Stability Parameters for Grain Yield and its Component Traits in Maize Hybrids of Different FAO Maturity Groups

Parametri stabilnosti prinosa zrna i komponenti prinosa hibrida kukuruza različitih FAO grupa zrenja

Dragan S. DJUROVIĆ, Milomirka R. MADIĆ*, Nikola R. BOKAN, Vladeta I.STEVOVIĆ, Dalibor D. TOMIĆ and Snežana T. TANASKOVIĆ*

University of Kragujevac, Faculty of Agronomy, Cara Dušana 34, 32000 Čačak, Serbia.
stanasko@kg.ac.rs or mmadic@kg.ac.rs *correspondence

Abstract

An objective evaluation of maize hybrids in intensive cropping systems requires identification not only of yield components and other agronomically important traits but also of stability parameters. Grain yield and its components were assessed in 11 maize hybrids with different lengths of growing season (FAO 300-700 maturity groups) using analysis of variance and regression analysis at three different locations in Western Serbia. The test hybrids and locations showed significant differences in grain yield, grain moisture content at maturity, 1,000-kernel weight and ear length. A significant interaction was observed between all traits and the environment.
The hybrids with higher mean values of the traits, regardless of maturity group, generally exhibited sensitivity i.e. adaptation to more favourable environmental conditions as compared to those having lower mean values. Regression coefficient (b_i) values for grain yield mostly suggested no significant differences relative to the mean. The medium-season hybrid gave high yields and less favourable values of stability parameters at most locations and in most years, as compared to medium-late hybrids.
As compared to medium-early hybrids, medium-late hybrids (FAO 600 and 700) mostly exhibited unfavourable values of stability parameters i.e. a specific response and better adaptation to favourable environmental conditions, and gave higher average yields. Apart from producing lower average yields, FAO 300 and 400 hybrids showed higher yield stability as compared to the other hybrids tested.
Medium-late hybrids had higher yields and showed a better response to favourable environmental conditions compared to early-maturing hybrids. Therefore, they can be recommended for intensive cultural practices and low-stress environments.

Due to their more favourable stability parameter values, medium-early hybrids can be recommended for low-intensity cultural practices and stressful environments.

Keywords: maize, hybrids, stability parameters, grain yield, yield components

Rezime