Performance of sugarcane genotypes under two agroclimatic conditions for yield and agronomic characters . S.Alarmelu,R.M.Shanthi and R.Nagarajan.2014

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A comparative study of high yielding, high sugar and non-flowering candidate varieties under two maturity groups (Early and Midlate) was performed to evaluate cane yield, sugar yield and cane characteristics in TamilNadu(SBI,Coimbatore) and North Karnataka (USW).Two plant crops were evaluated along with standards (CoC 671, Co 94012, Co 86032) in a RBD during 2009-2011 at both the locations. It was observed that varieties in the trials at both locations showed improvement for cane yield and sucrose % in comparison with CoC 671 and Co 86032. Among the early clones, Co 11021 recorded the maximum yield of 140 t/ha with an improvement of 17.81% over CoC 671 followed by Co 10027 with a yield of 134.35 t/ha. The results on the juice analysis revealed that the clones Co 10024, Co 11019, Co 11020 and Co 11021 were high sucrose clones. Among the midlate clones, Co 10028, Co 10033, Co 11024, Co 11025 were high yielding (150 t/ha) in comparison with Co 86032. For juice quality characters (Sucrose & CCS %), two varieties viz., Co 10028, Co 10033 were found promising. Four clones viz.,Co 11023, Co 11025, Co 13021 and Co 13022 identified from the trial were high yielding and non-flowering clones. These clones had the cytoplasm of Co 92024 which is a shy /rare flowerer. It was observed that progenies involving this female parent produced high proportion of non flowering clones in comparison with the parents Co 86010, ISH 1 and CoV 92102. Cane yield of these non-flowering varieties on ascending trend was Co 13022(141.44 t/ha, 138.21 t/ha), Co 11025 (150 t/ha, 142.38 t/ha) and Co 13021 (155 t/ha,148.12t/ha) at Karnataka and Coimbatore respectively. Among the productive characteristics studied, the average germination rate of the clones was recorded to be above 52 %. Average plant height was 225 cm under Karnataka condition and 210cm in Coimbatore. These varieties had excellent thickness and appreciable cane height. The clones expressed early vigour and maintained a high cane population. The genetic diversity among the 28 clones studied indicated that the clones Co 13021 and Co 13022 though genetically dissimilar were in the same cluster. The clones Co 10028, Co 10029, Co 11017, Co 11021 was genetically similar with eucledian distance coefficient of 0.03. The clones Co 10031, Co 10032, Co 10034, Co 11013, Co 11016, Co 11023, Co 11024, Co 11025, Co 13021 were selections from Co 92024 GC but they were in different clusters. Coefficient of correlation of yield components with the cane yield showed that cane thickness, cane height, number of internodes and millable cane were positive and highly significant. The highest value of correlation with cane yield was exhibited from number of millable canes (r = 0.70) and plant height (r = 0.54). High Coefficient of variability observed for the number of millable canes/hectare and plant height (18.00 and 10.04) at Tamilnadu and Karnataka was due to the influence of the environment.The study also indicated that the clones, Co 11022, Co 11024, Co 10027, Co 11028, and Co 11029 showed uniform and stable performance in both Tamilnadu and Karnataka conditions. Identification of nonflowering/shy flowering types with adaptation to the climate change is the need of the hour to sustain sugarcane production and hence utilization of shy flowering parents and identified stable clones in hybridization will thereby help to identify non flowering, stable and climate resilient clones.