



I11 - Effect of drought on the gas exchange of maize genotypes with different levels of drought tolerance

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Maize genotypes whose tolerance to drought had already been discriminated under field conditions were used in this study. The objective was to determine the effect of drought on leaf gas exchange and grain yield of genotypes considered as sensitive (BRS-1030 and BRS-1010) in comparison to tolerant ones (2B-707 and DKB-390). For this, maize plants of these genotypes were grown under well watered conditions. In the pre-flowering stage, a group of plants of each maize genotype was subjected to drought by water withholding until the soil reached a very low range of water potential (-1.5 to -2.0 MPa). From there, this water potential range was maintained during 12 consecutive days by controlled water replenishment. Another group of plants continued under the same irrigation manner used for cultivation (control). On the third day after water withholding, the rates of stomatal conductance (g_s), transpiration (E) and net assimilation of CO₂ (A) dropped abruptly to close to zero and remained low for 12 days in all stressed maize genotypes. In parallel, these genotypes showed an increase in the internal CO₂ concentration of (C_i) in comparison to controls. In spite of such widespread fall in the leaf gas exchange, tolerant genotypes showed slightly higher rates than sensitive ones under drought, but only DKB-390 had no reduced grain yield.

Keywords: *Zea mays*, water deficit stress

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I12 - Effect of drought on the photochemical apparatus of maize plants as evaluated by parameters derived from chlorophyll fluorescence

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Maize genotypes whose tolerance to drought had already been discriminated under field conditions were used in this study. The objective this work was to determine the effect of drought on the photochemical apparatus of the genotypes considered as sensitive (BRS-1030 and BRS-1010) in comparison to those considered as tolerant (2B-707 and DKB-390). For this, maize plants belonging to these genotypes were initially grown under normal conditions. In the pre-flowering stage, a group of plants was subjected to drought by withholding water, while another group remained under full irrigation. Drought resulted in a decrease in the total chlorophyll content, especially in chlorophyll a , for all studied genotypes over the stress period. As a consequence, there was a reduction in the absorption of photosynthetically