

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

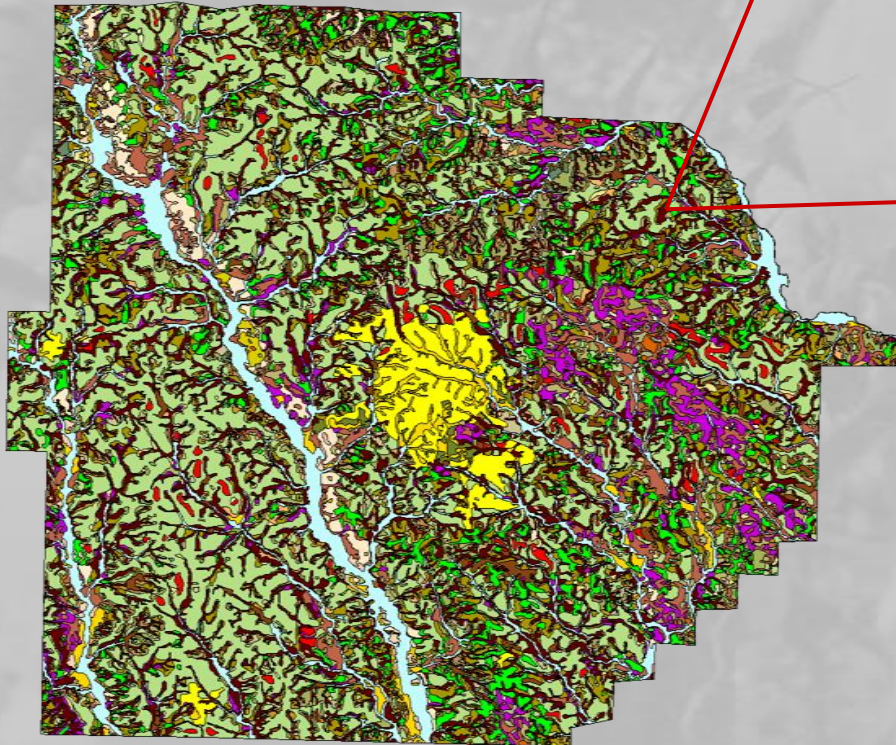


**Soil survey by
the USDA-NRCS**

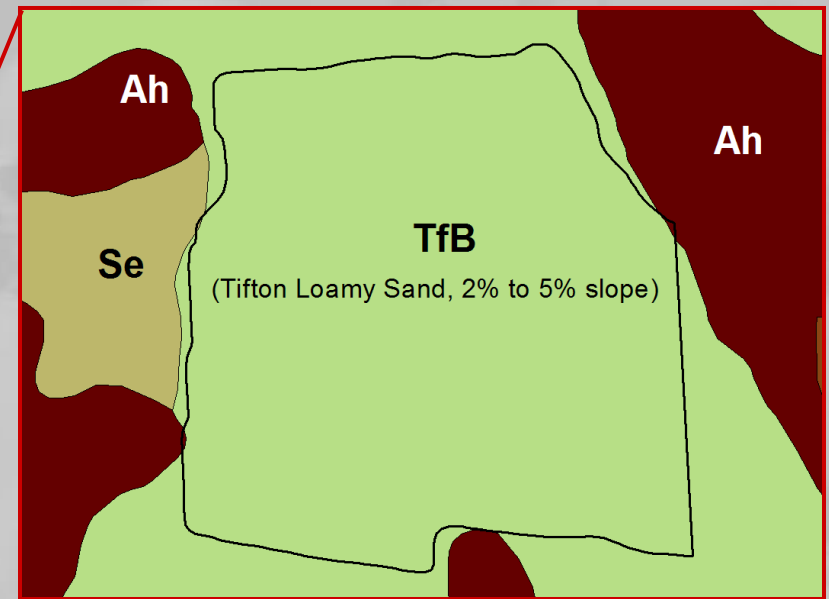


**Information available
for the producers...**

County soil survey (Order 2)



Tift county (GA)



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

Differences between Order 2 and 1 soil surveys

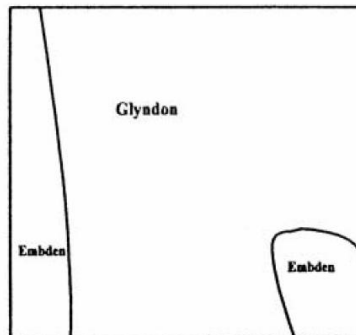
1. Order 2

- 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

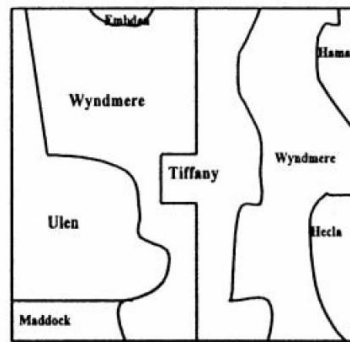
- Farm or field soil survey
- Scale >1:15,840, finer than Order 2.
- Min. size delineation: 2.5 acres
- Useful for SSM (VRA of inputs).
- Soil units are closely related to crop yield and nutrient variability.

