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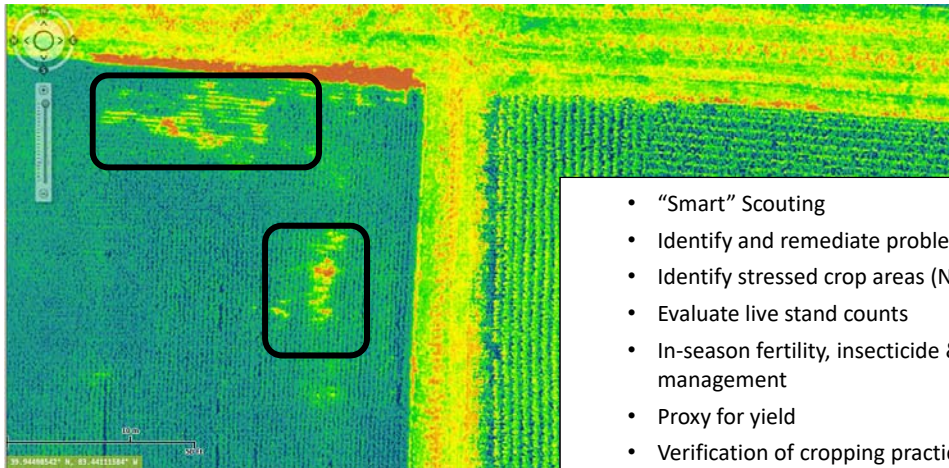
Decision making with High Resolution Crop Imagery

Dr. John Fulton



Food, Agricultural and Biological Engineering

Imagery



Ohio State University, Woopert and the Air Force Research Laboratory.

- “Smart” Scouting
- Identify and remediate problem areas
- Identify stressed crop areas (NDVI)
- Evaluate live stand counts
- In-season fertility, insecticide & fungicide management
- Proxy for yield
- Verification of cropping practices and decisions
- Equipment / management issues

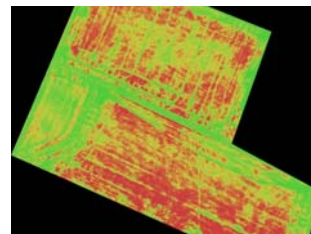



Considerations

- Direct scout with imagery
- Evaluate in-season decisions (N, fungicide, etc.)
- Readily available today at reasonable costs
- Homework...
 - How delivered, accessed and viewed
 - Type of imagery
 - More the better
 - Requires ground truthing
 - Watch out for erroneous data
 - Spatial accuracy if using to create Rx's

Remote Sensed Imagery

- **Types of Imagery:**
 - RGB (Visible)
 - IR (Infrared)
 - RedEdge (RE)
 - NDVI or ADVI
 - Thermal
- **Resolution** for required management / decisions.
- **Multiple images per year needed for in-season decisions and Rx** (overwhelming...).
- **Accessibility of imagery data...**





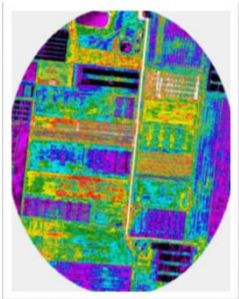
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Remote Sensed Imagery


NDVI / ADVI Imagery

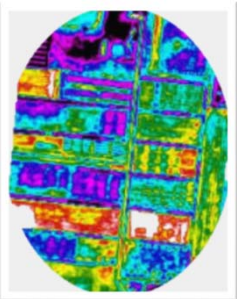
- Measures light being reflected from plants
- Identifies areas of varying biomass & health**
- Aids in differentiating between natural and manmade variability




Thermal Imagery

- Estimate of emitted energy / temperature of plants
- Early indicator of stressed crop areas**
- Aids in smart scouting, replant decisions and is-season management of inputs like fungicides.







