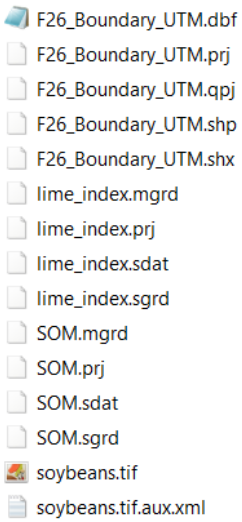
Exercise 4-1: Lime prescription mapping

Mapping objectives:

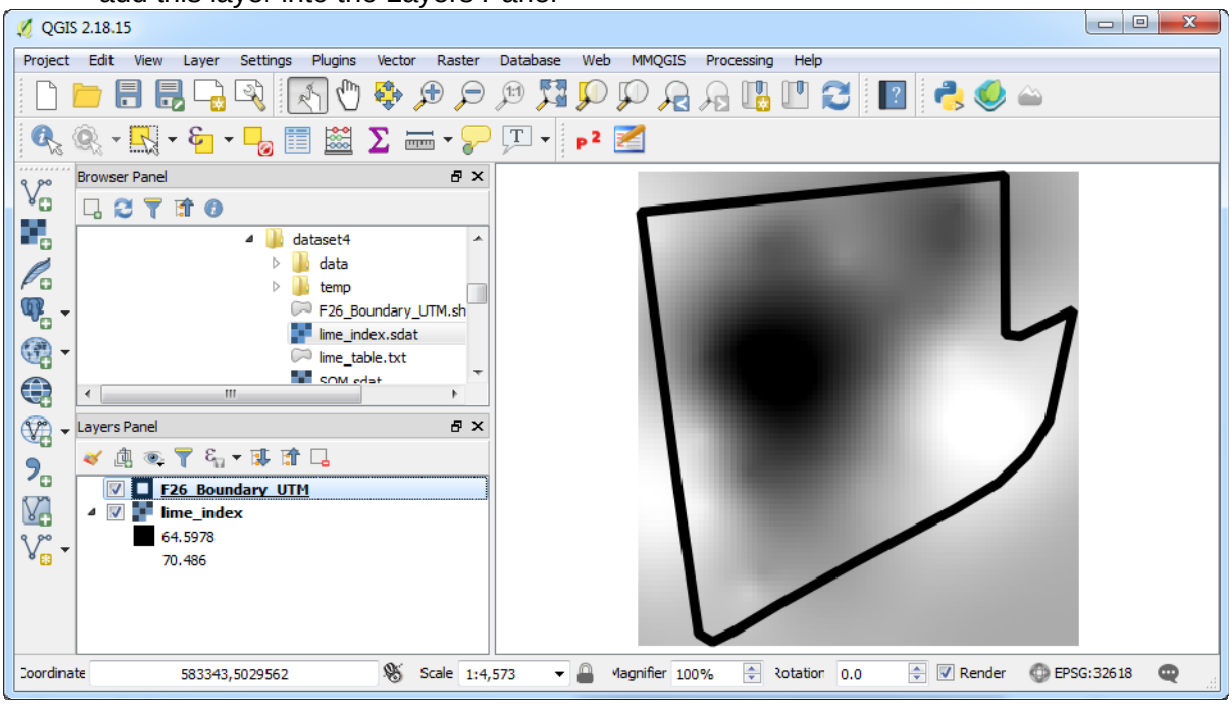
- Create a lime prescription map based on the variability of soil buffer pH

Data folder: Dataset4



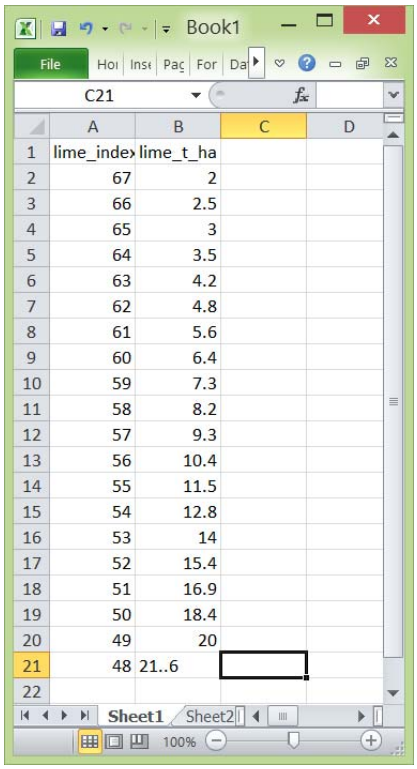
Part 1: Add the interpolated soil buffer pH map to QGIS

