Tutorial Set 3: Spatial data analysis

Exercise Site20_3-2 Developing a K fertilizer prescription map

Learning objective: Generating a potassium (K_2O) prescription variability map (raster) and converting it to a classified polygon layer

Techniques: ArcToolbox – Spatial Analyst – Reclass – Reclassify
ArcTookbox – Conversion Tools – From Raster – Raster to Polygon

**Data Source:** Dataset3

Part 1: Layer management

1. Open the previously saved project.
2. Add a subgroup named "**K2O**" under the group "**Nutrient Prescription**".
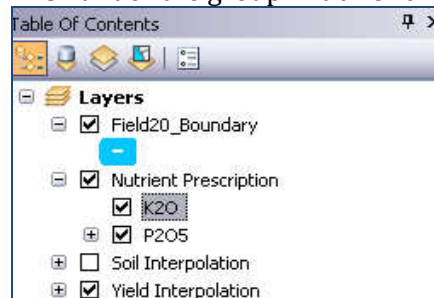
Part 2: Creating a K_2O prescription map using the **Reclassify** tool in the **ArcToolbox**

1. Understand the formulas used to estimate K_2O prescription

If $k < 100$ (ppm)	K_2O rate = 80 kg/ha
If $100 \leq k < 200$ (ppm)	K_2O rate = 60 kg/ha
If $200 \leq k < 500$ (ppm)	K_2O rate = 40 kg/ha
If $k > 500$ (ppm)	K_2O rate = 0 kg/ha

2. Right-click on the **K** layer (under the group "Soil Interpolation"). In **Layer Properties** dialog window, select **Symbology** and classify as in the following (classes following the K values stated under Step 1), and then click **OK**. This process only changes the classification for visualization. To permanently create a raster with classes you should use the same **Break Values** under the following step (Step 3).

