Fig. 2.1

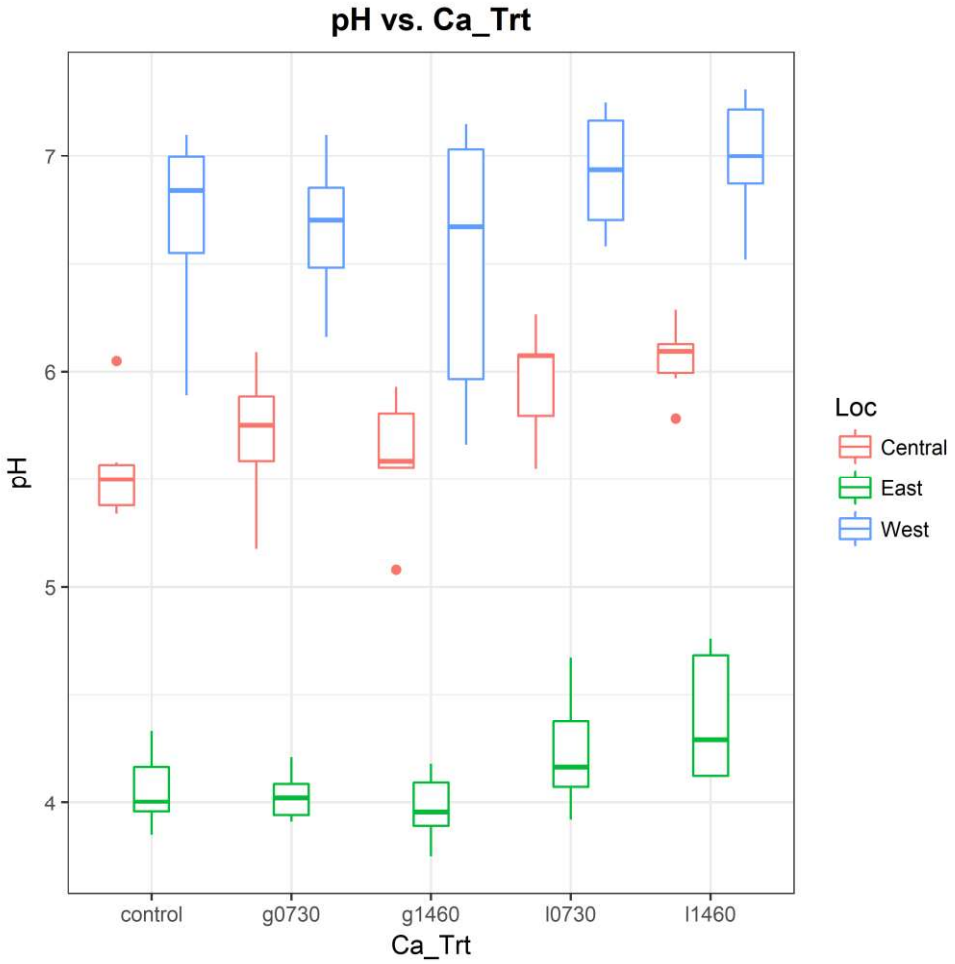

Fig. 2.1. This boxplot is the R equivalent of Fig. 5 in Chapter 2. The R version identifies three observations as being potential outliers, but Fig. 5 in Chapter 2 did not. This discrepancy is due to SAS and R using different algorithms for determining quantiles, which can result in sizable differences for the interquartile range and outlier fence, especially in small samples such as these (use the R help for the quantile() function for more information on the nine options for quantiles).

