Effects of Winter Cover Crops and Tomato-Cotton Rotation with Conservation Tillage on Soil Properties in California's Central San Joaquin Valley. (S06martinez172123-Poster)

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Abstract:

Conservation tillage in California's Central San Joaquin Valley (SJV), where most crops are furrow irrigated, is performed on beds to facilitate surface irrigation and drainage, mechanical weed control, and permanent paths for machinery traffic. The use of conservation tillage coupled with cover crops may improve physical, chemical, and biological soil conditions and result in better management options for farmers in this region. 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 compaction and yield in a tomato-cotton rotation in the SJV. From 1999 to 2002, s 1999 to 2002, soil strength was measured using a Rimik penetrometer from 0 to 50 cm. Results showed that the main differences in soil strength were detected in the upper 0-30 cm layer. Soil strength in the furrows was higher than that in beds. Penetration resistance was lower in tomato beds than in cotton beds because the soil surface was more disturbed during the tomato season in transplanting and cultivation operations. 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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