What is Precision Ag and how do You do it.

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Precision Nutrient Management
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About me

- Background
  - Non Ag
  - Rural Oklahoma Native
- O-State
- Current Work: Applied Nutrient Management
  - 70% Extension 30% Teaching
  - Precision Ag, Soil Fertility and Soil pH.
  - Wheat, Canola, Corn, Cotton, Sorghum, Sesame, Forages
- Teaching
  - Soil 4234 : Nutrient Management
  - Soil 4213 : Precision Agriculture
Extension in Oklahoma

- 4–5 million Acres Winter Wheat
- 50% grain only 50% grazed.
  - Of grazed 50% dual purpose 50% graze out.
- Babies in terms of technology
  - Industry is leading with “less than great Tech”
  - New too No-till and crop rotations
  - Proper Soil pH. (issues with leased land)
  - Nutrient Products and Stabilizers
  - Drought recovery in forage systems
Research in Oklahoma

- Agronomic Field Demos/Trials
  - NPKS Strips
  - Fertilizer placement in Canola
  - Foliar N, P, K, S, B, Ca
  - Product Evaluation
  - Soil Acidity
- R&D of optical sensors
  - Industry
  - Horticulture
  - Weed Science
  - Breeding
  - Forage Improvement
What’s Happening in OK

In Terms of Precision Nutrient Management

- Crop Consultants
- Yield Monitors
- Veris EC and Grid Sampling
- Zone & VRT Fertilization
- Tissue Testing
- N–Rich Strips
- GreenSeeker SBNRC, Flat and VRT
Success Stories

- The N–Rich Strip
  - Approx 500,000 acres.
- Sensor Based N Rates
  - Winter Wheat, Sorghum, Corn, Canola, Cotton
- New Crops
  - Winter Canola 120,000 acres
  - Sesame 50,000 acres
- Partners in Research
Reference Strips

- **What:** A high rate of N applied in, across, through, over or under each and every field
- **How Much:** Minimum of 50 lbs N above preplant rate.
- **How and Where:** 10 to 100 ft wide, anywhere representative.
- **When:** Winter crops; before or after sowing (1+ months), Summer crops; before or immediately after planting.
Reference Strips

- Are Very Visual..
- BMP?
- Risk Aversion?
- Sales and Service?
Optical Sensors

- Numerical, describe the crops BIOMASS.
- DOES NOT really WORK WITH OUT A REFERENCE..........
- Multiple options
  - Companies
  - Resolution
Yield Prediction

SBNRC (YP0*RI =YPN)
100 Pre (100 lbs N/ac applied preplant)
Producer Testimonial

North East Ok. Small fields, high amount of variability

- The funny thing to see this year is the fields of the "cheap" farmers vs the others. They are all standing nice and pretty with very minimal lodging – but they also do not appear to have top-end yield potential. My fields are lodged anywhere between 10–25% and most of the lodging spots are not severe. The ridges and edges are the worst in my fields. The GreenSeeker definitely provided enough N to reach full yield potential without excessive over-application.

- Overall, GreenSeeker reduced my topdress N use by almost 50,000 lbs of actual N across 1400 acres. The exact calc works out to 36 fewer lbs of N per acre. That savings is vs a 75 #/ac topdress rate since I applied 25 #/ac N at planting last fall. My UAN cost was $366.66 per ton = $0.573 per lb of N. My N savings were > $20/ac this year and my wheat yield should meet or beat the heavy N fields. If lodged wheat losses are only 3–4 bu/ac you can add another $20/ac bump. Hmmmm....1400 acres...$20/ac to $40/ac advantage. That $15,000 investment in an RT–200 was pretty cheap.
Optical Sensors
Agronomics behind Precision

- With all Nutrient Management Technologies
  - Strong enforces needs to be made on Agronomics
  - Make Black Boxes more Clear or at least muddy.
Near Future

- Combination of Optical Sensors and Soil based sensors.
- Responsibility to fit the application to the situation
- Social Media, Early adopters have adopted.
  - Producer with field trials communicates via twitter
“New” Outlets
Thank you!!!

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