

Exercise 2-3: Establishing grid sampling scheme over field topography

Mapping objectives:

- Create a continuous surface elevation map from RTK GPS measurements using Inverse Distance Weighting Interpolation
- Create a grid sampling scheme

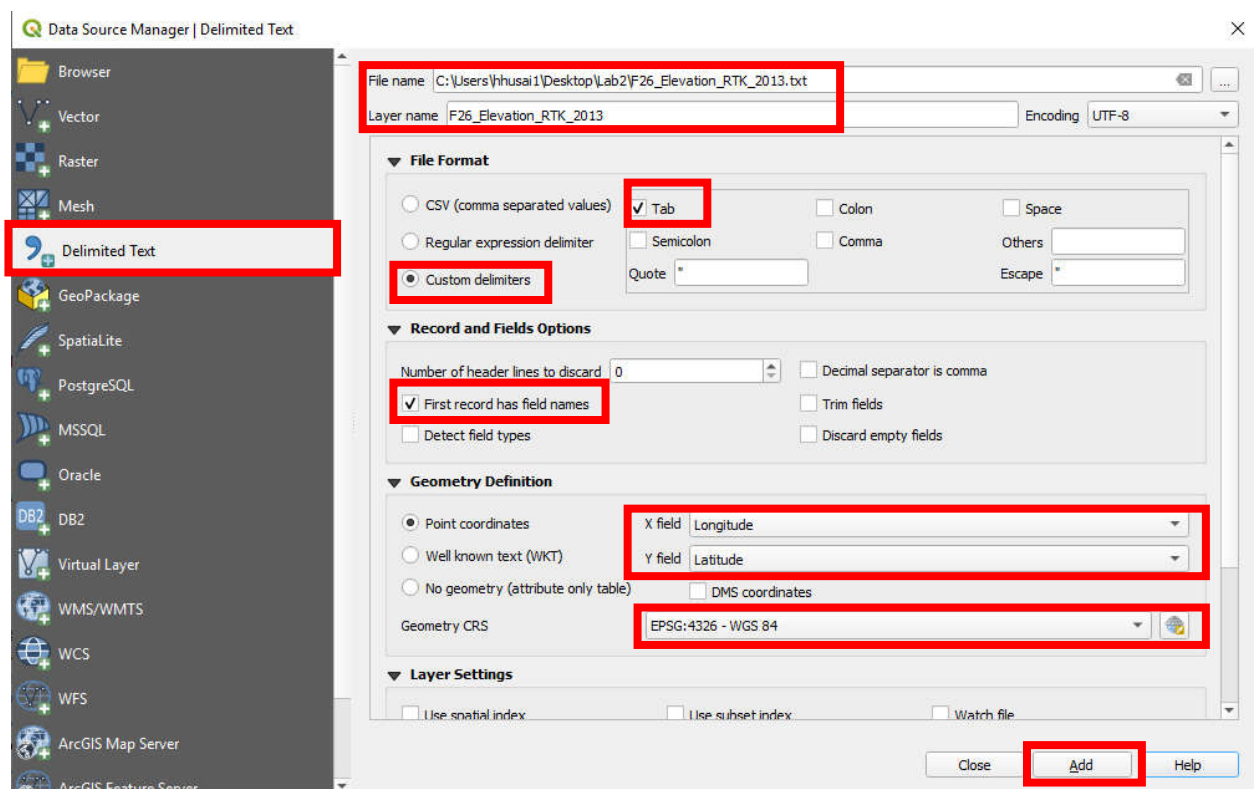
Data folder: Dataset2

Part 1: Open saved project

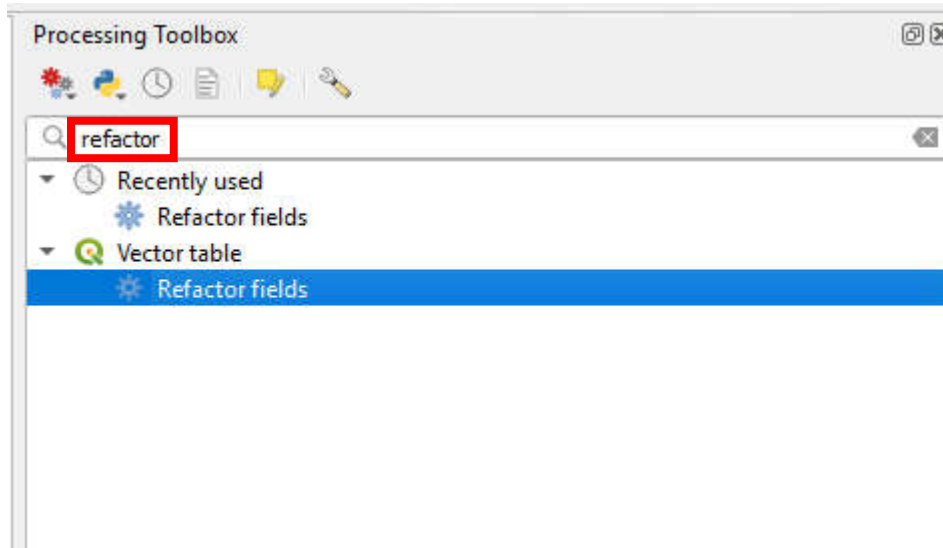
1. Open previous saved project
 - a. Double click **set2** in Recent Projects or double click **set2.qgs** in the folder of Dataset2
 - b. Uncheck all other layers except **F26_Boundary_UTM**

