Homework for Lesson 12

A study of recover of plants in Burned vs. Unburned areas involved repeated measurements of the same plots over a 15 month period. The floral count data, in stacked format, is in the Excel file ‘Flora.xlsx’ and is also shown below.

1) Plot the data, as response vs. time for each treatment level.

2) Run a repeated measures ANOVA, and determine which covariance structure to use (you can base your decision on AICC values). Consider the Variance Components, Unstructured, Compound Symmetry, and Spatial Power covariance structures (the repeated measures are not equally spaced in time).

To Submit to the Dropbox:

1) Show the process of your decision making and the Type 3 fixed effects for your final model.

2) Compare the F statististic and p-value for the Treatment effect between the VC and your final model. What impact did fitting the covariance structure have on significance?

**Note**: Because the time intervals are not equally spaced, the AR(1) is not appropriate as a candidate. Instead, the spatial power covariance structure should be considered. To use the spatial power type, we have to have the following lines in the data step:

input trt $ time flora;

month=time;

The reason for this is that we want to specify Time as a categorical fixed effect in the model statement, but we also need a quantitative equivalent of these times to use in calculating the exponents of the spatial power covariances. Then we use the following syntax in proc mixed:

repeated time / subject = …. type = sp(pow)(month);

The absolute values of the differences in time will then replace the integer values we would use in the AR(1) structure.