

ADAPTATION OF COTTON TO DIFFERENT WATERING REGIMES

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Abstract

Many physiological functions and morphological properties determining yield of cotton plant may inhibited by different water regimes. The aim of the present study was to investigate morpho-physiological adaptation of cotton plants to different irrigation regimes. For this purpose, a pot experiment was conducted under fully controlled growth chamber. Cotton plants (*Gossypium hirsutum* L.) were exposed three irrigation regimes. Plants were irrigated when water holding capacity reach 20%, 40% and 60% to field capacity in I20, I40 and I60 treatments respectively. Physiological parameters such as transpiration, canopy temperature depression (CTD) and SPAD values and morphological parameters such as adaxial and abaxial stomatal density were determined. Lowest transpiration found in I20 treatments than I40 and I60 treatments. SPAD value remained lower level in I20 treatment whereas higher in I60 treatments during different irrigation regimes. Stomatal density was higher in adaxial surface than abaxial surface of leaves. On the other hand, increasing stoma number per unit leaf area in adaxial surface with lower irrigation frequency was recorded. Our results suggested that cotton plants adapt to different water regimes via regulating transpiring organs and their functions.

Key words: Cotton, water regime, SPAD, CTD, stomatal density, irrigation frequency
