

1. S.Alarmelu, G.Hemaprabha and R.M.Shanthi.2014. Effect of selection on modified recurrent program in sugarcane (*Saccharum spp*) populations.In Proceedings of International Conclave on sugar crops.Sweeteners and Green Energy from sugar crops: Emerging Technologies.Power of Sugar Crops.Feb 15-17,2014 held at IISR, Lucknow. P: 114-115.

The modified recurrent selection method suggests testing a high yielding productive population with population of medium yield and thereby aiming to have more genetic gains than recurrent selection. The objective of this study was to estimate the genetic components and to evaluate the genetic gains of four heterotic groups of CoC 671, Co 8371, Co 86002, Co 86011 of sugarcane (*Saccharum spp.*) by adopting a modified recurrent selection method. Selection was conducted using an effective population size  $N = 50$  and a selection rate of 20% for a selection index, based on cane weight, cane thickness and number of millable canes. Two recombination cycles were evaluated with 144 progenies per cycle. The flowering clones were crossed among themselves to constitute inter-population and intra-population. The progenies were evaluated in RBD of two replications. Genetic variability in plant height, single cane weight and number of millable canes was observed in the first cycle of selection and in cane thickness in the second cycle. The intensity of selection followed in the first cycle indicated the variability for the yield parameters in the four groups evaluated and thereby indicating adequate levels of genetic variability to utilize them in breeding programs to obtain superior clones. Considerable genetic variability for the traits existed in the populations. Highest range was noticed for plant height (265 cm) in Co 86002 group followed by number of millable canes (63.2) and estimated yield / 2rows (145.32 kg). In CoC 671 group highest range was observed for cane thickness (3.23cm). Predicted genetic gain after 1st cycle of random-mating was as high as in the range of 33.21 % (CoC 671 group) to 59.24 % in Co 86011 population for number of millable canes at 20% selection intensity. For yield/plant in Co 8371 and Co 86011 groups expected genetic gain was higher than the overall mean of populations (29.82% and 41.0%) respectively. Among the groups, predicted gain was also high in CoC 671 for HR Brix %. Based on the results obtained 12, 21, 32 and 14 superior progenies were selected from CoC 671, Co 8371, Co 86002, Co 86011 groups respectively for next cycle population. Correlated responses were also in the desired direction. Mid-parent and high-parent heterosis increased significantly with selection. These improved heterotic groups evaluated further against their respective base population in 2011-12 resulted in improvement with genetic advantage of 11.21, 10.25, 13.8% and 13.5 % respectively. The third cycle of selection of these recombinants could be further utilized in breeding programme. The results also indicate that this breeding strategy can continue improving the yield population in sugarcane.