

Canopy Effects Upon Temperature in Mulched Soil Beds During Tomato Production. (S01-mansell626231-oral)

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Abstract:

Utilization of plastic mulched planting beds in commercial horticultural production increases yield and extends the growing season. Soil temperature is influenced by factors such as, seasonal changes in solar irradiance; interception of short-wave radiation through crop canopies; and additions of irrigation water. An experiment was established at the Gulf Coast Research and Education Center in Bradenton, Florida, to monitor soil temperature in east-west oriented plastic mulched planting beds with and without tomato canopy. Temperatures averaged over 15-min intervals were recorded from 32 thermocouples placed in soil bed cross sections over an entire growing season. Soil temperatures within each bed and overlying air were compared for plots with and without tomato canopy cover. Both air temperature within the canopy and soil temperature under the canopy differed from beds not cropped to tomatoes owing to insulating and shading effects of the canopy. Additionally, temperature distributions for north-facing portions of beds with tomatoes differed from those without tomatoes, but distributions for south-facing portions did not differ due to sun position in the sky. These observations illustrate microclimatic effects of plant canopies and justify inclusion of canopy components in models of agricultural systems.

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