

PRECISION AGRICULTURE



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PRECISION AGRICULTURE

- What is precision agriculture?
 - Use of:
 - Soil sampling
 - Remote sensing
 - Geospatial systems
 - GPS
 - GIS
 - Management of:
 - Inputs – fertilizers, pesticides, seeding rates, etc
 - Outputs – yield, runoff, biomass

THE 4 R'S

Right Source, Right Rate, Right Time, Right Place

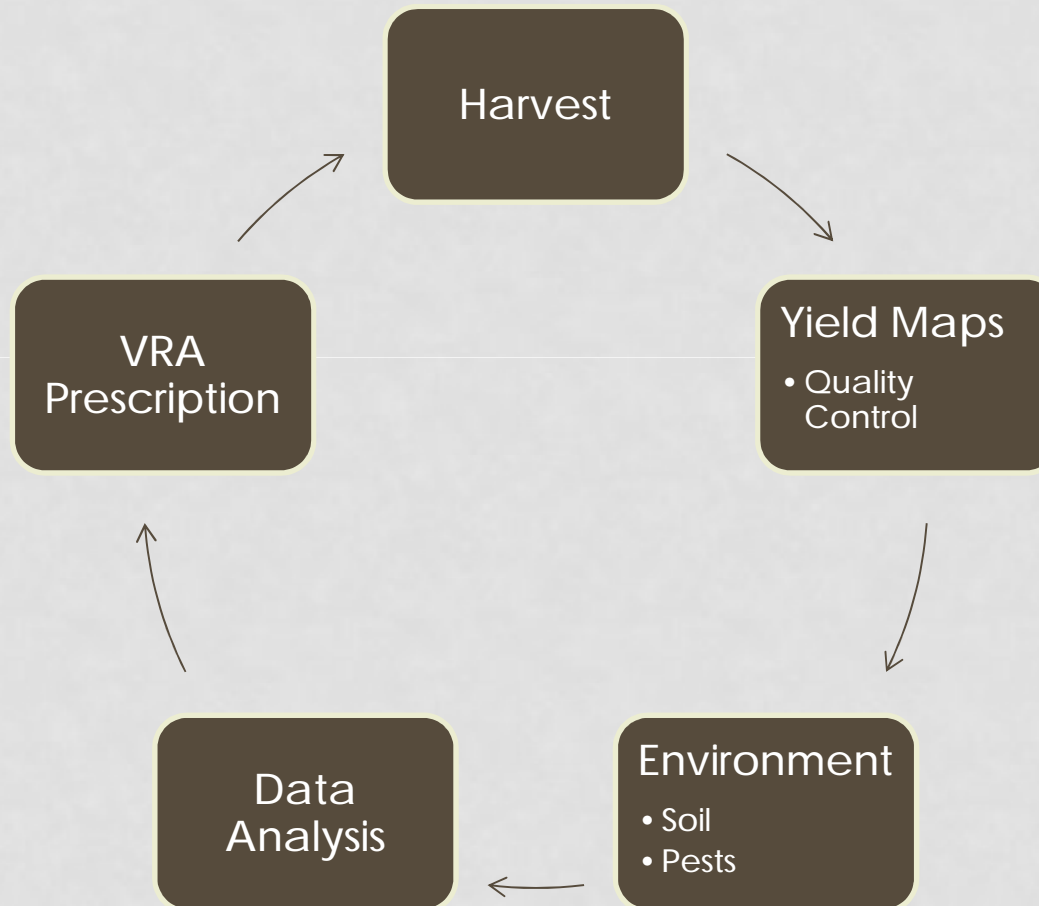
- Right Place

- Soil Sampling
- Fertilizer
 - Broadcast
 - Band/drill/inject
 - Variable rate
- Nematode control

- Right Rate

- Fertilizer
- Water
 - Low spots
- Pesticides

SITE SPECIFIC MANAGEMENT



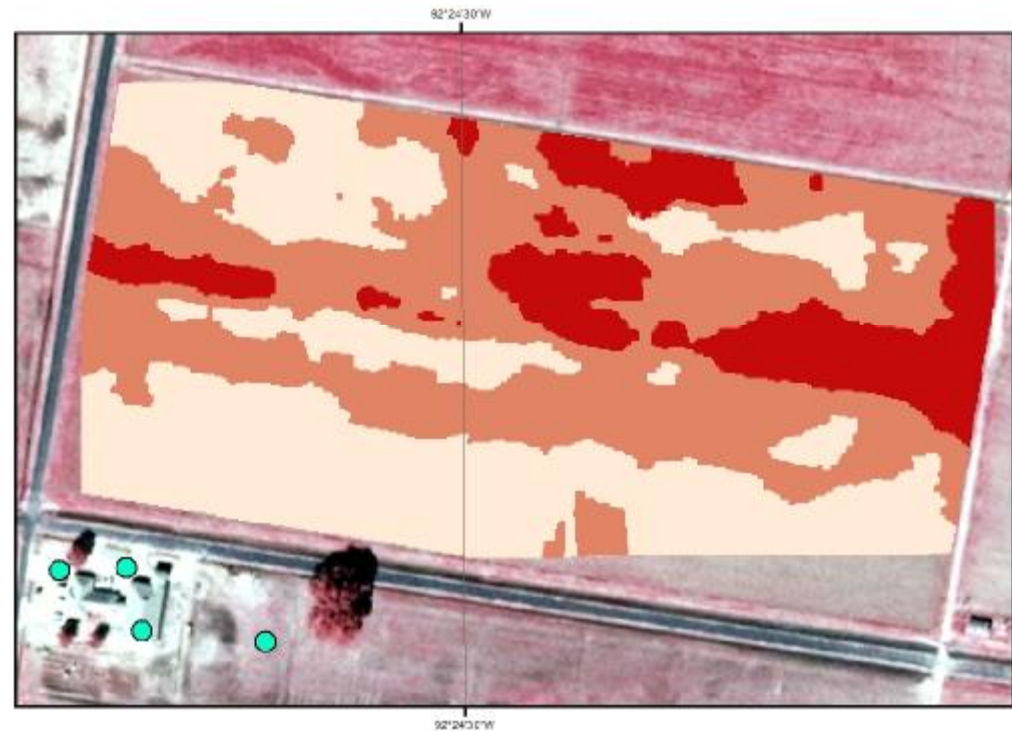
BENEFITS OF PRECISION AGRICULTURE

- More accurately manage diverse fields
- Increase fertilizer use efficiency



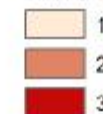
- INCREASE PROFIT

EC Management Zones - Training



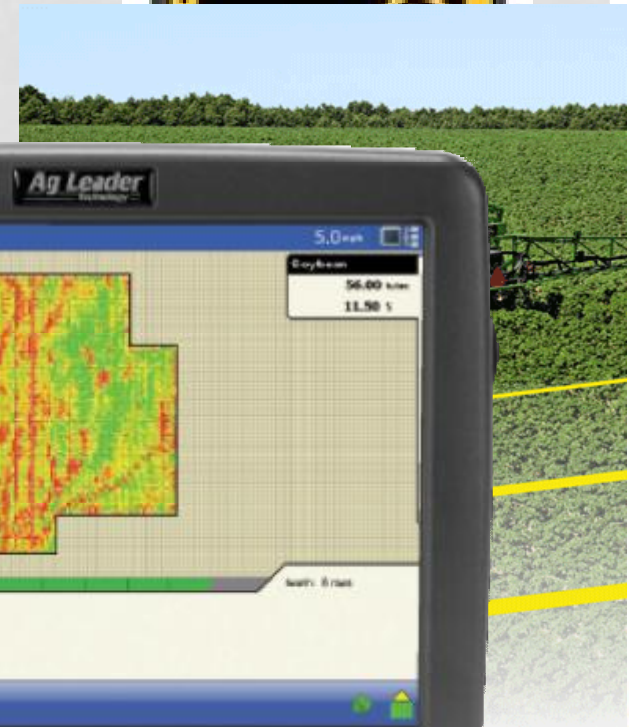
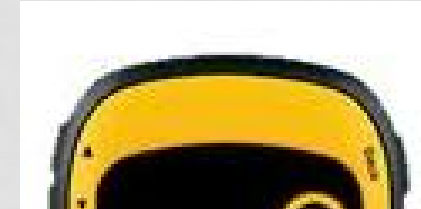
Legend

Field 1 Shallow EC



TOOLS OF THE TRADE

- GPS – Global positioning system
- GIS – Geographic information system
- Greenseeker – N management tool
- Variable rate
 - Sprayer
 - Seeder
- Yield monitor
- Veris



