

The Tender Fruit Grape Vine

VOLUME 13, ISSUE 5

MAY/JUNE 2009

Ontario Tender Fruit Tree Survey – 2009

It's finally here!

Ken Slingerland, Tender Fruit & Grape IPM Specialist, OMAFRA

I was feeling overjoyed and jubilant the first week of June as I remembered a classic 1979 movie with Steve Martin called "The Jerk". Steve Martin played the role of an adopted misplaced young man, Navin R. Johnson, who was living in the backwoods of anyplace in North America. As he returned from the mailbox from his daily chore, he could be heard all over the county saying, "The new phone book is here! The new phone book is here!"

And so, I too shared the similar celebration when I picked up several hundred copies of the new Ontario Tender Fruit Tree Survey. This report contains highlights of the report, a history of tender fruit production in Ontario, the number of trees in Ontario by crop, age and district and new for this report is a bar chart of the number of trees during the growing season.

The report is intended to assist the industry in the marketing of tender fruits and also to allow the growers to plan for the future for their own farms.

All tender fruit growers have been mailed a copy. Free copies for industry representatives can be obtained by contacting the Vineland OMAFRA Resource Centre at 905-562-4147 (press 2 for OMAFRA).



IN THIS ISSUE...

- Grape Tailgate Tour
- New Technology as a Guide for Irrigation
- Mechanical Blossom Thinning
- VRIC Sensory Panel
- Control vs Suppression
- Assail registered for OFM control
- Grape Disease Control, 2009
- Hidden Cost of Damaged Nozzles
- Wind Machine Study Update
- Bird Bangers—BMP

New!

CODE-A-PHONE—905-708-6620

COMING EVENTS

THE Tender Fruit Grape Vine is brought to you by the following staff of the Ontario Ministry of Agriculture, Food and Rural Affairs:

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ALL QUERIES, COMMENTS, QUESTIONS AND REQUESTS CAN BE DIRECTED TO THE ABOVE.

For a complete list of Crop Technology Staff visit the OMAFRA web site at:
www.ontario.ca/crops

June 17, 18, **Food meets Function**, Best Western Lamplighter Inn and Conference Centre, London, Ontario. For more info visit the website: <http://www.foodmeetsfunction.ca>

Premium Production Practices Demonstrations: 9:00 a.m.

- June 23—Niagara-on-the-Lake
 - June 24—St. Catharines/Lincoln
- Registration is required (for one day only) and includes lunch, refreshments, reference materials. For more information see the back page or call GGO at 905-688-0990 or the Vineland OMAFRA Resource Centre at 905-562-1631 or visit <http://www.omafra.gov.on.ca/english/crops/conferences/20090623.htm>.

July 22, **Summer Tree Fruit Orchard Meeting**, Cedar Springs Research Station, 7350 Talbot Trail, Blenheim. For more info see page 3 or contact John Zandstra at jzandstr@ridgetownc.uoguelph.ca or 519-674-1627

August 11, **Grape Tail Gate Tour**—see page 4 of this issue for details

Triggs International Premium Vinifera Lecture Series:

Sept 2—Vineyard Visits/ Technical Workshops

Sept 3—Public Lecture

2009 Speaker: Mark Greenspan, manager and Viticulturist, Advanced Viticulture, LLC. For more information visit: www.brocku.ca/ccovi/

Permit to Take Water Workshop—9:00 a.m. or 1:00 p.m. Simcoe OMAFRA office. (see page 4)

- October 15, November 19, December 17

For more information call 519-426-4920 or visit http://www.omafra.gov.on.ca/english/engineer/facts/ptw_course.htm

Subscribe on-line to view the full coloured newsletter (in pdf format) or to receive notice by email when a new issue of the Tender Fruit Grape Vine is posted. All you need to do is submit your email address at <http://www.omafra.gov.on.ca/english/subscribe/index.html>

Weather Information

Location	Maximum °C		Minimum °C		Precipitation (mm)	
	March	April	March	April	March	April
Vineland (85 yr ave)	17.9 6 th	28.6 27 th	-12.3 3 rd	-2.8 7 th	95.9	111.3
Harrow	15.5 17 th	27.7 26 th	-14.8 3 rd	-4.1 12 th	120.3	116.8
Simcoe	15.4 6 th	27.4 28 th	-15.5 4 th	-3.9 1 st	88.8	111

*We would like to thank the University of Guelph at Simcoe, Weather INnovations Incorporated, and AAFC Harrow for the weather data

**Wednesday July 22nd, 2009 (2:00 – 6:00 PM)
Cedar Springs Research Station**

Growers and industry representatives are invited to an informal orchard meeting where tree fruit research on peach, pear, cherry, and apple will be presented. Speakers from the University of Guelph, Agriculture and Agri-Food Canada, Michigan State University, and OMAFRA will discuss new management techniques, cultivars, advanced breeding selections, pest control and weed management strategies, new approaches to chemical thinning, and growth control using plant bio-regulators. This event, hosted by the University of Guelph, is sponsored by a research project based on the sustainability of the tree fruit industry and partially funded by the University of Guelph/OMAFRA Sustainable Production Systems Research Program.

