

SHORT COMMUNICATION

Determination of Cane Sampling Method for Chemical Analysis

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The crushing of quality cane is prerequisite for higher sugar recovery in sugar mills, and quality of cane is greatly depends on cane maturity which have great impact on pol % cane. Therefore, it is important to determine maturity status of cane before going for harvesting schedule to maximize pol % cane resulting ultimate higher sugar yield in sugar factory. In case of maturity determination chemical analysis of cane in the laboratory is necessary and needs to find out appropriate cane sampling method to get good chemical analysis results. Therefore, a trial was carried with 5 commercial sugarcane varieties viz. Isd 2/54, Isd 16, Isd 35, Isd 36 and Isd 37 in the Physiology and Sugar Chemistry Division of the Bangladesh Sugarcane Research Institute (BSRI), Ishurdi, Pabna during 2004-2006 cropping seasons. Two sampling methods were selected for collecting cane samples from field for cane quality determination. Methods used were i) randomly selected "single stalk" samples and ii) randomly selected "whole clump" samples. In case of "single stalk" sampling method 10 stalks were selected randomly, while 5 clumps were randomly selected for "whole clump" sampling method (Ghafur, 1985). Mean data of 10 stalks as well as 5 clumps have been shown in the Table 1.

The fresh samples were collected directly from the field. The extraction per cent of juice in each sample was determined by sample weight divided by juice extracted by power driven cane crusher. The juice analysis was done following method described by Chen (1985). Brix, pol % cane, purity and reducing sugars content were determined. The results of the trial have been shown in the table 1. It is seen from the table that "single stalk" method showed superior results in all parameter studied compare to "whole clump" method. Mean data of 5 varieties in respect of Brix, , pol % cane purity and reducing sugars showed higher in "single stalk" sample method compare to "whole clump" sample method. It is possibly because of the fact that "whole clump" consist of mother stalk, primary, secondary and might be tertiary tillers, while in case of "single stalk" sampling method possibly sample is not represented by different categories of stalks. It indicates that "whole clump" method of cane sampling would be much more representative of total field stalks. The results of the present findings are in conformity with the findings of Patil *et al.* (1980) and Legendre *et al.* (1969). In whole clump sampling method lower juice quality may be attributed to the crops comprises in different stages of cane quality. It may be concluded that "whole clump" sampling method is more representative to whole field compare to "single stalk" method of cane sampling, recommended "whole clump" method of cane sampling for chemical analysis.

Table 1. Chemical Parameters of sugarcane varieties under two different methods of cane sampling.

Variety	Single Stalk Wt (Kg)	Extraction (%)	Brix (%)	Purity (%)	Pol % Cane	R.S (%)
Whole clump sampling method						
Isd 2/54	0.70	46.4	18.2	86.6	12.4	0.20
Isd 16	1.15	48.9	20.5	89.3	14.3	0.39
Isd 35	0.78	46.2	20.0	88.8	14.0	0.25
Isd 36	0.61	40.8	20.2	90.2	14.3	0.36
Isd 37	1.13	45.1	18.9	89.2	13.3	0.29
Mean	0.87	45.5	19.6	88.8	13.6	0.30
Single Stalk Sampling Method						
Isd 2/54	0.86	46.5	19.2	89.3	13.5	0.13
Isd 16	1.22	50.8	20.8	90.2	14.7	0.33
Isd 35	0.86	46.5	20.2	88.7	14.1	0.18
Isd 36	0.74	43.2	21.5	89.9	15.2	0.27
Isd 37	1.68	48.8	19.8	89.8	14.0	0.15
Mean	1.07	47.2	20.3	89.6	14.3	0.21
Differences (on mean basis)	0.20	1.7	0.7	0.8	0.6	0.09
Percent higher in single stalk method over whole clump method (on mean basis)	23.0 %	3.8 %	3.8 %	0.8 %	4.7 %	30 %

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