Part 2: Create elevation point layer from tabular data

1. Click Add Delimited Text Layer in the Manage Layers Toolbar
2. Click Browse to select **F26_Elevation_RTK_2013.txt** and set other parameters as followings then click OK

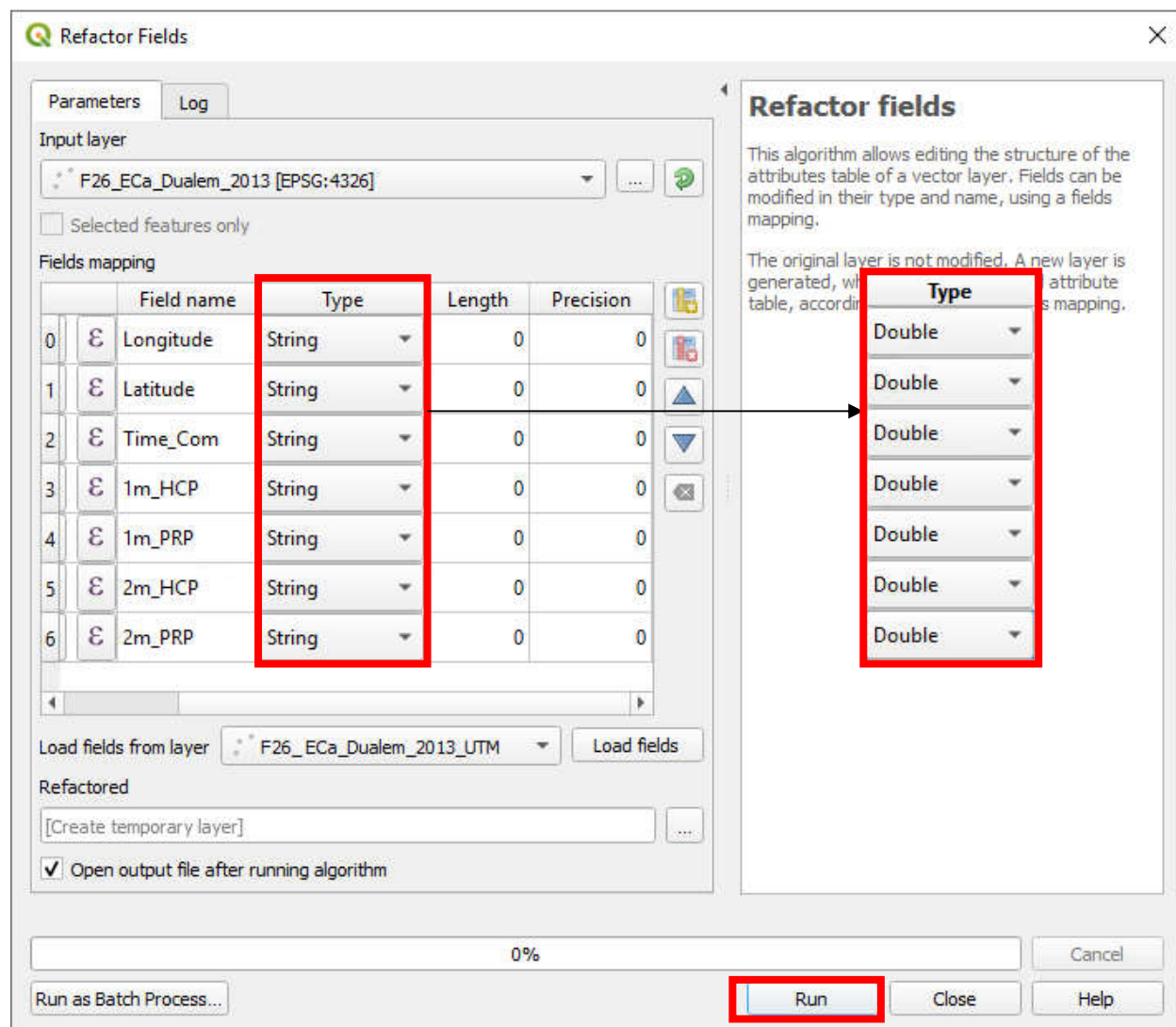


3. In the Layer Panel, right click **F26_Elevation_RTK_2013**, then click Save As

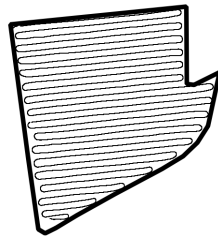


6. Change the type of field:

- a. Type "refactor" in processing Toolbox and open **"Refactor fields"**.
- b. Select **"F26_Elevation_RTK_2013"** shapefile.
- c. change all string type to "Double".
- d. click "Run"



