The Tender Fruit Grape Vine

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2009 Tender Fruit Tree Survey – Update

Ken Slingerland, Tender Fruit and Grape Specialist, OMAFRA

We are almost there! To date we have contacted almost all of the 645 tender fruit growers. Over 75% of all growers have sent in a reply as of late January. The number of active growers has now been reduced due to several factors: the closure of CanGro St. Davids Ltd., Orchard and Vineyard Transition Program, Plum Pox Virus issues, smaller parcels being leased out, a change to a different crop other than tender fruit, and retirement.

The survey, which is being conducted by the Ontario Ministry of Agriculture, Food and Rural Affairs in co-operation with the Ontario Tender Fruit Producers Marketing Board and the Vineland Research and Innovation Centre, is expected to be complete by the end of March. A report will be available to all growers and related industry.

This benchmark will assist the industry in strategic planning for sustained growth and development in the tender fruit industry for the next 15 years. By obtaining market information, specifically supply information, the following benefits can be realized:

- Identify planting trends as an industry,
- Identify shortages and surpluses of each fruit commodity during a particular time of year,
- Forecast the actual production to best match store promotions,
- Identify your own inventory so you can more accurately order supplies and manage labour,
- Help you to determine more accurately what to plant in the immediate future,
- Help your shipper/dealer accurately match their supply with the demand.

The last official Tree Census (1999) helped to guide the OTFPMB and the shipper/dealers to better predict supply management of increasing crops. This information in the past has been crucial to our industry, allowing growers and marketers to make sound decisions.

Confidentiality and Collection Notice:
Personal information collected in this survey will be used for statistical analysis. Individual responses are confidential. Data will be reported in aggregate form only. Authority for this collection is provided by the Ministry of Agriculture and Food Act, R.S.O. 1990, C.M. 16.

Information, Questions:
If you have any questions, or require further explanation, please contact:

- Ken Slingerland, Tender Fruit and Grape Specialist, OMAFRA, Box 8000, 4890 Victoria Avenue North, Vineland Station, ON L0R 2E0 Phone: 905-562-1639 Fax: 905-562-5933
- Janice Slingerland, OTFPMB, Box 100, Vineland Station, L0R 2E0 Phone: 905-688-0990 Fax: 905-688-3211 or 905-688-5915 *(Janice has been retained to assist with this survey and will be working out of the marketing board office)*
- Nick Lemieux has left the board as of late January to pursue his education in Australia – thanks Nick!

Thank you for your assistance.

ONTARIO FRUIT & VEGETABLE CONVENTION

IN THIS ISSUE...

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 Agriculture Development Branch Staff visit the OMAFRA web site at: www.ontario.ca/crops

COMING EVENTS

February 3-5, **Mid-Atlantic Fruit & Vegetable Convention**, Hershey, PA. For more info contact Maureen Irvin 717-677-4184 or visit the website at www.pvga.org/conv.htm

February 10-12, **Empire State Fruit & Vegetable Expo**, Syracuse, N.Y. For more information call Lindy Kubecka 315-687-5734 nysvga@twcny.rr.com or visit the website at: www.nysaes.cornell.edu/hort/expo/

February 18, 19, **Ontario Fruit & Vegetable Convention**, Brock University, St. Catharines. Watch for more info at http://www.ofvc.ca/

March 3, **NPF&VGA Annual Meeting**, Ontario Tender Fruit Marketing Board Office

- 7:00 pm Annual Meeting
- 7:30 pm Election of new executive
- 8:00 pm Regular Meeting

March 6-7, **Finger Lakes Grape Growers' Conference and Trade Show,** Holiday Inn, Waterloo NY. For more info visit: flg.cce.cornell.edu

March 10-13, **Wineries Unlimited,** Valley Forge Convention Center, King of Prussia, PA Visit www.wineriesunlimited.com for information.

March 18-19, **Lake Erie Regional Grape Growers Conference,** SUNY-Fredonia, Fredonia NY Contact Linda Aures at laures@netsync.net for more information.

