

CRANBERRY VINE

WSU Long Beach Research and Extension Unit
2907 Pioneer Road • Long Beach, WA 98631 • 360-642-2031 • pattenk@wsu.edu

December 2008

Meetings

Washington Cranberry Winter Workshop.

Saint Lawrence Catholic Church, Raymond, Tuesday, January 27, 2009, 1:00 to 4:00 pm. Three pesticide credits will be given. Aside from myself, speakers will include Brian Mauza from BC and folks from the WSDA. Please note the change in the day – I had to move from Saturday to Tuesday in order to accommodate our out-of-state speaker.

Oregon Cranberry Winter Workshop

Thursday, January 29th, 2009, all day. Sprague Community Theater, Bandon. Call Linda White 541-572-5263, OSU Extension, for details.

British Columbia Cranberry Congress,

Wednesday, February 4th, 2009, 9 a.m. to 4 p.m. Call the BC Cranberry Marketing Commission at 604-307-1046 for details.

Grayland Spring Workshop for Pesticide

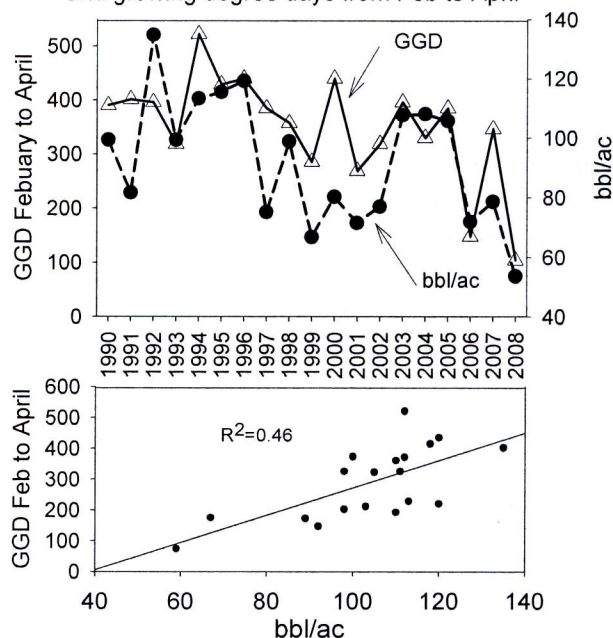
Credit. North Cove Grange Hall, March 18, 2009, 6:30 to 8:30 p.m. Weevil & girdler control options, new pesticides, and new varieties.

2008 Crop

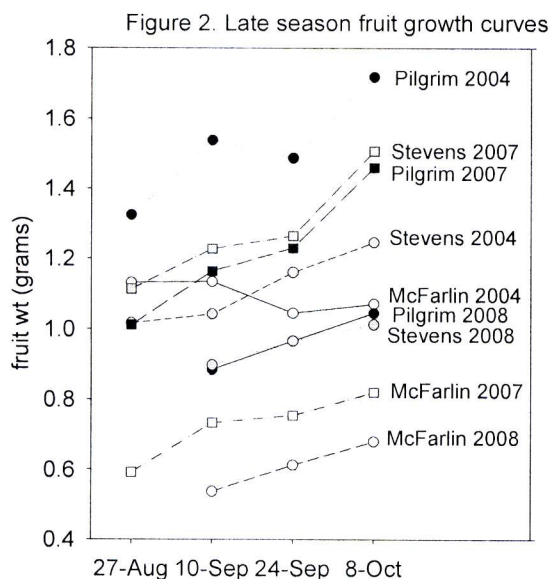
This year's cranberry crop was a disaster. It was the lowest average yield in the state since 1962, when we only averaged 57 bbl/ac. It was especially bad considering that we have transitions in more than half of our beds to higher-yielding hybrids. Many beds were down

by 50% or more. A low crop was expected, considering many McFarlin beds didn't bloom until August. No single weather factor can be totally linked to the crop decline, but obviously the cool spring delayed plant development beyond what the vines could compensate for during the our slightly cooler than average summer. A closer look at the weather and average state yield data for the past 18 years shows a very clear and clean relationship between the total number of growing degree days (GGD) between February and April and average yield (Figure 1).

