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**EXTENSION**

# Berry Notes

Prepared by the University of Massachusetts Fruit Team

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## Message from the Editor

**Time to renew:** Once again we've come to subscription renewal time for Massachusetts Berry Notes. Subscription costs remain at \$10 per year thanks to the generous underwriting by [Nourse Farms](http://www.noursefarms.com). Your subscription fee helps support the production of the newsletter as well as other educational activities. Stay in touch with what is happening and renew your subscription today! Go to [www.umass.edu/fruitadvisor/fruitsubscriptions.htm](http://www.umass.edu/fruitadvisor/fruitsubscriptions.htm).

**Budget Challenges:** As you may be aware, the UMass Extension budget is facing serious cuts. One is in the base funding from USDA to conduct research and educational work in IPM (see more about this in the General Information section of the newsletter). Further cuts of state and federal support are also impending for this year and next. We are working hard to fill these funding gaps with grant support and other mechanisms. As we adjust and restructure in response to new budget constraints, support from our community of growers is more valuable than ever, even if it's in the form of a letter acknowledging some benefit received from a program attended or publication received.

For those who may want to do more (even underwrite a specific activity), a contribution in support of UMass Extension's Fruit Program can be added to your annual subscription renewal. A donation to the UMass Extension Fruit Program will support quality **local** research and educational programming. Examples of some current initiatives can be found at [www.umass.edu/fruitadvisor](http://www.umass.edu/fruitadvisor).

To subscribe to the 2009 volume of Massachusetts Berry Notes and other fruit publications **and** to make program donations, go to [www.umass.edu/fruitadvisor](http://www.umass.edu/fruitadvisor) and click on the subscriptions link at the top of the page. Receipts will be provided for tax purposes.

## STRAWBERRY

### Plant Bug Parasitoid Established in Ontario Strawberry Production Areas

Tim Hays - CABI Europe; Peter G. Mason, Bruce Broadbent - Agriculture & Agri-Food Canada

The tarnished plant bug, *Lygus lineolaris*, is a major concern in strawberry production areas across Ontario. Tarnished plant bug adults and nymphs feed on all parts of the plant by sucking sap, destroying embryos within seeds and preventing fruit tissue growth beneath the seed. The resulting misshapen berries are known as "cat faced" and are unmarketable. In Ontario *Lygus* completes two full generations and a partial third generation per year in southern Ontario and has adverse impacts on strawberry production throughout the growing season: first-generation nymphs cause severe economic damage to June bearing cultivars, while second-generation nymphs are the major limiting factor on later day-neutral cultivars.



**Figure 1: Parasitic wasp attacking tarnished plant bug nymph (photo credit Tim Hays)**

Following the example of organic strawberry growing in California, an IPM strategy has been developed by scientists from CABI Europe - Switzerland in collaboration with Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and Agriculture and Agri-Food Canada (AAFC), combining trap cropping, classical biological control and a reduced-risk approach using chemical control. Adapting this strategy to Ontario strawberry farms was started in 2007 and has continued in 2008. The initiative was funded by AAFC's Pesticide Risk Reduction Program, to reduce the risks from pesticides used in the agriculture and agri-food industry.

As part of the IPM approach, several hundreds of the European parasitic wasp *Peristenus digoneutis*, were released at several locations in eastern and southern Ontario for biological control of tarnished plant bugs. In spring, the female wasp injects a single egg into each tarnished plant bug nymph and its larva feeds inside the young tarnished plant bug. After 7-10 days the mature larva leaves the dying plant bug nymph and drops to the

ground, where it pupates. A second generation of the wasp emerges in July parasitizing the summer generation of the plant bug. *Peristenus digoneutis* had previously been introduced to the northeastern USA where it has been shown to reduce plant bug field populations in alfalfa. Since its first release *P. digoneutis* has dispersed naturally into Canada, where it is now present in plant bug populations in Quebec, parts of Ontario and Nova Scotia.

The inundative releases under this project, from insects mass reared at AAFC in London, Ontario, were intended to enhance the spread of the parasitoid throughout the province and to allow its impacts to be realised much sooner in Ontario's strawberry fields. After consecutive releases of *P. digoneutis* in strawberry growing areas of southern and eastern Ontario, the

analysis of plant bug samples collected showed that that the wasp is now well established at several sites in eastern and southern Ontario. Records of *P. digoneutis* at strawberry sites where the wasp was not released suggest that *P. digoneutis* already naturally dispersed throughout parts of Ontario. At all release sites a promising increase in parasitism was observed soon after the first releases in 2007. However, it is too early to state whether *P. digoneutis* has already reduced *Lygus* populations in Ontario and whether the IPM approach has been successful. In the northeastern United States, it took almost ten years before a significant impact of *P. digoneutis* was recognized and *Lygus* populations collapsed.

