DETERMINATION OF DROUGHT SENSITIVITY OF MAIZE INBRED LINES VIA MONITORING CANOPY TEMPERATURE AND LEAF WATER STATUS

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Abstract

Drought is one of the most significant phenomenon that limits crop production in all around the world. Breeding drought resistant varieties is a key strategy for future agriculture production. Since global climate change has been already leading to increase frequency of drought events, limited time for breeding new varieties, more effective indirect selection techniques and useful traits for drought tolerance have received more attention. For these aspects, our study was aimed to determine drought sensitivity of maize plants by monitoring canopy temperature depression (CTD) and leaf water status. For this purpose, a field experiment was conducted with 80 maize (*Zea mays* L. Indentata) inbred lines under well-watered and short-term drought conditions during V7-9 growth stage. Plants were subjected to stress conditions for 15 day by withholding irrigation. CTD, SPAD values, leaf and soil water status was regularly monitored during stress period. The results showed that drought stress had a significant effect on CTD for all genotypes. The mean CTD values of all 80 genotypes under well-watered and drought conditions were 8.59 and 9.74 respectively. Drought treatment caused significant decrease in SPAD values of all lines. The average SPAD values at the end of the drought treatment (15th day) were 40.7 and 44.6 under well-watered and drought conditions respectively. However, no significant variation was observed between the mean values of relative water content of leaves under well-watered (83.9 %) and drought (84.3 %) conditions. Beside above given overview of the general results, response of individual inbred lines to gradually decrease in soil water content was evaluated using with regression line and its slops of the recorded physiological parameters.

Key words: Maize, drought, SPAD, DANS, RWC.