

# Soils characteristics used to delineate Management Zones

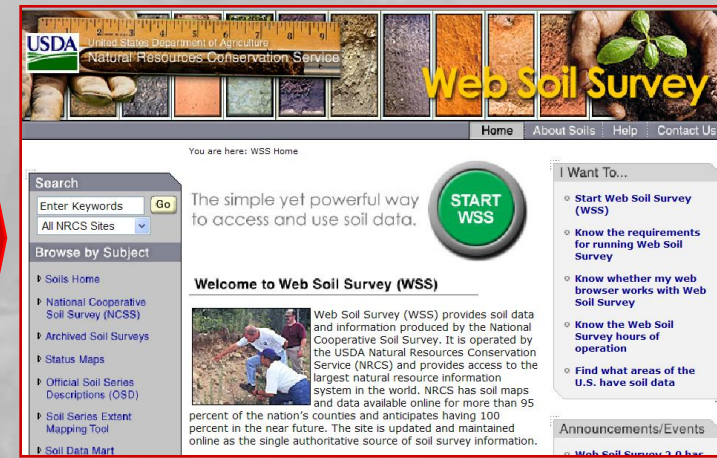
## 1. Soil survey information

- Erosion control
- Soil productivity
- Identify natural fertility

## 2. Soil survey information and SSM

- Texture
- Slope length
- Slope steepness
- Drainage
- Acidity

Identify  
**GENERAL**  
soil problems

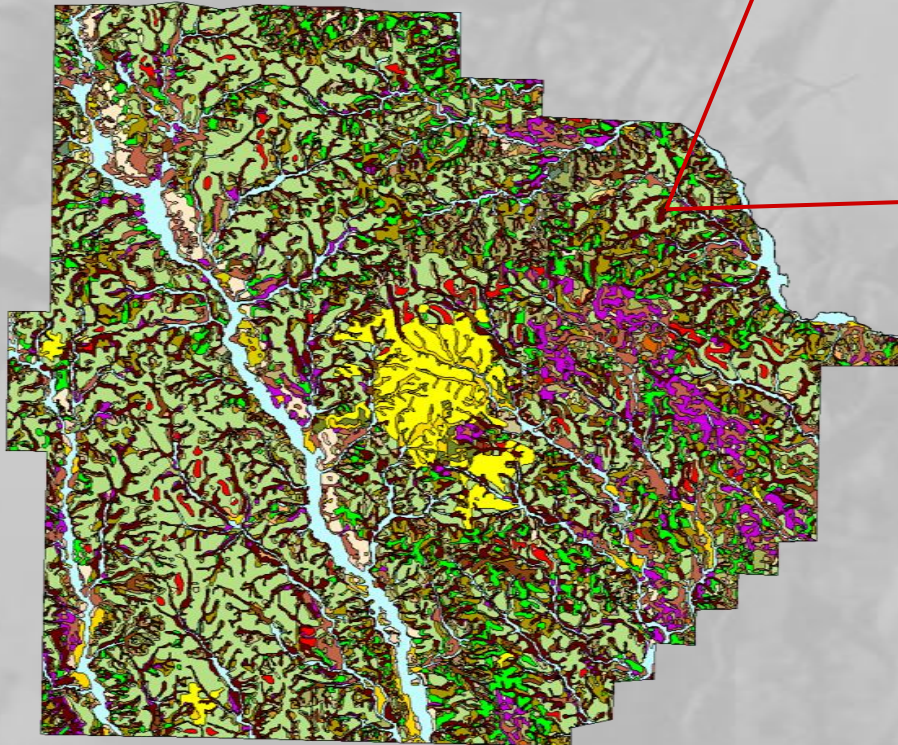


**Soil survey by  
the USDA-NRCS**

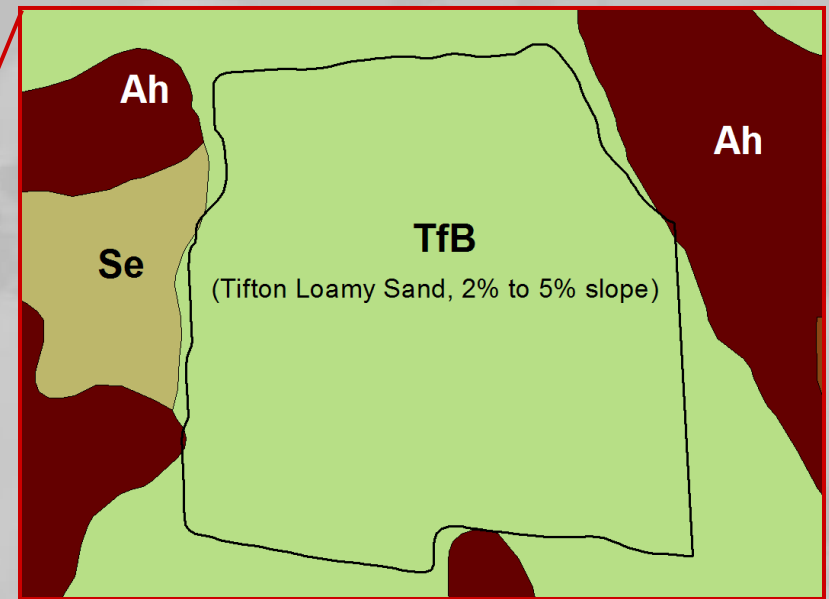


**Information available  
for the producers...**

## **County soil survey (Order 2)**



Tift county (GA)



