

The Tender Fruit Grape Vine

VOLUME 14, ISSUE 1

SEPT/OCT 2009

Darwin Mechanical Blossom Thinning Update

Ken Slingerland, Tender Fruit and Grape Specialist, OMAFRA

Several peach orchards in Ontario were blossom-thinned in the Spring of 2009. Data was collected with positive results removing 30-40% of the bloom on average.

Goals of the project were to:

1. analyze and compare the effectiveness of the Darwin to remove peach blossoms using different orchard training systems, tractor speed, string orientation, rotation speed of the strings, etc
2. record the economic benefit for thinning peaches comparing the Darwin to hand thinning
3. measure any differences in yield, fruit size and number of split pit fruit per tree

Follow-up harvests and hand thinning times were recorded later on in the summer. Highlights include:

- At one site, a section of 5 trees from two rows was hand-thinned 5 weeks after bloom. The hand thinners from the Darwin row removed only 469 fruit compared to 743 from the adjacent hand row (37% less fruit needed to be removed). The average fruit weight of the Darwin-thinned fruit was 9.37 grams compared to 8.77 grams from the hand thinned row (6% larger).
- Thinning times at most sites were reduced by about 40% per tree.
- At one site, Garnet Beauty trained to open center in a side by side demonstration, produced almost exactly the same yields per 25-tree row, but the fruit size on the Darwin-thinned trees was 140 grams per fruit compared to 126 grams per fruit (an 11% increase). However, the number of split pit fruit was 4.7% compared to the hand thinning at 2.3% during an unusually wet growing season.
- At another site, "Allstar™" peach was trained to a high density spindle vertically trained system in a replicated trial. Yields were almost identical per tree but fruit size was 159 grams for the Darwin treatment (18 strings at 180 rpm) and 145 grams for the hand-thinned treatment. The percent split pit fruit was almost identical 7.2% for hand versus 7.4% for Darwin. 3 other Darwin treatments with different string arrangements also had larger fruit but were over-thinned resulting in 9 to 18% less yield and 7.6% to 13.4% split pits.

Most of the results have been positive for growers using the Darwin in commercial orchards. Future peach trials will continue in 2010 as growers look forward to new technology to reduce labour costs in the orchard and increase profitability. Look for more information in newsletter updates and at the Ontario Fruit and Vegetable Convention 2010.



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

Permit to Take Water Workshop—9:00 a.m. or 1:00 p.m.
Simcoe OMAFRA office.

- October 15, November 19, December 17

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

November 24, **Niagara Research Industry Workshop**, Niagara College Niagara-on-the-Lake campus. This workshop will focus on bringing together organizations in the agriculture sector to discuss new technology, programs, products, and initiatives. In addition this full day workshop will highlight the resources available to local businesses, including research partnerships, tax credits, and funding sources. Registration is required which includes a light breakfast, lunch and all materials needed throughout the day. For more information please contact Rachel Brown at 905-641-2252, extension 4277 or by email at [re-search@niagararesearch.ca](mailto:research@niagararesearch.ca). Workshop details can be found at www.niagaracollege.ca/researchnews.

November 24, 25—**Essex County Associated Growers 59th Annual Bounty of the County Convention & Trade Show**, Sherk Complex, Leamington. Cooking demos, newest agricultural technology and equipment and informative seminars. For more information contact Lynda Baird at 519-326-4481 or ecag@bellnet.ca

February 24, 25, 2010, **Ontario Fruit & Vegetable Convention**, Brock University, St. Catharines. For more info visit www.ofvc.ca

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Weather Information

Location	Maximum °C		Minimum °C		Precipitation (mm)	
	July	August	July	August	July	August
Vineland (85 yr ave)	28.0 28 th	31.8 17 th	11.0 12 th	9.7 31 st	76.5	105.4
Harrow	28.2 28 th	31.8 9 th	9.6 13 th	6.7 31 st	12.6	96.9
Simcoe	27.9 29 th	31.0 18 th	9.8 13 th	10.3 31 st	78	95.4

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

2009 Cost of Production for Grapes – Coming Soon

Ken Slingerland, Tender Fruit & Grape Specialist, OMAFRA

Picture for a minute the voice of Andy Rooney, the CBS's news man on the 60 minutes news show on Sunday evening.

