Precision Agriculture Workshop

Exercise 1

Geographic Information Systems

1. Login to one of computer:
    - **Username: "paw"**
    - **Password: given in class**
2. Start AGIS software
3. Create a grower (your name)
4. Create a farm (PAW)
5. Retrieve, process and revise 6 years of yield data (1997-2002)
6. Determine average relative yield – *Normal_Yield_Average.txt*

$$\textbf{\textit{Relative Yield} = } (Y_1/A_1 + Y_2/A_2 + \ldots + Y_6/A_6) / 6$$

    - Y_i *– yield in i year*
    - A_i *– field average in i year*
7. Determine standard deviation at each point – *Normal_Yield_StDev.txt*
8. Classify yield in three categories – *Normal_Yield_Classes.txt*
    - ***Low*** *(-1) if Average – Yield > Standard Deviation*
    - ***High*** *(1) if Yield – Average > Standard Deviation*
    - ***Variable*** *(0) Otherwise*
9. Calculate yield goal – *Yield_Goal.txt*

$$\textbf{\textit{Yield Goal} = 1.1} \cdot (A_1 + A_2 + \ldots + A_6) / 6 \cdot \textbf{\textit{Relative Yield}}$$

10. Import and display field boundary
11. Import and display soil type boundaries map
12. Use GIS Workshop's Orthographic Imagery Server to locate and download 1993 DOQ using boundary shape file at http://ortho.gisworkshop.com/
13. Import and display background image
14. Import, interpolate and display field elevation map
15. Import and interpolate Veris electrical conductivity maps for both layers
16. 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)
17. Import and interpolate soil OM, NO_3-N and P soil tests (use default inverse distance interpolator)