1
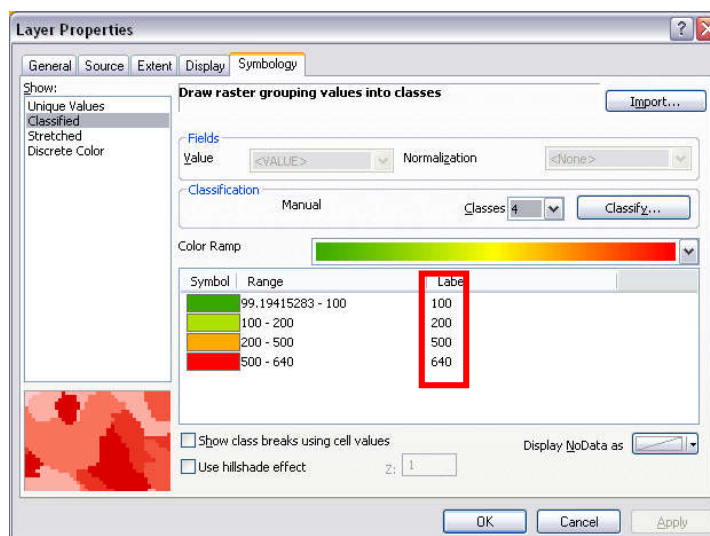
3. Create a K$_2$O prescription raster from a previously classified **K** Layer.
    Go to **ArcToolbox** > **Spatial Analyst Tools** > **Reclass** > **Reclassify**.
    In **Reclassify** dialog window, drag layer **K** in the field Input raster. Change the **New values** as follows. Click **Classify…** and set the number of classes to 4 and break values to be the same as on the table from the step above (Step 2). Save this reclassified raster as **K2O**.
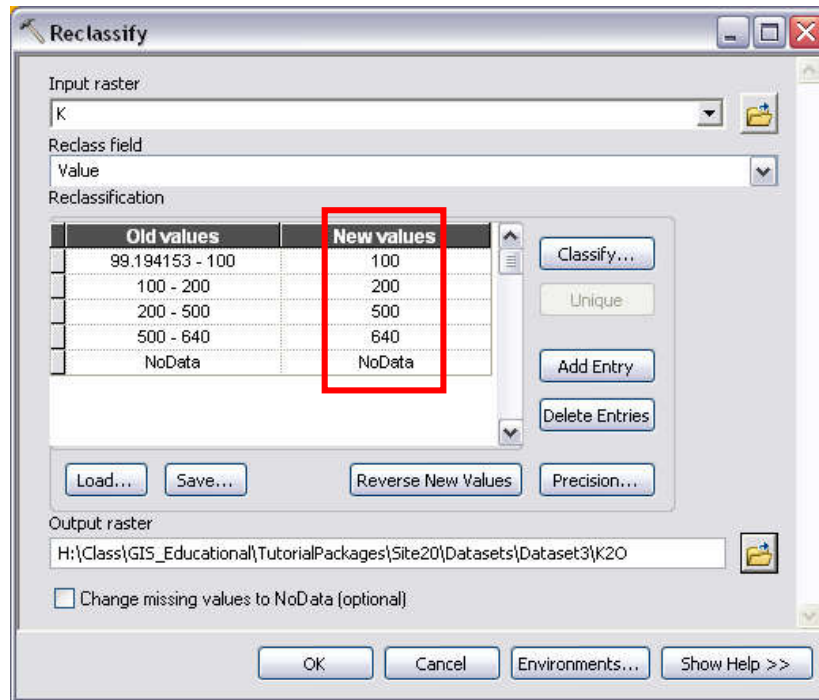
4. Convert the raster layer **K2O** to a shapefile using **ArcToolbox**.
    Go to **ArcTookbox** > **Conversion Tools** > **From Raster** > **Raster to Polygon**.
    Save the new shapefile as **K2O_shp**.
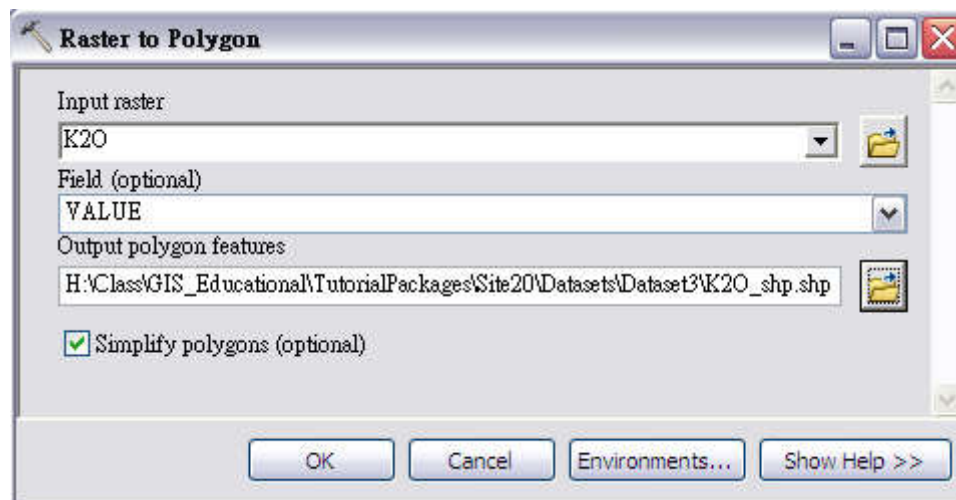
Part 3: Editing the attribute table of a K_2O prescription map (e.g., **_K2O_shp_**)