“Have you ever wondered how many years it takes to break-even on a new Chardonnay vineyard?” “By the way, in 2005 when the last survey was done, it took 14 years at 5 tonne per acre to break-even”.

On August 30, 2009, the grower surveys were completed for the report “Cost of Production and Establishment for Grapes in Ontario” and now the number crunching begins. I would like to thank Karen Van Weerden, contracted by the Grape Growers of Ontario, who conducted the interviews with growers this past summer.

So now we can answer some of those burning questions like, “What is the average cost of sprays per acre” and “How many tonnes per acre of Chardonnay do you need to break even? Is it 2.5 tonnes, 3.5 tonnes or is it as high as 4.0 tonnes for 2009?” Stay tuned to the next newsletter and see you at the Ontario Fruit and Vegetable Convention at Brock, February 24, 25, 2010 to answer all those questions.

Ontario Soil Reports/Maps

To order Ontario soil reports/maps:

- Visit the Service Ontario website at: www.serviceontario.ca/publications
- Phone through the ServiceOntario Contact Centre at 1-800-668-9938 or 416-326-5300
- In person at ServiceOntario Centres located throughout the province



Obsolete pesticides, livestock medicines and used sharps collection program October 20-22, 2009

Dispose of your obsolete pesticides, unused animal health products and used sharps in a safe, environmentally responsible manner—and its free!

Collection locations:

Ailsa Craig: Hensall District Co-operative

Arnprior: M&R Feeds and Farm Supply Ltd.

Bethany: Thompsons Limited

Brodhagen: Hoegy's Farm Supply Ltd.

Courtland: Cargill AgHorizons

Dundalk: Huron Bay Co-operative

Harriston: North Wellington Co-operative Inc.

Kitchener: GROWMARK Inc. – Distribution Centre

Lancaster: Munro's Agromart Ltd.

Napanee: O'Neill's Farm Supply

Jordan Station: Vineland Growers Co-operative Ltd.

Thornloe: Co-op Regionale – Temiskaming Ag Centre

Orangeville: Holmes Agro Ltd.

Thunder Bay: Thunder Bay Co-op Farm Supply

Tilbury: Cargill AgHorizons

Vienna: Max Underhill's Farm Supply Ltd.

Where do I get more information?

- Visit the AGCare or Ontario Farm Animal Council websites: www.agcare.org or www.ofac.org.
- Call the Ontario Farm Animal Council/AGCare: 519-837-1326
- Contact the Ontario Ministry of Agriculture, Food and Rural Affairs Agricultural Information Contact Centre
Toll Free: 1-877-424-1300
Local: 519-826-4047
Email: ag.info.omafra@ontario.ca

Herbicide resistant weeds not just in field crops

Kristen Callow, Weed Management Program Lead - Horticulture

With far less herbicide options in horticultural crops as compared to field crops, horticulture producers tend to accept more weed escapes. The reality of this practice is that we could be harbouring and increasing herbicide resistant weeds in our fields and orchards. The following list documents the confirmed herbicide resistant weed species in the province of Ontario by herbicide Group: <http://www.plant.uoguelph.ca/resistant-weeds/>

Herbicide Group*	Weed Species	Location(s)
2	Pigweed – redroot & green	Bruce, Elgin, Essex, Hamilton-Wentworth, Huron, Kent, Lambton, Middlesex, Oxford, Perth, Stormont, Dundas and Glengary, Wellington
2	common lamb's-quarters	Elgin, Kent, Middlesex, Simcoe
2	green foxtail	Huron, Lambton, Perth, Wellington, Victoria
2	giant foxtail	Lambton
2	common cocklebur	Lambton
2	eastern black nightshade	Bruce, Elgin, Huron, Middlesex
2	common ragweed	Elgin, Essex, Haldimand/Norfolk, Huron, Kent, Lambton, Middlesex, Oxford, Perth
2	waterhemp	Bruce, Lambton, Essex
4	wild carrot	Halton, Wellington
5	common lamb's-quarters	Numerous counties throughout Ontario
5	redroot pigweed	Waterloo
5	common ragweed	Brant, Essex, Haldimond/Norfolk, Hamilton-Wentworth, Lambton, Lennox & Addington, Niagara, Wellington
5	barnyard grass	Waterloo
5	yellow foxtail	York
5	old witch grass	Grenville, Grey, Haldimond/Norfolk, Prescott, Wellington
5	late flowering goosefoot	Brant
5	wild mustard	Glengarry
5	common groundsel	York
5	common waterhemp	Essex, Lambton
6	redroot pigweed	Essex, Kent
6	smooth pigweed	Essex
7	green pigweed	Middlesex
7	redroot pigweed	Simcoe
22	Canada fleabane	Essex
22	Field peppergrass	Essex

