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CRANBERRY VINE

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January 2008

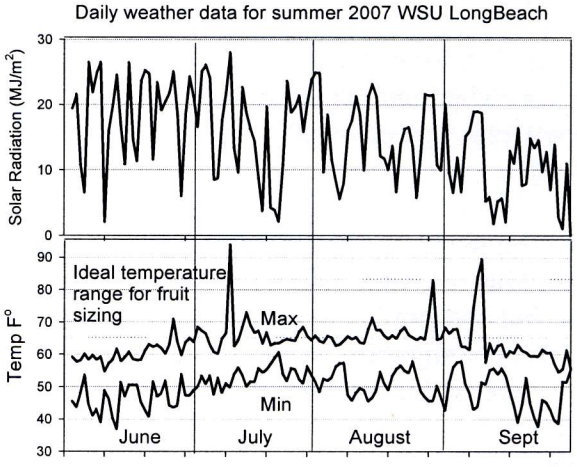
Cranberry Winter Workshop

Saint Lawrence Catholic Church, Raymond, Saturday 1:00 to 4:00 pm, February 9, 2008. Three pesticide credits will be given. Aside from myself and Kevin Talbot, two guest speakers will be featured: Drs. James Polashock and Peter Oudemans from Rutgers University. Subject areas include plant disease management, bed establishment, cranberry genetics, new pesticides for 2008, research update in pest management, variety trials, and fruit quality.

The 2007 Crop

The upturn in yield from 2006 is a welcome relief to many. Yield on several farms, however, was off due to problems with either frost protection or pest problems. I'll remind growers that automated frost protection systems work great as long as the sensors are set at the right temperature, not sheltered (fully exposed at bud level) and they are placed at the lowest location in the bed. Our earlier work on sensor placement indicated that during a typical frost event a minor change in any of these variables can make several degrees of difference when the sprinklers come on.

Another concern about the 2007 crop was fruit size. According to our records from numerous growers' beds, we consistently had some of the smallest fruit I've seen in many years. Maybe it's too Freudian to mention, but I was particularly struck comparing our fruit size data from the new variety trials with that of New Jersey. Their fruit was both much denser and larger. Why do we have comparatively smaller fruit? Earlier work comparing fruit size across all the grower areas in the US indicated low summer temperatures were a major deterrent for fruit sizing. The daily max-min temperature and solar radiation, recorded from our weather station and shown below, clearly show how infrequently we are within the ideal temperature for fruit growth (65 to 82). Even if we have all the nutrients, water, and genetics optimized, we are not going to obtain adequate fruit size if the photosynthetic process is on low burner. Not that we can do much about the weather, but I want to emphasis the point that adding more fertilizer doesn't under normal circumstances result in larger fruit.



PESTICIDE NEWS FOR 2008.

The SLN for **Weedar 64** is cancelled. We are working on getting it back, but until then you

can no longer use this product on cranberries in Washington.

The SLN for **Diazinon 14 G** is scheduled to be cancelled after 2008. Use up existing stock. Getting this SLN back is problematic and I wouldn't count on this product being available after 2008.

Callisto: We are expecting a full label (Section 3) for 2008. If it doesn't come in on time we will request a Section 18 for spring use.

New herbicide for buttercup: A Section 3 is pending for this summer. Until then no uses are allowed. Although it works best in early spring, good activity can be achieved in the summer, assuming the PHI is not violated. I am not sure what the PHI will be.

Indar and Abound fungicide – registered in previous years, but not tried by many growers. Products work great on cottonball and help suppress fruit rot when applied mid-bloom.

Delegate is a new improved formulation of Success/Spintor. Our data shows good efficacy on fireworm, but we don't yet have data for chemigation. Spintor will still be available but at a lower price.

Orthene and Admire have updated labels with the new state chemigation restrictions (see http://www.pnn.wsu.edu/wa03slnpdf/wa-030034.pdf):

Avaunt insecticide has chemigation labeled for fireworm. Our research indicates it is has good efficacy, but we don't have much data on its efficacy via chemigation. It also has a label for cranberry weevil, but not blackvine weevil. We lack efficacy data on blackvine weevil adulticides.

Numerous products are off-patent and as a consequence there are third-party registrations for many of our more commonly used products. Roundup is a good example that most of you are aware of. There are numerous other cranberry pesticides that also have a generic label. Some of these are equally efficacious and moderately less expensive.

Go to WSU's PICOL website, http://picol.cahe.wsu.edu/LabelTolerance.html to get an accurate update for 2008. Here are some highlights: **imidacloprid** has 9 different labels other than Admire; **clethodim** has 16 other labels than Select; **acephate** has 10 labels other than Orthene; **clopyralid** has 1 label other than Stinger; and **chlorothanonil** has 18 labels other than Bravo. For minor purchases it might not be worth the hassle of going generic, but for large purchases the saving could be significant.

