12º CONGRESSO BRASILEIRO DO ALGODÃO

ID TRABALHO: 045

PRODUCTION COMPONENTS AND WATER EFFICIENCY OF UPLAND COTTON CULTIVARS UNDER WATER DEFICIT STRATEGIES

José Rodrigues Pereira [1], Whéllyson Pereira Araújo [2], João Henrique Zonta [1], Hugo Orlando Carvallo Guerra [2], Mailson Araújo Cordão [2], Robson Felipe de Lima [2]

[1]Embrapa Algodão - Empresa Brasileira de Pesquisa Agropecuária (Rua Oswaldo Cruz, 1.143-Centenário, 58.428-095, Campina Grande, PB.), [2] UFCG - Universidade Federal de Campina Grande (R. Aprígio Veloso, 882 - Universitário, 58.429-900, Campina Grande, PB.)

RESUMO

In the semiarid region, the cultivation of irrigated cotton is a good alternative for farmers, as it presents climatic characteristics that contribute toreach excellent yields. The decrease in water availability may imply a need for changes and adaptations in irrigation strategies. So, it is important to study different cotton cultivars with water deficit applied on phenological stages in this region, since there may be cultivars that present different responses when subjected to water suppression in a certain stage of the cycle, which may lead to higher water-use efficiency and a more efficient crop production system. The objective of this work was to study water deficits effect on different phenological phases in the production components and water efficiency of upland cotton cultivars. For this, an experiment was carried out at the Federal University of Campina Grande - UFCG, Pombal county Campus, Paraíba. Treatments were formed from a split-plot arrangement in which plots were 6 water deficit periods (P): (P1 = No deficit; P2 = Deficit in the initial growth stage; P3 = Deficit in the flower bud stage; P4 = Deficit in the flower stage; P5 = Deficit in the boll stage; and, P6 = Deficit in the open boll stage) and, the subplots, 2 upland cotton cultivars (C): (C1 = Brazil Seeds 286 and C2 = BRS 336), in randomized block design, with 4 replicates. Irrigations were carried out daily, always in the morning, based on the availability of soil water (AWS) to plants. The replacement water volume was calculated considering the water lost by the crop evapotranspiration (ETc), which is represented as the difference between the soil water content (SWC) in the field capacity (FC) and the current mean SWC measured in the depths of 0.10, 0.20, 0.30 and 0.40 m, which were measured before irrigations. The current SWC was determined by the time-domain reflectometry (TDR) method, using a Delta-T-PR2 probe introduced through access pipes installed in each treatment. Each period of water deficit consisted of 14 days without irrigation in the predetermined phenological stage. After this period, the plants had normal irrigation until the end of the cycle. The number of open bolls per plant was determined by counting its total per plant in the subplot. The mean open boll weight and fiber percentage were respectively determined on the subplot by the mean cotton seed weight of the 20 open bolls collected in the standard sample at the time of harvest and by weighing the lint/fiber after processing, which result in the percentage rate between total cotton lint weight and total cotton seed yield in that sample. Cotton seed yield was determined by harvesting and weighing the cotton seed production of the useful area of each subplot, extrapolating per hectare. Mean cotton lint yield was calculated by multiplying the mean cotton seed yield by fiber percentage. Water-use efficiency was defined as the ratio between the cotton seed yield found (kg ha-1) and the total water used during the cycle (m3 ha-1) for each treatment considered in the study. The cultivars studied were more tolerant to water deficit in stages of initial growth, flower bud and open boll. Water deficit during flowers and bolls stages in upland cotton cultivars was the most detrimental to production components. Between cultivars tested, their behavior was similar only in cotton seed yield and water-use efficiency being BRS 286 higher than BRS 336 in other analyzed variables, except for mean open boll weight.

Keywords: *Gossypium hirsutum* L. r. latifolium H., hydric stress, agronomic variables.

REALIZAÇÃO: ABRAPA | APOIO: IBA | APOIO CIENTÍFICO: Embrapa | AGÊNCIA DE VIAGEM OFICIAL: elitetravel | SECRETARIA EXECUTIVA: COMUNICATO | COTA OURO: BASF, BAYER