1. Right-click on the layer **_K2O_shp_** and select **Open Attribute Table**.
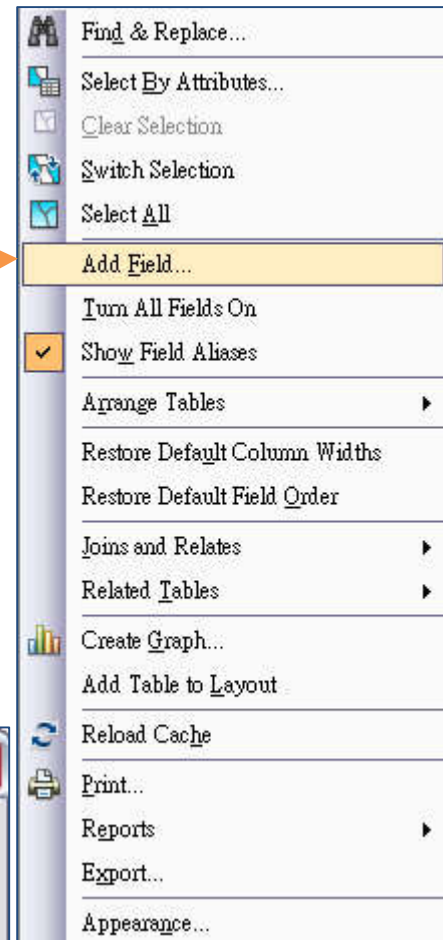2. Click the first button and select **Add Field.**

