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## Climate change puts commercial viability of citrus, vineyards and olive trees at risk



Credit: Asociación RUVID

Climate change threatens the medium-term commercial viability of citrus fruits, vines and olives. A study by the Ecophysiology and Biotechnology research group at the Universitat Jaume I de Castelló (UJI) - carried out in collaboration with scientists from France, Greece and the United Kingdom—warns that the effects of global warming will reduce the productivity of these three species of traditional and iconic fruit trees in the Mediterranean area. The conclusions of this review are published in the journal *Frontiers in Plant Science*.

Vicente Arbona, lecturer in the Department of Agricultural and Environmental Sciences, coordinator of this study and also a member of the Interdisciplinary Seminar on Climate Change Research at the UJI, argues that this phenomenon "will not only cause a drop in the productivity of iconic species such as citrus fruits, vines and olives, but also, the increase in temperatures or the water deficit will affect their commercial competitiveness." In addition, the expected variations in the territory of Castellón, the Valencian Community and the Mediterranean area as a whole, which is particularly vulnerable, "will affect the phenology of these fruit trees, altering their patterns for sprouting, flowering, giving and ripening the fruit."

Another important aspect is the quality of the fruit, which is key to its commercial viability. In citrus, high temperatures alter the balance between sugars and acids, giving rise to fruit without its characteristic acidic touch, "as can be seen in those from tropical regions," according to UJI researchers. In the olive tree, the impact can be "more dramatic," in the opinion of experts, because although it is a crop very well adapted to Mediterranean conditions, the combined action of lack of rain and high thermal values in autumn and early spring determines the flowering period and its intensity. In fact, "the flowering of this species can be advanced up to 17 days at the same time as reducing the percentage of fruit set and, therefore, production," commented the Ecophysiology and Biotechnology group.

These alterations during the period in which they sprout or flower will have a different effect on pollinating insects: so much so that "a desynchronisation between the cycles of one and the other can occur, as has already been observed between some herbaceous species and their natural pollinators, drones, with their consequent effect on the productivity of the fruit trees," says Arbona.