April 1-3, **New York Wine Industry Workshop,** Clarion University Hotel and Conference Center, Ithaca NY (note change of location) Contact Nancy Long at NPL1@cornell.edu for more information.

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

	Maximum °C		Minimum °C		Precipitation (mm)	
Location	Nov	Dec	Nov	Dec	Nov	Dec
Vineland *(85 yr ave)*	20.1 5th	17.4 27th	-6.8 19th	-14.2 21st	68.9	115.7
Harrow	19.2 4th	13.3 27th	-9.3 23rd	-18.9 21st	96.8	101.7
Simcoe	na	16.6 29th	-8.8 23rd	-15.7 8th	na	108.0

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

2008 Apricot Cultivar Evaluations - Niagara

Ken Slingerland, Tender Fruit and Grape Specialist, OMAFRA

Location	Cultivar	Yr	Cr	Rd	Un	Sf	Co	Bl	At	Fi	Fr	Ou	Rf	Sp	Ls	Fs	Or
Beamsville	HW467	01	6	July 11	7	6.5	7.5	6.5	7	7.5	7	7	9	9	9	9	7
Vic Farm	Haroblush™	97	8.5	20	8	6	8	8	8	7	8	7.5	9	9	9	9	7.5
Vic Farm	Harojoy™	97	8.5	22	5	7	8	8	8	8	8.5	7	9	9	9	9	7.5
St. Catharines	Harojoy™	00	7.5	22	6	7	7.5	7	7	7	9	7	9	9	9	9	7.5
Vic Farm	Harostar™	97	5	27	7	7.5	7	7.5	7.5	7.5	9	7.5	9	9	8.5	8.5	7.5
St. Catharines	Harostar™	00	7	24	7.5	7.5	7.5	7	7.5	7.5	9	7.5	9	9	9	9	8
St. Catharines	HW 463	00	6	24	7	7	7	7	7	7.5	9	7.5	9	9	9	9	7
St. Catharines	HW466	00	7	25	7	7.5	7.5	7.5	7.5	7.5	8	7.5	9	9	9	9	8
Vic Farm	V60031	97	7.5	29	7.5	7	7.5	7.5	7.5	7.5	9	7.5	9	9	8.5	8.5	7.5
St. Catharines	Harogem	00	7	29	7	7	7.5	7	7	7.5	9	7	9	9	8.5	8.5	7
Vic Farm	HW 440	97	7	30	7.5	8.5	7.5	6.5	7	7	9	7	9	9	8.5	8.5	7.5
Vic Farm	HW 443	97	4	31	7	7.5	7	7	7	7.5	9	7.5	9	9	8.5	8.5	7.5
St. Catharines	Harlayne	00	7	Aug 3	7.5	7	7	7	7	7.5	9	7	9	9	8.5	8.5	7
Vic Farm	Harogem	97	7	5	6	6.5	6.5	7	7	7	9	6	9	9	8.5	5	5.5

Notes:
HW467 – slightly pointed tip, also irregular maturity but otherwise ok as a very early apricot
St. Catharines location – Crop was slightly damaged by spring frost and hail
Vic Farm location – Crop was slightly over-thinned and damaged by hail

Key to the Cultivar Ratings

A standard scoring for most categories, unless otherwise listed, is defined as the following; 9 = exceptional, 7 = good, 5 = commercially acceptable, less than 5 is unacceptable. A 5 rating or less is occasionally acceptable in one category when other category ratings are much higher ie. Uniformity of crop is sometimes undesirable but perhaps normal for early season apricots.
Cultivar – The name of the cultivar is listed followed by any restrictions if applicable. The ™ following the cultivar stands for Trade Mark and the PP following the cultivar stands for Plant Protected.