Figure 1. Relationship between average WA yield and growing degree days from Feb to April



In fact this one variable accounts for 46% of variation in yield for those years. The fruit that finally did set continued to grow at a rate fairly similar to previous years, but, because they bloomed four to six weeks later than normal, they were 60% smaller than in 2004 (Figure 2).



What does this mean for our future? For this coming winter/spring, state climatologists and NOAA suggest there is an equal chance that temperatures will be below, equal to, or above normal. The greater uncertainty for the next 20 years suggests that it will be important to have varieties that have greater resiliency to abnormal weather patterns.

Having the best varieties and doing everything just perfect horticulturally only goes so far in producing good yield. High light combined with temperatures between 65 and 80 drive the equation for good production. Over the past two years we have compared “on bog” solar radiation for the different growing areas in the PNW. When one examines this data along with solar radiation maps of the US, it is not surprising that areas with double our average production have double our average summer solar radiation.

There is little we can do about solar radiation other than to console ourselves that higher production in other areas doesn’t equate to superlative horticultural skills.

PESTICIDE NEWS FOR 2009

Label information specific to PNW cranberries: Any and all 2009 pesticide label information for cranberry in Oregon and Washington can be found on WSU’s PICOL website. To see exactly what is legal to use, go to: <http://picol.cahe.wsu.edu/LabelTolerance.html>.

Need to read the label: The best web site is: <http://www.cdms.net/LabelsMsds/LMDefault.aspx>

Diazinon 14G: At the request of Wilbur-Ellis, WSDA has canceled SLN WA-060014. This SLN had provided for the use of Diazinon 14G for the control of cranberry girdler. It will not be renewed. A similar cancellation occurred in Oregon. **Existing product can not be used in either state!** WSDA will schedule some type of pesticide disposal for this and other products for our area sometime in 2009.

Orthene 97: WSDA has issued a revision to SLN WA-000021 and SLN WA-000021b for Valent and AMVAC, respectively. This SLN provides for the use of on cranberries for the control of blackheaded fireworm and several other insects. The revision adds WSDA chemigation guidance and tank mix precautions and also extends the expiration date to 12/31/12.

New Insecticides: As mentioned in the summer 2008 Cranberry Vine, there are three new insecticide labels for cranberries: Assail, Avaunt and Delegate. These are exceptionally useful products and more detail on their use is written elsewhere in the Vine. They all have cranberry chemigation on the label or as a supplemental label (Avaunt).

Pest Management

Cranberry Pest Management Guide

EB0845: This annually updated guide is now only available on-line and can be downloaded for free as a PDF file. The 16 page 2009 version is already out and can be found at <http://cru.cahe.wsu.edu/CEPublications/eb0845e/eb0845e.pdf>

PNW Insect, Weed and Disease Control Handbooks.

If you've never looked at this handbook they contain a great deal of detailed information on each specific pest. They can be purchased separately or downloaded as PDF files. PNW pest control handbooks are annually updated.

See http://www.ipmnet.org/IPM_Handbooks.htm.

Research sites still needed: We desperately need good sites for conducting weevil, girdler and fireworm research. Crop compensation will be available.

Disease control: Fairy ring is not a common problem in the PNW but has been noted in the past. Two newly label fungicides, Indar and Abound, can be used for control. Several applications are required at full label rate.

Both of these fungicides are also very effective against cottonball. I noticed several Pilgrim beds with significant fruit loss to cottonball this fall. Plan on one or two mid-bloom Abound or Indar treatments if cottonball was a problem.

Weed control: For sour dock, lotus and clover control, try a winter Stinger application. It is reasonably effective and there is no risk to crop. Sour dock takes several repeat applications.