- ☒ **Refactored**
- ☒ F26_Yield_Soybeans_2014
- ☒ F26_Boundary_UTM

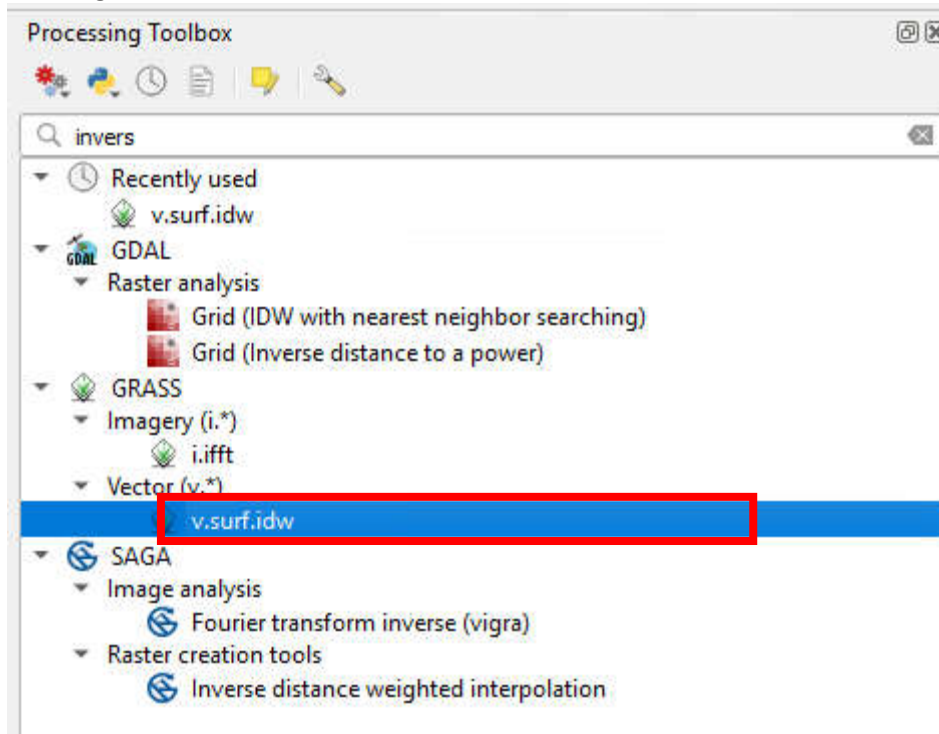


- ☒ F26_Boundary_UTM
- ☒ F26_Elevation_RTK_2013_UTM

4. Right click **F26_Elevation_RTK_2013**, then click Remove

Part 3: Create an elevation raster layer

1. In Processing Toolbox, enter “inverse” in Search ... and then click GRASS GIS > Vector > v.surf.idw



2. In v.surf.idw – Surface interpolation from vector points

Use default values, except ..

Input vector layer = F26_Elevation_RTK_2013_UTM

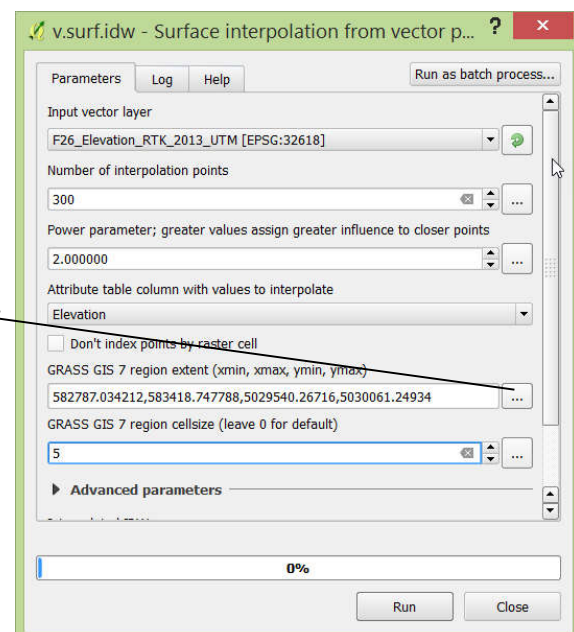
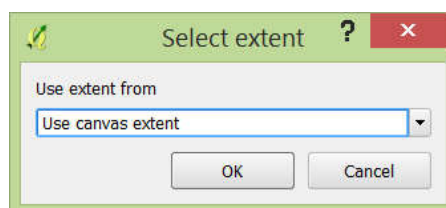
Number of interpolation points = 300

