Plant density effects on grain yield in some "Turda" maize hybrids

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Abstract
Objective of this work was to investigate how plant density affects the grain yield per unit area in some „Turda” hybrids.

Experimentation was conducted under natural conditions, without irrigation, at the Agricultural Research Station, Turda, Romania, during the 2006 and 2007 seasons. Seven single-cross hybrids were grown at three densities D₁=2.5, D₂=4.2 and D₃=8.4 plants/m², respectively. The experimental design was a split-plot, with different densities as main plots, randomized in three complete blocks, and the hybrids as subplots. Comparison of means was conducted by least significance difference (LSD) after analysis of variance for a three-factor split-plot design.

Analysis of variance depicted significance for the main factors of years, densities and hybrids; year x density and year x hybrid interactions were significant too. There was registered the difference among hybrids at the same season or among the hybrid across the three densities. The highest grain yield per unit area of seven hybrids was obtained under middle density of 4.2 plants/m². Optimum density varies considerably when hybrids lack ability of high yield at low densities. The differentiation between hybrids enlarged as density decreased. The first impact found in this is that phenotypic expression and differentiation increase as density decreases, highlighting the importance of low densities in the aim of isolating superior genotypes via phenotype when a selection process is under way.

Key words: yield per unit area, plant density, grain yield