Ongoing work to encourage population build up and assess impact is needed. In addition, surveys in other parts of Ontario would help to identify areas where the parasitoid is not yet present, and releases would help to accelerate the dispersion and establishment of *P. digoneutis*.

For more information on the "Lygus IPM in Ontario strawberries" project please visit: [www.cabi.org/ProjectsDetail.asp?ProjectID=382](http://www.cabi.org/ProjectsDetail.asp?ProjectID=382) (Source: Ontario Berry Grower, Dec. 2008)



**Figure 2: Releasing parasitic wasps into an alfalfa field. (photo credit Peter Mason)**

releases would help to accelerate the dispersion and establishment of *P. digoneutis*.

For more information on the "Lygus IPM in Ontario strawberries" project please visit: [www.cabi.org/ProjectsDetail.asp?ProjectID=382](http://www.cabi.org/ProjectsDetail.asp?ProjectID=382) (Source: Ontario Berry Grower, Dec. 2008)

## Review of Strawberry Fertilization

*Molly Shaw, Cornell University*

*(From Webinar by Marvin Pritts, Cornell University)*

Basic strawberry fertilization guidelines are given in Cornell's [Berry Guidelines](http://ipmguidelines.org/BerryCrops/) (<http://ipmguidelines.org/BerryCrops/>) for perennial matted row strawberries.

The first step is to have a soil test done before planting, the pH adjusted to 6.5, and P and K applied as recommended by the soil test. If those things are done properly, nitrogen should be the only nutrient needed

while the berries are still in the ground, unless the soil is very sandy.

The logic behind this fertilizer regimen is that the berries need adequate fertilizer to regrow strongly after renovation, and then nitrogen must also be available in early September when the plant is forming its flower buds for the following year.

**Table 2.6.2.** Nitrogen guidelines for berry crops (from Cornell Berry Guidelines)

Crop	Age of Planting	Amount/timings (actual N)	N source	Comments
Strawberries	0	30 lb/A, early June	calcium nitrate	Be sure plants are growing well prior to application
		30 lb/A, early Sept	ammonium nitrate or calcium nitrate	Adjust fall amount based on leaf analysis
	1+	70 lb/A, at renovation	ammonium nitrate, urea, calcium nitrate	Be sure plants are growing well prior to application
		30 lb/A, early Sept	ammonium nitrate or calcium nitrate	Adjust fall amount based on leaf analysis

Strawberries have rather shallow root systems, so putting on N in split applications assures that the N is present in the root zone when the berries need it.

Many growers have been accustomed to applying nitrogen in the early spring as the plants are starting to grow. But it has been shown in multiple field trials that while N applications in the spring do make the foliage grow bigger, it also makes fruit softer and more prone to rotting.

5 lbs/A of urea in 100 gallons of water (2.3 lb/A actual N) applied to the foliage in late fall gives as much yield increase as 30 lbs of actual N in the spring, and does not make the fruit soft. The foliar nitrogen should be applied after the plants have stopped growing in the fall (late October). Since the plant has stopped growing to get ready for winter dormancy, that extra nitrogen does not stimulate foliar growth. Instead, it gets sequestered in the plant roots to use in the spring. Plants can take up nitrogen through their leaves until 2-3 weeks before they drop.

Late fall foliar nitrogen is a good idea for strawberries (and apples, grapes, raspberries) if there are adequate carbohydrate reserves in the plant. Nitrogen actually makes carbohydrate reserves lower, decreasing winter survival if reserves were low to begin with. Knowing

just how low the carbohydrate level in strawberries is in the fall is a tough thing to figure out, and there isn't a good scientific way to go about it. In a sunny fall with cool nights, carbohydrate reserves will probably be high. In a cloudy fall, you might want to hold off on the late foliar nitrogen application. Most years the late fall foliar fertilization will probably pay off. Even if you don't fertilize in the fall, unless the soil is very sandy it would still be best to skip the spring N application.

**Note on foliar fertilizing:** Foliar fertilizing is practical only for nutrients that are needed in tiny amounts. Leaves are not adapted to take up the bulk of the nutrients a plant needs. For example, 5 lb/A urea provides a little more than 2 lbs/A actual N - assuming that all of the spray material contacts the leaf. It has been found that less than 50% is absorbed through the leaf under the best of conditions. So each application is probably getting less than 1 pound per acre into the plants. If a strawberry's total nitrogen needs for the year are 100 lbs, which would make 100 foliar applications! Not practical. The bulk of the plant's needs should be taken care of by supplying nutrients to the roots.

After the berries are established, their nutrient needs should be assessed with leaf analyses. A soil test measures the potential bank of nutrients the strawberry could withdraw from while growing, while the leaf test measures what the

plant actually manages to take up. Strawberry leaf tests should be taken after renovation in July or August.

