Relationship between soil properties and electrical conductivity in the Southern High Plains. (A08-officer171821-Poster)

Authors:

- K.F.Bronson - *Texas A&M Univ*
- S.J.Officer - *Texas A&M Univ*
- R.J.Lascano - *Texas A&M Univ*
- S.Maas - *Texas Tech Univ/Texas A&M Univ*
- J.Booker - *Texas A&M Univ*
- J.D.Booker - *Texas A&M Univ*

Abstract:

Site-specific soil and crop management will require rapid low-cost sensors that can generate dense, global positioning system-referenced data that measure important soil properties and can delineate meaningful management zones. Electrical conductivity (EC) is one such measure. Our objective was to determine which commonly measured surface soil properties correlated with EC at seven sites in the Texas Southern High Plains. We used both the Veris 2000 XA and Geonics EM38 EC mapping systems on 12 to 20 ha areas under seven center pivot sites that were cropped to cotton or peanut. Soil samples were taken from the 0-15 cm surface at 0.2 to 0.9 ha grid and analyzed for routine chemicals and particle size. At five and four of the seven sites, EC positively partially correlated with clay content and CEC, respectively. Other soil properties that were occasionally partially correlated with EC included silt and soluble salts. Partial least squares regression explained 19 to 78 % of the variation in observed EC by the measured soil properties. Electrical conductivity, therefore has potential to create dense maps that in the Southern High Plains, relate to clay and CEC.

Corresponding Author Information:

Kevin Bronson
Texas A&M Univ Texas Agric Exp Stn
RR 3, Box 219
Lubbock, TX 79401

phone: 806 7464013
e-mail: k-bronson@tamu.edu

Presentation Information:

Presentation Date: Monday, November 11, 2002
Presentation Time: 2:00-4:00 pm

Poster Board Number: 537

Keywords:
electrical conductivity, precision agriculture , Southern High Plains , soil properties