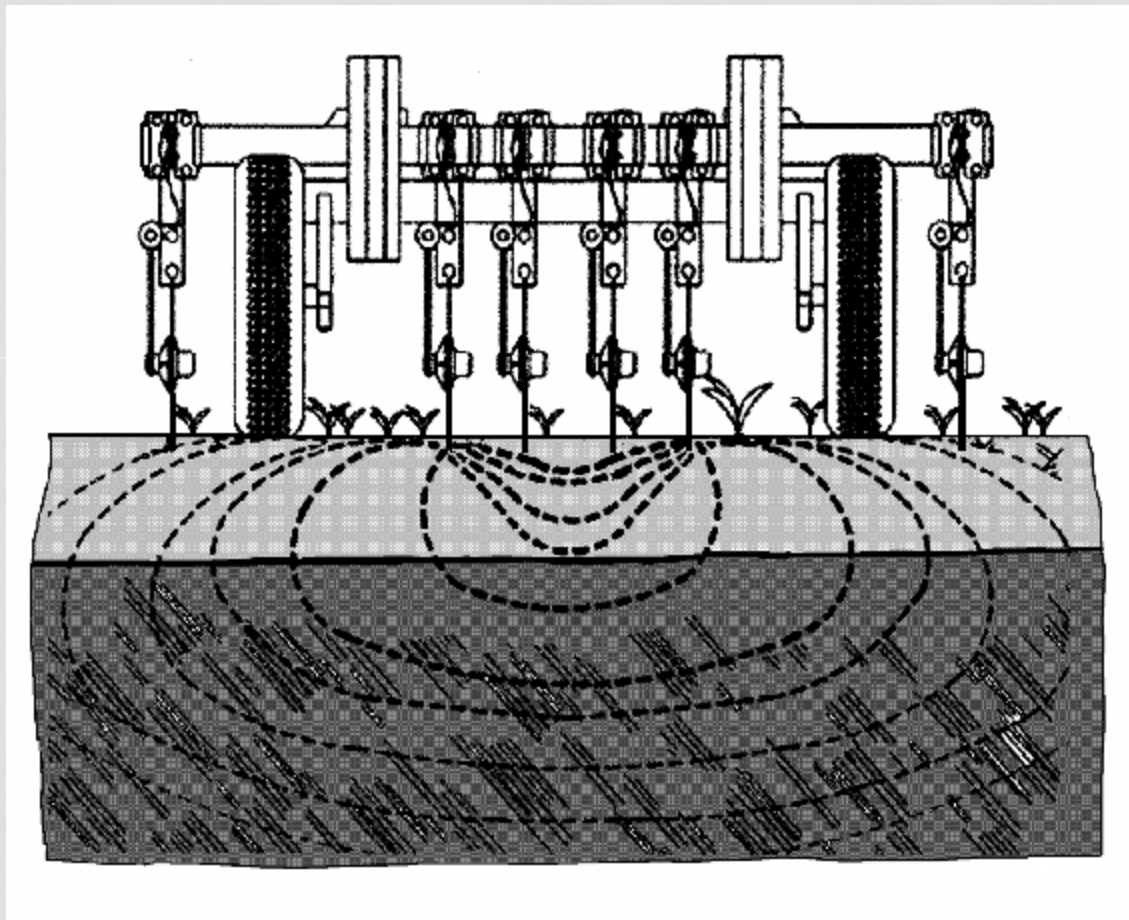
VERIS - EC

- Electrical Conductivity:
 - A materials ability to conduct an electrical current



Veris® 3100 Soil EC Mapping System

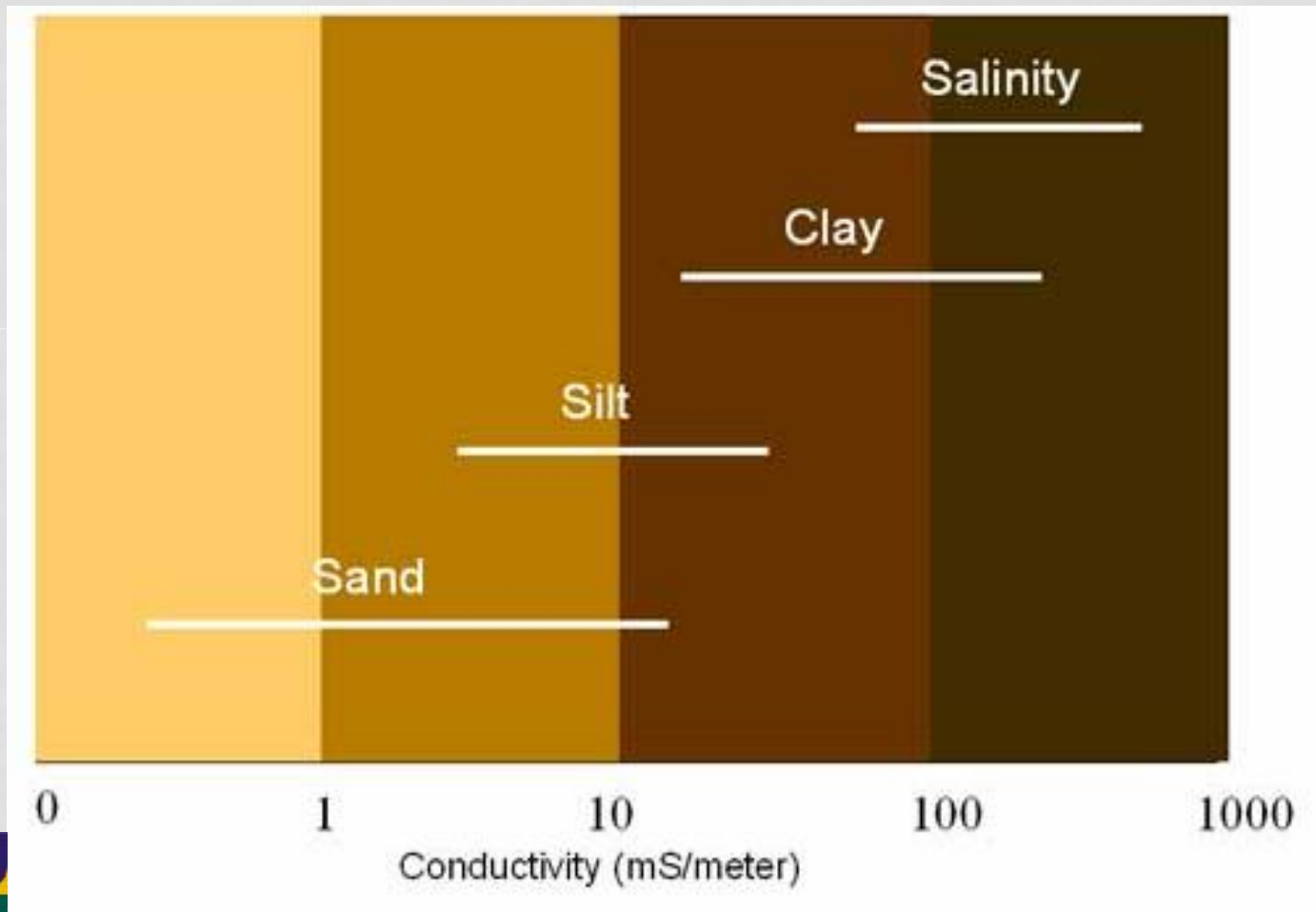
VERIS - EC



SH
0-12"

DEEP
0-36"

