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Deciduous Fruit Tree Chilling Hours

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Good fruit production requires some chilling temperatures.

SUMMARY

Most deciduous fruit trees are adapted to winter cold and require a certain number of *chill hours* to produce a good harvest.

Understanding the historical chill hours in your area allows you to select appropriate species and varieties for successful fruit production.

Q. How can I find the number of chill hours for growing fruit in Concord?

A. Chill hours are the cumulative number of hours of temperatures lower than 45°F that are required by deciduous fruit and nut trees for fruit production. The hours are tracked during the traditional dormant season, measured from November 1 to February 28/29.

Available Data:

The University of California provides cumulative chill hours, current year and historical, for more than 100 locations throughout the state. The data is collected from CIMIS (California Irrigation Management Information System) weather stations. There are 3 weather station locations in Contra Costa County – Brentwood, Concord, and Moraga. There is no weather station located in the east part of Contra Costa County (Richmond area) so the chill hours for that area can be approximated by data measured by the Oakland Hills, Alameda County station.

Some average chill hours for the last nine years for areas in Contra Costa County are on the next page. You can obtain the data yourself at the University of California website:

<http://fruitsandnuts.ucdavis.edu/chillcalc/index1.htm>.

Why Are Chill Hours Important?

During the fall season, shortening day length and cooler temperatures stimulate a tree to produce growth inhibitor hormones that stop it from growing. It is these hormones that keep a tree in dormancy during the winter months. Dormancy is broken when sufficient cold temperatures break down the growth inhibitors within the tree. A specific number of cumulative hours of chill (temperatures lower than 45°F), are required to break dormancy. Once the appropriate number of chill hours has been achieved, and only after trees are exposed to longer daylight hours and warm enough temperatures for natural growth processes to begin, will active growth resume in the spring.





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Effects of Insufficient Chill:

With insufficient chill, trees will leaf out late in the season, blossoming can be prolonged, buds may deteriorate and/or drop, and few if any flowers are produced. Without flowers, there is no fruit. Both the absolute number and the distribution of chill hours have an impact. Periods of a few days to a week or more of mild weather may offset or reduce the effectiveness of accompanying periods of good chilling weather. Greater seasonal totals are usually necessary when there is prolonged interruption of cool weather.

Chill Hour Requirements:

The number of chill hours required varies by the type and variety of fruit or nut. In order to make sure the tree you plant is appropriate for your area’s environmental conditions, you should

know the average chill hours in your area as well as the chill hours required for the specific fruit or nut tree you wish to plant. For information on the chilling requirement for various fruit and nut trees you can go to the University of California website:

http://homeorchard.ucdavis.edu/The_Big_Picture/Tree_Selection/#chill.

Fruit Tree Selection:

For information on fruit tree varieties for the home garden, including low chill varieties (varieties requiring less than 300 hours of temperatures lower than 45°F to break dormancy), go to the University of California free publication *Growing Temperate Tree Fruit and Nut Crops in the Home Garden*:

<http://homeorchard.ucdavis.edu/varieties.pdf>.

CIMIS Weather Station Location	Average seasonal chill hours (November 1 – February 28/29, 2001-2010)
Brentwood	805 ⁽ⁱ⁾
Concord	835
Moraga	1061
Oakland Foothills (Alameda County)	560

⁽ⁱ⁾ No Brentwood data available for the 08/09 and 09/10 dormant seasons. Therefore, the average is for the previous 7 years.



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