Yr – The year the cultivar was planted.
Cr – The amount of crop at harvest for Niagara, actual harvest weights are used for the Cedar Springs plantings
Rd – Ripe date when the first commercial harvest occurs.
Un – Uniformity of fruit on the tree, i.e. 1 harvest = 9, 2 harvests = 8, 3 harvests = 7, 4 harvests = 6, etc.
Sf – Size of Fruit, e.g. 3" = 9, 2 ¾" = 8, 2 ½" = 7, 2 ¼" = 6, 2 ⅛ = 5, less than 2 ⅛ = 4
Co – Colour of fruit exterior, background colour, etc.
Bl – The percentage of the blush on most of the fruit; 90% = 9, 70% = 7, 50% = 5, etc.
At – Attractiveness of fruit, brightness, concentration of colour, contrast, free from blemishes, etc.
Fi – Firmness of fruit at harvest
Fr – Freeness of the flesh from the pit
Qu – Quality of fruit, flavour, texture, sugar/acid ratio
Rf – Red in flesh; no red = 9, slight discolouration and some red at pit = 7, flesh heavily streaked from centre = 5, etc
Sp – Split pits; none = 9, 5% = 7, 10% = 5, 25% = 3.
Ls – Leaf spot; very resistant = 9, moderately resistant = 7, somewhat susceptible = 5, very susceptible = 3
Fs – Fruit spot; same as above
Or – Overall rating; considers above ratings and also includes susceptibility to diseases, skin pubescence, etc.

Apricots for Ontario?

Ken Slingerland, Tender Fruit and Grape Specialist, OMAFRA

Haroblush™

Apricots have always been the "weak sister" of the tender fruit industry. Historically, there has not been enough fruit to market through chain stores and the cropping has been erratic due to spring frosts. Today, new cultivars developed from Harrow that show good tolerance to bacterial spot and also have superior colour with a deep red blush have given growers hope that apricots can gain some market share. As growers look for alternatives to peaches and grapes, apricots may offer the diversity.

Several new cultivars and selections were evaluated during the 2008 season at grower sites and the University of Guelph, Vineland Campus Vic Farm research station. The ratings are published in a second article in this newsletter.

Old cultivars like Veecot, Harcot and Goldcot, that were the standard cultivar for several years, have problems with bacterial spot, firmness, colour or size. Haroblush™, Harojoy™ and Harostar™ are the new kids on the block and offer growers a better choice. There are other Vineland and Harrow selections that also might offer promise for the future.

The series of five fact sheets (Apricots, Cherries, Peaches/Nectarines, Plums and Pears are available at the OMAFRA resource centre at Vineland or on line at www.ontario.ca/crops. The fact sheets include more information on pollination, rootstocks and more cultivars of lesser importance. The tender fruit photo gallery is also available to view specific cultivars on the website.

Chain stores and consumers are always looking for new products and perhaps Ontario growers can consider apricot production to meet the consumer demands.

Increasing Incidence of X-Disease in Ontario

Stobbs, L. and K. Whybourne[1], C. Olivier [2], and T. Lowery[3]

Upper left: X-disease infected chokecherry in a fencerow, Upper right: Foliar chlorosis and reddening on foliage of X-disease infected chokecherry, Bottom: Reddish spots and shot-holing of peach leaves infected with X-disease.

X-disease is an economically important disease of stone fruits including sweet and sour cherry, peach, nectarine, and Japanese plum. X-disease has been reported primarily in the Great Lakes region, and its distribution corresponds with the occurrence of wild chokecherry (*Prunus virginiana* L.) which is the principle reservoir of this disease. Recently, an increasing incidence of X-disease has been seen in southern Ontario, likely a result of the expansion of chokecherry into stone fruit production areas. Once established in an area, X-disease can be very destructive to peach and cherry orchards. More recently, in Virginia , X-disease has been found in grapevine co-infected with aster yellows disease and has been referred to as North American Grapevine Yellows disease (NAGY). NAGY is a lethal disease of Vinifera, and is vectored by a number of leafhopper and psyllid insect species. In Ontario, both X-disease and aster yellows are naturally occurring in grapevine, although NAGY has not yet been reported.

