

GENETIC ANALYSIS FOR FRUIT YIELD AND ITS COMPONENT TRAITS IN TOMATO (*SOLANUM LYCOPERSICUM* L.) POPULATION

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Abstract: The present investigation was undertaken to study the genetics of fruit yield and yield components traits through generation mean analysis, which facilitates the idea about nature of gene action (Additive, Non-additive) as well as epistasis interaction involved in the expression of the trait. A six generations [Parents, F₁, backcrosses (B₁ and B₂) and F₂] of the five crosses of tomato, 1) GAT-4 × AVTOV 1002, 2) ATL-11-05 × AVTOV 1002, 3) GT-2 × AVTOV 1008, 4) AVTOV 1007 × AVTOV 1005/2 and 5) IIHR-329 × IIHR-335 were grown in compact family block design at the field of Main Vegetable Research Station, Anand Agricultural University, Anand. Both type of additive and non-additive gene effects found significant for majority of the yield contributing and biochemical traits in the studied five crosses. The magnitude of dominant gene effects was much higher than the additive gene effects in all the five crosses for yield contributing traits. This indicated predominant effect of dominance gene effects in the inheritance of yield and yield attributing traits involved in the expression of the traits. Contribution of duplicate type of epistasis, indicating complex inheritance pattern for the traits. Recurrent selection and bi-parental mating should be used for the improvement of the characters which shows the predominant dominant gene effect. However, complementary epistasis also found in some of cross combinations suggesting selection can be useful in subsequent generations for improvement of these characters.

Keywords: Additive, Bi-parental mating, *Solanum lycopersicum*, Tomato

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