EXST7015 : Daily Design Question 15

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 Agronomy wants to test Apples for pesticide residue (Endosulfan), a commonly encountered residue in fruit and vegetables. The national tolerance level for Endosulfan in the United States is 2 ppm for apples. The Agronomist wants to determine if different apple orchards have significantly different levels of residue, which would suggest that the various farmers in his district were using pesticides differently and perhaps some improperly. He also wants to determine the mean level and variability of Endosulfan actually present on the apples from orchards in his area.

Just before harvest he randomly chose 25 orchards from among the hundreds listed in the membership directory of the "Apple Growers Association". At each orchard he randomly chooses 6 trees, and from each tree he randomly chooses 3 apples. Each apple is bagged and tagged with the appropriate information and tested individually for residue. The variable of interest is the level of Endosulfan residue found in each apple (ppm).

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) orchards　(b) a tree　(c) an apple　(d) ppm　(e) residue　(f) Endosulfan

What is the sampling unit for this experiment?

　　(a) orchards　(b) a tree　(c) an apple　(d) ppm　(e) residue　(f) Endosulfan

What is the dependent variable for this experiment?

　　(a) orchards　(b) a tree　(c) an apple　(d) ppm　(e) residue　(f) Endosulfan

If the design is RBD, what are the blocks?

　　(a) orchards　(b) a tree　(c) an apple　(d) ppm　(e) residue　(f) Endosulfan

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

　　Enter the correct value here: _____