Growers who have replaced Casoron with Callisto over the past few years have no doubt noticed numerous weeds species creeping in their beds – horsetail, yellowweed, late season grasses and sour dock to name a few. It appears

that the longest we can reasonably go without Casoron is every other year or every third year. I would gauge this based on the amount of horsetail on the beds.

Anyone wanting details on the range of weeds controlled with Callisto should look at the table by Jed Colquhoun and Jack Perry University of Wisconsin at <http://www.hort.wisc.edu/cran/>.

We are still waiting for our registration for the herbicide that controls buttercup. It got held up at EPA in 2008 and is scheduled for registration in March 2009. Growers will be notified via phone tree or other means when it becomes legal to use.

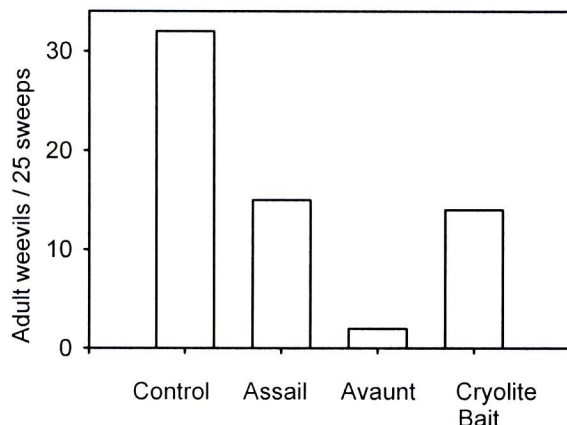
Cranberry girdler: The loss of Diazinon 14G leaves only nematode and summer flooding as viable options for girdler control in 2009. Summer flooding isn't an option for most dry harvest beds and usually only provides marginal control at best. Mid-summer nematodes are advised where damage has been noticed. Timing should be 2-3 weeks after peak flight counts. Three options for nematode use for girdler control exist – routine use at low rates, maximum 3 billion/ac rate, or spot treatment of trouble spots at the maximum rate. The latter might be most cost-effective. Order nematode earlier as there is often a limited supply. Pre-wet leaves and ground before applications, apply in the evening (they are UV-sensitive) and incorporate with 3-4 hours of irrigation.

Unfortunately none of the new insecticides have yet shown efficacy on girdler, nor does there appear to be anything really promising in the near future. Girdler damage can be easily confused with weevil damage. Often they occur together. Before you implement any expensive girdler treatment, make sure that the damage isn't attributed solely to weevils. I find the best way to distinguish between the two is girdlers leave "frass" and adult weevils would have left notching in the current year's new growth.

Blackvine Weevil: 2008 was a banner year for blackvine weevil infestation. It was also a banner year for weevil research. After years of trying in vain to develop cost-effective weevil control practices, we hit a home run. Two newly registered insecticides, Avaunt and Assail, were compared to the commercial Cryolite bait across several farms in numerous trials.

On the first study, Assail and Cryolite reduced weevil counts by ~50% six days after treatment, while Avaunt reduced weevils by 94% (Figure 3).

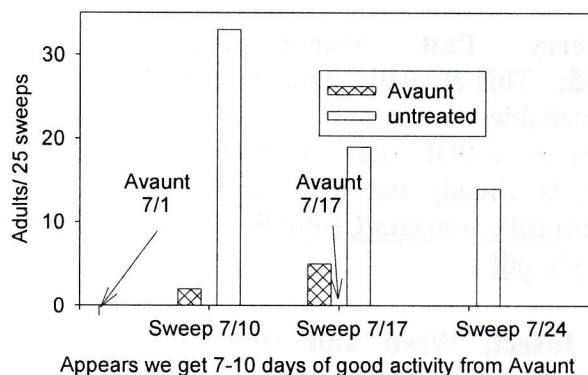
Figure 3. Average weevil counts in 25 sweeps from 3 farms 6 days after treatment



In three subsequent trials we had similar results. The average reduction in adult weevils ranged from 40 to 50% for Cryolite bait, 50 to 70% for Assail and 60 to 90% for Avaunt. Both Avaunt and Assail provided some control, albeit reduced, 14 days after treatment, while Cryolite did not. Overall, it appears that we get 7 to 10 days of effective control from Avaunt (Figure 4).