Published Order 2 survey



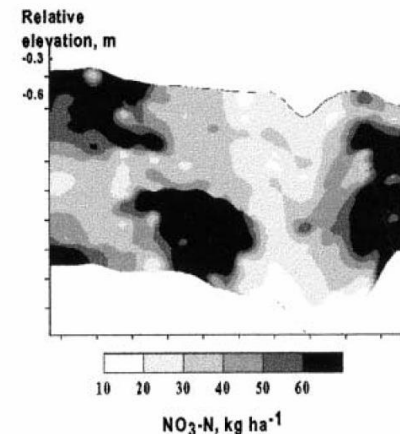
N ↑

Order 1 survey

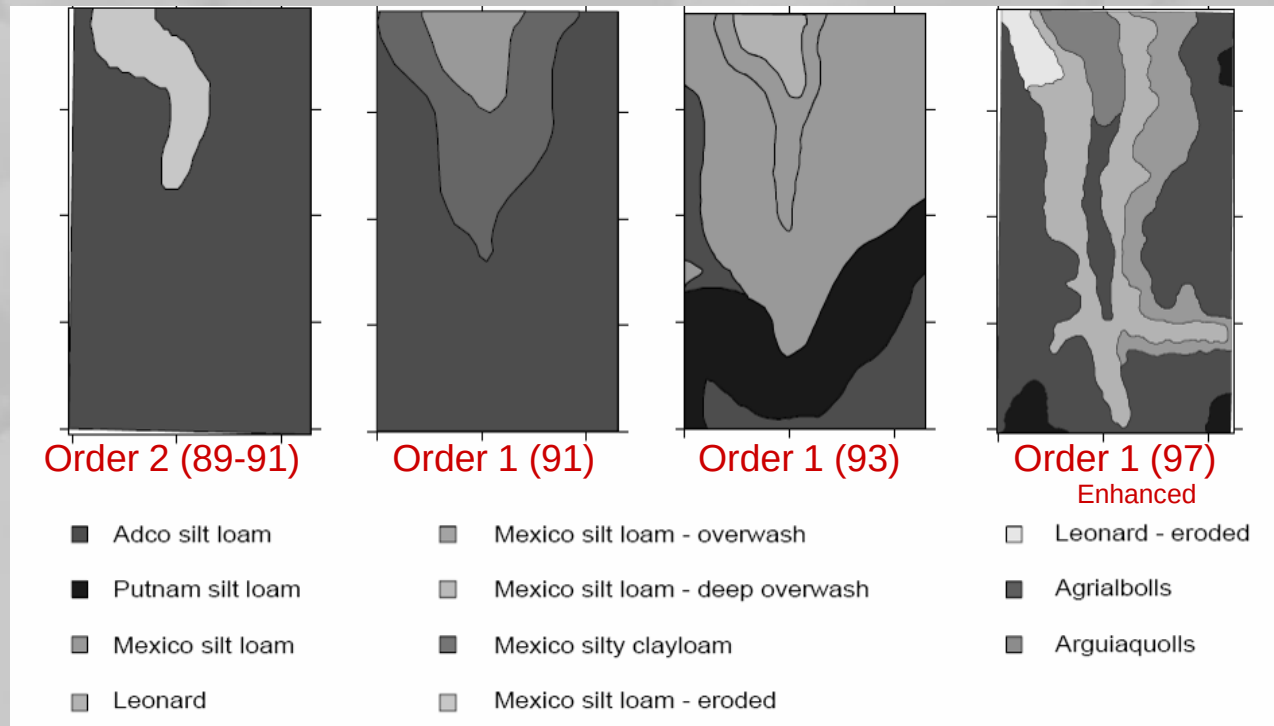


400 m

NO₃-N map



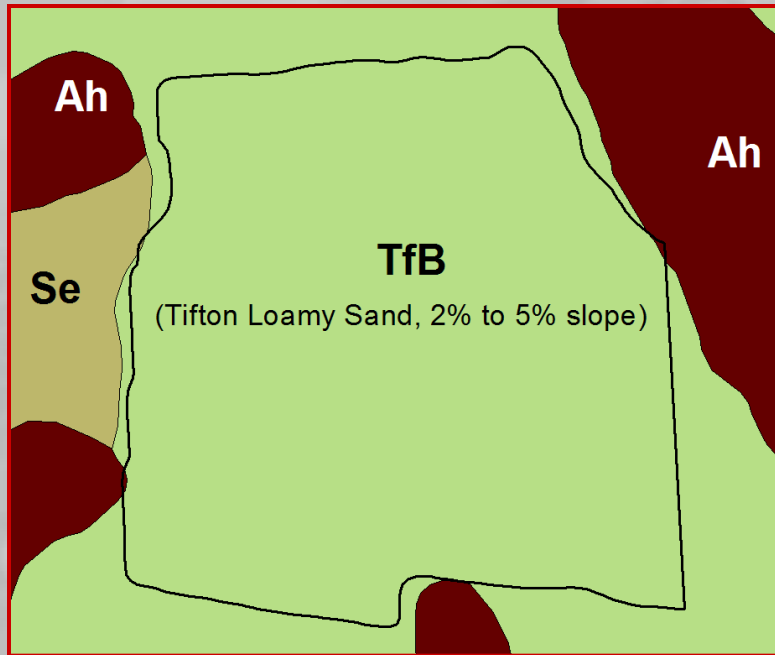
MZ and soil surveys



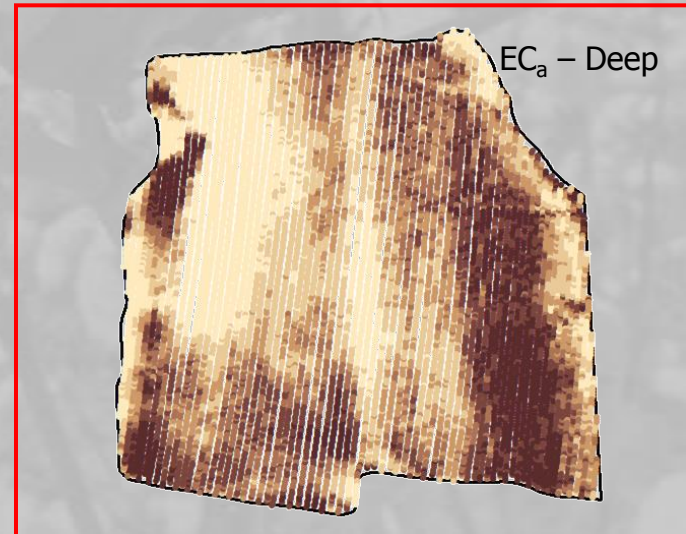
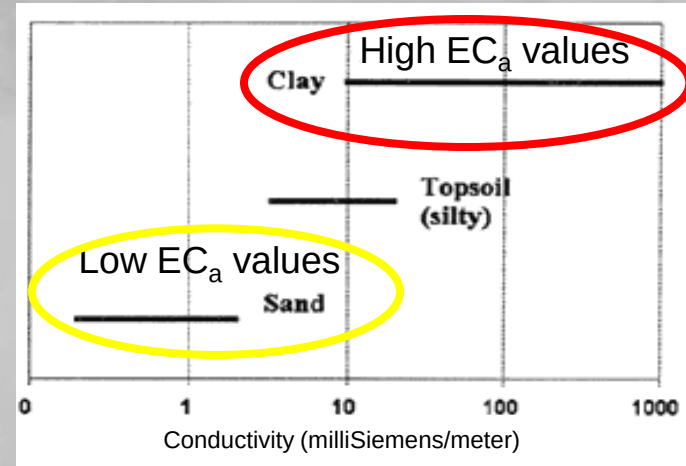
- Order 1, provides a better discrimination and corresponding with yield variability.
