



Research Paper

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Studies on genetic causes of heterosis in bottle gourd [*Lagenaria siceraria* (Molina) Standl.] near Gangetic region of Varanasi

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ABSTRACT : The heterosis study was estimated by using thirty six genotypes (8 parents and 28 F₁ hybrids). The significant heterosis for F₁'s over better parents for the various characters viz., PBOG-40 x DVBG-2 (pedicel length, average fruit weight, and fruit yield per plant), NDBG-58 X PBOG-62 (number of primary branches, days of first female flower anthesis and day of first fruit harvesting), NDBG-58 x Pusa Naveen (vine length), PBOG-40 x Pusa Naveen (days of first male flower anthesis), DVBG-1 x NDBG-58 (number of fruit per plant), PBOG-61 x PBOG-62 (fruit length), PBOG-61 x DVBG-1 (fruit diameter), PBOG-61 x NDBG-58 (number of seeds per fruit) and DVBG-2 x PBOG-62 (hundred seed weight). Using parents in these crosses can be used in the future breeding programme for hybrid development.

KEY WORDS : Bottle gourd, Half diallel cross, Highly cross-pollinated, Heterosis

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Bottle gourd [*Lagenaria siceraria*(Molina) Standl. 2n=2x=22] is an important vegetable crop of *cucurbitaceae* family (Maurya *et al.*, 2009). It is an herbaceous, annual climbing plant with long, strong tendrils and simple leaves. Fruits are globular, bottle, or club-shape up to 1 m long, with hard, durable rind. The most common types are light green and dark green with light green spots (Pandey *et al.*, 2004). Most commonly, gourds are the native to Africa, and at a very early date spread throughout the world by human migrations. It is a monoecious and highly cross-pollinated crop known to good potential for yield components (Pandey *et al.*, 2004). Bottle gourd has seen much variation for many economically important traits. The heterosis in bottle gourd has been studied by a large number of workers (Sirohi *et al.*, 1987; Maurya *et al.*, 1993; Sit and Sirohi, 2002; Dubey and Maurya, 2003; Pandey *et al.*, 2004; Praveen and Ahemed, 2006; Quamruzzaman *et al.*, 2009). They studied that the hybrids showed good response over better parents for the yield and yield contributing traits.

The heterosis offered the scope for identifying the

selective parents, can be used in breeding and exploiting the potentials parents of higher yields. The present investigation, was under taken with a view to examine the manifestation of heterosis by diallel cross fashion in bottle gourd. Exploiting of hybrid vigour depend on the direction and magnitude of heterosis, biological feasibility and type of gene action involved.

RESEARCH METHODS

Eight genetically diverse inbreeding parental lines of bottle gourd [PBOG-40 (P₁), PBOG-61 (P₂), DVBG-1 (P₃), DVBG-2 (P₄), VRBG-40 (P₅), NDBG-58 (P₆), PBOG-62 (P₇) and Pusa Naveen (P₈)] were selected for a half diallel cross fashion. The parental lines were diverse in terms of origin, earliness and fruit characters (Table 1). The crosses were made in 2003 on experimental site of vegetable research farm. The flowers were hand emasculated and pollinated to produce all possible combinations of F₁ hybrids without reciprocals. The F₁s fruit were picked at full physiological maturing and seed extracted.