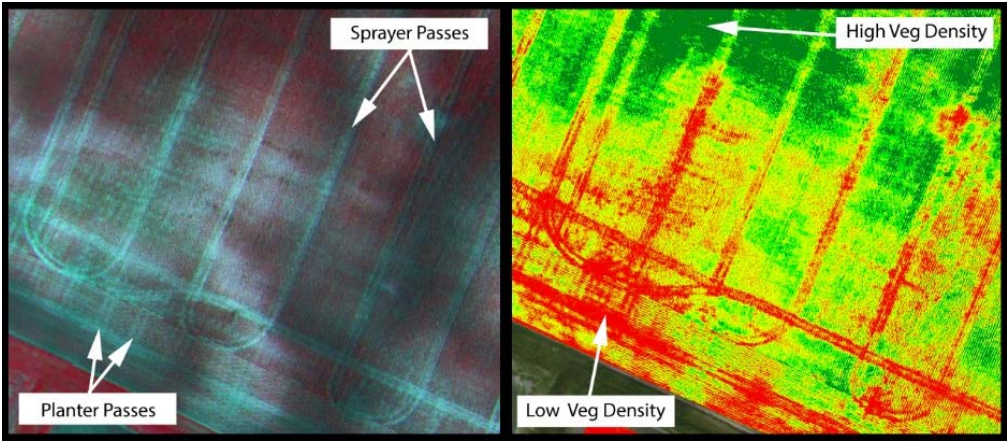
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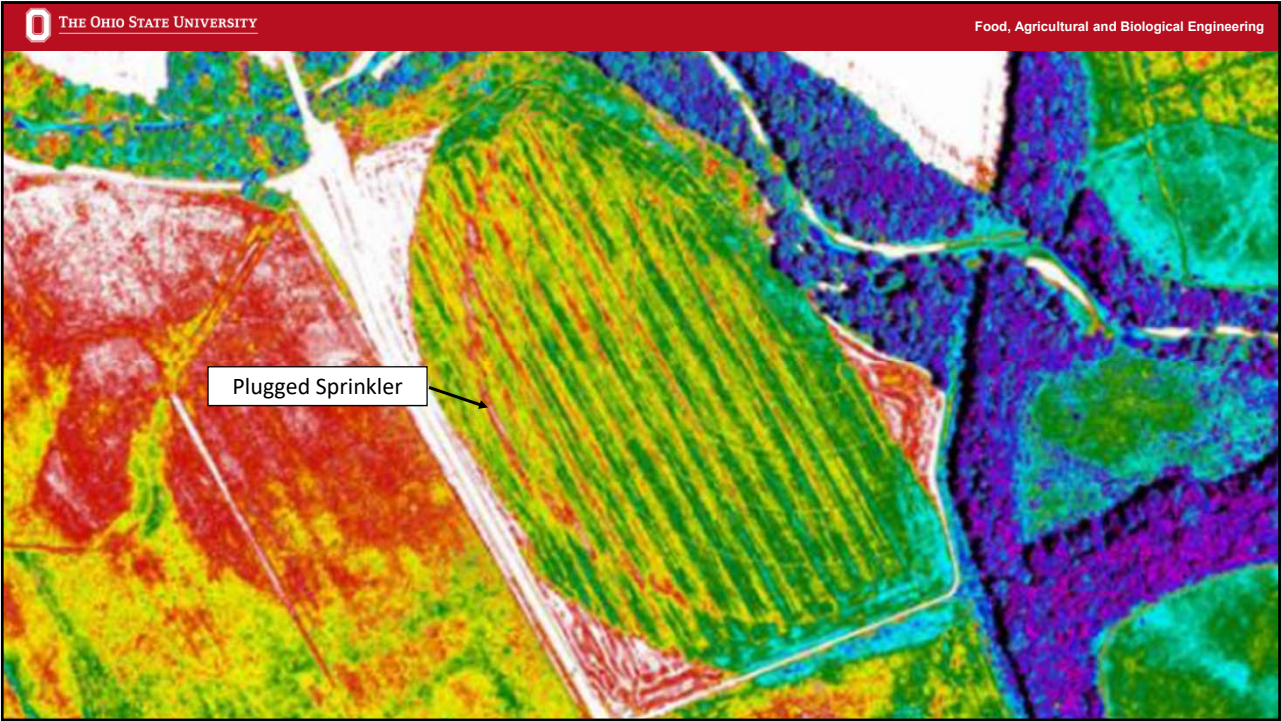
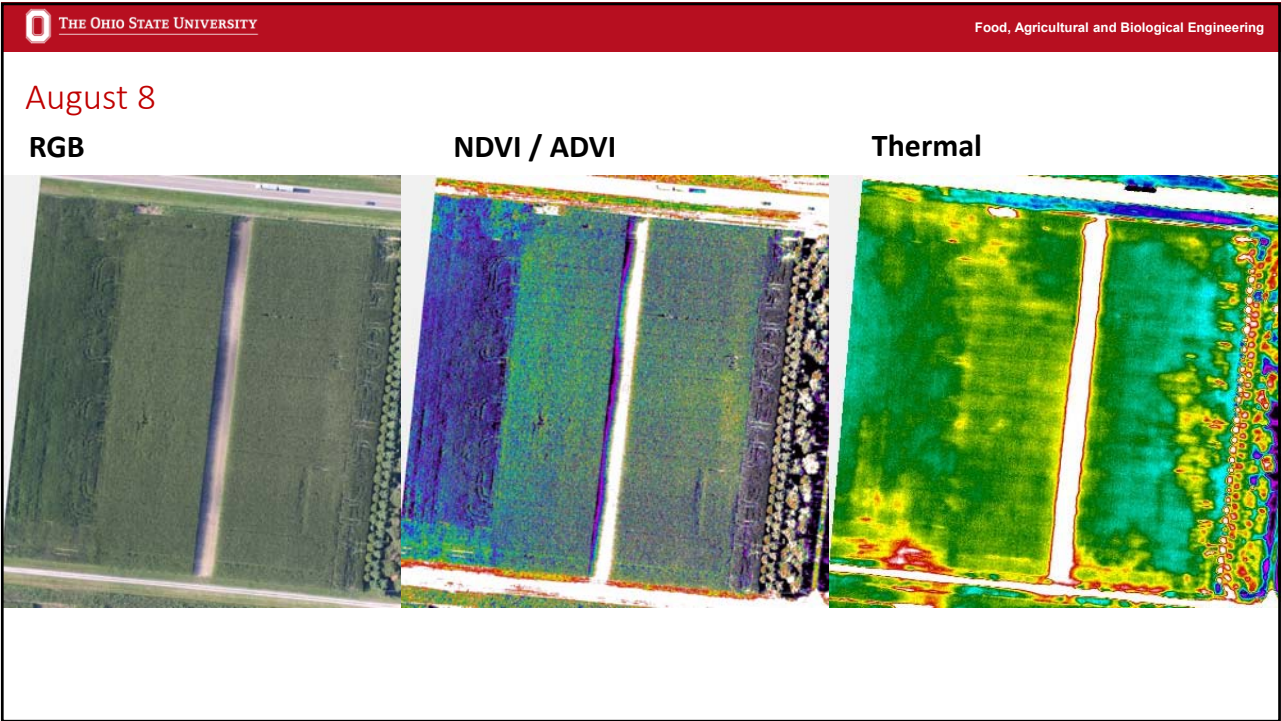
