

General information

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Linear model with log-transformed response vs. generalized linear model with log link

It appears they advise the fitting of a generalized linear model (GLM) with log link instead of a linear model (LM) with log-transformed response.

<https://stats.stackexchange.com/questions/47840/linear-model-with-log-transformed-response-vs-generalized-linear-model-with-log>

Singular models: random effect variances estimated as zero, or correlations estimated as +/- 1

This means that some “dimensions” of the variance-covariance matrix have been estimated as exactly zero.

Singularity is relatively easy to detect because it leads to random-effect variance estimates of (nearly) zero, or estimates of correlations that are (almost) exactly -1 or 1.

Reference: <https://rdrr.io/cran/lme4/man/isSingular.html>

This commonly occurs in two scenarios:

small numbers of random-effect levels (e.g. <5), as illustrated in these simulations and discussed (in a somewhat different, Bayesian context) by Gelman (2006).

You do not need a model like this.

The takehome message is, there's no really systematic effect coming from PLANT, so you don't need to specify a highly complicated model, do something like:

Reference: <https://stackoverflow.com/questions/60028673/lme4-error-boundary-singular-fit-see-issingular>

Some test:

```
ranef(gf4)
```

```
isSingular(gf4, tol = 1e-4)
```