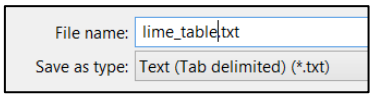
1. Open a new project
2. In the Browser Panel, double click ***lime_index.sdat*** and ***F26_Boundary_TUM.shp*** to add this layer into the Layers Panel



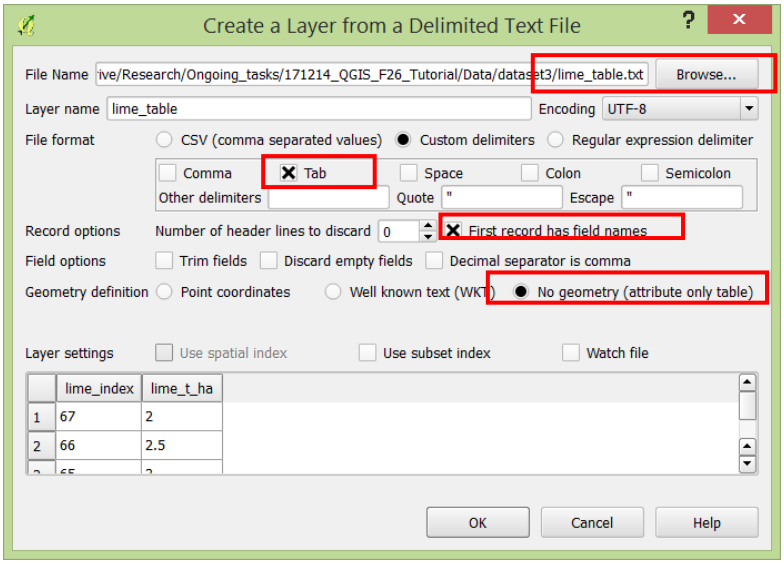
Part 2: Create a lime prescription map according to soil buffer pH

1. **Creating a table to assign lime prescription rate (t/ha)**
   *** In this tutorial dataset, the lime index is the soil buffer pH multiply by 10 to make sure one decimal value is considered during raster operation, i.e., **lime_index = Buffer pH * 10**
   a. In EXCEL, open a new sheet and enter values as shown
   b. Save this file in the project folder as lime_table.txt (Tab delimited)



