Note: This homework assignment covers Chapter 9.

Disclaimer: If you use R, include all R code and output as attachments. Do not just "write in" the R code you used. Also, don't just write the answer and say this is what R gave you. If my grader can't see how you got an answer, it is wrong. I want to see your code and your answers accompanying your code (like in the notes).

A balanced one-way classification experiment was run to compare the effects of various nitrogen sources on sugar beet yields (Y, measured in kg/hectacre). The six nitrogen sources used in the experiment were as follows:

1. Control, no nitrogen
2. ORGANIC nitrogen: $CO(NH_2)_2$
3. INORGANIC nitrogen, AMMONIUM based: $(NH_4)_2SO_4$
4. INORGANIC nitrogen, AMMONIUM based: NH_4NO_3
5. INORGANIC nitrogen, NITRATE based: $Ca(NO_3)_2$
6. INORGANIC nitrogen, NITRATE based: $NaNO_3$.

The data from the experiment are in Table 1 (next page). Treat these as independent samples from the six experimental conditions. This is reasonable because the nitrogen sources were randomly applied to the different plots of land used and also because there were no systematic sources of variation among the plots (at least the experimenter did not think so). There were 10 plots used per nitrogen source.

The experimenter's overall goal is to learn about the population mean sugar beet yields across the six experimental conditions (e.g., are they different, how do they compare?, etc.). Prepare a thorough analysis of the data using ANOVA and appropriate follow-up inference procedures (if needed?). Of course, an important part of any statistical analysis is understanding what statistical assumptions are needed and whether they are reasonably satisfied.

The experimenter has also asked you to advise him on what experimental condition(s) would maximize the population mean yield. What would you tell him? Defend your recommendations with solid statistical evidence.

Nitrogen source	Observations									
1	814.8	813.2	974.9	862.0	750.8	769.0	1026.0	849.4	946.3	997.9
2	1235.3	1185.9	1117.0	1171.8	1284.7	1211.5	1288.9	1001.4	1428.4	1373.6
3	1157.5	1236.1	1074.3	1171.5	1031.3	1015.9	950.1	1108.5	1275.8	999.4
4	955.0	1039.4	1318.6	926.9	1230.1	835.3	1013.8	1128.3	1023.7	1353.5
5	1070.0	1153.1	940.1	998.5	1264.3	1351.1	1117.5	1389.3	1037.1	1047.3
6	1077.2	1137.7	1187.4	1335.8	1262.6	1126.7	1081.6	1134.6	1272.0	1231.3

Table 1: Sugar beet yield data. Yields (measured in kg/hectacre) for six nitrogen sources.