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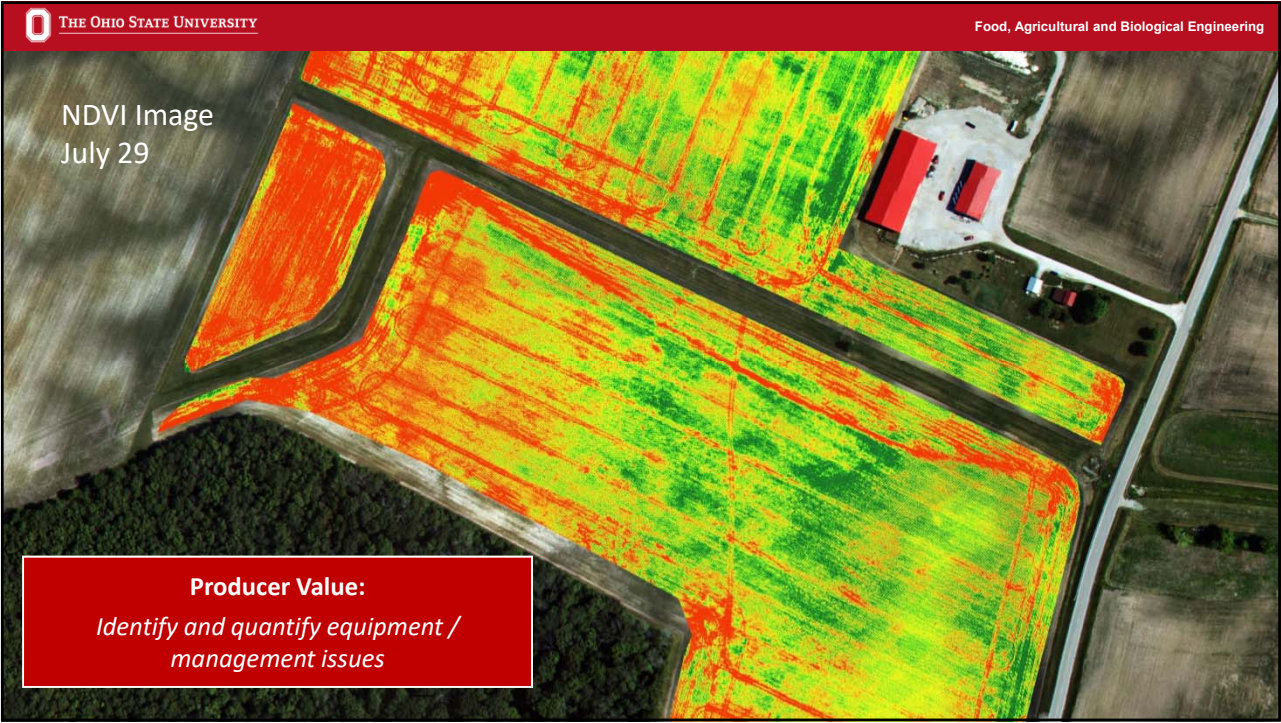
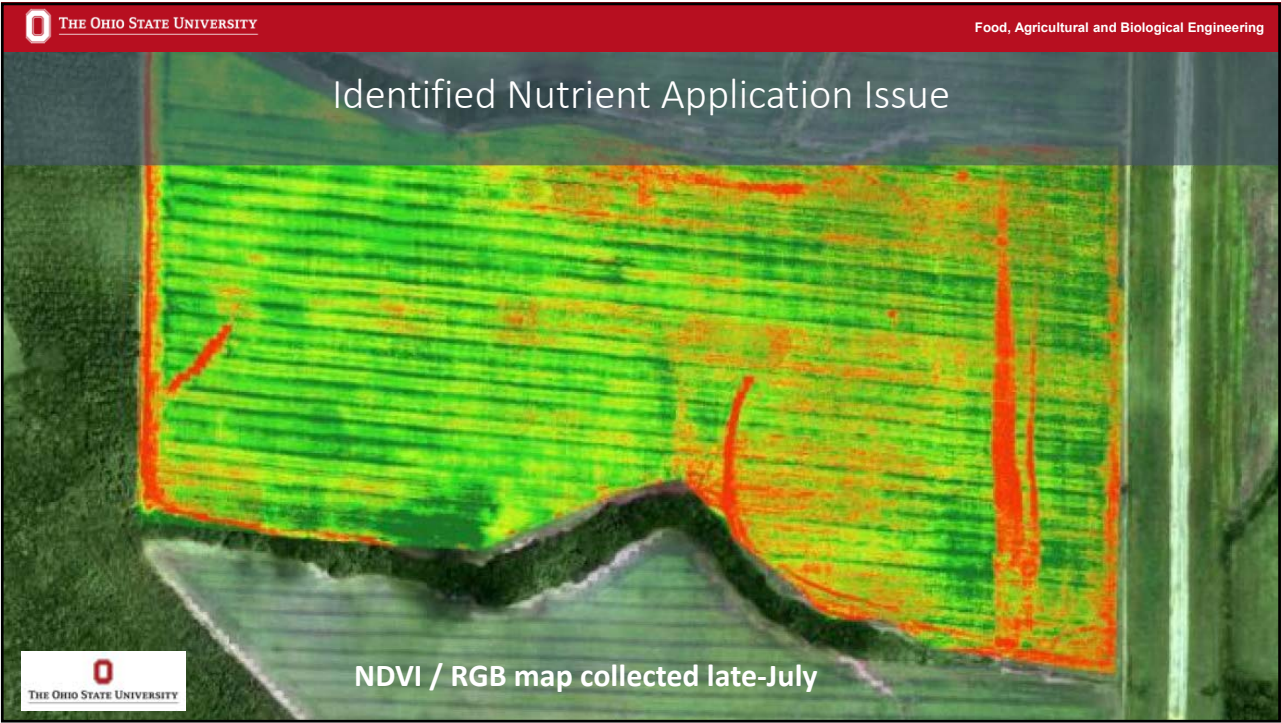
Late June