- Order 2, provides a better discrimination than no sub-field delineation *



On-the-Go sensing & MZ delineation



Soil survey (2nd Order)



Soil EC_a (VERIS 3100)



Soil ECa measurement methods



Electrical Resistivity (ER)

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

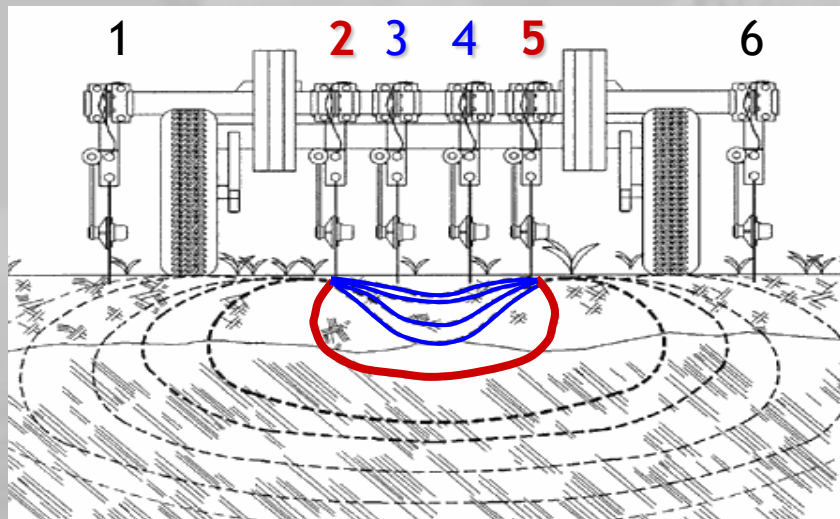


Electromagnetic Induction (EM)