Soil survey (2<sup>nd</sup> order)  
shows the field as  
homogeneous with respect  
to soil type

# Differences between Order 2 and 1 soil surveys

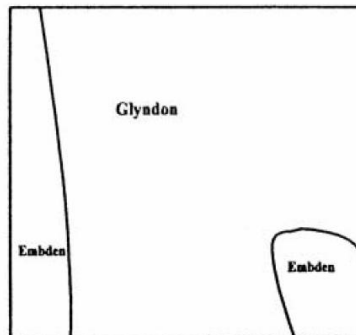
## 1. Order 2

- County soil surveys
- Scales of 1:12,000 to 1:31,680
- Min. size delineation: 1.5 - 10 acres
- NA for SSM if not complementary info. Too coarse for N management
- Generalize the, often highly variable, nature of soils at farm field scale

## 2. Order 1

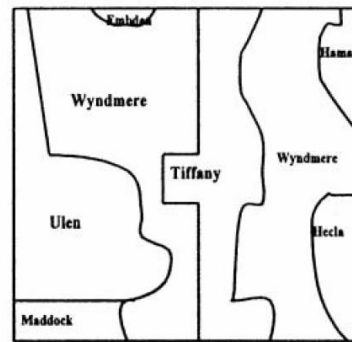
- Farm or field soil survey
- Scale >1:15,840, finer than Order 2.
- Min. size delineation: 2.5 acres
- Useful for SSM (VRA of inputs).
- Soil units are closely related to crop yield and nutrient variability.

