

## Cotton Yield Monitoring: Data Visualization and Interpretation



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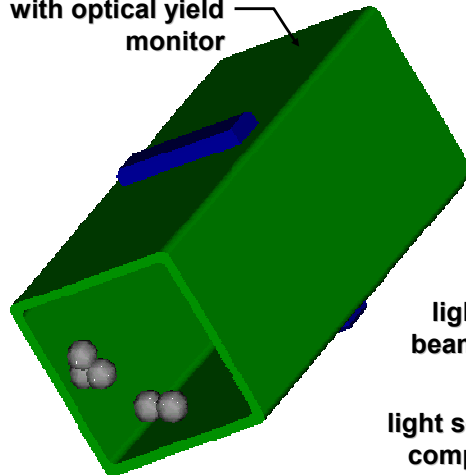


## Presentation Outline

- Basic information of yield monitors
- Components of yield monitors
- Benefits of using yield monitors
- Yield data to delineate management zones
- Cost of yield monitoring system and related components



cotton picker duct with optical yield monitor



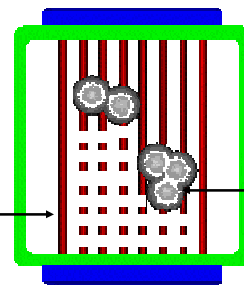
light emitting component

duct wall

cotton bolls

light beams

light sensing component



Glen Rains and Calvin Perry, Biological and Agricultural Engineering, University of Georgia

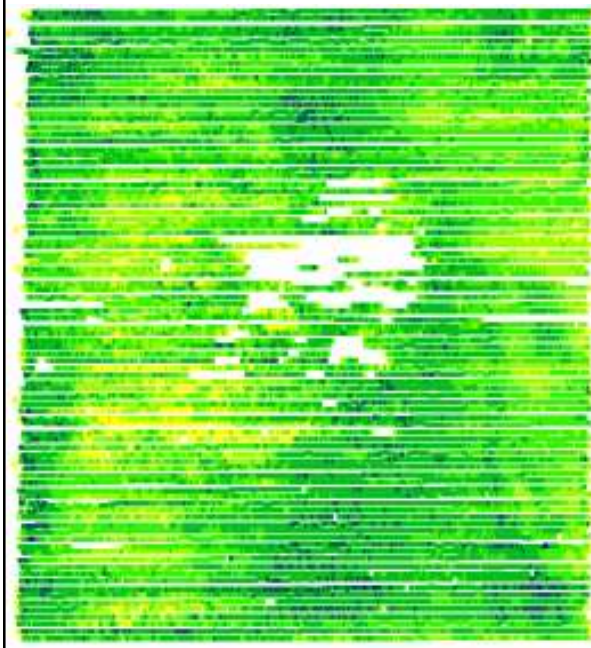
## Hardware:

- Several brands (AgLeader, Agriplan, Farmscan)
  - Optical sensors → flow rate information
  - Fan speed sensor → compensation
  - GPS receiver → position information
  - Console display → computations

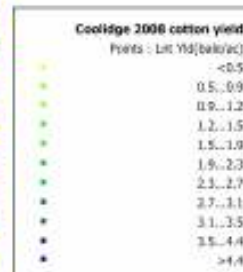
## Software:

- Farm management proprietary software (Case-IH, John Deere)
- High-end GIS
- Generic GIS





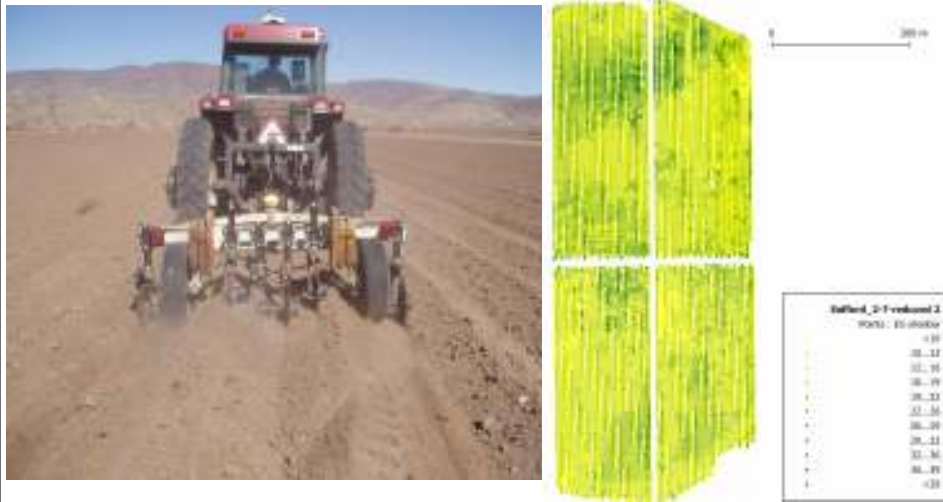
- Visual interpretation:
- Extent of variability
  - Detect (confirm) problematic zones
  - Improve management



