

## Tutorial Set 3: Spatial data analysis

### Exercise Site20\_3-2 Developing a K fertilizer prescription map

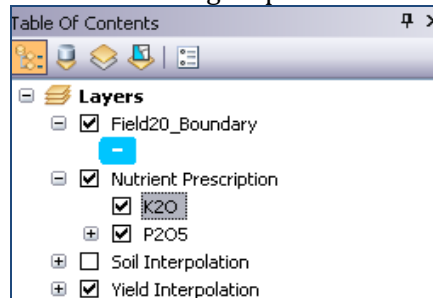
**Learning objective:** Generating a potassium ( $K_2O$ ) prescription variability map (raster) and converting it to a classified polygon layer

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

**Data Source:** Dataset3

#### Part 1: Layer management

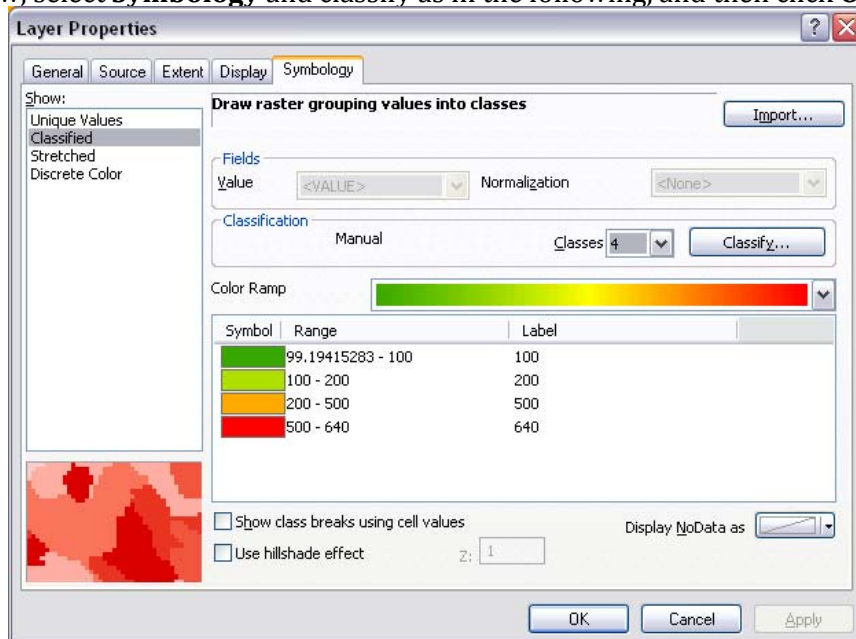
1. Open previously saved project.
2. Add a subgroup named “**K2O**” under the group “**Nutrient Prescription**”.



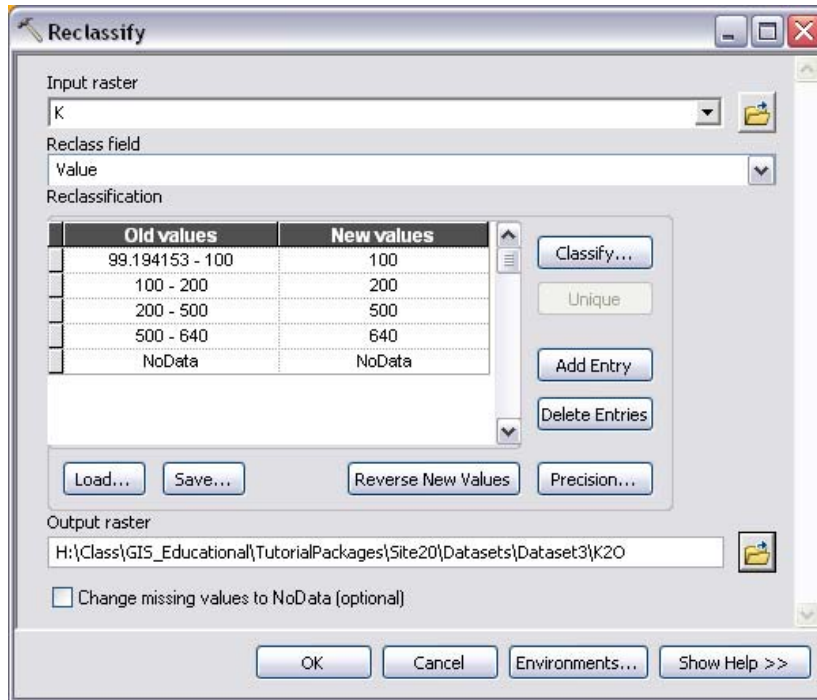
#### Part 2: Creating a $K_2O$ prescription map using the **Reclassify** tool in the **ArcToolbox**