Group 2 Herbicides – are acetolactate synthase inhibitors (imidazolinones, sulfonyleureas, sulfonlamino-carbonyl-triazolinones and triazolo-pyrimidines), such as Pursuit and Accent.

Group 4 Herbicides – are synthetic auxins (phenoxyacetic acids, benzoic acids and pyridines and quinoline carboxylic acids), such as 2,4-D, Dicamba and Lontrel

Group 5 Herbicides – photosystem II inhibitors (triazines, triazinones and uracils), such as Simazine, Sencor and Sinbar

Group 6 Herbicides – photosystem II inhibitors (benzothiadiazoles and nitriles) with the same site as groups 5 and 7 but different binding behaviour, such as Basagran and Buctril

Group 7 Herbicides – photosystem II inhibitors (ureas) with the same site as groups 5 and 7 but different binding behaviour, such as Lorox

Group 22 Herbicides – photosystem I electron diverters (bipyridilium), such as Gramoxone and Reglone

Glyphosate resistant giant ragweed is suspected and being investigated as well. Growers should be aware that these weeds are in horticulture production regions across the province and in the event of control failures herbicide programs will have to be altered.

You likely have a resistant weed population if you have a weed species that should have been controlled but is healthy while other susceptible species have been controlled or a weed control failure even when the correct herbicide rate was used and it was applied at the appropriate weed stage and under favourable environmental conditions. You can report suspected resistant weeds by contacting the Agriculture Information Contact Centre 1-877-424-1300. By taking advantage of this toll-free number, suspicious weed species will be tested for resistance by the University of Guelph. Any information obtained from this service will allow weed researchers to develop control options for resistant weed populations. You can also send samples directly to the University of Guelph. The University of Guelph will test, free of charge, suspected resistant weeds. Visit the link below for complete submission instructions.
<http://www.plant.uoguelph.ca/resistant-weeds/services/>

In order to prevent the development of herbicide resistant weeds growers should take into consideration the following practices:

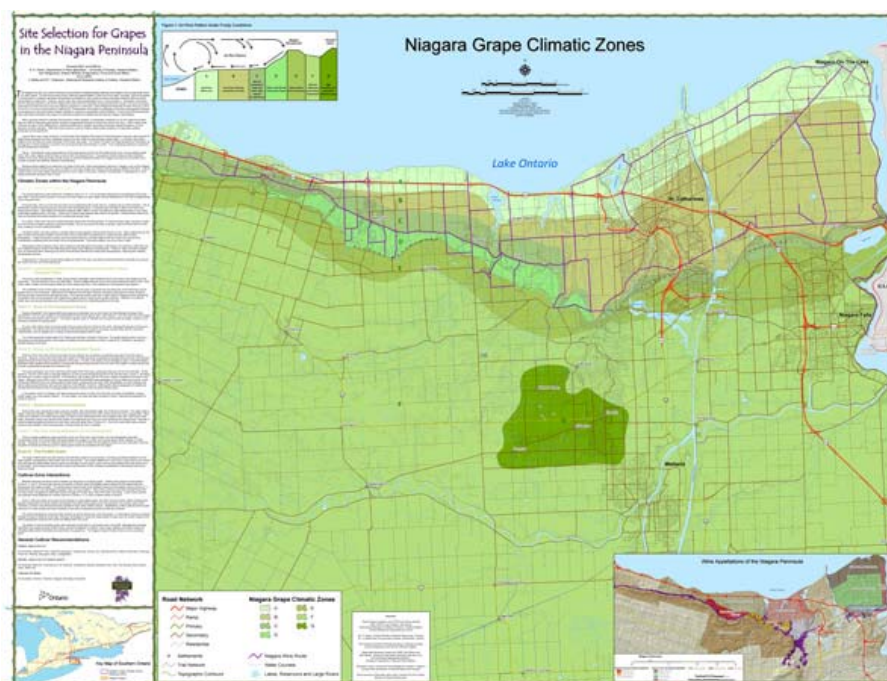
1. Rotate herbicides with different modes of action. For example, do not use simazine (Princep Nine-T) continuously. Consider other pre-emergence broadleaf herbicide options. Avoid making more than two applications of the same herbicide in the same year.
2. Scout orchards and fields to identify weeds. Respond quickly to changes in weed population by controlling weeds before they spread throughout the entire orchard or field.
3. Use non-selective post-emergence herbicides (Round-up, Ignite, Gramoxone) in your weed management program.
4. Use herbicides only as-needed.

