

# Environmental Quality Incentive Program (EQIP) and Variable Rate Irrigation (VRI)



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# Environmental Quality Incentives Program (EQIP)

- Sign up for 2019 EQIP at your County Office. The sooner the better.
- NRCS staff will work on a plan. Eng staff will meet with you in the field and gather needed data.
- Ranking will not occur until Dec 2018 or Jan 2019. This will allow us to plan over the summer and fall.
- 2016 – 4 pivots(VRI) were funded through EQIP
- 2017 – 10 pivots(VRI)
- 2018 – applications for 22 pivots (VRI) in SE and maybe 5-7 in NE ND, 20+ flood to pivot applications in the state.

## EQIP

### MUST HAVES

- ✓ conservation benefit
- ✓ irrigated at least 2/5 years

### CAN NOT

- ✓ maintenance
- ✓ start irrigating new land

# EQIP – High pressure to Low Pressure Conversions



# EQIP – Flood Irrigation to Sprinkler (or more efficient system)

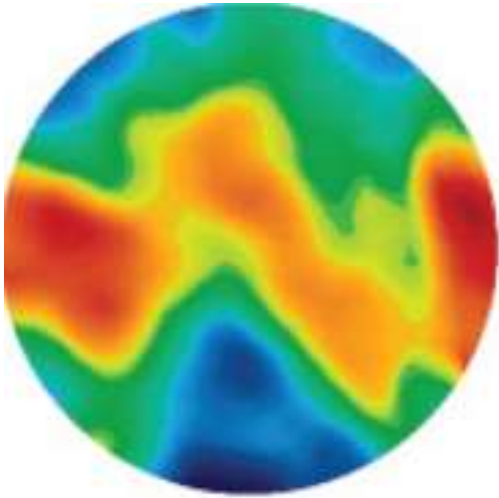


- Acreage currently irrigated is eligible to be irrigated under the pivot.
- The soils irrigability will be evaluated. (AE-1637). If conditional soils are present, a more in depth analysis will be performed.

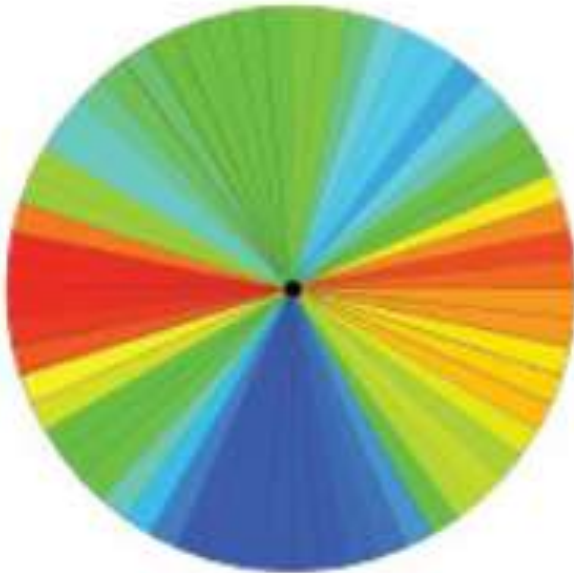




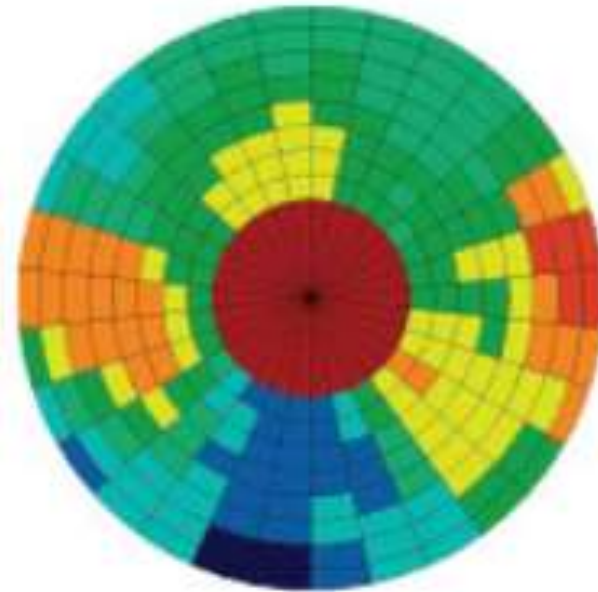
## Variable Rate Irrigation – available 2016



Typical pivot rate control



VRI control:



# EQIP - VRI

Must have 15% (EQIP 18) of field area that contains soil conditions, topography, or non-farmed areas that cause significant over or under application of water or nutrients.