PROGRAM

2:00 pm	Light Refreshments	Welcome, Dr. Robert Gordon, Dean, Ontario Agricultural College, University of Guelph
2:15	Apple performance on Dwarfing Rootstocks; High Density Peach Production	John Zandstra, University of Guelph, Ridgetown Campus
2:35	Improving Efficiencies in Apples	Leslie Huffman, Apple Specialist, OMAFRA Harrow
2:55	Are Pears in Your Future?	Dr. David Hunter, Research Scientist, AAFC, Vineland
3:15	Michigan's approach to Chemical Thinning and the Use of Apogee™	Phil Schwallier, District Hort. Educator & CHES Coordinator, Michigan State University
3:45	Stone Fruit Breeding Selections	Dr. Jay Subramanian, Stone Fruit Breeding and Biotech, University of Guelph, Vineland
4:05	New Advances in Tender Fruit	Ken Slingerland, Tender Fruit and Grape Specialist, OMAFRA, Vineland
4:25	Plant Bio-regulators for Apples and Stone Fruits	Dr. John Cline, Pomologist, University of Guelph, Simcoe and Vineland
5:00	Barbeque Dinner	
6:00	Adjourn	

Directions

The Cedar Springs Research Station is located on Highway #3 ~5 km east of Cedar Springs,.
The address is 7350 Talbot Trail, Blenheim, Ontario

Information

For further information, please contact John Zandstra.
Email: jzandstr@ridgetownc.uoguelph.ca; Tel: 519-674-1627.

**Mark your
calendars
now!**

Grape Tailgate Tour

August 11, 2009

12:30 p.m.—5:00 p.m.

Sponsored BBQ dinner to follow

Come to learn about current grape research projects in Niagara

Helen Fisher: Composting project

Andy Reynolds/Ralph Brown: GIS/Remote Sensing

Wendy McFadden-Smith: Sour rot project & fungicide update

Ken Slingerland: Irrigation Project

Details to follow in the July/August TFGV.

Pennsylvania Orchard Thinning Video

Through an effort led by Tara Baugher, Jim Schupp, and Steve Miller, a professionally-made video of fruit thinning utilizing the different Darwin string thinner models and the USDA drum shaker has been developed. The filming took place in Adams County, PA peach orchards during April, 2009. Please take a look at this interesting piece of work.

Go to www.abe.psu.edu/scri, and select "The Pennsylvania Orchard Thinning Video".

Kristen Callow

New Weed Management Program Lead – Horticulture

On May 1, 2009 Kristen Callow began her role as the new Weed Management Program Lead for Horticulture within the Agriculture Development Branch of the Ontario Ministry of Agriculture, Food and Rural Affairs, working out of OMAFRA's Ridgetown office.

Kristen has a master's degree in weed science from the University of Manitoba and has more than 12 years experience in the agriculture industry. Most recently, she was the General Manager of the Ontario Greenhouse Vegetable Growers (OGVG). Before working with the OGVG, she served as a vegetable crop specialist with OMAFRA, leading the development, coordination and implementation of various programs related to vegetables in Ontario. She is a past recipient of the Deputy Minister's Award.

She previously spent several years in the private sector with Dow AgroSciences, coordinating and implementing its research trials in support of new product registrations.

Kristen is very excited to be working with her OMAFRA colleagues and weed science friends again. There is great research being conducted provincially, by the University of Guelph, and federally, and Kristen looks forward to bringing this innovative technology and new information to Ontario growers.



Using New Technology as a Guide for Irrigation in 2009

Ken Slingerland, OMAFRA,

Wayne Heinen, Ron Pitblado, Rob Danford, Weather INnovations Inc. (WIN)

The “Niagara Irrigation Advisory” project has been funded by OMAFRA, OTFPMB, GGO, NPF&VGA and WIN and is continuing for 2009. You will be able to download local weather data from the various weather stations as well as be informed on irrigation advisories. To receive this information, follow these steps:

1. Go to www.weatherinnovations.com
2. Click on “Products and Services”, and then click onto the “Niagara Region Info”. You can choose general weather information, disease pressure maps, as well as the “Niagara Irrigation Advisory”.
3. Under the “Niagara Irrigation Advisory”, you can learn several of the technical aspects of irrigation practices. Click under “C-probe Analysis Reports” to read specific and current reports commenting on ETo, ETc, solar radiation and soil moisture conditions at each of the 4 irrigation locations. Snapshots are taken of the 4 c-probe graphs weekly and are added to the reports. Contact Wayne Heinen if you would like real-time access to the C-Probe soil moisture graphs. Click under “Rainfall Analysis Graphs” to view accumulated rainfall comparisons to the previous year

The same 2 grape and 2 peach sites located in Niagara-on-the-Lake and Vineland areas are being monitored in 2009 using C-Probe soil moisture sensors. The project is in its second year, initially advancing from the 2007 COWSEP funded project “Determining Irrigation Needs by Monitoring On-Farm Soil Moisture” completed by the Brace Centre/McGill University in cooperation with OMAFRA, WIN and 4 growers in Ontario. Information on the current 4 sites is shown in the following:

Peach Sites

Chris Andrewes site – Jordan Road, McDougal farm, Jordan Station

Cultivar – Harblaze nectarine, 11 year old

Kai Wiens site – 905 Concession 2, RR6, NOTL

Cultivar – Allstar – 5th leaf, adjacent cultivars – Harrow Fair, Bellaire, Bounty, Fantasia

