

## ASSESSMENT OF GENETIC VARIATION AND DIVERSITY IN RICE GERMPLASM BASED ON PRINCIPAL COMPONENT ANALYSIS

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**Abstract:** The present investigation was carried out to determine the relationship and genetic diversity among 47 rice genotypes based on the 27 agro morphological and quality traits using principal component analysis. Analysis of variance revealed significant and ample variation for all the studied traits in the germplasm lines. In this study, first eight principal components have more than one eigen values and more than 4% variations which explained the total 80.01% cumulative variance among 27 traits. PC1 had the contribution from traits viz., grain weight/plant, harvest index, panicle weight, and head rice recovery, which accounted for 29.16% of the total variability. Plant height and grain dimension parameters were contributed 12.11% to the total variability in PC2. The remaining 38.74% variability was consolidated by PC3, PC4, PC5, PC6, PC7 and PC8. Scatter diagram plotted against PC1 and PC2 revealed that genotypes Basmati I, IGKVR-1244, MTU1010, Dhaur, Badalphool, Parra, Dhaura, Jaya, Beo-I, and Dhamna panda were very divergent for the traits under study. Thus, the results of principal component analysis revealed the wide genetic variation in rice genotypes. Identified accessions may be used as donors to improve the yield and quality traits in varietal development program.

**Keywords:** Genetic diversity, Germplasm, Principal component analysis, Rice, Variance

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