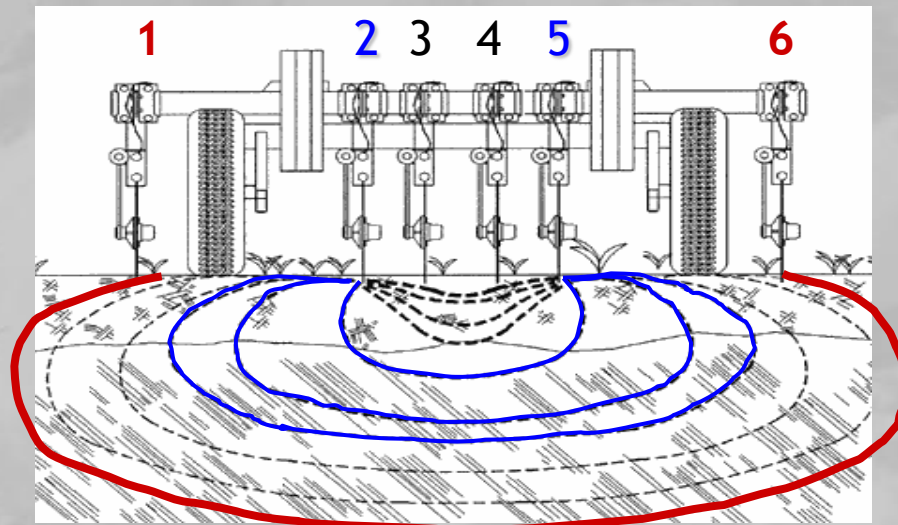
It does not require physical contact with the soil.



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.

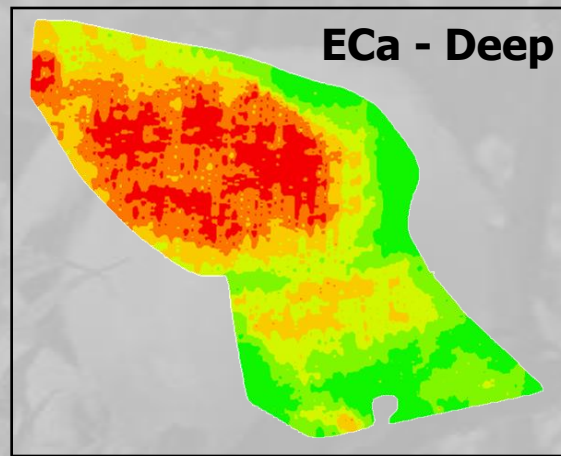
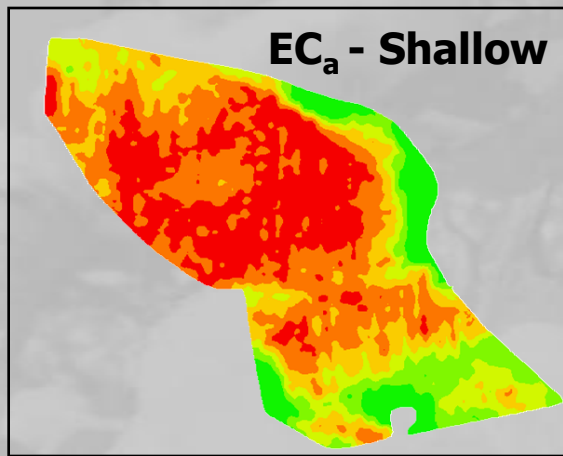


- Deep (0- 36 inches)
- EC_a -deep, the instrument uses the discs 1, 2, 5 & 6.
- The voltage is measured between discs 2 and 5.

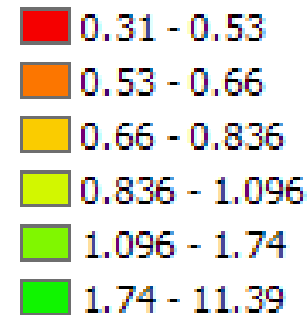


Soil ECa maps from VERIS sensor

South Georgia (Loamy Sand)