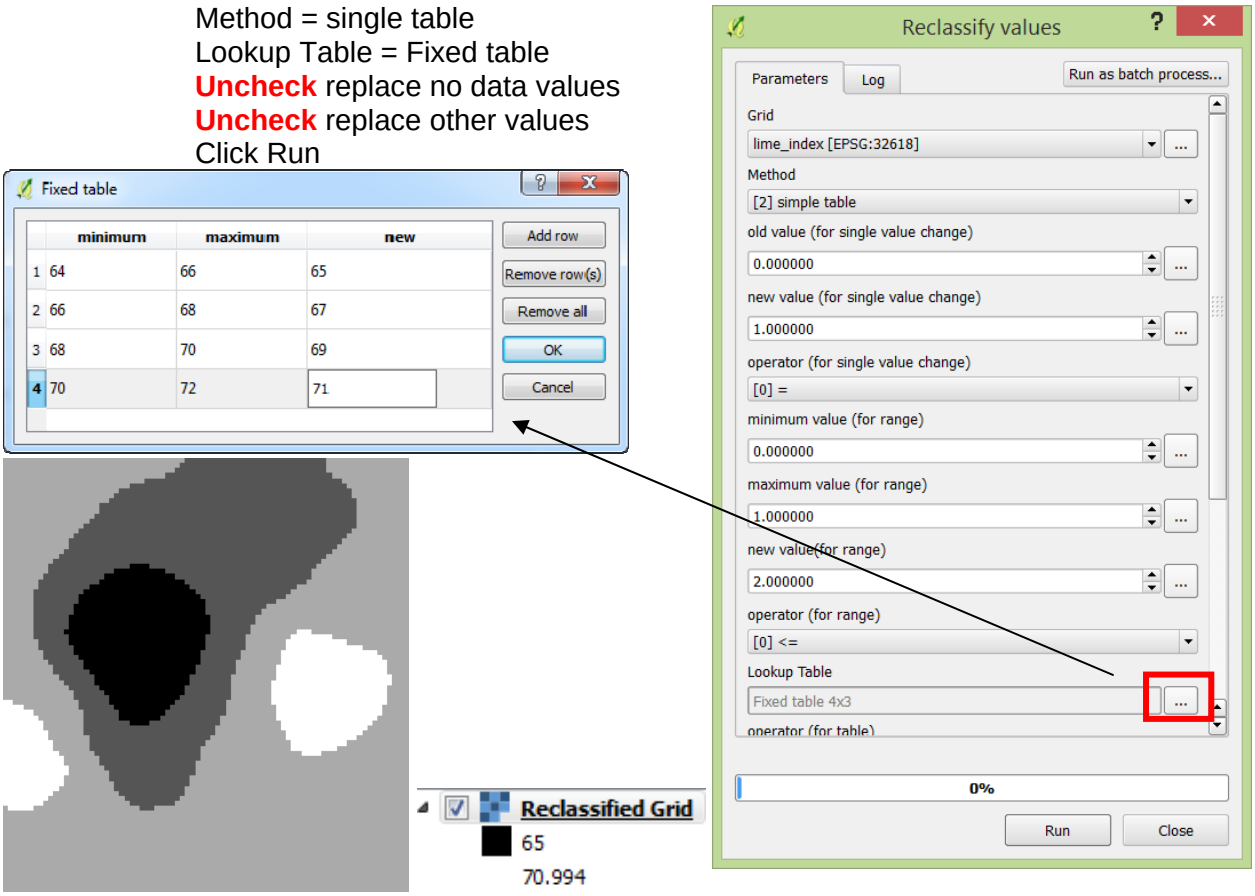


2. **Adding the lime_table.txt as a layer in QGIS**. Click Add Delimited Text Layer icon to add this table as a layer without geometry



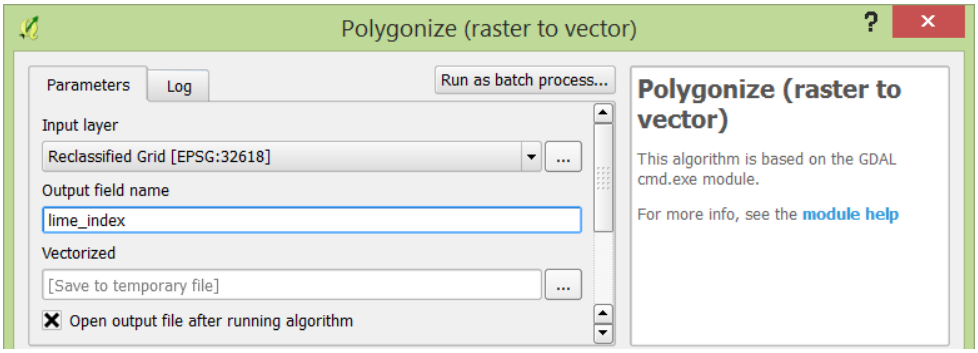
3. **Classifying buffer pH values into zones**. In the Processing Toolbox, enter “reclassify” and click SAGA > Raster tools > Reclassify values
   a. In Reclassify values
   Use default values, except the following exceptions

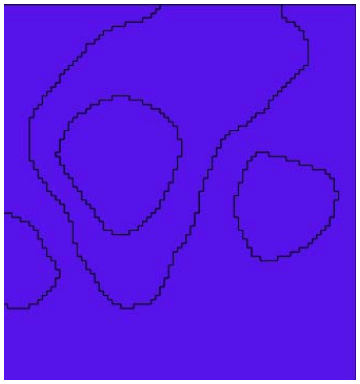
Grid = ***lime_index***
Method = single table
Lookup Table = Fixed table
Uncheck replace no data values
Uncheck replace other values
Click Run