Weevil larvae are notoriously difficult to control. Since an adult weevil can lay many hundreds of eggs, having even a few live adults can result in a quick population buildup of larvae and subsequent damage. Eliminating adult weevils should therefore be the major focus of a grower's weevil management program.

Figure 4. Change in Weevil density with multiple Avaunt applications



Based on our 2008 data, my recommendations are as follows: 1) an aggressive night sweeping program to monitor for first adult emergence and feeding; 2) Avaunt and/or Assail application at first emergence; 3) night sweeping 4 to 8 days after treatment to assess if an additional adulticide application is needed; 4) repeat weekly sweeping and adulticide treatments until sweeping counts are at or near zero.

We haven't evaluated how efficacy varies with rate or method of application (broadcast vs. chemigation) and therefore I would stick with the higher end of the label rate. For Avaunt use 6 oz /ac and for Assail use 3-5 oz /ac of 70 WP or 5 to 8 oz/ac of 30 SG. Follow label guidelines for chemigation. If sweeping data indicates continued high adult counts following chemigation switch to a low volume broadcast application.

Although Avaunt and Assail are much less toxic to bees than traditional OPs, they should be applied at late evening, night or early morning to minimize any potential hazard (see "How to reduce bee poisoning to pesticide": <http://extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf>) for more information.

Blackheaded Fireworm: Several new reduced risk insecticides, Avaunt, Assail and Delegate, are available for fireworm control in 2009.

This, in combination with Entrust and Intrepid, provides some good options for growers. The problem with these products has been either their cost and/or efficacy when applied via chemigation. Our research in 2008 indicates that, of these products, Delegate has shown exceptional efficacy for fireworm through chemigation. The 6 oz/ac rate was as good as Diazinon, and the 3 oz/ac just slightly less so.

Cranberry Management

Propagation beds: The one question I get asked most that I have no answer for is: What variety should I plant and where do I get vines? For the new Rutgers selections the answer is fairly straightforward -- from their designated propagators like Abbott Lee at Integrity Propagation. But obtaining Stevens and Pilgrim with a 100% guarantee that they will be the high producers they are supposed to be is more difficult. I strongly recommend DNA fingerprinting if you want to be sure. However, commercial DNA fingerprinting of cranberries is still not readily available and it is rather expensive (>\$100/vine sample and at least four

fruit and is mowed annually. The PCCRF and WSU obtained a grant for that purpose from the USDA. I have found DNA “pure” Stevens and Pilgrim and we will initiate that planting this coming spring. Our goal is to have these vines available to the industry for growers to establish their own propagation beds.

Cranberry Varieties: 2009 was another off year for Washington growers due to our less than ideal weather. The only solution I can offer for this is to plant varieties that perform better under these circumstances. Choices in this regard are problematic. Table 1 shows 4 years of the performance from the best selections out of our 2003 test planting. I’ve provided similar data for our other studies in the past. Overall, several of the new selections/releases look very promising. Some of the numbered selections from Rutgers may or may not be released in the near future. Here is a general overview of my thoughts on these and other varieties.

Pilgrim: In our plots and grower’s fields Pilgrim is superlative for total tonnage. Some growers indicate a decline in production over