Boron is one nutrient that is often low in fruit plantings in NY, because many of our soils are relatively low in boron. Boron is needed to good root growth (it's a component of auxin). If a leaf test comes up low in many nutrients, make sure to look at the boron levels closely. Sometimes if the boron level is low, the roots will be so small that they won't take up enough of the other nutrients that are actually available in sufficient quantity. Boron is important, but it's easy to overdo it when applying. If a leaf test shows boron is required,

apply no more than 2 lb/A actual boron (10 lb/A solubor) in any one year.

**How about those everbearing strawberries?** The everbearing strawberries can take the same soil prep (including P and K applications) as June-bearers, but they have a wimpier root system. Because of this, they need to be spoon fed nitrogen all season long. They need 1 lb of N/A/day, and should be fertilized at least once a week (if once a week, apply 7 lbs N). If you calculate that out, you'll find that day neutral strawberries need more nitrogen per year than June-bearers. (*Source: New York Berry News, Vol. 7, No. 12, December 2008*)

### **Incidence and Management of Root Weevils in Ontario Strawberry Fields**

*Jeff Tolman, P. Bouchard, K. MacKenzie - Agriculture & Agri-Food Canada (AAFC); Pam Fisher, OMAFRA*

Root weevils are significant pests of many crops, including strawberry. While adults feed on foliage, often leaving characteristic notches, economic injury is due to larval feeding on roots. In Ontario, the profitable life-span of heavily infested strawberry fields may decline from 3-4 years to two or fewer years. As part of a national, multi-year project to develop reduced risk pest management strategies for root weevils in Canadian berry crops, work was undertaken in selected Ontario strawberry fields to identify root weevils active in those fields and to evaluate potential of components of an integrated management program.

#### **Identification**

Twelve different species of root weevils were collected from Ontario sites in 2004-2006. Black vine weevil (BVW), *Otiorhynchus sulcatus*, is the most widespread and destructive weevil in Ontario. The smaller strawberry root weevil, *O. ovatus*, and a third species *O. raucus* occasionally cause significant damage.

#### **Exclusion Barriers**

Barriers to prevent weevil migration to new fields were evaluated in 2005. "Vernon Barriers" were built of 3 m lengths of purpose designed extruded black plastic. "Sheet Barriers" were made by supporting 30 cm wide sheets of plastic with 2x2 stakes, and with 1 edge buried 5-10 cm deep in soil. Collection pails were set at the ends of each barrier and numbers of adult root weevils captured were recorded.

Many more black vine weevils were collected moving around "Sheet Barriers" than "Vernon Barriers". Perhaps the Vernon barriers were less effective because they tended to warp and lift from the soil due to solar heating. Details on constructing sheet barriers were published in the Ontario Berry Grower,

May 2006. Some growers have subsequently installed modified sheet barriers, intercepting as many as 600 adults/m barrier at 1 location.

#### **Foliar Insecticides:**

Effectiveness of post harvest application foliar insecticides was determined in 2008. Relative effectiveness was measured by sweep net captures of adult weevils. Sweeping confirmed that indicated that weevil adults are active at night, only after it is fully dark. In this preliminary evaluation, several insecticides were identified as potentially suitable for minor use registration in future.

#### **Recommendations:**

BVW is the most important root weevil attacking Ontario strawberries. Management requires an integrated program with emphasis on prevention. Elements of an effective strategy will include:

- tolerant cultivar selection and plant management for optimum root growth.
- rotation and isolation of new plantings from infested patches.
- exclusion barriers for new plantings.
- control by properly timed application of entomopathogenic nematodes or insecticides.
- timely destruction of infested patches to minimize weevil adult emigration.

#### **Learn more:**

\* Root Weevils in Ontario Strawberry Fields (Hort Matters, vol #5, issue #6, Apr 28/05)

\* Exclusion Barriers for Management of Black Vine Weevil in First Year Strawberries *Ontario Berry Grower April 2006*

(*Source: Ontario Berry Grower, December 2008*)



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## RASPBERRY

### Bramble Chores - Winter 2008

Gina Fernandez, North Carolina State University

#### WINTER

##### *Plant growth and development*

- ✓ Plant is “dormant”
- ✓ Some differentiation is occurring in the flower buds

##### *Pruning and trellising*

- ✓ Pruning should occur in late winter. However, in some areas winter ice storms can do tremendous damage to plants and trellis systems. If you produce blackberries in one of these areas, pruning can take place early winter to help avoid severe damage.
- ✓ Make trellis repairs after plants have defoliated but before pruning and training.