EC READINGS





SHALLOW EC

□	Low
↓	
■	High

M. W

SOIL SAMPLING

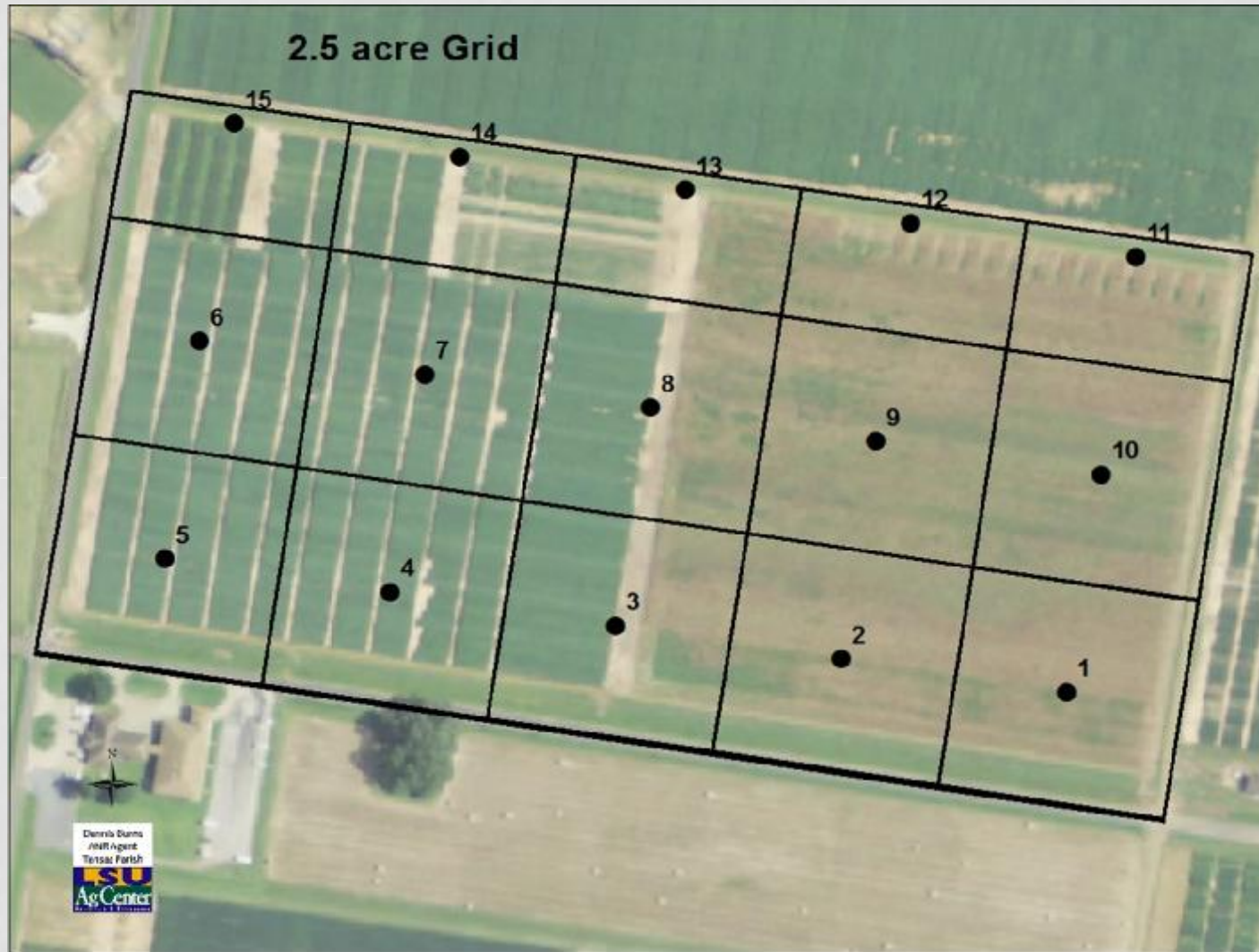
Methods

- Grid
- Management zone
- Soil type

GRID SAMPLING

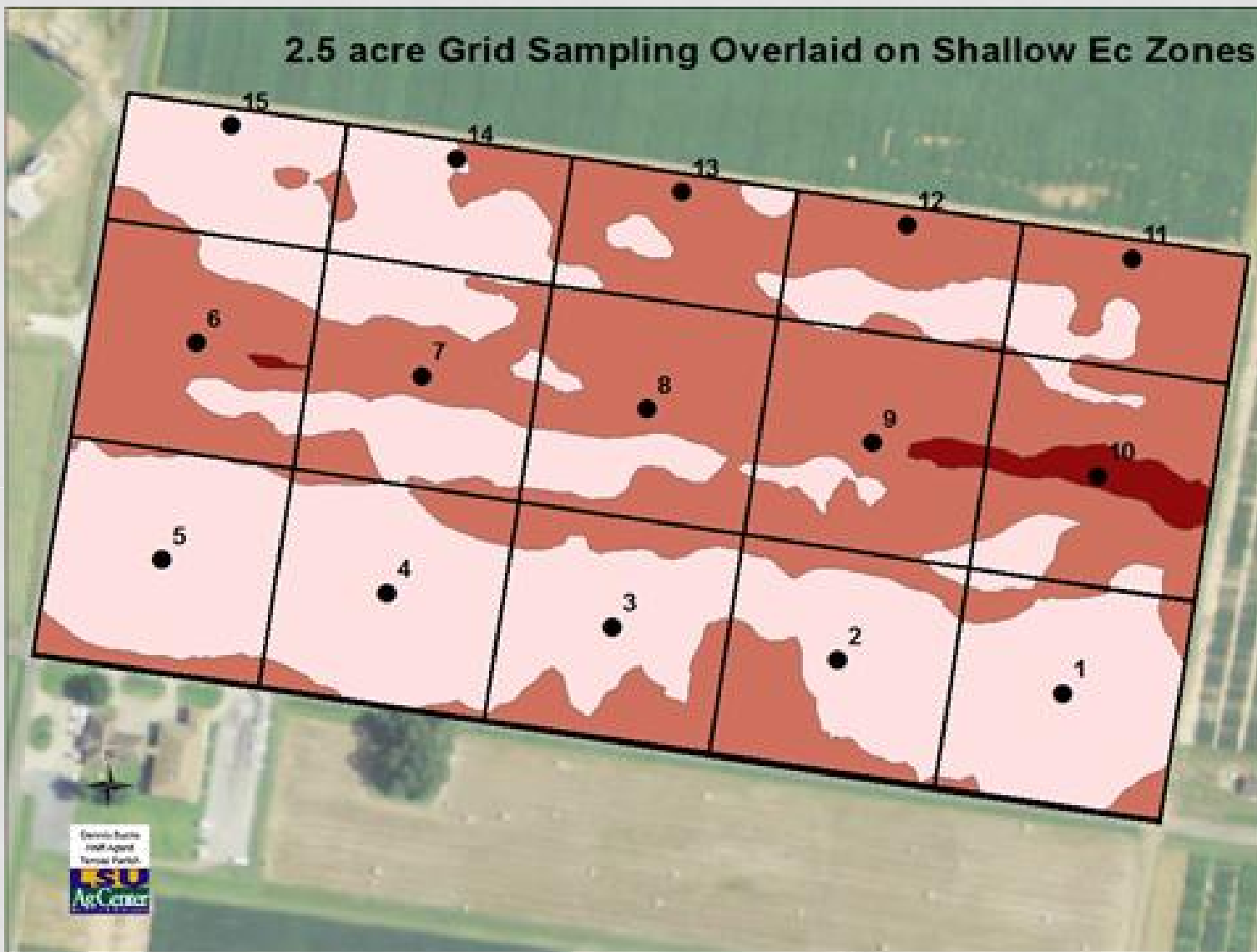
- Decide how refined sampling is needed
 - 2.5 acre grid
 - 5 acre grid
 - 10 acre grid

