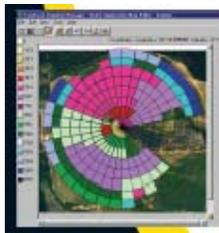


# Variable Rate Irrigation

VRI



GPS is added to a center pivot system and only areas needing water receive it.



The amount of water applied varies. Portions of the field with streams or wetlands can have the nozzles set to zero. Differences in soil and crop can be handled with different water application rates.

- Originated in Australia
- Patented in Idaho; patent soon expires
- Water conservation in SW GA for an aquifer with heavy use by communities and agriculture
- ND farmer installed it to avoid installing a large drainage system to catch the excess runoff

VRI



Farm in North Dakota installed VRI to avoid installing a large drainage system under the center pivot to capture runoff.



Each drop tube has a programmed control sequence so it knows how much water to apply when.



Control box permanently mounted. OK for GA; too harsh conditions for ND?

- Georgia EQIP docket for 2011 (first year)
- \$5000 control panel (EQIP \$3750)
- \$3500 main flow valve (EQIP \$2625)
- \$10 per lineal foot for installation and additional nodes (typically 700-800 ft)

### Costs

- With VRI farmers can have an increase in crop yield and quantity. The technology can eliminate watering non-crop areas and irrigation induced runoff thus saving water. It can improve the quality of rainfall-induced runoff, decreasing stream sediment pollution.

### Literature Quotes

- Does my pivot need VRI? Your field could benefit from VRI if it has
- Overlap areas
- Non-crop areas
- Boggy or extra dry areas
- Varying soil types

### Literature Quotes

- Looked at systems in more typical fields where water was not ponded and where soil types varied but little slope in field
- Systems were not cost effective unless the sprinkler was used for fertilizer or pesticide application. The water savings alone did not justify the expense.

### ARS Research, Sidney MT

- Farmer in ND had two adjoining center pivots, one with VRI and one standard. The two ran the same amount of time. The typical center pivot used 5.65 inches/acre and the VRI system used 2.29 inches/acre, a savings in water of 59.5% in 2010. Farmer had no crop yield data at time of this comment.

### ND data

- Request from Irrigators Association of MN for this to be on EQIP docket
- NRCS asked IAM for the existing environmental concern that this practice addresses
- NRCS Requested data on cost effectiveness for environmental benefits
- Will producers adopt this practice and maintain it?
- Not on 2011 EQIP docket in MN

**Conclusion for MN**