Symptoms: In peach, symptoms are not usually seen for 6 to 9 months after infection, often in the next growing season. This is largely due to the fact that the pathogen spreads mostly in late summer or fall, when both pathogen concentrations are high in leaves and leafhoppers are most abundant. In midsummer, infected leaves develop irregular yellow spotting which becomes reddish purple with upward rolling of the leaf at the margins. Necrotic areas soon develop and drop out leaving a shot-hole effect and tattered leaves (Fig.1). As the season advances, there is a progressive defoliation of stems from the base

up, with only a rosetted tuft of leaves remaining at the shoot tips. Fruit on infected branches is smaller, lacks flavor often with a bitter taste, and may drop before ripening. Diseased branches are more susceptible to winter kill. Symptoms are generally more severe during hot summers. The most characteristic symptom within the first two years of infection is the presence of both healthy and infected symptomatic branches on the same tree. Usually by the third year after infection, most branches will show symptoms. Young trees die within 1 to 2 years after the first symptoms appear, and older trees gradually decline in vigor and often die from winter kill or other opportunistic diseases.

Infected cherry trees on Mahaleb rootstock are usually killed midsummer or early the following year. This is the result of rapid necrosis of rootstock cells just below the graft scion. Foliage turns pale with a reddish tinge and curls upward. Trees on Mazzard rootstock decline slowly over many years. Often the only symptom is on the fruit, which may be smaller, bitter and pink at harvest.

Grapevine infected with NAGY exhibit leaf yellowing, die back of shoot tips and fruit abortion. Infected grapevines often die within months of the onset of symptoms and significant losses of vines have been observed in Virginia.

Leaves on infected chokecherry turn yellow by mid June with gradual reddening far in advance of normal fall colouration (Fig 1). Infected bushes are usually stunted with shortened internodes and die back of branches increases each year. Infected chokecherry usually dies within 1 to 3 years after exhibiting symptoms.

Causal Agent: X-disease is caused by a phytoplasma, a small parasitic organism smaller than many bacteria, and lives in the phloem cells of plants. The phloem is a network of nutrient conducting tissues moving food manufactured in the leaves to other parts of the plant. The phytoplasma also infects the leafhopper vector where it multiplies and remains for the life of the insect, ensuring its transmission to susceptible feeding hosts of the leafhopper.

Transmission: Several species of leafhopper transmit X-disease between different susceptible plant species. Leafhoppers acquire the X-disease pathogen while sucking juices from the leaves of infected plants. After the pathogen has multiplied in the insect for 2 or 3 weeks it can be injected through saliva into healthy leaves during leafhopper feeding. Movement of X-disease can occur from infected sweet and sour cherry, although chokecherry is often the principle reservoir. Other reservoirs of X-disease include certain weeds such as clover species, dandelion, and several rosaceous species including strawberry and blackberry. Maximum spread in stone fruits occurs from mid August through October when high concentrations of the pathogen are present in the leaves and leafhopper populations are increasing in orchards. The most significant spread of X-disease is from cherry to cherry, from cherry to peach, or chokecherry and bitter cherry to either cherry or peach. Spread of X-disease from peach to peach by leafhoppers appears to be of minor significance.

Control: Wild chokecherry should be removed from within 250 m of susceptible orchards and vineyards. Chokecherry is commonly found in fence rows, along edges of woods, unused road allowances, overgrown meadows and abandoned fields. Brush killers provide the cheapest and most effective control with both summer and autumn spray applications. Treated areas must be re-examined annually during the growing season to ensure complete eradication. Infected cherry trees should be removed near peach orchards, as X-disease is most severe in young peach orchards planted next to old X-disease infected cherry blocks. In nurseries and orchards, all infected trees should be removed and destroyed as soon as they are found. New trees may be safely replanted the following spring. Control of leafhopper vectors throughout the growing season is not practical.

Agriculture and AgriFood Canada, [1.] Vineland Research Station, Vineland Station,ON LOR2EO, [2.] Saskatoon Research Station, 107 Science Place, Saskatoon, SASK S7NOX2, [3.]Pacific Agriculture Research Centre, Hwy 97, Summerland, BC. VO-H1ZO

Fungal Trunk diseases: a threat to aging vineyards?