1. Understand the formulas used to estimate  $K_2O$  prescription
 

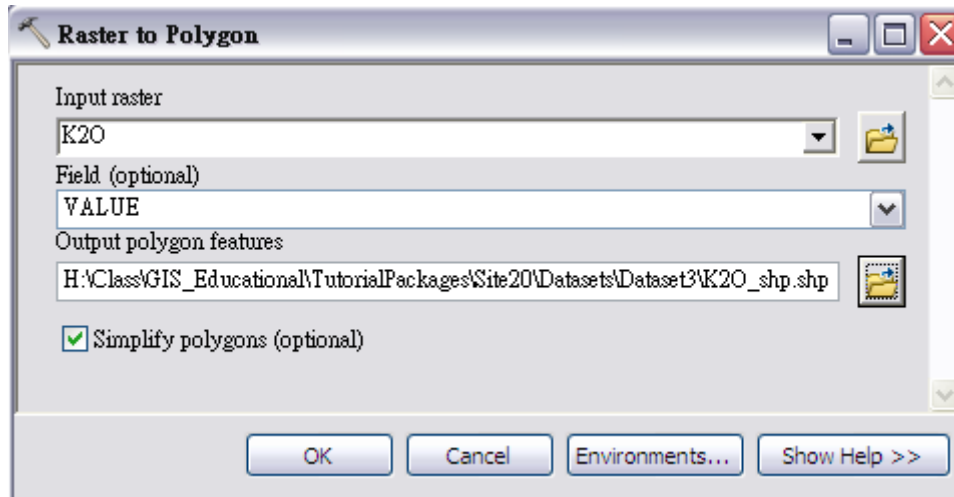
If $k < 100$ (ppm)	$K_2O$ rate = 80 kg/ha
If $100 \leq k < 200$ (ppm)	$K_2O$ rate = 60 kg/ha
If $200 \leq k < 500$ (ppm)	$K_2O$ rate = 40 kg/ha
If $k > 500$ (ppm)	$K_2O$ rate = 0 kg/ha
2. Right click on the **K** layer (under the group “Soil Interpolation”). In **Layer Properties** dialog window, select **Symbology** and classify as in the following, and then click **OK**.



3. Create a  $K_2O$  prescription raster from a previously classified  $K$  Layer.  
Go to **ArcToolbox > Spatial Analyst Tools > Reclass > Reclassify**.  
In **Reclassify** dialog window, drag the layer  $K$  in the field of Input raster. Change the **New values** as follows. Save this reclassified raster as  $K_2O$ .



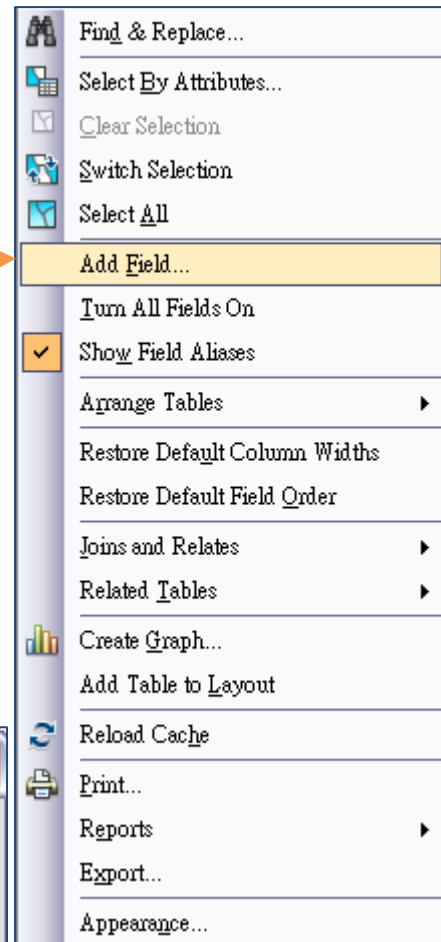
4. Convert the raster layer  $K_2O$  to a shapefile using **ArcToolbox**.  
Go to **ArcToolbox > Conversion Tools > From Raster > Raster to Polygon**.  
Save the new shapefile as  $K_2O\_shp$ .



