The Relationship Between Sweetness and Internode Feature of Sugarcane

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Sugarcane is an important economic crop of Thailand. Past research showed that sugar is collected in the sugarcane stem. So far there has been no report on a relationship between the sweetness and the internode feature of sugarcane. Therefore, we have conducted a study to find that relationship. In this research, Khon Kaen 3 species was used as a sample group. The sweetness of the sugarcane stems, with the average number of 26 internode segments, were measured using Brix Reflectometer. Only the sweetness value of the 1st internode segment from the root of the cut stem to the 20th segments were studied since it was impossible to extract the juice out of the 21st segment onward. The study of sugar from each segment revealed that the length, circumference, and weight of the stem did not show any correlations with sweetness. However, the sweetness has been found to correlate with the order of the internode. In addition, among the 20 segments studied, the highest sweetness values reflecting the high sucrose contents were in the range of segments 14 to 18. The relationship between the sweetness value and the order of internode was obtained as follows: ; $Y=-0.0017x^3+0.0485x^2-0.2103x+20.826$; $R^2=0.9792$ Where x is the order of the internode of sugar cane (x is 1,2,3,...,20) y is the sweetness value (Degree Brix) Such relationship may be used to analyze and control sugar quality in industrial plants. Moreover, it may be used in combination with consideration on other factors to improve sugarcane trading in Thailand.

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