

Remotely Sensed Imagery

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Images of Fields

- Sources
 - Satellite
 - Aerial
 - Ground
- Soils – simple color images
- Crops – different vegetative indices

Bare soil color and texture

**Sand 90
Silt 6
Clay 4**

**Sand 80
Silt 16
Clay 4**

**Sand 46
Silt 40
Clay 14**

**Sand 68
Silt 22
Clay 10**

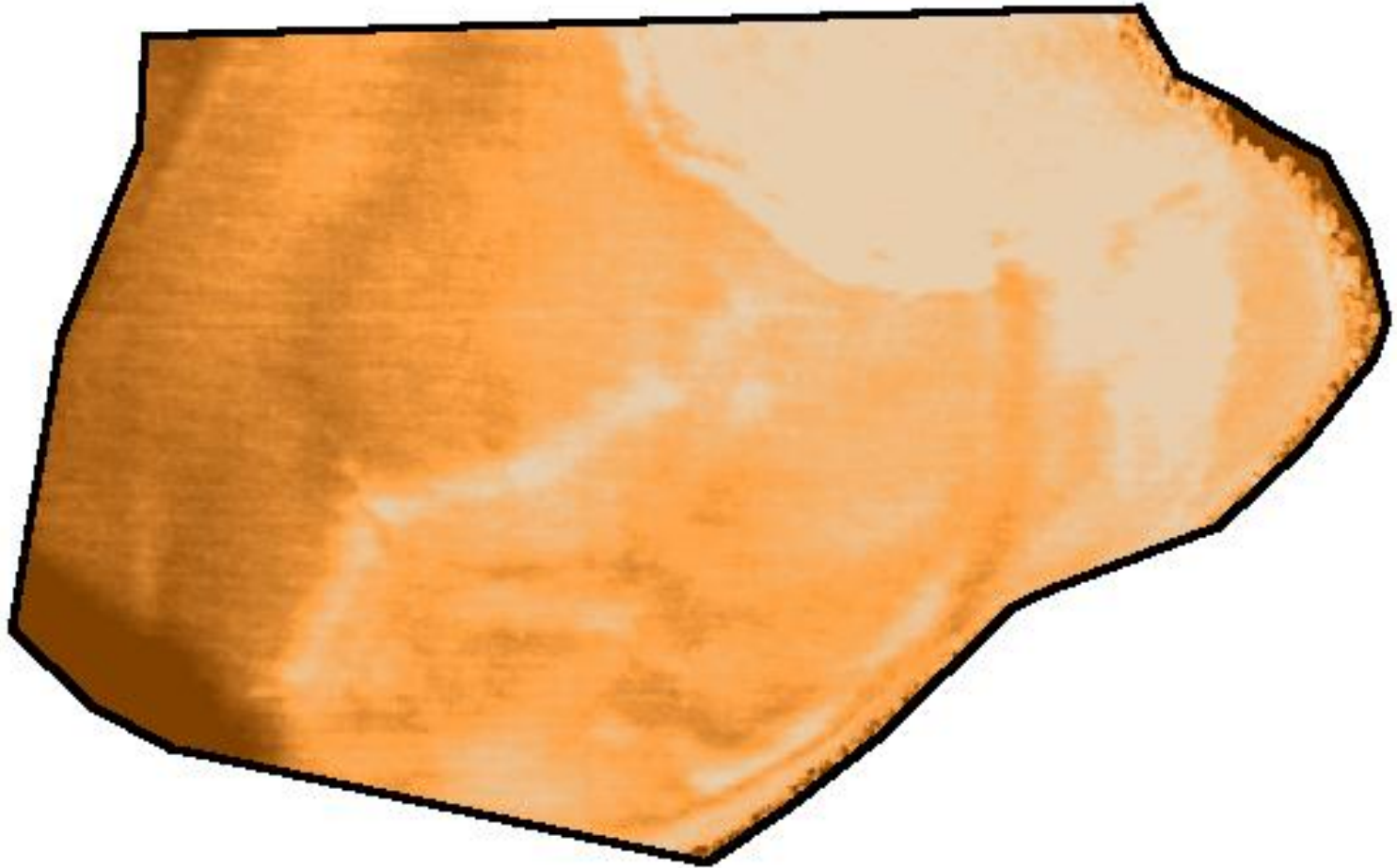
**Sand 10
Silt 52
Clay 38**



Image taken April 21, 1998



Soil Color and OM