3. Set the parameters as shown

4. Select the three rows containing GRIDCOD = 200 (e.q. $100 \leq k < 200$), then right-click on the field name **K2O** to launch **Field Calculator**. Give K2O = 60, and then click **OK**.
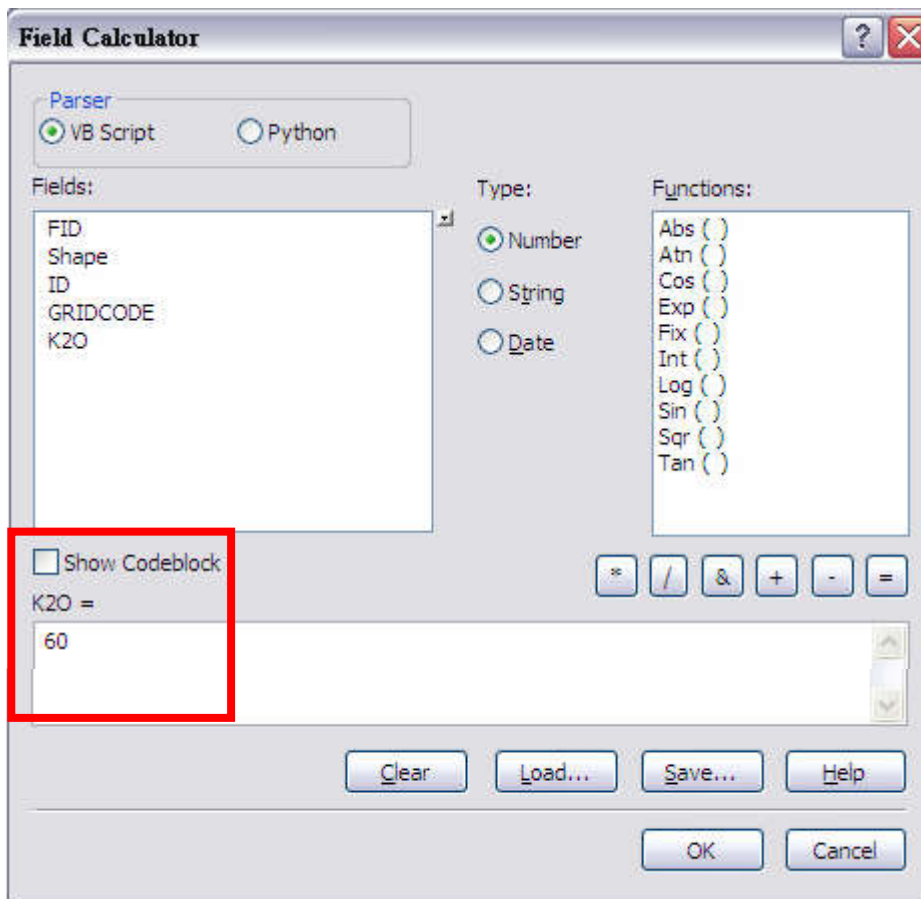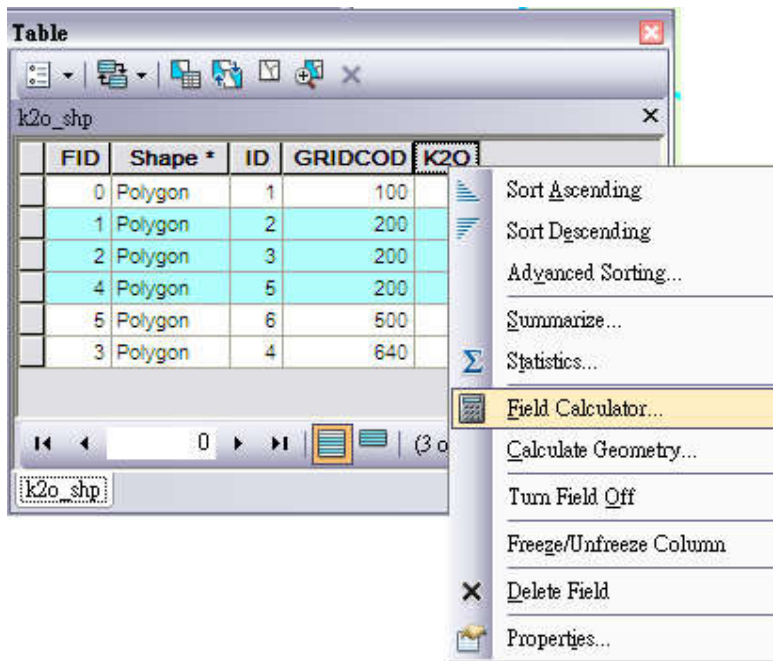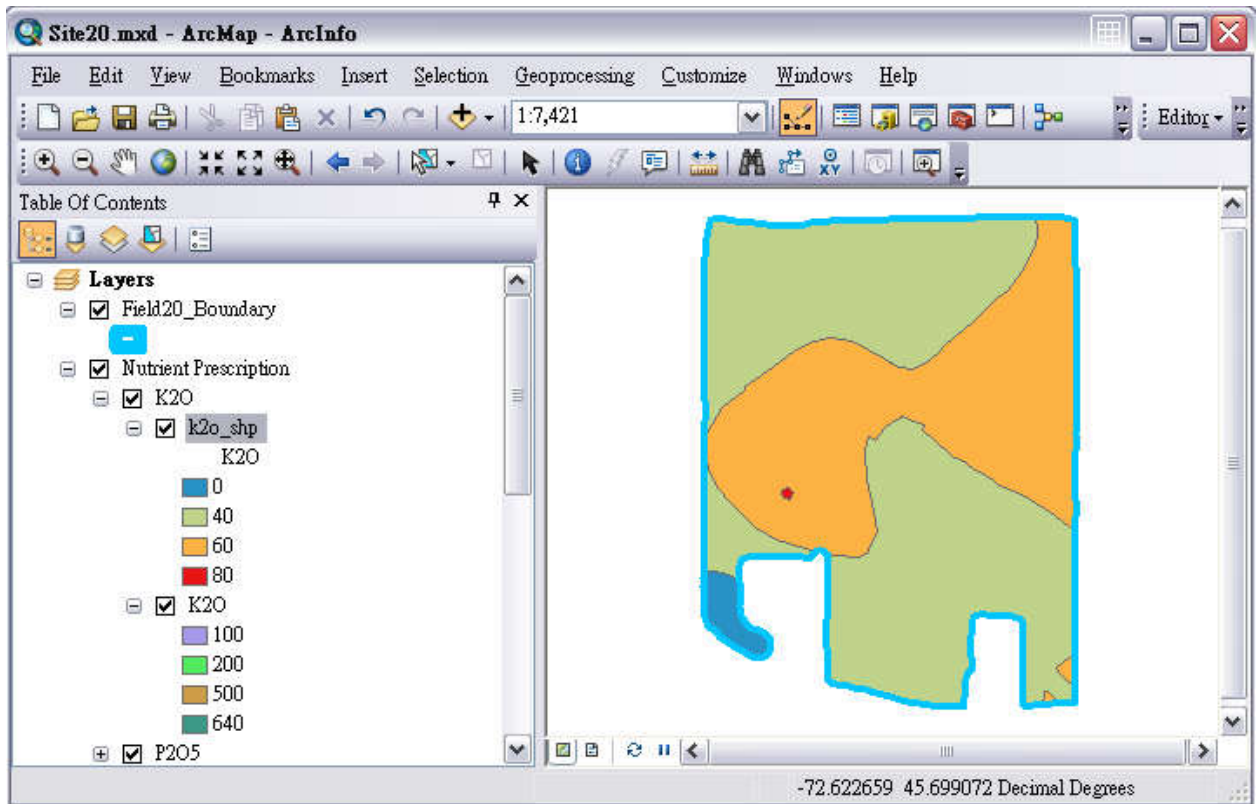
5. Repeat step 4 to set:
   GRIDCOD = 100 (e.q. $k < 100$); K$_2$0 = 80
   GRIDCOD = 500 (e.q. $100 \le k < 500$); K$_2$O = 40
   GRIDCOD = 640 (e.q. $k > 500$); K$_2$0 = 0