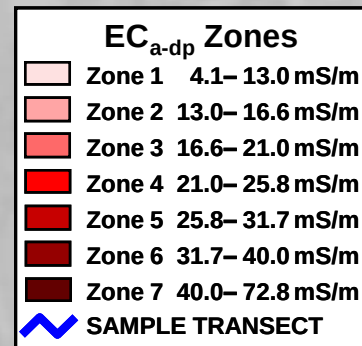
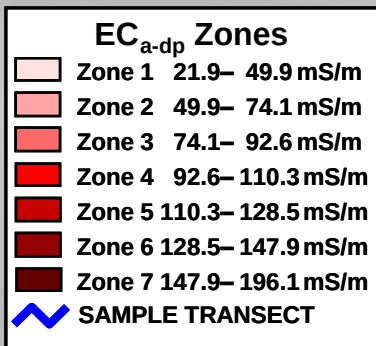
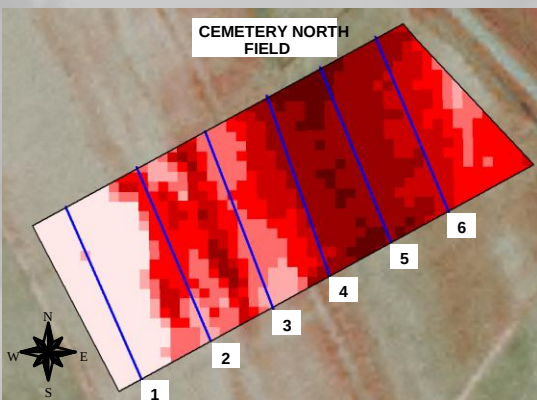


Soil ECa (mS/m)



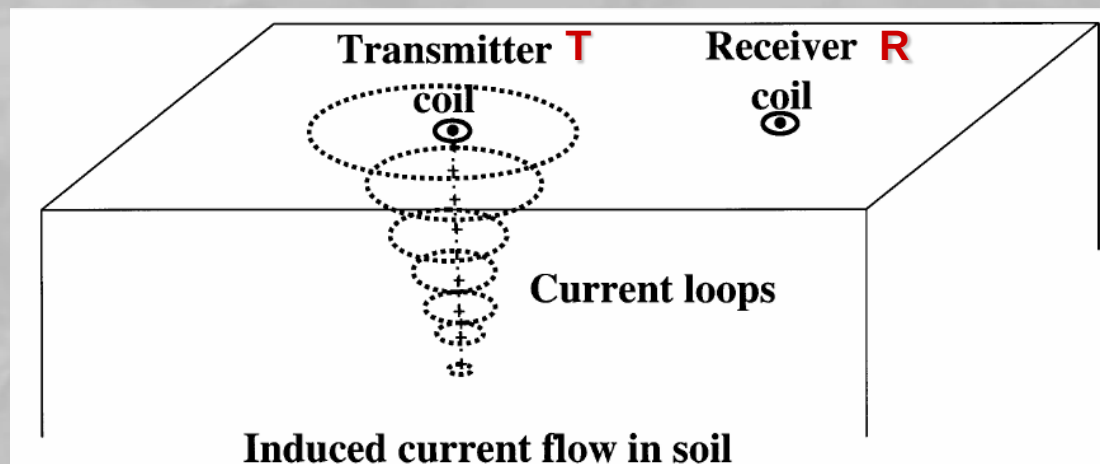
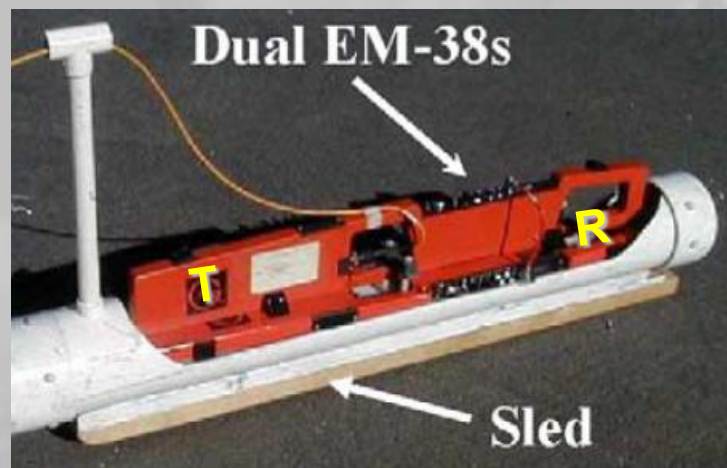
Northeast Louisiana (Alluvial soil area)

ECa - Deep



Source: Wolcott, M. 2007. Cotton yield response to residual effects of Telone Fumigant. In *Beltwide Cotton Conference*. New Orleans.

