

Multi- Temporal Yield Analysis

Variables

Dry Yield	Dry??XXX	where ?? = crop year (97, 98, 99,00) & XXX = crop (Wht, NvB,Soy,CFw,OFw)
Normal Yield Data	Norm??Yld	where ??=crop year
Average Normal Yield	AvgNormYld	
Standard Deviation	StdDev	
Coefficient of variation	CV	
Temporal Stability	Tstability	
Crop yield goal	XXX??goal	where XXX = crop & ?? = crop years
Rank	5 = High 4 = Consistently High 3 = Average 2 = Consistently Low 1 = Very Low 0 = Unstable	
Goal Norm Yld	GoalNm??	where ??=crop year
Normalization 0 to 100	Nrm100??	where ??=crop year
Standard Normal Value	SNV??	where ??=crop year

Using the Manager Layers tool, rename the yield volume layers so they have a name similar to the following examples:

Dry97Corn
Dry98Wht

Now you are ready to apply multi-temporal yield analysis to your yield data. With a few or several years of yield data, you can generate meaningful information about field performance over time regardless of variety or environmental conditions. Through spatial analysis, you can determine the yield performance against the average (mean). Then characterize these locations in the field as High, Average, Low, or unstable.

Once the long term spatial variability is determined for multiple years, patterns of performance become visible. These patterns have emerged through spatial analysis of the yield. Conclusions can be made that show how the field generally performs. For this example, the field has above average performance from year to year. The noticeable patterns represent an edge effect and the pivot access road for the unstable regions. The other regions that are below average need to be ground truthed to determine what temporal variability in certain regions of the field. From a management view point, areas of the field that perform below average require reduced inputs since they demonstrate poorer performance historically. Thereby reducing some of the costs associated to growing a crop in this field and improving the profitability overall.

1) Create [Entire] by Renumber Dry??XXX

Renumber

Renumber: 1997_Yield_Volume

New Value: 1

Old Value: 0

Old UpperValue: 100000

Add

Del

For: Entire

OK Cancel Help

2) Composite each year for Avg??Yld

Composite

Composite: Entire

With: 1997_Yield_Volume

Select:

- Average
- Median
- Stdev
- Majority
- Covvar
- Minority
- Total
- Diversity
- Maximum
- Deviation
- Minimum
- Proportion