**Part 3: Editing the attribute table of a K<sub>2</sub>O 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**.

FID	Shape *	ID	GRIDCOD
0	Polygon	1	100
1	Polygon	2	200
2	Polygon	3	200
3	Polygon	4	640
4	Polygon	5	200
5	Polygon	6	500



3. Set the parameters as shown

**Add Field**

Name:

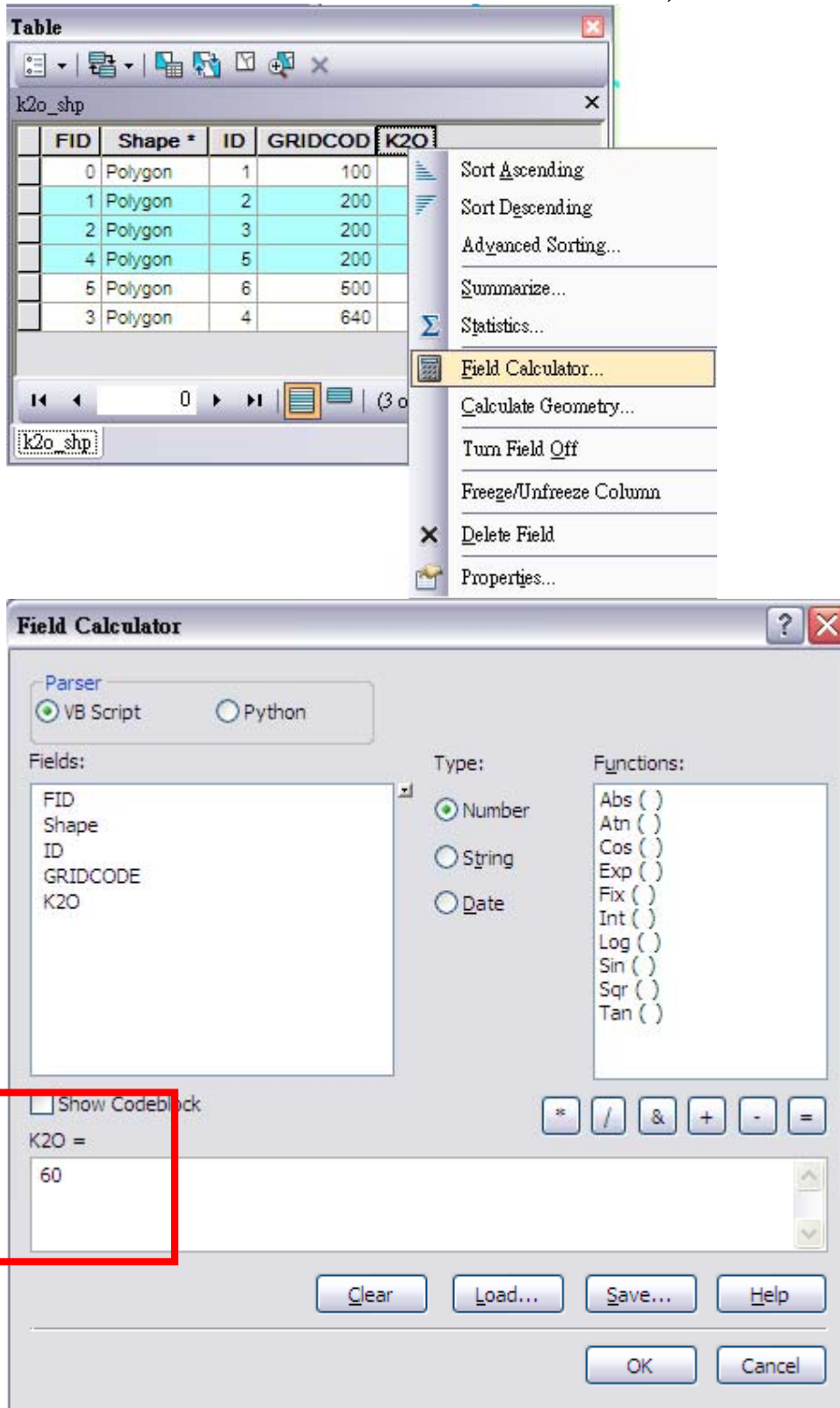
Type:

Field Properties

Precision:

OK Cancel

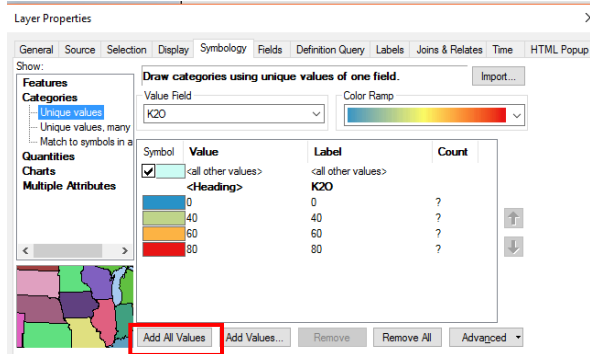
- Select the three rows containing GRIDCOD = 200 (e.g.  $100 \leq k < 200$ ), then right click on the field name **K20** to launch **Field Calculator**. Give K20 = 60, and then click **OK**.



