



Wisconsin Fruit News

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How could this warm weather affect fruit crops?

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I have received several phone calls and emails regarding the recent warm weather, and how it will affect fruit production this year. I know the spring frost that we experienced last year is still fresh in our memory, and many of you are wondering if, with this warm weather, we might have an early bud break and thus more chances of having another spring frost event.

Woody perennial fruit crops grown in temperate climates need to experience a specific amount of chilling temperatures (between 32-45 °F) to be able to break out of dormancy and resume growth in the spring. The term “chilling hours” was developed to quantify how long plants need to be exposed to chilling temperatures (between 32-45 °F) to break dormancy or “complete rest”. This requirement varies among species and cultivars. For example, apple trees require a range of 800 to 1700 chilling hours to complete rest, while peach trees require between 700 and 1000 chilling hours to complete rest. Grapevines are thought to have a much lower chilling requirement to complete rest; unfortunately, not much is known about the exact chilling requirements of cold hardy grapes.

At this point, we have accumulated around 900 to 1100 hours of chilling in the majority of the fruit growing areas in the state. This means that some cultivars with low chilling requirement might have completed rest. However, many of the cultivars grown in Wisconsin are in the higher range of chilling requirements and will still have to accumulate more chilling to be able to complete rest and break bud. Reaching the chilling requirement might happen fast from now on, if temperatures stay in the 32-45 °F range. After the required chilling hours have been experienced, plants need warmer temperature (over 50 °F) to break bud and resume growth. You can calculate chilling hours with this new app created by Mississippi State University (https://webapps.msucare.com/chill_hours/).

This unusual warm weather does have a significant effect on the ability of dormant tissue (i.e. buds) to withstand freezing temperatures. In the middle of the winter, when temperatures are consistently low (below freezing), plants achieve their maximum level of cold hardiness or resistance to freezing stress. However, the level of cold hardiness of tissues such as buds is depended on the temperature experience, and plants will lose cold hardiness (deacclimate) if the weather gets warmer. What this means is that with the warm weather we are experiencing right now, buds of fruit trees and grapevines are less hardy than they were in mid-January, and if the temperatures were to abruptly drop into the single digits we would experience significant damage in dormant buds. However, at the moment, it doesn't look like we will experience anymore of the deep winter cold temperatures, and even though buds have lost some degree of cold hardiness, I don't think we will have temperatures dropping into the single digits any time soon.

In summary, most fruit crops in Wisconsin still require more chilling hours (between 32-45 °F) before they will break dormancy, but even once they reach the chilling requirement, temperatures will then have to return to levels about 50 °F. Hopefully the weather will cool down in the next couple of days, holding those buds dormant for longer, and giving us time to prepare for this new growing season.