Table 1. Selected data from 2003 variety trails

Variety	Bbl/ac					Average (2006 to 2008)		
	2005	2006	2007	2008	2006 to 08	Fruit size (g/fruit)	% Field rot	% Storage rot
Crimson Queen	77	179	347	242	683	1.66	11	5
Mullica Queen	23	20	252	178	394	1.68	10	3
Pilgrim	257	202	327	345	799	1.56	7	1
Stevens		1	48	209	372	1.27	6	2
BE4	150	217	383	229	801	1.11	3	1
CNJ 93-9-42	61	187	451	266	814	1.37	9	3
CNJ 96-44-83	54	203	288	270	674	1.48	11	6
CNJ 95-37	85	277	322	246	820	1.24	3	1

or five are recommended per bed). Our DNA surveys of beds in Washington and elsewhere have not been encouraging. The only solution I could figure out to this enigma is to have a designated bed for propagation that is started with “DNA” certified vines, is not allowed to

time; others don’t. If beds are well fertilized and minimal Casoron is used, decline should be minor. It is inclined to have higher rot and thus not ideal for the fresh fruit market. Obtaining good Pilgrim vines however, has been problematic.

We have recently run DNA on several of the best Pilgrim beds in Washington, Oregon and Wisconsin. Most come out at 50% or less pure "Pilgrim". Obtaining "prunings" from these beds would not be a prudent choice. Mowed vines from these Pilgrim beds should at least give you a similar end product as what is currently in the bed.

Crimson Queen: This new selection is a homerun. It is a high-yielding, early-coloring, large-size fruit. Fruit rot data isn't overly impressive, but it should dry harvest well. Because it is patent protected and limited to Ocean Spray growers, availability and cost to establish are a concern. Several growers on the West Coast have it and are planting it, so a better sense of its performance will be forthcoming. A mature BC bed averaged slightly better than Stevens or Pilgrims in 2007 and 2008.

Mullica Queen: Highly touted elsewhere for its high yield. It hasn't done particular well for use in Washington.

DeMoranville: No West Coast data.

Hy-red: This is a beautiful, early-coloring and maturing berry from the University of Wisconsin's breeding program. There is very little West Coast data. One Oregon grower has a three-year-old bed that he just commercially harvested at 227 bbl/ac, which was similar to his Stevens beds planted at the same time. In a BC trial, the two year average was 425 bbl/ac for a mature bed. This was similar to Crimson Queen and slightly higher than Stevens or Pilgrim. I would strongly consider it for dry harvesting. It appears to have good keeping quality and would be great for the early fresh market niche. It is patent protected through the University of Wisconsin and restricted to Ocean Spray growers.

BE4: This is an Aviator x McFarlin cross. I selected it for my trials based on the yield and

rot data from trials by Dr. Boone in Wisconsin (<http://www.library.wisc.edu/guides/agnic/cranberry/proceedings/1994/craboo.pdf>). It has performed excellently in Washington, has virtually no fruit rot and good early red color and should be easy to dry harvest. Although the fruit are on the small side, it should be ideal for the fresh market. Vines are not patent protected. Since no vines are commercially available, I have moved this selection into a propagation bed to make it available to the industry.

Stevens: This traditional variety has been a good performer on the West Coast. It has not done well, however, in our variety trials. One problem with Stevens is being assured of good performing vines after they have been planted. With the cooperation of Dr. Nick Vorsa and Ocean Spray, we DNA-fingerprinted numerous poor and good performing Stevens beds in Washington this year. The results were alarming – none of the beds were pure. In addition, purity decreased each time the vines were selected from each subsequent planting. Also significant, in one bed we selected vines from runners and immediate adjacent fruiting uprights. They were markedly different genetically. This suggested that propagation from runners (via pruning) is likely to result in a high amount of less productive off-types.

Grygleski 1 (GH-1): This recent release from a private breeder in Wisconsin has shown good potential. It has high yield, good size and vigor and reasonably good color. Our 15 year-old planting continues to do well, but Pilgrim has consistently out-yielded it. It is too early to discern how it will do as a fresh fruit berry. Our BRIX, harvest and storage rot data over 6 years puts it in line with Stevens. Reports from numerous Washington growers with mature plantings have been favorable, but it is still too early to tell. It doesn't seem to be too happy growing in beds that are poorly drained.

Grygleski 2 (GH-2): Grygleski 2 is similar to #

1 in fruit qualities, but has been lower yielding with slight higher field and storage rot. A few new grower beds exist but it is too early to tell how they will do.