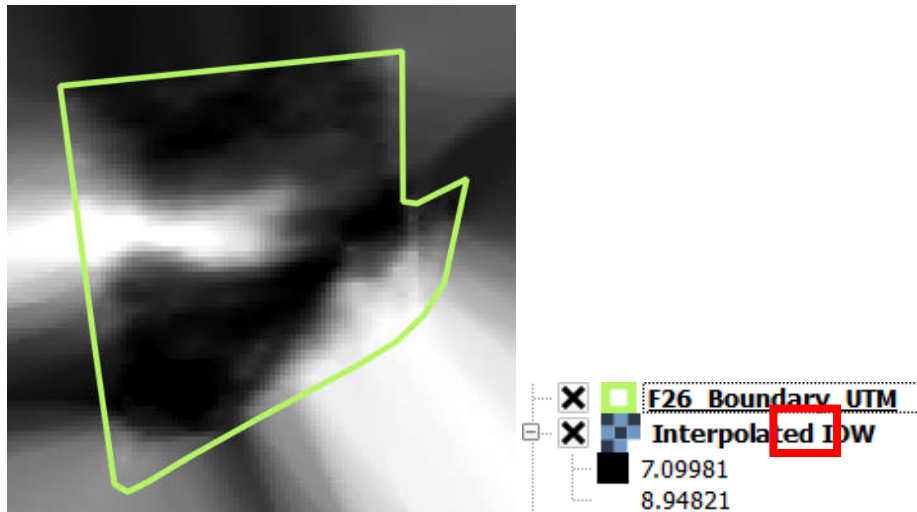
Attribute table column with values to interpolate = Elevation