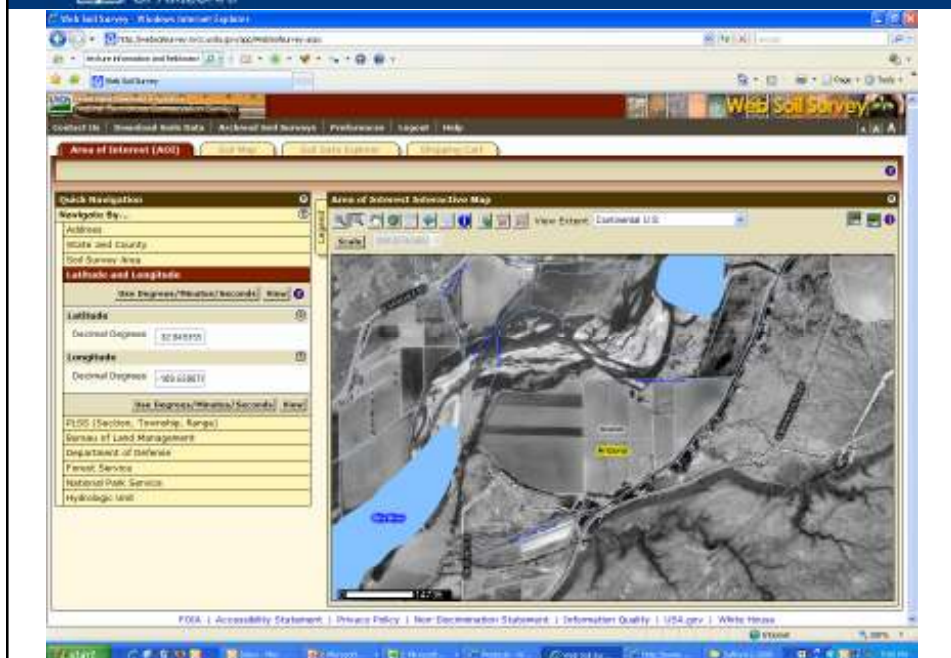
Integrating different layers of information :

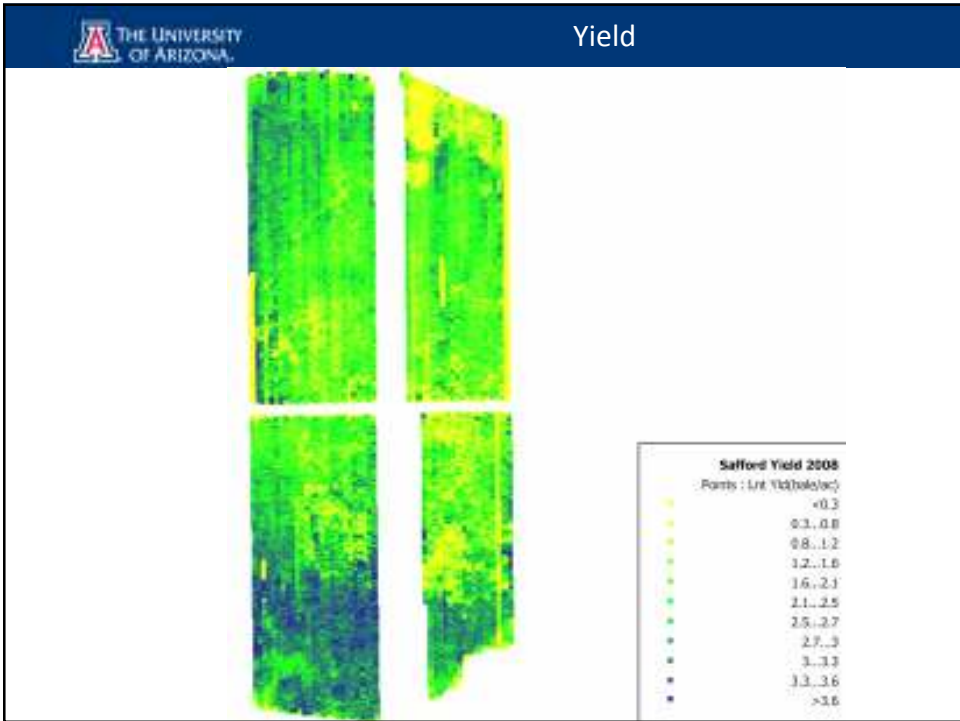
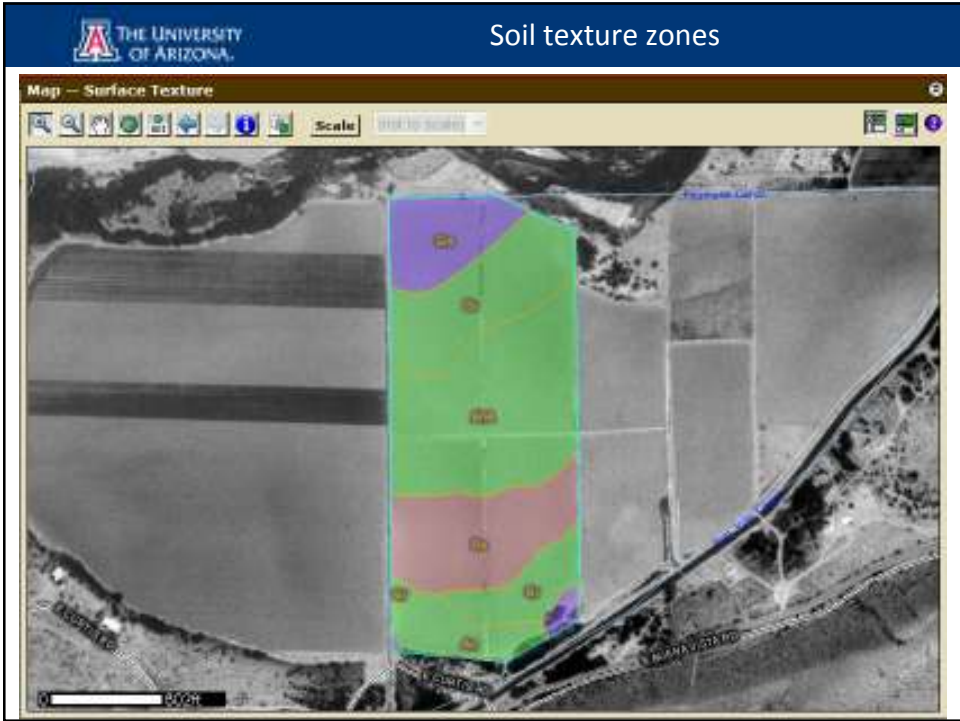
- Physical
  - Electrical conductivity (bulk)
  - Soil texture
  
