Precision Agriculture Workshop

Exercise 2

Prescription Maps Development

Start AGIS software and use imported data layers to calculate **phosphorus** application map (Prate, lbs P_2O_5/acre) using the following equations:

1. Replenishment of grain P removal equation *Phosphorous_1.txt*

Prate = Yield Goal · 0.33

2. UNL P equation (sufficiency concept) *Phosphorous_2.txt*

Prate = (25 – Bray-P) · 4 ***for Bray-P < 25 ppm***

- *Bray-P = soil test P [ppm] in 0-8" depth*

3. KSU P equation (sufficiency concept with yield goal) *Phosphorous_3.txt*

Prate = 50 + Yield Goal · 0.20 – Bray-P · 2.5 – Yield Goal · Bray-P · 0.01
for Bray-P < 20 ppm

4. KSU P equation with buildup concept - *Phosphorous_4.txt*

Prate = (20 - Bray-P) · 18 / Years to Build + Yield Goal · 0.33 ***for Bray-P < 20 ppm***

Compare Bray-P map used in exercise with the "best" Bray-P map available. Re-run any of the equations with the "best" P map to evaluate the effect of less detailed soil sampling and interpolation of soil test P on the variable rate P application map.

Use UNL Equation to prescribe **nitrogen** application (Nrate, lb N/acre):

1. UNL N Equation:

Nrate = 35 + Yield Goal ·1.2 – (8·NO_3 + 16·3)/24·8 – Yield Goal · SOM · 0.14 – Other Credits

- *SOM = % soil organic matter in 0-8"*
- *NO_3 = nitrate-N [ppm] in 0-8" depth*

2. Constant yield goal and constant soil nitrate value (NO_3) of 5 ppm in 0-8" depth

3. Constant yield goal and variable soil nitrate

Compare SOM and nitrate maps used in exercise with the "best" SOM and nitrate maps available and re-run equation.