##

Scientific Training for Plant Biotechnology

Course in Modern Plant Breeding - Advanced Level

14-25 March 2022, Skoltech

- Day 1: Split-Plot: Biocontrol against grey mold in tomato using endohytic bacteria -

(From Chaouachi et al., 2021)

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######### CASE STUDY PRESENTATION

#Context: Fruit protection test by bacterial Volatile Organic Compounds

A split plot design was used in this assay; each plastic box contains all three different fungal treatments (non-infected fruit, fruit infected with either S2 or S5 B. cinerea strain) and one Petri dish with one antagonistic bacteria strain on solid LB medium or no bacteria for the control.

The test was repeated three times, with two replicates per treatment.

Tomato fruit free from wounds with comparable sizes and stage of maturity were used in this work.

The fruit were disinfected. Then, a hole of 6 mm in diameter was performed in fruit skin and a fungal mycelia disc of 5 mm was placed in it. Fungal inoculated fruit were placed in plastic boxes in the presence of 24 h old bacterial culture on solid LB medium. Control fruit were inoculated by PDA discs.

The boxes were sealed with cellophane paper to prevent the release of bacterial VOCs and incubated in the dark at 24 ± 2 °C.

The degree of *B. cinerea* infection on fruit was estimated by measuring the diameter and the depth of the macerated zone due to fungal colonization of the tissues at 6 days after inoculation (03_VOCs_TomatoFruit.csv).

Questions:

1. Using a schema, you will describe the experimental design implemented for this study.

What is the whole plot factor and whole plot experimental unit?

What is the split plot factor and split plot experimental unit?

2. Do VOCs released by the bacterial endophytic strains affect fruit infection by grey mold?

Is there any difference in the antifungal properties of VOCs depending on Botrytis strain?