Analysis of canola stability in rain-fed conditions and comparison of stable genotypes selection methods using stability indices

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Abstract

The selection of high performance varieties with high stability is an important objective for canola breeding programs in rain-fed and arid areas. Also, evaluation of G×E interaction is very important for releasing stable varieties in different regions. In this research, the stability and adaptability of 19 advanced lines of canola for grain yield were compared in Gachsaran (semi-warm and dry area) experimental station during 2005 to 2007 cropping seasons. The experimental design in all three years was randomized completely block design with three replications. Combined analysis of variance showed that the effect of variety and year × variety interaction were significant. The different stability methods were used to identify stable genotypes in this research. These methods were parametric including, type I parameters (Environmental variance (S^2_i), Coefficient of variation (C.V.)), type II parameters (Shukla stability of variance and Wrick equivalence indices, regression (b_i)), type III parameters (Deviation of regression (S^2d_i), and Non-parametric method of rank (based on R and SDR parameters). Finally, genotypes Option 500 ،PP-308-8 ،PP-401-15E ، PP-401-16 and Shiralee with high stability and grain and oil yields were selected and introduced as the most stable cultivars with high oil yield.

Keywords: Canola, Yield, Stability, Parametric, Non-parametric.