## Lesson 3.2: Developing a K fertilizer prescription map

## Data Source: dataset3.zip

Part 1: Creating a K<sub>2</sub>O prescription map using the Reclassify tool.

- 1. Open the previously saved project.
- 2. Add a subgroup named "K2O" under the group "Soil Prescription".
- 3. Understand the formulas used to estimate  $K_2O$  prescription.

If <i>k</i> < 100 (ppm)	K <sub>2</sub> O rate	= 80 kg/ha
If $100 \le k < 200$ (ppm)	K <sub>2</sub> 0 rate	= 60 kg/ha
If $200 \le k < 500$ (ppm)	K <sub>2</sub> 0 rate	= 40 kg/ha
If <i>k</i> > 500 (ppm)	K <sub>2</sub> O rate	= 0 kg/ha

- 4. Seach Raster and Imagery (Options).
- 5. Under Raster Dataset, change Maximum number of unique values to display to 100,000.
- 6. Right click on *K* and select **symbology.** Select the below options.

Symbology	- k		~	μ×
/				≡
Primary sym	bology			
Classify				•
Field	No fields	•		
Normalization	No fields	•		
Method	Natural Breaks (Jenks)	-		
Classes	4	•		
Color scheme		•	 	

- 7. Search Reclassify (Spatial Analyst Tool).
- In the Reclassify window, change the following inputs, then hit Run: Input Raster : K

Reclass Field: Value

Start, End, New: Change the values to match the values shown below.

		~ 4 ×
$   \in $	Reclassify	$\oplus$
Parameters Envir	ronments	?
la sud su stan		
ĸ		
Reclass field		
VALUE		्रि
Reclassification		
		Reverse New Values
Star	t End	New
99.194153	100	100
100	200	200
200	500	500
500	632.395447	632
NODATA	NODATA	NODATA
Classify	Unique	🧀 🔚 📎
		<b>~</b>
K/U		
K2U		
Change missir	ng values to NoData	
Change missir	ng values to NoData • <b>Polygon</b> and input the foll	owing, then hit <b>Run.</b>
Change missir Change missir Search <b>Raster to</b> Geoprocessing	ng values to NoData • <b>Polygon</b> and input the foll	owing, then hit <b>Run.</b> ~ म ×
Change missir Change missir Search <b>Raster to</b> Geoprocessing	ng values to NoData • <b>Polygon</b> and input the foll Raster to Polygon	owing, then hit <b>Run.</b>
Change missir Search <b>Raster to</b> Geoprocessing	ng values to NoData • <b>Polygon</b> and input the foll Raster to Polygon	owing, then hit <b>Run.</b>
Change missir Change missir Search Raster to Geoprocessing Ce Parameters Environm	ng values to NoData <b>&gt; Polygon</b> and input the foll Raster to Polygon ments	owing, then hit <b>Run.</b>
Change missir Change missir Search Raster to Geoprocessing C Parameters Environm	ng values to NoData <b>&gt; Polygon</b> and input the foll Raster to Polygon ments	owing, then hit <b>Run.</b>
Change missir Change missir Search Raster to Geoprocessing C Parameters Environn Input raster	ng values to NoData <b>&gt; Polygon</b> and input the foll Raster to Polygon ments	owing, then hit <b>Run.</b>
Change missir Change missir Search Raster to Geoprocessing C Parameters Environn Input raster K2O Field	ng values to NoData <b>D Polygon</b> and input the foll Raster to Polygon ments	owing, then hit <b>Run.</b>
Change missir Change missir Search Raster to Geoprocessing C Parameters Environn Input raster K2O Field Value	ng values to NoData <b>Polygon</b> and input the foll Raster to Polygon ments	owing, then hit <b>Run</b> .
Change missir Change missir Ceoprocessing Ce	ng values to NoData <b>D Polygon</b> and input the foll Raster to Polygon ments Ires	owing, then hit <b>Run</b> .
Change missir Change missir Search Raster to Geoprocessing C Parameters Environn Input raster K20 Field Value Output polygon featur K20_poly	ng values to NoData <b>D Polygon</b> and input the foll Raster to Polygon ments Irres	owing, then hit <b>Run</b> .
Change missir Change missir Search Raster to Geoprocessing C Parameters Environn Input raster K20 Field Value Output polygon featur K20_poly Simplify polygons	ng values to NoData <b>D Polygon</b> and input the foll Raster to Polygon ments rres	owing, then hit <b>Run</b> .
Create multipart fe	ng values to NoData <b>D Polygon</b> and input the foll Raster to Polygon ments irres seatures	owing, then hit <b>Run</b> .