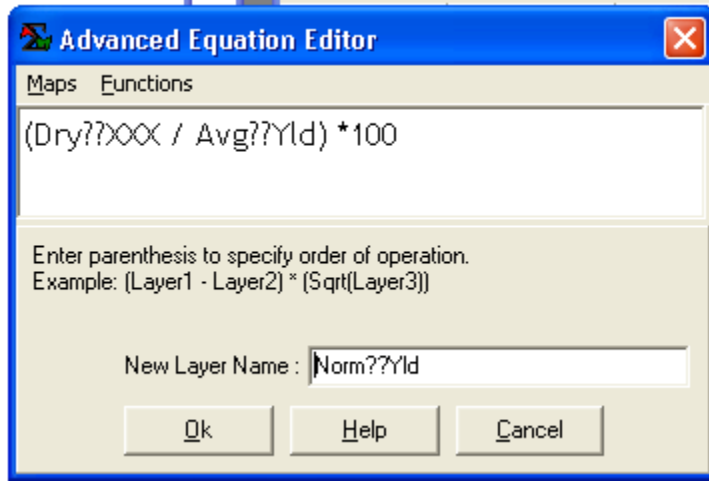
Ignore: PMAP_NULL

For: Avg97Yld

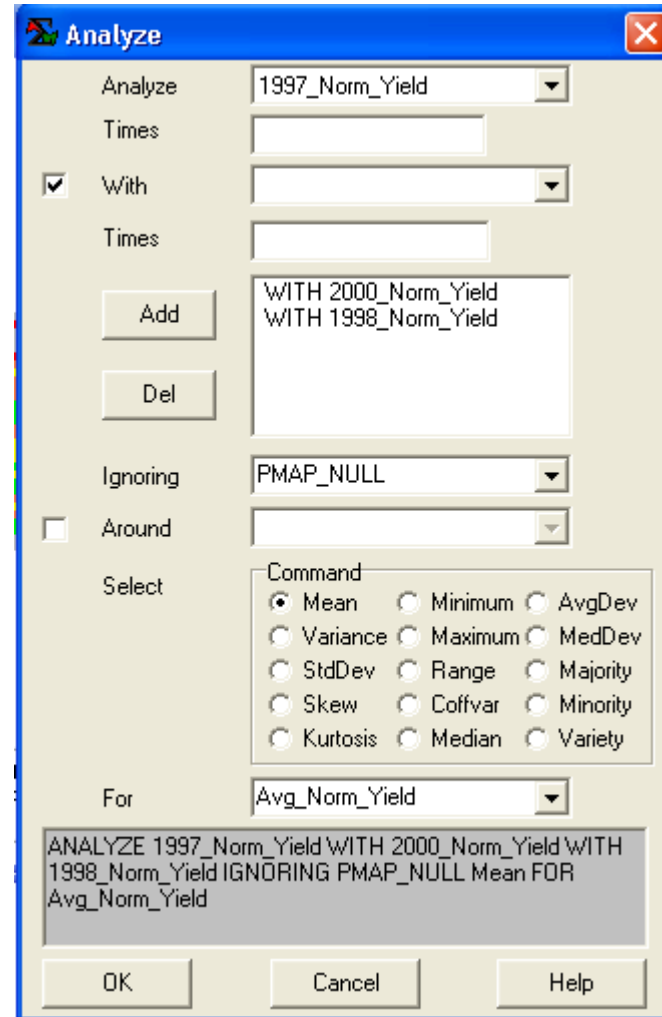
COMPOSITE Entire WITH 1997_Yield_Volume Average
IGNORE PMAP_NULL FOR Avg97Yld

OK Cancel Help

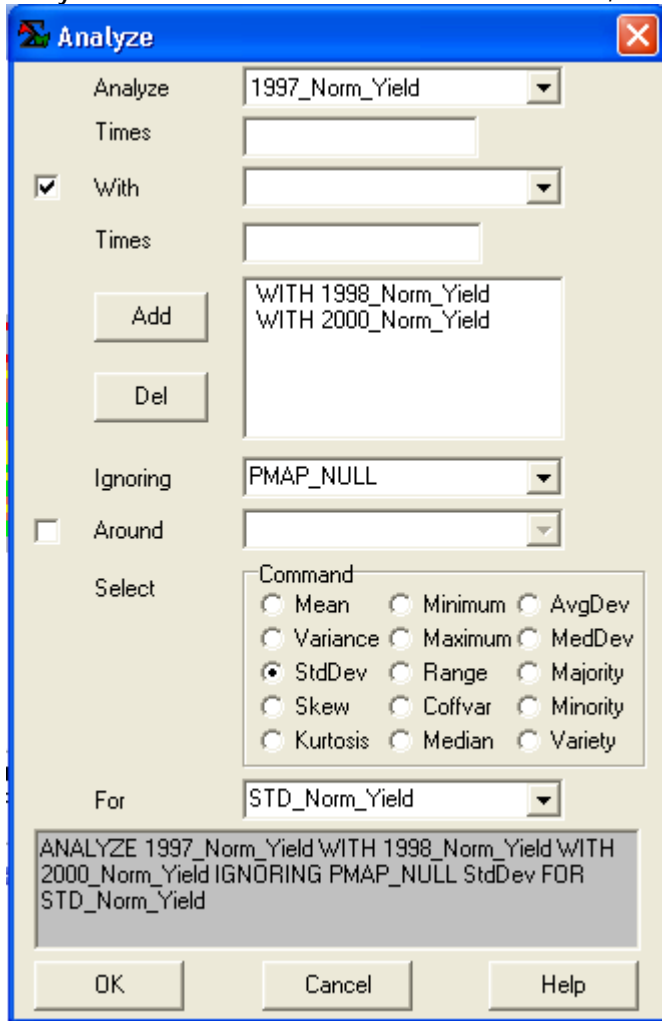
3) Normalize Yield by Calculate $(Dry??XXX / Avg??Yld) * 100$ for Norm??Yld



