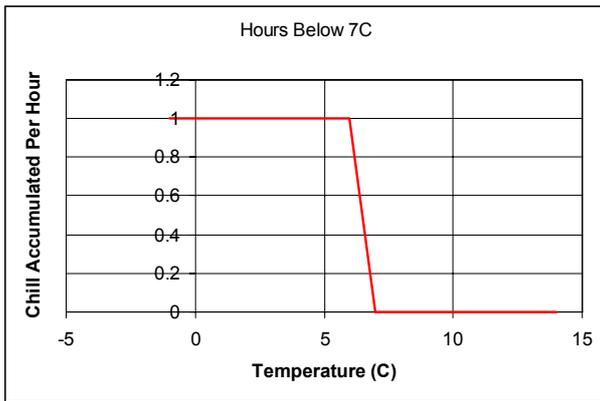


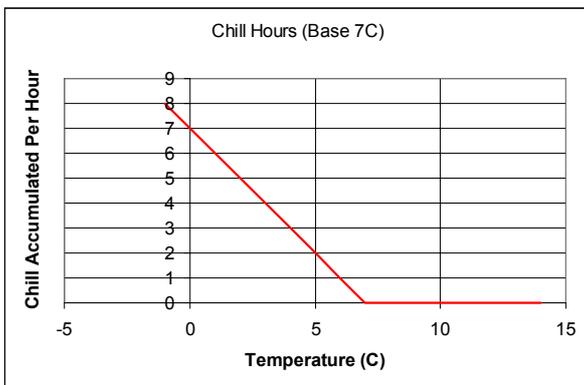
Winter Chill Calculations
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In previous Weather Sense columns we have addressed the need for winter chilling by many of the fruit crops grown in New Zealand, and talked briefly about different ways in which it can be measured. This month I will shed a bit more light on "the Richardson Chill Unit", also known as the Utah Chill Unit, and how they compare with the type of chill measurements most growers are familiar with.



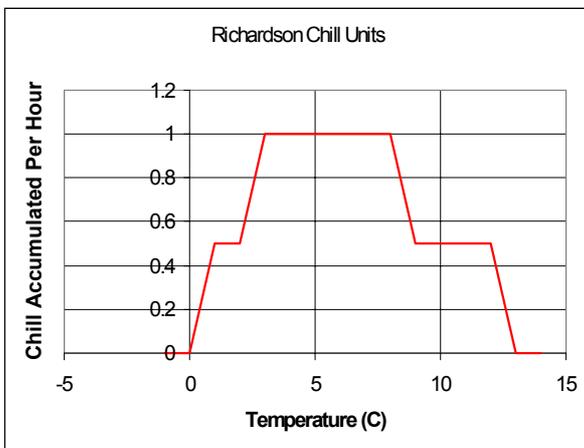
Hours Below Threshold (7°C)

This is the most commonly used measure of winter chill in New Zealand. It assumes that the tree or plant receives no chilling effect when the temperatures are above the base temperature of 7°C, and that temperatures below 7°C all contribute equal chilling effect. Therefore for every hour below 7°C, one hour of chilling is recorded



Chilling Hours

Based on the same concept as Hours Below Threshold, except that it is assumed that the colder the temperatures then the greater the chilling effect. So with a threshold temperature of 7°C, one hour at 6°C is one chill hour; one hour at 5°C is two chill hours etc. One fairly common variation that you may see on both Hours Below Threshold and Chilling Hours is to assume that temperatures below 0°C give no chilling effect.



Richardson Chill Units

Originally developed using potted trees in controlled temperature rooms, the Richardson Chill Unit tries to better estimate the chilling effect of various temperatures. The optimum for chilling was found to be 4°C, and so one hour at 4°C counts as one Richardson Chill Unit. Chilling effect falls away to zero as the temperature approaches 0°C, and falls away at higher temperatures with no chill effect at temperatures over 14°C. There are many refinements available to the Richardson Chill Unit including negation of chilling by temperatures over 14°C, and fixation of chilling effect against high temperature negation over time.