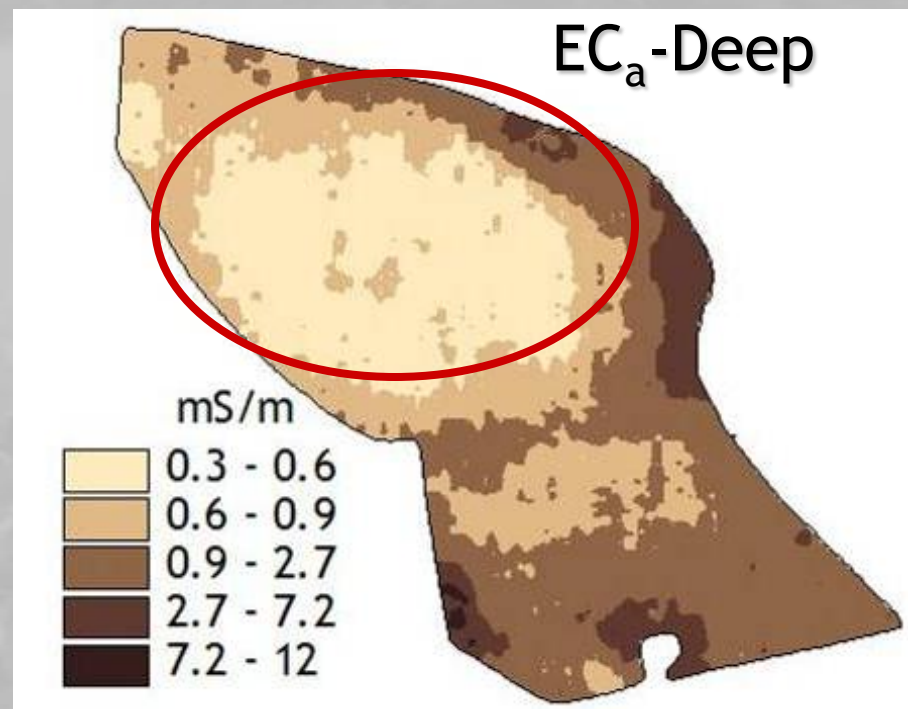
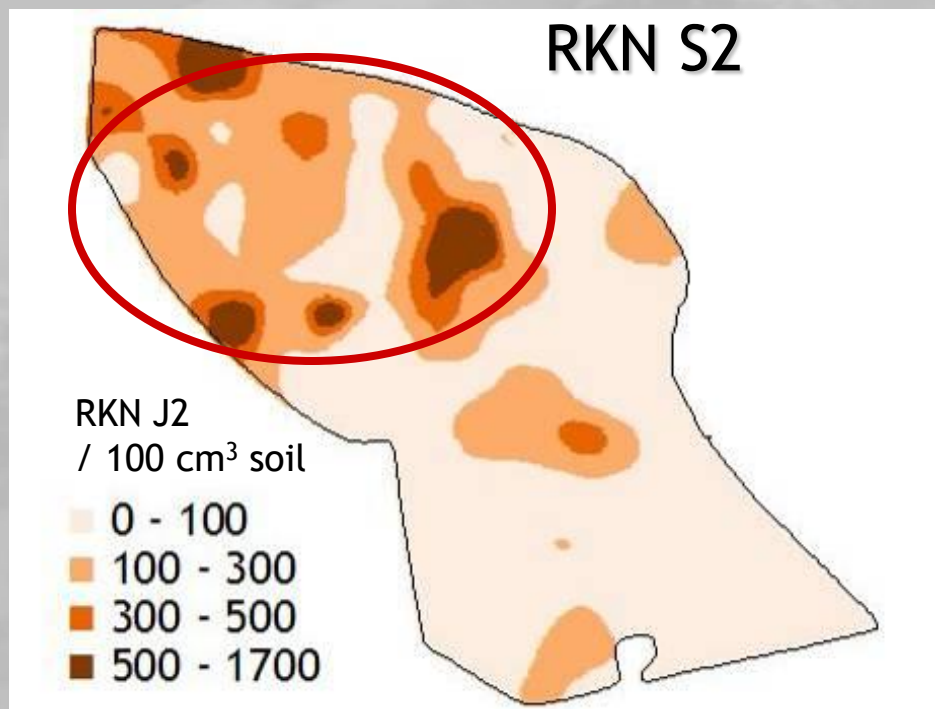
Electromagnetic Induction (EM) $\approx$ Geonics EM 38



- 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_a -Deep



In South Georgia, areas with the lowest values of EC_a -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/>

The screenshot shows the USDA Web Soil Survey homepage. At the top is a banner with the USDA logo, the text "United States Department of Agriculture Natural Resources Conservation Service", and the title "Web Soil Survey" in large yellow letters. Below the banner is a navigation bar with links: Home, About Soils, Help, and Contact Us. A breadcrumb trail indicates "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.

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

Mouseover to enlarge image.



