Variable Rate Irrigation

NAICC
2009 Annual Meeting
Why is there VRI?
What is Variable Rate Irrigation?

• Variable Rate Irrigation, VRI, Refers to the application of different volumes or rates of water to different segments of a field

• Rates are varied throughout the pivot span, depending on where the pivot is in the field.
What Kind of Pivots?

• Electric Drive
• Low Pressure
• Pressure Regulators
• Electric End Gun Control
• Flat pump curve
Sprinklers cycled OFF

Arrow 1: Regulator
Arrow 2: Gooseneck
Arrow 3: Hydraulic valve controlled by air
Valves grouped to make zones
Importance of Irrigation to Georgia

Now 1,200,000 ac
13,000 center pivots

1970 - 144,000 acres
87 center pivots
Overlapping Pivots

Non-cropped areas not watered

Pivot overlap not double watered
Non-crop Inclusions

Cut off in non-crop area
Nozzles off; keeping dairy lagoon water from going into ditch
Topographic / Soil Variability
Multiple Crops/ Multiple Crop Stages

Set map to water multiple crops at different stages

Cotton

Corn

Peanut

Boddiford Farm, Sylvania, GA, 2002
VRI Components

Canlink Controller
Mount Assembly
VRI Components

• Master Controller
New Controller Model
Farmscan 7000
VRI Components

- Air Compressor
VRI Components

- Valves/Regulators
VRI Components

- Auxiliary Air Tank
- Control Solenoids

This is an old style node board
New Node Board
Farmscan 7000
VRI Components

- Valves/Regulators
- GPS
What about pressure?

Cycle-Stop Valve regulates pressure

Pivot below has 30 of 32 zones off with end gun left running.
Pressure line on “Z”-pipe
Application Map Development
Application Map Development

Slice can be 2, 5, or 10 degrees
Application Map Development
Application Map Development

Red lines represent field boundaries.

Blue represents special objects.

White represents pivot reach.

Black represents individual control zones.
During growing season, near infrared imagery helps you to update and modify water rates.
Clear zones are ZERO percent zones.

Note at the top, pivot is shut off where it overlaps with one north of it.

Light blue represents 120% Zones, green 100%.
Water Use Summary

Software on Desktop PC provides summary data on how much water you are using.

Maps are easily transferred from desktop to A flash card for loading to controller.
Uniformity Testing

VRI doesn’t degrade pivot application uniformity.
Variable Rate Irrigation

• VRI SAVES WATER
• Water savings on the 2005 installations totals 127,000,000 gallons, enough to supply 3,000 people for one year.
• Water savings average 12 – 16% average, but some as much as 28%.
• Uses WATER BETTER
• Systems are designed and programmed to match the water needs of sandier and wetter areas of fields
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