Fig. 2.2

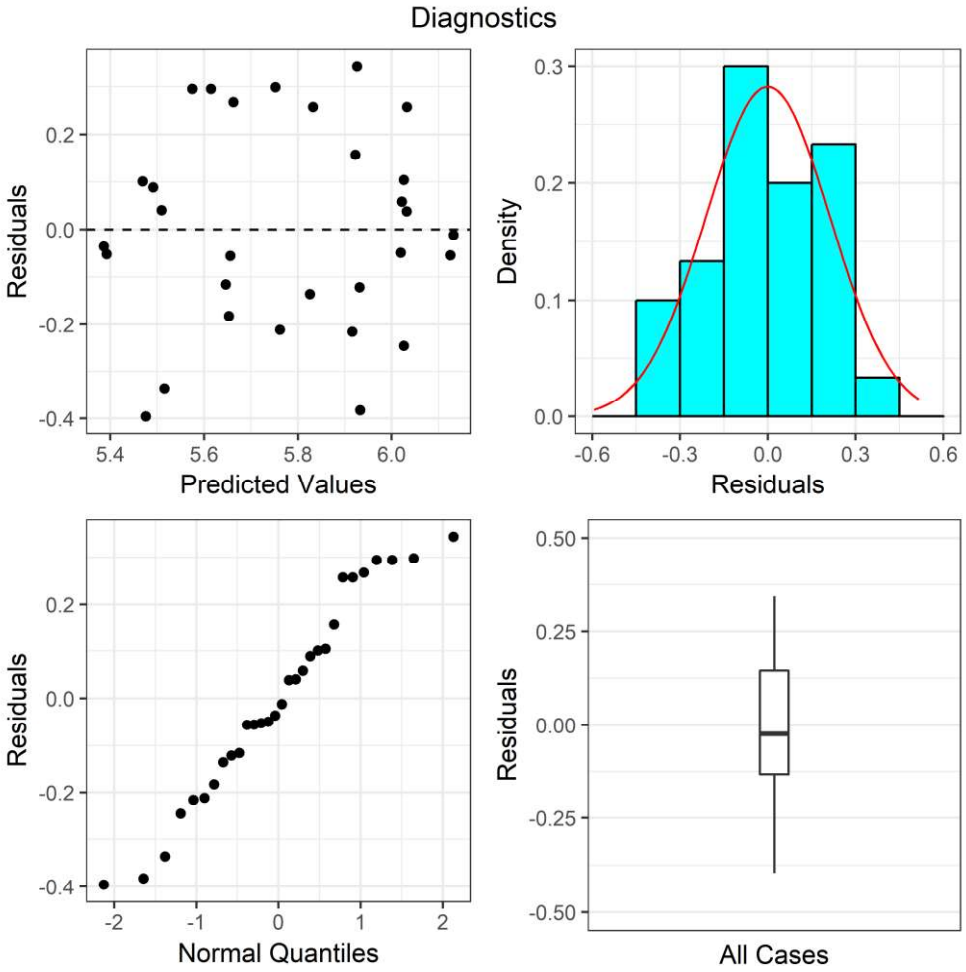

Fig. 2.2. These are the diagnostic plots for the ANOVA of the Statbean Study pH data from the Central Location. This panel is comparable to the top section of Fig. 6 in Chapter 2. Both show there are only minor deviations from normality and no evidence of systematic departures from the model. The R packages used to make these graphs do not provide a method to overlay a straight line on the Q-Q plot (lower left). Also, SAS uses the lower right section to print a table with four statistics describing the distribution of the residuals and four fit statistics. Because the R's summary() function gave the five-number summary for the residuals and we are not comparing models, I found it easier and more informative to put a box and whisker plot in this position.

