

COLUMBIA GORGE FRUIT GROWERS NEWSLETTER

JANUARY 2011

SEASONAL PATTERNS OF FRUIT GROWTH OF 'D'ANJOU'

By Todd Einhorn, MCAREC Horticulturalist

CALENDAR

January

- 21 Spanish speaking pesticide handlers

February

- 8 Mid-Columbia Cherry Day & MCAREC Sweet Cherry Research Symposium
- 9 Hood River Winter Hort Meeting
- 17 Wasco County SWCD annual meeting, 5:30pm. Discovery Center. Call 541-296-6178 ext 3 for cost & information
- 24 Hazardous Waste, Hood River 10-2*
- 25 Hazardous Waste, The Dalles 10-2*

*Mandatory pre-registration. Call 1.800.547.2436

OFFICE HOURS

Mon-Fri 9am-1pm
Afternoons subject to change. Call 387-4769 for hours.

An understanding of the different phases of fruit growth through the season, and the factors which affect them, can help to explain year-to-year differences in fruit size. More importantly, it allows us to consider effective ways for improving final fruit size.

Though differences exist among the commercial pear varieties grown in the Mid-Columbia, the seasonal fruit growth pattern of all varieties is quite similar. Throughout the first 40 to 60 days following bloom growth of the developing fruit is mainly due to cells dividing. This phase is termed the cell division or multiplication phase and the growth of the fruit is defined by an exponential growth rate. Once this period is complete, relatively few new cells, if any, are formed in the fruit throughout the remainder of the season. Fruit growth is rapid during this period and the number of cells formed in the fruit will be highly associated with its final size (e.g., more cells in the spring equals larger fruit at harvest). However, extended periods of cloudy weather with low light and/or low temperature can both drastically affect fruit size. These effects can be worsened when combined with heavy fruit loads. Although good light is important for photosynthesis, fruit are relatively small in the spring, and plants have stored carbohydrate

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FIRST AID CLASS IN SPANISH

Are you interested in sending any of your workers to a first aid class taught in Spanish? CGFG has contacted the American Red Cross and they have a Spanish speaking instructor who can travel to Hood River for a class in first aid and CPR. The first aid class is \$46 per participant and if there is enough interest in the CPR class, the cost

would be \$57 for both.

We would like to schedule this class for sometime in February, so we need your response as soon as possible.

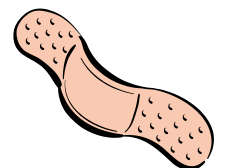
If there is enough requests, we could also organize a separate class to be held in The Dalles.

Please call the CGFG office at 541-387-4769 and let us

know:

- Number of participants
- Location - The Dalles or Hood River
- Which class—1st Aid only; or 1st Aid and CPR

If there is enough of a response, we will schedule a class and inform you of the date and location.



TRAINING MATERIALS

The following training materials are available at the CGFG office.

For sale on DVD - \$4 each

- EPA Worker Protection Standard - Orchard Workers
- EPA Worker Protection Standard - Pesticide
- Tractor Safety
- Orchard Ladder Safety & Forklift Training

For Loan on VHS

- Load & Lift (English)
- Tripod Orchard Ladder Safety

CGFG BOARD OF DIRECTORS

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LOCAL WATER MONITORING

Water quality monitoring results were shared recently with the Local Advisory Committee for the state's agricultural water quality management program in Hood River. Anne Saxby, Manager of the Hood River SWCD, explained that the state Department of Environmental Quality (DEQ) has been monitoring water quality in the Hood River watershed over the past 10 years. In 2004, exceedences of water quality standards by the organophosphates (OPs) chlorpyrifos (Lorsban) and azinphos-methyl (Guthion) resulted in the listing of Indian, Neal and Lenz creeks on the DEQ list of water-quality impaired streams.

Results for 2009 showed only one OP detection, continuing a downward trend in both OP detections and exceedences. This was also the second straight year that chlorpyrifos

was not detected above the chronic aquatic life criterion. Part of the downward trend may be due to a reduction in use of OPs. Growers in the Dee and Odell areas have been part of a CGFG grant-funded program to use pheromone disruption and other IPM practices in place of the OPs. CGFG's Jean Godfrey and OSU Extension Hort agent Steve Castagnoli have been looking for additional sources of funds to continue this cost-share program in 2011.

When monitoring began, only a small number of chemical analytes were tracked. In

2009 the number was expanded to 100 analytes, resulting in 14 chemicals detected. OPs and the herbicide simazine have been consistently found in local streams, with occasional detections of the OP Imidan and the herbicide atrazine. With the expanded list of analytes, additional herbicides were found. Hexazinone, an herbicide used in forest operations, was found in Neal Creek. The herbicide diuron was found at least once at all sampling sites. It is used to control weeds in road and rail right-of-ways, as well as in orchard operations.

-Anne Saxby

FOR SALE

The items are used and quantities are approximate.

