Using Spring Weather Data to Predict Harvest Date for "Improved French" Prune

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It has been established in peaches, Japanese plums, and nectarines that the accumulated temperatures (GDH or growing degree hours) during the first 30 days after full bloom are highly correlated with the number of days between full bloom and the harvest maturity date for specific cultivars (Ben Mimoun and DeJong, 1999). This means that the date of fruit maturity can be predicted by knowing the bloom date and the GDH accumulation 30 days after full bloom. To see if a similar relationship exists in dried plums/prune, the harvest dates of Improved French prune collected at UC's Wolfskill Orchard (Winters, Yolo County) and Kearney Research and Extension Center (Parlier, Fresno County) over the last eight years were correlated to the associated accumulated GDH 30 days after full bloom for each year. A relationship was found in French prune that is similar to what has been found in the other *Prunus* crops (Figure 1).
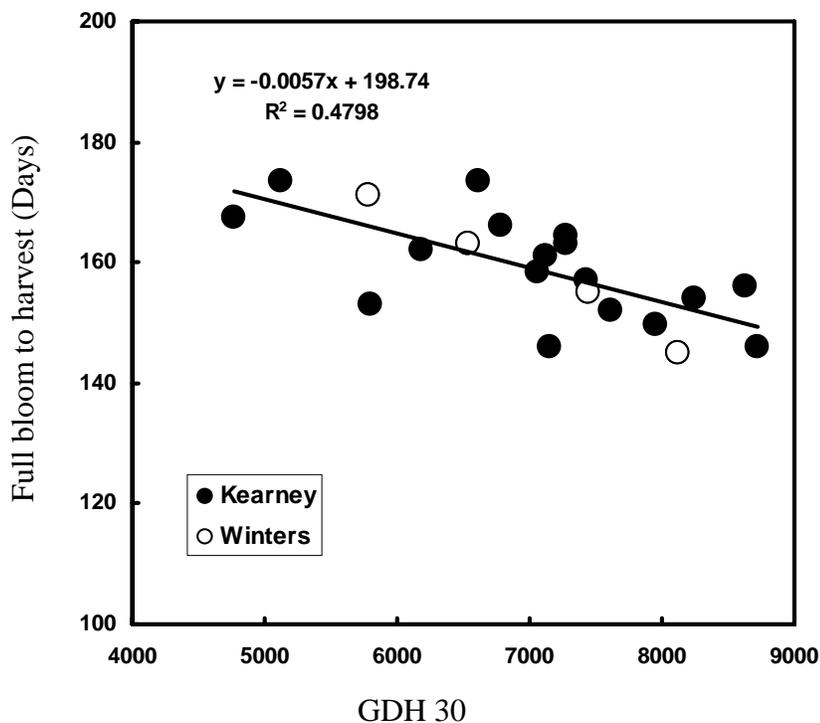

Figure 1. Relationship between growing degree hours (GDH) 30 days after full bloom and the number of days from full bloom to harvest for the cultivar 'Improved French' at Kearney and Winters.

This relationship signifies that the spring temperatures in the first 30 days after full bloom govern fruit developmental rates and are a major factor in determining the harvest date in any given year. This relationship can be used as a tool, early in the season, for growers to estimate the approximate harvest date for Improved French prune. This can be easily accomplished, 30 days after bloom, by going to the UC Fruit & Nut Research and Information Center web site-(http://fruitsandnuts.ucdavis.edu). Once there, select 'Weather Services,' then 'Harvest Prediction Model.' Select the location of your nearest California Irrigation Management Information System (CIMIS) weather station and enter the date of full bloom. The data that will be shown are the accumulated GDH during the first 30 days after bloom. Using this number, you can estimate from Figure 1 how many days there will be from full bloom to harvest for this year.
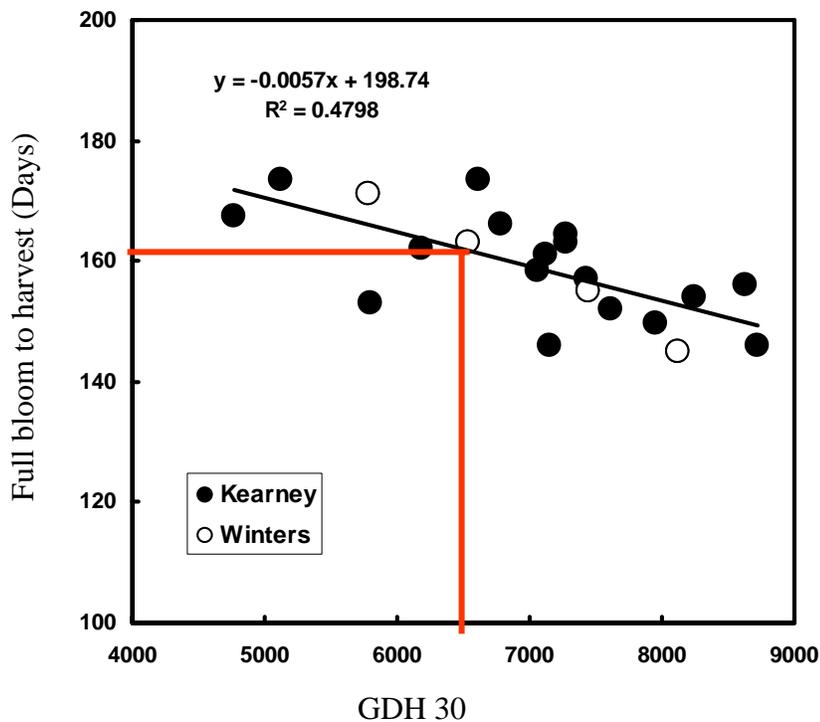

Figure 2. If the GDH 30 (growing degree hours from full bloom to 30 days after full bloom) for your orchard location this year is 6500 then you can use the figure above to estimate that your fruit maturity date will be about 162 days (+/- 5days) after full bloom.

In 2006 the predicted Improved French harvest date using this method was September 10th at in Winters, CA, approximating 157 days from full bloom to harvest. For Kearney we predicted the harvest date of French would be about September 4th approximating 160 days from full bloom to harvest. This estimate was within 5 days of the actual harvest at both locations. Actual harvest for Wolfskill was September 5th and for Kearney August 30th.

One additional note: data on peach harvests (Lopez, Johnson and DeJong, *California Agriculture* 2007 http://CaliforniaAgriculture.ucop.edu) indicate that fruit size is more difficult to obtain when the GDH 30 is above 6000 whereas fruit sizes are generally better when Springs are cool and GDH 30 is less than 6000. We believe that similar relationships probably hold for prunes so if spring temperatures 30 days after full bloom are warm take special care to monitor your crop loads and thin accordingly.