Grape Sites

Bill George site – 3896 Lakeshore Road, Vineland

Cultivar – Chardonnay – 22 year old

Dave Lambert site – 370 Line 1, RR2, NOTL

Cultivar – Vidal – 13 year old

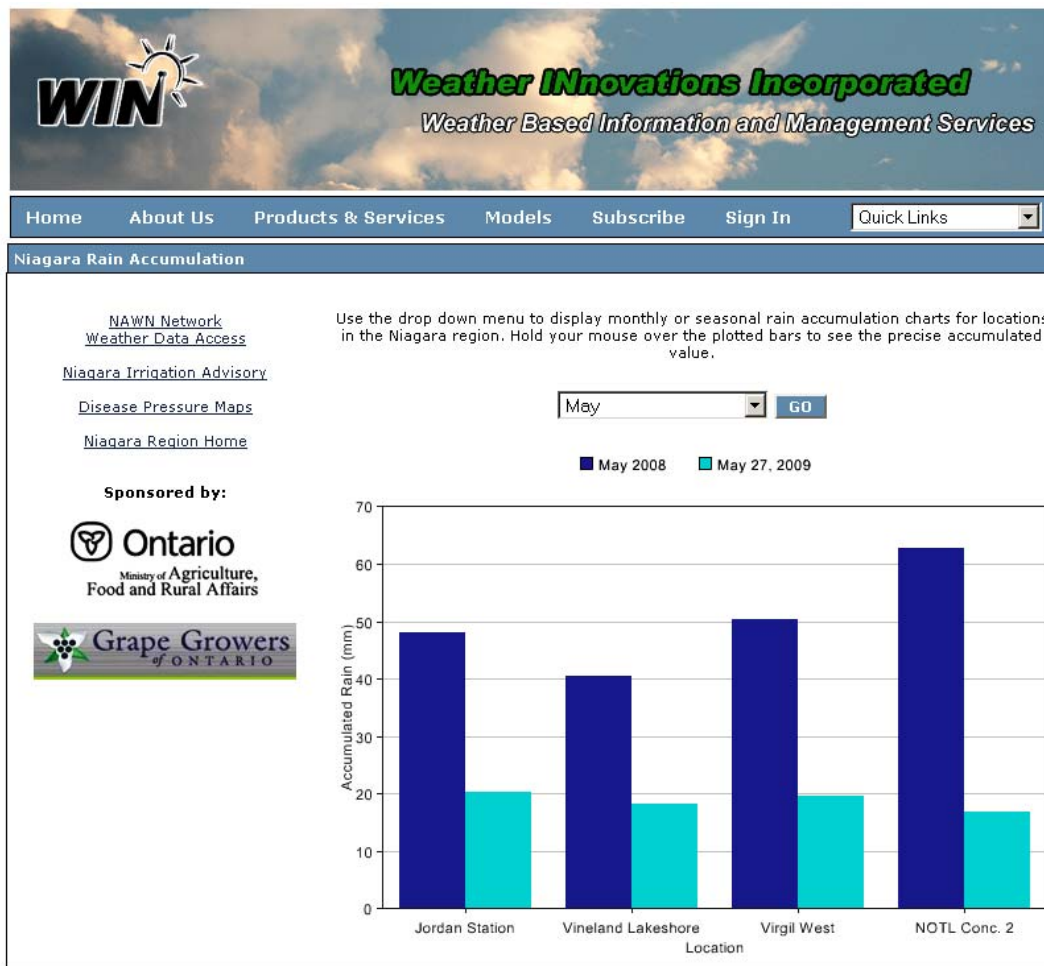
A C-Probe records volumetric soil moisture data by using capacitance sensors. The sensors are mounted on a column that is inserted into a PVC access tube in the ground (Fig. 1). A standard C-Probe may have up to six sensors on the column. The sensors can be placed at any depth required by the grower. Typically, most sensors are placed near the portion of the plant’s root zone that draws the most water from the soil. WIN often uses a C-Probe recording soil moisture at 10 cm (4 in), 30 cm (~1 ft) and 50 cm (~2 ft) depths.

The data from each sensor is processed by an electronic circuit on the C-Probe and is transmitted to a telemetry communication unit. The unit stores the data then relays it to a central base station, where they are processed. Chatham, Ontario is WIN’s central processing location.

The screenshot shows the website for Weather INnovations Incorporated. The header includes the WIN logo and the tagline "Weather INnovations Incorporated - Weather Based Information and Management Services". A navigation menu at the top lists "Home", "About Us", "Products & Services", "Models", "Subscribe", "Sign In", and "Quick Links". The main content area is titled "Niagara Irrigation Advisory 2009" and includes the Ontario logo and "WIN in Co-operation with OMAFRA". A sidebar on the right contains two red circles highlighting "Rainfall Analysis Graphs" (with sub-links for "Monthly and Seasonal Accumulation Compared to 2008") and "C-Probe Analysis Reports" (with sub-links for "May 27, 2009" and "May 19, 2009"). The main content area features a photo of a C-Probe sensor in a field and a section titled "The Importance of Irrigation Monitoring" with text explaining the benefits of soil moisture monitoring.

Stay Tuned

The old rules of 1" of rain per week for fruit trees or 4 gallons per day for Concord grape vines may be useful but new technology may help growers to determine if they really have applied enough water and if it was done on a timely basis. There are still key growth phases that growers need to keep in mind when irrigating. For peaches, Stage 1 – rapid growth and cell division which lasts approximately 30 days after bloom; Stage 2 – the “lag phase” or the time of pit hardening marks the start of this phase when fruit size increase is very slow even though the embryo inside the seed is rapidly growing, the length of this stage is very dependent upon the cultivar; and Stage 3 – cell expansion which usually starts occurring 4 weeks prior to harvest. The critical stages for irrigating are Stages 1 and 3, but stage 2 should also have adequate moisture. For grapes, keep moisture levels high for the 4 week period between bloom and fruit set when growth is rapid and water demand is high. Maintain an adequate moisture level throughout the remainder of the season reducing slightly after veraison. Growers will need to stay tuned by connecting to the WIN website, code-a-phone (905-708-6620) and reading updates in the “Tender Fruit Grape Vine” newsletter.



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Mechanical Blossom Thinning – Dream or Reality?

