# INVESTIGATING THE EFFECT OF MOISTURE STRESS ON SELECTED AGRONOMIC PARAMETERS - 01 OF TOMATO (*Lycopersicon esculentum* Mill.) AT DIFFERENT GROWTH STAGES



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# ABSTRACT

Water is an essential input for successful crop production. Increasing competition for water from the various sectors will further limit its availability for agriculture. Hence, it is imperative to use it more judiciously.

This experiment was conducted on tomato (*Lycorpersicon esculentum*) to evaluate the effect of moisture stress on selected agronomic parameters such as Leaf Area Index (LAI), Root Length Density (RLD) and Specific Leaf Area (SLA) of tomato in the Eastern region. The tomato (*Lycorpersicon esculentum*) is a major vegetable crop in Sri Lanka and throughout the world also, for their fresh fruits and another processed food. This crop is a one of the best crop for home gardener in selecting crop for planting botanically.

The experiment was carried out in the Agronomy Farm of Eastern University of Sri Lanka, Vantharumulai located in Eastern region during the Yala season from April 2007 to August 2007. Five treatments were defined according to water stress imposed during different growth stages. Treatment 1 served as control, in treatment 2 as moisture stress was imposed during vegetative stage, treatment 3, 4 and 5 served as moisture stress given orderly at flowering, early fruiting and fruit ripening stage and treatments were arranged in Random Complete Block Design with four replicates in accordance to the recommended practices of Department of Agriculture (DOA) with relation to farmer adaptation at eastern region.

The measurements were done on the 5th day from the commencement of the stress cycle during the vegetative stage, flowering stage, early fruiting and fruit ripening stage and the measured data were analyzed statistically using SAS package linear model (ANOVA).The result of this experiment showed significant differences on Leaf Area Index (LAI), Root Length Density (RLD) and Specific Leaf Area (SLA) and yield.

Moisture stress reduced LAI, SLA and RLD than control treatment irrespective of the growth stage. The LAI, SLA and RLD showed significantly highest reduction at flowering stage, when compare to other stages. Water stress during the flowering stage showed the highest yield reduction than other stages. So, the flowering stage was found as the most critical stage to water stress. The timing of irrigation on cultivation according to the growth stages of crop will reduces the wastage of water, can save and get more yields from a particular amount of water during the water shortage period. And thus could be adjusted in a way that less water stress is experienced by these plants during the flowering stage in order to sustain the yield.

**Key words:** Leaf Area Index **(LAI)**, Root Length Density **(RLD)**, and Specific Leaf Area **(SLA).**

# TABLE OF CONTENTS