IR

NDVI / ADVI









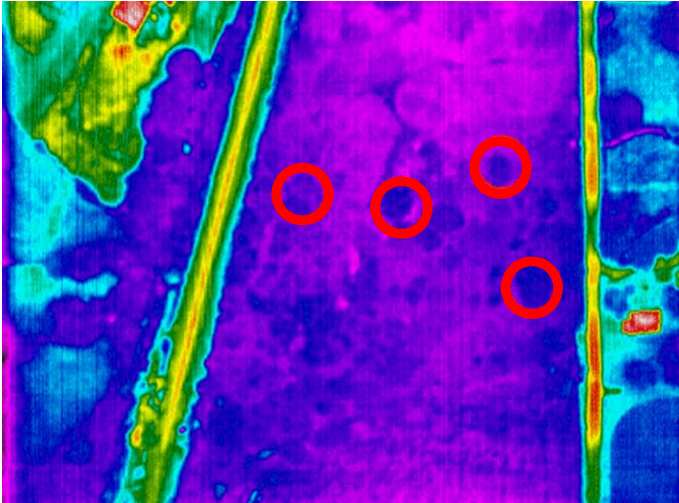
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What can be learned during the season?

ADVI Image: Identified circular patterns that led to SDS (Sudden Death Syndrome)

Associated with drainage and cyst nematode issues





