

# **9<sup>th</sup> International Cherry Symposium**

## **Abstract Book**

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## Adaptation of sweet cherry cultivars to future climate conditions in the Ebro Valley (Spain)

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### Abstract

Global warming is causing rising temperatures during the winter in many regions, directly affecting the flowering dates of fruit tree species. The reduction of winter chill is causing delays on dormancy overcome, which could ultimately even limit the cultivation of sweet cherry in some traditional areas. Each sweet cherry cultivar requires a specific demand of chilling for dormancy overcome, followed by a specific heat demand for finally flowering. The main aim of this work is to predict the adaptation of 12 cultivars to future conditions in the growing area of Zaragoza in the Ebro Valley, one of the most important regions of cherry production in Spain. We first delineated the chilling phase using an empirical methodology in which shoots were sampled weekly and transferred into a growing chamber at  $20 \pm 1^\circ\text{C}$  for 8 days. Then we evaluated bud growth by comparing the fresh weight of 10 flower buds sampled before and after the exposition to the growing chamber. To calculate chilling requirements (CR), we used three chilling models (Chilling Hours, Utah, and Dynamic). Finally, we assessed the potential of cultivars to adapt to a warmer future using climate projections and comparing the CR with the expected chill accumulation under two global warming scenarios throughout the 21st century, with temperature projections from several Global Climate Models. The calculation of the probability of covering the CR of each cultivar in each future scenario allowed us to evaluate the possible impacts of the lack of winter chilling caused by climate change on cherry cultivation in Zaragoza, considering that a cultivar could successfully adapt to future conditions with a rate of fulfillment of 90%.