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EFFECTS OF DIFFERENT MULCHING PRACTICES ON GROWTH, YIELD AND PIGMENT RESPONSE OF TOMATO (*Solanum lycopersicum*)

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Abstract

Tomatoes (*Solanum lycopersicum*) need appropriate moisture content throughout the growing season for optimal plant growth and yield, particularly in sandy soils and hot regions. The objective of this study was to analyze and evaluate different mulching practices that enhance soil qualities, growth, yield and photosynthetic responses of tomato. Land preparation was carried out using standard procedures in order to provide a uniform soil condition to all tomato plants. Four-week-old tomato plants were transplanted to the field with three replicates for each treatment and plants were arranged in randomized complete block design. Soon after transplanting, the base of each plant (2 feet diameter) was covered with the mulching materials i.e. rice straw, sawdust, rice hull, tree litter and blue color polythene and uncovered soil as the control bed. Plant height, number of leaves, leaf area, chlorophyll content, number of flower and fruit weight were measured until the fruiting period. Soil temperature, soil moisture, soil pH and soil salinity too were measured before and after the treatments. Blue polythene showed an optimum soil temperature (27°C) and the soil pH and salinity did not differ significantly among treatments. However, sawdust showed the highest moisture content of soil (80%) and the second was blue polythene (70%). Blue colour polythene showed the highest mean value of plant height (74.83cm) and stem diameter (1.20cm). Rice straw mulching treatment showed highest mean value (314.33) of number of leaves. Blue colour polythene treatment had highest mean value (12.7cm) of leaf length, highest mean value (5.53cm) of leaf width and highest mean value (24.33) of number of flower clusters, highest mean value (0.378 g) of fruit weight and 3.55cm fruit diameter. Blue colour polythene mulch had the highest mean value (2.55 mg/g) of chlorophyll a content. Rice straw mulch showed the highest mean value (2.37mg/g) of chlorophyll b content. In terms of overall plant growth parameters and yield parameters blue polythene mulch and rice straw mulch appeared to perform significantly better compared to all others. As a conclusion, blue polythene mulch and rice straw mulch resulted on a better growth and yield but saw dust mulching resulted better soil moisture retention.

Keywords: ***r****ice straws, sawdust, rice hulls, tree litter, blue color polythene, tomato*