- 1000ea Dan micro sprinklers
- 500ea Nelson R10 sprinklers
- 1500 ft of hand set lines
- 300 daisy wire tighteners
- bartlett sorting screens
- 20 ft flatbed truck with CAT 3208 engine
- Edwards front transport
- 2 transport forks

For more information call Don Wanzek at 386-3025 or 541-490-1417.

NORTHWEST HORT REPORT BY CHRIS SCHLECT

The executive director of NCAE, Frank Gasperini, started the meeting of the National Council of Agricultural Employers' Executive Committee by initiating a discussion of the big issue facing the membership: the fate of immigration reform and how to best organize on this issue for the new Congress. Craig Regelbrugge and Monte Lake of the Agricultural Coalition for Immigration Reform or ACIR were present and presented

their views. After a good interchange of ideas, it was the consensus for ACIR to continue leading the legislative effort to achieve AgJobs, a program aimed at providing needed field workers for agricultural employers, while NCAE focused on the various Administration initiatives likely to be aimed at agricultural employers arising within such federal agencies as the Department of Labor.

COMPLIANCE ISSUES

Enclosed are new fact sheets from OR-OSHA on "Recording and posting work-related incidents," "Safety committees and safety meetings for agricultural employers" and "All-terrain vehicles."

The Safety Committee sheet reviews the new rules effective January 1, 2011 regarding safety committees versus safety meetings.

We have also enclosed a copy of the two-page Form 300. The Summary page must be

posted from February 1 – April 30 covering 2010.

BOLI POSTER

We have been informed by staff at BOLI that there are no changes to the poster this year, other than the Oregon minimum wage, which has risen from \$8.40 to \$8.50 for 2011. BOLI will be printing new posters with the new wage, but you may apply a sticker with the new wage on your poster from last year instead of purchasing the

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Troy-Built, Cub/MTD/White
- * Irrigation Supplies *



2 LOCATIONS FOR YOUR CONVENIENCE

1995 12th St. – Hood River 541-386-2757
MON-SAT: 7:30 AM–6 PM SUN: 9AM–5PM

3831 Eagle Loop – Odell 541-354-3000
MON-SAT: 7:30AM–5PM
www.hrsupply.com

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Owners:
Tony DeHart & Kris Zorza

Contractor Drop-Off Site
541-806-4455

RECYCLE YOUR WOOD

new poster. Stickers are available at the CGFG office (you can make your own, too).

New IFP Network website

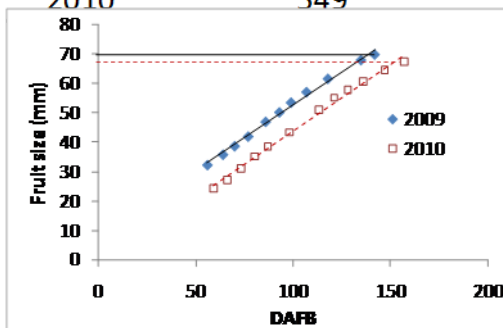
Bookmark the new IFP Network website today at:

www.integratedfruitproduction.com

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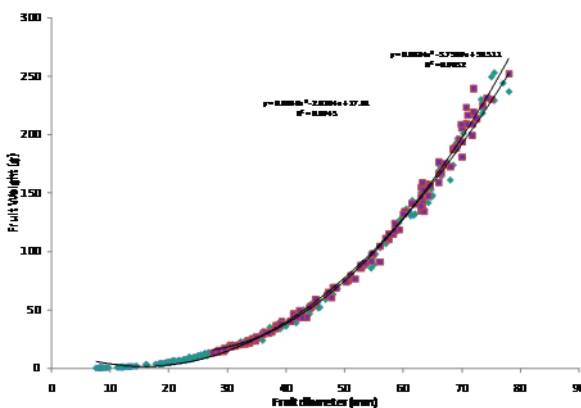
'reserves' which can help meet the demand of the fruit during periods of low light. Uncharacteristically low temperatures, on the other hand, can play a very important role in fruit development during the cell division stage (i.e., an organism's physiological development, including cell division rate is dependent upon temperature). Interestingly, a comparison between 2009 and 2010 offers an example of two years with very different springs, and might provide insights to help understand the general differences observed between pear fruit size in 2010 (smaller) and 2009 (larger).

Year	Accumulated Heat Units FB-59 DAFB
2009	860
2010	549



Converting temperatures into accumulated heat units provides a meaningful number that can be related to fruit development, and is analogous to the use of accumulated degree days for monitoring insect development, useful in timing spray applications targeting specific pests. Heat unit accumulation for 2009 throughout the cell division stage, calculated from the full bloom date to 59 DAFB, was more than 50 % greater than that of 2010 (see table at right). These principles can be illustrated with weekly fruit growth measurements of Anjou taken during 2009 and 2010. Anjou fruit size in 2010 was already limited at 59 days after full bloom (DAFB), relative to 2009 (see fruit size figure at right). Following the cell division period, fruit growth for

the remainder of the season is attributed to the expansion of cells, and takes on a linear pattern (e.g., this can be seen as the parallel curves of 2009 and 2010 fruit growth in the figure above). Therefore, fruit size cannot 'catch up' during the subsequent cell expansion phase, and limitations to fruit size in early spring remain for the rest of the season.



