

Development of The Grading Machines for Wentan Pomelo Fruits¹

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Summary

The purpose of this project is to develop the grading machine for wentan pomelo fruits. It includes three major parts: roller sizer, weight sorter and automatic transportation equipment. Testing and analyzing the roller sizer, we optimize its working capacity. The belt conveyor's velocity is 43.5 m/min and the rolling axis's speed is 76.3 rpm. The gaps between axis and belt are designed with 6 grades: under 8 cm; 8.1~10 cm; 10.1 ~ 10.5 cm; 10.6 ~ 11 cm; 11.1 ~ 12 cm and over 12 cm. The maximum working capacity of rolling sizer is 54 tons per day, (based on 8 working hour per day). The weight sorter is also designed with 6 grades: under 300 g 375 g 450 g 525 g 600 g and over 600 g. Its working capacity is 30 tons per day. The whole grading machine can reduce the labor requirement and marketing cost, and increase the grading efficiency. To fit the purpose of cleaning, we set 20 units of brushes after the inlet. After brushing, wentan pomelo fruits will be cleaner and shiner in appearance. We also analyze the sweetness, sugar-acid ratio, juice content, fruit size and weight. Because the sweetness, sugar-acid ratio and juice content of wentan pomelo fruits were significantly positive-related to the overall preference from consumers, the wentan pomelo fruits from second and third grade show the best quality. Wentan pomelo fruits could be graded recording to fruits size and weight, and have the equality in quality (margin of error is 2 % to 5 %) and promote products' values.

(Key words : wentan pomelo fruits、 grading、 roller sizer、 weight sorter)

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