

increase the output of sugarcane and achieve the purpose of increasing income, which is of great significance to farmers. It has become a development trend to adopt mechanized sugarcane production instead of manpower labor.

4.1 Recommendations

In order to promote mechanized sugarcane production, let more farmers adopt mechanized sugarcane production, and reduce labor, several suggestions are provided:

1. Increase scientific research efforts in sugarcane planting machinery, intertillage fertilizer applicator-cum-hiller and harvesting machinery. At present, the mechanization rate of sugarcane harvesting links is low, and the research and development of sugarcane harvesting machinery is increased, so that the sugarcane harvesting machinery can meet the operation requirements of various terrain conditions.
2. The combination of mechanization technology and agronomy changes the row spacing of sugarcane planting, which is suitable for the whole mechanized operation.
3. Research and development of new sugar-making technology can increase the sugar cane impurity rate acceptable to sugar factories and promote more farmers to choose mechanical harvesting.
4. Accelerate the land improvement of sugarcane planting areas, make sugarcane planting areas centralized and large, reduce scattered and small planting, and be beneficial to mechanized production.
5. Increasing subsidies for agricultural machinery and promoting the mechanization of sugarcane production will help reduce farmers' labor, reduce sugarcane production costs, increase farmers' income and promote the development of sugarcane industry.
6. Combine with artificial intelligence technology, computer technology, sensor technology and other advanced technologies to realize intelligent and precise control of sugarcane production.

REFERENCES

Chuanyun Wu, Jian Feng, Yan Huang, et al. Analysis on the Situation and Proposal of Sugarcane Mechanization [J]. Sugarcane and Canesugar, 2021, 50(3):11-15.

Qifang Qiu. Study on Popularization and Application of Sugarcane Mechanization Technology [J]. South Agricultural Machinery, 2021, 52(4):57-58.

Shengfen Zhang. Discussion on Popularization and Application of Sugarcane Planting Mechanization Technology [J] . South China Agriculture, 2020, 14(21): 150-151.

Lin Zhang, Quanxin Li. Analysis and Prospect of Sugarcane Production Mechanization Development in Guangxi [J] Agricultural Outlook., 2021, 17(2): 59-63.

Hongliang Nong, Bosheng Zeng, Yuhang Fan. Analysis on Technology and Development Trend of Sugarcane intertillage fertilization and ridging [J]. GuangXi NongYe JiXieHua, 2017(3):10-13.

Qiuju Fan, Qingling Huang, Hebin Wu, et al. Prospect and Development of Sugarcane Mechanized Harvest at Home and Abroad [J]. Sugarcane and Canesugar,2020, 49(6):1-11.

Shanshen Xie. Application Analysis of Agricultural Mechanization in Sugarcane Production in Nanxiang town [J]. South Agricultural Machinery,2020, 51(7):52-53.

Kaihua Qin. Strategies for Improving the Mechanization Level of Sugarcane Production in Guangxi in the New Period [J]. Agricultural Technology & Equipment,2021, (7):38-39.

Yongtong Wang. Current Situation and Development Suggestions of Sugarcane Mechanized Harvest in Guangxi[J].South China Agriculture 2021, 15(8):177-178.

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