Gratitude is expressed to Dr. Peter Sikkema and Mike Cowbrough for their review of this article.

2009 Niagara Grape Climatic Zones Map

The Niagara Grape Climatic Zones map has been updated and is now available for a cost of \$40.00 plus tax.

These maps can be obtained through the OMAFRA Resource Centre at Vineland or the Wine Council of Ontario office.



The Impact of Travel Speed on Spraying -or- Slow Down to Spray the Roses

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

Whether boom or airblast spraying, travel speed impacts application rate, coverage uniformity, canopy penetration and drift.

As forward speed increases, spray can be diverted backwards into upward wind currents and vortices behind the sprayer. This increases variability in spray deposit, which is generally undesirable and adds to drift. This effect is amplified when driving into the wind because the shearing effect increases the number of driftable fines, even when using coarser droplets. One study on boom spraying showed that reducing speed from 8 to 6 kph has the potential to reduce drift by ~50%.

When performing airblast applications, canopy penetration and uniformity is greatly improved at slower speeds. Air and droplet velocity have a high rate of drop off, and this loss of momentum means it takes time for spray to get to the target.

Studies in grapes demonstrated that increasing air volume does not compensate for higher forward speeds; it reduced deposition on the spray side of a fully developed canopy, while it did not affect deposition on the far side. Moreover, the backward angles increased variability and ground deposition beneath vine rows. Adding more liquid will not permit a higher forward speed, either. This will only increase the material deposited on the area already sprayed.

So, why do growers spray so quickly?

Time Constraints

Obviously, there are time constraints associated with spraying; many pests and diseases develop rapidly under certain conditions, limiting the window of opportunity for control. Uncooperative weather often exacerbates the issue by imposing further restrictions. Given that many growers have insufficient sprayer capacity for their plantings, they often resort to alternate row spraying and higher forward speeds in order to keep up. Employing additional operators or additional sprayers may not be economically feasible, so what are the alternatives?

Studies have shown the actual “spraying” part of a spray operation can be less than 50%. You can save some of that time by:

- installing a rapid-fill overhead water source and using large-bore hoses;
- using worksheets to allow operators to refill with all the facts on paper, rather than trying to calculate rates on the fly;
- moving water supply tanks closer to spray operations to reduce travel time when refilling;
- reducing spray volume to some extent, being aware that this could reduce efficacy;
- increasing boom width, being aware they are more difficult to keep level;
- Use a multi-row sprayer; and
- ensuring your speedometer is properly calibrated – see below.

Calibration

Speedometers can become inaccurate over time or because of wheel slippage during spraying. An important part of sprayer calibration is checking your driving speed by timing how long it takes to drive over a measured distance under true field conditions.

