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## Effect of Variable Irrigation on Water Use and Growth of Jutemallow (*Corchorus olitorius*)

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### Abstract

Jute mallow (*C. olitorius*) is a leafy vegetable widely cultivated in sub-saharan Africa and most Asian countries and it is a good alternative for okra and other vegetables. However, its production during off-season will require good knowledge of its behaviour under water stress. Therefore, water use, growth and biomass yield of Jute mallow (*C. olitorius*) under three water management strategies were investigated during the dry season of 1999 and late rainy season of 2000 on the field at the Experimental farm of the Federal University of Technology, Akure, south western Nigeria. The crop was subjected to three irrigation treatments A, B and C, i.e. 1Ep (full pan evaporation),  $\frac{3}{4}$  Ep and  $\frac{1}{2}$  Ep respectively (three replication). Soil moisture content in the first 50 cm layer was monitored. Yield and agronomic parameters were measured during crop growth. Plant height in the three treatments A, B and C were 93.9 cm, 80.2 cm and 63.9 cm in 1999 and 102.7 cm, 96.9 cm and 81.0 cm in 2000 respectively. Values of leaf area and leaf area index (LAI) were highest in irrigation treatments at full level (A) during the trials. Biomass yield at crop maturity were 5.22  $\text{tha}^{-1}$ , 4.14  $\text{tha}^{-1}$  and 1.96  $\text{tha}^{-1}$  in 1999 and 6.02  $\text{tha}^{-1}$ , 5.89  $\text{tha}^{-1}$  and 5.76  $\text{tha}^{-1}$  in 2000 for A, B and C treatments respectively. A significant decrease in water use efficiency (WUE) for biomass production was observed with decrease irrigation water application. The values of WUE were 0.70  $\text{Kgm}^{-3}$ , 0.59  $\text{Kgm}^{-3}$  and 0.15  $\text{Kgm}^{-3}$  of water in 1999 and 0.51  $\text{Kgm}^{-3}$ , 0.44  $\text{Kgm}^{-3}$  and 0.19  $\text{Kgm}^{-3}$  in 2000 for irrigation treatments 1 Ep,  $\frac{3}{4}$  Ep and  $\frac{1}{2}$  Ep respectively at 7 WAP (weeks after planting). These results suggest that the crop made efficient use of water applied at full level for optimum growth and yield.

**Keywords:** Biomass yield: Pan evaporation, irrigation, Jute mallow, Leaf Area Index (LAI), Water Use Efficiency (WUE)