

ANSC/TPSS 603  
Assignment 4 - Orthogonal Comparisons

Write out the analysis of variance for the following three (3) experiments and subdivide the treatments df into single df by writing out the orthogonal contrasts.

1. An experiment which compared four equally-spaced levels of herbicide was installed as a randomized complete block design with 5 blocks.
2. An experiment which compared the effects of 3 levels of potassium (K) fertilizer on 2 varieties of roses was installed in a completely randomized design with 3 replicates. The potassium levels were 0, 75, and 150 kg/ha and the rose varieties were V1 and V2.
3. An experiment was installed in a Latin square design to compare 6 varieties of sorghum: varieties A, B, C, D were early maturing; varieties E and F were late maturing. In addition, varieties A and B were tall and varieties C and D were short.
4. Compare the means of the 6 varieties of sorghum in question 3 assuming the MS Error is 24. Calculate the LSD and use the DMR to make all possible comparisons. Indicate significant differences for DMR using both lines and letters.

A	B	C	D	E	F
37	46	42	40	32	38

5. Calculate the SS for the contrast from question 3 comparing early and late varieties and test for significance. MS Error is 24. Make sure you use treatment totals rather than means.
6. Compare your answers to questions 4 and 5. Which test is more sensitive in detecting differences between early and late varieties? Which is easier to interpret biologically?