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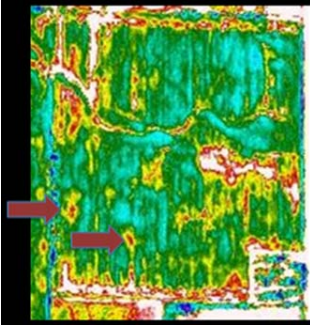
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What can be learned during the season?

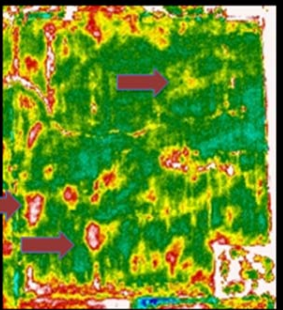
ADVI Imagery: 2 collects mid-season

Identifying disease spread

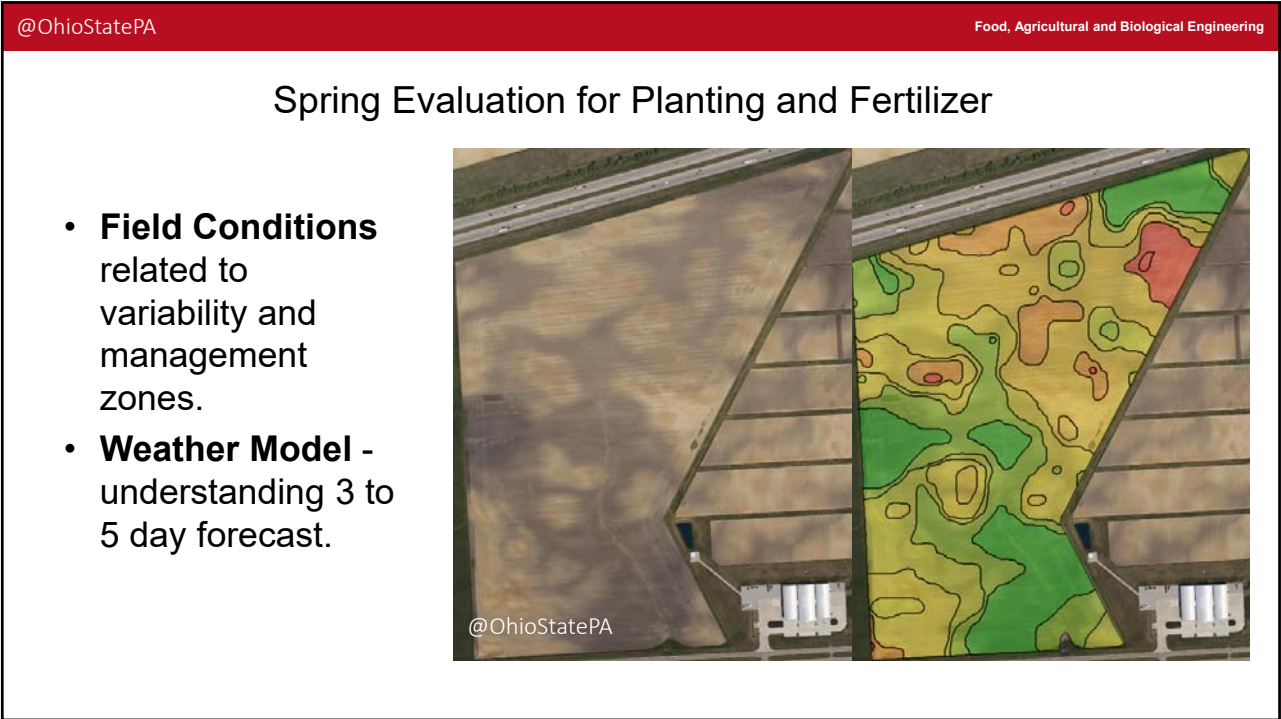
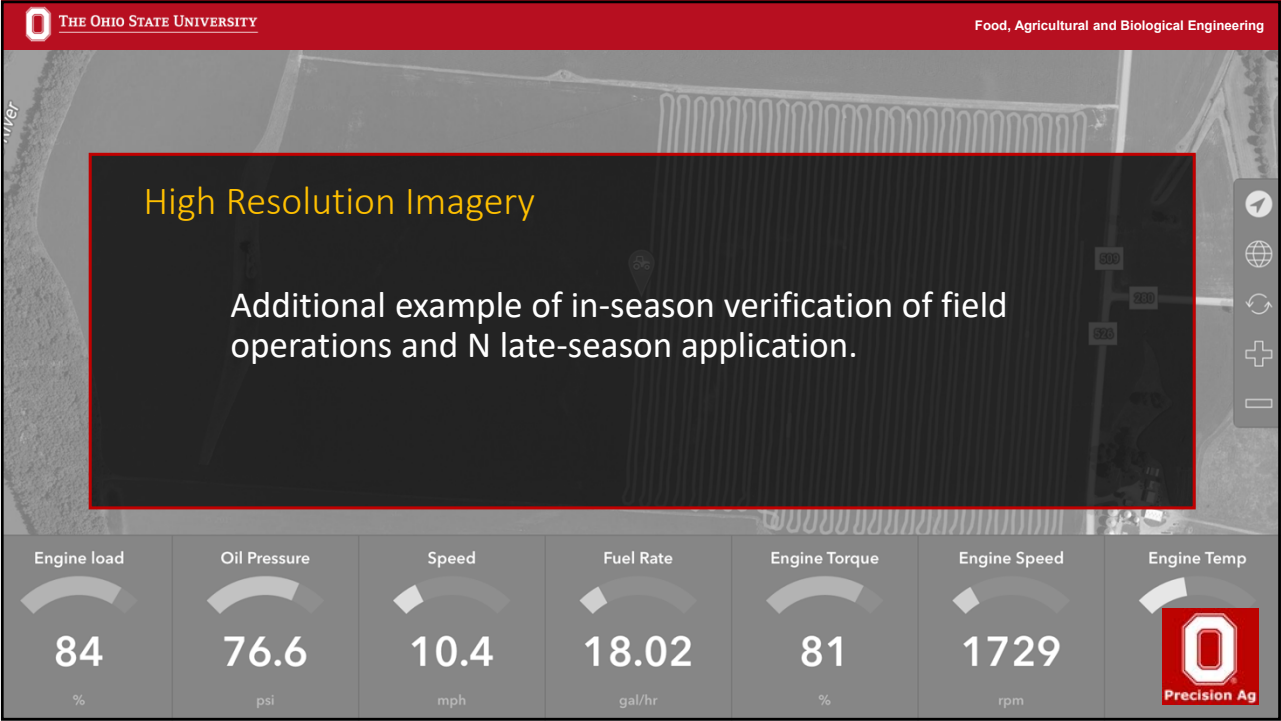
Mid-July

