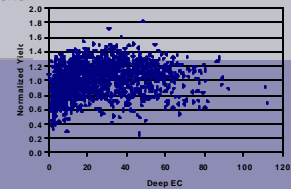


Boundary Line Analysis

Randy Taylor
K-State Research and Extension
&
Paul Drummond
Veris Technologies

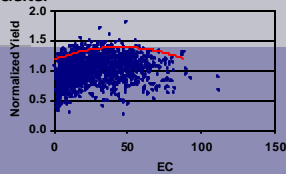
What is BL Analysis?

- Data typically gathered in precision agriculture applications are not well correlated
- BL Analysis examines the upper limit relationship of the data



Maximum Yield Line

- Boundary Line has also been called Maximum Yield Line
- Examine the relationship between yield and other dense data
 - Soil EC
 - Elevation



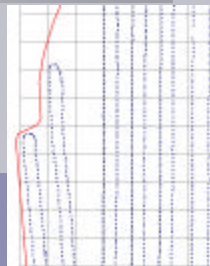
Step 1: Creating Cells

- The first step in BL analysis is to create cells for data
- Cells are typically created by placing a mesh or grid over a field
- What size should the cells be?



Step 2: Aggregating Data

- Each data layer must be aggregated into the cells using a GIS
- There are several methods for aggregating data
 - Average
 - Sum the mass
 - Median
 - MPGM
 - Interpolation
 - Nearest Neighbor



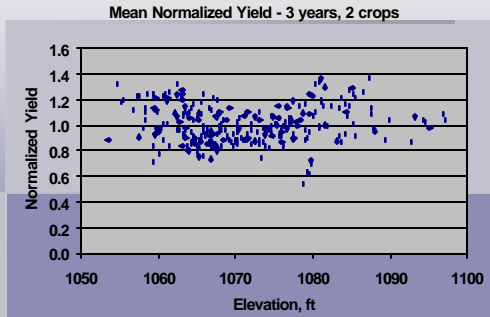
Step 3: Export Data

- The aggregated data file is then exported in a format that can be read by most spreadsheets
- This is typically a txt file
- It should contain all the information of interest, EC, elevation, yield (multiple years) along with the coordinates and a cell identifier

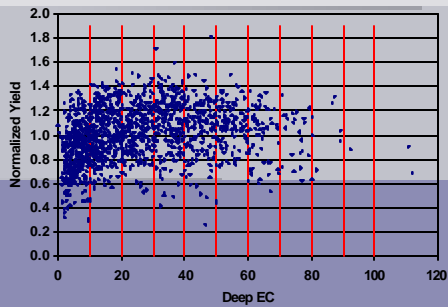
Step 4: Import Data

Case	Year	Area	EC	Yield	EC	Yield	EC	Yield
21	2007	38	1123	48.41	0	120974	34.0769	0.6942
22	2007	38	1123	48.41	0	120974	34.0769	0.6942
23	2007	38	1123	48.41	0	120974	34.0769	0.6942
24	2007	38	1123	48.41	0	120974	34.0769	0.6942
25	2007	38	1123	48.41	0	120974	34.0769	0.6942

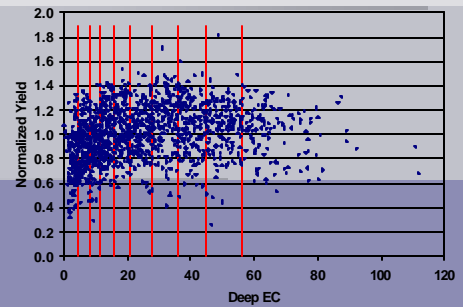
Step 5: Create Scatterplots



Step 6: Create Bins



Step 6: Create Bins (cont)



Step 7: Selecting Points

- How do you select the upper points within each bin?
- It can be done in a spreadsheet, but is very tedious
- Veris Technologies has an Excel add-in to assist

Step 8: Fit a Curve

- The curve defines the relationship between the dependent (yield) and independent variables (EC, elevation, etc)
- Most spreadsheets have limited choices