Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
agritech National Research Center for Technology in Agriculture

EXPERIMENTAL FERTILIZERS FROM FOOD WASTE: A SUSTAINABLE WAY TO IMPROVE VEGETATIVE AND PRODUCTIVE PERFORMANCES OF TOMATO PLANTS.

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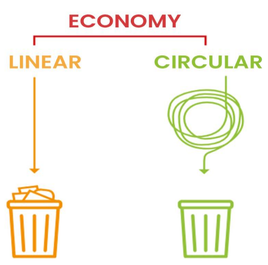
8.3.2

NUTRIENT AND ORGANIC MATTER RECOVERING FROM WASTES TO REDUCE THE USE OF AGROCHEMICALS AND CLOSING WASTE CYCLE

Introduction

Tomato (*Solanum lycopersicum* L.), a commercially valuable crop, is increasingly cultivated using **soilless cultivation systems** to mitigate the effects of climate change.
These systems typically rely on cocopeat or perlite as a substrate, but due to their high costs and environmental impact, there is a growing interest in **alternative substrates**.



Reducing the use of synthetic fertilizers by resorting to organic alternatives derived from agri-food waste is a valuable strategy for the transition from a **linear** to a **circular economy** in agriculture.

Biochar (BC) and **Wood Distillate** (WD), obtained from pyrolysis of agricultural wastes, are reported to improve yield and quality of the production acting respectively ad an amendment and biostimulant.

Nowadays, there is significant interest in using **agrifood waste** to develop experimental biostimulants.

A **biostimulant** is a substance or microorganism that is applied to plants, seeds, or soil to enhance natural processes, leading to improve plant growth, nutrient uptake, stress tolerance, and overall health.

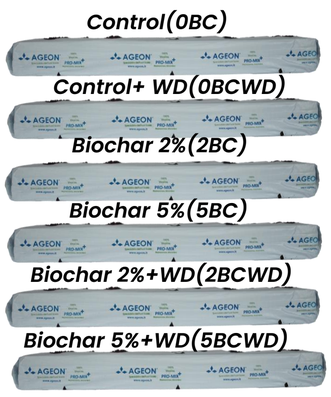
Aims

1) EVALUATION OF THE EFFECT OF BIOCHAR AND WOOD DISTILLATE ON VEGETO-PRODUCTIVE PERFORMANCES OF TOMATO PLANTS GROWN IN SOILLESS CONDITION

2) EVALUATION OF EXPERIMENTAL BIOSTIMULANTS DERIVED FROM FOOD WASTE ON VEGETO-PRODUCTIVE PERFORMANCES OF TOMATO PLANTS GROWN IN SOILLESS CONDITION

3) EVALUATION OF THE EFFECT OF BIOCHAR ON *IN VITRO* ROOTING OF TOMATO SEEDLINGS IN RESPONSE TO SALT STRESS

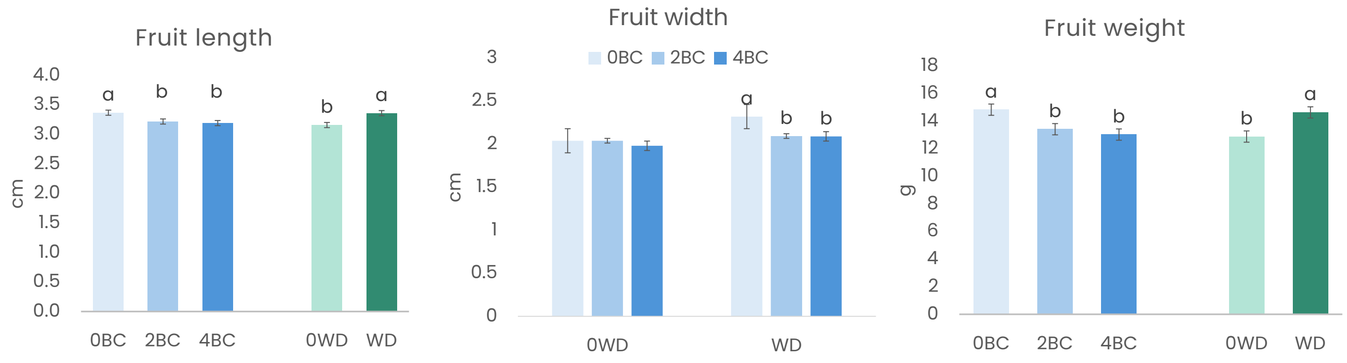
1. EVALUATION OF THE EFFECT OF BIOCHAR AND WOOD DISTILLATE ON VEGETO-PRODUCTIVE PERFORMANCES OF TOMATO PLANTS GROWN IN SOILLESS CONDITION



