EXST7015 : Daily Design Question 03

Carefully read the description of the experiment below. Be prepared to answer the questions that follow the design description as a class quiz.

A researcher in horticulture is trying to develop a new fertilizer that will improve the growth of Azaleas in Louisiana soils. He is currently examining four formulations of his fertilizer. The four formulations differ only in terms of pH (i.e. the levels are 6.0, 6.2, 6.4 and 6.6). These levels are spread evenly across his range of interest.

The experiment consists of obtaining 32 potted Azaleas and randomly assigning 8 Azaleas (i.e. pots) to each of the four treatment levels. The plants were obtained in April and the initial biomass of the pot and plant were determined. The plants were given the fertilizer formulations for 5 months at which time the final biomass was determined (pot and plant). The increase in biomass from April to September (final - initial) was used as the dependent variable.

Questions:

What is the treatment arrangement for this experiment?

   (a) single factor   (b) factorial   (c) nested

What is the experimental design for this experiment?

   (a) CRD   (b) RBD   (c) LSD   (e) Split-plot   (d) Repeated Measures

Does it seem to you that the treatments are fixed or random?

   (a) fixed   (b) random

What is the experimental unit for this experiment?

   (a) fertilizer   (b) pH   (c) pot   (d) increase in biomass

What is the sampling unit for this experiment?

   (a) fertilizer   (b) pH   (c) pot   (d) increase in biomass

What is the dependent variable for this experiment?

   (a) fertilizer   (b) pH   (c) pot   (d) increase in biomass

If the design is RBD, what are the blocks?

   (a) fertilizer   (b) pH   (c) pot   (d) increase in biomass

How many degrees of freedom are available for testing the treatments?

    Enter the correct value here: _____

Special considerations:

In this particular example the treatments are quantitative. As a result, polynomial contrasts should be considered as opposed to other post-hoc tests.