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

- 1. Right-click on the layer *K2O\_poly* and select **Attribute Table**.
- 2. Select Add Field.

	III K2O_poly ×							
Fi	Field: 📰 🖪 Selection: 🖫 🕂 🖶 📄 💭							
	OBJECTID *	Shape *	Id	gridcode	Shape_Length	Shape_Area	K20	
1	1	Polygon	1	100	40.134152	109.864991	<null></null>	
2	2	Polygon	2	200	1675.175068	79320.987842	<null></null>	
3	3	Polygon	3	200	130.754011	752.996272	<null></null>	
4	4	Polygon	4	632	404.853085	10347.843263	<null></null>	
5	5	Polygon	5	200	84.243874	358.860572	<null></null>	
6	6	Polygon	6	500	2961.136189	151024.586185	<null></null>	
	Click to add new row.							

 Add the following field, then right click on the field and select Save: Name: K2O

Type: Short			
	K2O	K2O	Short

- 4. In the **Attribute Table,** hold down **ctrl** and select all the rows that have a **gridcode** equal to **200.**
- 5. With the three rows selected, right click on the **K2O** column, and select **Calculate Field.**
- In the box under K2O = , enter 60. We are doing this to assign the right amount of K2O to the field, based on the current part per million of potassium present in the soil. The numbers are coming from the equations given at the beginning.

Calculate Field		?	×
This tool modifies the Input	Table		$\times$
i Input Table			^
K2O_poly		• 🦳	
Use the selected records	: 3		
Field Name (Existing or New)			
K2O		~ 读	
Expression Type			
Python		~	
- y			
Expression	-		
Fields	Helpers	T	
OBJECTID	.as_integer_ratio()	^	
Shape	.capitalize()		
Id	.center()		
gridcode	.conjugate()		
Shape_Length	.count()		
Shape_Area	.decode()		
К2О	.denominator()	~	
Insert Values	* / + - =		
K2O =	, .		
60			
Code Block			
			~
Enable Un	do Apply	OK	

7. Repeat steps 4-6 for the rest of the grid codes:

gridcode = 100 , K20 = 80 gridcode = 500, K2O = 40

gridcode = **632**, **K20 = 0** 

	III K2O_poly ×							
Fie	Field: 🖽 🖽 Selection: 🖼 🚭 📲 🔲 💭 📑							
	OBJECTID *	Shape *	Id	gridcode	Shape_Length	Shape_Area	к20	
1	1	Polygon	1	100	40.134152	109.864991	80	
2	2	Polygon	2	200	1675.175068	79320.987842	60	
3	3	Polygon	3	200	130.754011	752.996272	60	
4	4	Polygon	4	632	404.853085	10347.843263	0	
5	5	Polygon	5	200	84.243874	358.860572	60	
6	6	Polygon	6	500	2961.136189	151024.586185	40	

8. Right click on *K2O\_poly* and select **Symbology.** Fill out the window as shown below.

Primary syml	pology	
Graduated Cold	rs	
Field	gridcode 🔹 🔀	
Normalization	<none></none>	
Method	Natural Breaks (Jenks)	•
Classes	4	
Color scheme	☆ ▼	
	000	

9. Search Pairwise Clip.

$   \in $	Pairwise Clip	$\oplus$
Parameters Environments		?
i) Input Features K2O_poly Clip Features		<b>~</b>
Field20_Boundary	~	🧰 🖊 •
K2O_map		



Save your project. Done!