- Use a tape measure to place 2 stakes 50 metres (164 feet) apart in the field.
- Fill the sprayer half full of water.
- Select the throttle and gear settings you plan to use when spraying.
- Drive the distance between the stakes three times, timing each pass in seconds. Each time, make sure the tractor is at the desired spraying speed as you pass the first stake. Keep driving at this speed until you pass the second stake. Run the course in both directions and do not drive in the same tracks.
- Take the average time of three passes and use the formula below:

$$\text{Driving Speed (km/hr)} = 50 \text{ meters} / \text{average travel time (seconds)} \times 3.6 \text{ (a constant)}$$

A modern alternative is to use a hand-held GPS receiver to determine accurate forward speed in specific gears at known RPMs. They're also handy for measuring row length and block areas.

So what is an effective speed?

Choosing an Effective Speed

Several factors must be considered in choosing the most effective operating speed:

- weight of sprayer being pulled;
- slope of terrain and ground conditions (leading to wheel slippage);
- the size and spacing of the crop;
- the density of the foliage;
- wind conditions; and
- the limitations of the equipment itself.

Generally, the recommended operational speed is **between 6 and 10 kph for tractor-drawn boom sprayers** and **4 to 6 kph for airblast sprayers**. There will always be exceptions, but if the speed is too fast, the pesticide will drift and will not provide optimal results.

Don't compromise the effectiveness of an already expensive and time-consuming spray programme by speeding through applications, find some good music to listen to and slow down to spray the roses.

It's True – MALB is back this year!

Ryan Brewster and Kevin Ker, KCMS

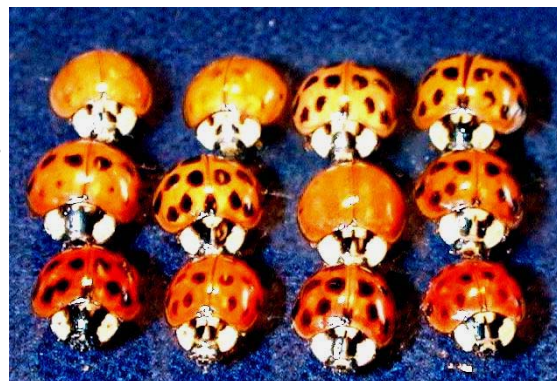
KCMS is monitoring select vineyards across the Niagara growing region for the presence of lady beetles as part of a project funded by Ontario Grape and Wine Research Inc. Twelve vineyards are being examined twice a week throughout the harvest period, targeting cultivars for examination as they ripen. A total of 6 vineyards are being monitored; 3 in NOTL, 2 in West St. Catharines (base of the escarpment), 3 in Beamsville bench, 1 in Vineland (top of escarpment), 2 along QEW at West St. Catharines and Beamsville and 1 in Winona (base of the escarpment). Presence of lady beetles is noted based on four categories: foliage, clusters, wood/trunk area and understory (weeds and grasses) beneath vines.

The first Multi-coloured Asian Lady Beetle (MALB) was recorded on September 14. The blocks with MALB have active weed growth that attracted aphids which were a food source for the beetles. At one Bench location, aphid populations were so great that aphids were feeding and colonizing the soft shoot tips and tendrils of the vines.

With the recent cooler evening and morning temperatures, greater numbers of beetles are being detected in numerous vineyards across Niagara. Beetles are found inside the clusters during the evening and morning hours. This movement into vineyards and the aggregation behaviour is occurring even though the clusters appear undamaged and recording very low VA levels. As the temperatures gradually warm up through the day, we are finding more beetles active in the canopy and around the outside of clusters. All of the species observed to date on sample vines so far have been identified as MALB. Very few 7-spotted lady beetles have been observed this year.

Many harvested grape loads have been rejected at the processor/winery level as the processor thresholds for beetle presence in harvested bins are virtually zero this year. Many wineries are using a rejection threshold of no more than 1 beetle per tonne of grapes. All areas, regardless of historical pressure or geographic location, are at risk for MALB this harvest season.

Where growers have applied registered control materials, observed beetle numbers have declined. The greatest success in decreasing beetle numbers, and keeping them away, has been seen with the use of Ripcord 400EC. This product has a 7-day PHI listed on the current label and there appears to be a repellency effect with Ripcord that has kept most beetles away for up to 14 days. Malathion 85E and 500E are also labelled for MALB control and has a 3 day PHI; however, there is potential for re-infestation after application with this product. Some growers are reporting re-infestation in less than 3 days where Malathion was used this season. Check with your winery before selecting a product for MALB control.



