Effects of Winter Cover Crops and Tomato-Cotton Rotation with Conservation Tillage on Soil Water Availability in California's Central San Joaquin Valley. (S06-martinez165806-Oral)

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Abstract:

California's Central San Joaquin Valley (SJV) produces a number of high-value crops including tomato and cotton. Conservation tillage and cover crops may improve physical, chemical, and biological soil conditions that result in increased soil water availability for crops. The objective of this study was to assess the effect of standard tillage (ST) and conservation tillage (CT) with (CC) and without (NC) cover crops on soil-water availability in a tomato cotton rotation in the SJV. Changes in soil-water content (0-270 cm)were monitored using a neutron hydroprobe from November 1999 to March 2002. Two total soil-water content (TSWC) trends were consistent for this period. First, TSWC with cover crops was up to 10% higher than that without cover crops. Secondly, TSWC with ST was up to 23% higher than that in CT. At the end of 2001, TSWC become greater in CT than in ST, confirming that CT effects take time. During 2000 and 2001, cotton and tomato yields were not statistically different among treatments, however, CT eliminated 8 to 9 tillage operations.

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