

GENETIC VARIABILITY, HERITABILITY AND GENETIC ADVANCE IN TOMATO

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Abstract: 68 genotypes of tomato were assessed for genetic variability, heritability and genetic advance studies at Vegetable Research Farm, Department of Horticulture, Institute of Agricultural Sciences, B. H. U., Varanasi during rabi season 2009-10. All the characters studied for all the genotypes showed highly significant variation. General coefficient of variation at phenotypic level was higher in magnitude than corresponding genotypic level though the differences were not much in all the cases. Maximum PCV (49.55) and GCV (47.30) were registered for shelf life while days to 50% flowering had the lowest PCV (8.66) and GCV (7.40). The range of heritability was observed between 73.10 to 99.60 %. Highest value of heritability 99.60 was observed for fruit yield per plant and fruit yield per hectare, while it was lowest for days to 50% flowering (73.10). Highest genetic gain was recorded for shelf life followed by fruit yield per plant, fruit yield per hectare, whereas days to 50% flowering exhibited moderate genetic gain.

Keywords: Tomato, *Lycopersicon esculentum*, Variability heritability, Genetic advance

REFERENCES

- Allard, R. W. (1960). Principles in Plant Breeding. John Wiley and Sons, Inc. New York. 185 p.
- Burton, G. W. and Devene, E. W. (1953). Estimating heritability in all fall fescue (*Festuca arundinacea*) from replicated clonal material. *Agronomy Journal*, **4**: 78-81.
- Burton, J. W. (1952). Quantitative Inheritance in grasses. *Proceeding of 6th International Grassland Congress*, **1**: 277-283.
- Cooper, D. C. (1927). The anatomy and development of tomato flower. *Botany Gazette*, **83**:399-411.
- Johnson, H. W., Robinson, H. F. and Comstock, R. E. (1955). Estimates of genetic and environmental variability of Soybeans. *Agronomy Journal*, **47**: 317-318.
- Mehta, N. and Asati, B. S. (2008). Genetic relationship of growth and development traits with fruit yield in tomato (*Lycopersicon esculentum* Mill.) *Karnataka Journal of Agricultural Science*, **21** (1): 92-96
- Mittal, P., Prakash, S. and Singh, A. K. (1996). Variability studies in tomato (*Lycopersicon esculentum* Mill.) under sub-humid conditions of Himachal Pradesh. *South Indian Horticulture*, **44** (5&6): 132-134.
- Pujari, C. V., Wagh, R. S. and Kale, P. N. (1995). Genetic variability and heritability in tomato. *Journal of Maharashtra Agricultural University*, **20** (1): 15-17.
- Ramanujan, S and Tirumalachar, D. K. (1967). Genetic variability of certain characters in red pepper (*Capsicum annum* L.). *Mysore Journal of Agricultural Science*, **1**:32-36.
- Sharma, J. P., Kumar, S., Singh, A. K. and Bhusan, A. (2006). Variability and interrelationship studies in tomato (*Lycopersicon esculentum* Mill.). *Journal of Horticultural Sciences*, **1** (1):52-54.
- Singh, A. K. (2009). Genetic variability, heritability and genetic advance studies in tomato under cold arid conditions of Ladakh. *Indian Journal of Horticulture*, **66** (3):400-403.
- Singh, J. B. and Singh, S. (1993). Comparative performance of tomato cultivars under rainfed conditions of Khadi area (Punjab). *Punjab Horticulture Journal*, **3**: 123-126.
- Singh, A. K., Sharma, J. P., Kumar, S. and Chopra, S. (2008). Genetic divergence in tomato (*Lycopersicon esculentum* Mill.). *Journal of Research, SKUAST-J*, **7** (1):105-110.