Fig. 2.3

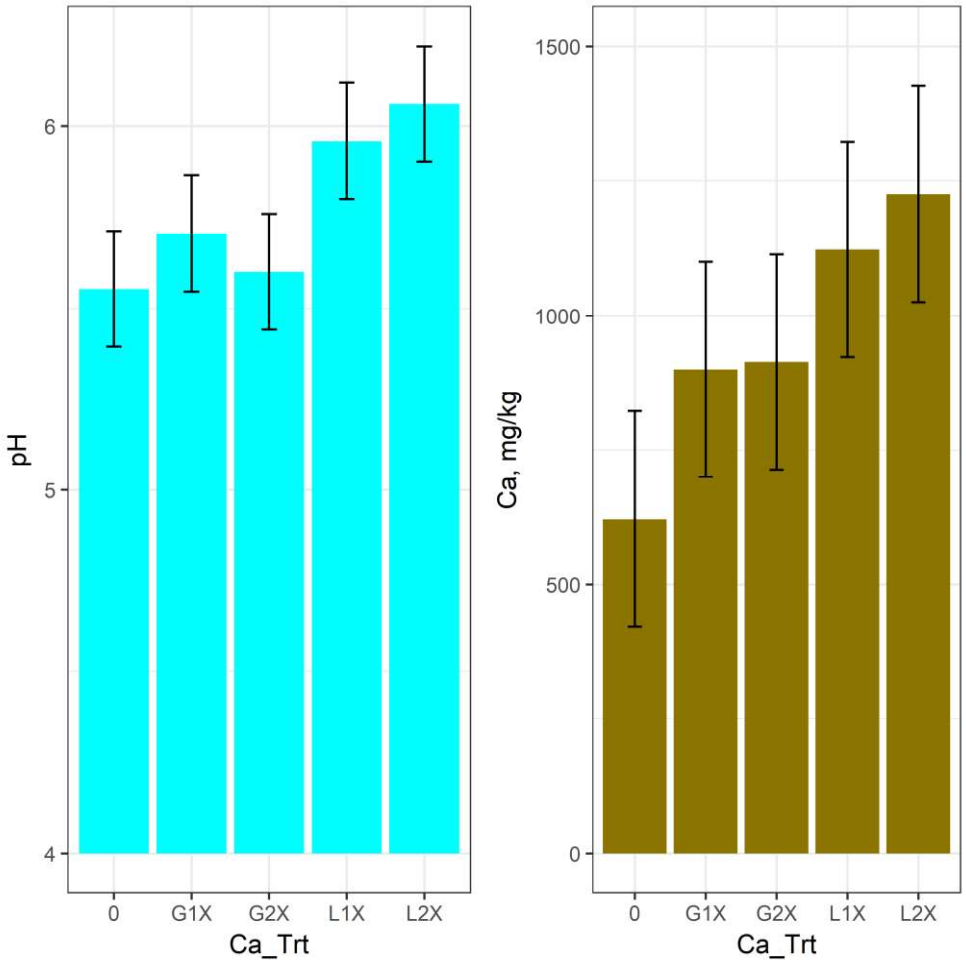

Fig. 2.3. These bar charts of the calcium treatment means for soil pH and Ca with LSD error bars (averaged over the mulch levels so n=6) at the Central Location correspond well with Fig. 7 in Chapter 2. Observe the pH chart above and the one in Chapter 2 move the baseline to pH=4 to emphasize the differences among treatments. In both graphs above, the LSD error bars are centered so half the LSD is above the mean and half below. Thus, if these error bars overlap, the treatments are not significantly different at the 5% level (Ca LSD = 400 mg/kg, pH LSD = 0.318).

Fig. 2.4.