**Published Order 2 survey**



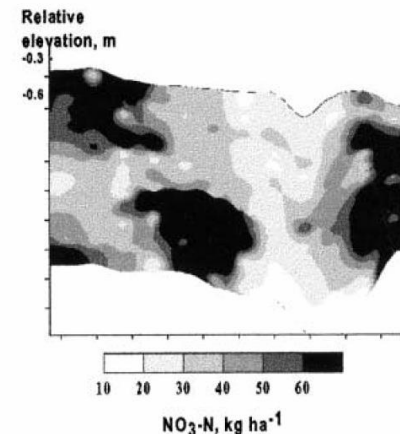
N ↑

**Order 1 survey**

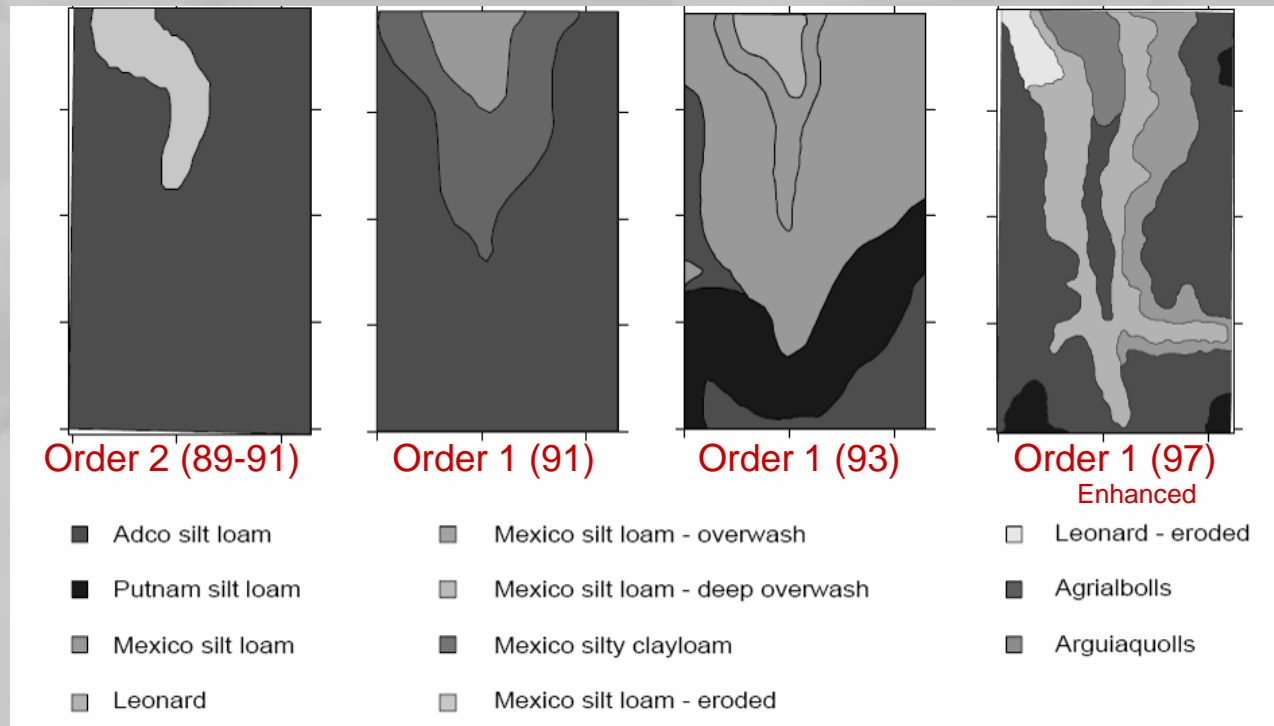


400 m

**NO<sub>3</sub>-N map**



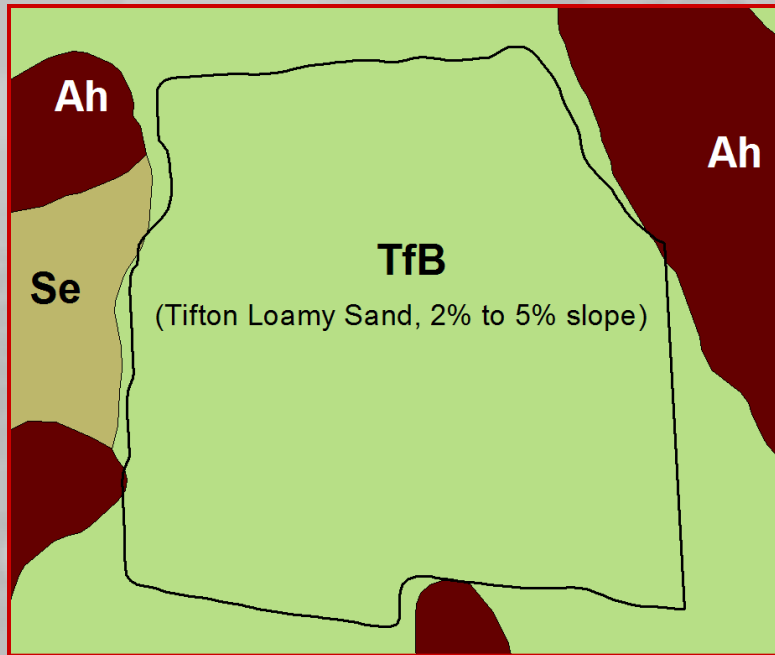
# MZ and soil surveys



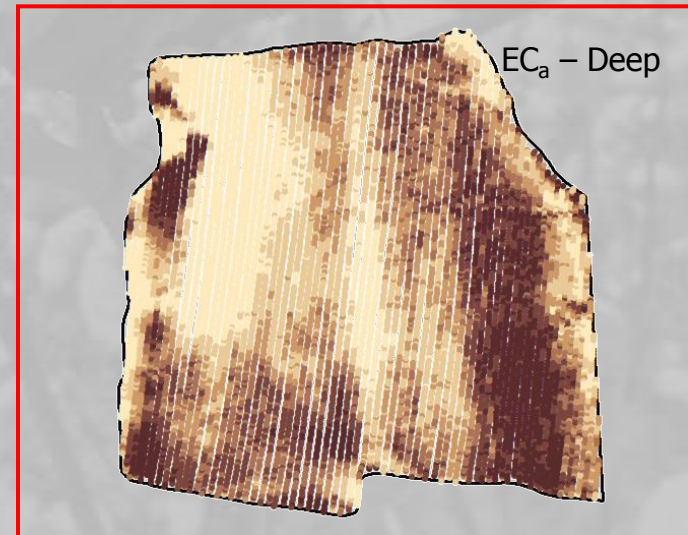
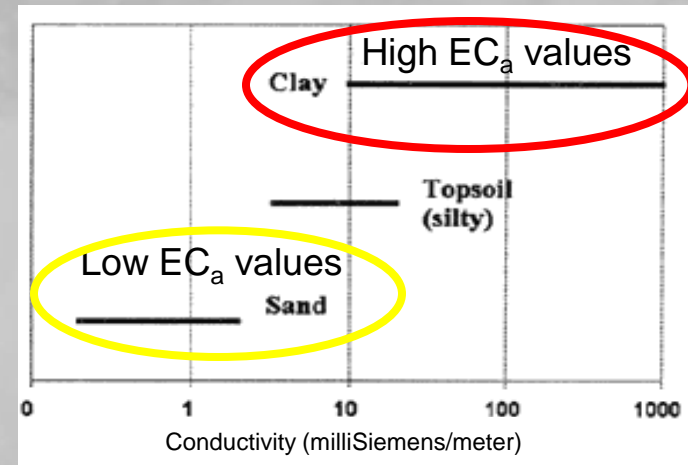
- Order 1, provides a better discrimination and corresponding with yield variability.
- Order 2, provides a better discrimination than no sub-field delineation \*



# On-the-Go sensing & MZ delineation



Soil survey (2<sup>nd</sup> Order)



Soil EC<sub>a</sub> (VERIS 3100)



# Soil ECa measurement methods



## Electrical Resistivity (ER)

It requires good contact between the soil and the four electrodes inserted in the soil

