Desease in cucumbers

Key words: Factor structure.

Description

A greenhouse experiment was carried out to investigate how the spread of a disease in cucumbers depended on climate and on amount of fertilizer for two varieties. The following data are an extract from the experiment. Two climates were used, (1) change to day temperature 3 hours before sunrise, and (2) normal change to day temperature. Three amounts of fertilizer were applied, normal (2.0 units), high (3.5 units), and extra high (4.0 units). The two varieties were Aminex and Dalibor.

At a certain time the plants were 'standardized' to have equally many leaves, and then (on day 0, say) the plants were contaminated with the disease. On 8 particular subsequent days the amount of infection (in percent) was registered. From the resulting curve of infection two summary measures were calculated (in a way not specified here), namely the `rate` of spread of the disease, and the `level` of infection at the end of the period.

There were 3 `blocks` each consisting of 2 `sections`, a section being a part of the greenhouse. Each section consisted of 3 `plots`, which were each divided into 2 `subplots`, each of which had 6-8 plants. Thus there were a total of 36 subplots. Results were recorded for each subplot.

The experimental factors were randomly allocated to the different units as follows: the 2 climates were allocated to the 2 sections within each block, the 3 amounts of fertilizer were allocated to the 3 plots within each section, and finally the 2 varieties were allocated to the 2 subplots within each plot. Thus, in summary, there were

3 blocks

2 sections per block (given 2 different climates)

3 plots per section (given 3 different amounts of fertilizer)

2 subplots per plot (with 2 different varieties)

Number of observations: 36

Variable	Description
block	Numbered 1-3
section	Numbered 1-6
plot	Numbered 1-18
climate	Numbered 1,2
fert	Values 2.0,3.5,4.0
variety	Values aminex,dalibor
rate	Rate of spread of the disease
level	Level of infection at the end of the period

Source

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Analysis