2.5 acre Grid

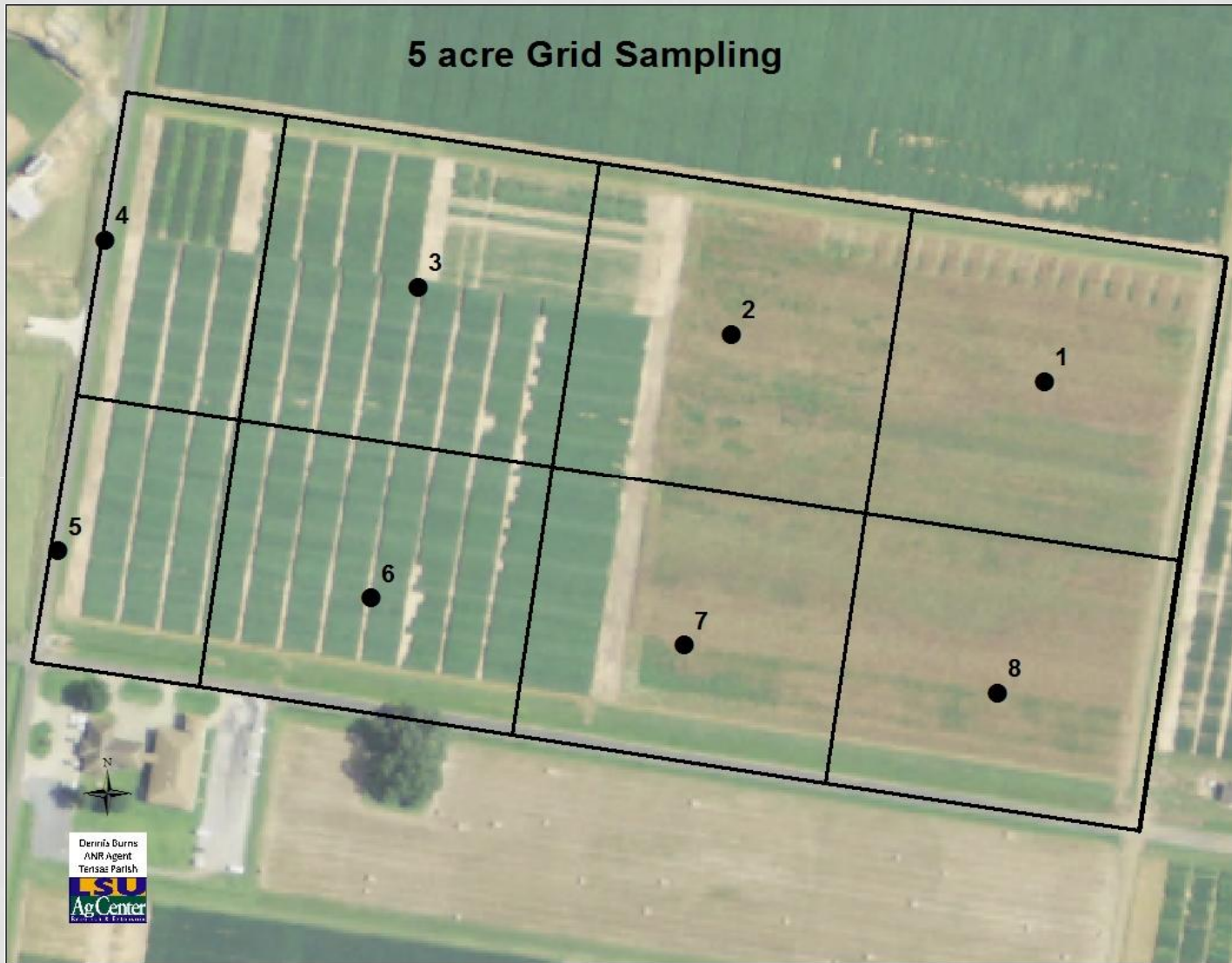


Dennis Egan
2011 Agent
Teresa Parikh
KSU
Ag Center

2.5 acre Grid Sampling Overlaid on Shallow Ec Zones

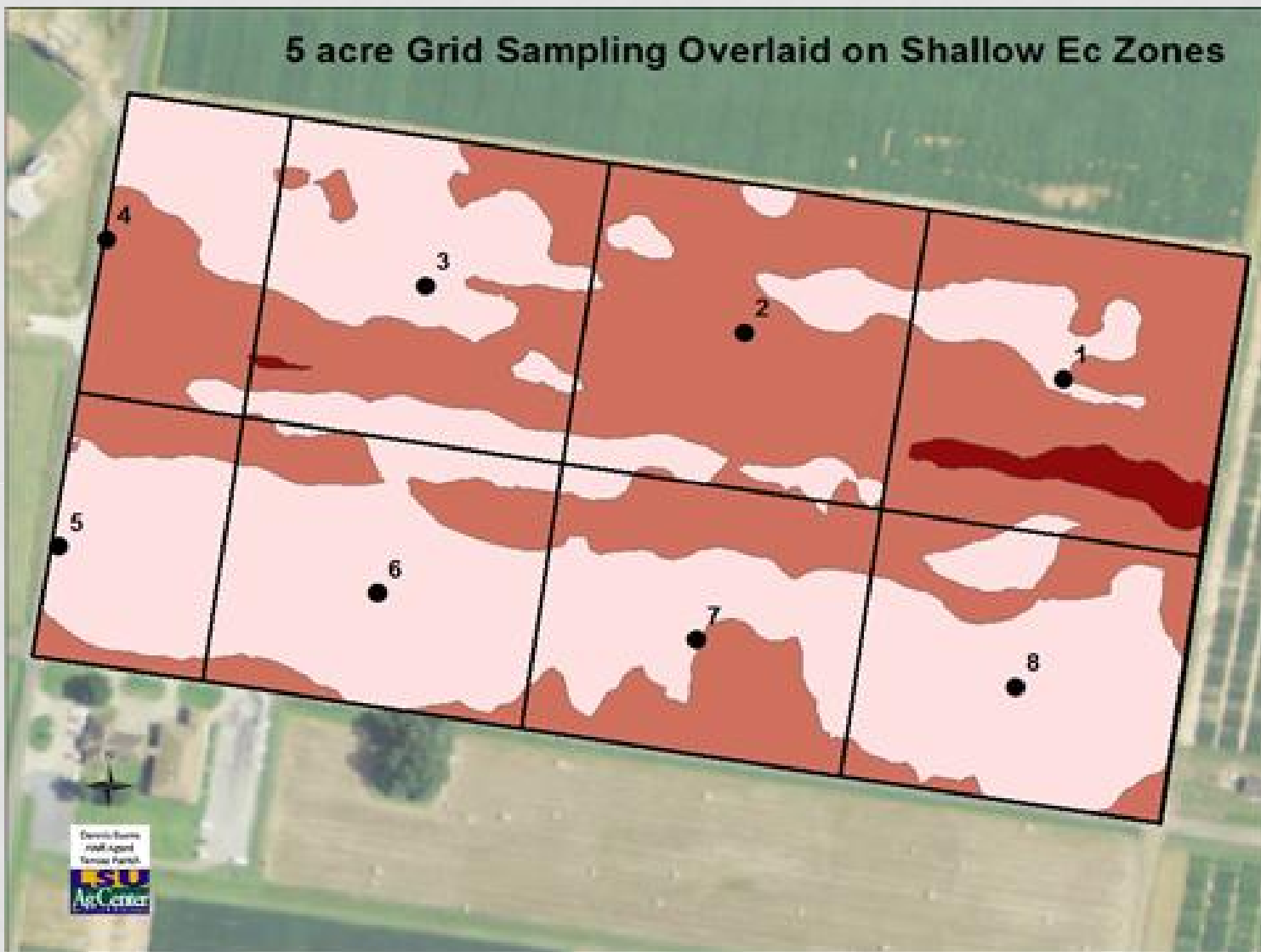


5 acre Grid Sampling



Dennis Burns
ANR Agent
Terrebonne Parish
LSU
Ag Center
Louisiana State University

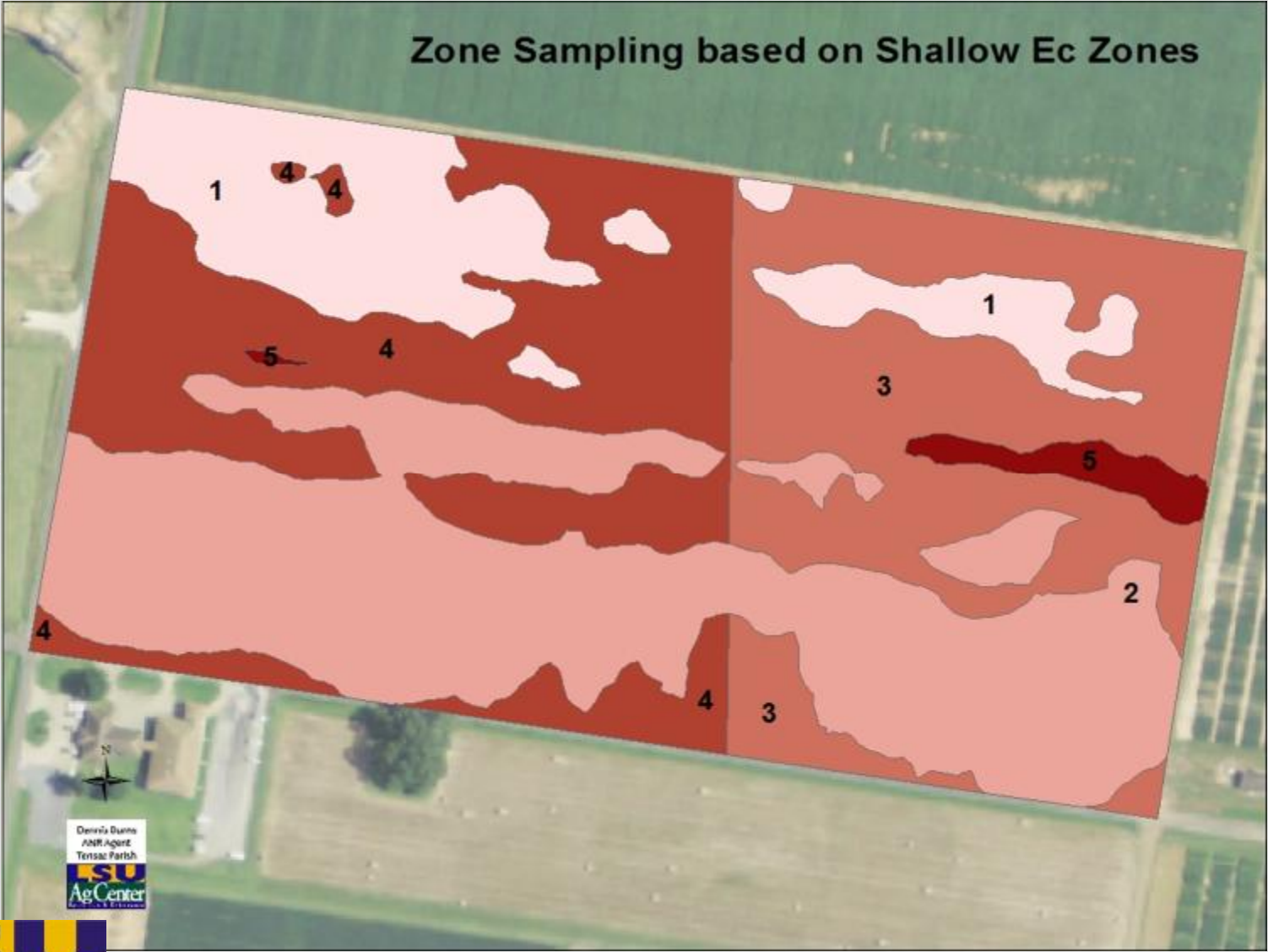
5 acre Grid Sampling Overlaid on Shallow Ec Zones



ZONE SAMPLING

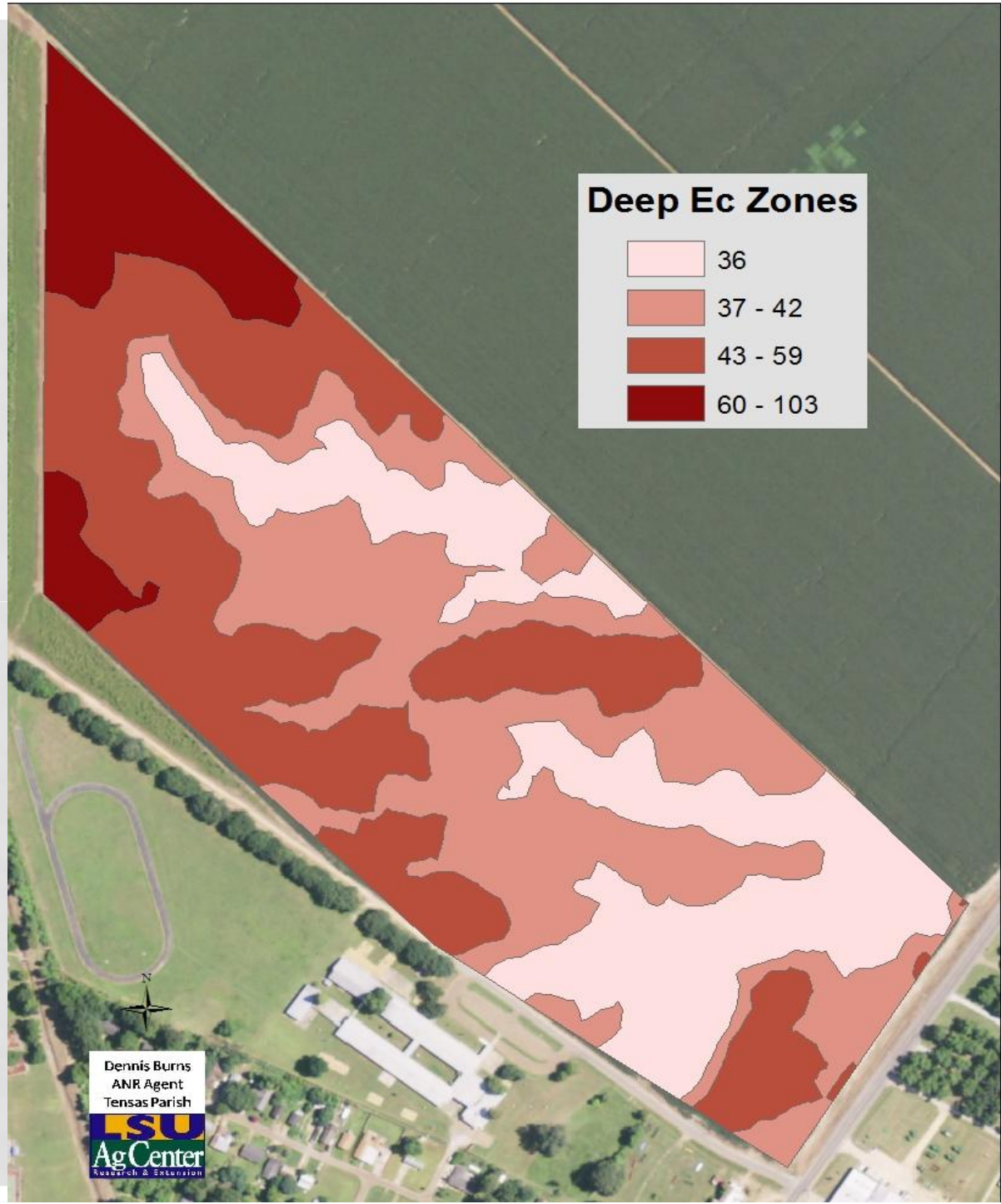
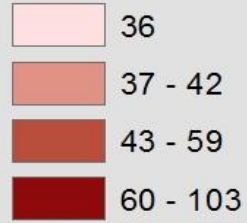
- Similar to grid
 - Chose size of zones
 - Should not go over 10 acres
 - Dependent on soil variability