CNJ 93-9-42; 96-44-83 & 95-37: all look promising, but unfortunately they are not available. One or more might be released by Rutgers in the near future.

Miscellaneous information: We have finally come out of the stone age and our website is available at <http://longbeach.wsu.edu/>. It is still a work in progress, but you can download copies of talks, newsletters, publications etc.

Honeybee research. Honey Bee Colony Collapse Disorder (CCD) could have a profound effect on the future of cranberry in the PNW. Because of recent large colony losses in western Washington, some beekeepers have expressed reluctance about servicing our industry. A new research effort has begun to investigate causes of those losses. The USDA Tucson Bee Lab, WSU's Apis Molecular Systematics Lab, WSU Long Beach, numerous cranberry growers, and our beekeeper, Eric Olson, cooperated on a

project this summer to begin to understand the factors affecting colony health following their five-six weeks of servicing cranberry beds. This research investigated how colonies in Long Beach and Grayland performed as a function of post-cranberry foraging, diseases, colony nutrition, and pesticides. Much of the data on mites and Nosema, and colony health coming off the subsequent fireweed foraging are still pending and the study will be repeated next year.

Initial results indicate that: 1) there was adequate protein available from alternative pollen sources while foraging cranberries with no critical amino acid being limiting, 2) supplemental protein feeding of colonies tended to improve colony strength, 3) high levels of copper were found in pollen coming off of bees foraging in and around cranberry beds (No one knows what this means for colony health), and 4) there were only occasional hints of trace amounts of other cranberry pesticides detected in pollen. Current thinking suggests that CCD results from the interaction of multiple stressors in the system, including nutrition, parasitic mites, pathogens, and pesticides.

WEATHER HISTORY											
*December 2008 data not available, so December 2007 data was used.											
Precipitation						Growing Degree Days					
Month	2005	2006	2007	2008	20 year average		2005	2006	2007	2008	20 year average
January	8.4	20.9	6.9	10.5	12.2		102	30	9	4	45
February	3.0	4.7	10.4	5.4	8.0		44	26	33	16	44
March	7.9	7.8	11.0	9.7	8.6		103	29	66	12	71
April	9.0	4.3	4.1	5.3	6.3		112	90	104	43	125
May	4.8	4.8	2.1	2.5	3.6		304	208	205	230	250
June	1.4	4.7	2.8	2.4	2.9		334	345	294	244	341
July	2.2	0.7	3.6	0.5	1.3		417	399	495	364	448
August	0.7	.03	1.8	4.0	1.9		411	332	464	424	457
September	1.6	1.7	1.2	0.9	1.9		238	349	323	326	380
October	9.1	0.0	11.1	4.9	7.1		208	177	152	166	217
November	11.4	22.6	6.3	11.0	11.7		25	78	53	138	88
December*	12.2	12.4	13.2	13.2*	12.3 *		44	36	20	20*	35*
Totals	71.6	84.7	74.5	70.3*	77.8*		2342	2099	2217	1987*	2502*

WSU Cooperative Extension provides educational opportunities in agriculture and natural resources, family living, youth and community development, in cooperation with the USDA. Extension helps you put knowledge to work.

Cooperative Extension programs and policies are consistent with federal and state laws and regulations on nondiscrimination regarding race, color, gender, national origin, religion, age, disability, and sexual orientation. Evidence of noncompliance may be reported through your local cooperative extension office. We welcome your suggestions to improve educational programs offered through this division of WSU.

WSU - Long Beach Research & Extension Unit
2907 Pioneer Road
Long Beach, WA 98631

COOPERATIVE EXTENSION



Washington State University

Long Beach Research and Extension Unit

Dr. Kim Patten, Associate Horticulturist

Email: pattenk@wsu.edu

Phone and fax; 360-642-2031

Mobile phone; 360-355-7864

NON-PROFIT ORG.
U.S. POSTAGE PAID
LONG BEACH, WA
PERMIT NO. 24