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

Grapevine trunk diseases are often overlooked in Ontario due to their slow development relative to the more common and pressing disease targets of annual spray programs (powdery and downy mildews and bunch rot). Trunk diseases are caused by pathogens that grow only in mature wood and are almostalways associated with old, large pruning wounds which act as the point of entry for fungal spores. They subsequently grow, decay the wood and slowly kill the vines. Several fungi are known to cause trunk diseases in grapevine. Eutypa dieback is the main trunk disease problem of wine grapes grown in temperate regions and the one historically recognized as an occasional problem in Ontario vineyards, especially in vineyards over 10 years of age. *Phaeoacremonium aleophilum* and *Phaeomoniella chlamydospora* cause trunk diseases variously known as Esca, Petri disease, black measles, and "black goo". They are common and serious pathogens in California and parts of Europe. These fungi have previously been found in Virginia, Pennsylvania, and New York, although the extent of the problems that they might cause in the region has yet to be determined. A systematic survey of grapevine trunk diseases has not been conducted in Ontario.

A 2007-2008 survey conducted by Agriculture and Agri-Food Canada investigated decline problems in Okanagan vineyards (O'Gorman, Haag & Sholberg). The survey confirmed the presence of several fungal pathogens causing vine decline symptoms, including 2 pathogens associated with esca (*Phaeomoniella chlamydospora* and *Phaeoacremonium aleophilum*). Closer to home, a survey of cankers from eighteen vineyards of *V. vinifera, V. labruscana*, and interspecific hybrids was conducted in 2007 in New York, Connecticut, Rhode Island and Vermont by Drs. W. Wilcox (Cornell University) and P. Rolshausen (University of Connecticut). In the cankers sampled, *Eutypa lata* was the most frequently isolated pathogen; it was recovered from 13 of the 18 vineyards sampled and from 20% of the diseased vines. This pathogen has long been recognized as a cause of grapevine trunk cankers in the Northeast United States and Ontario, and until recently was assumed to be the sole cause of these diseases. *Phaeoacremonium aleophilum* and *Phaeomoniella chlamydospora* were associated with heavily symptomatic trunk-diseased vines in 12 out of 18 vineyards surveyed in four Northeastern states, suggesting that they may, indeed, be notable pathogens in that region and possibly in Ontario.

Young vine decline in an Okanagan vineyard.
Source: BC Ministry of Agriculture and Lands

There are no chemical controls registered for control of most trunk diseases. Pruning out infected trunks and retraining trunks with new shoots is the only management option that can be exercised. Recommendations from elsewhere in the world suggest pruning as late as possible in the dormant season so that pruning wounds heal quickly and are not susceptible to infection by the pathogen for as long. It is also very important to remove infected trunks from the vineyard and burn them as they can act as a source of spores that can cause new infections.

Springtime symptom of Eutypa dieback: stunted shoot growth, sometimes occurring only on one side of the vine.
Source: Oregon State University Extension

As many newer vineyards age, it is likely that canker diseases will become increasingly important. The results from the northeast US survey suggest that such diseases are caused by a number of different organisms known to cause similar, often devastating symptoms in other parts of the viticultural world. The best strategy for minimizing the impact of trunk diseases is to assure vines that vines are as healthy and unstressed as possible, that pruning is done under ideal conditions for healing and that only clean nursery material is used when planting new vineyards.

Rotating Pesticides to Delay the Development of Resistance

Wendy McFadden-Smith, Tender Fruit & Grape IPM Specialist

One of the main ways in which pesticide resistance for both insect pests and diseases is managed is through rotation among chemical families with different modes of action. Generally, if a pest population in an orchard or vineyard has become less sensitive (more resistant) to one member of a chemical family, it will also be less sensitive to other members of that chemical family. For example, if the population of brown rot fungus in an orchard becomes less sensitive to Indar, and the labeled rate of Indar no longer provides control of brown rot, then Topas, Mission and Nova will also not provide as good control of the disease. The same would apply for an insecticide group like the organophosphates (OPs).