Zone Sampling based on Shallow Ec Zones



Dennis Duane
ANR Agent
Tensas Parish
LSU
AgCenter

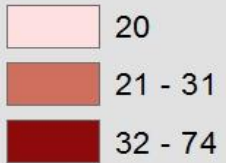
Deep Ec Zones



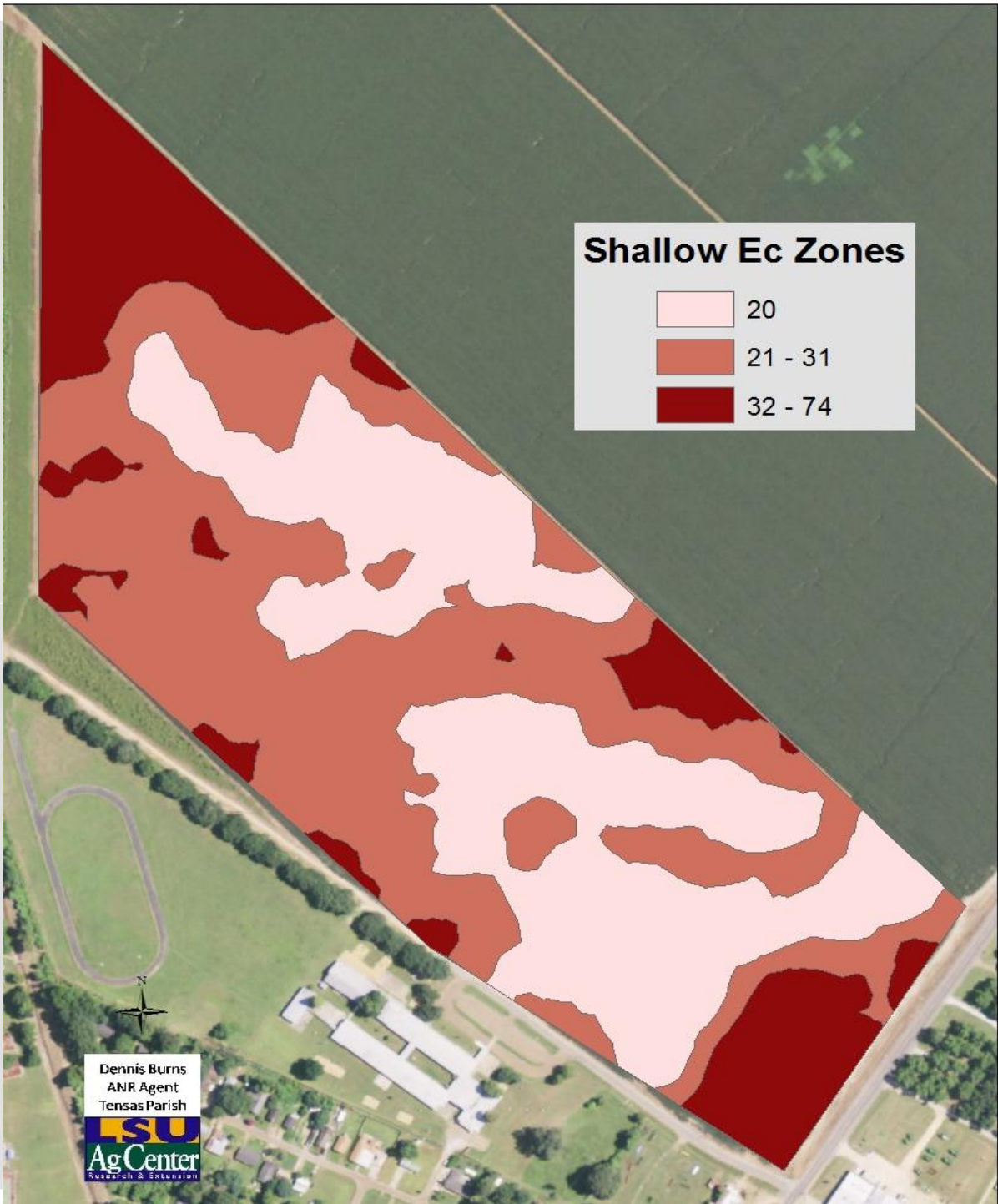
Dennis Burns
ANR Agent
Tensas Parish



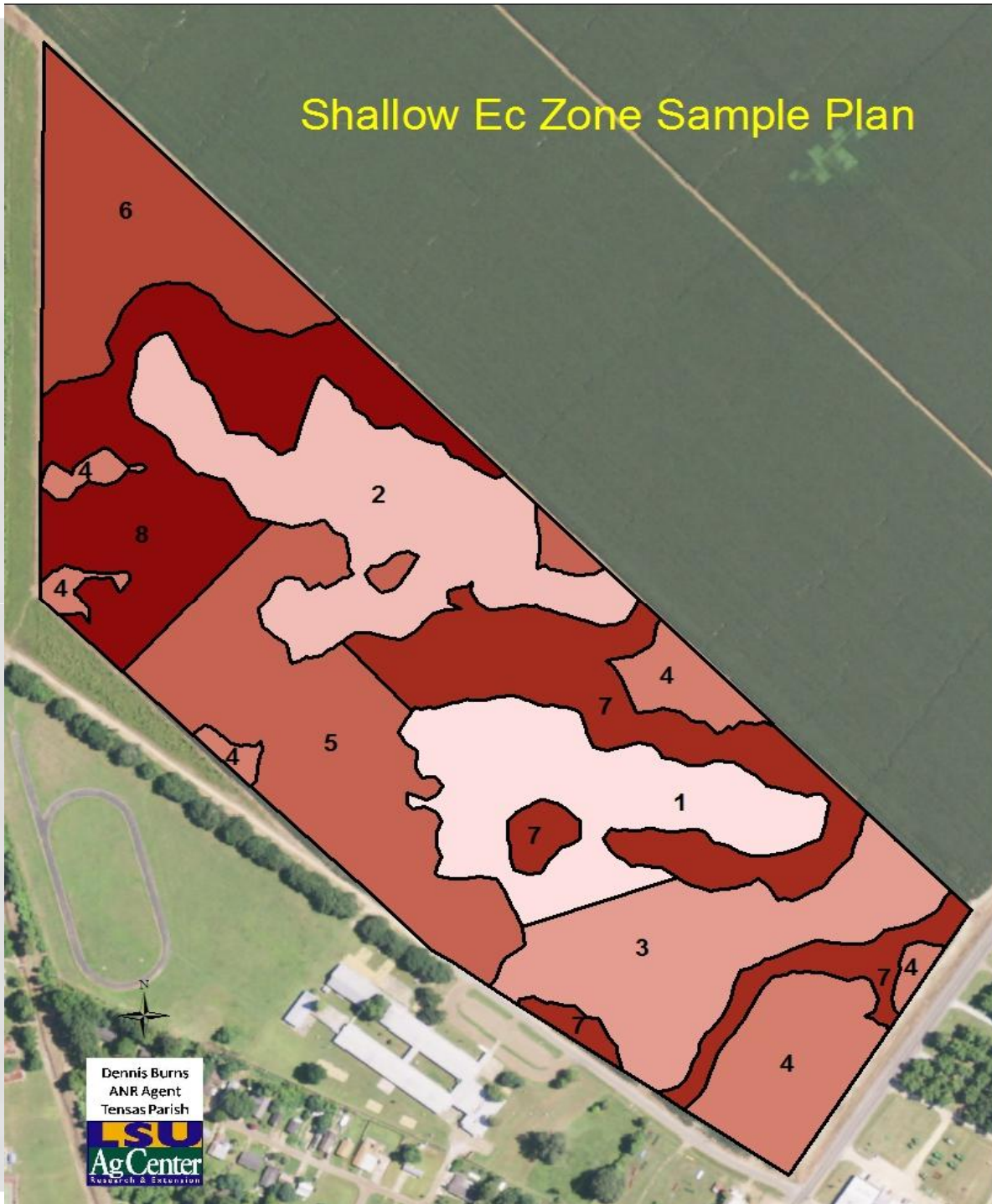
Shallow Ec Zones

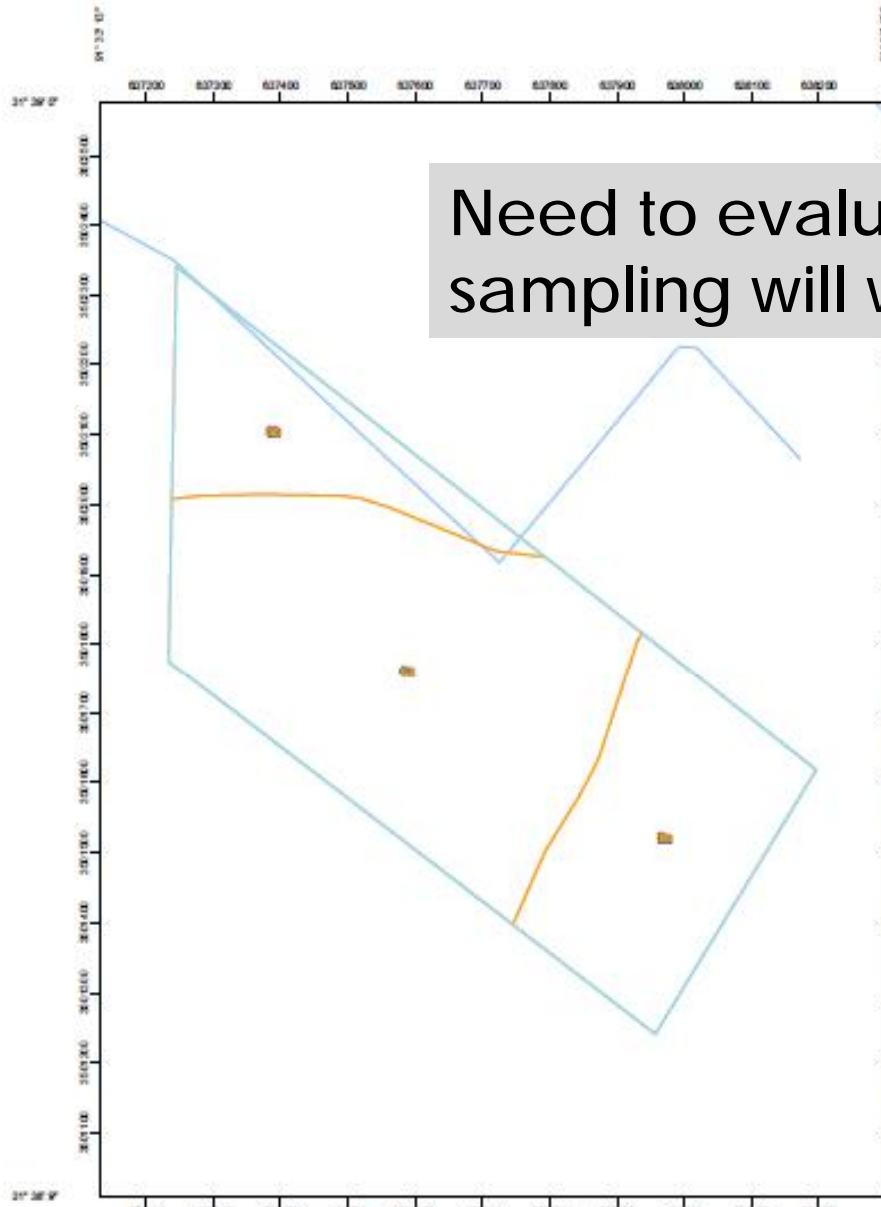


Dennis Burns
ANR Agent
Tensas Parish

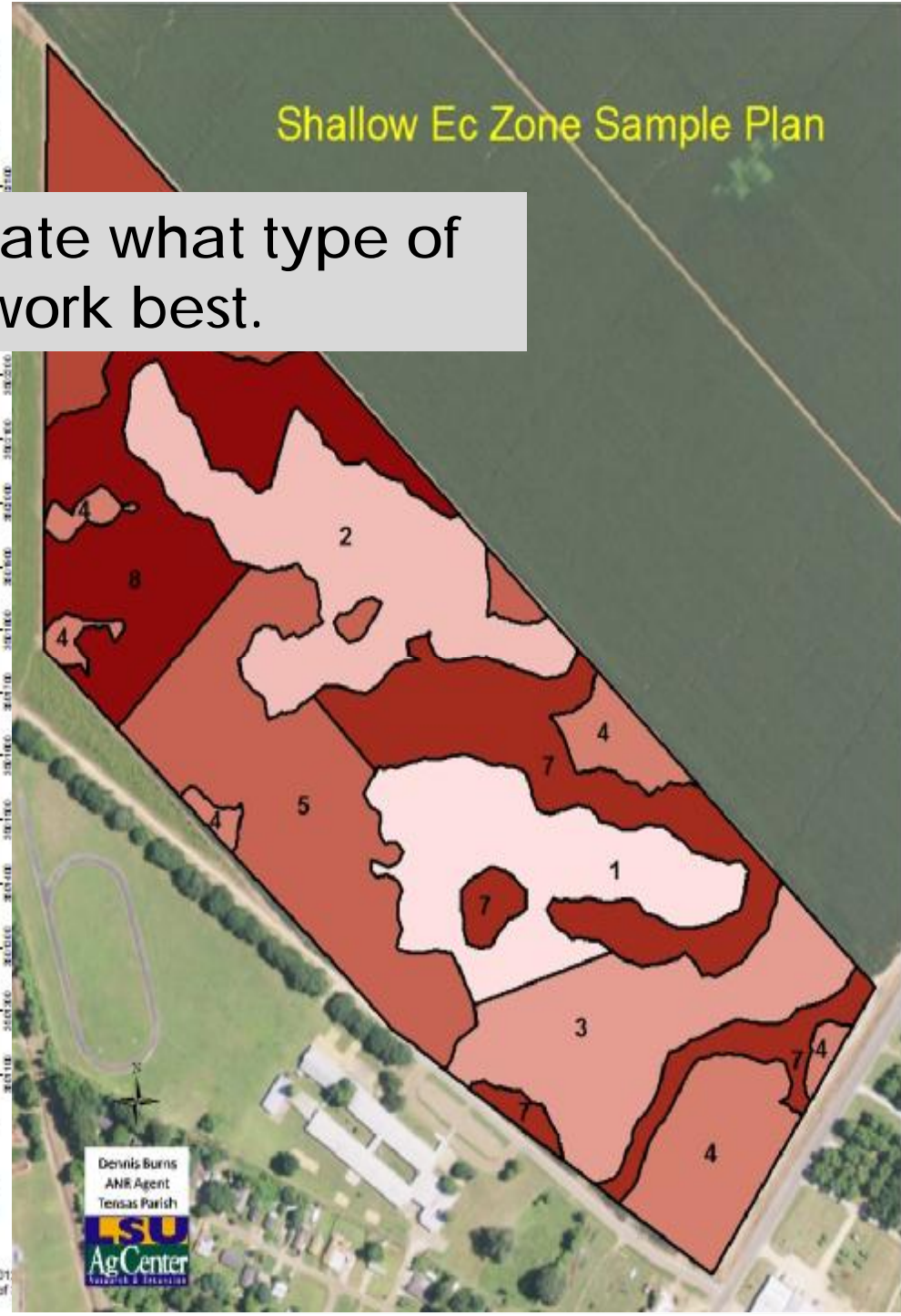


Shallow Ec Zone Sample Plan





Need to evaluate what type of sampling will work best.



