Normalize Vegetation Index Values to remove 'field effects'

Compare all data to 'Healthy Plants' that have the same:

- Growth stage
- Cultivar (variety)
- Previous crop
- Water management
- Soil properties --- except nutrients

If one assumes all nutrients are adequate except for N, for example:

Differences in crop vigor are probably related to plant N status

Common Vegetation Indices

NDVI = (NIR t Red)

(NIR+ Red)

NDRE= (NIR t RedEdge)

(NIR+ RedEdge)

Chl Index = (NIR t Red)

(RedEdge t Red)

Visible / NIR = (Red)

(NIR)

See: Existing Vegetation Indices 100 VIs

Sufficiency Index

Relative Vigor
(i.e., 92% adequate)

“ Target“ / Reference = “Managed Crop” / “Happy Crop” = S I

- N-rich (highest 3 consecutive seconds) GreenSeeker
- N-rich (average) Missouri
- Virtual reference from field with modest preplant N Holland

Sensors only Measure Bulk Reflectance

- Many factors can influence leaf chlorophyll content -

Algorithm Comparison

^ t Z ç ot compare nitrogen recommendations using a common data set M _

Algorithms have been developed using specific sensors that are associated with recommended agronomic practices

- Wave-band differences
- Reference Strategy (normalization)
- Opportunity for producer input
- Preplant N differences
- Yield (relative, predicted, not used)
- NUE input

patents

PRACTICAL Session

1. Use Spectrometer, SPAD, CROPSPEC
2. Use CAMERA with different filters (Handheld and DRONE) and EXTRACT RGB from PICTURES
3. Apply to appropriate VIs (provided 100 more VIs)
4. Statistical Analysis (SPECTROMETER, SPAD, or CROPSPEC will be as dependent variable), and CAMERA data will be as Independent variable

Thank You !