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EXCALIBUR selects new biocontrol agents for tomato and strawberry

European research team on the selection of microbial antagonist to control pathogens on horticultural crops.

The Centre of Competence AGROINNOVA of University of Torino (UNITO), which is led by Prof. Maria Lodovica Gullino and is partner of the Excalibur project, is working on the identification of novel microorganisms able to control tomato and strawberry plant diseases.
We selected – as explained by Prof. Massimo Pugliese from AGROINNOVA - two commercial farms located in Piedmont Region in Italy in 2020 where we monitored several key diseases affecting tomatoes and strawberry plants. We collected diseased plants and identified the pathogens by laboratory culturing techniques with particular attention to microbes that might come from the soil, also called soil-borne pathogens. At present, we are using the isolated pathogens to inoculate plants grown in greenhouses as part of a pot-scale experiment for reproducing the same diseases observed in the field to select microbial antagonists that might help with the control. We are testing fungi and bacteria including *Trichoderma*, *Pseudomonas* and non-pathogenic *Fusarium* strains, and evaluating their capacity to control the soil-borne pathogens.
We are also assessing the effect of organic fertilizers made of compost, alone or fortified with microbial strains, such as *Trichoderma*, in suppressing the soil-borne pathogen *Phytophthora capsici*, which can cause stem and fruit rots to several crops, including tomato. Our finding, using molecular techniques, showed that the suppressive activity is linked to the microbial population in the compost and the amount of compost added to the experiments. However, the ability of the rhizosphere microbial composition to change was also found to be of important to reduce the disease incidence. The results have been recently published in Frontiers in Plant Science (https://www.frontiersin.org/articles/10.3389/fpls.2020.00885/full).
After this selection process, the most promising solutions will be applied starting from next year in the two commercial farms to further validate the possibility to control the diseases.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817946.

This type of “tailor-made” approach will help growers to reduce the use of chemical fungicides and, together with the Excalibur project partners, will help to better understand the impact of microbial antagonists on soil biodiversity.

About EXCALIBUR:

EXCALIBUR is an international research project financed by the EU Research and Innovation Programme Horizon 2020 led by the Consiglio per la ricerca in agricoltura e l’analisi dell’economia agraria (CREA) - Italy, which started in June 2019. With the aim to initiate a biodiversity-driven change in agricultural soil management practices the project received 6.995.197,50 € in funds and brings together 16 European partners. Over a five-years timeline, the researchers will explore how crops, soil and microorganisms interact. The gained understanding will promote a more effective use of biopesticides and biofertilizers for long-term productive and sustainable practices in horticulture.
If you would like more information about this project, please contact the Coordinator Dr. Stefano Mocali at (email: stefano.mocali@crea.gov.it), or learn more on Facebook, Instagram, Twitter and the EXCALIBUR homepage.

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