WHAT METHOD SHOULD I USE?

- Make use of other data:
 - EC data
 - Yield data (multiple year average)
 - Soil Map
- What are you interested in evaluating?
 - pH, P, K, or micronutrients
- How much variability is there in the field?

WHAT METHOD SHOULD I USE?

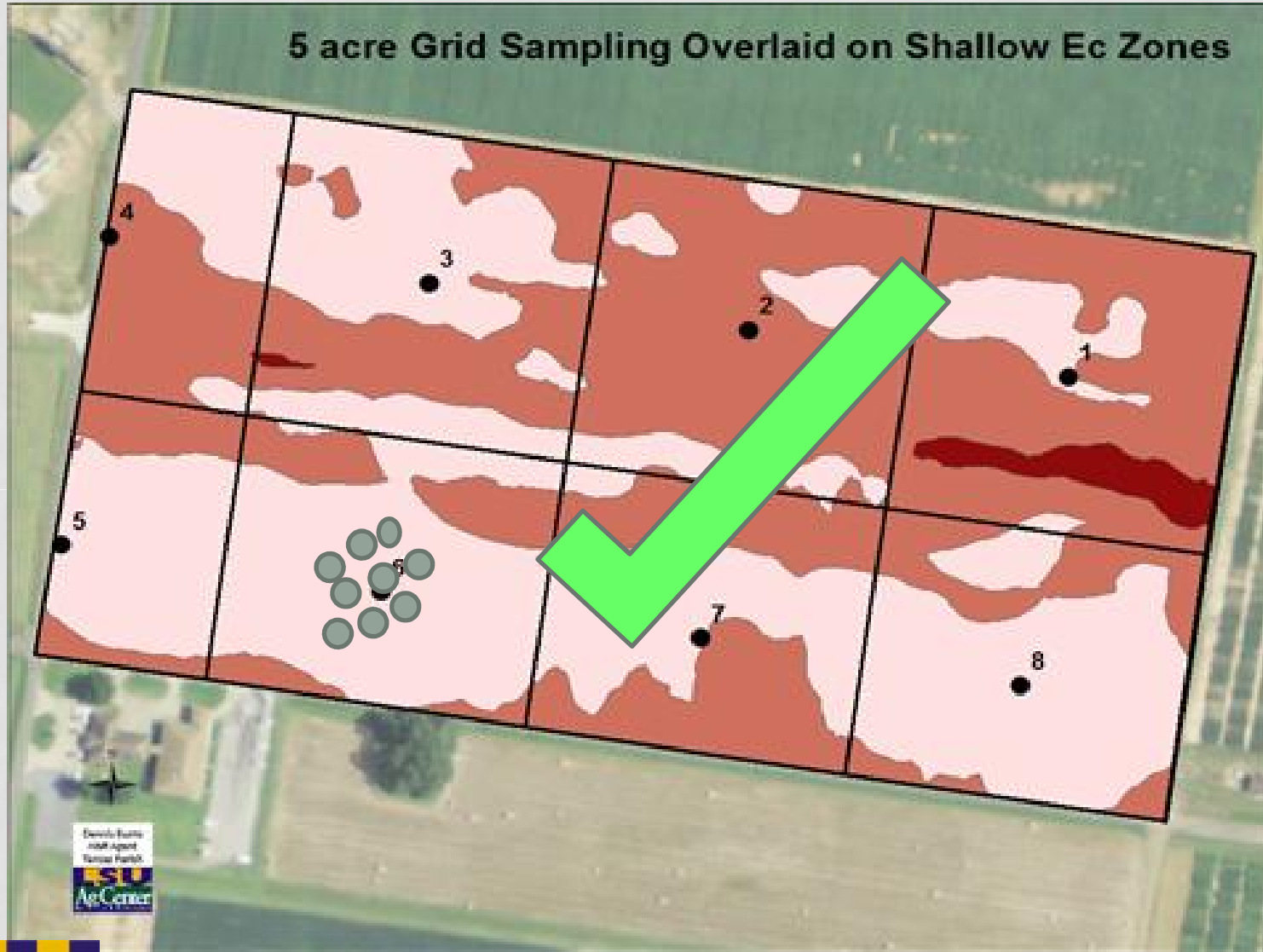
- Make use of other data:
 - Producers knowledge
 - EC data
 - Yield data (multiple year average)
 - Soil Map
- What are you interested in evaluating?
 - pH, P, K, or micronutrients
- How much variability is there in the field?