##### **Erect types**

- ✓ prune out the spent floricanes
- ✓ Tie canes to wires in a fan shape
- ✓ cut lateral branches back to 8-12”
- ✓ thin canes to 6-8 canes/ hill (4 ft spacing)

##### **Trailing types**

- ✓ prune out spent floricanes
- ✓ tie or weave canes to wire so that they do not overlap
- ✓ prune side laterals to 12-18”
- ✓ thin canes to 6-8 hill (6-8ft spacing)

##### **Primocane fruiting raspberries**

- ✓ Prune (mow) primocane fruiting types to ground level

##### *Weed control*

- ✓ Many summer weed problems can be best managed in the fall and winter using preemergent herbicides. Determine what weeds have been or could be a problem in your area. Check with local extension agent for cultural or chemical means to control these weeds.
- ✓ Establishing new plants into rows of black plastic or landscape cloth can reduce weed problems significantly

##### *Insect and disease scouting*

Listed are insects and diseases that are present during this season. Control of these pests may occur at this time or in another season. Check the Southern Regional Bramble integrated Management Guide for recommendations

<http://www.smallfruits.org/SmallFruitsRegGuide/Guides/2006/BrambleSprayGuide61506.pdf>

- ✓ Scout fields for insect and disease damage and remove those canes
- ✓ Remove wild brambles within 600 ft of your planting during the winter
- ✓ Apply liquid lime sulphur or Bordeaux for disease control

##### *Planting*

- ✓ Growers in warmer regions can plant in December.
- ✓ Take soil tests to determine fertility needs for spring plantings.
- ✓ Prepare list of cultivars for next years new plantings. Find the commercial small fruit nursery list at <http://www.smallfruit.org>

##### *Nutrient management*

- ✓ Place nitrogenous fertilizers in row before new canes emerge in spring
  - Raspberries: Apply 500-800 lbs of 10-10-10 per acre in split applications. Apply half in Feb-March and the remainder in April-May. Spread uniformly across the row or side dress with half on each side of row in a 3 ft wide band.
  - Blackberries: In established plantings apply 60 to 80 lb/acre N. Nitrogen can be applied in split or single applications. If using a split application, apply the first portion at bud break and the remainder just after harvest. Ammonium nitrate is the most common form of N used on blackberries.

##### *Water management*

- ✓ Make repairs to irrigation system (check pumps, lines, etc)
- ✓ Plants generally do not need supplemental water in winter

##### *Marketing and miscellaneous*

- ✓ Order containers for next season
- ✓ Make contacts for selling fruit next season
- ✓ Attend grower meetings:
- ✓ Plan on attending the North American Bramble Growers Association meeting. ([www.nabga.com](http://www.nabga.com))

(*Source: Small Fruit News, Vol. 8, No. 1. January 2008*)

**Blueberry Nutrition and Fertilization Options**

*Eric Hanson, Michigan State University*

Blueberries are a high value crop, and there is a natural tendency to apply more types or higher rates of fertilizers with the hope of improving yield or quality. Remember, blueberries are light feeders. They have low nutrient requirements and are sensitive to excessive nutrient levels in the soil.

Common Nutrient Problems. Nutritional problems vary by region. In Michigan, the most common problems are nitrogen (N) and phosphorus (P). Deficiencies of potassium (K) are less common, and shortages of magnesium (Mg) and most micronutrient shortages are rare.

Soil pH. Many nutrition problems can be avoided by maintaining a proper soil pH. Optimum soil pH for blueberries is 4.5 to 5.0, but plants usually do fine a little above or below this range. If pH is above 5.5, leaves become chlorotic and plants lose vigor due to disrupted iron nutrition. Very acidic soils (pH < 4.0) can also reduce growth, but soils this acidic are not common in Michigan. Sample the soil to monitor pH before planting new bushes, and every few years thereafter.

Apply sulfur to reduce soil pH. Do not use aluminum sulfate; it is very costly and may injure bushes. Measure the pH to determine how much of a reduction is needed. As a guide, 300, 600 or 1,000 lb of S per acre are needed to reduce pH by one unit (e.g. 6.0 to 5.0) in a loamy sand, sandy loam, or loam, respectively. Apply sulfur a year before planting, since it takes a season to react in soils. Lime may help if pH is below 4.0, but we have not seen benefits from lime applications if pH is higher.

Michigan water sources can be high in alkalinity or lime. Frequent irrigation with alkaline water increases soil pH. Several years ago we surveyed water from potential cranberry sites in Michigan and found an average of 146 ppm alkalinity. An acre-inch of this water contains 33 lb lime, so high irrigation rates applied on sandy, non-buffered soils can clearly increase pH. Have the alkalinity of your water sources measured so you can predict changes in soil pH.

Proper Use of Nitrogen. Most blueberries require annual N applications for good production but using the

right rate is important. Excessive applications reduce blueberry vigor, yields and hardiness. Careless use of N wastes money and can pollute groundwater or streams and ponds.