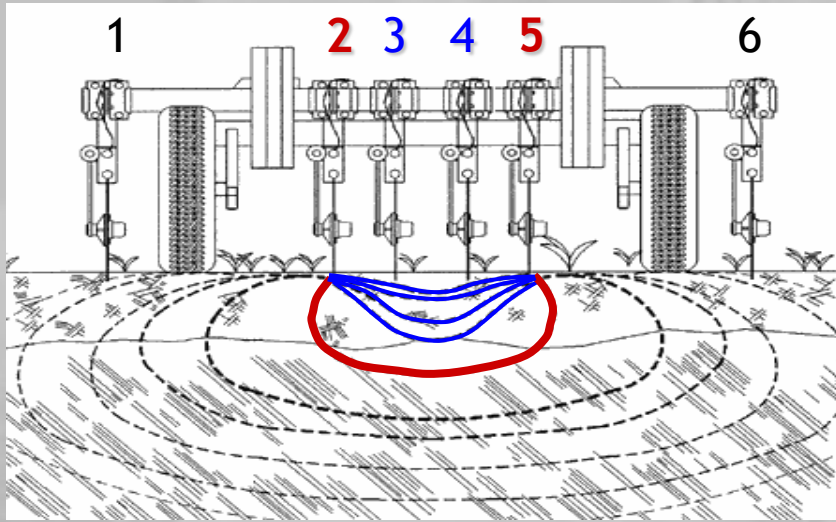


## Electromagnetic Induction (EM)

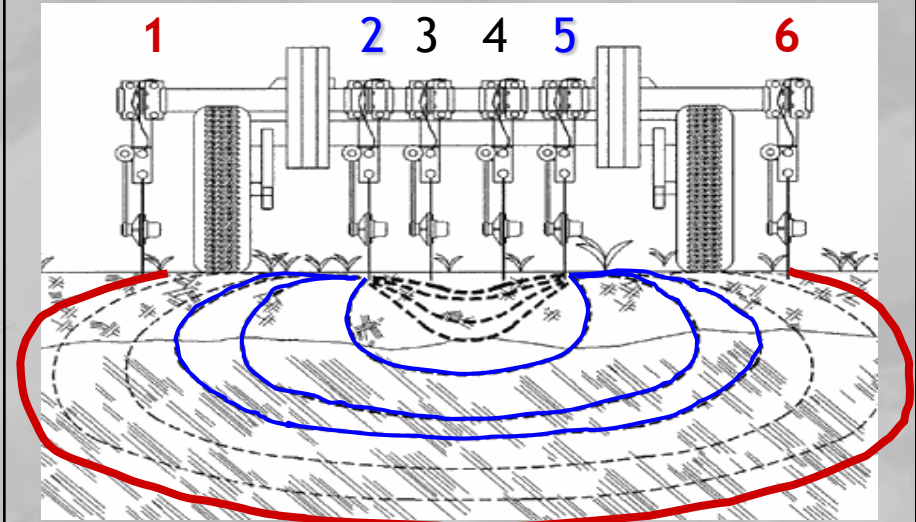
It does not require physical contact with the soil.



# Electrical Resistivity (ER) $\approx$ VERIS 3100



- Shallow ( 0- 12 inches)
- $EC_a$ -shallow, the instrument uses the discs 2, 3, 4 & 5.
- The voltage is measured between discs 3 and 4.

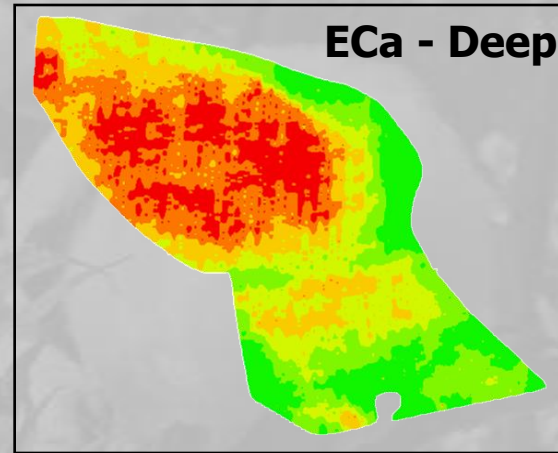
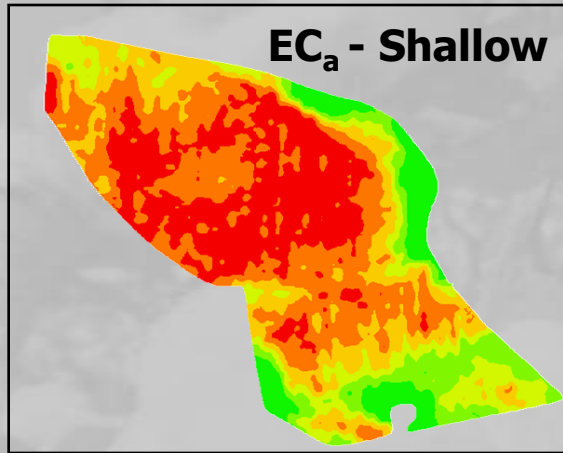


- Deep ( 0- 36 inches)
- $EC_a$ -deep, the instrument uses the discs 1, 2, 5 & 6.
- The voltage is measured between discs 2 and 5.