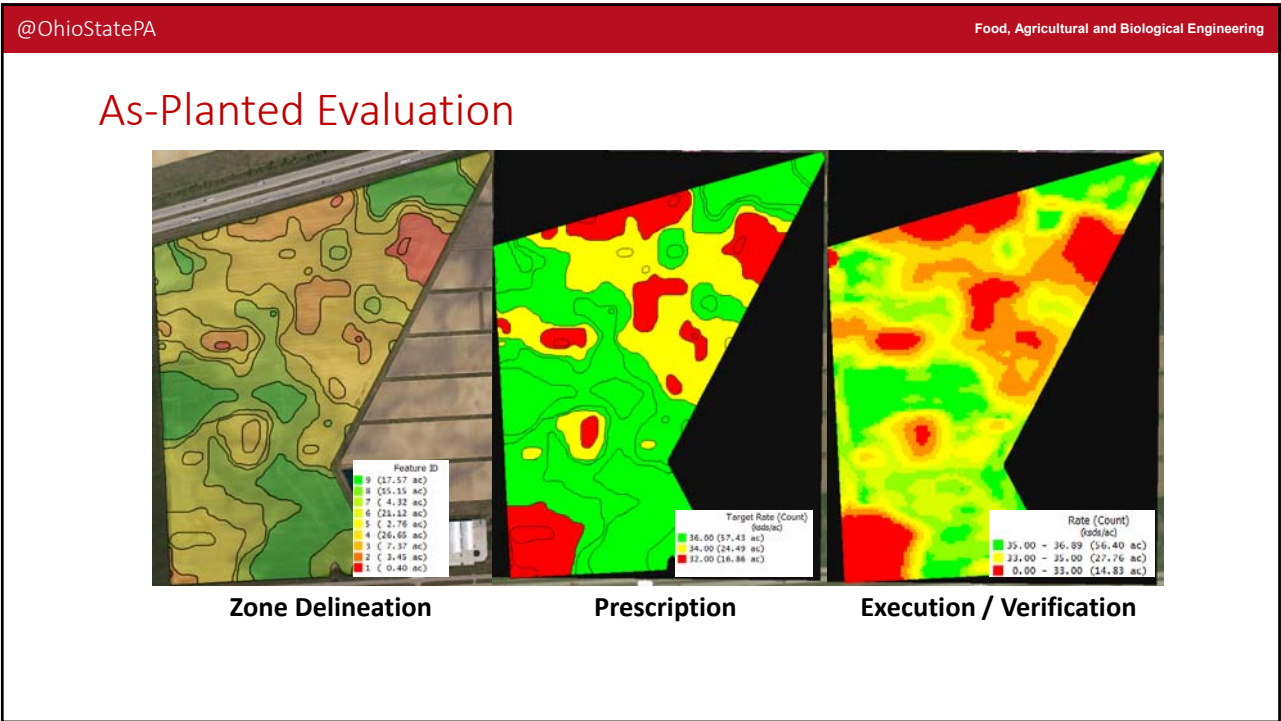
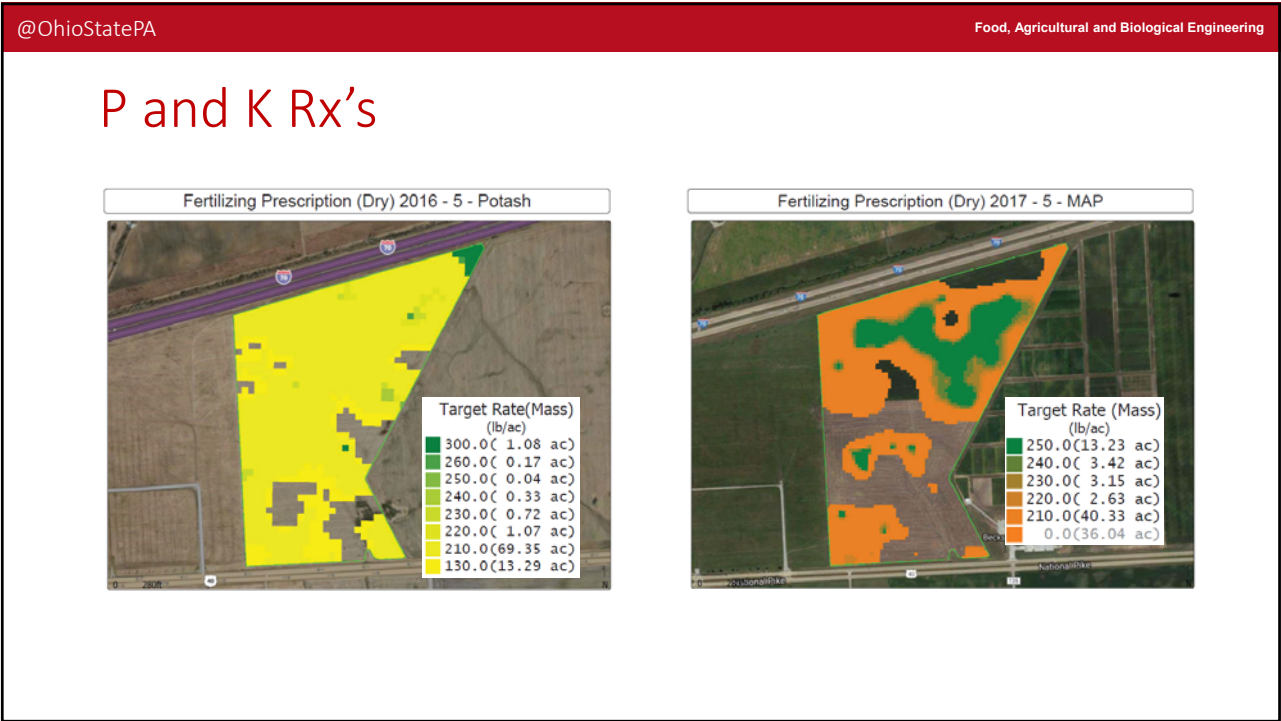