The multiple colour variations observed in Ontario (Ker/Brewster 2003)

Bacterial spot of Stone Fruit a Challenge in 2009

Wendy McFadden-Smith, Tender Fruit and Grape IPM Specialist

The regular rains throughout most of the season in Niagara provided optimal conditions for bacterial spot in stone fruits in 2009. The bacteria that cause this disease infect woody tissue in late fall as the leaves fall from the tree. The bacteria multiply within the twigs during periods with favorable temperature and the bacteria ooze out of natural openings in the spring during periods of wetness. The bacteria require water congestion for infection to occur so since newly emerged leaves contain no air spaces between the cells; these leaves are immune to infection. Thus, leaf and fruit infections generally do not occur until around petal fall and shuck split, respectively. Warm temperatures (21-29°C) with light rains, heavy dews or fogs and windy weather are most conducive for disease development and spread. The disease makes little progress when weather is hot and dry. Bacteria exude from the cankers for a period of about 30 days and also exude from leaf and fruit lesions throughout the season.

On peach, nectarine and apricot, symptoms appear as sunken, tan, pinpoint spots, which can develop into larger lesions, forming pits on the surface. Fruit infected early in the season develop unsightly deep-pitted blemishes and may exhibit gumming. Since the infected areas cannot expand with increased fruit size, the spots crack as the fruit matures. Pits or cracks on the fruit surface extend into the flesh and create large brown to black depressed areas on the fruit surface. Lesions that develop during the pre-harvest period are usually superficial and give the fruit a mottled appearance.

Peach and nectarine leaves frequently show more severe spotting along the midvein and towards leaf tips because bacteria are suspended in water droplets that run down the leaves and these regions of the leaf dry more slowly. The leaf spots are always angular. Within one to two weeks, the centre of the lesion is walled off by the rest of the leaf and drops out, resulting in a "shothole" or tattered appearance. Leaves with as few as two to three lesions turn yellow and fall.

Bacterial spot symptoms are typically more severe on plums than other stone fruit, with water-soaked sunken spots, developing into brown/black necrotic lesions 1 cm in diameter mid-season. Leaf infections on plums consist of angular spots on veins or on leaf injuries; these spots are shiny black on the leaf undersurface.

Nitrogen deficiency can cause leaf symptoms that are very similar to those of bacterial spot. Care must be taken to avoid an incorrect diagnosis. In both cases, the leaves of affected trees turn yellow and drop prematurely. With bacterial spot, symptoms are most likely to appear at the tip of the leaf but with nitrogen deficiency, symptoms are usually most evident along the midrib and entire leaves may turn red. Leaf tissues surrounding shot-holes caused by a nitrogen deficiency are more likely to have a reddish color than when bacterial spot is involved. Captan spray injury may also be mistaken for bacterial spot. This injury is more circular and occurs mostly on young leaves, many of which may be damaged on only one side of the midvein.

On peaches and nectarines, two distinct types of cankers damage twigs. These cankers are different from the large perennial cankers caused by fungi. "Spring cankers" develop on young twigs produced the previous summer. Spring cankers first appear as water-soaked, slightly darkened blisters about the time the first leaves appear. If these cankers encircle the twig, it will die. When conditions are moist, the canker surface has a black, water-soaked appearance. As the season progresses, the tis-



Bacterial spot on plum. Note sunken lesions with oozing on fruit and shot-hole injury on leaves.

sues over the blister-like lesions rupture and bacteria are released. These bacteria can be spread by windblown or splashing rain and can result in new infections. In time, spring cankers heal and become inactive.

"Summer cankers" develop on green twigs of the current season's growth. They usually occur later in the summer after leaf spots are evident. At first, they are water-soaked, dark purplish spots. In time, they enlarge, turn brown to purple-black, become slightly sunken and round to elliptical with water-soaked margins.

On certain plum and apricot varieties, twig cankers may continue to develop in two- and three-year old twigs. If the cankers are deep-seated, they can deform or kill the twigs. These can be confused with hail-damaged stems. Bacterial spot cankers are generally greasy in appearance with water-soaked margins.

