

Purpose:

Demonstrate that the Method of Moments (OLS with algebra) and REML for mixed model equations do not give the same results when the data are not balanced. Some data sets are unbalanced by design. For example, if we do not have sufficient seed to assign some entries to the same number of plots (experimental units) as others entries. Other data sets are planned to be balanced, but some plots are lost due to unexpected natural disasters such as wind or erosion from rain or ...

Goal:

Demonstrate ability to estimate heritability using field data of testcrossed hybrids derived from DHs, but with unbalanced data sets.

ALA: Estimates of heritability - unbalanced data set

Modify the data in “QG\_Mod\_ALA9.2\_ds.csv” by deleting half of the rows in Family A, Environment 1, block 1. Imagine that some cattle destroyed half of the plots. Also delete half of the rows of data in Family B, Environment 2, block 2. There was not enough seed for these hybrids. (see QG\_Mod9\_ALA9.3\_ds.csv as an example). Now run all of the data analyses as in ALA 9.2 and note the differences.

- a. Provide estimates of heritability on a progeny mean basis and a family mean basis using the Method of Moments.
- b. Provide estimates of heritability on a progeny mean basis and a family mean basis using the mixed linear model with REML.