# Lesson 3 - Processing a Multi-Layer Yield History

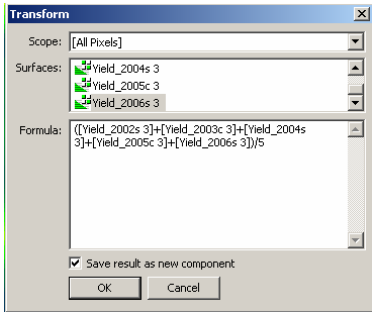
## Exercise 3-3

**Objective:** Calculate the five-year normalized yield average and the yield goal maps.

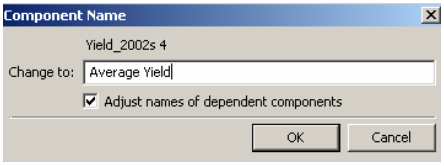
1. **File-Open *Project_3-2_all.map***.

2. Double click the ***Surfaces*** map component in the **Project** pane. Expand the map by pressing the **Maximize** button at the top right corner of the map window. Click the **Zoom To Fit** icon. Click the ***Yield_2002s 3*** tab at the bottom.

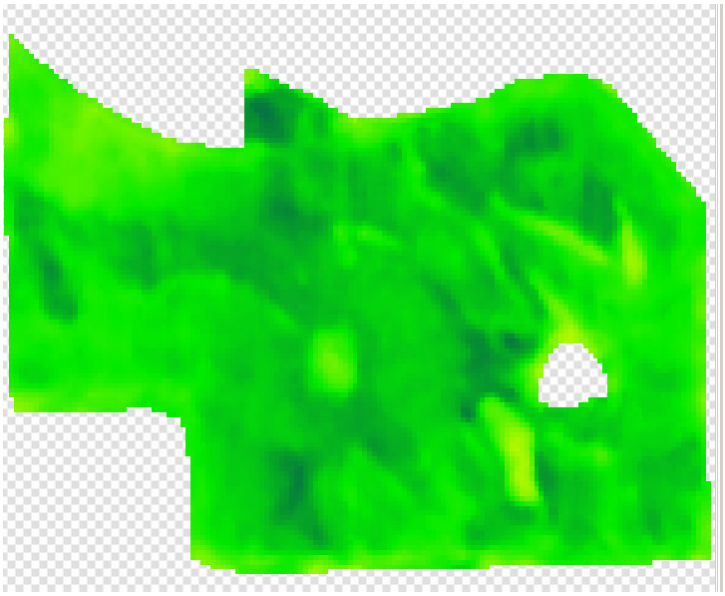
3. From the **Surface** menu choose **Transform**. In the popup **Transform** dialog box delete the existing formula in the **Formula** box. Double click one by one each surface layer in the **Surfaces** box. This will bring the names of each surface into the **Formula** box. Type "+" between each layer and show the sum in parentheses. Than add "***/5***" at the end. Check the box next to **Save result as new component**. Click **OK**. *This will create a new surface with every pixel corresponding to a five-year normalized yield average.*



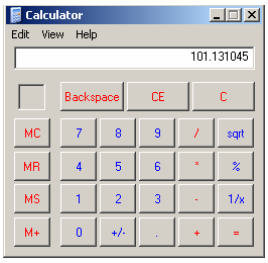

4. Right click the new ***Yield 2002s 4*** surface component in the **Project** pane and select **Rename**. In the popup **Rename** dialog box type ***Average Yield*** in the **Change to** box. Click **OK**.



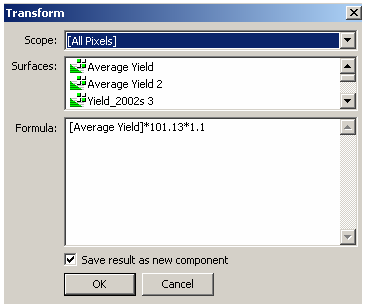

Double-click the ***Average Yield*** surface component in the **Project** pane. **Maximize** the surface window and click the **Zoom To Fit** icon. *To determine the yield goal for corn, the surface shown below should be multiplied by the average yield for the years when corn was produced (2003 and 2005) plus 10%.*



5. Double click the ***Boundary*** table component in the **Project** pane. Use the **Calculator** accessory to compute the average value for the odd-year yield maps (2003 and 2005).




6. From the **Surface** menu choose **Transform**. In the popup **Transform** dialog box delete the existing formula in the **Formula** box. Double click the ***Average Yield*** surface in the **Surfaces** box and multiply it by 101.13 (average corn yield) and 1.1 (10% increase) in the **Formula** box. Check the box next to **Save result as new component**. Press **OK**.

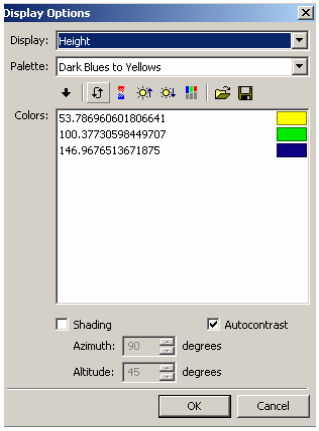



7. Right click the new ***Average Yield 2*** surface component and choose **Rename**. In the popup **Rename** dialog box type ***Yield Goal*** in the **Change to** box. Click **OK**.

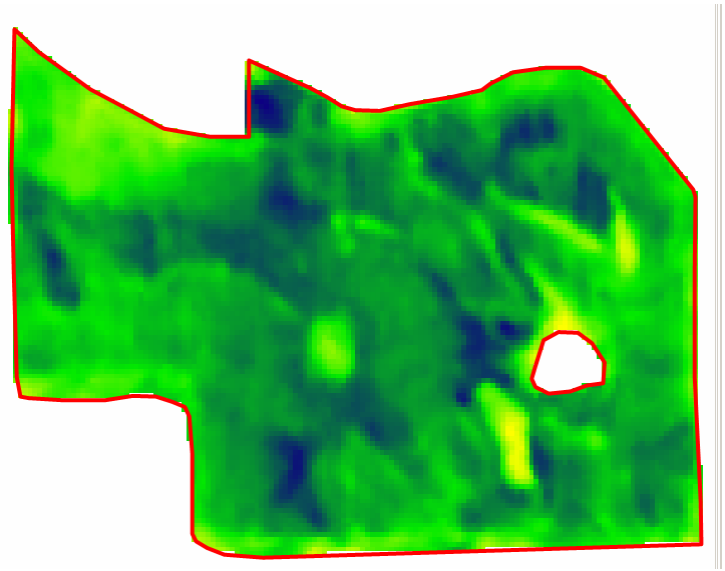
8. Right click an empty space in the **Project** pane and select **Create-Map**. In the popup **Create Map** dialog box type ***Goal*** in the **Name** box and check both boxes next to ***Boundary Drawing*** and ***Yield Goal***. Click **OK**.

9. Double click the ***Yield Goal*** map component in the **Project** pane. Expand the map by pressing the **Maximize** button and click the **Zoom To Fit** icon. Click the ***Yield Goal*** tab.

10. From the **View** menu select **Display options**. In the popup **Display options** dialog box click **Apply** icon and **Reverse** icon. Click **OK**.




*The resulting **Yield Goal** map is shown below:*



11. **File-Save As** ***Project 3-3.map***.