

# Estimation of Additive, Dominance and Epistasis through Triple Test Cross in Brinjal (*Solanum melongena* L.)

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**Abstract**—Brinjal (*Solanum melongena* L.) is known as egg plant or aubergine belong to family solanaceae, grown as fresh market crop especially in low and mid hill areas of Himachal Pradesh. In spite of its economic importance, no major strive has so far been made for the improvement of yield and quality traits in this crop. Based on these considerations, the present investigation was undertaken to obtain information on the relative magnitude of additive, dominance and epistatic component of genetic variance and average degree of dominance of different traits such as marketable fruit yield per plant, days to 50% flowering, total soluble solids, dry matter content, iron content, phenol content and bacterial wilt incidence by following a triple test cross mating design, proposed by Kearsay and Jinks (1968). Ten randomly selected plants were crossed with inbred lines ( $L_1$  and  $L_2$ ) and their  $F_1$  hybrid ( $L_3$ ) to develop thirty triple test cross progenies during the year Kharif, 2014 and evaluated along with parents ( $L_1$  and  $L_2$ ),  $F_1$ 's ( $L_3$ ) and  $F_2$ 's (Pi lines) in a Randomized Block Design (RBD) with three replications at the Experimental Farm, Department of Vegetable Science and Floriculture, CSKHPKV, Palampur (H.P.) during Kharif, 2015. The best cross combinations ( $P_8 \times L_1$ ), ( $P_7 \times L_1$ ), ( $P_9 \times L_1$ ), ( $P_3 \times L_1$ ), ( $P_1 \times L_1$ ) and ( $P_2 \times L_1$ ) manifested superior performance over the standard cultivar Pusa Purple Cultivar (PPC). Heterotic effects were supported by the preponderance of non-additive genetic effects was evident and the degree of dominance was in over-dominance range, whereas a significant contribution of additive  $\times$  dominance, dominance  $\times$  dominance genic interactions was predominant for different traits along with both additive (D) and dominance (H) components were significant. The dominance (H) components were also significant which indicates that for maximum benefits, heterosis breeding programme should be adopted for the improvement of these traits.

**Keywords:** Triple test cross, epistasis, dominance, additive.

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