PLANT-GROWTH EXPERIMENT

1. Introduction

In the following study, you will be involved in the experiment of growing a plant of your choice. The experiment is designed such that the data can be collected with reasonably inexpensive measuring equipment. The data will be analyzed using SPSS. The experiment can be carried out in a team.

Objective

Your task is to examine and estimate the effects of seed type and amount of water on the growth of a particular type of plant. In particular, you will find how the growth of the plant is affected by different combinations of the two factors.

You will have to design the experiment, collect the data, enter the data into SPSS, carry out the statistical analysis, and formulate your conclusions. The data collection equipment used in the experiment is very simple and relatively cheap.

The instructions provided in the study will allow you to produce and examine your own data. However, if you do not wish to be involved in the data collection process, you can use our data.

The plant-growth experiment will be performed in several versions, and you will see that the statistical model used depends heavily on how the experiment was carried out. In particular, we will consider the experiment when data for some of the factor-level combinations are not available (the plants did not shoot up). Moreover, various outcomes of the experiment will be discussed.

Statistical Concepts

Planned experiments, two-factor design, randomization, complete block design, general linear model.

Materials Needed

20 small flowerpots with identification tags, potting soil, seeds for three varieties of the same vegetable, meter stick, planting trowel, 1/4-cup measure, and a bucket of water.

Software

SPSS version 8.0