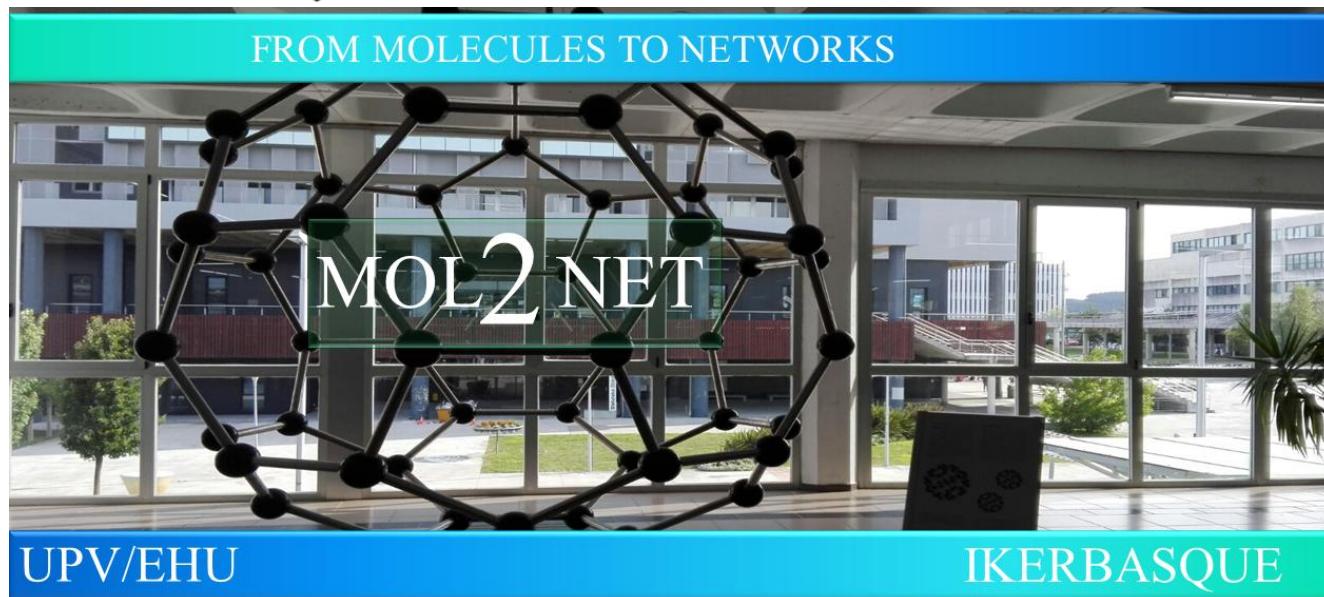




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## Pushing the northern Alpine limits of the Italian olive growing by exploiting climate change as a driving force

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### Graphical Abstract

### Abstract.

Since 1996 the Fojanini Foundation has been undertaking a project for the reintroduction, after eight centuries, of olive growing in Valtellina (along the Italian Alpine boundary with Switzerland), by recovering abandoned terraces so to stem forest advancement as an indirect effect. This has been made possible by the increase in temperatures recorded in the last three decades in this Alpine area. In particular, in comparison with the 1977-1981 period, all the years between 1990 and 2021 in Valtellina were

	<p>found to be in a range between 0.5 and 4°C warmer.</p> <p>For the rebirth of Valtellina olive growing, a preliminary phase of varietal selection according to a bibliographic study and the consultation and analysis of historical data took place. Then the molecularly characterized planted varieties have been evaluated concerning physiological performances and olive oil characteristics throughout the 22-year-long study.</p> <p>The varietal comparison to evaluate agronomic success, cold resistance, olive yield, and oil quality to identify the most suitable cultivars for the lasting development of alpine olive growing, may serve as a touchstone for overcoming the olive conventional limits even in non-traditional olive-producing countries.</p>
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### **Introduction** (*optional*)

Olive (*Olea europaea* L.) is an evergreen xerophytic tree characterizing vegetative landscape and historical-cultural identity of the Mediterranean Basin. As a subtropical species, the olive tree is quite sensitive to low temperatures, and air temperature is the most critical environmental factor limiting olive tree growth and production (Petruccelli et al., 2022). In a context of climate change, the increase in mean temperatures is currently allowing the extension olive cultivation beyond the northern (and southern) latitudes. Accordingly, this study was conceived to reintroduce olive growing in the Italian Alpine area of Valtellina.

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### **References** (*mandatory*)

Petruccelli, R.; Bartolini, G.; Ganino, T.; Zelasco, S.; Lombardo, L.; Perri, E.; Durante, M.; Bernardi, R. Cold Stress, Freezing Adaptation, Varietal Susceptibility of *Olea europaea* L.: A Review. *Plants* **2022**, *11*, 1367. <https://doi.org/10.3390/plants11101367>

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