In the example above, 2010 Anjou fruit remained on the tree an additional 15 days, relative to 2009. Though final fruit size at harvest only appeared to be slightly reduced in 2010 [measurements

were of fruit circumference, and were 67.5 in 2010 vs. 69.8 mm in 2009], these fruit were nearly a box-size smaller (difference between 90s in 2009 vs. 100s in 2010). The second figure (at left) shows the relationship between Anjou fruit weight and the circumference measured at the widest point of the fruit, for both 2009 and 2010. Several notable points are revealed from this graph: 1) Fruit shape does not vary from year to year, 2) The curves for each year lie directly on top of each other, suggesting that the relationship is fairly strong, and predictable, and 3) According to the line equations describing the relationships, the small, 2.3 mm (1/10th inch) difference in the circumference of the harvested fruit is a difference of about 20 grams, which translates to nearly a whole box size

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smaller! For reference, a size 90 fruit is between 210-235 grams, while a size 100 fruit is between 190-210 grams.

So, what can be done about it? The potential to increase fruit size by allowing fruit additional time on the tree is a plausible strategy. Since fruit growth rate during the cell expansion stage is fairly constant with time, the more time on the tree the greater the accumulation of mass. However, this only works for so long. Fruit do not continue to size indefinitely (the symbols representing the 2010 fruit in the first figure show that the rate of fruit size just prior to harvest begins to flatten), and perhaps more importantly, as fruit remain on the tree they drop in pressure and soften below the critical values required for good postharvest storage life and fruit quality. Further, they continue to be susceptible to disease pressure while in the field.

Water and nutrients are essential for optimal fruit growth, but because the trees used in the above study were well-watered, and had good nutrient status, additional supply of these factors during 2010 would likely not have made much difference in fruit size. Regardless, water needs to be non-limiting during the cell expansion stage, if optimal fruit growth is to be expected.

We have been interested in studying the relationships between cropload and fruit size, and although Anjous are not typically thinned, high fruit load years coupled with low spring temperatures may necessitate thinning to achieve large fruit size. The timing would ideally occur early, near 60 days following bloom, since an increase in the slope of the linear pattern of fruit growth during cell expansion would benefit from a greater time period. Additionally, we are beginning to work with plant growth regulators with the goal of improving fruit set and fruit size, and will be evaluating several classes of PGRs in the near future. Please stay tuned for more information.

**Accumulated heat unit data supplied by Steve Castagnoli. T. Einhorn would like to thank Steve Castagnoli for his helpful comments on this article.*

OREGON FARMWORKER HOUSING TAX CREDITS

The Farm Worker Housing Tax Credit Program was established by the Oregon Legislature to provide a tax incentive to those constructing, rehabilitating or installing housing for farm workers. The Oregon Housing & Community Services Department administers this program. The general information sheet, application checklist and application forms for 2011 are available online (www.oregon.gov/OHCS) or at the Columbia Gorge Fruit Growers office. There have been a few changes to the application process, so if you are considering building or remodeling this year, you might want to review the information before beginning your project. The total amount of the credit available is still 50% of the eligible costs in a given project. A taxpayer may elect to take the credits over no fewer than five and no more than ten years, claiming no more than 20% of the credits in any given year. All or any portion of the tax credits may be transferred to a third party.

COLUMBIA GORGE FRUIT GROWERS

Mailing Address:

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Odell, OR 97044

Physical Address:

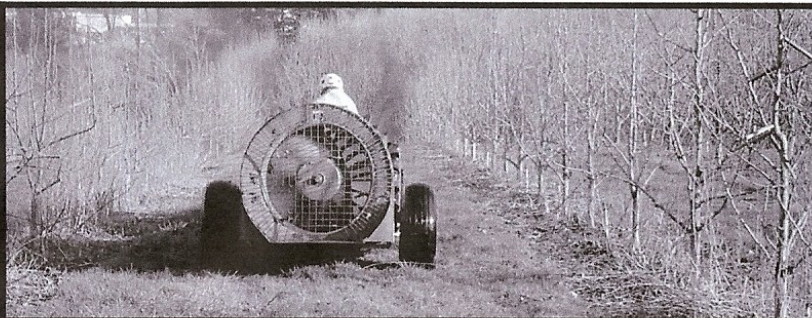
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E-mail: cgfg@hrecn.net
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Columbia Gorge Fruit Growers cooperates with Hood River County on a low-interest (3%), 10-year loan program that is eligible for farm worker housing projects; conversion to propane orchard heaters; micro-sprinkler systems; and wind machines. Each grower can apply for \$25,000 on a first-come, first-served basis and there is currently \$30,000 available. If you would like more information on this loan or would like to request an application, please call the CGFG office.

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