

## Genetic variability and heritability studies in tomato (*Lycopersicon esculentum* Mill.)

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### SUMMARY

Thirty four genotypes of tomato were evaluated during *Rabi* season of 2006 - 2007 for genetic parameters *viz.*, variability, heritability and genetic advance. The estimates of PCV and GCV were high for fruit weight followed by fruit length and lowest for number of flowers per cluster and total acid (%). Moderate value (20-30%) of PCV and GCV were recorded for fruits per plant, while other characters displayed less than 20 per cent. Moderate to low estimates of PCV was recorded against plant height, primary branches per plant, fruits per plant and yield per plant. However, days to first flowering, flowers per cluster, fruits per plant, fruit yield and average fruit weight recorded lower GCV values compared to their respective PCV values. The estimates of PCV and GCV values were close for days to 50 per cent flowering, days to full flowering, number of primary and secondary branches, plant height of all the fruit and quality characters except average fruit weight. High heritability coupled with high genetic advance expressed in percentage of mean was observed for selection for primary and secondary branches, plant height, fruits per plant, fruit length, fruit diameter, and fruit weight indicating that these traits were mainly governed by additive gene action and responsive for further improvement of these traits.

**Key Words :** Genetic variability, Heritability, Genetic advance, Tomato

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**T**omato, *Lycopersicon esculentum* Mill which belongs to the nightshade family, Solanaceae, the world's largest vegetable crop after potato and sweet potato and it tops the list of canned vegetables and occupies an area of 4.5 mha in the world with an annual production of 123.6 mt. The productivity of tomato in India is very low (15.60 t/ha) compared to the global average (25.09 t/ha). Low productivity of tomato in India is mainly due to cultivation of unimproved types or/and un adapted types, cultivation in low priority area, poor crop management, inadequate plant protection

measures, and non-availability of well-adapted and high yielding varieties for various agro-climatic regions. The non-availability of superior genotypes and low efficiency in utilizing the existing variability in plant breeding programmes has resulted in low space of crop improvement. Therefore, an alternative would be to go for indirect selection considering correlated traits with high heritability. In the present investigation, germplasm lines have been obtained from different agro-climatic regions of India.

### MEMBERS OF THE RESEARCH FORUM

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### MATERIALS AND METHODS

The base material for the experiment consisted of thirty four genotypes/lines of tomato collected from different sources. The list of genotypes used in the study is given in Table A.

The field experiment was conducted during the *Rabi* season on farmer's field, under the supervision of Institute of Agriculture, Palli Siksha Bhavan, Visva Bharati University.