

Water Productivity and Sensitivity Tolerance Stress Indices in Five Soybean Cultivars (*Glycine max L.*) at Different Levels of Water Deficit

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Abstract : In order to measure the water deficit stress effects on seed yield and water productivity of soybean cultivars, a two field experiments wad conducted out via split plot in a randomized complete block design with four replications in 2011 and 2012. Irrigation treatments were three levels (S1; 50, S2; 62.5 and S3; 150 mm) that applied based on evaporation from the 'class A' pan. Cultivars were L17, Clean, T.M.S, Williams×Chippewa and M9, too. The results showed that, only extreme water deficit stresses (S3) was reduced number of pods per plants, dry weight, seed yield and also water productivity and water economic productivity, significantly. Among cultivars and at the first and second levels of irrigation (S1, S2) cultivar of L17 and at the third level (S3) cultivar of Williams*Chippewa had the highest seed yield, water productivity and water economic productivity. There were observed a positive and significant correlation between seed yield with number of pods per plants and plants dry weight, too. Also, despite the reduction in water consumption at level of S2 than S1 and due to the lack of a significant reduction in seed yield, water productivity and water economic productivity was also increased, significantly ($P < 0.01$). All indices of sensitivity and tolerance (SSI, STI and GMP) investigated in this study showed that at the moderate and extreme water deficit stresses (S2, S3), the cultivars of L17 and Williams * Chippewa had the highest tolerance and lowest sensitivity among the cultivars.

Keywords : drought, sensitivity indices, yield components, seed

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