Use fertilizers containing ammonium (NH<sub>4</sub><sup>+</sup>) nitrogen. Use urea if the soil pH is sufficiently low (below 5.0), and ammonium sulfate if the pH is slightly high (above 5.0). Ammonium sulfate is more acidifying (reduces pH) than urea. Mono-ammonium phosphate (MAP) and diammonium-phosphate are suitable N sources if P is also needed, but the cost per unit of N is very high. Blended fertilizers containing other nutrients may also be suitable if most of the N is in the form of urea or ammonium.

Start with low rates on young plants and increase amounts as the plants age, up to 60-70 lb N/acre on mature plants (Table 1). These rates may need to be adjusted by soil type. More N may be needed on very sandy soil with little organic matter, whereas plants on organic or fine-textured soils may require much less N. If the planting is mulched with sawdust, wood chips, or bark, twice as much N may be needed because these materials tie up N as they decompose.

Apply N during periods of peak demand by the plants. Our recommendation is to apply half of the annual amount prior to bloom and the second half at petal fall. Avoid fertilizing early in the spring (plants can't use it) or in the late summer or fall (may reduce hardiness).

Phosphorus - Many Michigan blueberry fields are deficient in P and trends indicate the problem is becoming more common. Soil tests nearly always

indicate P is adequate to excessive. When plants are deficient, leaves develop a darker green, purplish color. We need to test some strategies for correcting P shortages. At this point, a reasonable program for P deficient plantings is annual applications of modest rates (25-50 lb P<sub>2</sub>O<sub>5</sub> per acre). Two useful fertilizers are monoammonium phosphate or MAP (11-52-0) and diammonium phosphate or DAP (16-48-0). Both are expensive, but they also supply N.

Potassium - K applications are usually not needed each year unless the soil is very sandy. Acute deficiencies cause the margins of leaves to scorch and brown as if they are drying out. Rates of 50-75 lb K<sub>2</sub>O per acre correct most deficiencies. Use potassium sulfate (0-0-50) or muriate of potash (0-0-60). Don't apply more than 100 lb K<sub>2</sub>O as muriate because the chloride content may injure bushes.

**Table 1.** Nitrogen Recommendations for Blueberries (lb/acre).

Years in field	N	Urea	Ammonium sulfate
2	15	35	75
4	30	70	150
6	45	100	215
8	65	150	300

Potassium-magnesium sulfate or Sul-Po-Mag (0-0-22-11) is a useful K source when magnesium is also needed. Leaf K levels are high when there is little fruit and lower when the crop load is high, because blueberry fruit accumulate K at the expense of the leaves.

Other Problems. Magnesium deficiency is an occasional problem. Shortages cause a distinct interveinal coloration that becomes more pronounced later in the season. I have only seen these symptoms on very sandy sites. Calcium requirements have been of interest because Ca levels affect the quality of several fruit types. We have not been able to improve blueberry quality or yield with Ca additions. We saw no benefit from foliar Ca sprays prior to harvest, or from long-term additions of lime or gypsum to a low Ca, low pH field. It appears that blueberries obtain adequate Ca as long as the soils are not extremely acidic (pH < 4.0). Optimum leaf concentrations of micronutrients such as boron (B), copper (Cu), manganese (Mn) and zinc (Zn) are not completely understood. However, based on available information and field observations, shortages of these elements in Michigan blueberries appear to be rare. In the case of boron, trials have indicated that blueberries are unlikely to respond to additions if leaf levels are above 15-17 ppm. Nearly all of Michigan plantings are above this range.

**Monitoring Nutrient Status**

Soil testing is best used in blueberries to monitor soil pH. Soil test nutrient levels only provide an estimate of nutrient supply and do not accurately describe whether bushes are getting enough nutrients. Sample all blueberry soils before planting, and sample established

Divide the farm into sampling units or areas that have uniform soil types, management history and variety. Farms with variable soils or history will require more sampling units to provide an accurate picture of the nutritional health over the farm. If the soil and history are similar, divide the farm into 1015 acre blocks. Sample soils anytime of year. Collect soil with a soil probe or auger from at least 20 locations throughout the sampling unit. Sample from beneath the plants to a depth of 8 inches. Combine the soil in a bucket, mix, and remove a portion to send in for analysis.

Leaf analysis is the best way to monitor the nutrition of blueberries. Results are a direct measure of the nutritional health of plants; soil tests only estimate nutrient supply. Leaf analyses can be used to diagnose nutritional problems and to identify developing problems before growth or yield are affected. Sample young plantings every 1-3 years and mature plantings every 3-5 years. The whole farm can be sampled every 3-5 years, or portions sampled more frequently.