GRASS GIS 7 region extent = Use canvas extent

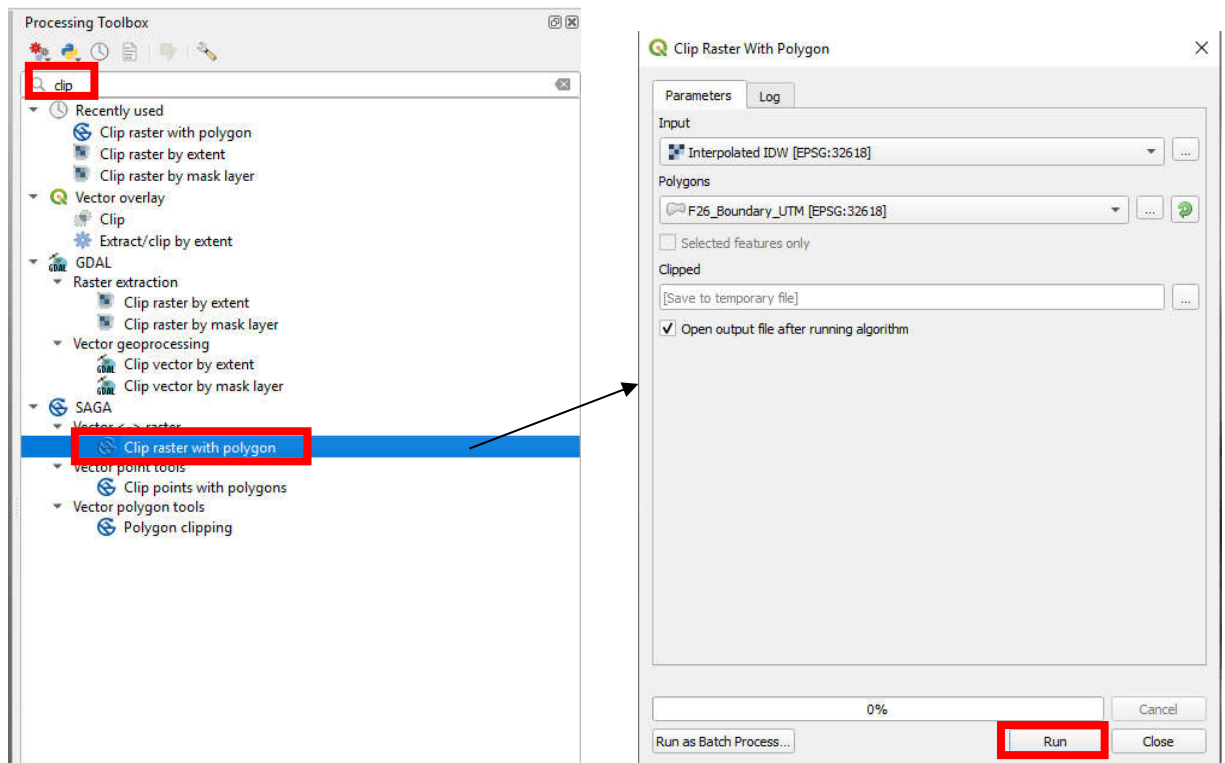
GRASS GIS 7 region cellsize = 5

Click Run



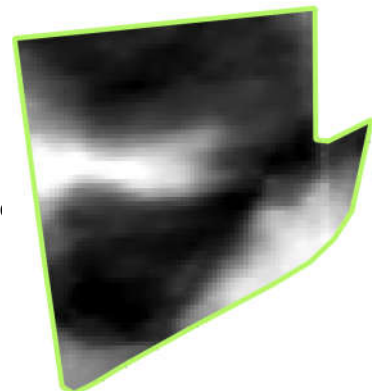


3. Go to processing Toolbox > type “Clip”.

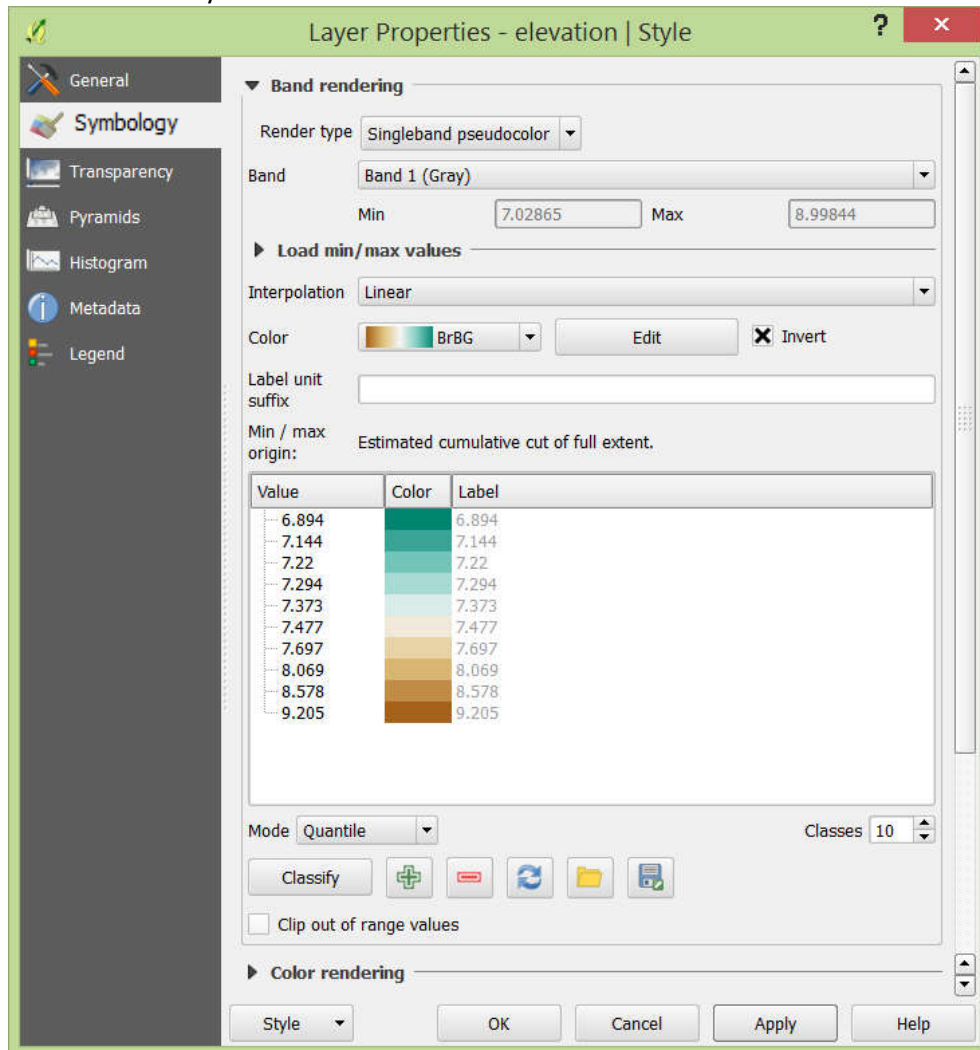


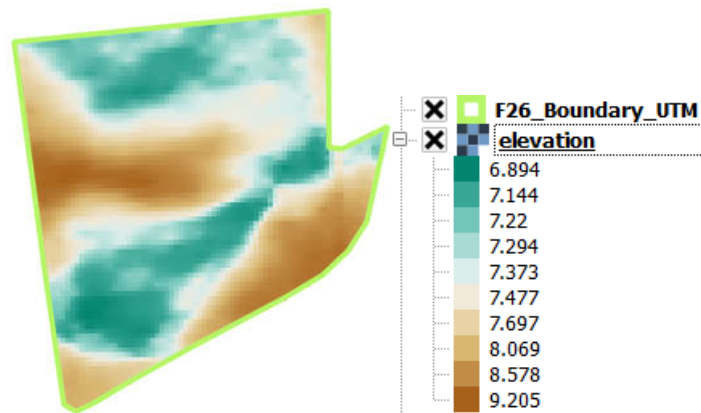
- Input file (raster) = Interpolated IDW
- Polygons = F26_Boundary_YTM
- Clipping mode = Mask layer
- Click Run

4. In the Layers Panel, right click **Interpolated IDW** layer and click R



