

## RESEARCH ARTICLE

# Genetic diversity analysis for yield and yield components in foxtail millet [*Setaria italica* (L.) Beauv.]

■ V. Thippeswamy, G.M. Sajjanar and Prabhakar

### SUMMARY

Genetic diversity analysis helps in identification of the diverse genotypes for hybridization purposes and to derive desirable segregants. Knowledge on the nature and magnitude of genetic diversity present in the crop species will play an important role in formulating a successful breeding programme. In this regard a field experiment was conducted to study the genetic diversity analysis for yield and yield contributing characters using 149 germplasm accessions of foxtail millet. Based on  $D^2$  values, a total of 149 genotypes were grouped into 15 clusters, among these clusters, cluster I was the largest with 134 genotypes followed by cluster VIII with 2 genotypes whereas remaining 13 were solitary clusters. Maximum intra cluster distance among the genotypes was recorded by cluster I having 134 genotypes followed by cluster VIII with two genotypes. The maximum intra cluster distance in the cluster I indicated the genotypes in this cluster were relatively more diverse than the genotypes within other clusters. The maximum inter cluster distance was found between clusters IX and XIV followed by cluster VI and XIV, while it showed least distance between clusters II and cluster V followed by clusters III and VI, thus it can be concluded that, considerable diversity existed among 149 lines. The per cent contribution of yield and yield contributing characters to total divergence among nineteen characters were recorded. It showed that maximum contribution towards divergence was recorded by number of tillers per meter row length and 1000 seed weight followed by number of productive tillers/plant, days to maturity, days to 50% flowering, grain yield/hectare and plant height indicating the major role of these characters in building up diversity and differentiating inter cluster levels. All the 149 genotypes were spread over fifteen clusters and means were scored across the clusters for all the nineteen characters. Cluster IV with overall score of 78 across the nineteen characters secured first rank followed by cluster VI, cluster I and cluster IX indicating the presence of most promising genotypes in them and can be extensively used for further breeding programme to generate new material.

**Key Words :** Foxtail millet, Genetic diversity,  $D^2$  values, Clusters, Yield contributing characters

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