Start by defining sampling units as described above. If the farm is very uniform with large blocks of the same bush age and varieties, define units no larger than 10-15 acres. Sample leaves in late July to early August. Collect at least 50 leaves from different bushes throughout the sampling unit. Select healthy leaves from the middle of this year's shoots. If the leaves are dusty, rinse them briefly in tap water, then lay them out on a table top until they are dry to the touch. Package leaves in clearly labeled paper bags, and send them to a reputable laboratory. Use Table 2 to interpret your leaf analysis results. (Source: 2008 Great Lakes Fruit, Vegetable and Farm Market Blueberry II Session Summaries at [www.glexpo.com/abstracts.php](http://www.glexpo.com/abstracts.php))

**Table 2. Tissue Analysis Interpretation for Blueberries**

Nutrient	Deficient (<)	Normal	Excessive (>)
<u>Macronutrients (%)</u>			
Nitrogen (N)	1.7	1.7 – 2.1	2.3
Phosphorus (P)	0.08	0.1 – 0.4	0.6
Potassium (K)	0.35	0.35 – 0.65	.08
Calcium (Ca)	0.13	0.2 – 0.6	0.8
Magnesium (Mg)	0.1	0.15 – 0.3	0.4
<u>Micronutrients (ppm)</u>			
Boron (B)	15	20 – 60	80
Copper (Cu)	?	5 – 20	?
Iron (Fe)	?	60 – 200	?
Manganese (Mn)	?	50 – 350	?
Zinc (Zn)	?	8 - 30	?

plantings every 2-4 years.

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## GRAPE

### Long Island Horticultural Research and Education Center Vinifera and Hybrid Variety and Clone Trial - 2008

Alice Wise, Cornell University

Since the first vines were planted in 1993, we have evaluated 36 varieties, many with multiple clones. With input from industry, we have continued to update and refine the variety and clone trial. In May 2008, we planted three new varieties Albariño, Marquette and Zweigelt.

- **Albariño** – A white variety grown in Galicia, a region in coastal northwest Spain that receives growing season rainfall. Berries are thick skinned, vines are trained to a high system which promotes drying out of the canopy and clusters. Wines are described as having a floral, fruity and/or perfumey nose. Interestingly, wines are described as lean, crisp and often dry. Wines presented at the Maritime Conference in August were distinctly citrusy, one was lean and minerally while the other had much more body and weight.
- **Marquette** – A true hybrid with complicated parentage of *V.vinifera*, *V.riparia*, other *Vitis* x Ravat 262. Frontenac and Pinot Noir are part of its lineage. Planted based on a recommendation from international wine judge and Southeastern PA Winegrape Specialist Mark Chien who liked Marquette wines he had tasted. Slightly more vigorous than other vines planted in 08, vines sprayed once for PM at the very end of the season. The literature reports that Marquette features high sugars and moderate acids, good color and pronounced tannins. Marquette was bred for good cold hardiness, not surprising as it comes from a Minnesota breeding program.
- **Zweigelt** – From the cross Blaufrankisch (Lemberger) x St Laurent. Zweigelt is the most widely grown red in Austria, reportedly known for winter hardiness and a tendency to overcrop. Apparently, this variety produces a range of wine styles from early drinking lighter to fuller bodied age worthy wines. Logically, the latter would involve judicious vineyard management and crop control. In 2008, we harvested a small crop from the following three year olds. Wines from these will be available for evaluation in the latter half of 2009.
- **Chardonnay 809** – Known as a muscat selection, this fruit had a very distinct and wonderful orange zest flavor. There is at least one planting in industry. Based on our initial impressions, those with an interest in aromatic whites should take a look at this.
- **Sauvignon Blanc 376 & Sauv Blanc 534** - Not a lot of information on these other than they are planted in the west.
- **Semebat** - Baroque x Malbec, a red vinifera hybrid from INRA (France). Baroque is a white variety grown in the Landes region of southwest France. Fruit was harvested Sept. 24, about 25% of the berries were dehydrated. We mainly wanted to harvest ahead of an upcoming rain. Harvest numbers were 23.1 Brix, 9 g/l and 2.85 pH. After crush, must color was intense.
- **Segalin** – Another INRA cross of Jurancon noir x Portugais Bleu. The latter is a red variety grown in Austria and Germany. Visually, this fruit needed a little more time in the vineyard but again, we were concerned about young fruit enduring the upcoming storm. Harvest numbers were 21.1 Brix, 12.5 g/l and 2.96 pH. As with Semebat, juice was darkly colored.
- **Norton** – Norton was in its fourth leaf this year. It is a variety grown with some success in the mid-Atlantic region. Norton is an American variety, *Vitis aestivalis*, and thus has a fair amount of fungal disease resistance. We treated once for powdery mildew in 08. Berry moth and beetles were minor issues. These vines have not tolerated oil or sulfur well. Given this, copper would probably be an issue as well. Vines are vigorous, shoots are leggy and small in diameter. We have struggled with both magnesium and slight nitrogen deficiencies. Clusters are small compared to most vinifera, with very long rachis stems. For the last two years, Norton has been the very last variety harvested, after both Cabernet Sauvignon and Petit Verdot. We picked on Oct. 24, there was a fair amount of dehydration so fruit was ready. Numbers were 22.9 Brix, 10.3g/l acid and 3.37 pH. Apparently high acid and high pH are not unusual. Must color was good. (*Source: Long Island Fruit & Vegetable Update, No. 31, December 2008*)