Canopy Development

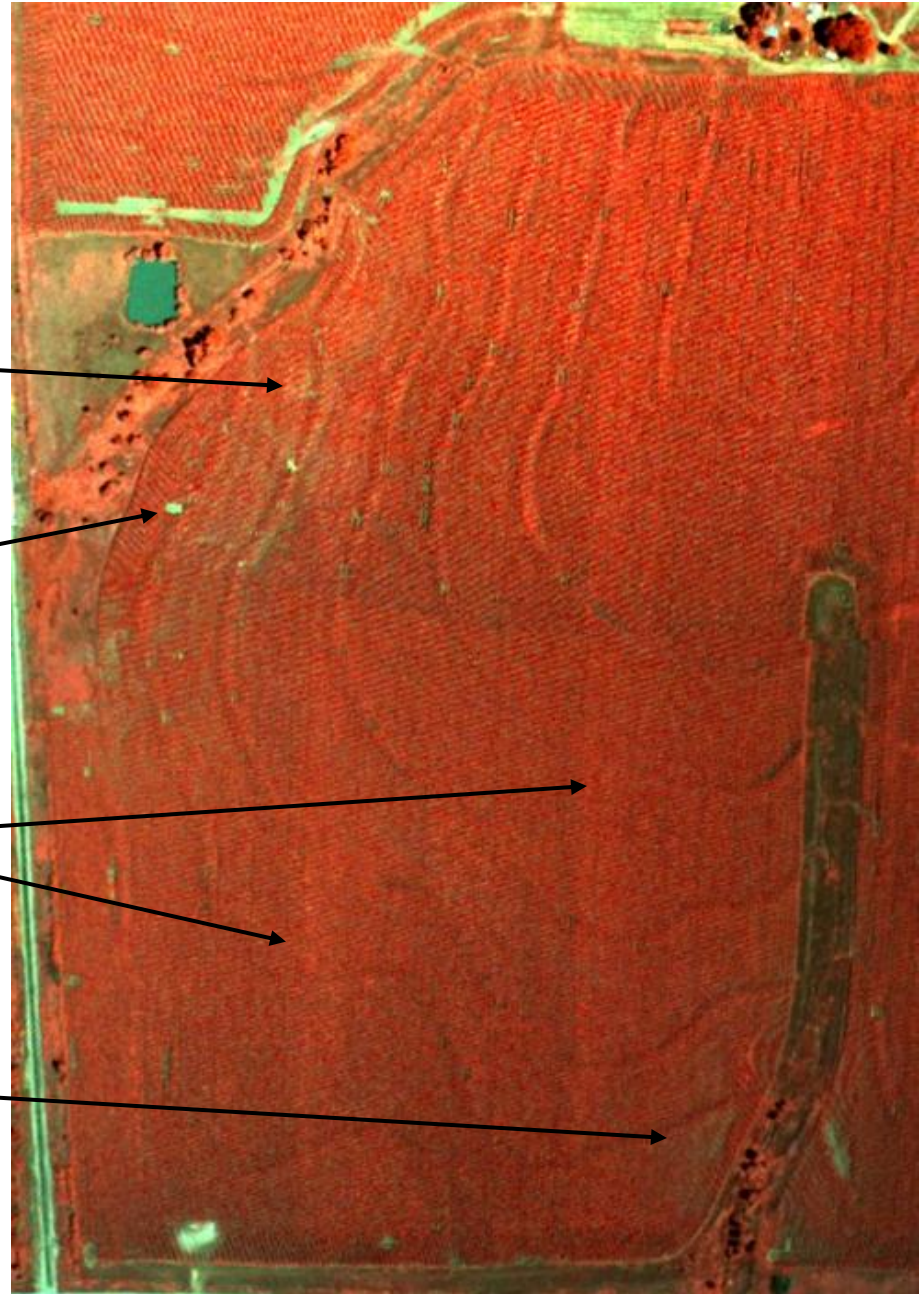
Shallow topsoil
depth - short corn

Planter skip

High plant
population strips

Shallow topsoil
depth - short corn

Image take June 27, 1998



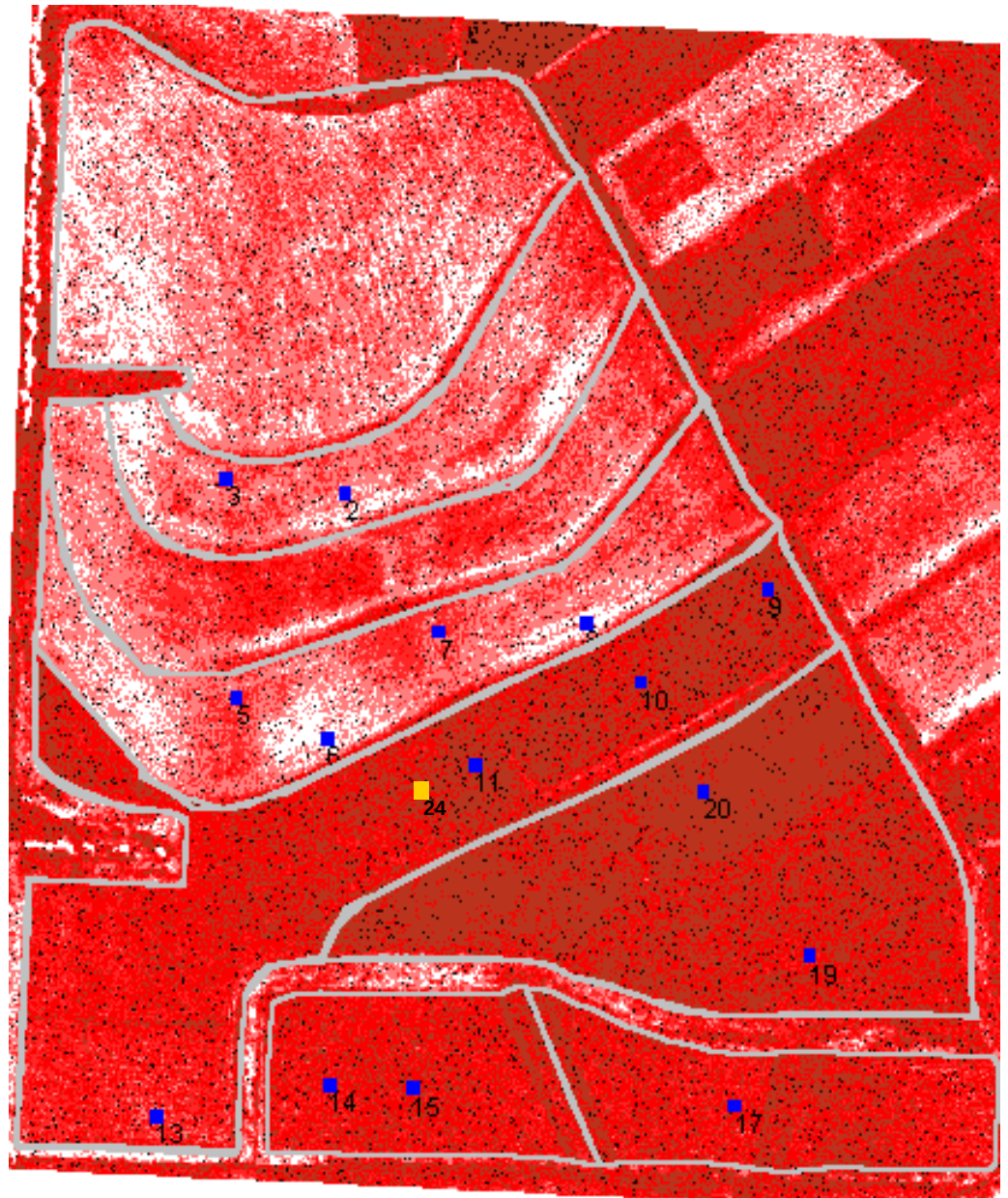
Precision AG Site

7/19/99 IR Layer

**Point
ID**

Description

-
- | | |
|----|--|
| 2 | Beans 3" shorter than beans up the hill 50' |
| 3 | Good beans, wider canopy development |
| 5 | Good beans |
| 6 | beans 8-10" shorter than at wpt 5 & 7, thin stands |
| 7 | Good beans |
| 8 | beans 8-10" shorter than at wpt 5& 7, thin stands |
| 9 | Poor stand 2' skips and weed pressure |
| 10 | smaller compared to #9 |
| 11 | change in plant height to wpt 24 |
| 13 | thin stand, but good plants |
| 14 | plants ok, but the corn is thin |
| 15 | good corn, better stand than wpt 14 |
| 17 | best corn in PA site |
| 19 | thin stand, but good plants |
| 20 | grassy area (extends to the east side of field) |
-