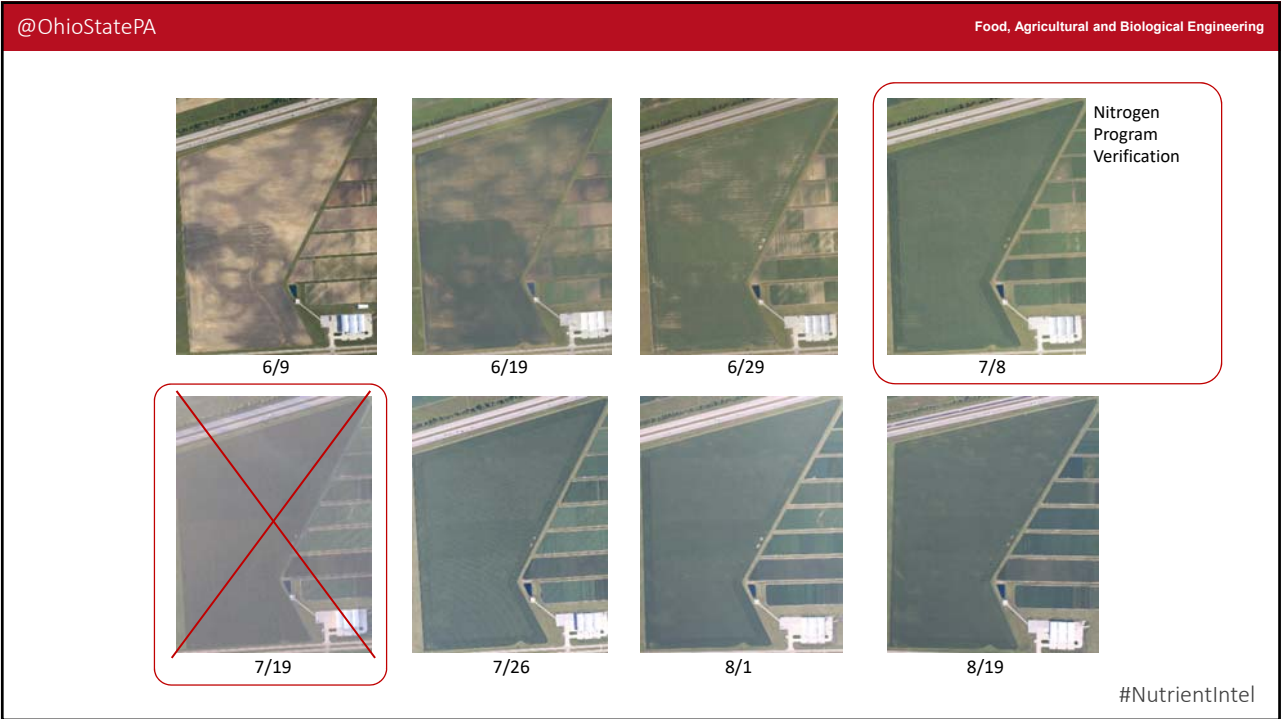
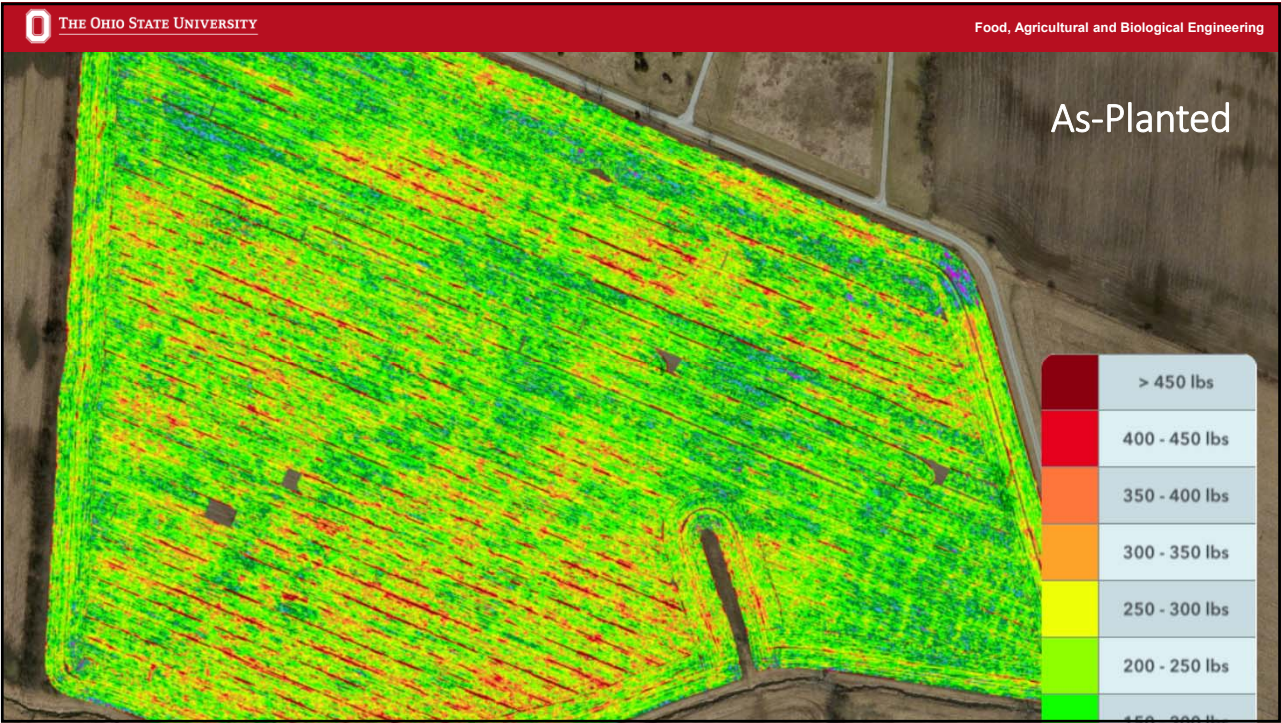
10 days later