Rotation among chemical families is an important practice for management of resistance. However, the use strategy differs depending on the biology of the target pest. Certain pests, such as oriental fruit moth and grape berry moth, have discrete generations: the adults emerge from pupae in the spring, mate, lay eggs and these eggs hatch to produce larvae that cause injury to the crop plant. All of the adults don't emerge at the same time, but all of the overwintering adults produce eggs and larvae before the next "batch" of adults develops. This trend can be followed in pheromone trap catches: the number of moths caught increases then decreases during each generation. The recommendation for this type of pest is to use an insecticide from a different chemical family for **each** generation. In some cases, emergence can extend beyond the period when residues of the product will be effective so a second, and possibly third, spray may be required to cover a single generation. These subsequent sprays within the **same** generation should be within the **same** chemical family (or the same product). When the next generation emerges, a product from a **different** chemical family should be used. For example, the general regional recommendation for OFM in Niagara is to apply Lorsban for the first generation, Delegate or Altacor for the second, Altacor or Delegate (whichever wasn't used for the second) for the third and a synthetic pyrethroid for the pre-harvest spray.

Fungal pathogens produce millions of spores (several orders of magnitude more than OFM or GBM produce eggs), but not all of them are released at the same time. Each of these spores can cause a lesion that will then produce more millions of spores, but this does not happen all at the same time. There are no recognized "generations". In addition, the generation time (from when a spore infects to produce a lesion until more spores are produced on that lesion) is extremely short, as little as 5 days under optimal conditions for powdery mildew on grape. The potential for an explosive epidemic and the rapid selection for resistant isolates mean that, for resistance-prone products (anything that product that does not have an M in the group in Table 2-8 of Publication 360), the number of consecutive applications and applications per season is limited on labels. Generally no more than 2 consecutive applications from one of these families should be made. Since we have a good selection of fungicides, a more conservative approach of alternating among families for each spray and including fungicides that act on multiple sites may be even more effective at prolonging the life of products.

Mites and insect pests such as leafhoppers, and aphids, like fungal pathogens, do not always have synchronous generations, particularly later in the season. On a single leaf, you can find all stages of development from egg through adult at the same time. Therefore, the insecticide use pattern for these is to rotate among chemical groups for each application, if monitoring indicates additional sprays are required.

Attention Farmers: Don't miss your local *Growing Your Opportunities – Quest for New Farm Value* Workshop this winter

Are you looking for or do you have a business idea for your farm? Not sure how to make your idea a reality? Local Stakeholders along with the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) are offering up to 20 *Growing Your Opportunities –Quest for New Farm Value* workshops offered throughout the province this winter. Over 2 days, the participant will identify their specific value-added idea, put their idea into action, find the right market channels, build a business plan, explore how to finance the stages of the business, price the product properly and manage risk. Workshop leaders include Ontario farm business owners, entrepreneurs and advisors who will share lessons learned and best practices.

Limited to only 25 registrants per location, interested participants are encouraged to register as soon as possible. Through the generous sponsorship of the Canadian Farm Business Management Council, OMAFRA and local stakeholders, the 2 day course is being offered at a low rate of $75 per participant. Registration includes 2 fun-filled days of learning, work-book, related print resources, refreshments and lunch.

To register for a workshop nearest you visit: www.ontario.ca/agbusiness or call 1-877-424-1300.

Winter Injury Studies 2008/09 Grape Bud Survival
January 12, 2009

Research Team

Ken Slingerland and ***Hugh Fraser***, OMAFRA

Kevin Ker , PhD *(cand)*, CCOVI Brock University & KCMS;

Dr. Helen Fisher, University of Guelph

Ryan Brewster, KCMS Applied Research and Consulting Inc.

Grape bud sampling to establish winter survival is part of the - CanAdvance- and CRESTech-funded Winter Injury and Wind Machine project. The tables in this article report the sampling results based on the bud collection during the week of January 12th, 2009. However, the percent alive may vary up or down from the last sample due to the variation in the samples taken. The tables below are based on multiple samples and multiple sites within an area for each cultivar.

The Grape Growers of Ontario (GGO) and the Wine Council of Ontario (WCO) are the major sponsors of the project. Other partners include; Stephane Bosc – Orchard Rite; Roger Vail – Chinook; KCMS Applied Research and Consulting; Agricorp; Ontario Tender Fruit Producers' Marketing Board; the Niagara Peninsula Fruit & Vegetable Growers' Association, OMAFRA; Brock University and the University of Guelph.

