

Study on genetic variability, heritability and genetic advance in tomato

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SUMMARY

Thirteen tomato genotypes were evaluated to estimate variability, heritability and genetic advance in yield and yield contributing characters at AICRP on vegetable crop, M.P.K.V., Rahuri. A high degree of significant variation was observed for all the characters studied except pericarp thickness and number of locules. A highest GCV was observed for fruit yield per plant and PCV for fruit yield per plant and number of locules while lowest GCV was noticed for days to first harvest, days to 50 per cent flowering and pericarp thickness and PCV for days to first harvest and days to 50 per cent flowering. High heritability with high genetic advance as per cent of mean was observed for fruit yield per plant and average fruit weight which could be improved by simple selection.

Key Words : Tomato, Variability, Heritability, Genetic advance

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Tomato (*Lycopersicon esculentum* Mill.) is one of the most popular and widely grown vegetable in the world ranking second in importance only next to potato in many countries and ranked 1st in preserved and processed vegetables. Information on genetic diversity among available genotypes is essential for development of promising variety (Balash *et al.*, 1984) and on the other hand, information on nature of total phenotypic variability together with the magnitude of heritability for any given quantitative characters under improvement is of utmost importance to the breeder to proceed towards fruitful hybridization programme. Yield improvement would be facilitated only when genetic diversity exists in the material chosen for improvement. The genotypic and phenotypic co-efficients of variation are useful in detecting amount of variability present in the available genotypes. Heritability and genetic advance help in determining the influence of

environment in expression of the characters and the extent to which improvement is possible after selection. Hence, the study was conducted to quantify the variability in tomato genotypes for yield and its related characters.

MATERIALS AND METHODS

The experimental material consisted of 13 genotypes which includes 10 progenies of cross M-3-1 x H-36 along with two parents and check Dhanshree were laid out in Randomized Block Design (RBD) with 3 replications at All India Coordinated Research Project on Vegetable Crops, MPKV Rahuri during autumn-summer (October to April) 2010-11. Transplanting was done at a spacing of 90 x 30 cm in a plot size 3.60 x 3.0 m². Data were recorded on various 15 quantitative characters. Analysis of variance was done based on RBD as suggested by Panse and Sukhatme (1985) for each of the characters separately. The phenotypic and genotypic co-efficient of variance and heritability in broad sense was estimated according to Burton and De Vane (1953). Genetic advance was estimated as per Allard (1961).

RESULTS AND DISCUSSION

In Table 1, the Analysis of Variance (ANOVA) revealed

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