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## GENERAL INFORMATION

### **EXTENSION IPM PROGRAMS THREATENED WSSA Asks Congress to Rescind Farm Bill Change That Threatens Extension Integrated Pest Management (IPM) Programs**

*Cathy Heidenreich, Cornell University*

The Weed Science Society of America (WSSA) has petitioned Congress to rescind a last-minute change to the recently approved 2008 Farm Bill that threatens Extension Integrated Pest Management (IPM) Programs throughout the United States.

Extension IPM programs run by the nation's land grant universities make an essential contribution to the common good. They provide training and advice to help us protect our food supply, minimize human health risks, promote judicious pesticide use, conserve environmental resources and improve the profitability of the nation's farmers.

Historically, this national network has been funded by the Farm Bill at an average of approximately \$135,000 per state each year. This modest investment produces far-reaching results by enabling a nationwide IPM infrastructure that supports seamless information sharing and knowledge transfer.

But a last-minute amendment to the 2008 Farm Bill threatens the very existence of many of the extension programs that support farmers and homeowners across the country. For the first time in the 30-year history of

Extension IPM, funds will not be allocated to universities in each state on a proportional basis. Instead, a limited number of grants will be awarded competitively by the Secretary of Agriculture.

This change erodes the national nature of the IPM network and is expected to leave entire regions of the country without the grower training and outreach needed to manage pests and weeds effectively or to address problems that are unique to a particular region or locale.

"The new funding model reduces our capacity to respond quickly and effectively to emerging pest threats," said Lee Van Wychen, WSSA science policy advisor. "That means critical expertise will wither away in states that lose funding, leaving entire regions of the country vulnerable to insects, diseases and weeds that know no geographical boundaries."

Visit the Weed Science Society of America's website (<http://www.wssa.net>) for further background on the change and what you can do to help. Or contact: Lee Van Wychen, Director of Science Policy for the Weed Science Society of America, [Lee.VanWychen@wssa.net](mailto:Lee.VanWychen@wssa.net) (*Source: New York Berry News, Volume 07, Number 12, Dec/ 15. 2008*)

### **The First North American Elderberry Summit**

*By Patrick Byers, University of Missouri Extension*

Recently I attended the first North American Elderberry Summit, which focused on the past, present, and future of this unique native fruit crop. The meeting was held in St- Bernard-de-Lacolle, Quebec, and was hosted by Jacinthe Desmarais and Sylvain Mercier of Suro Biosambucus ([http://www.sureau.ca/english\\_home.html](http://www.sureau.ca/english_home.html)). Suro Biosambucus is a farm that focuses on production of certified organic elderberries and a wide range of culinary and medicinal elderberry products. In attendance were Denis Charlebois, researcher and elderberry proponent with Agriculture and Agri-Food Canada in Quebec, Edie and Phil Johnston of Maine Medicinals, and Todd Hardie of Honey Gardens Apiaries in Vermont.

The meeting began with an evening gettogether, and the discussion focused on Suro Biosambucus. Over a glass of elderflower liqueur, Jacinthe and Sylvaine shared the history of the farm, which originally produced maple syrup. To digress a bit, Suro is still a producer of maple syrup, using traditional practices that are organically certified, and we enjoyed a syrup tasting. The best

syrup, by consensus, was from the final sap collection in the spring – wow! Jacinthe is a chiropractor, and became interested in plants with healing properties. Elderberry has a long and interesting history as a medicinal plant, and it seemed a natural choice for the farm as a focus. At present Suro produces fresh and frozen elderberries for culinary uses, and supplies innovative chefs in Montreal and elsewhere. As a testament to the tasty qualities of elderberries we enjoyed elderberry pie and french toast with elderberries. Suro also produces two types of dried elderberries, semi-dry for fruit bars and trail mixes, and completely dry for powdered uses. Processed elderberry products include jelly, preserves, and a wonderful jelly that was flavored with maple syrup. Looking to the future, Suro is presently experimenting with elderberry wine, elderberry juice/mead combinations, elderberry wine vinegar, and a project looking at an elderberry/ kombucha (fermented green tea) product. Suro is involved with a wide range of non-culinary elderberry based products. Soaps containing elderberry plant parts, as well as other aromatic herbs, are manufactured. A syrup that contains elderberry juice, honey, and Echinacea is marketed as a nutritional supplement, as is

an elderberry tincture. Elderflowers are harvested and dried for sale, and used to make a salve.