4. **Converting raster to polygon**. In the Processing Toolbox, enter “polygon” in Search … and then click GDAL/OGR > Conversion > Polygonize (raster to vector)
    a. Input layer = ***Reclassified Grid***
    b. Output field name = lime_index

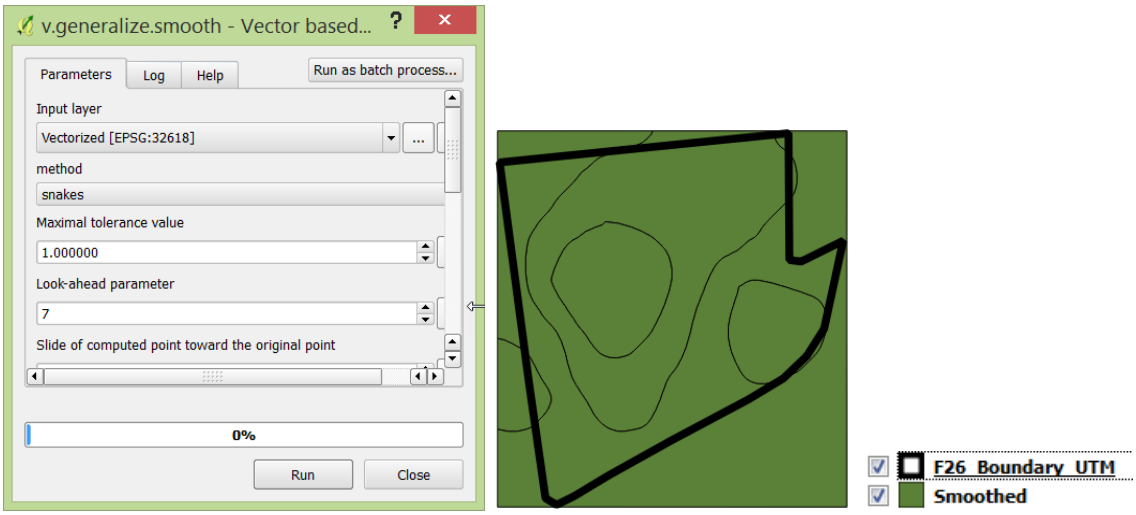
    Click Run





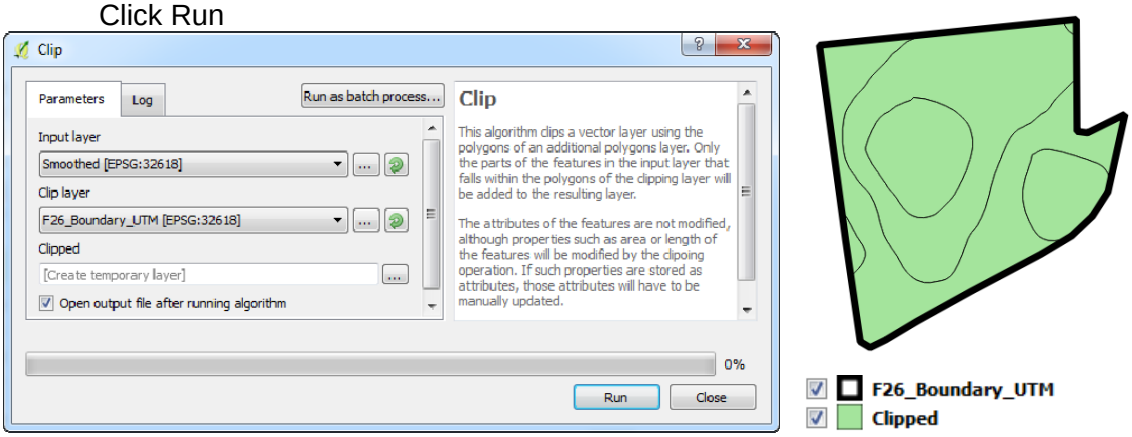
5. **Smoothing polygon outline**. In the Processing Toolbox, enter “smooth” in Search … and then click > GRASS GIS > Vector > v.generalize.smooth
    Use default value, except the following exceptions
    a. Input layer = ***Vectorized***
    b. Method = snake