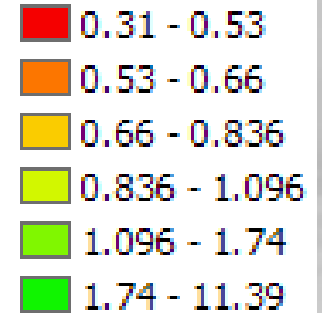


# Soil ECa maps from VERIS sensor

## South Georgia (Loamy Sand)

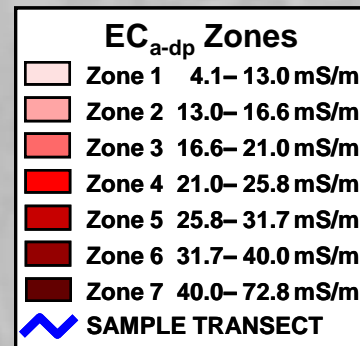
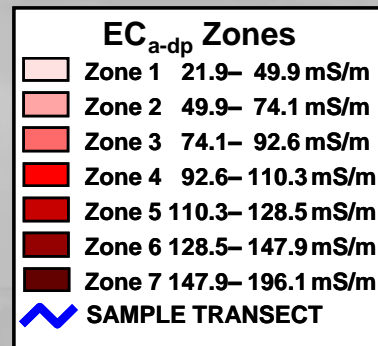
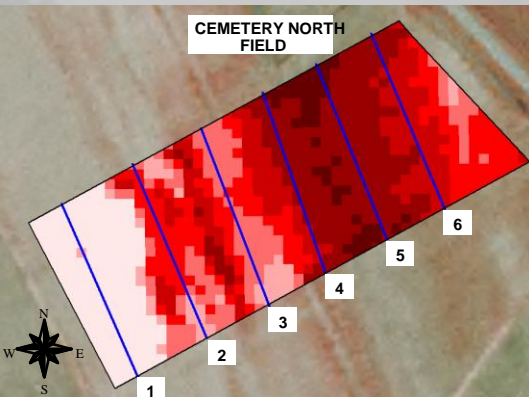


### Soil ECa (mS/m)



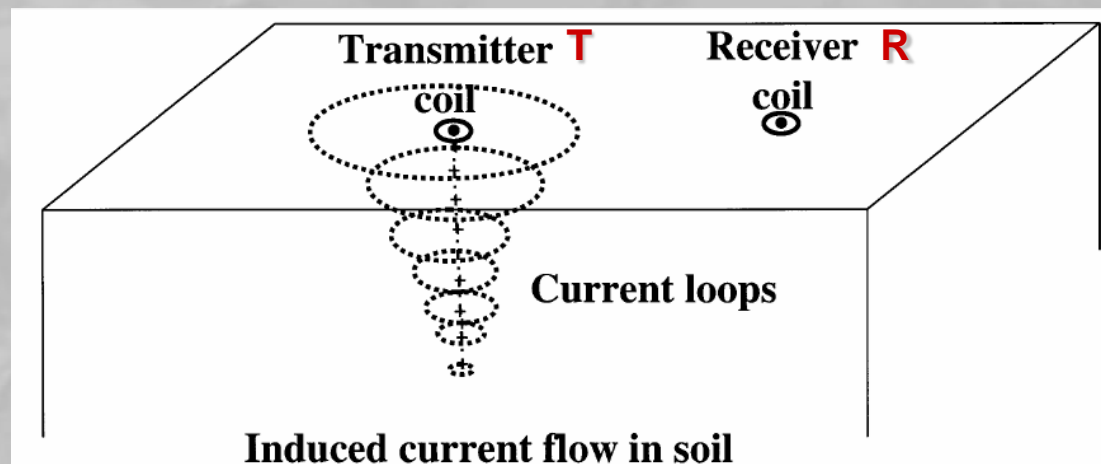
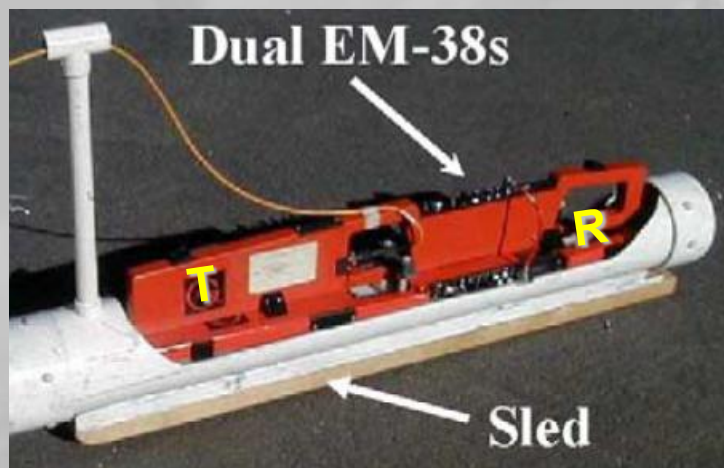
## Northeast Louisiana (Alluvial soil area)