1. Search data by :

The screenshot displays the 'Web Soil Survey' web application. On the left, a sidebar contains search and navigation options. The 'Quick Navigation' section is highlighted with a red circle and includes a 'Navigate By...' dropdown menu with options: 'Address', 'State and County', 'Soil Survey Area', and 'Latitude and Longitude'. Below this, there are input fields for 'Latitude' (Degrees: 31, Minutes: 16, Seconds: 12.9) and buttons for 'Use Decimal Degrees' and 'View'. The main content area on the right shows an aerial map of a region in Georgia, with 'Colquitt' labeled. A cyan-colored polygon with diagonal hatching delineates a specific field boundary. A red text label 'Field boundary delineated by the user' points to this polygon. A scale bar at the bottom left of the map indicates 0 to 470 feet. The top of the browser window shows two tabs: 'Web Soil Survey - Home' and 'Web Soil Survey'.

Web Soil Survey - Home

Web Soil Survey

Name

Map Unit Symbols

- ☒ Use Soil Survey Area Map Unit Symbols
- ☐ Use National Map Unit Symbols

Area (acres) 51.1

Soil Data Available from Web Soil Survey

Colquitt and Cook Counties, Georgia (GA627)

Soil Maps Version 1, Sep 30, 2004

Soil Data Version 5, Dec 28, 2006

Clear AOI

Quick Navigation

Navigate By...