    Click Run. A Smoothed polygon is added



6. **Clipping the vector layer to the field boundary**. In the Processing Toolbox, click QGIS geoalgorithms > Vector overlay tools > Clip
    a. Input layer = ***Smoothed***
    b. Clip layer = ***F26_Boundary_UTM***

    Click Run



7. **Joining the lime_table to the attribute table of Clipped layer**. Go to the Processing Toolbox > QGIS geoalgorithms > Vector general tools > Join attributes table
    a. Input layer = ***Clipped***
    b. Input layer 2 = ***lime_table***
    c. Table field = lime_index
    d. Table field 2 = lime_index

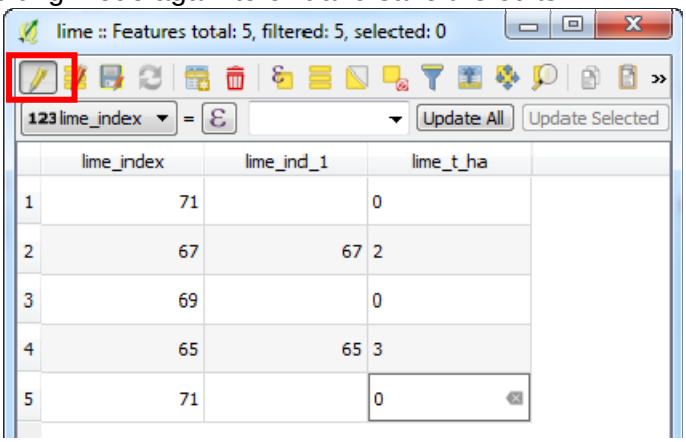
    Click Run

8. **Storing the temperate file as a shapefile in the system**. In the Layers Panel, right click ***Joined layer*** and then click Save as …
    a. Format = ESRI shapefile
    b. File name = lime.shp
    c. CRS = Selected CRS (EPSG:32618, WGS 84 / UTM zone 18 N)

    Click OK
9. **Remove the unneeded layers**. In Layers Panel, remove ***Clipped***, ***Smoothed***, ***Vectorized***, ***Filtered Grid***, ***Joined layer***, and ***Reclassified Grid***