There are no registered pesticides for control of bacterial spot. However, research in the US showed that a fall application of copper at 50% leaf drop for peach leaf curl reduced overwintering bacterial spot pathogen populations as well. A delayed dormant application in the spring covers the tree, particularly the woody portions, with copper during the late dormant period, so that the first thing the bacteria are exposed to as they emerge in spring is the bactericide. Reduced rates of some fixed coppers have been shown to be effective and less phytotoxic to leaves when applied in the three weeks after petal fall. Babygold 5 and Springcrest are especially susceptible to bacterial spot so these varieties should be avoided.

Will next year be a bad one for bacterial spot? "One year does not predict the next. It depends on the weather conditions in late winter and early spring. If we have favourable weather conditions, then it could be a very severe year again," says David Ritchie, a North Carolina State University plant pathologist in Raleigh. "If we have dry conditions as the trees begin to come out in the spring and the fruit sets, we could expect it to be very light." Dormant sprays are cheap insurance against a disease for which we have no products later in the season.

Bunch rot diseases may be a challenge again in 2009

Wendy McFadden-Smith, Tender Fruit and Grape IPM Specialist

After a couple of sunny weeks in September, growers were hoping that we'd seen the last of the rain that plagued us throughout the 2009 season. But the skies have opened up and botrytis and sour rot are starting to make an appearance. Many of the botrytis infections appear to be initiated within the cluster. These infections likely occurred before bunch close. The infections are activated as the fruit matures and Botrytis can then spread from one berry to another within a cluster, rapidly rotting the entire cluster. Berry splitting due to the rapid influx of water during rains or any physical injury that causes juice to leak, will promote the development of bunch rot. However, once berries reach veraison, they are increasingly susceptible to infection by Botrytis and no visible injury is necessary for infection to occur.

Fungicide options for botrytis control include Scala, Vanguard, Elevate, Rovral and Serenade Max or ASO. Table 1 summarizes the use of each of these fungicides. Note that **Scala and Vanguard** are from the same fungicide family so they should **not be used in rotation with each other**. While the labels for these products state a maximum number of applications per season, for resistance management, it is recommended that no fungicide family be used more than twice in a season if at all possible and that you rotate among families for consecutive sprays. The label for Rovral indicates a 7 day PHI; however, residue problems with the LCBO in the past indicated that this fungicide should be used only earlier in the growing season. Bayer CropScience recommends using Scala no later than 14 days pre-harvest. Your winery may have different recommendations so be sure to check with them.

Table 1: Fungicides used for Botrytis bunch rot control

Fungicide	Fungicide group	Pre-harvest interval	Minimum re-entry (hr)	Max. # applications/season	
				Resistance Management Recommendation	Label
Elevate	17	7	4	2	3
Rovral	2	7*	12	2	2
Scala	9	7*	24	2	3
Vanguard	9	7	48		2
Serenade Max/ASO	No class	0	0	No maximum	

Table 2 shows the relative activity of the fungicides registered for Botrytis bunch rot as well as their mode of activity. + indicates slight activity, +++ indicates the best level of activity. Rovral is rated as “++” due to historical wide-spread resistance to this fungicide.

Table 2: Activity of fungicides on Botrytis bunch rot

Fungicide	Activity on Botrytis bunch rot	Protective	Post-infection	Anti-sporulant
Elevate	+++	+	+	
Rovral	++	+	+	+
Scala	+++	+	+	+
Vanguard	+++	+	+	+
Serenade Max/ASO	++	+		

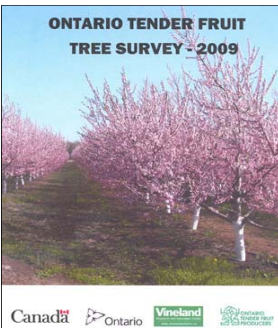
Most of these products, with the exception of Serenade, have post-infection activity and in some cases, anti-sporulant activity. If a product has post-infection activity, it moves into the berry so it is therefore not prone to removal by rains (about an hour after drying, but check labels for more information). Fungicides with anti-sporulant activity will reduce spore production **but will not eradicate infections that are actively sporulating**. Do not expect any of these fungicides to completely “dry up” actively sporulating infections. They will help to reduce spread of bunch rot and protect healthy clusters.