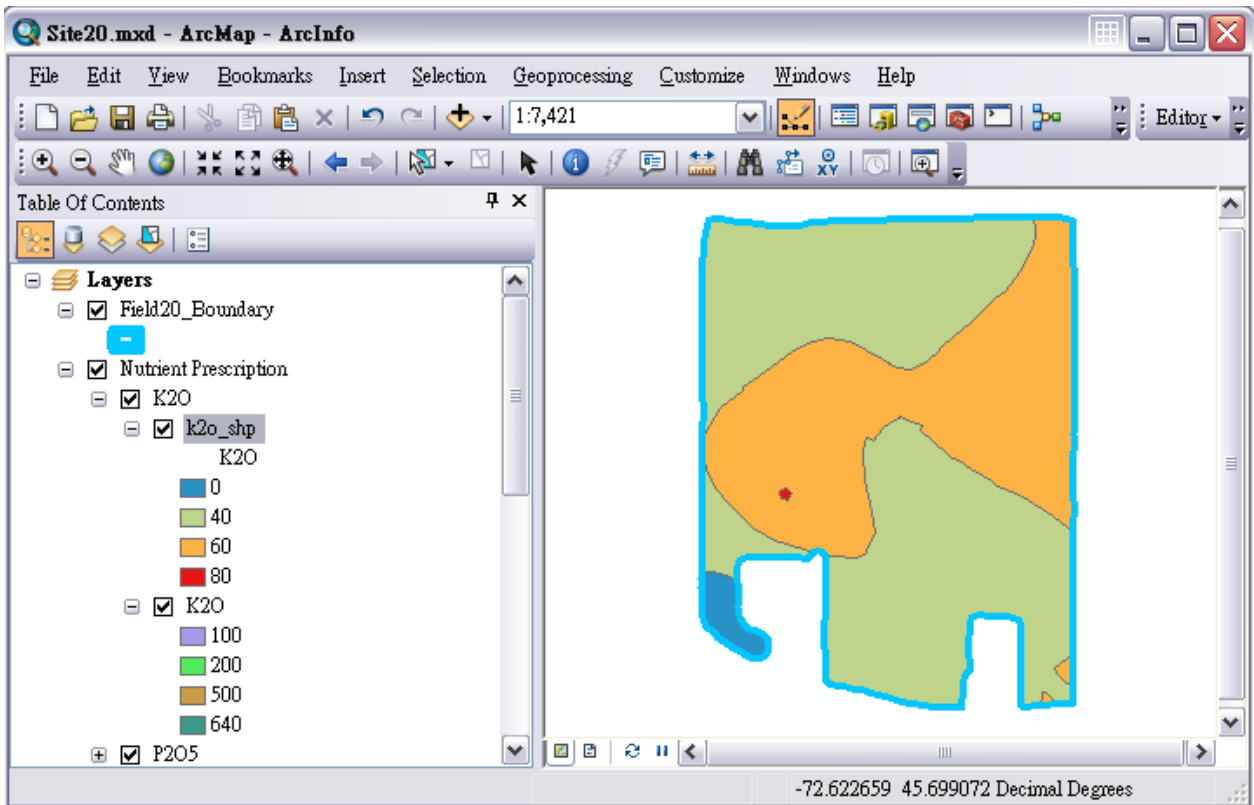
- Repeat step 4 to set:  
 GRIDCOD = 100 (e.q.  $k < 100$ );  $K_2O = 80$   
 GRIDCOD = 500 (e.q.  $100 \leq k < 500$ );  $K_2O = 40$   
 GRIDCOD = 640 (e.q.  $k > 500$ );  $K_2O = 0$

FID	Shape *	ID	GRIDCOD	K2O
0	Polygon	1	100	80
1	Polygon	2	200	60
2	Polygon	3	200	60
4	Polygon	5	200	60
5	Polygon	6	500	40
3	Polygon	4	640	0

- Change **Symbology** of the layer **K2O\_shp** as follows. To see all symbol colors, click **Add All Values**



- The **K2O\_shp** (e.g.  $K_2O$  prescription map) presents as:



8. Save the project.