Ken Slingerland, Tender Fruit & Grape Specialist

Tender fruit growers need to reduce labour costs in order to remain efficient and profitable. According to the OMAFRA publication “Establishment and Production Costs for Tender Fruit in Ontario 2006 Economic Report”, the cost for thinning fresh market peaches contributed \$500 per acre to the overall variable costs. There are 6,374 peaches and nectarines in the province (Ontario Tender Fruit Tree Survey 2009). The peach and nectarine industry could realize a savings of approximately \$1.6 million if mechanical blossom thinning could reduce 50% of the crop and therefore 50% of the labour costs. Currently, all tender fruit must be hand thinned since there are no chemical thinners available in the foreseeable future.

The success of the spring trials could not have been possible without the support of Matt Peters, M.N. Bartlett Inc. The company purchased two Darwin mechanical thinning machines this spring and cooperated with the thinning investigation and growers demonstrations. The funding was provided from Vineland Research and Innovation Centre through the Orchard and Vineyard Transition Fund and further supported by the Ontario Tender Fruit Producers’ Marketing Board and the Apple Growers of Ontario.



Matt Peters driving the Darwin mechanical thinner

Is it possible to mechanize fruit thinning in the orchard? There are many issues and questions that need to be answered:

- Can we get all the trees thinned in time during the bloom period? *Answer – The Darwin can do about 10-15 acres per day depending upon tractor speed and orchard design.*
- Is it cost effective? *Answer – yes – payback could be in 1-2 years depending upon number of acres*
- Is mechanical thinning effective on trees not yet pruned? *Answer – yes – but likely not as good as pruned trees*
- Will the machine thin enough? *Yes – but always need to adjust tractor speed, number of strings, rpm of strings, timing of bloom*
- Is it possible to over-thin? *Answer – yes – same as above*

Eight peach growers, one plum and four apple growers participated in thinning trials this spring. The results to date have been positive. Data collected at each site included: blossom counts at pre-thin using the Darwin mechanical thinning machine and Control (hand thinning) followed up by post thin blossom counts shortly after using the Darwin. The desired goal was to reduce approximately 40-50% of the peach bloom.

The first trial involved mature Japanese plum trees that were tall and vigorous. 24.1% of the Early Golden bloom 25.0% of the Shiro bloom were removed. Since this was the first attempt, a few limbs were broken and not enough blossom thinning was achieved. Harrow Diamond trees at approximately 10-20% full bloom were also mechanically thinned. Trees that were unpruned averaged 47.3% blossoms thinned and pruned trees averaged 46.3% blossoms thinned. The thinning was consistent but the unpruned trees may still be carrying a larger crop since the Darwin might not have penetrated the inner canopy.

In another observation of standard pruned Harrow Diamond trees, the Darwin thinner in the vertical position removed 56.8% of the blossoms from the sides and removed 68.4% of the blossoms from the top in the horizontal position. Most of the grower demonstrations for peach achieved the desired thinning effect of around 40-50% blossom removal.

Other replicated trials involved Dr. John Cline and Debbie Norton, from the Department of Plant Agriculture, University of Guelph using grower sites that had spindle trained trees at one site and central leader trained trees at another site. Intensive data such as fruit counts and size grading will be collected at these two sites throughout the growing season and reported later in the fall.

Many factors are involved in how many blossoms the Darwin can remove. Factors include the numbers of rows of strings, how many strings per row, the rpm of the rotation of the drum holding the strings and the tractor speed. In Europe, the tractor typical travels 8-10 kph for apple systems but 4-5 kph was the desired speed for peaches in Ontario orchards.

Future peach and other tender fruit orchards will have to develop new strategies such as the vertical shape to achieve the greatest benefit of mechanization. The orchard architectures would then allow growers to increase the number of rows per acre to increase overall orchard efficiency. Other benefits of mechanical thinning have been the increase in fruit size which affects grower profitability as well as reducing labor costs. Look for more information in newsletter updates and the Ontario Fruit and Vegetable Convention 2010.

Sensory panel on duty at the Vineland Research and Innovation Centre

Dr. Isabelle Lesschaeve, Research Director Consumer Insights & Product Innovation,
Vineland Research and Innovation Centre

One of Vineland Research and Innovation Centre's research capabilities aims to expand markets through product innovation driven by consumer insights on the attributes and benefits new products should deliver to be appealing. The "instrument" which will assist in this mandate has just started operations. A sensory panel of 20 members were recruited based on their abilities to smell and taste, and their availability to come six to nine hours per week while participating on a sensory project.

We were overwhelmed by the interest the call for participation generated in the community. One hundred and seventy-seven people contacted us and 156 were invited to participate in two screening sessions over the two week period from April 27 to May 8. Candidates performed 12 tests assessing their ability to recognize and name odours, their sensitivity to odorants and tastants, their ability to describe their perceptions when tasting products and their olfactory memory.

The selected panel is formed of 20 people, 15 females and six males. They are currently undertaking basic sensory training until the end of June to hone their skills and enlarge their knowledge of sensory attributes that could be perceived in various horticulture products including fruits and wines. Michele Moniz, Sensory Analyst for Vineland, is managing the sensory panel and leading their training.

The group meets twice per week in the state-of-the-art sensory lab, recently constructed in the Agriculture Canada building on site. The lab is composed of two rooms: the tasting room, with 10 booths equipped according to international standards and connected to a web-based computerized system to record panelist data, and a preparation room where sensory staff prepare the samples to be evaluated.

We will use this panel as "sensory detectors" to provide accurate and precise measurements of sensory attributes perceived in horticulture products. They won't be questioned whether they like a product because they will become so analytical they could not possibly represent general consumers anymore. Product acceptability will be assessed by consumers specifically recruited for each new project.

