Du Mond Ag, LLC

- Family Farm ~4500ac
- 4 Full-time employees
- Primarily Corn and Soybeans (50/50)
- Small amount of wheat to allow grid tiling
- Many trials conducted annually
- Frequently modify equipment & practices for optimization
- Equipped for full implementation of VRA with all inputs
- Data collection began in 2006
- VRA applications since 2010

GPS Signal

- Most manufacturers offer different levels
- WASS (Free)
- SF1 (Minimal Fee ± 12”)
- SF2 (±4”)
- RTK ($$$ ±1”) More importantly REPEATABLE

Precision Agriculture

- Todd Du Mond, Du Mond Ag, LLC

Equipment optimization
  - GPS Signal - RTK
  - Guidance
  - Swath control
  - Row control
  - Rate Control
  - Application Control
  - Acceleration compensation
  - Variable variety
  - Implement Control
  - Machine Sync
  - WDT (wireless data transfer)

Precision Management
  - Develop a strategy, goal means to the end
  - Yield Data
  - VRU
  - Veris
  - Grid sampling
  - Software
  - Data evaluation
  - Performance data
  - Weather data

Guidance

- Increase efficiency
- Allows operator to focus on details
- Versatile across all operations
- Enables control traffic
- $3-$5k

Basic Components

- Display (~$5000)
- Receiver (~$3000)
- Activations (~$1-$5000)
- Controllers

Row/section Control

- Controls application in sections
- Precise control (single row 20-30”)
- Minimizes waste, over application
- $1300 controller, $3000 activation, + hardware
Rate Control

• Machines have the ability to turn on/off products as needed
  – Nitrogen Stabilizer
  – Additional Herbicide

Multi-Varity

• Planters have the ability to switch varieties on the go to optimize seed placement.
• Question is how to EFFECTIVLY utilize this technology

Application Control

• Passive or Active
• Controls location by equip pos. not machine
• Valuable with wide equipment due to drift, side hills, arcs.

Implement Control

• Machine Sync
• Machine to Machine control
• Phase 1 Combine-Grain buggy
• Real-time information flow

Sprayer Acceleration Compensation

• Individual Nozzle flow control/compensation
Precision Ag systems provide new information about the farm like never before, but...

- How do we use this technology to make better decisions & optimize production?
- Do you have variable rate capabilities?
- Do we truly understand how to maximize returns using variable rate analysis?

Precision Agriculture
Todd DuMond, DuMond Ag, LLC

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Precision Management
- Develop a goal then a strategy & a means to the end
- Yield Data
- VRL
- Veris
- Grid sampling
- Software
- Data evaluation
- Performance data
- Weather data

Benefits/Outcomes of Implementation
- Machine functionality
  - Increased productivity/performance
  - Less down time
  - Better results
  - Less overlap
- VRL Application
  - Smoothing of soil variance and production
  - Increase production on same inputs applied differently
- Nitrogen management
  - Optimizing return
  - 2014 N conversion ratio of 1:1.4 (req. 1:1.1)
    - Environmental, economic

POTENTIAL OF PRECISION AG SYSTEMS

Precision Ag systems provide new information about the farm like never before, but...

- How do we use this technology to make better decisions & optimize production?
  - Do you have variable rate capabilities?
  - Do we truly understand how to maximize returns using variable rate analysis?

Know our your goal then develop the process necessary to achieve it

- The Science of VRL Application
  - Slow process only 1 channel/yr!!!
  - Make a plan evaluate/revise the course
  - Maintain long term goals/direction
  - Understand soil, exposure, potential, Probable, Economic impact, Consequences
  - Predict speed bump/hurdles (harvesting silage!! you will have!!)
  - Understand the limits of the data (how it was collected, resolution,)
- Manage De-nitrification
  - Predictive modeling
  - Crop sensing

Du Mond Ag, Implementation

- Machine functionality
  - Guidance
  - Documentation
  - Section control
  - Application control
  - Machine control
  - Variable variety
  - Machine Sync
  - WDT (immediate data analysis)
- Limits in traditional side by side
  - Misses 90% of data
  - Optimize everything Just like dairy!!!
  - We don’t have it perfect either!!!
  - Continually evolving learning
- Soil Health
- Equipment optimization
  - GPS Signal - RTK
  - Guidance
  - Swath control
  - Row control
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WDT (Wireless Data Transfer)
- Connects
  - Machine
  - Desktop software
  - Mobile devises
  - Consultants
  - Data security
- Real time transfer

Custom built 24R20 Strip Tiller
w/ on board UAN, section Control 5’, & VRA

Mulch film planter, >300 GDU
and frost protection, early planting date, full season corn -> greater potential
Yield Data

- Combines and Choppers
- **Must** be carefully calibrated!!
- Variety tracking/reporting

Grid Sampling

- Automated, fast, cost-effective
- Rec. Shape files (usable spatial data)

VRA (Variable Rate Application)

- Many products
  - Seed
  - Fertilizer
  - Lime
  - Chemicals
- Optimize application/allocation

Soil Property Data Collection

Veris Data Collection

- Electrical Conductivity
- Organic Matter
- pH

Software

- OEM Software
  - Usually necessary for managing guidance and equipment
  - Very poor at creating algorithms
- Analytically strong software
  - Can’t manage equipment control (liability)
  - Often interacts with Excel for generation of complex algorithms
Data Analysis

Data Collection – Pioneer Field360

Incorporating weather data into multi-location

Optimizing Information & Technology

NYCSGA Precision Ag Research

- Started 2013
- Large scale
- Predict production potential based on intrinsic soil properties
- Evacuate multiple verities
- Provide baseline for algorithm generation

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QUESTIONS?

- Prescription Seeding
- Yield Mapping
- Electrical Conductivity Mapping
- Organic Matter Mapping
- pH Mapping
- Field Level GDU's and Precipitation
- Fertility Sampling
- Compaction testing