Components eligible:

- Valve control on pivot – by the linear ft
  - includes GPS components, control panel, components required for zone control
- Renozzle of pivot (nozzles, regulator, drops) - >10 yrs old or CU of 90 or less.
- Variable Frequency Drive (VFD) – unit price
- *NOTE: There is no longer any contract caps. The Farm Bill cap does still apply at \$450,000.*



# Other Requirements for EQIP Contract

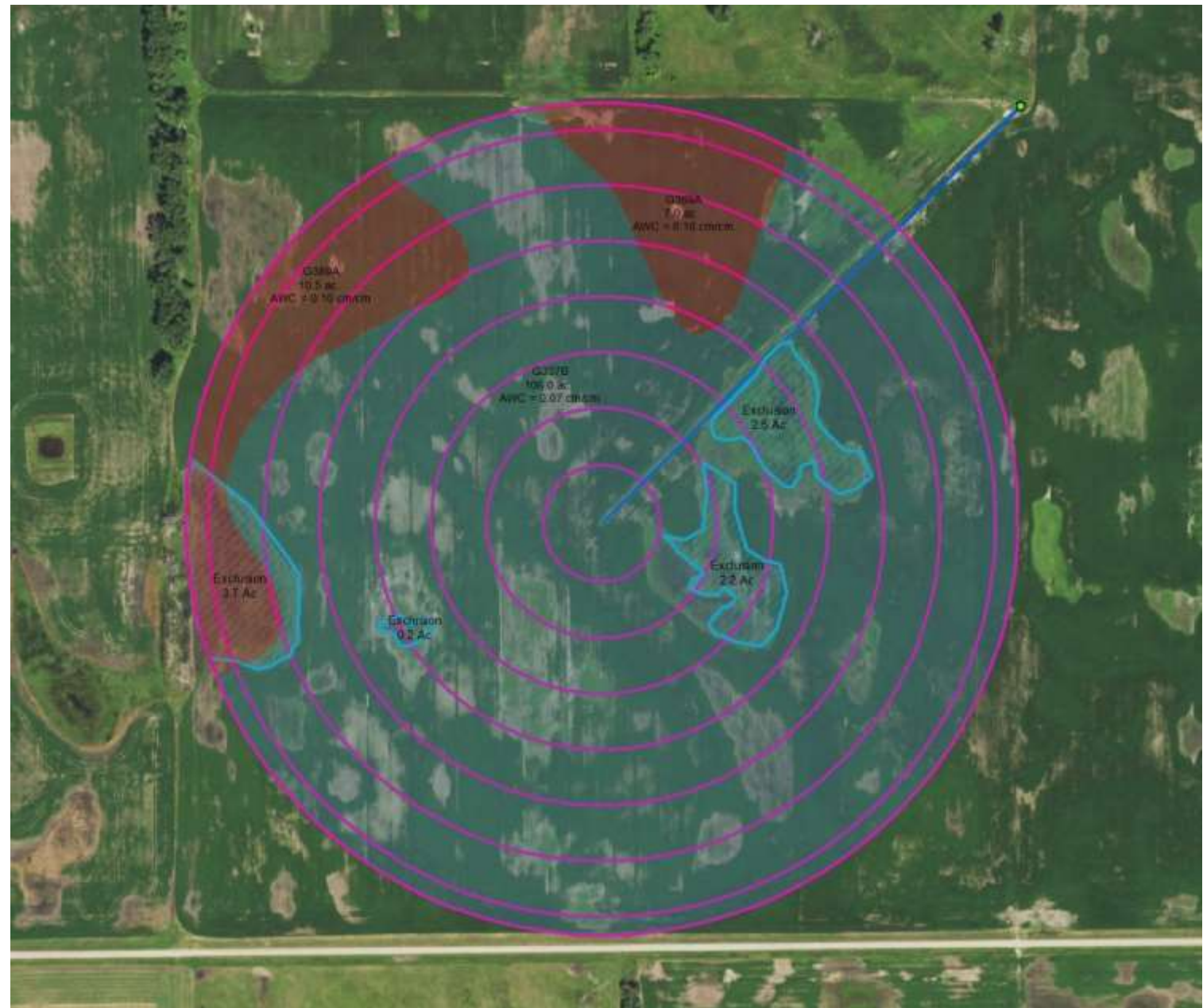
- Must meet our standards for the pivot, supply line, and pump.
- Flow meter required – with telemetry
- Irrigation Water management for 3 years is required. Must have sensors that have telemetry.