The Parkway zone runs approximately 1 km along the west side of the Niagara River from Niagara-on-the-Lake to Queenston; the Lakeshore zone is approximately 1 km south of the lake from the Niagara River to Grimsby; the Central zone continues south of the Lakeshore zone to the base of the escarpment; the Bench zone starts at the south side of the Central zone to the brink of the escarpment and the Vinemount zone runs south of the Bench Zone.

8 Sampling Zones Used

% Live Buds - Labrusca – January 26, 2009 (NS means no sample taken)

Cultivar	Location	East of Canal	West of Canal
Concord	**Vinemount**	**NS**	**91**
Niagara	**Vinemount**	**NS**	**94**

% Live Buds - Hybrids – January 26, 2009 (NS means no sample taken)

Cultivar	Location	East of Canal	West of Canal
Baco Noir	**Central**	**75**	**87**
	Parkway	**80**	**NS**
	Vinemount	**NS**	**78**
Foch	**Central**	**NS**	**86-92**
	Vinemount	**NS**	**74**
Vidal	**Central**	**67-77**	**61-89**
	Lakeshore	**63**	**NS**
	Parkway	**70-74**	**NS**
	Vinemount	**NS**	**74-96**

% Live Buds - Vinifera – January 26, 2009 (NS means no sample taken)

Cultivar	Location	East of Canal	West of Canal
Cabernet Franc	Bench	85-98	75-96
	Central	59-75	67-100
	Lakeshore	77-83	75
	Parkway	80-91	NS
	Vinemount	NS	94
Cabernet Sauvignon	Central	NS	85
	Lakeshore	NS	66
	Parkway	95	NS
Chardonnay	Bench	89-100	66-79
	Central	85-89	91-94
	Lakeshore	86-98	NS
	Parkway	82-83	NS
	Vinemount	NS	75
Gamay	Parkway	95	NS
Merlot	Bench	79-90	79-97
	Central	74	97-99
	Lakeshore	80	79-84
	Parkway	84-100	NS
	Vinemount	NS	87
Pinot Noir	Bench	85-87	77-92
	Central	75	90-95
	Lakeshore	75	67
	Parkway	83	NS
	Vinemount	NS	85-96
Riesling	Bench	81-100	60-95
	Central	67-78	79-95
	Lakeshore	68-81	68
	Parkway	72-84	NS
	Vinemount	NS	72-74
Sauvignon Blanc	Central	81	86
	Lakeshore	63	NS
Syrah	Lakeshore	NS	67
	Parkway	86	NS

2008/2009 Cold Hardiness Testing of Grape Buds in Niagara

The Wind Machine Grape Team has recently begun posting this data on the KCMS website. The link is as follows: http://www.kcms.ca/research.asp . Here you will be able to review all of the bud hardiness data and review the bud survival numbers we are collecting throughout the dormant period. The website will be updated frequently so we urge growers to reference the website on a regular basis.

