



Research Paper

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Development of heterotic hybrids in bitter gourd (*Momordica charantia* L.) for earliness, high yield and quality traits

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ABSTRACT : An experiment was conducted in bitter gourd with ten genetically diverse inbreds as parents in full diallel mating design to estimate the extent of heterosis for earliness, yield attributing and quality traits. The parent CO 1 was used as a standard check. Among ninety hybrids evaluated, forty six hybrids were found to exhibit negative significant heterobeltiosis for days to first female flower appearance and the hybrid CO1 × GL had registered favourable values for this trait. For node at which the first female flower appears the hybrid CO1 × MC105 had registered negative significant relative heterosis, heterobeltiosis and standard heterosis. The highest significant relative heterosis and heterobeltiosis for fruit length was also observed (KR × UB). The highest positive and significant standard heterosis was observed in the hybrid CO1 × MC105 for fruit length. The estimate of heterobeltiosis for fruit weight had shown positively significant for twelve hybrids, and it was the highest in KR × USL. Thirteen hybrids had registered positive and significant heterobeltiosis and standard heterosis values for number of fruits per vine. The highest positive heterobeltiosis and standard heterosis (Preethi × MC-30) was observed for fruit yield per vine. By considering mean, *sca* and significant standard heterosis values the hybrids *viz.*, Preethi × MC-30, KR × USL and MC-105 × MC-10 were selected as the top performing hybrids with respect to yield, earliness and quality traits.

KEY WORDS : Earliness, Heterosis, *Momordica charantia* L., Quality, Yield

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Bitter gourd (*Momordica charantia* L.) is an important commercial cucurbit belonging to the family Cucurbitaceae, genus *Momordica*. It is a large genus with many species of annual and perennial climbers, of which *Momordica charantia* L. is widely cultivated. Bitter gourd has several uses; the fruits are used as vegetables in many ways and quite commonly used in cooked, fried and stuffed forms. The fruits are also pickled, canned and dehydrated. The fruits are cooling, digestive, laxative, antipyretic and its administration reduces blood diseases, rheumatism and asthma.

Heterosis in cross pollinated crop has been known to offer potentialities for increased yield. As cucurbits do not show inbreeding depression, superior recombinants identified in subsequent generations could also be explored for

commercial exploitation. In our country, a wide range of variability in vegetative and fruit characters is available in bitter gourd. Due to the existence of wide variability, monoecious nature, conspicuous and convenient flowers and large number of seeds per fruit, bitter gourd can serve as the most potent material for the exploitation of heterosis on commercial scale. Hybrid vigour is substantially increased on crossing genetically diverse inbreds. Though heterosis for yield and yield contributing characters has been reported earlier in bitter gourd by Munshi and Sirohi (1993) and Singh *et al.* (2000), there is not much commercially high yielding, early fruiting and quality hybrids has been released from public sector organization so far. The present study was therefore, undertaken to determine the extent of heterosis in bitter gourd and to identify the most heterotic hybrids with high yield,