

# Panhandle Agriculture

## Counting Accumulated Winter Chill



By  
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) all temperatures turned cold early in 2008, but December was milder than average across North Florida. The 2008-09 weather is looking like 2006-07 when accumulated chill began near-normal, then turned unseasonably low during mid-winter, and finished near normal with cooler late January-early-February temperatures.

Gardeners and north Florida orchardists have reason to watch temperatures from November through mid-February. This cool season period affects fruit yields in May and June. Many deciduous fruit trees – those that drop their leaves in the fall and bud out again in the spring - have a dormancy requirement based on fall and winter chill. Blueberries, stone fruit, and apples are chill sensitive and require “a period of rest” with no growth or production activity.

The dormancy requirement is estimated as accumulated chill hours, sometimes called chilling requirements or chill units. A calendar and a thermometer are used when calculating the internal biology of chill-dependent plants for the purpose of understanding the process. There are several complicated formulas used to measure the hours necessary to meet each plant’s dormancy requirements. The most common, and the simplest, is to count all hours between November 1 and February 15 below 45 degrees Fahrenheit.

Chill was monitored for over four decades at the former UF/IFAS Research Center west of Monticello. Table 1 shows a 41-year summary with normal, or typical, chill, and the extremes of lowest and highest recorded for the area. A Florida Automated Weather Network (FAWN, <http://fawn.ifs.ufl.edu>) station is located at the same site now.



Nov 1 through	Nov 30	Dec 30	Jan 15	Feb 15
<b>Average</b>	<b>121</b>	<b>342</b>	<b>591</b>	<b>700</b>
Minimum	12	183	305	318
Maximum	228	551	969	1152

Across the Florida panhandle, FAWN sites are located at Jay, Marianna, Quincy, Carrabelle and Monticello. Compare chill from these five sites in recent years (Table 2) to the long-term data from Monticello. Note the variability from site-to-site within a season, and from season-to-season.

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The moderating effects of the Gulf of Mexico place Carrabelle's chill hours substantially below the other area sites.

This season, through the first week of January, Monticello had about 307 hours of chill. That is almost 200 hours below normal, and close to the all-time low. But a cool January and early February could repeat the chill pattern of 2006-07, shown in Table 3. Almost half the total dormancy-breaking chill hours occurred in the final 30 day of that year's cool season.

Year	Jay	Marianna	Quincy	Carrabelle	Monticello
2002-03	888	847	892	---	---
2003-04	---	780	823	666	779
2004-05	588	605	637	535	671
2005-06	662	605	665	558	656
2006-07	740	615	602	463	581
2007-08	667	663	645	---	715

their chill requirement and bloom during a mid-to-late winter warm spell, only to have a late freeze damage flowers or small fruit. Because our chill varies, prudent gardeners will plant a few of each type to "hedge their bets." A strategy for dooryard and

Nov 1-15	Nov 16-30	Dec 01-15	Dec 16-31	Jan 01-15	Jan 16-31	Feb 01-15	Total
34	108	90	45	56	115	134	582

Cultivars (or "cultivated varieties") are selected as having the best potential to produce under local chilling conditions.

Varieties are rated by their estimated chill requirement and grouped as low, moderate and high chill hour types. Peaches and nectarines are the most chill hour sensitive fruit grown here.

Examples of low chill peach and nectarine varieties are UFGold (225 hours and not recommended here), Flordaking (peach, 350 hours), Suncoast (nectarine, 400 hours). June Gold is considered a mid-to-high chill cultivar (peach, 650 hours). High chill requirement varieties or cultivars will not bloom or set fruit in moderate or warm years. Low chill varieties will accumulate

commercial orchards is to plant about 20%-30% each of relatively low-chill and high-chill requirement cultivars, and the balance with mid-chill fruit

cultivars. In ideal years this strategy may help extend harvest seasons for home gardeners, for U-Pick growers, and for commercial producer with labor constraints.

FAWN offers a chill calculator to compare annual accumulated chill to the long term normal numbers.

From the FAWN home page, click "Tools" at the bottom of the page, then look for "Air Temperature Threshold" under Cold Protection. For dormancy breaking chill, use the time period Nov 1 through Feb 15, and temperatures below 45°F.



*North Florida Peaches*