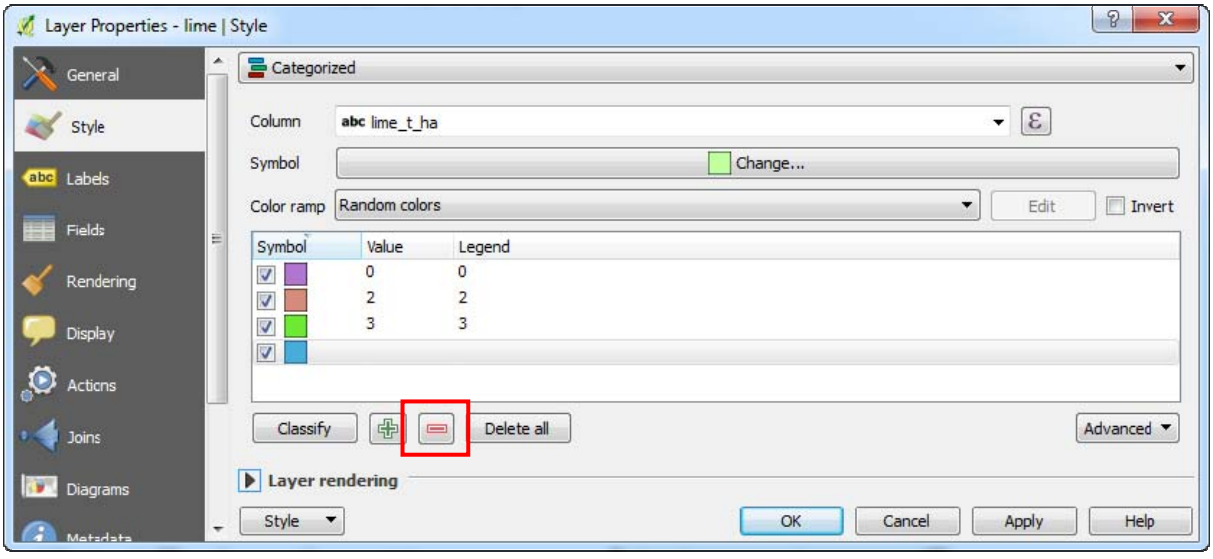
Part 3: Produce a liming layout map

1. In Layers Panel, right click ***lime*** and click Open Attribute Table. Click Toggle editing mode and manually enter 0 in the column of lime_t_ha for lime_index > 67. Once done, click Toggle editing mode again to exit and save the edits

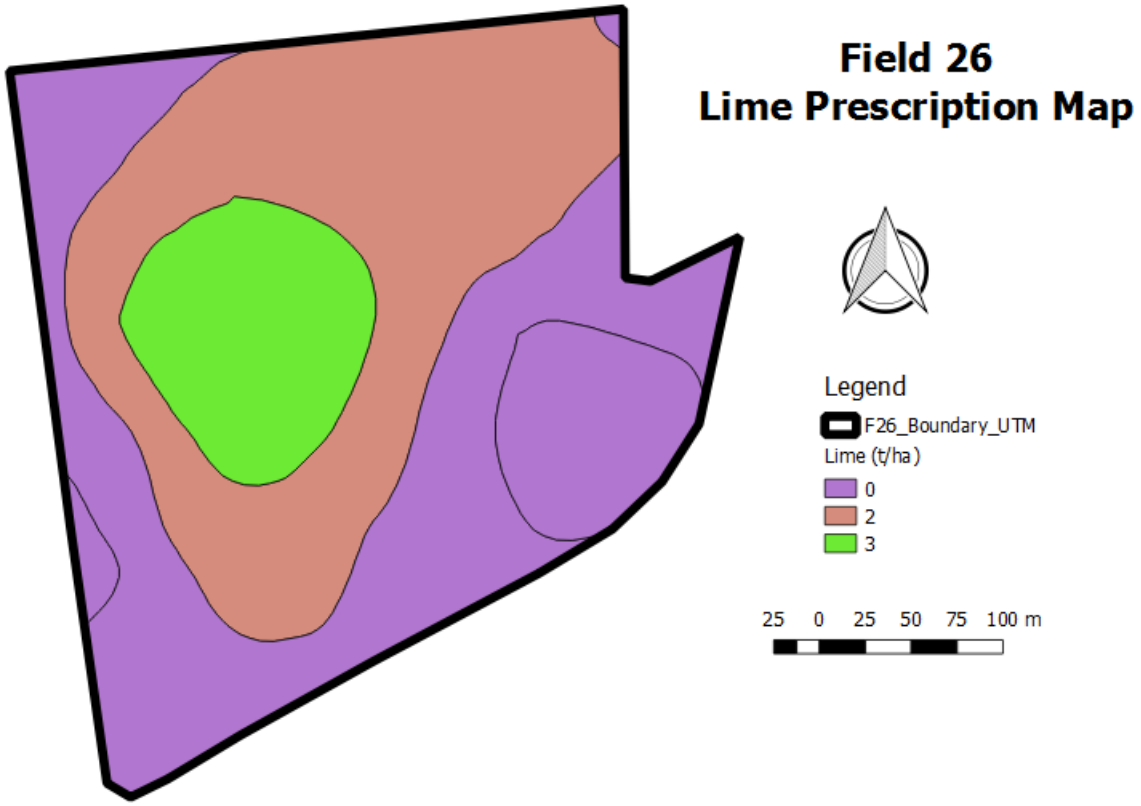


2. In the Layers Panel, right click ***lime*** and then click Properties
    a. Style = Categorized
    Column = lime_t_ha
    Color ramp = Random colors
    Click Classify
    Click the unassigned category and then click Delete

    Click OK



3. In Layers Panel, right click ***lime*** and rename this layer as ***Lime (t/ha)***
4. Create a lime prescription layout map following the same steps described in previous exercise.



5. Save this project as ***set4.qgs***.