

ANSC/TPSS 603
PC SAS Laboratory

Exercise 4j: Using PC SAS to determine the "best" model for predicting the loss of ascorbic acid in snap beans during storage.

Objectives:

1. To apply the procedures learned in class and Exercise 3 to the analysis of experimental data.
2. To determine the "best" model to predict the loss of ascorbic acid in snap beans during storage.

Background:

Snap beans were picked under uniform conditions, prepared and quick-frozen before noon of the same day they were picked. Three packages were assigned at random to each of the 12 treatments and all packages were stored at random positions in the locker. This was a completely randomized design with three replications. The beans were stored at three temperatures (0, 10, and 20 F) and for 4 periods (2, 4, 6, and 8 weeks). The totals of three ascorbic acid determinations are the data being studied.

The data should be plotted before proceeding with model development as this permits you to see the trend of the data.

Procedure:

1. The data set is in an Excel file on the class lab web page.
2. It will be helpful to create some additional variables to use in model development. Equations which describe the relationships can be linear, curvilinear, or exponential, depending on how the variables are expressed. For this exercise, you might try the squared and square root terms. These terms can be created using Data Transform.
3. You can add other variables that you believe are needed to give you the analysis that you want.
4. You can use Regression and Stepwise or other options to develop your models.
5. Next Wednesday please turn in the printouts of the following items for the models that you considered as potential models for this relationship.
 1. Analysis of variance and parameter estimates
 2. Plot of the residuals for the final selected model
 3. A summary of the regression statistics (SSE, MSE, Rsq, Adj-Rsq, PRESS)
 4. The prediction equation for the model which you consider the "best" model
 5. An explanation of why you selected that particular model over the other models.

References:

1. SAS User's Guide: Basics
2. SAS/STAT User's Guide Release 6.03 Edition
3. SAS System for Linear Models. Third Edition. 1991.
4. Draper and Smith. 1981. Regression Analysis

H.M. Zaleski/J.A. Silva/J.L. Brewbaker