

Data Description: Maize Project

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1 Design

108 maize seeds are planted in 18 different pots, each with 6 wells.

Inside one pot, the same soil is used. The soils that were used are: Bio garden (4 pots), Composana (4 pots), herbs (6 pots), mixture (4 pots).

In each well, one maize seed is planted at a pre-defined depth (in cm), which is allocated randomly to the well. The maximum value for depth is 6cm and this corresponds to planting the seed directly in the coconut fiber that makes up the pot.

Wells in the same pots are allocated as follows:

```
##      [,1] [,2]
## [1,] "e"  "f"
## [2,] "c"  "d"
## [3,] "a"  "b"
```

The pots are arranged as follows on a table in the lab:

```
##      [,1] [,2] [,3] [,4] [,5] [,6]
## [1,] "C1" "C2" "C3" "C4" "C5" "C6"
## [2,] "B1" "B2" "B3" "B4" "B5" "B6"
## [3,] "A1" "A2" "A3" "A4" "A5" "A6"
```

Seeds are watered for the first time on 04.30.2022 and are transferred to the field on 05.15.2022 according to the same scheme.

Some seeds are broken when planted, one seed develops a fungus.

Some seeds germinate in the lab, others in the field, while some seeds never germinate.

On 07.05.2022, the height of all maize plants is measured in cm. The plants that were not measured for time reasons receive a height value of **not measured**, while the plants that were not found and could hence not be measured present missing values.

On 09.16.2022, the weight of the cob is measured for all plants that have a cob. The variety of maize that was planted typically yields 1 cob per plant.

2 Variables

The original data set contains the following variables on seed level:

2.0.1 *pot*

This variable contains information identifying the pot. However, it is coded as a character.

2.0.2 *soil*

This variable contains information about the soil. However, it is coded as a character.

2.0.3 *well*

This variable contains information about the well in a pot. However, it is coded as a character.

2.0.4 *depth*

This is the depth at which the seed has been planted (in cm). The maximum depth of 6cm corresponds to the seed being stuck into the coconut support that makes up the pot.

2.0.5 *seed.weight*

This variable records the seed weight in centigrams (cg).

2.0.6 *fungus*

This variable contains information on whether there was a fungus present on the seed. However, it is coded as a character.

2.0.7 *date.germinated*

This variable contains information on when the seed germinated in the time it was in the lab (that is, in the time between April 30th, 2022, and May 14th, 2022). However, it is coded as a character.

2.0.8 *observations*

This column contains several observations made in the course of the experiment in character form. We will use this variable to create other, new, variables that may be used in the analysis later on.

2.0.9 *height_2022_07_05*

This variable describes the height of the plant, measured on July 5th, 2022. However, it is coded as a character. For some plants, this information might be missing for two reasons. First, the plant might not have been found in the field (NA). Second, there was no time to measure this information (**not measured**).

2.0.10 *cob_weight*

This variable describes the weight of the cob for cobs found on September 16th, 2022.

3 New variables created

3.0.1 *pot.fac*

Factor version of the *pot* variable. The levels of this variable are the 18 pot types: A1, ..., A6, B1, ..., B6, C1, ..., C6.

3.0.2 *soil.fac*

Factor version of the *soil* variable. The levels of this variable are the 4 types of soil: Bio garden, Composana, herbs and mixture.

3.0.3 *well.fac*

Factor version of the *well* variable. The levels of this variable are the 6 wells present in a pot: a, b, c, d, e, f.

3.0.4 *seed.weight.grams*

This variables is the seed weight in grams.

3.0.5 *fungus.fac*

Factor version of the *fungus* variable. The two levels are **yes** and **no**.

3.0.6 *date.germinated.asDate*

Date version of the germination date.

3.0.7 *obs.time*

Time when the observation was recorded. This is read from the *observations* column. Usually, the plants are checked for germination at night, but sometimes this has happened in the morning.

3.0.8 *broken*

Logical variable indicating whether the seed was broken before it was planted.

3.0.9 *height_2022_07_05.num*

Numeric version of the *height_2022_07_05* variable.

3.0.10 *plant.found*

Logical variable indicating whether a plant was found for the specific seed or not.

3.0.11 *cob_weight.num*

Numeric version of the *cob_weight* variable.

3.0.12 *germinated.in.lab*

Logical variable indicating whether the seed germinated in the lab.

3.0.13 *germinated.in.field*

Logical variable indicating whether the seed germinated in the field.

3.0.14 *germinated.yes*

Logical variable indicating whether the seed germinated at all during the experiment.

3.0.15 *days.to.germination*

Numerical variable indicating how many days it took for the seed to germinate (in case it germinated at all).