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 2008 version is already out and can be found at http://cru.cahe.wsu.edu/CEPublications/eb0845e/eb0845e.pdf

Winter weed management: As I have mentioned before, Stinger is a good option for winter weed management. There is no risk to the crop and it does provide excellent control/suppression of false dandelion, lotus, clover and sheep sorrel. Our data on sheep sorrel indicated it took several applications to show efficacy. I also like to clean up beds with grass herbicides like Select once we begin seeing activity in the early spring or late winter. Just for your information, Callisto can not be used this spring until we have a Section 18 or Section 3.

Weevil: There is still time for winter Admire application for weevil larvae. On peat soil, this time of year expect approximately 50% control. Our efficacy using cold tolerant Nemasys L nematode (*Steinernema kraussei*) this past

April wasn't too favorable. This contrasted with our excellent results from a summer timing. Overall, if you have a serious weevil problem we found that it will require both adulticide treatments (Cryolite bait and one or more Actara sprays) and larvicide treatments (two Admires and nematodes). Several new chemical control options are on the horizon. Because a single adult female can lay hundreds of viable eggs, it isn't long before you get to problematic populations. Beds showing new weevil damage this spring can be helped out in their recovery by sanding the damaged areas.

MISCELLANEOUS

Cranberry Varieties: Compared to other growing areas, getting consistently high yields (>250 bbl/ac) in Washington has been an on-going challenge. Although there is some opportunity for added income from niche incentives, like fresh fruit, it is fairly clear that it will be hard to be competitive without renovating to the highest yielding varieties. Based on our data from two variety trials and numerous grower beds over the past twelve years, Pilgrim is hard to beat for accumulative tonnage (if you need a copy of those variety trails progress reports I can email you one). Pilgrim, however, might not be the best option, owing to the problem of getting true "Pilgrim" vines and their lack of suitability for dry harvesting. Buy mowed vines with DNA certifications if possible. This is somewhat problematic since neither of these are easily available.

Numerous growers are planting Gryleski vines. Our 14 year-old planting continues to do well and in general has shown fewer problems with vigor decline than Pilgrim. However, accumulative tonnage has been less than Pilgrim. For example, for the past three years we obtained 550 bbl total for Gryleski and 815 from Pilgrim, with both having similar levels of BRIX and fruit rot at harvest.

Are the four new varieties on the market, HyRed, Crimson Queen, Mullica Queen and DeMoranville, worth considering? It is a little too early to make definitive conclusions. Data from back East suggest that all of these are good producers with excellent fruit quality.

Variety	bbl/ac			fruit wt (g)	% rot in 2007		BRIX
	05	06	07	06 &07	Har-vest	Stor-age	07
Crimson Queen	85	277	347	1.7	8	14	8.1
Mullica Queen	23	204	252	1.8	7	4	8.8
CNJ93-9-42	61	187	451	1.4	10	7	8.3
BE	150	217	383	1.2	3	2	8.3
AR	16	223	290	1.6	9	4	8.7
Bain Favorite	46	178	212	1.8	15	9	8.1
Pilgrim	257	202	327	1.7	5	2	8.9
Stevens	3	48	209	1.4	3	2	9.3

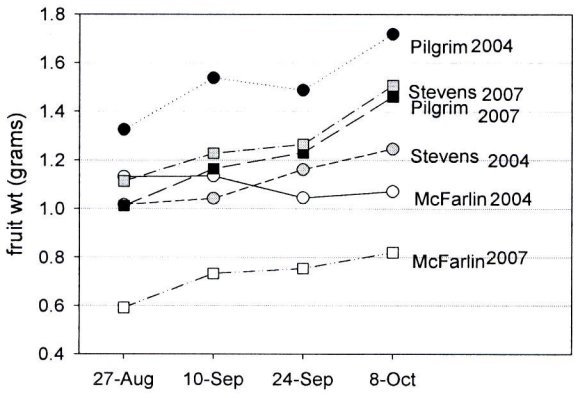
One has to be cautious when looking at these results and assuming we would get similar yield and size. We only have data for our 2003 planting of Crimson and Mullica Queen (see table below). The accumulative yield 2005+2006+2007 for Crimson, Mullica and Pilgrim was 603, 294 and 787 bbl/ac, respectively. Differences in fruit size and harvest and storage rot were minor.

Although these new releases have good yield with beautiful fruit that colors earlier, I am not sure yet if the added expense of procuring and planting the vines can be justified. In our trials there is one unnamed release, CNJ93-9-42, which actually looks much better than Crimson and Mullica Queen, is suitable for dry harvest and has yield similar to Pilgrim. If it continues to look good in 2008, we are planning on getting Rutgers to name it and make it available to Ocean Spray growers through Integrity Propagation (Abbott Lee). To help make that decision I'll need input from dry harvest growers next season on how they rate these selections for dry harvest suitability.