The first product to be evaluated by the panel is wine. This project will contribute to identify sensory attributes driving likes and dislikes of Ontario consumers. Preliminary studies on tender fruits will occur during the coming season and we look forward to working with the tender fruit industry to address their research needs.



“Control” vs “Suppression”: The difference can be important!

Wendy McFadden-Smith, Tender Fruit and Grape IPM Specialist, OMAFRA

Before a crop protection product company submits a product for registration, many trials must be conducted to determine human toxicity, environmental impact and potential injury to plants. In the U. S., crop protection products are submitted for registration without a review of efficacy data, whereas Canada requires data to support the level of control (efficacy) a product has against a specific pest on a specific host. The product is generally tested at the proposed label rate and twice, half and possibly one quarter the label rate to determine the lowest rate at which the product is effective. The amount of pest activity (insect feeding, disease development, weed survival) in these treatments is rated relative to untreated control plots. This information is then used to develop the label. A set of terms have been developed to describe the degree of control that a product provides:

Control

- A consistent level of pest management, as defined by commercial standards and expectations in the market, when compared to untreated control plots. In general, pest control ratings would range between 85% - 100%.

Suppression

- A consistent level of pest management that is less than full control, as defined by commercial standards and expectations in the market, when compared to untreated control plots. In general, pest control ratings would range between 65% - 85%.

Reduction in damage from /partial suppression

- A level of pest management that is less than suppression, as defined by the commercial standards and expectations in the market. This label claim will be considered for non-conventional pesticides. This claim may also be considered for conventional pesticides following discussions with PMRA on a case-by-case basis. In general, pest control ratings would range between 30% - 65%. This degree of control would be more of an incidental activity of the product against pests other than the main one(s) on the label.

Many of the newer, “softer” pest control products do not give the immediate “knock down” that older products did. You will notice the term “suppression” on some of the labels of these newer products. Under severe pest pressure, these products are not likely to give acceptable commercial control. However, under trace to moderate pressure, when used in rotation with more effective products and used with other control methods in an IPM program may provide satisfactory control.

Assail registered for OFM control in stone fruits.

Wendy McFadden-Smith, Tender Fruit & Grape IPM Specialist, OMAFRA

Assail 70 WP is now registered for control of oriental fruit moth and plum curculio in stone fruit (apricot, sweet and tart cherry, nectarine, peach, plum, fresh prune and plumcot). It is a Group 4 (neonicotinoid) insecticide so therefore provides an additional rotational partner for our arsenal of insecticides for OFM management. It has translaminar activity (moves across the leaf from the sprayed side to the unsprayed side). It is also rainfast once the spray has dried. No more than 4 applications can be made per season with a spray interval of 12 days. The pre-harvest interval is 7 days and the re-entry interval is 12 hours for all activities except hand-thinning, which has a re-entry period of 6 days. Research in the US indicates that Assail also has some effectiveness against plant bugs and stinkbugs and fair activity against San Jose scale, and Japanese beetle, although these are not on the Canadian label.

GRAPE DISEASE CONTROL, 2009

Wayne F. Wilcox, Department of Plant Pathology, Cornell University,
NY State Agricultural Experiment Station, Geneva

*After 2008's challenges for bunch rot control, growers may be reconsidering their options for post-bloom treatment to manage Botrytis. The following excerpt from the popular annual Magnum Opus of Dr. Wilcox provides insights into the biology and management of bunch rot.—
Wendy McFadden-Smith*

The Botrytis fungus thrives in high humidity and still air, hence the utility of cultural practices such as leaf pulling and canopy management to minimize these conditions within the fruit zone. It's a "weak" pathogen that primarily attacks highly succulent, dead, injured (e.g., grape berry moth, powdery mildew), or senescing (dying) tissues such as wilting blossom parts and ripening fruit. Although the fungus does not grow well in berries until they start to ripen, it can gain entrance into young fruit through wilting blossom parts, old blossom "trash" sticking to berries, and scars left by the fallen caps. Such infections typically remain latent (dormant) all the way through harvest, but some may become active as the berries start to ripen, causing them to rot. Should this occur, disease can spread rapidly through the rest of the cluster (or others nearby), reducing both marketable yield and quality. (We also witnessed in 2007 in Prince Edward County and in 2008 in Niagara that these latent infections can actually be activated as early as pea-sized berry if severe hail injury is sustained on clusters. WFM-S)

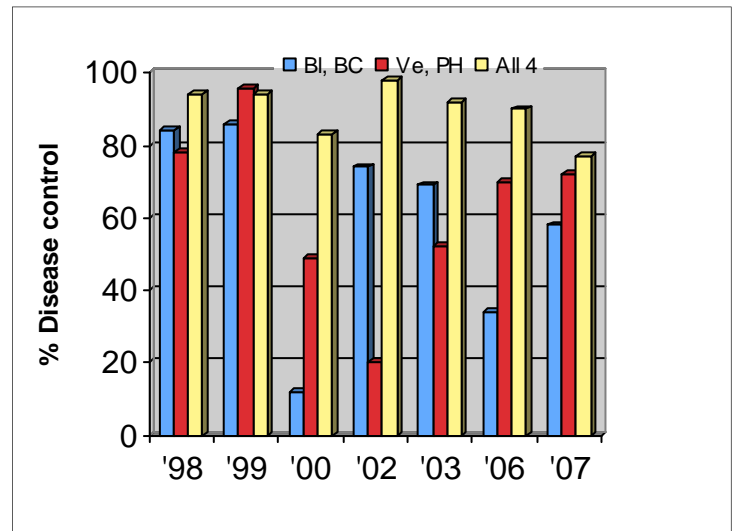
Some recently-determined details re the above:

Latent infections can be common following a wet bloom period, but the vast majority remain inactive through harvest and never rot the fruit. Factors that cause latent infections to activate (cause disease) are incompletely understood. High humidity and high soil moisture are two environmental factors that promote this process. Note that for the preceding reasons, a wet bloom period (to establish latent infections) followed by a wet mid-summer and pre-harvest period (to activate them and provide conditions for further spread) is a perfect "recipe" for Botrytis. Did somebody say 2008?