### ECa - Deep





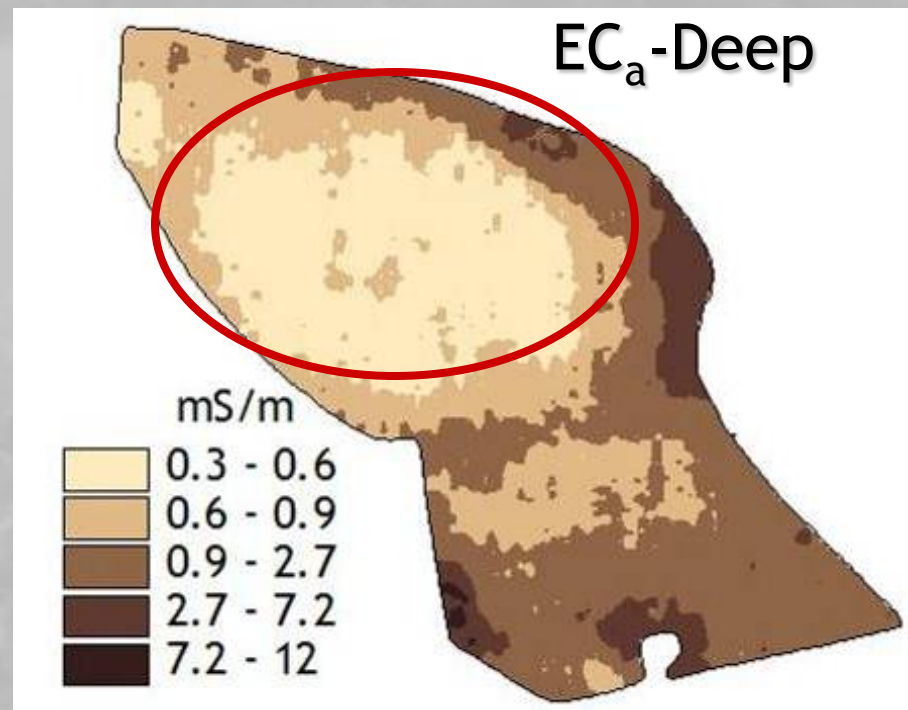
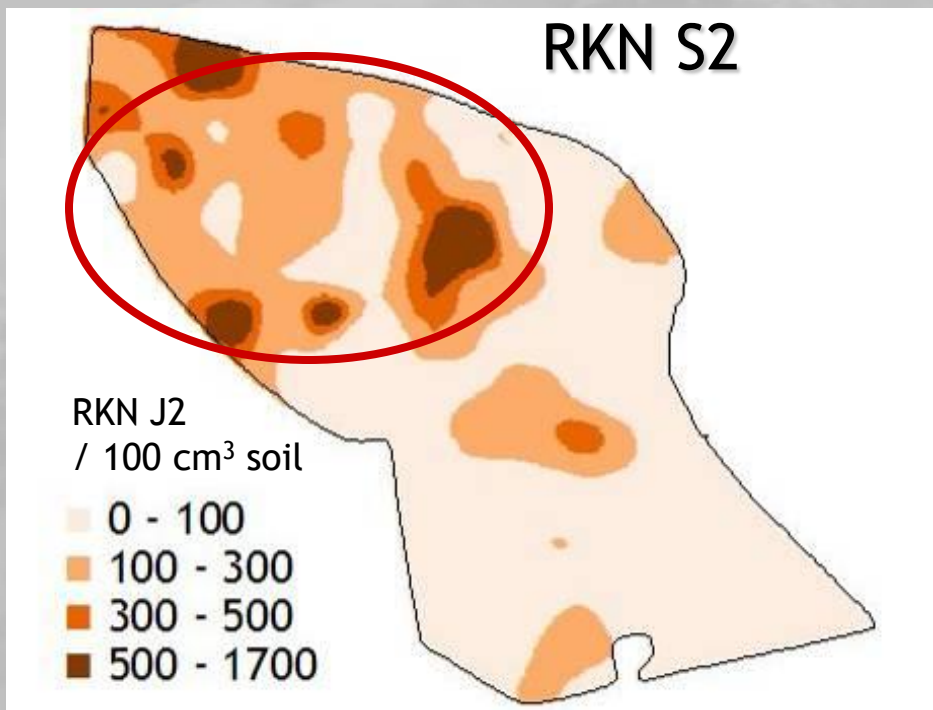
# Electromagnetic Induction (EM) $\approx$ Geonics EM 38



- The sensor is made up of two coils:
  - The Transmitter : induces current loops into the soil
  - The Receiver: measures the resulting electromagnetic field from these current loops.
- EM 38 in a Horizontal orientation measures  $\approx$   $EC_a$  up to 30 inches
- EM 38 in a Vertical orientation measures  $\approx$   $ECa$  up to 60 inches



## MZ for Root-Knot Nematode (RKN) based on Soil EC<sub>a</sub>-Deep



In South Georgia, areas with the lowest values of EC<sub>a</sub>-Deep are at risk of having high population of RKN



# Where to find this type of data on Internet

<http://websoilsurvey.nrcs.usda.gov/app/>

USDA United States Department of Agriculture Natural Resources Conservation Service

## Web Soil Survey

Home About Soils Help Contact Us

You are here: WSS Home

**Search**

Enter Keywords

All NRCS Sites

**Browse by Subject**

- Soils Home
- National Cooperative Soil Survey (NCSS)
- Archived Soil Surveys
- Status Maps
- Official Soil Series Descriptions (OSD)
- Soil Series Extent Mapping Tool
- Soil Data Mart
- Geospatial Data Gateway
- eFOTG
- National Soil Characterization Data
- Soil Geochemistry Spatial Database
- Soil Quality
- Soil Geography
- Geospatial One Stop

The simple yet powerful way to access and use soil data.