6. **Change Symbology** of the layer ***K2O_shp*** as follows. To see all symbol colors, click **Add All Values**. When using **Categories**, ArcGIS tend to randomly select the color assignment (the color ramp does not follow the data distribution). If you encounter this problem, just select a random color ramp, then pick again the one you chose. This should fix it. In addition, if you wish to invert the color ramp (e.g.: in the image below 0 be red and 80 be blue), right-click on the green-box region below and click **Flip Colors.**
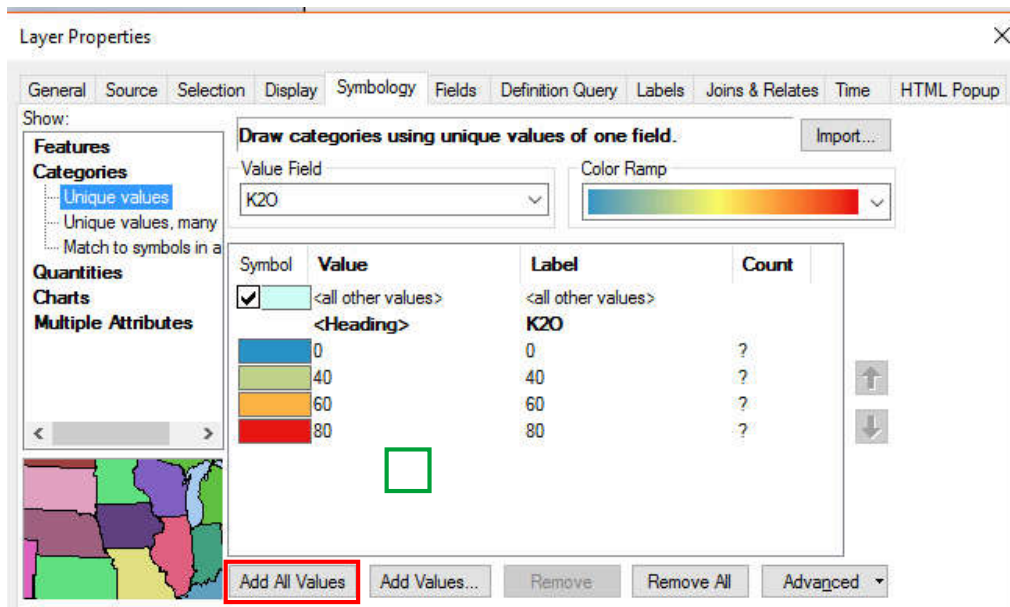
7. The **K2O_shp** (e.g. K$_2$O prescription map) presents as:

8. Save the project.