



**RESEARCH ARTICLE :**

## Assessment of breeding potential of tomato (*Lycopersicon esculentum* mill.) germplasm for productivity and adaptability traits

■ K. SURESH, D.L. SAVITHRAMMA, S.V. MADHU AND R. NANDINI

**ARTICLE CHRONICLE :**

**Received :**  
20.07.2017;

**Accepted :**  
16.08.2017

**KEY WORDS:**

Tomato, Germplasm,  
Root traits, Variability  
and D<sub>2</sub> analysis

**SUMMARY :** Tomato (*Solanum lycopersicum* L.) yield in India is below world averages and to increase productivity under semi arid regions, it is necessary to develop superior varieties/hybrids with better root traits. The efficiency of selection depends upon the nature and magnitude of genetic variability and diversity of desired traits. Thirty exotic genotypes of tomato were assessed to determine the nature and magnitude of variability, their association and divergence. The analysis of variance (ANOVA) revealed highly significant differences among all genotypes for the traits studied. High genotypic coefficients of variability (GCV), and heritability coupled with high genetic gain, were observed for fruit yield per plant, fruits per plant, root dry weight, SCMR, shoot dry weight, root volume and specific leaf area, indicating that these traits are under additive gene effects and more reliable for effective selection. Correlation indicated that fruit yield was significantly and positively associated with root length, number of fruit per plant, plant height, root to shoot ratio and SCMR. Path analysis revealed that the average plant height (1.143) had the highest direct positive effect on fruit yield per plant followed by fruits per plant (0.419), root length (0.352) and branches per plant (0.302). Direct selection on the basis of number of fruit per plant, branches per plant, and SCMR is reliable for yield improvement in tomato. Thirty accessions were grouped into five divergent clusters and intercross among genotypes of cluster II and V, cluster II and IV and cluster III and V will create wide spectrum of variability to produce transgressive segregants with better fruit yield and root traits in tomato. Thus, the lines EC 676730, EC 686531, EC 677076, EC 677080, CLN 2070A and EC 686703 were identified as high fruit yielding and better adaptive traits.

**How to cite this article :** Suresh, K., Savithramma, D.L., Madhu, S.V. and Nandini, R. (2017). Assessment of breeding potential of tomato (*Lycopersicon esculentum* mill.) germplasm for productivity and adaptability traits. *Agric. Update*, 12 (TECHSEAR-8) : 2070-2078.

**Author for correspondence :**

**K. SURESH**  
Central Sericultural  
Research and Training  
Institute, BERHAMPORE  
(W.B.) INDIA  
Email : suresh4211  
@gmail.com

See end of the article for  
authors' affiliations