Interpreting genotype x environment by non-parametric methods for malt barley evaluated under north western plains zone

AJAY VERMA, V. KUMAR, A. S. KHARAB AND G. P. SINGH

ABSTRACT: The present study was carried out to identify malt barley genotypes with high yield and stability across eight different environments, using non-parametric statistical measures. Descriptive statistics MR, SD and CV identified DWRB147, DWRB150 and RD2943 stable genotypes. BH902 and PL890 were identified as unstable genotypes by CMR CSD and CCV. Non-parametric measures selected DWRB147 and DWRB150 as the stable genotypes and BH902 and PL890 unstable genotypes. Significant tests for $S_1^1$ and $S_1^2$ were based on sum of $Z_1^1$ and $Z_2^2$ measures and sum of $Z_1^1$ was greater than critical value confirmed significant differences among the twenty genotypes. Results of NP$_1$, NP$_2$, NP$_3$ and NP$_4$ were similar for unstable performance of BH902, DWRB150 and DWRB147. Biplot analysis of PCA1 and PCA2 accounting for 70.08 per cent showed three distinguish groups among non-parametric measures. Clustering by Ward’s hierarchical method expressed four clusters by using the squared Euclidean distance as dissimilarity measure.

KEY WORDS: Non-parametric measurements, Rank correlation, Biplot analysis, Hierarchical clustering