**START WSS**

**Welcome to Web Soil Survey (WSS)**

Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 95 percent of the nation's counties and anticipates having 100 percent in the near future. The site is updated and maintained online as the single authoritative source of soil survey information.

**Three Basic Steps**

1 Define

**Area of Interest (AOI)**

Use the Area of Interest tab to define your area of interest.

Mouseover to enlarge image.

**I Want To...**

- Start Web Soil Survey (WSS)
- Know the requirements for running Web Soil Survey
- Know whether my web browser works with Web Soil Survey
- Know the Web Soil Survey hours of operation
- Find what areas of the U.S. have soil data

**Announcements/Events**

- Web Soil Survey 2.0 has been released! View description of new features.

**I Want Help With...**

- How to use Web Soil Survey
- Known problems and workarounds
- Frequently Asked Questions

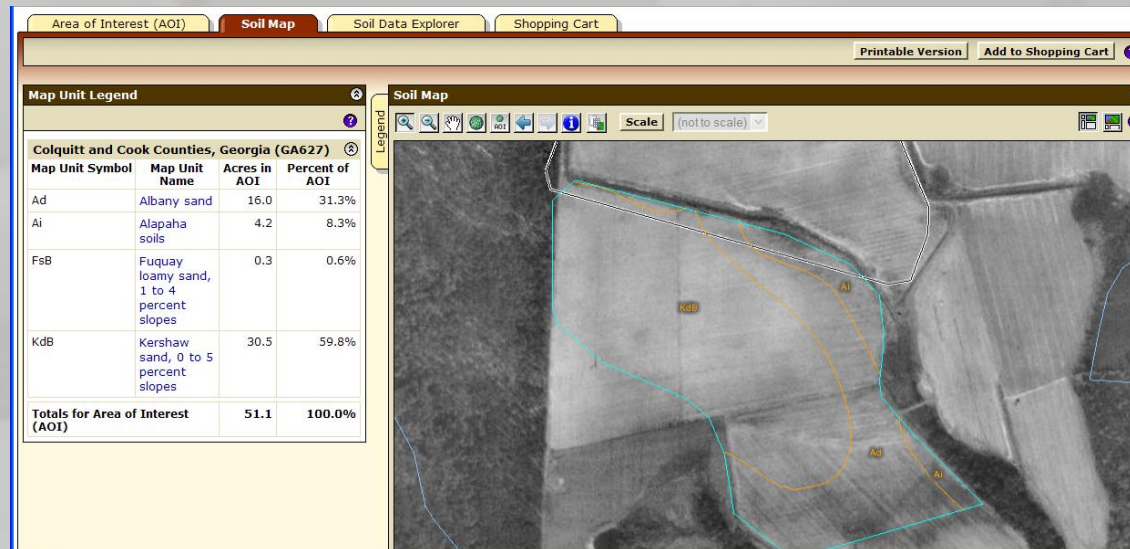


# 1. Search data by :

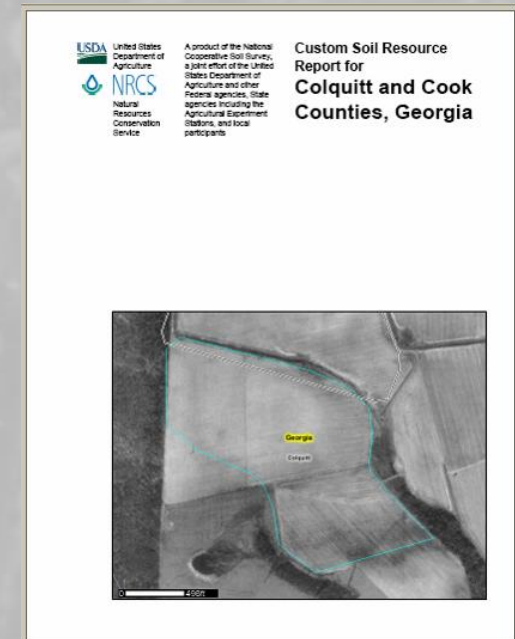
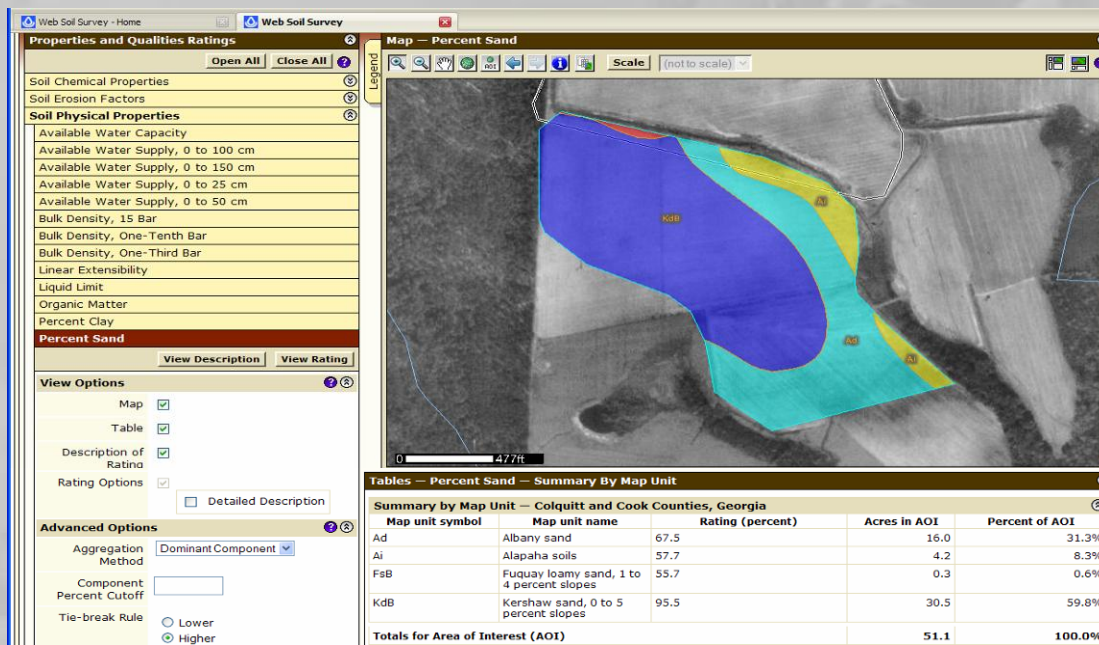
The screenshot displays the Web Soil Survey interface. On the left, the 'Quick Navigation' section is circled in red, showing search options: 'Address', 'State and County', 'Soil Survey Area', and 'Latitude and Longitude'. The 'Latitude and Longitude' section is expanded, showing input fields for Degrees (31), Minutes (16), and Seconds (12.9). The 'Soil Data Available from Web Soil Survey' section indicates 'Colquitt and Cook Counties, Georgia (GA627)' with 'Soil Maps Version 1, Sep 30, 2004' and 'Soil Data Version 5, Dec 28, 2006'. The 'Area (acres)' is 51.1. A 'Clear AOI' button is visible. The main map area shows an aerial view of a field with a cyan hatched boundary delineated by the user. The map includes a scale bar (0 to 470ft) and labels for 'Georgia' and 'Colquitt'.



## 2. Soil series



## 3. Soil properties



# 3. Download Soils data

**Download Soils Data for Your Area of Interest**

Soil Survey Area: Colquitt and Cook Counties, Georgia

Title: Custom Soil Resource Report for Colquitt and Cook Counties, Georgia

Subtitle:  Area of Interest Name: (none defined)  Custom Subtitle:   None

