Differences in Soil Temperature and Soil Moisture in Conventionally and No-tilled Field Corn with Applications of Remote Sensing. (S06-bodnar124019-Oral)

Authors:

- S.L.Bodnar* - *Alabama A and M University, Normal, AL*
- T.D.Tsegaye - *Alabama A and M University*

Abstract:

Tillage management systems with maximum surface crop residue are promising planting and tillage systems, which may improve soil properties, and increase crop yield. A two-year study was conducted in North Alabama to compare % reflectance and yield in a no-till system and a conventional tillage system in Decatur silt loam soil(Thermic Rhodic Paleudult). The two main treatments being studied are no-tillage (one disk is used to plant seed 6 to 7 inches) with the entire previous year's corn crop chopped as mulch (NT) and conventional tillage (involving an initial plowing with two disks to incorporate all of the previous year's corn crop and a second plowing to incorporate fertilizer before planting seed)(CT). Field measurements, including soil and air temperature, soil moisture (near surface and profile soil moisture), plant chlorophyll and plant spectral (% reflectance) during plant growth were done. Preliminary results show significant differences in the % reflectance and distribution of soil moisture and yield in these two tillage systems. The NT system has shown increased soil moisture retention with decreased soil temperatures and higher crop yield.

Corresponding Author Information:

Teferi Tsegaye
Alabama A and M University
Plant and Soil Science
Normal, AL 35762

phone: (256)858 4219
fax: (256)851 5429
e-mail: Suzan.Bodnar@att.net

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