## Other potential practices available

- cover crops
- Grass seeding
- Nutrient management
- Conversion to a less invasive tillage system



Example of map showing exclusion area based on soils, topography, and non-farmed areas.



# Benefits

- NRCS is looking for water savings, energy savings, and improved water quality.
  - We will calculate water saved based on exclusion (shut off or change in water application) areas.
  - We will calculate the energy (HP) savings based on the decreased flow rate. We will analyze if there is a cost benefit to install a VFD and what the payback period would be.

# EQIP - IWM





## EQIP – BASIC IWM



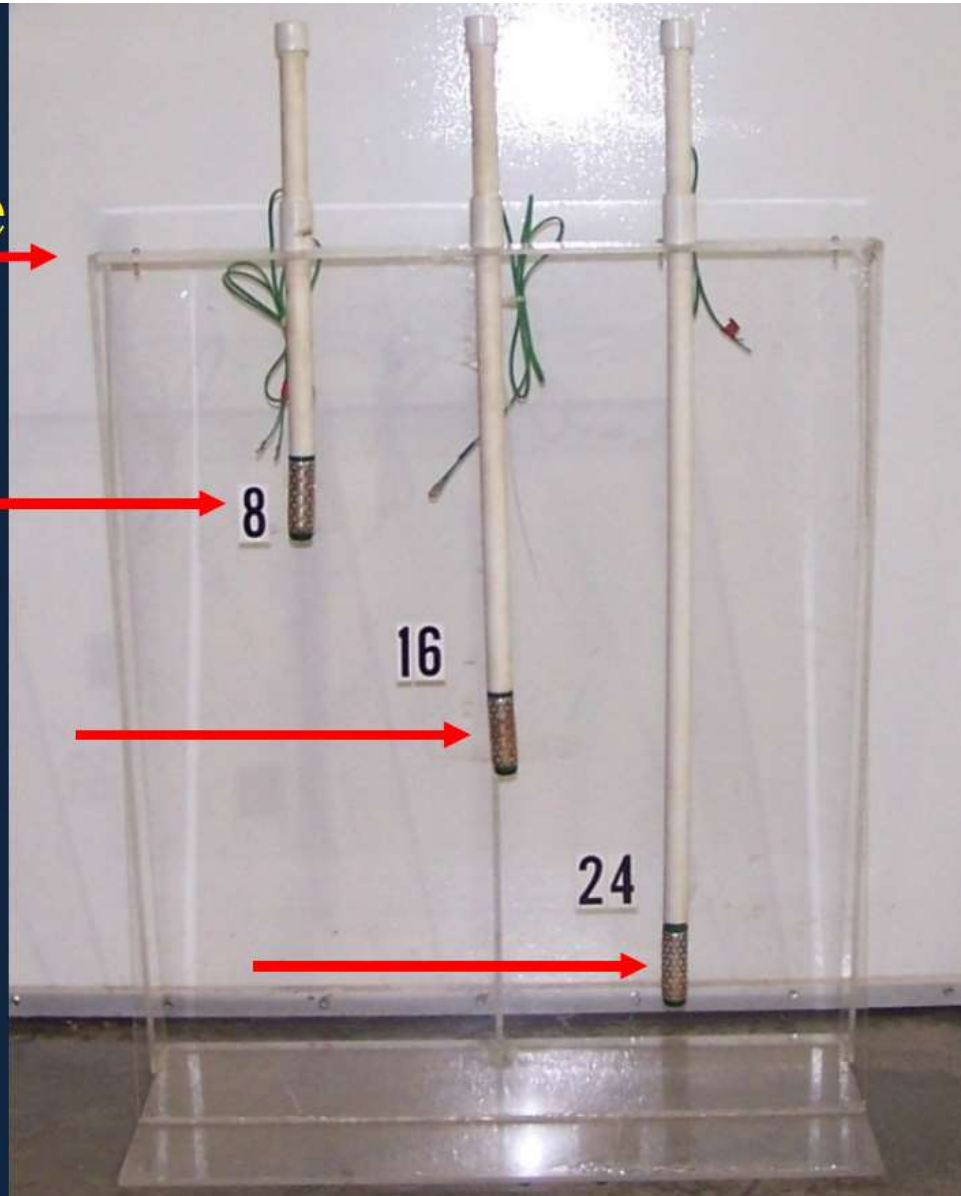
## EQIP – INTERMEDIATE IWM

**Soil Surface**

**8 in**

**16 in**

**24 in**





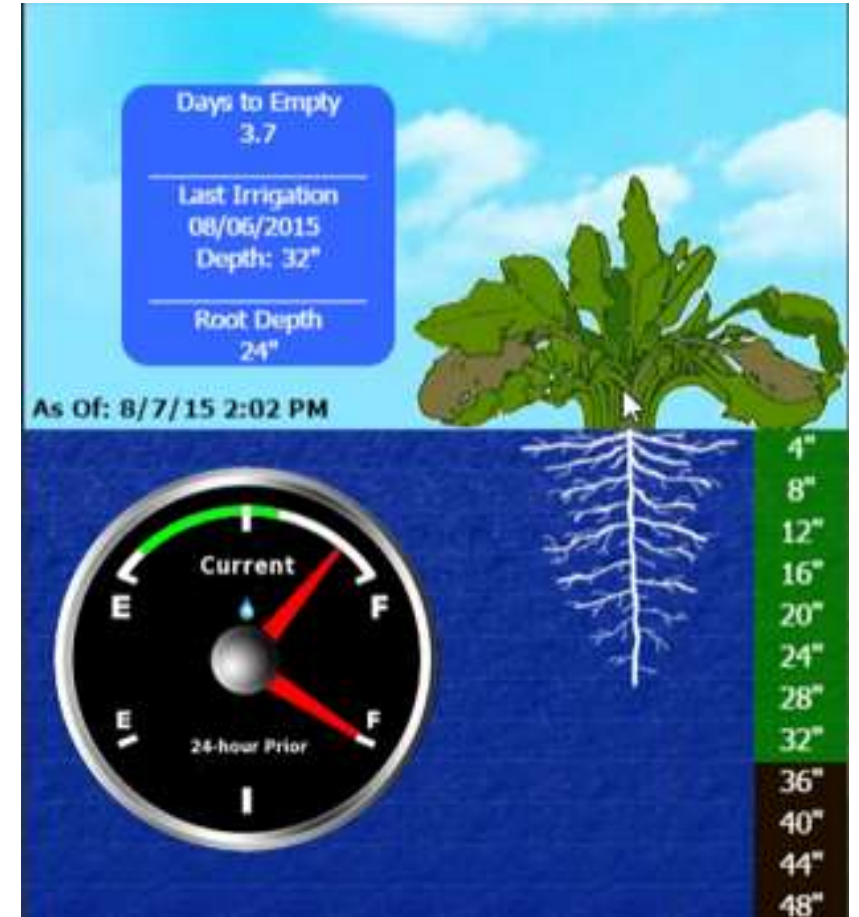
# EQIP – Advanced IWM – Required with VRI



2017 – continuously-log  
capacitance probe,  
single tube, sensors  
every 4" for min 4'.  
Include modem and 3<sup>rd</sup>  
party software.