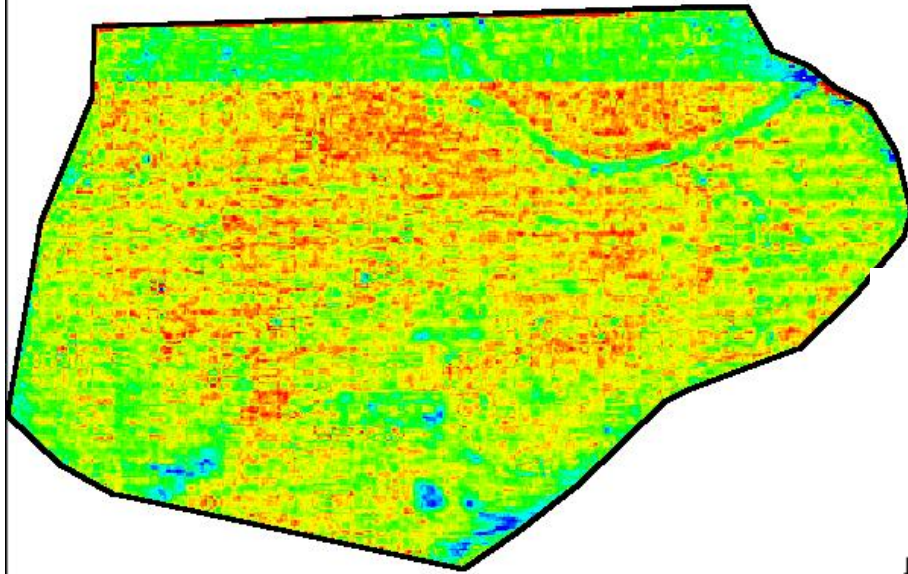
Normalized Difference Vegetation Index

$$\text{NDVI} = (\text{NIR} - \text{Red}) / (\text{NIR} + \text{Red})$$

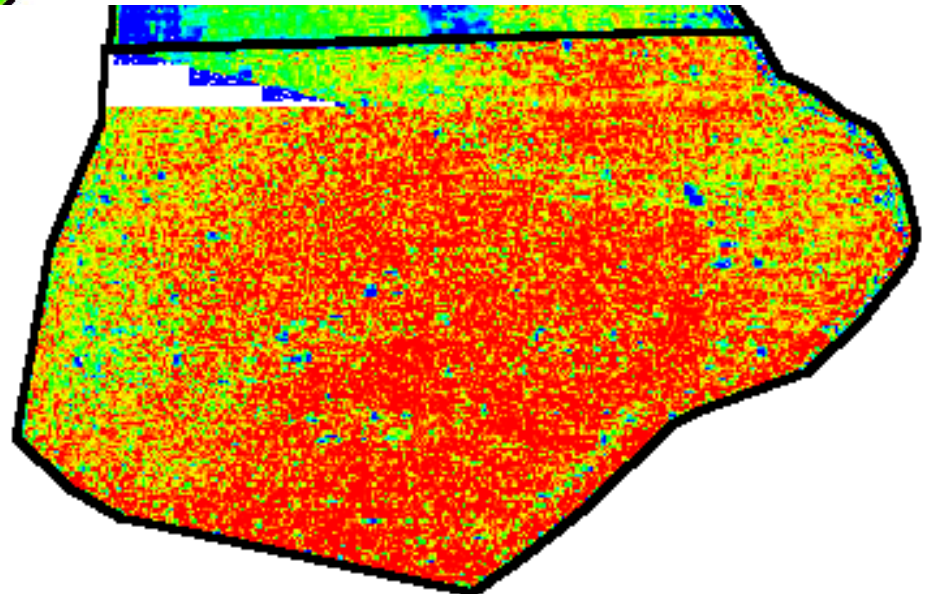
- Has been used to successfully predict grain yields in fields of grain sorghum, corn, cotton, and soybeans (Yang and Anderson, 1996). NDVI has been shown to be an excellent predictor of LAI and biomass production

Timing dictates what you see.

Early Season



Late Season





Interpreting Patterns

- Straight lines are manmade
 - Parallel with travel
 - At an angle with travel patterns
- Irregular patterns are generally naturally occurring.

- Lines

- Areas/patches

**This is visual analysis.
Determine what
capabilities you have in
your software.**



Creating Zones

- What's the Same?
- What's Different?
- Ground truth everything