TAKING THE SOIL SAMPLES

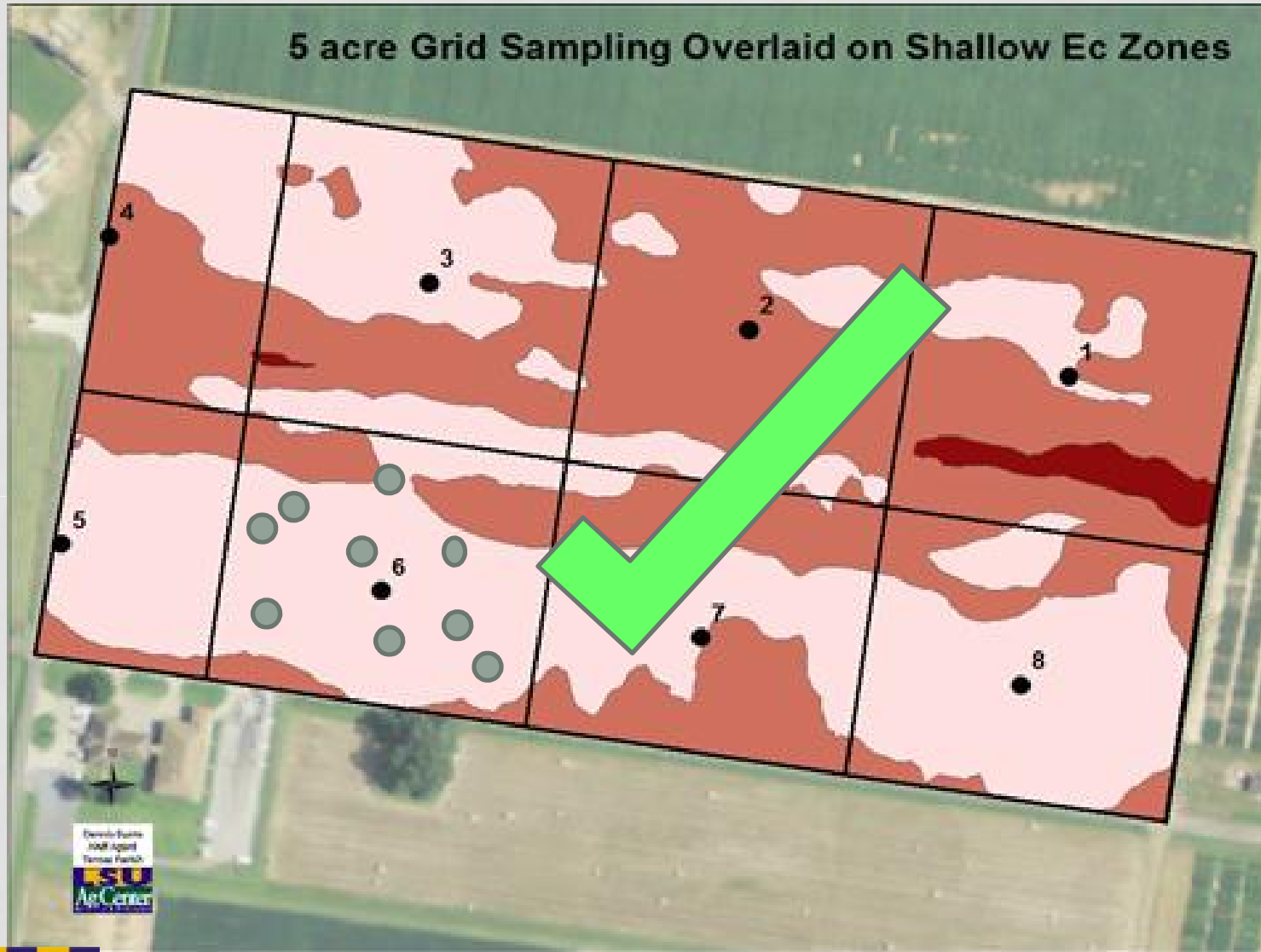
- Multiple cores need to be taken to reduce variability
 - 15-20 samples from each zone or grid
- If the field is using banded fertilizer (Phosphorous), it has been shown that samples should be taken with the following ratio
 - 30 inch band spacing – 1: 20(1 sample from a band for every 20 samples in the zone)
 - 24 inch band spacing – 1:16 (1 band sample for every 16)
 - 12 inch band spacing – 1:8

Page 8-4 in Four R book

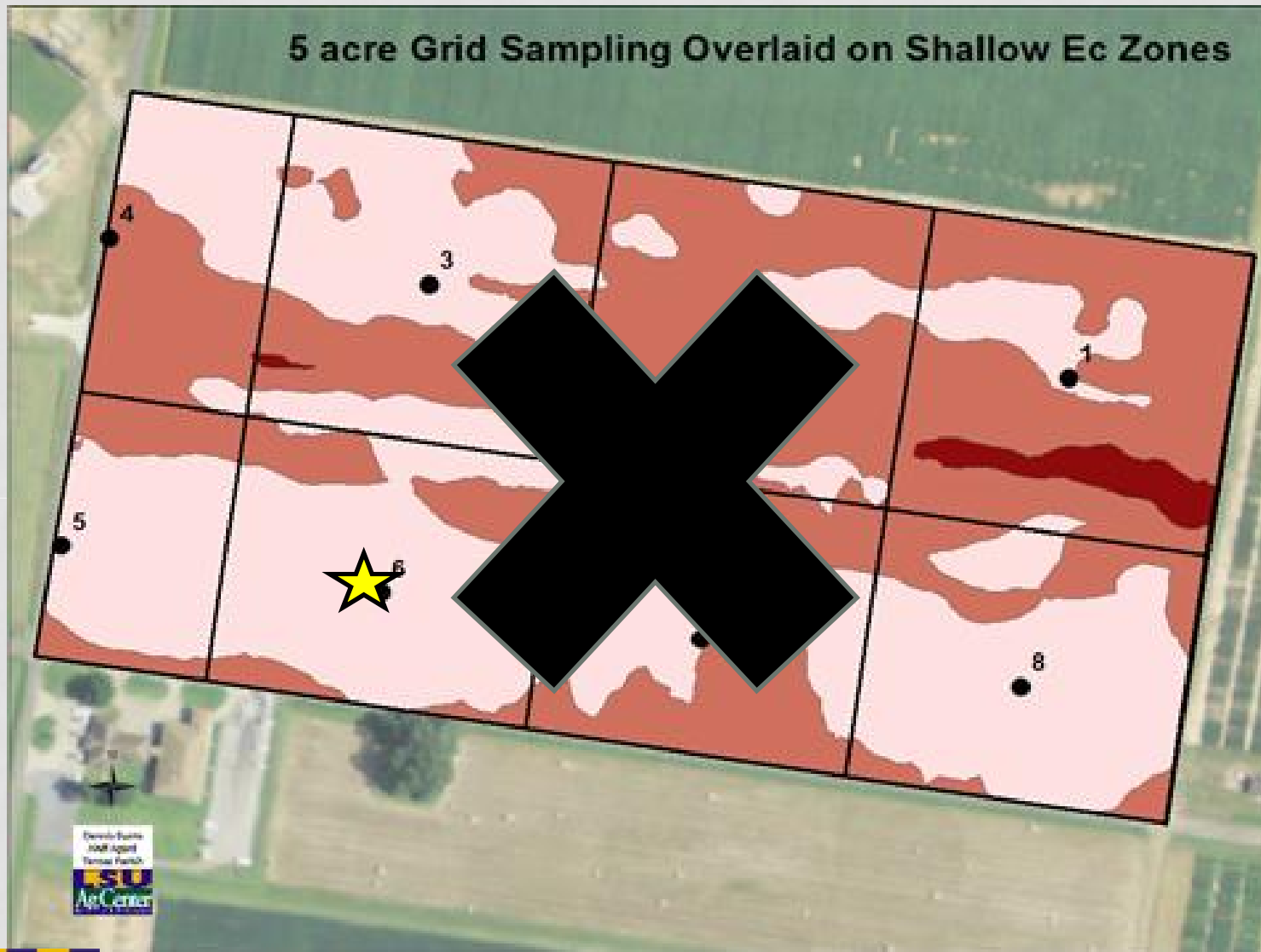
5 acre Grid Sampling Overlaid on Shallow Ec Zones



