

**Solution to Exercise 5.2c** (Version 1, 26/09/14)

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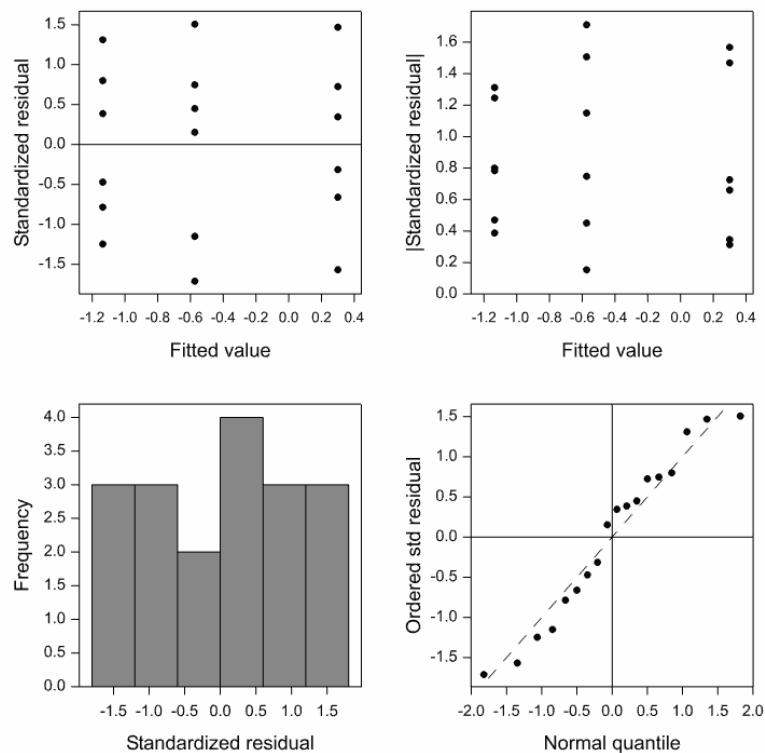
**Exercise 5.2c** (Data: courtesy J. Pell, Rothamsted Research)

For the data set of Exercise 4.4, produce a set of residual plots based on standardized residuals, including a histogram of residuals, a fitted values plot, an absolute residuals plot and a normal plot. Give a critical assessment of whether the ANOVA assumptions are reasonable. Is there any evidence of outliers?

**Solution 5.2c**

A composite display of residual plots is shown in Figure S5.2.2; there are only 18 observations in this data set, so we would expect to detect only major deviations from the expected patterns.

The histogram (bottom left) is rather flat but shows no sign of asymmetry. The normal plot (bottom right) is reasonably. The variation in the residuals appears reasonably constant across the three treatments in both the residuals plot (top left) and the absolute residuals plot (top right). All absolute standardized residuals are less than two; there is no suggestion of any outliers. These plots do not indicate serious departures from the homogeneity of variance or normality assumptions underlying the analysis.



**Figure S5.2.2.** Composite set of residual plots based on standardized (std) residuals.