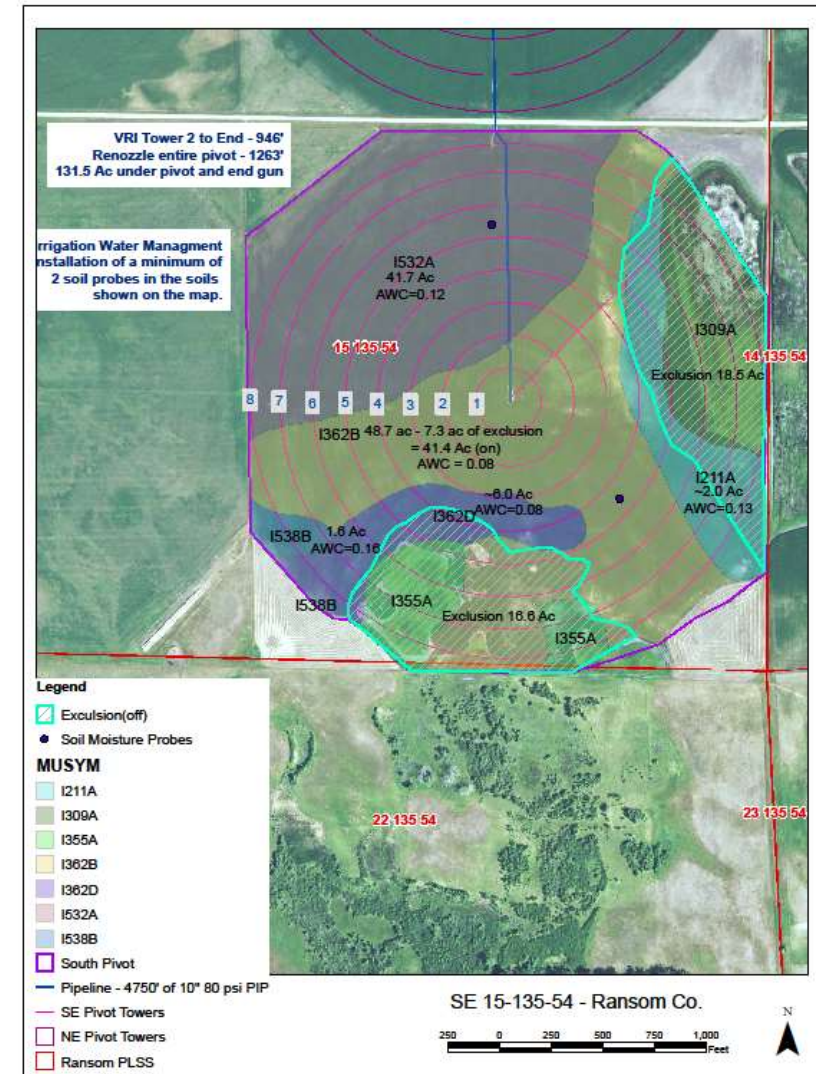
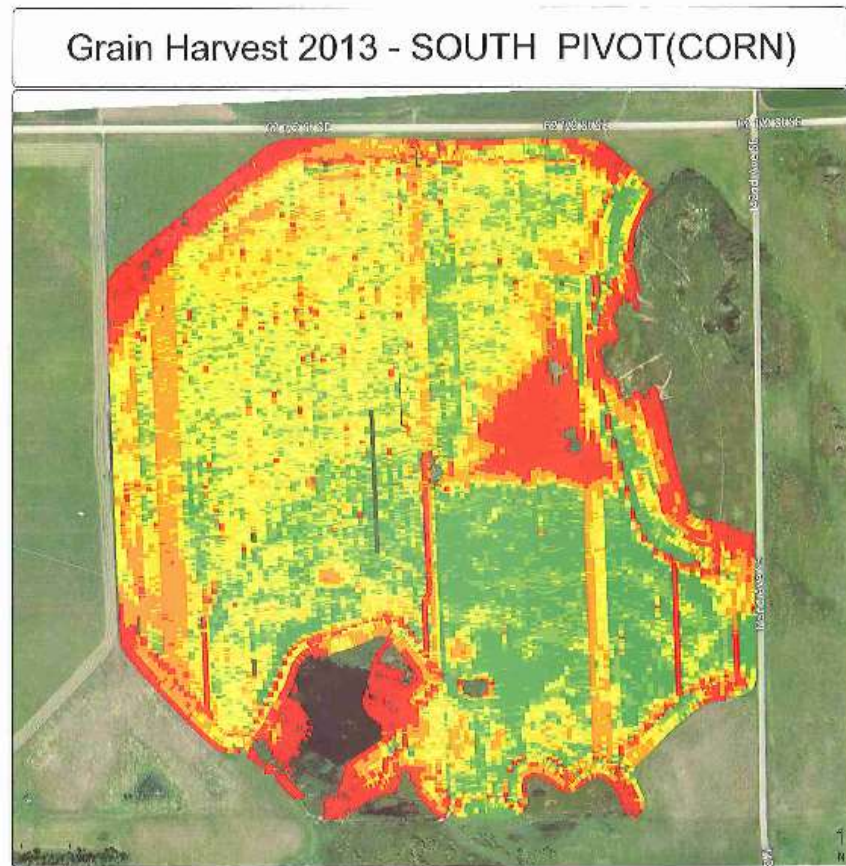