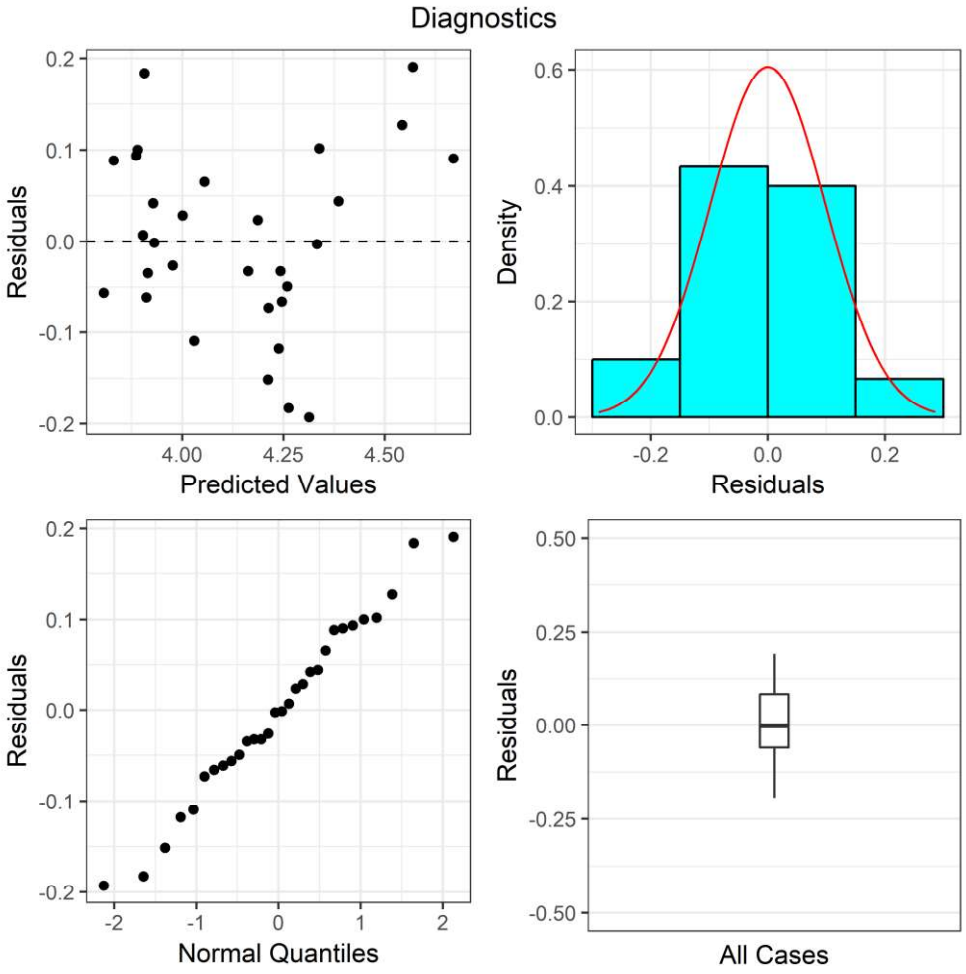

Fig. 2.4. These are the diagnostic plots for the ANOVA of the Statbean Study pH data from the East Location. This panel is comparable to the middle section of Fig. 6 in Chapter 2. Both show there are only minor deviations from normality and no evidence of systematic departures from the model. The structural differences between these R graphs and those in the SAS panel are discussed in the caption for Fig. 2.2.

Fig. 2.5.

