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MULTIVAR STATS IN ECOL AND GENETICS — EXERCISES, SHEET 8

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1. The file fruits.txt shows for 400 fruits that were picked from 20 trees of a plantation from which trees and from which aspect of the tree the fruit was picked, in which height it grew, how big the fruit was (diameter in cm), and how sweet the fruit was (measured in some way). Analyse how the sweetness of a fruit depends on the other parameters.

2. Analyse the datasets Sitka and Sitka89 from the R package MASS. How does the growth of the spruce trees depend on the treatment? Account for differences between the individual trees.

3. Re-analyze the TbDeerAndBoar.txt dataset with lme4 and with mcmcglmm. Take differences between the Farms into account.

4. Perform a simulation study to compare lme4 to mcmcglmm. Try different model fitting strategies with each package (e.g. the choice of priors in mcmcglmm).

5. If possible, form teams such that in each team has one member who has a dataset from his or her Master's or IRT project that can be analysed with mixed models. Collaborate in your team to analyze this dataset with lme4 and mcmcglmm. Also explore several ways to visualize the data.