Cultivars: Solarino and Chikito

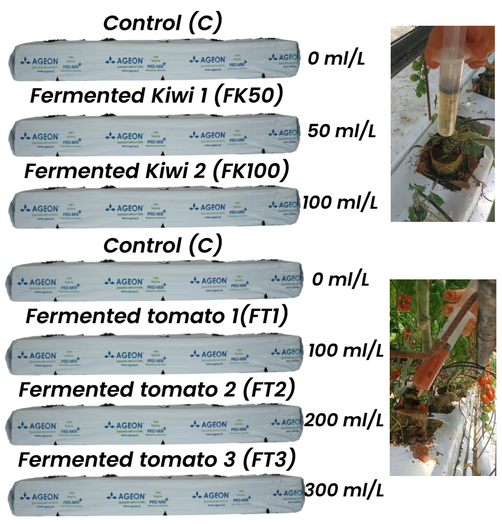
Substrates: Coconut fiber and Perlite

N° of plants: 18 plants per treatment (2023)
30 plants per treatment (2024)



Two-way ANOVA,Tukey's test, $p<0.05$

2. EVALUATION OF EXPERIMENTAL BIOSTIMULANTS DERIVED FROM FOOD WASTE ON VEGETO-PRODUCTIVE PERFORMANCES OF TOMATO PLANTS GROWN IN SOILLESS CONDITION