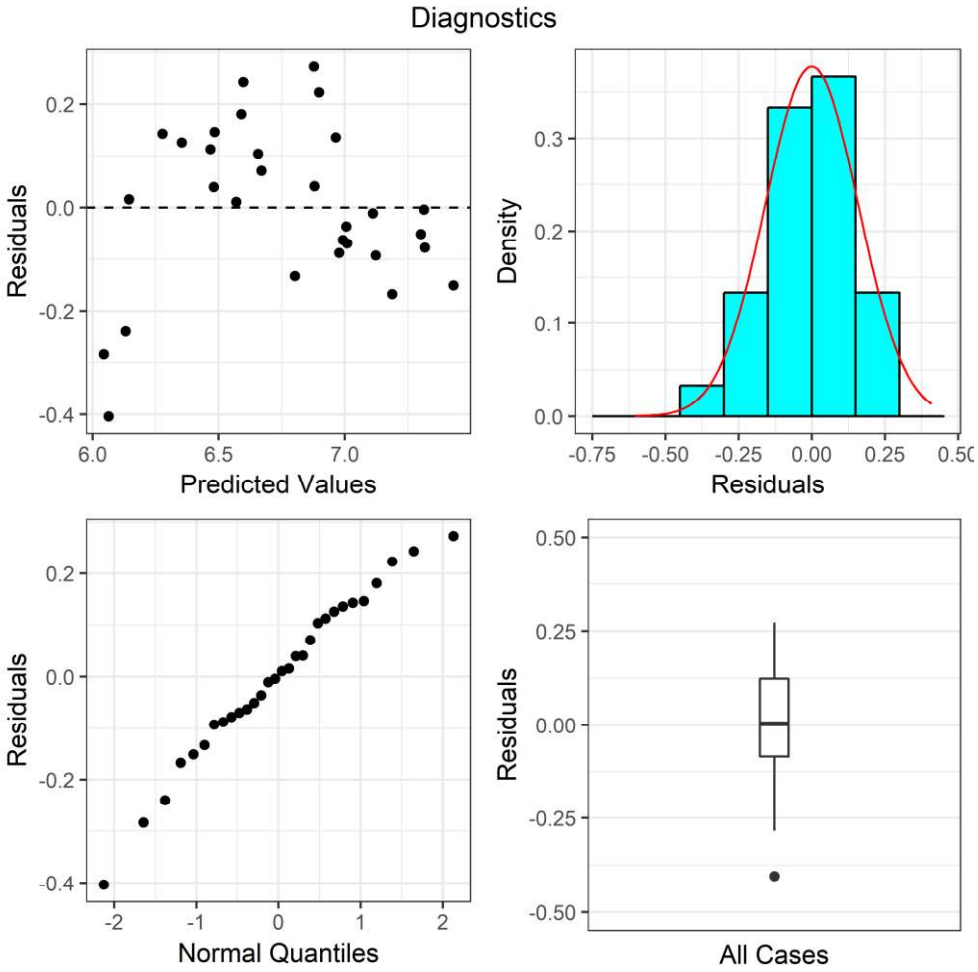

Fig. 2.5. These are the diagnostic plots for the ANOVA of the Statbean Study pH data from the West Location. This panel is comparable to the bottom section of Fig. 6 in Chapter 2. Both show there are only minor deviations from normality and no evidence of systematic departures from the model. One potential outlier shows on the box and whisker plot, but the scaled residuals place at about -2 on a standardized scale so it is not likely an outlier (see R output text). The structural differences between these R graphs and those in the SAS panel are discussed in the caption for Fig. 2.2.