# EQIP – Advanced IWM

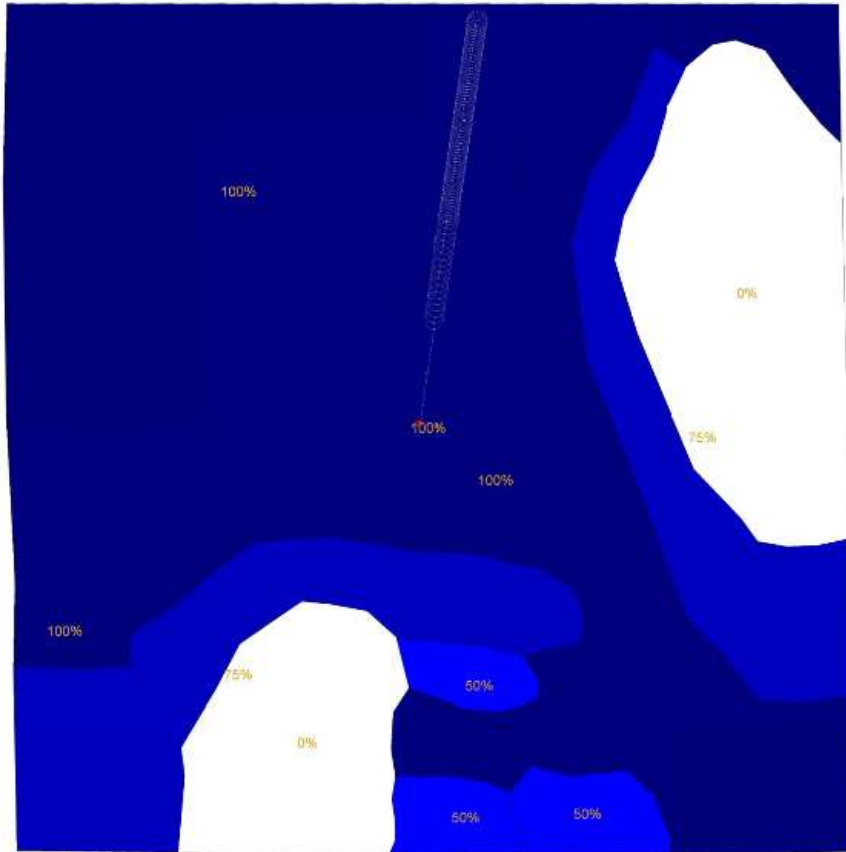




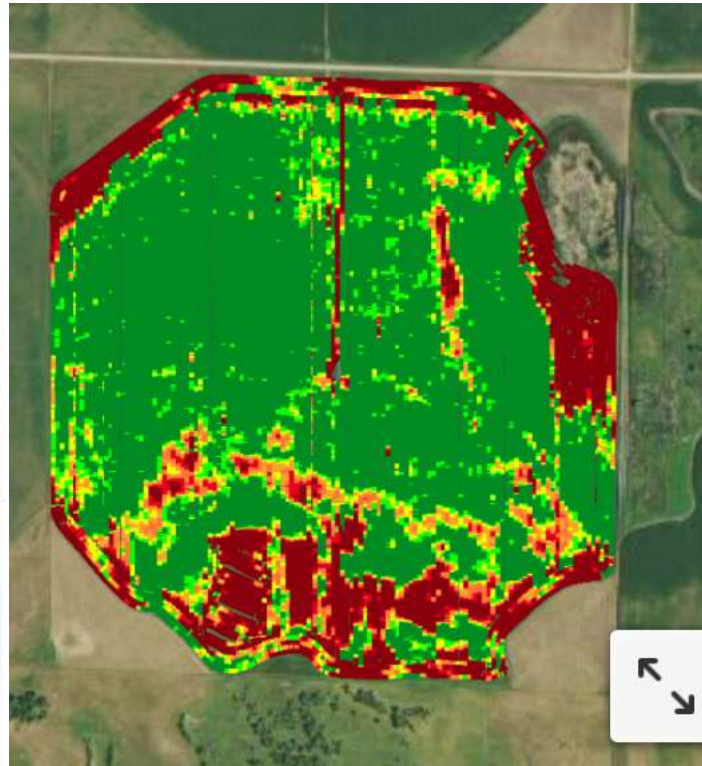
# VRI Success – Before VRI



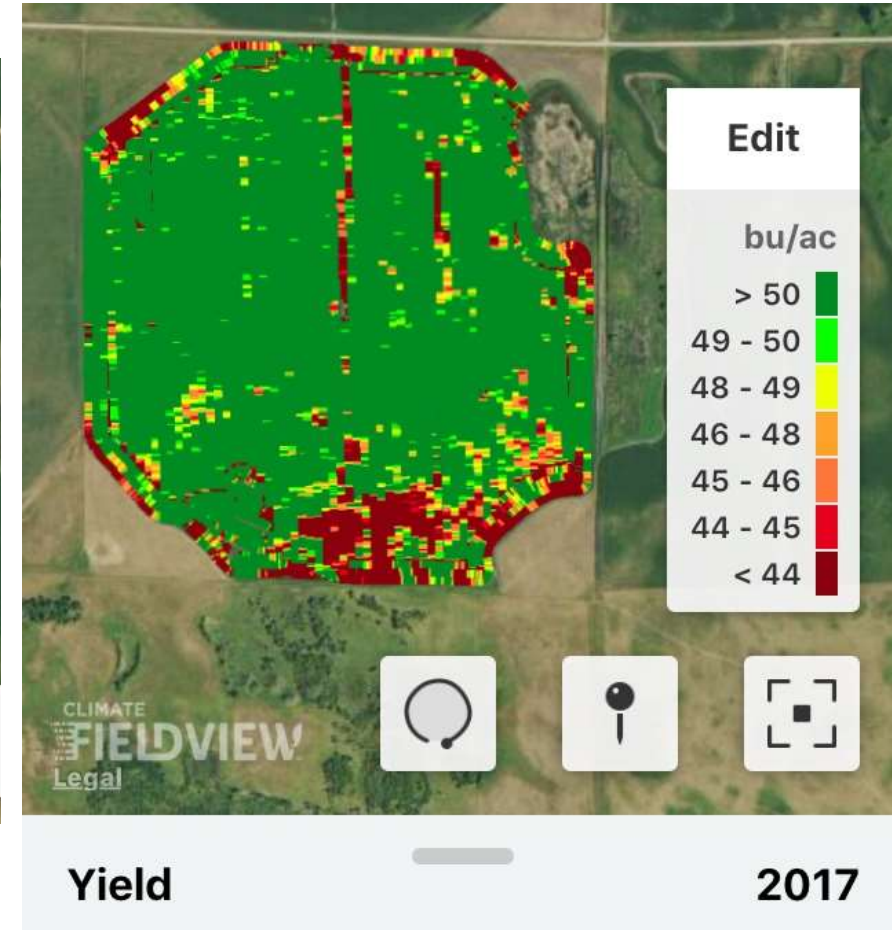
# VRI Prescription and Yield Maps after VRI



Prescription  
map 2017



Corn Yield  
map 2016



Soybean Yield  
map 2017





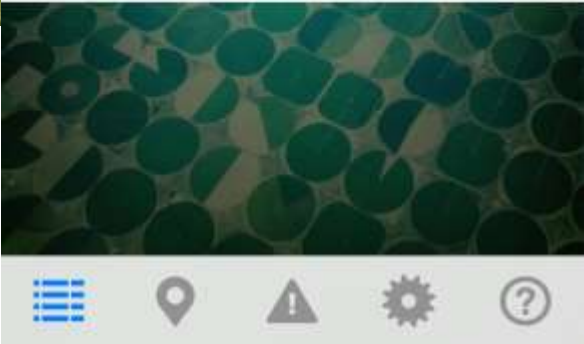
Verizon LTE 11:55 AM

< Equipment North Soil Probe

7/19/16, 11:30 AM

Normal

12 in	27 Centibar
24 in	11 Centibar
36 in	200 Centibar
48 in	7 Centibar





# Success!

- Water Quality – not applying chemical or fertilizer on wet areas
- More even yields through out a variable field
  - Corn before (2013) – 135 bu/acre
  - 2016 w/ VRI – corn 191 bu/ac
- Electrical bill for pump (VFD installed in 2016, 2 pivots on pump)
  - 2015 - \$4500/pivot (before VRI and VFD)
  - 2016 - \$2000/pivot
  - 2017 - \$1500 for **both** pivots

Any questions?



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