

FROOTS

ASSESSING STRESS IN OLIVE TREE
ROOTSTOCKS TO MAKE THEM MORE RESILIENT
TO GLOBAL CHANGE



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CALL: H2020-MSCA-IF-2019

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PRINCIPAL INVESTIGATOR: DIEGO BARRANCO NAVERO

Can olive trees be bred to be more resistant to drought, extreme temperatures and limiting factors in the soil? Answering this question in the affirmative is the objective of research by Agricultural Engineer Dr. Carlos Trapero and Marie Sklodowska-Curie, postdoctoral fellow at the University of Cordoba for the execution of the European FROOTS project.

The European FROOTS project crossbreeds olive tree varieties to achieve genetic improvements to deal with the impact of environmental stresses

Through the crossbreeding of rootstocks of different olive varieties, Trapero aims to achieve new ones featuring genetic improvements that are more resistant to the impact of environmental adversity.

This study, led by Diego Barranco, a professor of Plant Production at the UCO, is based on the selection of olive tree rootstocks; that is, small roots of this plant with less than a month of development, which are fused in laboratories. The procedure used to graft the tissue of two plants in their initial growth phase could be compared to "a surgeon's work, but applied to plants", according to Trapero, "since we open, and cut, with great precision the part we are interested in, and join them together". Once this "operation" has been carried out, it is time to wait for "the grafted rootstocks to heal and for them to begin to grow so that

we can then evaluate the results," adds the researcher.

The European FROOTS project, carried out entirely at the University of Cordoba, aims to design methodologies to generate and select the olive tree rootstocks most resistant to abiotic factors like drought and extreme temperatures, as well as to generate new rootstocks with genetic improvements.

To complete this meticulous work Trapero indicates that it is necessary to take into account certain guidelines governing the handling of the samples and the environmental conditions to which they are exposed in the laboratory to ensure that "the seedlings graft satisfactorily, and grow". This method makes it possible to test the resistance of small plants with a view to applying the results obtained to large plantations through cloning.

The European project FROOTS, carried out entirely at the University of Cordoba, will design methodologies to generate and select the rootstocks most resistant to abiotic factors like drought and extreme temperatures

This study will make it possible in the future to generate new olive varieties with properties that are more resistant to environmental stress and the consequences of climate change. In



addition, the results of this study will undoubtedly contribute to improving olive plantations' final yields.

Although Trapero's study is mainly carried out at UCO facilities, the agricultural engineer will do part of his research in Sweden. The University of Cordoba's participation in this European project is a source of "international prestige and recognition for the institution of the great research work it is doing on olive trees".

Olive varieties and natural material from the World Olive Germplasm Bank, located at the Rabanales university campus, are used for this study, which forms part of the FROOTS project.

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