

Deliverable 3

Sustainable agricultural practices are nowadays designed to provide multiple ecosystem services. The soil organic carbon (SOC) content is used as a broad indicator that embeds many agronomic and environmental aspects such as soil fertility, carbon dioxide sequestration, soil biodiversity, etc.

Different cultivation systems (conservation agriculture-CA; organic farming-OF; conventional farming-CF) are here compared to test whether their application enhances the SOC (g kg^{-1}) content. The test is conducted in the field under a completely randomized experimental design.

Your tasks are:

- a) Describe the structure of the database and apply some descriptive statistics that can summarize the main statistical aspects of the database.
- b) Identify the null hypothesis H_0 , and the alternative hypothesis H_1 .
- c) Identify and apply the correct statistical test to verify the null hypothesis.
- d) Report the scripts you used and the outcomes from the test.
- e) Report graphically your results with suitable graph(s).
- f) Draw your conclusions based on the statistical outcomes.