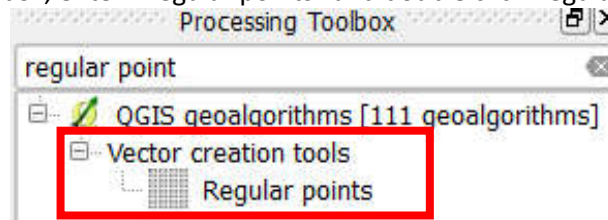
5. In the Layers Panel, right click **elevation** layer and click Properties
 - a. In Style:
 - Render type = Singleband pseudocolor
 - a. Load min/max values
 - Interpolation = Linear
 - Color = BrBG; check Invert
 - Mode = Quantile; Classes = 10
 - Click Classify and click OK



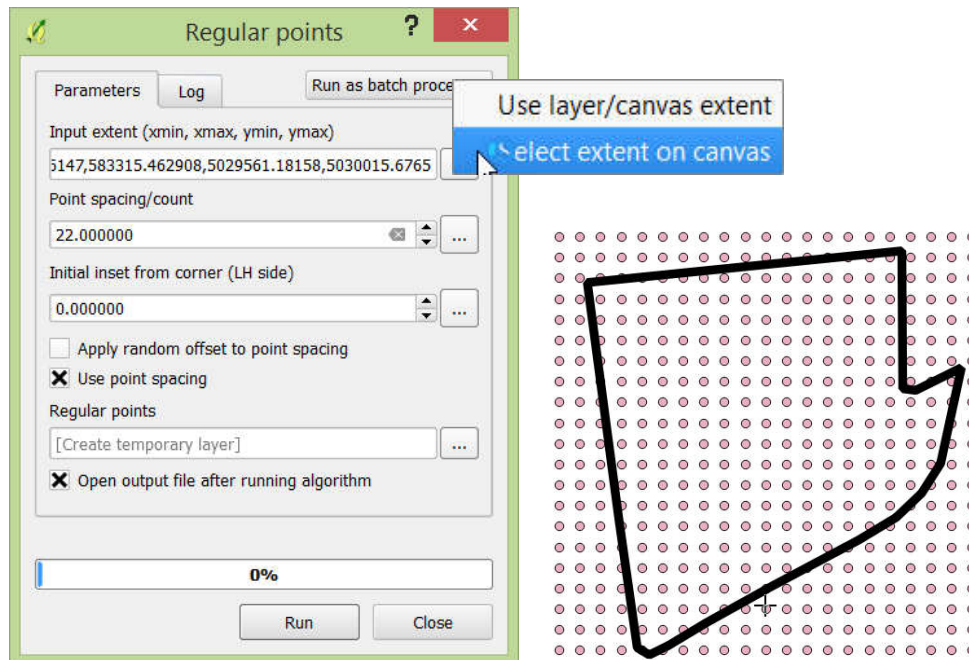


Part 4: Create 0.5 ha grid sampling scheme

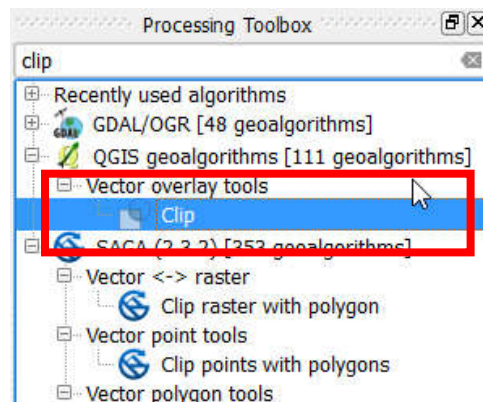
1. In Processing Toolbox, enter "Regular points" and double click Regular points