- Chemical
  - Salinity
  
- Biological
  - Nematode population
  - Plant canopy
  - **Yield response**

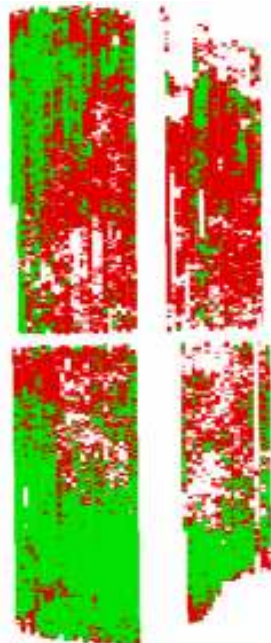
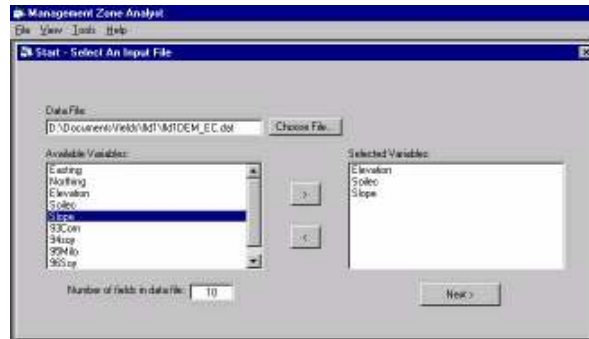
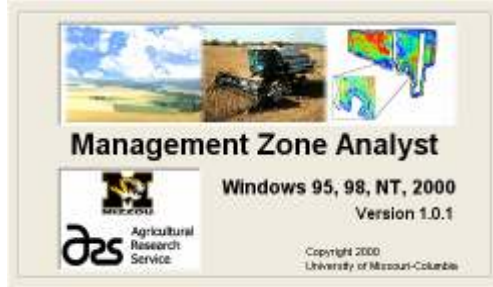
### Soil Electrical Survey



Veris sensor. Apparent Electrical Conductivity ( $EC_a$ )









Hardware:

- Optical sensors
  - Console display
  - Fan speed sensor
- } \$ 10,000
- GPS receiver \$ 1,500
  - Retrofit kit \$ 1,700

Software:

- Farm management proprietary software
- High-end GIS \$ 1,300/year (basic, no modules)
- Generic GIS \$ 300/one-time

Free software and other electronic resources available on-line