

QUANTITATIVE GENETICS

Title Expectation of Mean Squares for Fixed and Random EffectsPurpose:

Compute the expectation of mean squares from a linear model.

Goals:

1. Classify factors as fixed or random effects.
2. Estimate the components of genetic variability.

ALA: Determine expected mean squares fixed and random effects.

Imagine that you are responsible for conducting a special Striga screening nursery. In an attempt to identify the most resistant Sorghum hybrids from a breeding program the breeder has submitted a set of 20 selected hybrids to be evaluated in the nursery. The hybrids were evaluated under striga infested and non-striga infested fields. This is also known as a split-plot design because there are different size experimental units.

1. If hybrids and striga fields are both fixed effects set up an analysis of variance table.
2. If hybrids represent a sample of the breeder's hybrids, but striga represents a fixed effect (+/-), set up an analysis of variance table.
3. If the two fields have different unknown infestation levels, but hybrids were selected by the breeder for evaluation, set up the analysis of variance table.
4. If the two fields have different unknown infestation levels, and hybrids represent a sample of the breeder's hybrids selected by the breeder for evaluation set up the analysis of variance table.