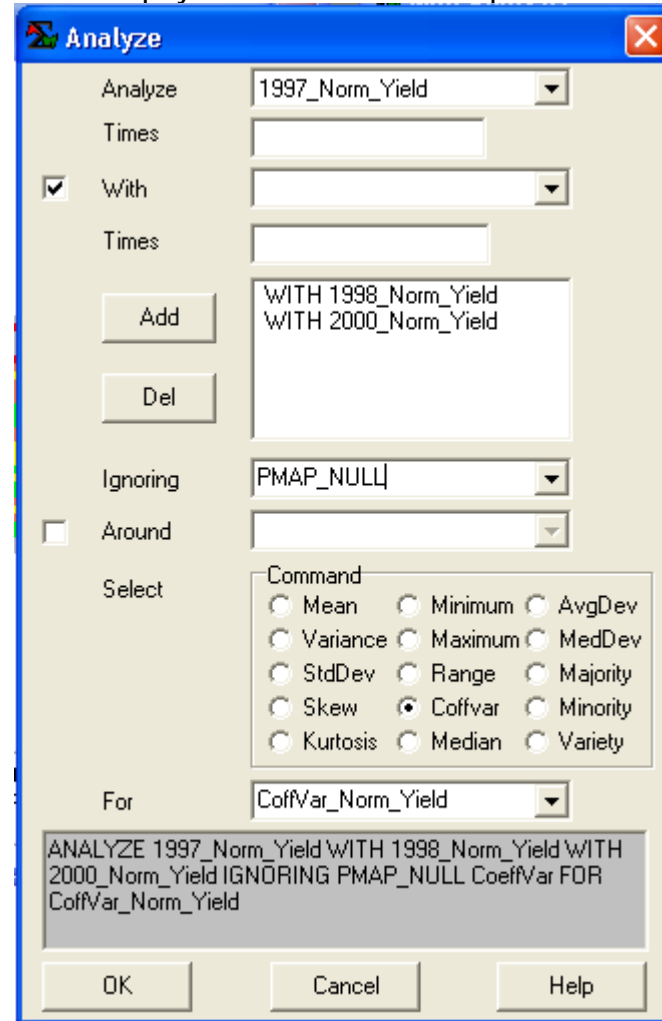
4) Analyze Norm97Yld with Norm98Yld with Norm00Yld, Avg for AvgNormYld



5) Analyze Norm97Yld with Norm98Yld with Norm00Yld, StdDev for StdDev



6) Analyze Norm97Yld with Norm98Yld with Norm00Yld, Coffvar for CV
NOTE – displayed as decimal can be interpreted as % if multiplied by 100



7) Renumber AvgNormYld

New Value	Old Value	Old Upper Value
5	120	250
4	105	120
3	96	105
2	80	96
1	0	80

The 'Renumber' dialog box is titled 'Renumber' and has a close button (X) in the top right corner. It contains the following fields and controls:

- Renumber:** A dropdown menu set to 'Avg_Norm_Yield'.
- New Value:** An empty text input field.
- Old Value:** An empty text input field.
- Old UpperValue:** An empty text input field.
- Add:** A button to add a new renumbering entry.
- Del:** A button to delete a renumbering entry.
- For:** A dropdown menu set to 'Yield_Norm_Class'.
- Text Area:** A text area containing the following text:


```
ASSIGNING 5 TO 120 THRU 250
ASSIGNING 4 TO 105 THRU 120
ASSIGNING 3 TO 96 THRU 105
ASSIGNING 2 TO 80 THRU 96
ASSIGNING 1 TO 0 THRU 80
```
- Preview Text Area:** A text area showing the generated command:


```
RENUMBER Avg_Norm_Yield ASSIGNING 5 TO 120
THRU 200 ASSIGNING 4 TO 105 THRU 120
ASSIGNING 3 TO 96 THRU 105 ASSIGNING 2 TO 80
THRU 96 ASSIGNING 1 TO 0 THRU 80 FOR
```
- Buttons:** 'OK', 'Cancel', and 'Help' buttons at the bottom.