Cultivar	Date	Location	BUD LT 10% °C	BUD LT 50% °C	BUD LT 90% °C
Cabernet Franc	26-Jan-09	West Central (GRS – Vineland)	-21.7	-24.6	-25.9
	22-Jan-09	West Central (St. Catharines)	-20.6	-23.0	-25.1
	28-Jan-09	West Bench 1 (Beamsville)	-22.0	-24.6	-23.8
	28-Jan-09	West Bench 2 (Beamsville)	-20.7	-23.3	-24.3
Cabernet Sauvignon	26-Jan-09	West Central (GRS – Vineland)	-20.4	-23.8	-25.6
	28-Jan-09	West Bench 1 (Beamsville)	-19.9	-22.0	-23.1
	28-Jan-09	West Bench 2 (Beamsville)	-20.5	-22.7	-24.1
	20-Jan-09	West Lakeshore (St. Catharines)	-21.5	-23.4	-25.9
Chardonnay	26-Jan-09	West Central (GRS – Vineland)	-20.7	-23.2	-24.9
	22-Jan-09	West Central (St. Catharines)	-23.4	-25.3	-27.0
	28-Jan-09	West Bench 2 (Beamsville)	-22.7	-24.0	-25.1
	20-Jan-09	West Lakeshore (St. Catharines)	-20.8	-23.6	-26.1
	27-Jan-09	East Central (NOTL – Virgil)	-20.9	-24.3	-26.0
	27-Jan-09	East Lakeshore (NOTL)	-23.5	-28.4	-27.0
Gamay	26-Jan-09	West Central (GRS – Vineland)	-20.8	-24.8	-26.7
	27-Jan-09	East Central (NOTL – Virgil)	-20.9	-24.1	-26.4
Gewurztraminer	26-Jan-09	West Central (GRS – Vineland)	-19.6	-23.1	-24.4
	28-Jan-09	West Bench 1 (Beamsville)	-17.0	-20.6	-23.4
Merlot	26-Jan-09	West Central (GRS – Vineland)	-19.1	-23.2	-24.3
	22-Jan-09	West Central (St. Catharines)	-20.1	-23.1	-27.4
	28-Jan-09	West Bench 2 (Beamsville)	-18.8	-22.0	-24.1
	20-Jan-09	West Lakeshore (St. Catharines)	-14.7	-18.7	-22.2
	27-Jan-09	East Central (NOTL – Virgil)	-19.3	-22.8	-24.7
	27-Jan-09	East Lakeshore (NOTL)	-17.3	-21.4	-24.5
Pinot Blanc	26-Jan-09	West Central (GRS – Vineland)	-22.5	-24.8	-26.1

Cultivar	Date	Location	BUD LT 10% °C	BUD LT 50% °C	BUD LT 90% °C
Pinot Gris	26-Jan-09	West Central (GRS – Vineland)	-19.4	-24.2	-25.7
	27-Jan-09	East Central (NOTL – Virgil)	-21.1	-22.6	-25.9
Pinot Noir	26-Jan-09	West Central (GRS – Vineland)	-22.3	-25.1	-27.5
	22-Jan-09	West Central (St. Catharines)	-22.2	-24.9	-25.8
	28-Jan-09	West Bench 2 (Beamsville)	-20.9	-24.1	-27.0
	20-Jan-09	W. Lakeshore (St. Catharines)	-22.4	-24.3	-25.9
Riesling	26-Jan-09	West Central (GRS – Vineland)	-23.8	-25.6	-27.7
	28-Jan-09	West Bench 1 (Beamsville)	-20.6	-23.0	-25.3
	27-Jan-09	East Central (NOTL – Virgil)	-24.4	-25.2	-26.8
	27-Jan-09	East Lakeshore (NOTL)	-22.4	-24.2	-25.1
Sauvignon Blanc	26-Jan-09	West Central (GRS – Vineland)	-18.2	-23.1	-25.5
	22-Jan-09	West Central (St. Catharines)	-17.8	-21.8	23.9
	28-Jan-09	West Bench 1 (Beamsville)	-16.6	-22.0	-23.7
	27-Jan-09	East Central (NOTL – Virgil)	-20.7	-23.7	-25.8
	27-Jan-09	East Lakeshore (NOTL)	-20.2	-22.6	-25.3
Syrah	28-Jan-09	West Bench 1 (Beamsville)	-20.3	-22.7	-23.9
	20-Jan-09	W. Lakeshore (St. Catharines)	-18.6	-21.6	-22.9
	27-Jan-09	East Lakeshore (NOTL)	-18.5	-22.4	-23.6
Baco Noir	22-Jan-09	West Central (St. Catharines)	-25.7	-28.7	-30.8
Vidal	27-Jan-09	East Lakeshore (NOTL)	-23.5	-25.4	-27.1

BUD LT10 is the temperature (degrees Celsius) at which 10% of the primary buds will be killed. BUD LT 50 and BUD LT 90 refer to 50% and 90% bud damage respectively. Vine hardiness ratings are site specific and may vary depending on your specific environmental conditions, overall vine health and viticultural practices. KCMS is not responsible for any damage from the use or misuse of this information.

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