Botrytis sprays should have been applied in bunch rot-prone varieties starting at bloom, again just before bunch closure, then veraison and 2 weeks after veraison. If Botrytis continues to be a problem, additional sprays should be applied but at no shorter than 2-week intervals, keeping product rotation, maximum number of applications and pre-harvest intervals in mind.

Sour rot is also a threat with the wet fall weather and extended period until harvest. There are no products registered for control of the sour rot organisms that are present in Ontario. Infection of clusters with Botrytis may promote the development of sour rot; however, in the past 2 years, there hasn’t been a strong relationship between the severity or incidence of these two diseases. Research studies suggest that treatment of clusters with certain compounds around bloom may “stretch” clusters, reducing physical injury caused by berry squeeze as well as the time during which berries are wet, which in turn reduces sour rot. These are being explored in Ontario research trials. Various treatments applied starting at veraison are currently being evaluated to determine efficacy against sour rot and elevated volatile acidity (VA). Potassium metabisulphite (KMS) has shown promise in research trials but the optimum timing and rate are still unclear. We are also exploring the relationship between brix accumulation and development of sour rot and the optimum timing and rate of products. This research is part of a collaborative project among OMAFRA (McFadden-Smith), CCOVI Brock University (Inglis) and University of Guelph (Fisher), funded by NPF&VGA and Ontario Grape and Wine Research Inc., to address the sour rot problem.

Clusters with Botrytis bunch rot or sour rot should be cut out and **removed from the vineyard**. Rotting clusters on the vineyard floor will produce more spores to infect healthy clusters and also attract fruit flies which can transmit both Botrytis bunch rot and sour rot-causing organisms. Improving air movement by leaf removal will help clusters to dry, reducing the opportunity for infection. Wind machines **will not** provide adequate air movement to dry off the clusters.





The take-home points: don’t expect more from fungicides than they are capable of doing – they will not eliminate sporulating infections; maximize cluster exposure to reduce wetting times; remove diseased clusters from the vineyard. And hope for an end to the showers.



Ontario Tender Fruit Tree Survey – 2009

This report contains highlights of the survey, 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 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).

Normal Farm Practices Protection Board Decision

Hugh Fraser, P.Eng., Agricultural Engineer

Some of you will know about a Board hearing this summer dealing with noise complaints about the use of bird bangers in a vineyard over the past few years. I was an expert witness speaking on best management practices for bird bangers. There were also many other witnesses called to testify.

The Board decision was dated September 10, 2009. I thought it was important for grape growers to understand some details that went into the Board's decision. However, I will not use any names in this article. 'Applicant' means the neighbours complaining about the noise, while 'Respondent' means the owner operating the bird bangers. **Remember, Board decisions are site-specific for this location and are not precedent setting.**

The Applicant sought relief from a disturbance of noise claiming the Respondent's use of bird bangers was not a Normal Farm Practice.

The Board found the Respondent's use of bird bangers was *not* a Normal Farm Practice because:

- Over a period of 6 years the use of bird bangers on the farm had increased, despite evidence presented that bird pressure was low and had not changed.
- The operation of the bird bangers had been interfered with, because some had been placed inside enclosures so they could not turn freely, or had been tied down to point in one direction at the residences on the Applicant's property
- The bird bangers were operated outside the season between veraison and harvest.
- The bird bangers were operated outside normal operation hours, later than a half hour after sunset and prior to a half hour before sunrise.
- The bird bangers had been operated closer than the suggested set back of 125m (410 feet) from a residence.

The Board ordered the Respondent to modify the use of his/her bird bangers and any other acoustical bird deterrent on the farm. The ordered changes follow best management practices set out in our new OMAFRA Factsheet entitled, '*Using Propane-Fired Cannons to Keep Birds Away from Vineyards*'. However, the Board went a few steps further ordering that:

- Setbacks to the Applicant's houses be increased to 183 m (600 feet)
- Bird bangers could not be tied down, or in any way inhibited from swiveling normally
- Light sensor override devices be used to make sure all bird bangers cannot operate at night



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