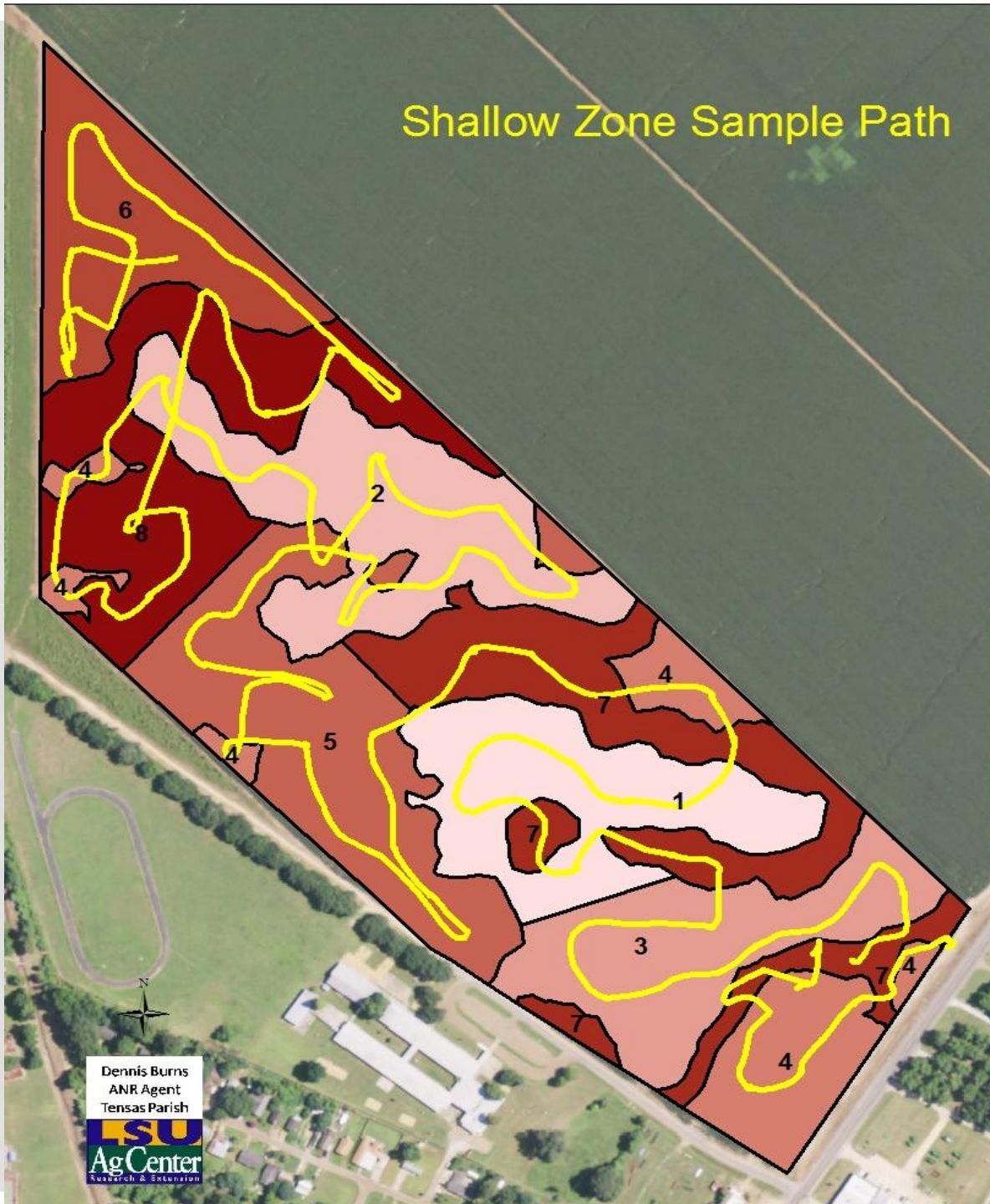
5 acre Grid Sampling Overlaid on Shallow Ec Zones



5 acre Grid Sampling Overlaid on Shallow Ec Zones



Shallow Zone Sample Path



WEB SOIL SURVEY

- Soil survey data online
 - Quicker data delivery
 - Decide what data is relevant
 - Must use Internet Explorer
-
- www.websoilsurvey.nrcs.usda.gov

WEB SOIL SURVEY

The screenshot shows a web browser window with the address bar displaying 'ipp/HomePage.htm' and the page title 'Web Soil Survey - Home'. The browser's address bar also shows several navigation links: PAWS, AgCenter Remote Support, LSU 4-H Intranet, LSU 4-H Enrollment, Dynamics in IE, and Web Slice Gallery. The main content area features a header with the USDA logo, the text 'United States Department of Agriculture Natural Resources Conservation Service', and a large image of soil samples with the text 'Web Soil Survey'. Below the header is a navigation menu with links for 'Home', 'About Soils', 'Help', and 'Contact Us'. The main content area includes a search box, a 'START WSS' button, a 'Welcome to Web Soil Survey (WSS)' section with a photo of people in a field, and a 'Four Basic Steps' section with a '1 Define' step and a screenshot of the 'Area of Interest (AOI)' tool. On the right side, there are two sections: 'I Want To...' with links for starting WSS, requirements, hours of operation, and finding soil data; and 'Announcements/Events' with links for WSS 2.3 release and release history. At the bottom left, there is a logo for 'LSU AgCenter Research & Extension'.

ipp/HomePage.htm Web Soil Survey - Home

PAWS AgCenter Remote Support LSU 4-H Intranet LSU 4-H Enrollment Dynamics in IE Web Slice Gallery

USDA United States Department of Agriculture Natural Resources Conservation Service

Web Soil Survey

Home About Soils Help Contact Us

You are here: Web Soil Survey 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

START WSS

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

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.

Four 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 – will Web Soil Survey work in my web browser?
- Know the Web Soil Survey hours of operation
- Find what areas of the U.S. have soil data

Announcements/Events

- Web Soil Survey 2.3 has been released! View description of new features.
- Web Soil Survey Release History

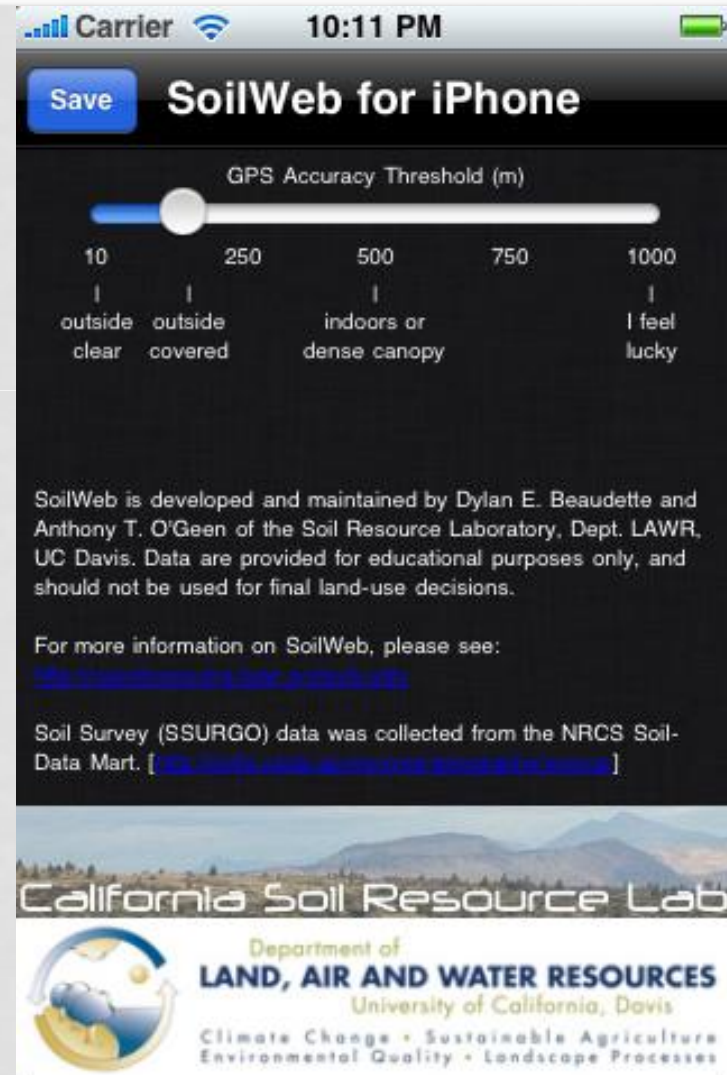
I Want Help With...

- Getting Started With Web Soil Survey
- How to use Web Soil

LSU AgCenter Research & Extension

SoilWeb

- App for iPhone and Android phones



SoilWeb

Carrier 10:11 PM

Get My Location Help

Instructions:

1. click "get my location" to enable GPS
2. if sufficient accuracy is not attained by the GPS, adjust accuracy threshold slider on back page
3. once soils information is returned, click one of the two links associated with soil profile images
4. click the "back arrow" button to return to this screen at any time

Pollasky (40%)
Typic Xerorthents

0 cm
8 cm
20 cm
86 cm
99 cm

terraces/Summit

Accuracy Thresh: 146 m acquiring location...

Carrier 10:11 PM

Get My Location Help

Pollasky (40%)
Typic Xerorthents

0 cm
8 cm
20 cm
86 cm
99 cm

Pollasky-Montpellier complex, 9 to 15 percent slopes erosion remnants terraces / Summit

Montpellier (40%)
Typic Haploxeralfs

0 cm
10 cm
28 cm
51 cm
86 cm
109 cm
140 cm
152 cm

Pollasky-Montpellier complex, 9 to 15 percent slopes erosion remnants / Backslope

Accuracy: 100 m request complete

WHAT IS ON THE HORIZON?

- Evaluating N management
 - Recommendations
 - Especially alluvial clays – irrigated
- Evaluating K application techniques
 - Split applications (Corn)
- Cover Crops
 - What all can they provide?

QUESTIONS?