



**Boosting functional biodiversity to
maximize ecosystem services for
Mediterranean crop production**

Soil microorganisms to improve plant health

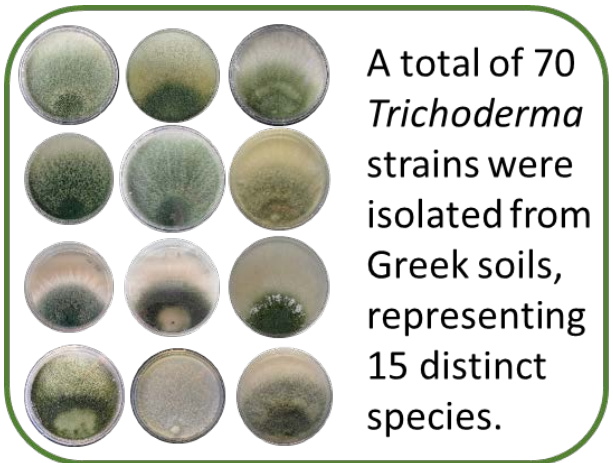
Soil is more than just dirt; it's a bustling ecosystem teeming with microscopic life. These microorganisms play a critical role in plant health, from nutrient cycling to disease suppression. Among these beneficial organisms, fungi in the genus *Trichoderma* and mycorrhizal fungi stand out. *Trichoderma* species and mycorrhizal fungi are known for their ability to promote plant growth, suppress diseases, and enhance nutrient uptake.

How does the ECOBOOST project aim to improve plant health of Mediterranean Solanaceous crops?

One of the primary objectives of our research is to isolate *Trichoderma* strains that are well-adapted to the Mediterranean soil conditions. By identifying these locally adapted

strains, we aim to develop more effective *Trichoderma* inoculants that can significantly enhance plant health in this region.

To achieve this, soil samples from five organic farms across the Macedonia and Thrace regions, as well as from the Dadia forest were collected by the ECOBOOST teams of the University of Thrace (Greece) and the University of Göttingen (Germany). These diverse locations provide a broad spectrum of *Trichoderma* isolates that are currently assessed for their effectiveness against the root-knot nematode *Meloidogyne incognita*. This parasitic nematode is notorious for causing gall formation on plant roots, posing a severe threat to many crops, particularly those within the Solanaceae family—a key focus of the ECOBOOST project. At the University of Göttingen, Master's student Pratigya Regmi and Dr. Catalina Posada-Vergara have been diligently working on this project, overseeing the planting, inoculation, and harvesting of tomato plants to evaluate the impact of the *Trichoderma* isolates. Their efforts are crucial in determining the potential of these isolates to mitigate nematode damage and promote healthier crop production in the Mediterranean region.



The initial results are promising, with preliminary identification pointing to isolates like *Trichoderma simonsii* as particularly effective. This strain has shown a remarkable ability to significantly reduce nematode-induced gall formation in tomato roots. The findings suggest that *T. simonsii* and similar isolates could play a vital role in mitigating the impact



of root-knot nematodes, offering a potential tool in sustainable crop protection for the region. Further experiments will tell!

Flower strips of wild Mediterranean plants to boost ecosystem services

In spring-summer 2024, the Benaki Phytopathological Institute's research in Greece on utilizing Mediterranean wildflowers to support beneficial arthropods and enhance ecosystem services, like biological control and pollination within crops, has made significant progress. Following detailed botanical surveys, field margins have been



established using mixtures of promising wildflower species. To assess their impact, suction sampling was conducted to document natural enemies of crop pests, while net sampling and visual observations were used to monitor bee populations. Additionally,

the moth *Tuta absoluta*, a major pest of tomatoes, was closely monitored using Delta traps. To further explore the role of wildflowers, Y-tube olfactometer assays were performed with a parasitoid of *T. absoluta* to evaluate the flowers' attractiveness as a potential food source for this beneficial insect. These efforts are key in developing sustainable pest management strategies that leverage the ecological benefits of native flora.

Collaboration between ECOBOOST and Moroccan red pepper producers

In August, the ECOBOOST team in Morocco, headed by Dr. Abdelali Laamari (3rd from the left), was invited to a presentation of the red pepper platform in the Tadla region, which has been established by the National Institute for Agricultural Research (INRA) and the regional pepper producers' cooperative.



Our ECOBOOST team collected data and developed an enterprise budget for red pepper. This budget will be instrumental in estimating production costs and introducing innovative crop management technologies, which are the focus of ECOBOOST. The establishment of similar platforms for tomato and eggplant are currently negotiated.

2nd ECOBOOST Meeting at University of Thrace in Alexandroupolis, Greece

The second ECOBOOST meeting, hosted by Assoc. Prof. Maria Pappas and her team, took place from 6.-7. June 2024. During the event the consortium presented the latest research findings and discussed collaboration strategies across the working groups.





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