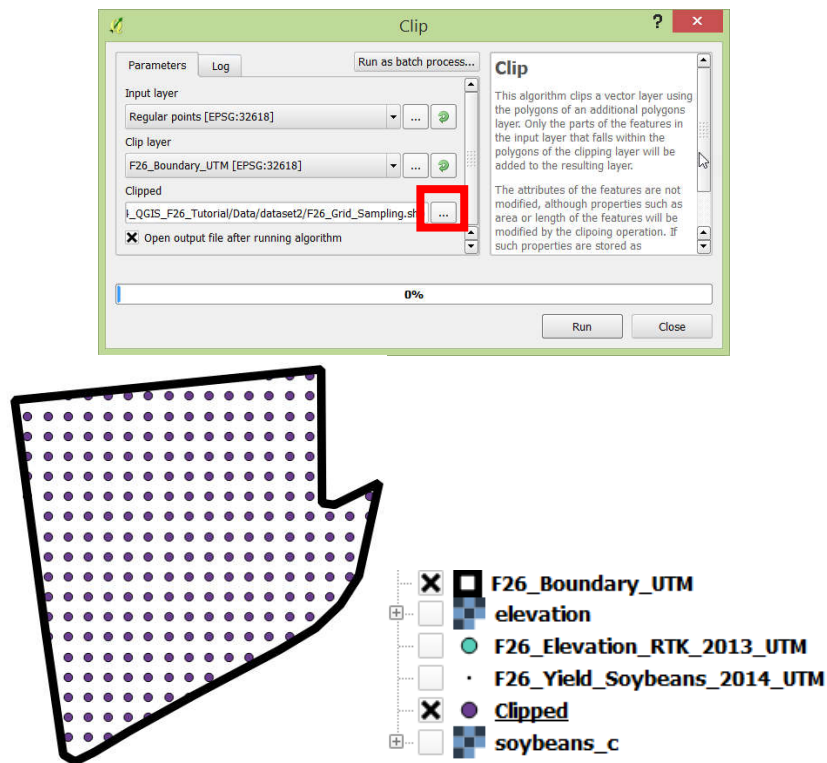
2. In Regular points:
 - a. Input extent = select extent on canvas
Draw a rectangular containing the entire F26 boundary
 - b. Point spacing/count = 22
 - c. Initial insert from corner (LH side) = 0
 - d. Check Use point spacing
 - e. Regular points = (leave it blank)
 - f. Check Open output file after running algorithmClick Run



3. In Processing Toolbox, enter "clip" in Search ... and double click Clip under QGIS > Vector overlay tools



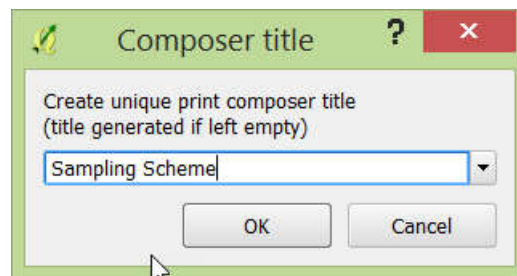
4. In Clip:
 - a. Input layer = Regular points
 - b. Clip layer = F26_Boundary_UTM
 - c. Clipped = F26_Grid_Sampling.shpClick Run
5. In Layers Panel, right Click **Regular points** layer and click Remove



6. In Layers Panel, right click **elevation** and rename it as **Elevation (m)**
7. In Layers Panel, right click **Clipped** and rename it as **Grid Sampling**
8. In Layers Panel, right click **F26_Boundary_UTM** and rename it as **Boundary**