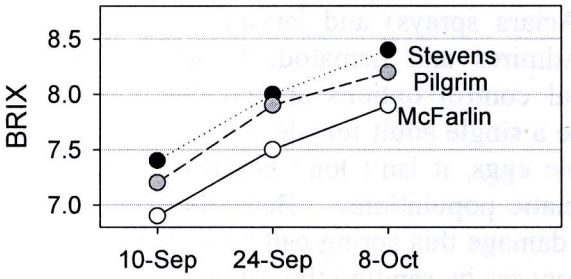
Early harvest effects: Under what conditions is it lucrative to take advantage of the early harvest incentive? To help answer that question, let's examine two separate years of fruit growth on three different varieties (see figure below). This data is the average of three to four beds per variety. Different beds were used in 2004 and 2007. The growth curves clearly show that McFarlin makes little growth past early September, while both Stevens and Pilgrim continued to grow into early October. 2004 had a warmer growing season and consequently had larger fruit than 2007. The mean percent increases in McFarlin, Pilgrim and Stevens for 2004 and 2007 between September 24 and October 8 were 3, 16, 7, 9, 19, & 19 % respectively.

Therefore, my conclusion, based on fruit weight alone, is that there is no advantage in waiting for McFarlin to gain in size, and an early harvest of Pilgrim could reduce yield by 15 to 20%.

Data on Stevens is not as consistent and may vary by bed or year. Obviously not every bed every year will respond the same and there are many other things to consider in early harvest. But, given a choice, it would be most prudent to harvest McFarlin beds first and Pilgrim beds last. Also, if the weather during these last two to three weeks of fruit growth is ideal (Indian summer), then I suspect the difference in weight gain will be significantly amplified compared to a cold wet fall.



What about BRIX? In 2004, the BRIX values didn't change appreciable between September 10th and October 8th, while in 2007 they increased linearly (see below).



Under the right conditions, a 0.2 BRIX unit and 10% weight gain per week is conceivable. Considering the economic incentives, it would be a good practice to monitor changes in BRIX and fruit weight over time to help guide your harvest sequences. Refractometers for measuring BRIX and small scales for fruit weight are inexpensive. I am not sure if the slower weight gain and lower BRIX data for McFarlin is true for all beds all years, but it is another reason to renovate.

Sanding: We are still taking data on our sanding studies from 2002 on Gryleski and Pilgrim. The cumulative yield for the past five years for sanded and unsanded beds Pilgrim and Gryleski beds was 1353, 968, 1015, and 869 bbl/ac, respectively. Sanding appears to be more beneficial for Pilgrim than Gryleski and the over time continues to pay-off.

Research sites still needed: Finding and keeping good research sites has been more than problematic for us. Numerous fireworm and weed control plots bit the dust in 2007 without us getting any data. We desperately need good sites for weevil, girdler, fireworm and fruit rot. More than adequate crop compensation will be available. What I am really hoping for is an untreated bed(s) that will be renovated in summer 2008 that would allow us to get good first and/or second generation fireworm data.

Local and national research overview: Our 2007 research season went well. For those of you who can't make it to the winter workshop here are some highlights.

Fruit rot: After three years of plot work, mid-bloom fungicides didn't affect yield and in some cases reduced rot. Differences between Indar, Abound and Echo were minimal. There appear to be some interesting relationships between monkey facing and fungicide treatments.

Insect control: New insecticides were only marginally effective against tipworm, didn't work too well with chemigation on fireworm, and were only so-so on weevil. New weevil baits look impressive, as do the newer nematode products.

Weed control: Callisto continues to look good, but the relationship between surfactants, spray volume and efficacy against various weed species was not straightforward.

Obtaining consistent control of some problematic weeds has been difficult. The best Callisto treatments only suppressed yellowweed and lily. However, we have a new herbicide in the registration queue for yellowweed. It does work, but be prepared to wait several years for its availability.

At the national level there was a lot of discussion at the recent 2007 Cranberry Researcher Conference regarding new pesticides. There are lots of new insecticides with novel modes of actions on the horizon. Everyone is trying to figure out how to make them work for our insect pests. Similar work as ours is going on for fungicide timing and evaluations. No consistent pattern is emerging yet, but mid-bloom combinations look promising for fruit rot. There is some novel work being done on new innovations for planting/renovating and irrigating cranberries.

WEATHER HISTORY

	Precipitation					Growing Degree Days				
Month	**2004**	**2005**	**2006**	**2007**	**20 year average**	**2004**	**2005**	**2006**	**2007**	**20 year average**
January	15.0	8.4	20.9	6.9	11.9	49	102	30	9	46
February	6.2	3.0	4.7	10.4	7.9	49	44	26	33	46
March	5.4	7.9	7.8	11.0	8.7	87	103	29	66	72
April	3.7	9.0	4.3	4.1	6.2	189	112	90	104	130
May	3.1	4.8	4.8	2.1	3.9	301	304	208	205	249
June	2.5	1.4	4.7	2.8	2.9	410	334	345	294	344
July	0.9	2.2	0.7	3.6	1.4	536	417	399	495	451
August	5.4	0.7	.03	1.8	1.7	544	411	332	464	457
September	4.7	1.6	1.7	1.2	1.9	381	238	349	323	379
October	10.1	9.1	0.0	11.1	6.8	262	208	177	152	224
November	4.3	11.4	22.6	6.3	11.7	78	25	78	53	86
December	10.2	12.2	12.4	11.4	12.1	46	44	36	20	37
Totals	**71.4**	**71.6**	**84.7**	**72.7**	**77.0**	**2932**	**2342**	**2099**	**2217**	**2519**