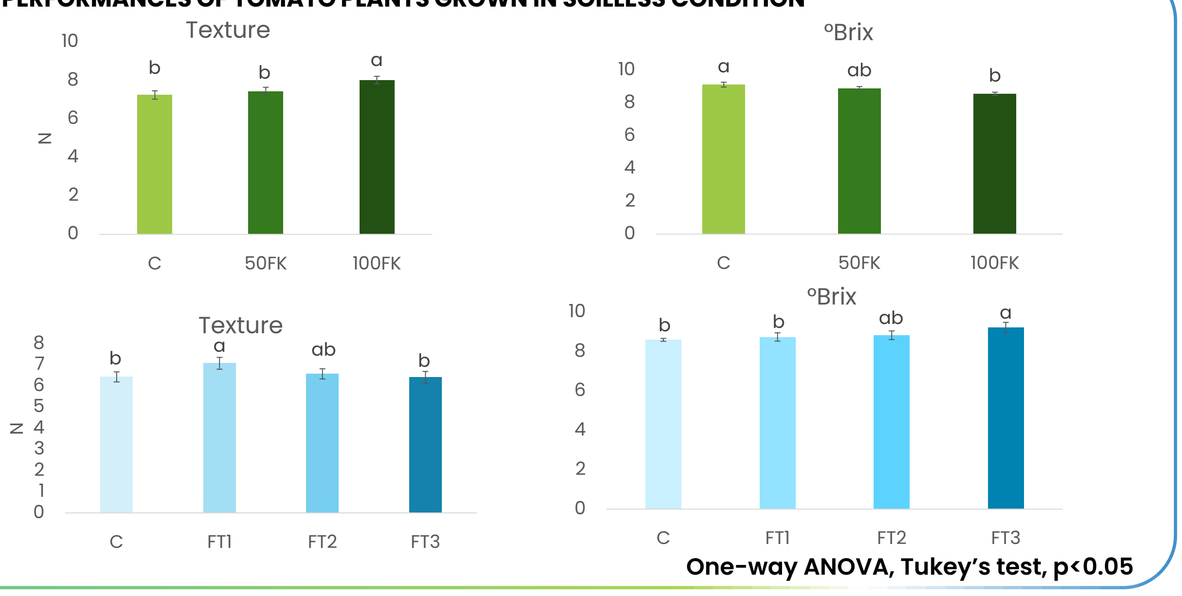
Cultivar: Solarino

Substrate: Coconut fiber

N° of plants: 18 plants per treatment

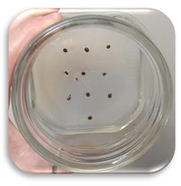
2 Type of biostimulant: Fermeted Kiwi waste (FK) and Fermented Tomato waste (FT)

In collaboration with Task 8.1.2

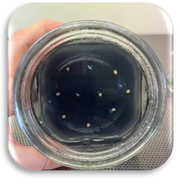


One-way ANOVA, Tukey's test, $p<0.05$

3. EVALUATION OF THE EFFECT OF BIOCHAR ON *IN VITRO* ROOTING OF TOMATO SEEDLINGS IN RESPONSE TO SALT STRESS



0mM NaCl-BC0
20mM NaCl-BC0
40mM NaCl-BC0
60mM NaCl-BC0



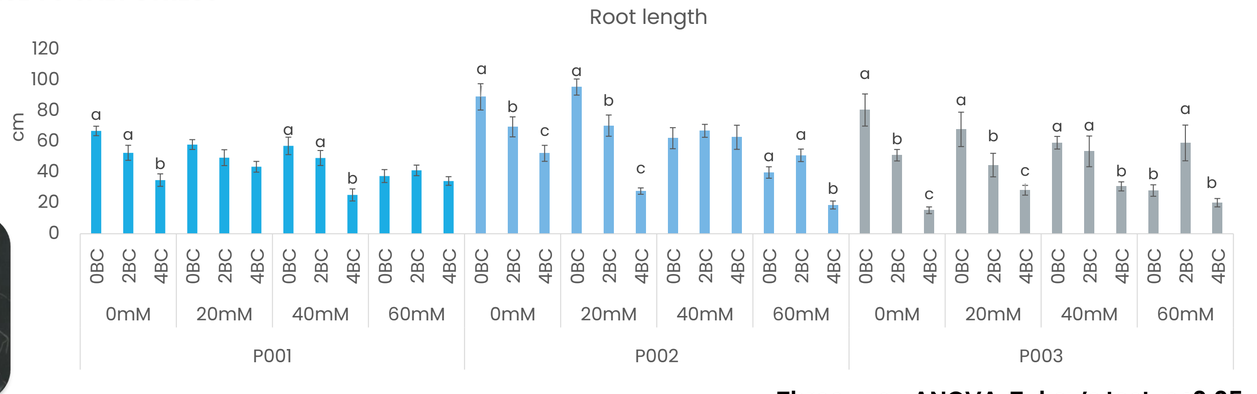
0mM NaCl-BC2-BC4
20mM NaCl-BC2-BC4
40mM NaCl-BC2-BC4
60mM NaCl-BC2-BC4

Genotypes: 3 parentals

Substrate: MS+BC+NaCl

N° of seeds: 30 per substrate

In collaboration with ISI Sementi



Three-way ANOVA, Tukey's test, $p<0.05$

References

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Dissemination

LEAF healthe planet's FUTURE – Notte Europea delle Ricercatrici e dei Ricercatori – Parma 29 settembre 2023
EHC 12-16 May 2024 Bucharest, Romania – European Horticulture Congress
#AISSA under 40
VITROSOI2024 V Convegno Nazionale sulla Micropropagazione Viterbo 14-16 ottobre 2024

This study was carried out within the Agritech National Research Center and received funding from the European Union Next-GenerationEU (PIANO NAZIONALE DI RIPRESA E RESILIENZA (PNRR) – MISSIONE 4 COMPONENTE 2, INVESTIMENTO 1.4 – D.D. 1032 17/06/2022, CN00000022). This manuscript reflects only the authors' views and opinions, neither the European Union nor the European Commission can be considered responsible for them.