Size: Total Size 988 KB (1.0 MB)

Map Options: Show UTM Coordinate Ticks  Map Page Size: A (8.5" x 11") Map Scale: Automatic

Table of Contents:  Custom Soil Resource Report for Colquitt and Cook Counties, Georgia 988 KB

Shopping Cart: [Check Out](#)

United States Department of Agriculture  
Natural Resources Conservation Service  
GA627 - Colquitt and Cook Counties, Georgia  
Soil Data Mart

Please select the class of data you wish to download: ( Survey Area Version 5 , Tabular Version 5 , Spatial Version 1 )

Tabular Data Only  Tabular and Spatial Data  Spatial Data Only  Template Database Only

Please select a spatial format: ArcView Shapefile Please select a coordinate system: UTM Zone 17, Northern Hemisphere (NAD 83) [Reset Default](#)

Please select a template database (optional): [Clear Selection](#)

State	MS Access Version	Template DB Version	Template DB Name	Size
CT	Access 2002	32.1	soildb_CT_2002	1.8M
DC	Access 2002	31	soildb_DC_2002	1.7M
DE	Access 2002	31	soildb_DE_2002	1.7M
GA	Access 2002	32	soildb_GA_2002	1.8M

Description: Custom Access Template Version 31 for Georgia. Several reports not applicable to Georgia have been disabled in the template report list. Reports with (GA) following the report name have been locally customized for use in Georgia.

Soil Data Mart - Download Soil Survey Area Data. - Windows Internet Explorer

http://soildatamart.nrcs.usda.gov/Download.aspx?State=GA&Survey=GA627

United States Department of Agriculture  
Natural Resources Conservation Service  
GA627 - Colquitt and Cook Counties, Georgia  
Georgia  
Soil Data Mart

Home Select State State Contacts Template Databases SSURGO Metadata Status Map US General Soil Map [Logon/Register](#) [Help](#)

Please select the class of data you wish to download: ( Survey Area Version 5 , Tabular Version 5 , Spatial Version 1 )

Tabular Data Only  Tabular and Spatial Data  Spatial Data Only  Template Database Only

Please select a spatial format: ArcView Shapefile Please select a coordinate system: Geographic Coordinate System (NAD83) [Reset Default](#)

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