

GRAIN YIELD VARIABILITY IN MID-EARLY MATURING MAIZE HYBRIDS

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Abstract

Field trials on mid-early maturing maize hybrids were established in 2010 and 2011 in the vicinity of Smederevo (40° 39' N and 20° 57' E, 99 m a.s.l.) in Serbia to analyse grain yield and its components at different plant densities under the existing agroenvironmental conditions. Twelve maize hybrids belonging to FAO maturity groups 500 and 600 (50:50) were sown in each year in two independent trials at 51,000 and 62,000 plants ha⁻¹, respectively, each in a randomised block design with three replications. Wheat was the preceding crop in both years. During the growing season, standard agricultural practices (without irrigation) were used. Maize growing conditions in 2010 were more favourable than in 2011, including more moderate air temperatures during the growing season, a more uniform distribution of rainfall, and more rainy days. Total rainfall was much lower in 2011, especially during July and August, i.e. at critical growth stages (flowering and fertilisation) of the tested hybrids. Grain yield of all hybrids was higher in 2010, mostly due to the higher amount and more uniform distribution of rainfall during the growing season. In both years, significantly higher grain yields were obtained by FAO 600 hybrids than by FAO 500 hybrids. Grain yield in 2010 was significantly greater at a higher plant density in FAO 500 hybrids, as opposed to later maturity hybrids which showed no significant differences in grain yield across plant densities. Regardless of differences between the tested groups of hybrids, the grain yields of all hybrids in 2011 were consistent across plant densities in that no hybrid produced significantly greater yields at a higher plant density. Results show that increases in the number of plants per unit area under favourable growing conditions (with irrigation included) would give priority to early maturing hybrids over longer-season hybrids, with grain moisture content at harvest also taken into account.

Keywords: *Grain yield, hybrids, maize.*

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