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# *Short Internodes Reduces the Weight of the Cane*

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## **ABSTRACT**

**Sugarcane is an important commercial crop of India. In a field experiment it was found that short internode (7.2 cm) recorded a lesser cane yield of 0.657 kg. However, long internodes (12.1 cm) yielded 1.705 kg/individual cane. Hence management practice to be developed to increase the internode length of the cane and varieties with long internodes should be developed to improve the productivity of the cane.**

Sugarcane (*Saccharum officinarum*) is an important sugar crop, besides being utilized as biofuel around the world. The world's four major sugarcane producing countries are Brazil, India, Thailand and China. India is second largest producer which has registered 344.34 million tonnes (2021-22). Tamil Nadu is one of the top sugars producing state, contributing to about one-tenth of the country's sugar production for the past years. Sugarcane yield for Tamil Nadu at over 100 tonnes /ha has been decisively the highest in the country for decades that is also comparable to the best obtaining yield anywhere in the world. But over recent years, there had been a declining trend in sugarcane production due to reduction in area under cultivation in Tamil Nadu. Additional focus has to be laid in adopting state of art technologies and eco-friendly practices for the sustainability of cane agriculture in Tamil Nadu.

We have observed the yield contributing attributes, in which we found that short internode and reduced internode length reduced the cane weight. So the researcher should focus on releasing varieties with good internode length which will give better cane weight. Within the same field observation was taken. Generally Varietal difference, Nutrition deficiency, lesser irrigation and salinity reduced the internode length. Plant height determines the sugarcane growth and development. Sugarcane height is determined by the elongation of the internode. Complex hormonal interactions are involved in the control of internode elongation. Gibberellin, brassinosteroids and auxin are important in promoting internode elongation. Whereas, abscisic acid, ethylene and jasmonic acid inhibit internode elongation. The expression of GA-oxidases is strongly related to decreased internode elongation. Internode length and diameter are responsible for better cane weight. In general, internode length at the base and the top are short and with long internodes in the middle of the cane stalk. Internode elongation and division zones have a large number of unique genes and evaluated the specific profile of genes related to primary and secondary cell wall formation, cellulose synthesis, hemicellulose, lignin, and growth-related genes. For each section these genes presented different profiles along the internode in elongation in energy cane.

**Table 1. Cane weight recorded in short internode plants**

<b>Plant No.</b>	<b>Number of internodes</b>	<b>Internode length (cm)</b>	<b>Individual cane weight (kg)</b>
1.	21	7.0	0.474
2.	22	7.5	0.654
3.	21	6.5	0.523
4.	17	7.5	0.670
5.	23	7.0	0.828
6.	19	7.8	0.790
Mean	21	7.2	0.657

**Table 2. Cane weight recorded in better internode length**

<b>Plant No.</b>	<b>Number of internodes</b>	<b>Internode length (cm)</b>	<b>Individual cane weight (kg)</b>
1.	17	12	1.564
2.	23	11	2.178
3.	21	12.5	1.462
4.	21	11.0	1.718
5.	20	13.5	1.767
6.	19	12.5	1.542
Mean	21	12.1	1.705

Short internode recorded a length of 7.2 cm yield a cane weight of 0.657. However, long internodes (12.1 cm) yielded 1.705 kg/individual cane.

**CONCLUSION**

The length and diameter of the cane internodes varied with varieties and growing condition very short internode at the bottom and centre of the cane reduced the yield of the cane. It was found that short internode recorded a length of 7.2 cm yield a cane weight of 0.657. However, long internodes (12.1 cm) yielded 1.705 kg/individual cane. Varieties, Nutrition deficiency, lesser irrigation and salinity reduced the internode length. Good varieties with better elongation should be chosen for higher productivity.