

Precision Agriculture Workshop

Exercise 4

Geographic Information Systems

Computer Lab (room 114)

1. Start AGIS software
2. Create a grower (your name)
3. Create a farm (SITE_3)
4. Retrieve, process and revise 6 years of yield data (1997-2002)
5. Determine average relative yield – *Normal_Yield_Average.txt*
$$\text{Relative Yield} = (Y_1/A_1 + Y_2/A_2 + \dots + Y_6/A_6) / 6$$
 - Y_i – yield in i year
 - A_i – field average in i year
6. Determine standard deviation at each point – *Normal_Yield_StDev.txt*
7. Classify yield in three categories – *Normal_Yield_Classes.txt*
 - **Low** (-1) if $\text{Average} - \text{Yield} > \text{Standard Deviation}$
 - **High** (1) if $\text{Yield} - \text{Average} > \text{Standard Deviation}$
 - **Variable** (0) Otherwise
8. Calculate yield goal – *Yield_Goal.txt*
$$\text{Yield Goal} = 1.1 \cdot (A_1 + A_2 + \dots + A_6) / 6 \cdot \text{Relative Yield}$$
9. Import and display field boundary
10. Import and display soil type boundaries map
11. Import and display background image
12. Import, interpolate and display field elevation map
13. Import and interpolate Veris electrical conductivity maps for both layers
14. Import and interpolate soil pH map using the following interpolators:
 - a. Nearest neighbors (default and 5 m radius of influence)
 - b. Inverse distance (0.25, 1 and 2 power)
15. Import and interpolate soil OM, NO₃-N and P soil tests (use default inverse distance interpolator)