Crop Sensor Components
Mapping and Real-time Application

“Just In Time” Plant Nutrition
Measurement → Calculation of N fertilizer demand → N application

Courtesy of Topcon Precision Ag
Crop Sensor Hardware Components

- DGPS Receiver
- Display / Console
- Sensors
- Brackets and wiring harness including power (12 V)

Sprayer Example

Topcon CropSpec
Topcon CropSpec Components

- DGPS Receiver
- X20 Display
- CANBUS
- Sensors
- Rate Control ECU
- Implement with Liquid or Granular Application

These 3 components only needed for real-time variable rate application

Sprayer Example
Trimble GreenSeeker

Images Courtesy of Topcon Precision Ag
GreenSeeker Components

DGPS Receiver
Trimble FMX Display
RT 200 Module
Sensors

Tablet PC or Laptop running Farm Works Mobile software

2 Options

Rate Control ECU
Implement with Liquid or Granular Application

These 2 components only needed for real-time variable-rate application

Components for Real-Time Input Application
GreenSeeker Example

Integrated Trimble Option

Sensor mounted on tool bar or spray boom
RT 200 Module
FMX Display

Farm Works Module

Sensor
RT 200 Module
Tablet running Farm Works Mobile
Display/Controller with serial input capabilities

Equipment with variable-rate capabilities
Available Nozzle Technology
Consider the range of application rate (GPA)

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<th>Flow Rate (gpm)</th>
<th>Pressure (psi)</th>
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TurboDrop VR - Greenleaf

VariTarget - Delevan

Variable Orifice Components
Exploded View

VariTarget by Delavan
www.delavanagspray.com

Variable Orifice Nozzles

- Select nozzles which meet expected range of application rate (GPA)
- Calibrate
**Side-Dress Unit**

Hydraulic Drive attached to a CDS John Blue Piston Pump

**Sprayer Setup**

Most high clearance sprayers have the pump + hydraulic motor + control combination to conduct variable rate (VR)

**Accepted Resolution**

Keep in Perspective

- Be concerned about macro-variability within a field.
- Are you capturing general trends?
Rate Adjustment Reality
Keep in Perspective

* Be concerned about macro-variability within a field.
* Are you capturing general trends?

Summary Comments...

- Crops sensors - consider the desired application (crop + inputs)
- Mapping versus Real-time VR
  - Mapping: first step and can generate Rx maps
  - Real-time
    - Select proper nozzles for the product
    - Manage macro-variability
- AgGIS - Software to generate maps

Precision Ag technologies simultaneously enhance production efficiency and environmental stewardship.

Precision Agriculture: Crop Sensors

www.AlabamaPrecisionAgOnline.com