8) Renumber CV

New Value	Old Value	Old Upper Value
0	.30	2.0
1	0	.30

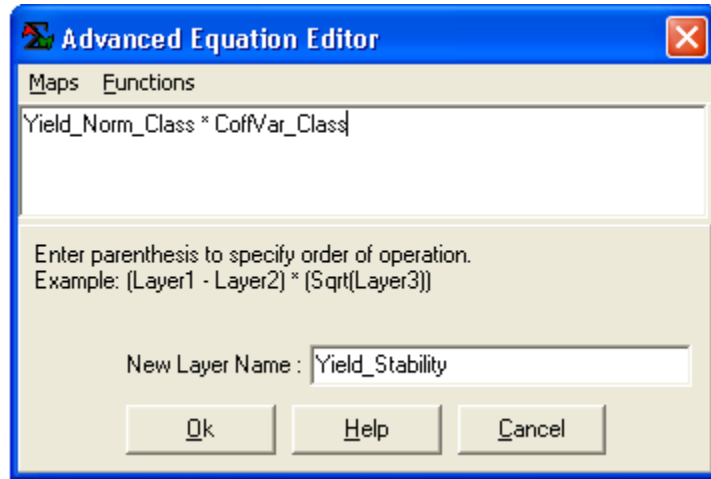
The 'Renumber' dialog box is titled 'Renumber' and has a close button (X) in the top right corner. It contains the following fields and controls:

- Renumber:** A dropdown menu set to 'CoffVar_Norm_Yield'.
- New Value:** An empty text input field.
- Old Value:** An empty text input field.
- Old UpperValue:** An empty text input field.
- Add:** A button to add a new renumbering entry.
- Del:** A button to delete a renumbering entry.
- For:** A dropdown menu set to 'CoffVar_Class'.
- Text Area:** A text area containing the following text:

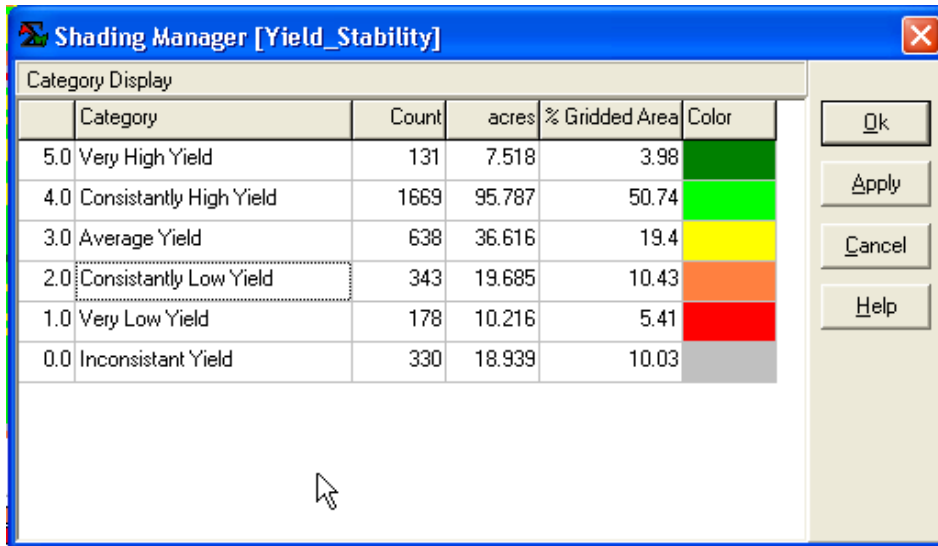

```
ASSIGNING 0 TO .30 THRU 2.0
ASSIGNING 1 TO 0 THRU .3
```
- Preview Text Area:** A text area showing the generated command:


```
RENUMBER CoffVar_Norm_Yield ASSIGNING 0 TO .30
THRU 2.00 ASSIGNING 1 TO 0 THRU .3 FOR
CoffVar_Class
```
- Buttons:** 'OK', 'Cancel', and 'Help' buttons at the bottom.

9) Calculate Yield_Norm_Class * CoffVar_Class



10) Open Shading Manager and change the category listings to the following:



Resulting Map