Fig. 2.6

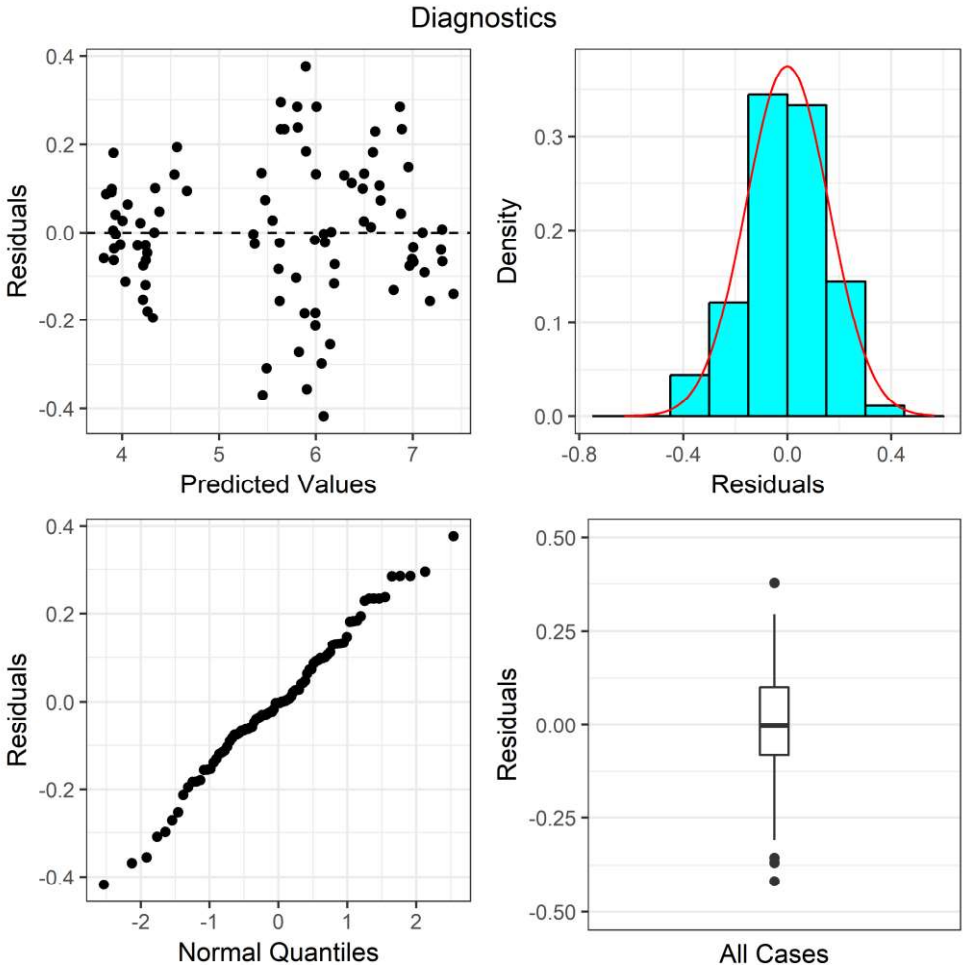

Fig. 2.6. These are the diagnostic plots for the ANOVA of the Statbean Study pH data combined over all three locations. This panel is comparable to Fig. 8 in Chapter 2. Both show there are only minor deviations from normality and no evidence of systematic departures from the model. Four potential outliers show on the box and whisker plot, but the minimum and maximum scaled residuals were about -2 and +1.8 on a standardized scale so it is unlikely that these are outliers (see R Output 2.4). The structural differences between these R graphs and those in the SAS panel are discussed in the caption for Fig. 2.2.

Fig. 2.7

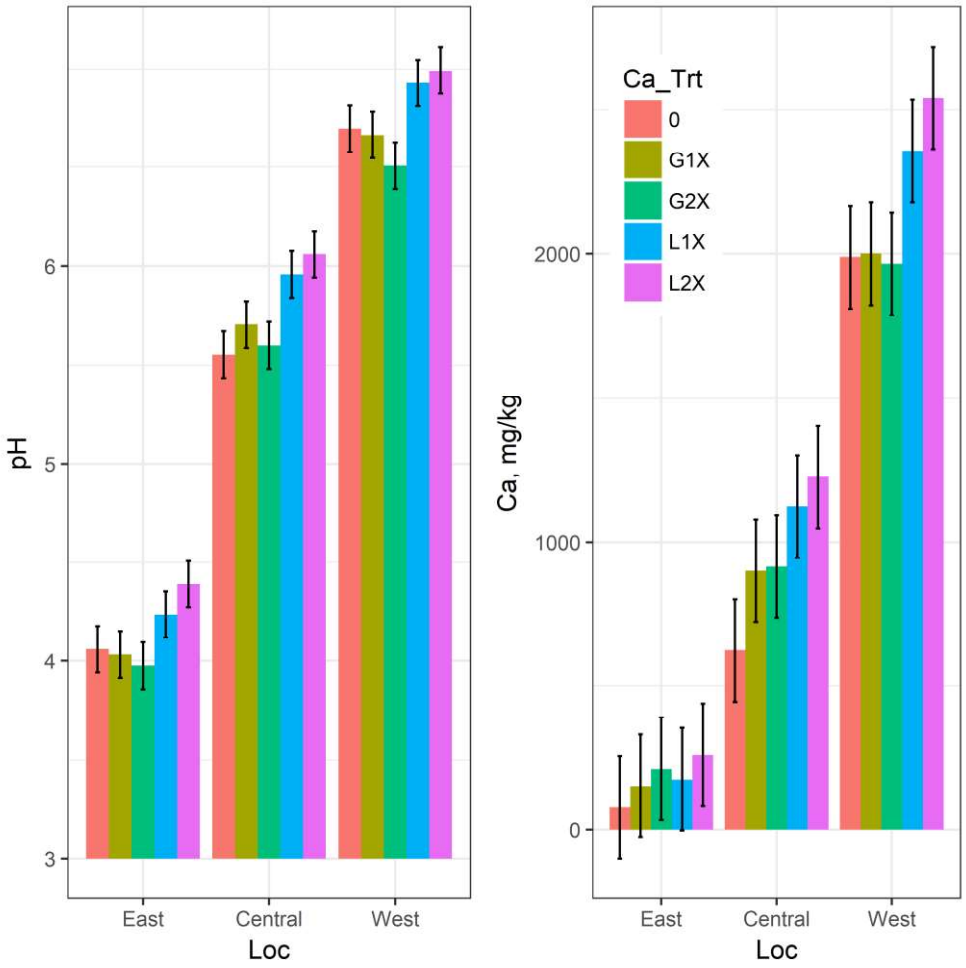

Fig. 2.7. These bar graphs plot the soil pH and Ca means for the Loc-by-Ca_Trt combinations with error bars equal to the LSD (n=6 per bar). They are the equivalent of Fig. 9 in Chapter 2. The LSD error bars are centered so half the LSD is above the mean and half below. Thus, if these error bars overlap, the treatments are not significantly different at the 5% level (pH LSD = 0.236; Ca LSD = 341).