RESEARCH ARTICLE

STUDIES ON GENETIC DIVERGENCE ANALYSIS FOR QUALITY TRAITS IN RICE (*ORYZA SATIVA* L.) GERMPLASM

Madhuri Singh, Prabharani Chaudhari*, Sandeep Bhandarkar and Ishu Kumar Khute

Department of Genetics and Plant Breeding, College of Agriculture,
Indira Gandhi Krishi Vishwavidyalaya, Raipur, 492012
Email: chau.prabha@gmail.com

Received-05.03.2020, Revised-26.03.2020

Abstract: Genetic diversity among fifty rice germplasm was evaluated analysis of variance revealed the presence of considerable amount of variability among the germplasm. Based on cluster analysis, the germplasm were grouped into five clusters. For quality characters, the cluster III constituted of 18 accessions, forming the largest cluster followed by cluster IV constituted of 14 accessions, Cluster V constituted of 8 accessions, Cluster I constituted of 6 accessions and Cluster II constituted of 4 accessions. This type of pattern of cluster group confirms the continuation of significant number of variability. The inter cluster distance was maximum between cluster II and V and minimum inter cluster distance was observed between cluster III and IV. Cluster II exhibited highest mean value for head rice recovery %, Cluster III exhibited highest mean value for endosperm content of amylose, Cluster IV exhibited highest mean value for hulling %, milling %, grain width, decorticated grain width, kernel width, alkali spreading value, Cluster V exhibited highest mean value for grain length, decorticated grain length, decorticated grain length width ratio, kernel length, kernel length width ratio. The germplasm falling in different clusters with high mean for hulling % and other component characters can be utilized for hybridization programme to obtain elite segregants. These traits hence could be focused for selection while improving grain yield.

Keywords: Genetic divergence, Cluster analysis, Yield attributes, Rice

REFERENCES

Arunachalam, V. (1977). Heterosis for characters governed by two genes. J. Genet. 63: 15-24.

Dela Cruz, N. and Khush, G. S. (2000). Rice grain quality evaluation procedures. In R.K. Singh, U. S. Singh & G. S. Khush (Eds.), Aromatic rices (pp. 15–28). New Delhi, India: Oxford and IBH Publishing.

Dela Cruz, N. and Khush, G. S. (2000). Rice grain quality evaluation procedures. In R.K. Singh, U. S. Singh & G. S. Khush (Eds.), Aromatic rices (pp. 15–28). New Delhi, India: Oxford and IBH Publishing.

Falconer, D. S. (1964). An Introduction to Quantitative Genetics (3rd Imp.) Oliver and Boyd, Edinburgh and London.

Manonmani, S. and Khan, Fazlullah (2003). Analysis of genetic diversity for selection of parents in rice. Oryza, 40: 54-56.

Murty, B. R. and Arunachalam, V. (1966). The nature of divergence in relation to breeding systems in some crop plants. Indian J. Genet., 26A: 188-98.

Nayak, A.R., Chaudhury, D. and Reddy, J.N. (2004). Genetic divergence in scented rice. Oryza, 41: 79-82.

Singh, G., Kumar, P., Kumar, R. and Gangwar, L. (2018). Genetic diversity analysis for various morphological and quality traits in bread wheat (*Triticum aestivum L.*). Journal of Applied and Natural Science., 10. 24-29.

Swaminathan, M. S. (1999). Rice in a variable climate. Ed. Y. P. Abrol and Sulochana Gadgil. APC Publications Pvt. Ltd., 217-238.

Yadav S., Singh A., Singh M. R., Goel N., Vinod K. K., Mohapatra T. and Singh A. K. (2013). Assessment of genetic diversity in Indian rice germplasm (*Oryza sativa L.*): use of random versus trait-linked microsatellite markers. J. Genet., 92, 545–557.

*Corresponding Author