Serious Botrytis losses result from disease spread during the post-veraison/ pre-harvest period, after berries begin to ripen and become highly susceptible to rot by the fungus. Thus, latent infections established at bloom can be important even if only a few of them become active and provide the initial "foot hold" from which subsequent spread can occur during ripening. Because relatively few of these early infections typically do become active and turn into rot, controlling them at bloom provides only modest benefit if the post-veraison season is dry and doesn't support further disease spread. However, it can be critical in a year with a wet pre-harvest period

(especially if the mid-summer was wet as well), which favors both the increased activation of latent infections and their rapid spread. So in one sense, bloom sprays are an insurance policy against the future unknown.

There is no single "correct" timing regimen for fungicide applications in a Botrytis management program. The standard "full" program used in fungicide trials and by some growers of highly susceptible and valuable cultivars consists of four sprays: at bloom, bunch closure, veraison, and 2-3 weeks pre-harvest. We have looked at the relative contributions of the two early sprays, the two late sprays, or all four in most years of the past decade; a summary of these data is presented in the figure below. Note that in some years, the two early sprays provided better control than the later sprays. In an equivalent number of seasons, the opposite was true. In some years, two early sprays OR two late sprays provided the same control as all four; in a majority of years, applying all four provided the best results.

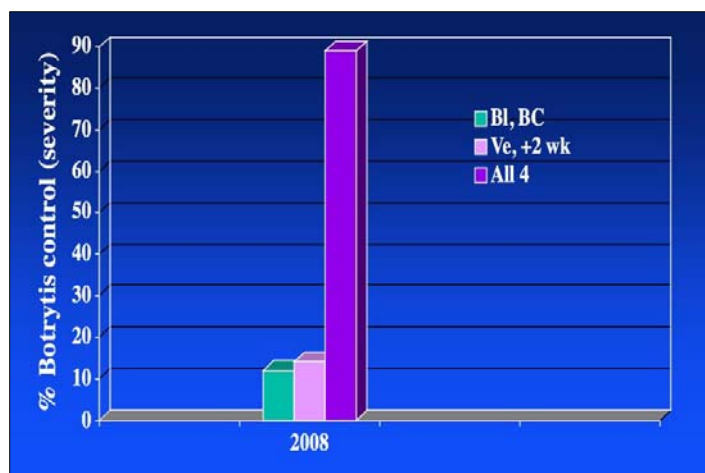


Influence of spray timing on control of Botrytis bunch rot in Geneva, NY (cv. Aurore, 1998-2000; cv. Vignoles, 2002-2007). Sprays were applied at (i) Bloom + bunch closure (BI, BC); (ii) Veraison and 2-3 wk later (Ve, PH); or (iii) at all four of these stages. Data are expressed as percent control of disease severity relative to the check treatment (no Botrytis fungicides).

The relative benefits of early versus late applications, and the total number necessary, will vary among years according to rainfall patterns and, quite likely, differences between cultivars and clones (e.g., cluster tightness). Think in general

terms of early sprays as limiting the establishment of primary infections, and later sprays as limiting disease spread. But remember that Botrytis is not a disease that you can just “spray your way out of”. These materials help, but they won’t do the job by themselves in a tough block and tough year if you don’t give them a hand with cultural practices (canopy management, leaf pulling, etc.).

So what happened in 2008? In upstate NY, and many other parts of the East, 2008 was a banner year for Botrytis. But perhaps not surprisingly, success levels in managing it were all over the board, even on the same varieties. To try and find out why, Extension educator Hans Walter-Peterson and I interviewed a number of Finger Lakes *V. vinifera* growers last December, to look for clues that separated the good, the bad, and the ugly. But before completing this story, let’s complete the spray-timing data story in the figure below to account for 2008.



Influence of spray timing on control of Botrytis bunch rot in 2008 (Geneva, NY; cv. Vignoles). Sprays were applied at (i) Bloom + bunch closure (BI, BC); (ii) Veraison and 2 wk later (Ve, PH); or (iii) at all four of these stages. Data are expressed as percent control of disease severity relative to the check treatment (no Botrytis fungicides).

Clearly, in this trial, we lost control if we didn’t stop bloom infections from occurring and if we didn’t stop those that did occur from spreading. But we did OK when we threw the kitchen sink at it and provided control both early and late. It was that kind of year.

So what did we find from our grower surveys? No big surprises. Basically, those that had significant problems had omitted the bloom spray or, in one case, relied on an application 7-10 days before the start of bloom to do the trick (another sprayed at bloom but used no Botrytis materials thereafter). Growers that sprayed at bloom/late bloom and 2 or 3 additional times generally had few or no problems, with

two exceptions: One had a serious drainage problem in the block where control broke down (it “never” dried out), the other had a new sprayer. Unfortunately, this was not a year to be working those bugs out.

Over the past few years, we’ve been looking at the various “physical modes of action” of the available Botrytis fungicides, to get a better idea of some of their specific characteristics and differences. Following are a couple of experiments that provide some interesting and useful information.

