Simulated and observed diurnal distributions of thermal regimes in soil beds with polyethylene cover. (S01-mansell142817-Oral)

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Abstract:

Utilization of plastic covered planting beds during production of horticultural crops increases yields and extends the growing season. In order to optimize management of these mulched beds, a model is needed that accurately predicts daily and seasonal soil temperature variations. Shinde et al.(2000) developed a 2-dimensional, mechanistic model for coupled water-heat-solute transport in mulched beds during fumigation prior to plant establishment. In order to validate this model over several weeks, a field experiment was established to monitor soil temperature in mulched beds without plants during continuous subsurface irrigation. Lack of agreement between simulated and observed soil temperatures was attributed to inadequate assumptions regarding solar irradiance. Incorporation of seasonal changes in the solar ephemeris, canopy shading, and transpiration into the model is needed for describing the thermal regime of soil beds during crop production.

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