

# **Determination of the Critical Growth Stage(s) to Control Moisture Stress in Tomatoes Production**

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## **Abstract**

Tomato (*Lycopersicon esculentum*) is one of the major vegetables grown in Kenya as a commercial crop. Since the crop is susceptible to many pests and diseases greenhouse production under irrigation is more popular than open field production. Open field production is also common in hot and dry areas where water supply for irrigation is available. Apart from pests and diseases, tomatoes are also affected by various physiological disorders. One of the common disorders of tomatoes is blossom end rot caused by a calcium imbalance within the plant. The disorder is exacerbated by moisture stress since calcium is not mobile in the plant. Irrigation is therefore an important agronomic practice in tomato production. The main objective of this study was to determine the critical growth stage to control moisture stress in tomato production. The study was conducted in a greenhouse at the University of Embu. The experiment was laid out in a Randomized Complete Block Design (RCBD) with four (4) treatments replicated three times. The treatments were: (i) no water stress (control), (ii) stress during the vegetative stage, (iii) stress during the flowering stage and (iv) stress during the early fruit set. Data was collected on number of fruits (yield), plant height, number of branches and number of leaves and occurrence of blossom end rot. The data was subjected to Analysis of Variance (ANOVA) at 5% level of significance. Optimal watering throughout the growing period of tomato produced the highest yield and the lowest level of tomato. Stress during the flowering stage had the highest yield reduction followed by those stressed at vegetative stage but both had significantly low incidence of blossom end rot. Moisture stress during the early fruiting showed the highest incidence of blossom end rot.