Part 5: Create an elevation and grid sampling layout map

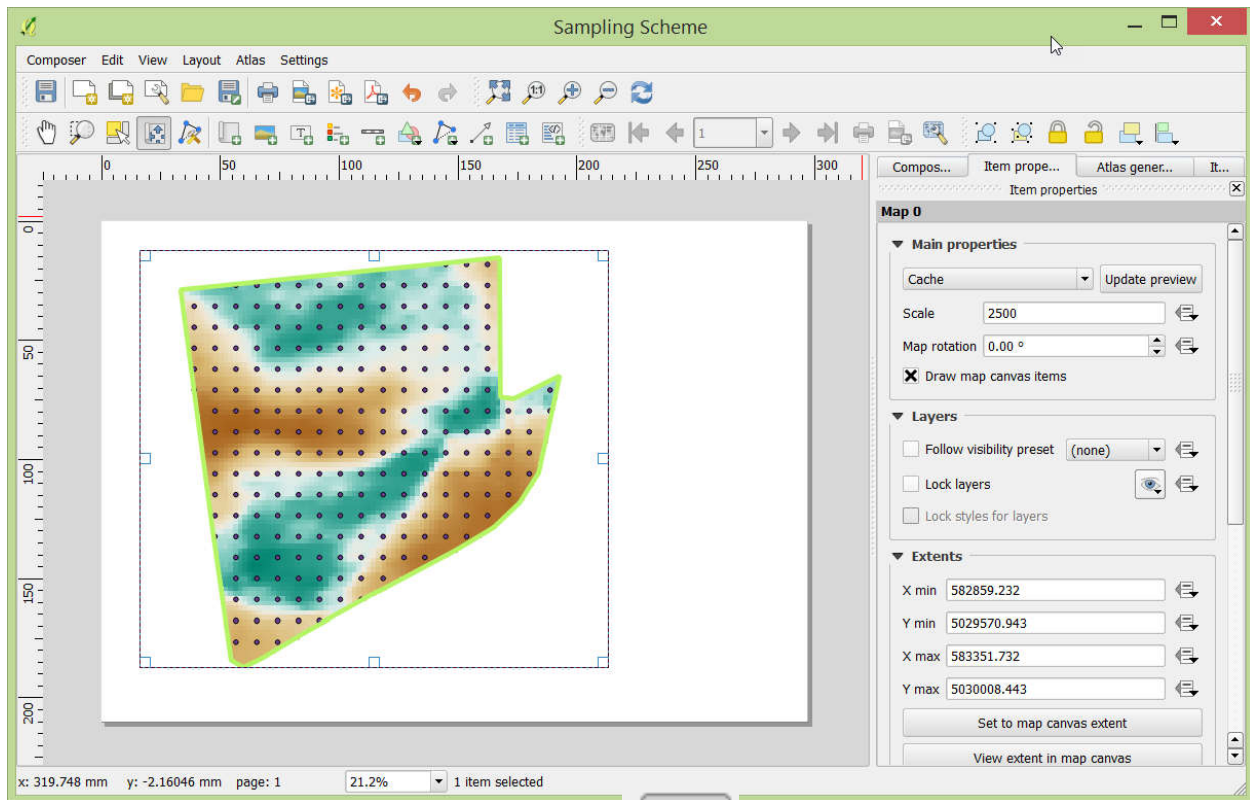
1. In Main Menu, click Project > New Print Composer, and name this layout as Sampling Scheme. Click OK



2. Click Add new map and draw a rectangular area in the layout



Scale = 2500



3. Use move item content to adjust the view of
4. Add legend, title, and scalebar to the map using:

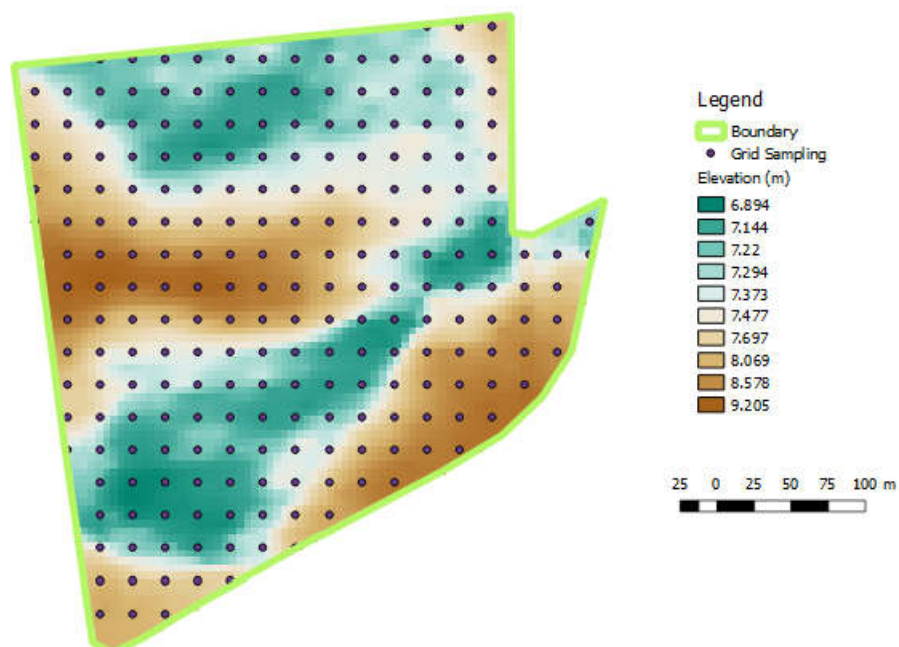


5. Go to Composer > Export as Image...
 - a. File name = ***elevation_sampling_map.png***

Add

Add Scalebar

Field 26 Elevation and Grid Sampling Scheme



6. Save the project.