

Effects of Water Stress on Sweet Sorghum Growth and Development

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Abstract

Sugar from sweet sorghum (*Sorghum bicolor*) is used to produce ethanol fuel. This study was conducted to increase the amount of sugar found within the stalk of the sweet sorghum using water stress. The effects of water stress on growth and yield of sweet sorghum were studied in Tucson, Arizona on very fine sandy loam during the months of June and July 2007. Irrigation treatments were at 35%, 50%, and 65% depletion of plant available water corresponding to low, medium, and high water stress, respectively. The 50% plots had higher leaf counts than the 35% plots, which was receiving the most water. However, the plants in the 35% plots were 4 inches taller than the 50% plots, and 7 inches taller than plants in the 65% plots. Plants in the 35% plots intercepted about 3% of the incoming solar radiation whereas radiation interception was about 7% in the other treatments. The early season yields of the 35%, 50%, and 65% plots were 3.44, 2.94, and 2.88 tons/acre respectively. Water stress decreased height, radiation interception, and yields of sweet sorghum, but had variable effects on leaf number. The effect of water stress on sugar accumulation in the stalk will not be measured until harvest in October.