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MORPHOLOGICAL MARKERS OF ROOT IN MAIZE GENOTYPES WHICH CONTRAST FOR DROUGHT TOLERANCE IN RESPONSE TO ALUMINUM STRESS

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The objectives of this work were to evaluate morphological parameters of root system and growth characteristics of maize inbred lines selected to drought from the maize breeding program belonging to Embrapa Maize and Sorghum. Two inbred lines tolerant (L1 and L3) and two sensitive to drought (L2 and L4) were planted in seedling beds with different levels of aluminum saturation (m%), being low m%=13, intermediate m%=20 and high m%=60. The experiment was seeded manually at space 0.20 m among plants and 0,20 m among lines. The experimental plots were established in 0.8 m^2 (four lines of 1.2 linear meters being five plants per linear meter). The experimental design used was randomized complete blocks, with six replications. Two evaluations of root morphology were accomplished by using digital images techniques through WinRhizo, as well as the characteristics of root and canopy growth were evaluated at 14 and 28 days after seeding. There were significant differences for root morphological attributes and characteristics of growth for root and canopy of maize plants. In general the inbred lines tolerant to drought showed superior performance compared to the sensitive ones. Those tolerant sowed larger root length, surface area, volume and greater number of fine roots (diameter less than 0.5 mm). The use of digital image system WinRhizo make possible the determination of root length by diameter class. These alterations in the root system morphological attributes may be an indication that the inbred lines selected to better water efficiency are indirectly selected for a better efficiency in nutrients acquisition.

Key words: morphological markers, root, maize, aluminum, WinRhizo

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