Remote Sensing Challenges

- Too much raw data
  - Daily field imagery
  - In minutes, soil moisture, weather, and other IoT sensors
- Significant work to get useful information
- Both affect management decisions
  - Timely Tactical Decisions—this season
  - Long term Strategic Decisions—future seasons
  - Velocity
Technology Integration at the Farm

“The bottom line is, imagery is a tool in the toolbox, and as such it is not designed to fix every problem faced on the farm. To maximize its usefulness, imagery must complement the many other resources farmers have at their disposal: soil type data, inputs, weather data, machine data, agronomic knowledge and many others. As an industry, we need to collaborate to leverage our combined learning from all of these data sets. We need to apply this data at different times based on our understanding of the farming process. And ultimately, we need to stop providing raw data and start providing information that helps farmers make the next decision.”

-Lisa Prassack, Prassack Advisors, “Show me the Money” August 2017 www.precisionag.com

Remote Sensing Alone
Like Forecasting a Hurricane

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All of the data will drive the best decisions

Knowledge

Strategic Decisions + Tactical Decisions

All of the data will drive the best decisions

Knowledge

Strategic Decisions + Tactical Decisions

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Goal

- **Optimally** manage potato production
  - Economically Sustainable
  - Environmentally Sustainable
  - Socially Responsible

**Useful Metrics**

- **Economically Sustainable**
  - Return on Investment
- **Environmentally Sustainable**
  - Generational
- **Socially Responsible**
  - Norms

- **Yield**
- **Cost**
- **Quality**
- **Compliance**
- **Sustainability**
- **Responsibility**
- **Profit**
- **Reduced Risk**
Compliance Data is Farm Data

Data

- Paper
- Spreadsheets
- Data Bases
- Integrated Information Platforms
Automated Data

- Tractor processes data at field and variety level
- With data integration from other sources, take it even lower
  - Soil Zones
  - Trial Plots
  - Elevation Contours
  - Etc.

- More data lets there be more analysis, like
  - Yield by Soil type
  - Moisture by Soil Type
  - Yield by Slope
  - Yield by Variety
Automated Data Into Knowledge

Integrating and Reporting
Where We Are: Remote Sensing

- Veris
  - EC
  - OM
  - PH

- WaterBit

- PowWow
  - Energy Monitoring
  - Failure Predictions

- Tule
  - In-field ET sensing
  - Irrigation Activity Monitoring
  - Irrigation Schedule Recs

- WiseConn

#PrecisionAgVision

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Where We Are Going: Remote Sensing

**Irrigation:**
- Soil Moisture
- Humidity
- ET
- Temp
- Canopy Height/Vegetation
- IRT
  - Optimal Irrigation Schedule
  - Realtime Adjustments
    (Sensors Drive Actuators)

**Soil Health:**
- Soil Maps (PH/OM/EC)
- Soil Samples (Targeted)
- Soil Reflectance
- Vegetation
  - Optimal Remediation
  Programs (VR Amendments)

**Labor:**
- Digital Time Cards
- Real Time Activity Tracking
- iPhone 8
- Data Sharing/Collection

#PrecisionAgVision

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"This is where ag needs help"
Danny Royer, Bowles Farming Co.
Integration as a Service

What Integration Can Accomplish
Some of the Data is a Great Start