- Address
- State and County
- Soil Survey Area
- Latitude and Longitude

Use Decimal Degrees View

Latitude

Degrees 31

Minutes 16

Seconds 12.9

Georgia

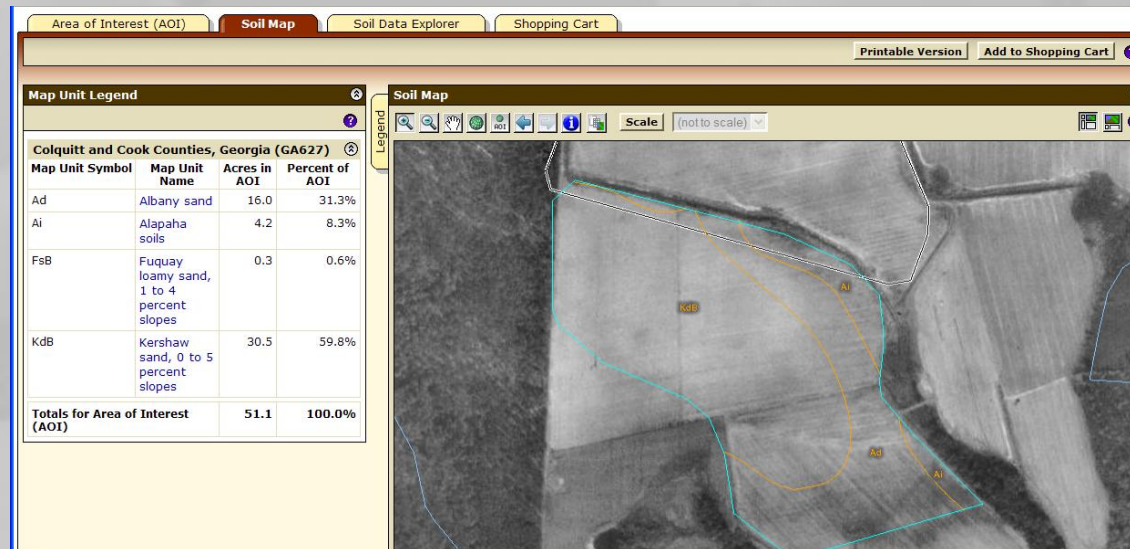
Colquitt

0 470ft

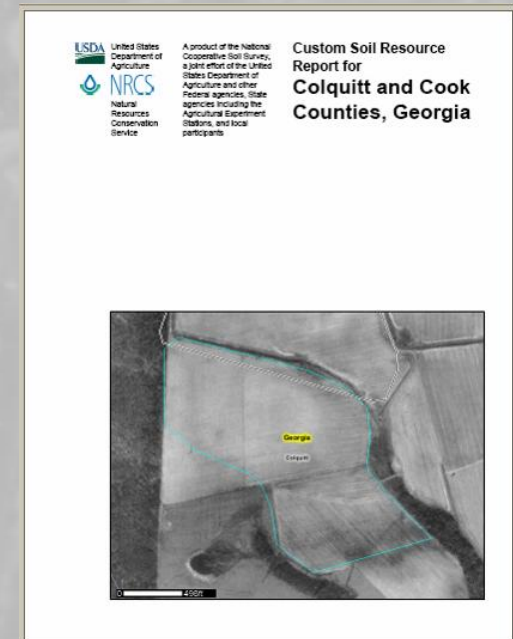
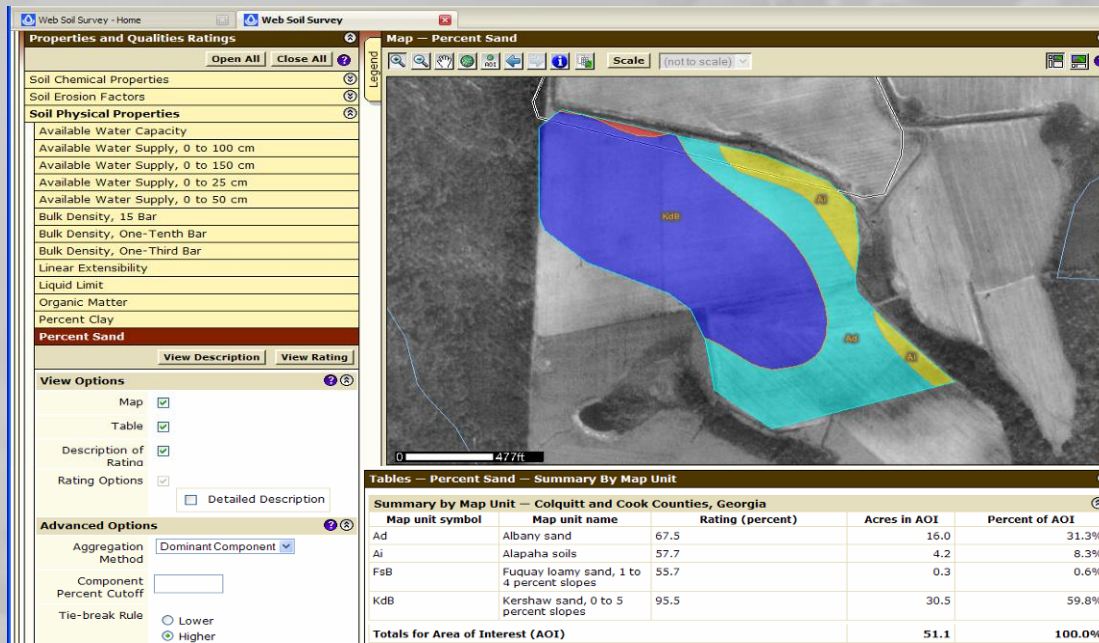
Field boundary delineated by the user



2. Soil series



3. Soil properties



3. Download Soils data

The screenshot displays the NRCS Soil Data Mart interface. On the left, a sidebar contains a 'Download Soils Data for Your Area of Interest' section, which is circled in red. This section includes a 'Soil Survey Area' dropdown set to 'Colquitt and Cook Counties, Georgia', a 'Title' field with 'Custom Soil Resource Report for Colquitt and Cook Counties, Georgia', and a 'Size' field showing 'Total Size 988 KB (1.0 MB)'. Below this is a 'Map Options' section with checkboxes for 'Show UTM' and 'Coordinate Ticks', and a 'Map Page Size' dropdown set to 'A (8.5" x 11")'. A 'Table of Contents' section at the bottom of the sidebar shows a checked item: 'Custom Soil Resource Report for Colquitt and Cook Counties, Georgia' with a size of '988 KB'.

The main content area of the website is titled 'Soil Data Mart' and features a navigation bar with links: 'Home', 'Select State', 'State Contacts', 'Template Databases', 'SSURGO Metadata', and 'Status Map'. The page is for 'GA627 - Colquitt and Cook Counties, Georgia'. It prompts the user to 'Please select the class of data you wish to download:' with options: 'Tabular Data Only', 'Tabular and Spatial Data', 'Spatial Data Only' (selected), and 'Template Database Only'. Below this, there are dropdowns for 'Please select a spatial format:' (set to 'ArcView Shapefile') and 'Please select a coordinate system:' (set to 'Geographic Coordinate System (NAD83)'). A 'Reset Default' button is also present.

A table titled 'Please select a template database (optional):' is displayed, showing columns for 'State', 'MS Access Version', 'Template DB Version', 'Template DB Name', and 'Size'. The table lists three entries for Georgia (GA):

State	MS Access Version	Template DB Version	Template DB Name	Size
GA	Access 2002	32.1	soildb_CT_2002	1.8M
GA	Access 2002	31	soildb_DC_2002	1.7M
GA	Access 2002	31	soildb_DE_2002	1.7M

Below the table, a 'Description' field states: '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.'

At the bottom of the page, there is a form to 'Please enter your e-mail address:' with the email 'bvortiz@uga.edu' entered. A red warning message states: 'If the e-mail account entered above is protected by spam blocking software, you will need to authorize e-mail from SoilDataMart@nrcs.usda.gov in order to receive e-mail notification once your request has been processed.'

Four buttons are located at the bottom: 'Submit Request', 'See Disclaimer', 'Select Survey Area', and 'View Metadata'. There are also links for 'Generate Reports' and 'Subscribe'.

The footer contains links: 'Back to Top', 'FOIA | Information Quality | Accessibility Statement | Privacy Policy | Non-Discrimination Statement', and 'White House | USA.gov | USDA | NRCS | NRCS Soils | Disclaimer | Contact Us'.