Concentration Area: Plant breeding

Heterosis: an ally against the harmful effects of drought on the ground?

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The main environmental limiting for agricultural production is drought, and it will become more frequent with climate change. It is indicated for heterosis as a possible mitigator of the harmful effects of the drought. The objective was to characterize two lines and a hybrid of popcorn as tolerance to drought. For this, the lines, L71 (tolerant), and L61 (sensitive) and the Hybrid L71xL61 were used. The experiment was conducted in randomized blocks, with 9 replicates, in two water conditions (CH), that is, irrigated (WW), in the field capacity (CC - 100%), and water stress (WS), whose irrigation was maintained at 45% of CC for 10 days. The plants grew up in a substrate composed of perlite and peat, allocated in a PVC tube, 150 cm. Physiological analyzes were performed - photosynthesis rate (A), stomatal conductance (GS), and perspiration rate (E); morphological, such as growth and biomass measures; and root analyzes, from the dry weight due to the volume (RWD) of five strata of 30 cm. Analyzes of individual and joint variance were performed, as well as heterosis estimates were calculated. The hybrid presented a higher index of tolerance, greater averages in all evaluated characteristics, regardless of CH. The heterosis, in general, was higher in WS condition. In the joint analysis for genotypes (G), there was no significant difference for non-Senescent Sheets (NFS), while for CH there were no differences for total sheets, RWD_B, RWD_D, and RWD_E. For G*CH interaction, foliar mass features, height plant, NFS, RWD_A, RWD_B, GS and presented significant differences. Heterosis has shown an ally in mitigating the effects of drought in popcorn.

Keywords: Popcorn; Hybrid; Tolerance.