



Impact of climate change on olive crop flowering at southern Spain

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Andalusia region (Southern Spain) is the largest olive oil producer in the world with 40% of the total production (1.1 millions tons; FAOSTAT, 2013). Predicting flowering dates of olive under future climate conditions has a critical importance as flowering is a critical stage for olive as heat and water stresses during this period have a significant impact on final olive oil yield.

The aim of this study was to evaluate the olive flowering dates under future climate conditions. Climate data for the future period was obtained from the ENSEMBLES European Project (<http://www.ensembles-eu.org/>) with a bias correction in temperature and precipitation with regard with the SPAIN02 dataset (Herrera et al., 2012) (ENS-SP). Flowering of ten different olive cultivars were evaluated under current and forced (greenhouse) climate conditions, applying the bias in temperatures comparing the current period (1981-2010) with the future period (2071-2100) to the current conditions in Cordoba (Andalusia, Spain). These observations allowed obtaining a flowering approach which was applied to the whole Andalusia region. The results showed an average advance in flowering dates about 16 days at the end of the 21st century. With these results different areas within Andalusia region were classified based on the vulnerability caused by the lack of chilling hours accumulation (coastal areas) or by high temperatures during flowering (north and northeast regions).

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