

## **Lab Session 4**

### **ArcView – Spatial Analyst**

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#### Preparation

Data set C:\esri\av\_gis30\avtutor\spatial\  
Start ArcView. Select Extension Spatial Analyst

#### 1. Exercise 1: Analyzing surfaces

*You will learn how to create and analyze grid themes representing continuous surfaces in order to determine the relationship between soil, terrain and crop yield*

- Open the new view and set map units to meters
- Create a classified crop yield map
  - ◇ Add new table *yield.txt*
  - ◇ **Add Event Theme** with Table is *yield.txt*, X field is X\_coord and Y field is Y\_coord (Goto menu **View** and select **Add Event Theme**)
  - ◇ Create a surface of crop yield.
    - Add *thefarm.shp*
    - Make *yield.txt* theme active
    - From **Surface** menu, select **Interpolate Grid**. The option as below

Output Grid Extent	Same As thefarm.shp
Cell Size	3 meters
Method	Spline
Z value field	Yield
Weight	0.01

- ◇ Reclassify yield surface
  - Make *Surface from Yield.txt* active
  - From **Analysis** menu select **Reclassify**
  - Set the number of classes to 5
  - Select **Graduated color** in Legend Editor
- Understand the **terrain**
  - ◇ Add the grid theme **DEM** to your view
  - ◇ From **Surface** menu select **Create Contour** to create a contour map
  - ◇ From **Surface** menu select **Create Derive Slope** to create a slope map
  - ◇ From **Surface** menu select **Create Derive Aspect** to create a aspect map
  - ◇ Chart the relationship between **yield** and **aspect**
    - Go to Legend Editor of **Aspect of DEM** and set the number of classes to **12**
    - Make **Reclass of surface from yield.txt** active
    - Go to **Analysis** menu Select **Histogram By Zone**
- Mapping soil chemistry and its relationship to crop yield
  - ◇ Add theme *soilsamp.shp*
  - ◇ Create a surface of organic matter
    - Go to **Surface** menu, select **Interpolate Grid**. The option as below

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Output Grid Extent	Same As Dem
Cell Size	Same As Dem
Method	Spline
Z value field	Organic_m

- ◇ Change the name of Surface from **Soilsamp.shp** to **Organic Matter** (Go to **Theme**, select **properties..** )
- ◇ Chart the relationship between organic matter and yield
  - Make **“Reclass of surface from yield.txt”** active
  - Go to **Analysis** menu Select **Summarize Zones...**
  - Select **“Organic Matter.shp”** as theme to summarize
  - Select **Mean** as the statistics to chart
- ◇ Create a surface of potassium
  - From **Surface** menu, select **Interpolate Grid**. The option as below

Output Grid Extent	Same As Dem
Cell Size	Same As Dem
Method	Spline
Z value field	Soil_k

- ◇ Change the name of Surface from **“Soilsamp.shp”** to **“Potassium Content”**
- ◇ Chart the relationship between potassium and yield