Source: Brian Sutton of Sutton Farms / AirScout







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COLLECT IN-SEASON DATA






#4Rs

#NutrientIntel

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Bare Soil (April 17)



Identify varying soil OM , CEC, water holding capacity, and texture.

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Raw

Ortho-rectified

Best Management Practices for Addressing Challenges with Imagery Quality
<https://ohioline.osu.edu/factsheet/fabe-5541>

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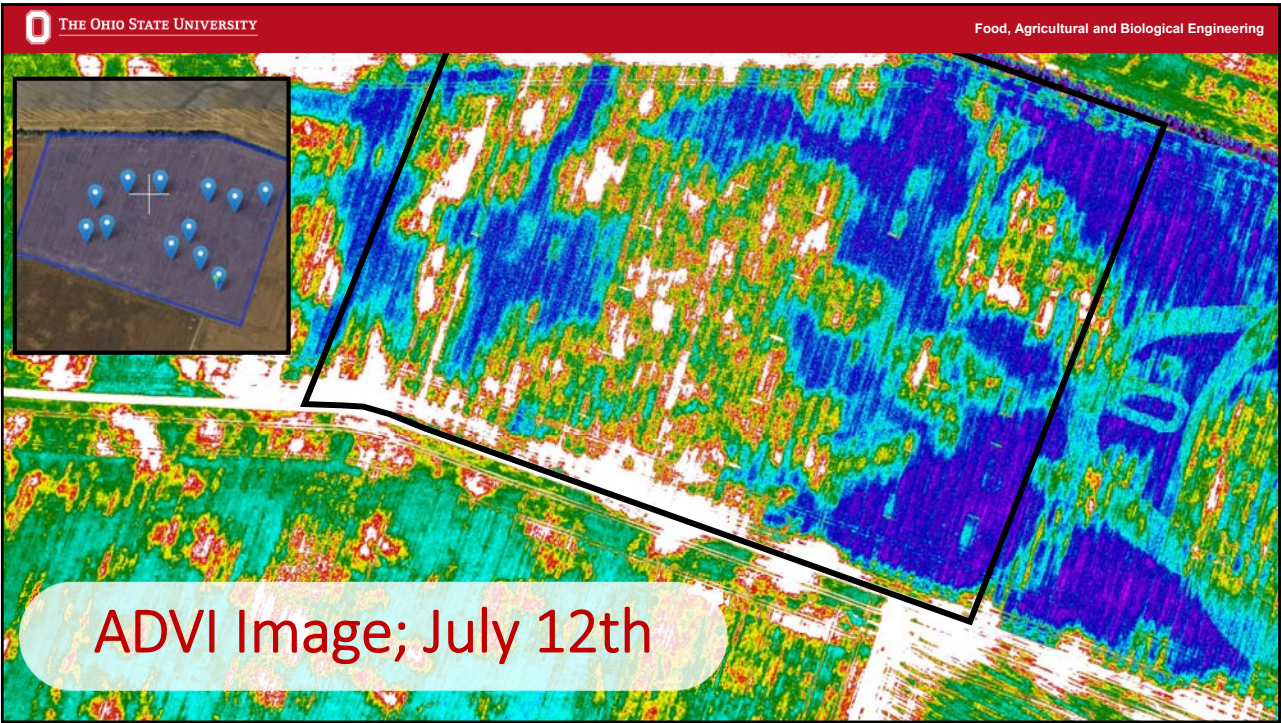
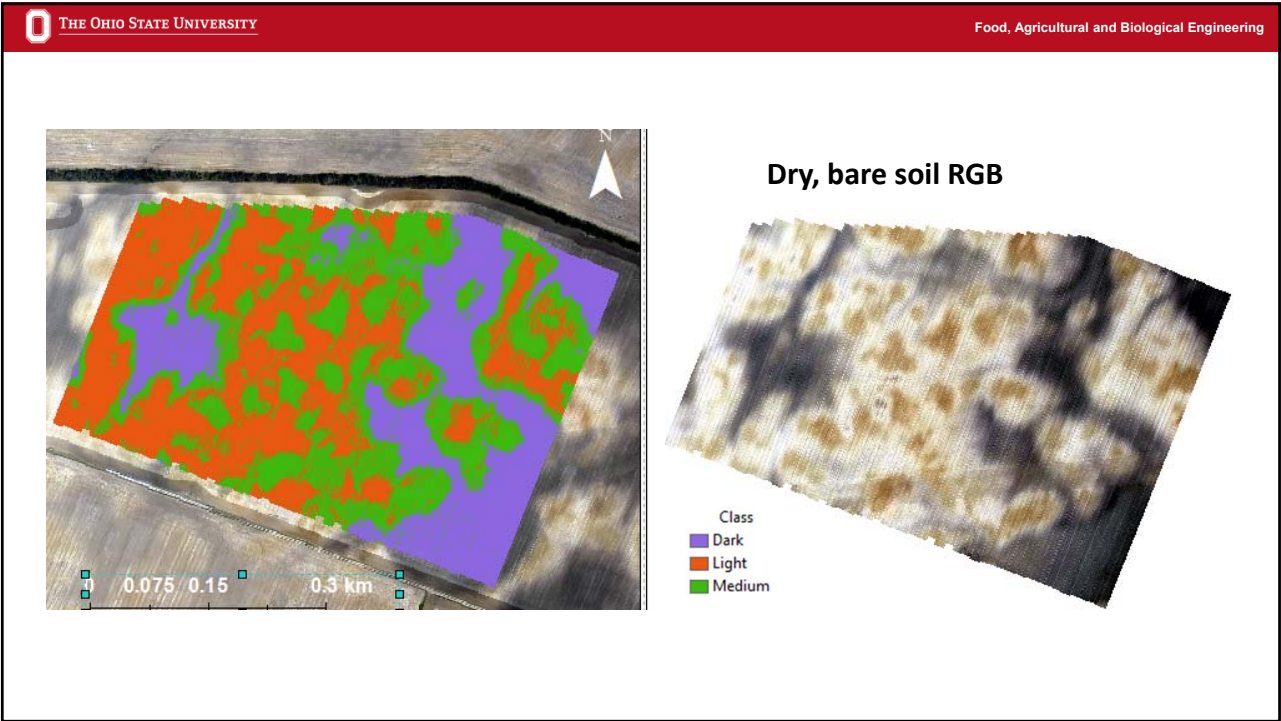
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"Smart" Sampling Sites

Bare Soil (April 17)

9:16 PM

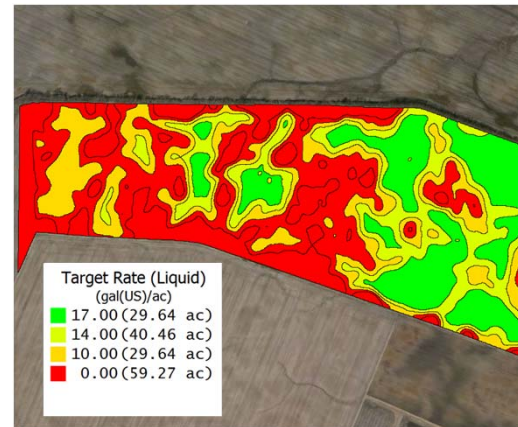
Mult Hyt



Prescription Creation (Rx)

INFORMATION

- Imagery (WHERE) = zones
- Agronomic knowledge (HOW MUCH)
 - Smart Scouting
 - Weather information
 - Soil N samples?
 - Prior production knowledge

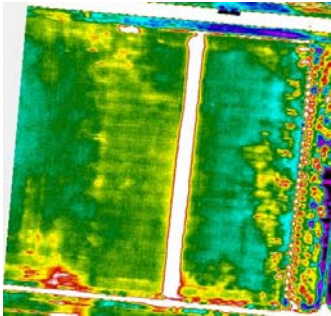


#NutrientIntel

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SUMMARY




Growing opportunities to utilize imagery during the season

Identify your need and type of imagery

Consider a service that provides multiple collects over the growing season

#DataIntel

#NutrientIntel

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Digital Agriculture

Providing solutions to meet world demand

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