Pinot Noir clusters were inoculated with Botrytis spores at late bloom but weren’t sprayed with Botrytis fungicides until veraison. The purpose of this test was to see whether the fungicides could eradicate or suppress latent (dormant) infections long after their initiation, as long as the materials were applied before such infections became active. (Recall that preharvest activation of bloom-initiated latent infections is often the kick-start to a Botrytis outbreak). Under the conditions of this test (individual clusters sprayed by hand, complete spray coverage to an extent not likely in commercial production), a single application of Scala or Vanguard at veraison provided almost complete control of latent infections established at bloom, 60 days earlier. Elevate and Rovral were almost as good. When additional clusters re-treated a second time, 15 days after veraison, Scala, Vanguard, and Elevate provided complete control and Rovral reduced infection by about three-fourths. *While not on the Canadian label, Wilcox indicates that Flint controls bunch rot and Sovran suppresses it.* (WM-S)

Nevertheless, as shown in the previous figures, we often get better control in our field trials when these fungicides are sprayed at bloom and bunch closure in addition to veraison and 2 weeks later. This suggests that the level of curative effect from the later sprays doesn’t replace the need for earlier applications when conditions favor infection at bloom, although it probably contributes to the overall level of control obtained.

So, is it worth it to add a botryticide at bloom? It depends on the weather during bloom and how much of a gambler you are, especially when it comes to high-value, tight-clustered, thin-skinned varieties. Choosing a product that at least suppresses Botrytis if not one labeled for its control, in the bloom/immediate post bloom spray period can be considered relatively cheap insurance in a year when pre-harvest conditions are optimal for bunch rot development. (WM-S)

The Hidden Cost of Damaged Nozzles

Dr. Jason S.T. Deveau, Application Technology Specialist

Many factors contribute to a successful spray application: sprayer mechanics, application method, weather conditions, nature of the target, product applied and the aptitude of the operator. All of these factors converge when the spray leaves the nozzle. It is therefore surprising that the most critical part of the sprayer, the nozzles, are so often neglected. Monitoring nozzle performance pays financial dividends because tip damage has a direct impact on product effectiveness and cost (see Table 1). If the application is seriously compromised, the operator might have to re-spray, which incurs additional labour, time, fuel, and wear-and-tear on equipment.

The Potential Impact of Damaged Nozzles

Nozzle Damage	Result	Possible Causes	Potential Impact
Worn Nozzle	Over Application	Regular Use (particularly with wetttable powders)	Higher Product Cost
			Phytotoxicity (particularly on heat or moisture stressed plants)
			Unacceptable Residue level
Plugged Orifice	Under Application	Debris	Inadequate Protection
		Dirty Carrier Water	Increased Risk of Resistance
		Product Build-up	Increased Risk of Resistance
Distorted Orifice	Uneven Application	Regular Use	All of the Above
		Improper Cleaning	

The solution lies in proper maintenance and early detection. Tip orifices have delicate edges, so clean them with a soft-bristled brush or a can of compressed air. Even a wooden toothpick can distort some plastics, so imagine what a wire does. Better still, carry spares for quick field replacements and clean them later in the workshop where they won't get lost. Be sure to clean nozzle screens with a brush as well because flushing does not dislodge build-up. Nozzle performance should be tested during each calibration (before and mid-way through the season at minimum) or whenever damage is suspected. Testing is simple, quick and inexpensive:

1. Temporarily install a pressure gauge on the boom behind the nozzle (commercial or home-made);
2. Adjust the regulator to compensate for the pressure change between the pump and nozzle to accurately set nozzle pressure;
3. Use a graduated container or commercial tip-tester to measure the discharge of clean water over a one minute interval;
4. Compare the rate to the manufacturer's rate <OR> compare the flow rate from the used tip to the flow rate of a new tip of the same size and shape.

If the flow rate is 10% (or even 5%) more than the ideal rate, replace ALL nozzles, not just the ones that appear damaged. Replace them once a year or at the first signs of deterioration, whichever is first. The cost of renewing an entire set of nozzles is a fraction of the potential cost of wastage and potential crop damage:

Example:

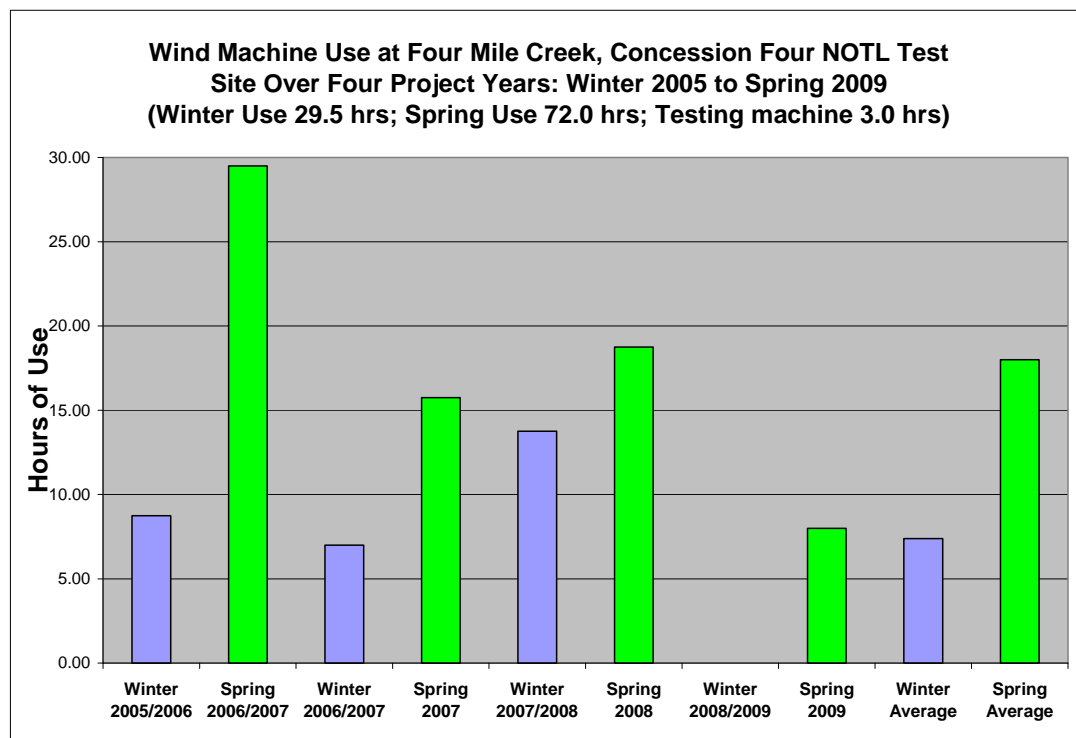
An airblast sprayer with 16 nozzles sprays a product that costs \$150/hectare (~\$60/acre).
Nozzle tips are worn by an average 10%, which sprays an additional \$15/hectare (\$6/acre).
16 new ceramic hollow cone tips and gaskets cost \$80 at \$5 each.
The nozzles pay for themselves in 5.3 hectares (13.3 acres).

