

The future of sweet cherry in Australia

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Predicted variations in global climates have fruit producers trying to determine which crops are best suited to weathering future temperature changes. Extreme high-temperature events are expected to become more frequent, and predictive models suggest that the global mean surface air temperature will rise by as much as two degrees by the middle of the 21st century. Higher temperatures could have an impact on the duration of critical "winter chill" periods needed for successful fruit production, potentially altering growing strategies. According to the authors of a study published in the March 2014 issue of *HortScience*, the future of sweet cherry crops may be at risk in Australia. If climate change models are correct, the scientists say that these high-value crops could suffer. Sweet cherry needs adequate periods of winter chill to flourish: insufficient chill can result in poor bud development, sporadic and uneven budbreak, prolonged flowering and fruit development, and non-uniform ripening.

Penelope Measham and Nicholas MacNair from the Tasmanian Institute of Agriculture at the University of Tasmania, along with Audrey Quentin from CSIRO Ecosystems Science, published the results of their experiments using two common sweet cherry varieties. The researchers established the chill requirement for two commonly grown sweet cherry varieties, 'Sweetheart' and 'Kordia', and then explored the uniformity of bud burst and subsequent impacts on fruit maturation in both varieties. They then conducted field trials in a commercial cherry orchard in Southern Tasmania, Australia from leaf fall in June until harvest the following February.

The team determined that the two sweet cherry varieties required different chill hours, and also found that 'Sweetheart' reached mean time to, and maximum total bud burst, faster than 'Kordia'; no significant differences in uniformity of bud burst were found between the two varieties. The results demonstrated that the success of initial and total bud burst increased with time at low temperatures and under natural field conditions. "The results we obtained by matching chill accumulation to tree phenology showed that cherry-producing regions in Australia will experience sufficient chill to support the production of the variety 'Sweetheart' with an increase in mean winter temperature of 1 °C," stated corresponding author Penelope Measham. "Regions in Western Australia and Queensland will become marginal, or not suitable, for 'Kordia'."

The authors said their study demonstrates the complexity of quantifying chill in line with tree phenology, and shows the challenges for growers who seek to implement chill information. They noted that additional strategies for ensuring cherry trees meet specific chill requirements are needed for marginal areas.

More information: The complete study and abstract are available on the ASHS HortScience electronic journal web site:

[hortsci.ashspublications.org/c ... nt/49/3/254.abstract](http://hortsci.ashspublications.org/c...nt/49/3/254.abstract)

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