The rate of tip wear depends on spray pressure, product sprayed, and the material of which the nozzle is made. Upgrading to a harder, more durable tip can reduce maintenance costs. Never mix nozzle materials on a boom; from softest to hardest: Brass < Stainless Steel < Plastics < Hardened Stainless Steel < Ceramic.
Inevitably, all nozzles wear out so be sure to include regular nozzle maintenance and replacement in every spray program.

Wind Machine Study Update

Hugh Fraser, Agricultural Engineer, OMAFRA

Here's a quick update on behalf of the Wind Machine Study team of myself and Ken Slingerland, OMAFRA; Kevin Ker and Ryan Brewster, KCMS; and Helen Fisher, U of G. Our project ends this fall, and (as I correctly predicted when this project began), the winter weather has been 'warmer' over the past four years than might have been expected, although spring use of the machines has been higher than expected. The graph below shows relative hours of use during winter (December to March) and spring (April and May) over the project at our site at the Hernder farm south of Virgil. The average use over four years has been about twice per winter with about 3.75 hours/use, and about four uses each spring with about 4.5 hours/use. Machine use varies across the Peninsula, based on weather and experience. For more information on using wind machines see the OMAFRA Infosheet on our website. An updated version will be coming fall 2009. http://www.omafra.gov.on.ca/english/engineer/facts/windmach_info.htm



Bird Bangers...Best Management Practices Factsheet now available

Hugh Fraser, Agricultural Engineer, OMAFRA

As some of you know, there is a Normal Farm Practices Protection Board hearing underway in Niagara related to whether a grape grower's use of bird bangers on his vineyard should be considered normal farm practice, or not. The season for bird banger use will be here before you know it, so here is a gentle reminder about what are considered best management practices (BMPs). Many of you will have already seen the Factsheet I wrote this past winter on the use of bird bangers which discusses; how they work; what BMPs are; what is considered normal farm practice and perhaps more importantly what isn't; appropriate hours of use based on a table of sunrise and sunset times; and how to figure out what appropriate setbacks to your neighbours should be based on how you're operating the equipment. Please help reduce the many complaints I received in 2008 by following the information in the Factsheet and helping persuade other growers to as well. I'm confident complaints will be down this year. Remember, the BMP setback from a neighbour's house for a bird banger is 125 m (410 feet) when operated:

- during the regular grape season, ceasing about the end of October (not the extended season for ice wine, which could go well into winter some years)
- with proper leveling of the bird banger so it spins uniformly 360 degrees in all directions (not when set to fire only in a 180 degree plane around a neighbour's home)
- using the 'B, loud volume' setting (not the 'A, quiet volume' setting, available on some bird bangers)
- on Frequency 2 setting; four to eight minute sequence interval (not Frequency 1; two to four minutes)



PREMIUM PRODUCTION PRACTICES DEMONSTRATIONS

June 23, 2009 - Niagara-on-the-Lake

June 24, 2009 - St. Catharines/Lincoln

Day 1

Tuesday June 23, 2009

9:00 a.m. – 3:30 p.m.

Location: Niagara-on-the-Lake

Day 2

Wednesday June 24, 2009

9:00 a.m. – 3:30 p.m.

Location: St Catharines/ Lincoln

Register for 1 day only.

* A confirmation letter and a map to the fields will be sent by email/ fax to all registrants.

* Dress appropriately – i.e. work boots, hat, bug spray, & sunscreen

* Bring your own knife or soil trowel

Program:

The morning program will focus on Nutrient Cycling and Soil Life (fertility, cover crop management, micronutrients, mulch); Organic Matter (soil compaction, tillage, water infiltration) and Water & Irrigation (soil moisture probe, irrigation scheduling).

The afternoon program will focus on Grape Nutrition, Crop Balance and Fruit Zone Management. A separate afternoon program will be provided for Tender Fruit Growers at a different location.

Registration is required and includes: lunch, refreshments, and reference materials.

Registration Deadline: Monday, June 15, 2009

Please call GGO 905-688-0990 office or email mjcombe@grapegrowersofontario.com or send Registration Form to:

Ontario Ministry of Agriculture, Food and Rural Affairs, 4890 Victoria Ave N, Box 8000, Vineland Station, ON L0R 2E0.
t: 905 562-1631 f: 905 562-5933

Name _____ Company _____

Address _____ Postal Code _____

Phone _____ Fax/ email _____



Agricultural Information Contact Centre: 1-877-424-1300

E-mail: ag.info.omafra@ontario.ca

Northern Ontario Regional Office: 1-800-461-6132

www.ontario.ca/omafra