The first full day of the meeting included a presentation on the elderberry development program in Missouri, a joint project of the University of Missouri and Missouri State University. The results of several projects were discussed in detail, and ideas were gathered for future projects and collaborations.

The afternoon was spent touring the elderberry plantings and facilities at Suro. Over 9000 elderberry bushes are in production, with York, Nova, and Kent as the primary cultivars. The plants are pruned similar to a blueberry, with annual removal of older canes to encourage the growth of new canes. The fruit is harvested by hand, frozen, and removed with screens on a vibrating frame. The frozen fruit is stored in a freezer at -20C. Juice is pressed with a grape press, or extracted with a steam process. Fresh, unfrozen berries are used for drying.



On the second day of the meeting we heard an in-depth discussion of the elderberry research and development project headed by Dr. Denis Charlebois. Denis is with Agriculture and Agri-Food Canada in Quebec, and has worked with elderberry since 2003. He initially was interested in elderberry as a source of food colorant. His interests have since expanded to include all aspect of elderberry production, including work with antioxidant levels, elderberry tissue culture, and cultivar evaluation.

A collaboration is already underway between Dr. Charlebois and the Missouri program, and several Midwestern elderberry selections are under evaluation in Quebec.

The afternoon of day 2 was devoted to additional discussions on elderberry processed products. Edie Johnston of Maine Medicinals described her firm's interest in elderberry as a health supplement. Edie is an accomplished grant writer, and she shared her thoughts on potential

funding sources for elderberry research and promotion. Todd Hardie discussed his work with mead /elderberry combinations. Todd is also involved in the Vermont Elderberry Project, which has a goal of spreading awareness of elderberry throughout Vermont by encouraging the planting of elderberry. Todd reminded me of a passionate modern-day Johnny Appleseed, with a Sambucus twist! We sampled several elderberry meads, and Todd presented each of us with

a jar of his raw honey.

Two exciting developments came out of the meeting. The group formed the North American Elderberry Alliance, with the mission of increasing the awareness of elderberry through research and promotion. The Alliance is open to all with an interest in elderberry. The group also planned the 2009 Elderberry Summit, tentatively scheduled for October in Maine. I returned from this meeting convinced that elderberry has a promising future, especially so with such dedicated people involved. For more information on the North American Elderberry Alliance and the 2009 Elderberry Summit, a website will soon be online with detail, or please contact Patrick Byers at [byerspl@missouri.edu](mailto:byerspl@missouri.edu). (*Source: The Berry Basket, Vol. 11, No. 3. Autumn 2008*)

## Winterizing your Sprayer in the Fall

*Helmut Spieser, OMAFRA*

Your field sprayer is likely finished its duties for this year. Any problems experienced with your sprayer this past season should be fresh in your mind. Now is the time to check it over completely and order replacement parts allowing your dealer adequate time to get the needed items.

Cleaning, checking and winterizing your sprayer in the fall prepares it for storage and has it almost field ready in the spring. Having your sprayer in top working condition now will save you valuable time in the spring.

### **Clean the sprayer inside & out**

Cleaning a sprayer both inside and outside not only gets rid of accumulated dirt and grime but more importantly, removes as much of the chemical residue from the system as possible.

- Use a pressure washer and detergent to thoroughly wash the outside of the whole sprayer. Be sure to get all tank surfaces, the boom, tires and rims as well as the frame and undercarriage.
- Clean the inside of your spray tank completely using a good tank cleaner.
- Circulate this cleaning solution for ten minutes through the tank wash nozzle(s), if your sprayer is so equipped.
- Look for any leaks in the plumbing system as you are circulating the cleaning solution through the sprayer. Be sure to repair any leaks before the sprayer is parked for the winter.
- Remove and thoroughly clean out the end plugs or end caps on the various boom sections. Rinse with

sufficient cleaning solution to remove all product residues.

- Remove all filters, screens, nozzles and diaphragm check valves and wash them in the same cleaning solution. A nozzle tip brush will aid in removing any buildup of material on screens.
- Reinstall all the filters, screens, nozzles and diaphragm check valves.

#### **Plumbing freeze protection**

All plumbing components are at risk of severe damage caused by water freezing. This is especially critical for the sprayer pump since it is the most expensive part of the plumbing system. Pumps that are not freeze-protected not only risk frost damage but they can also deteriorate in storage as a result of corrosion.

A 50/50 mixture of a good quality antifreeze and water will protect against frost damage. This antifreeze mixture in the plumbing system will also prevent oxidation from occurring by not allowing air to contact metal surfaces causing rust.

- Mix up 5 gallons of antifreeze and water and pump it through all circuits of your sprayer, especially the agitator circuit. After 10 minutes of circulation through the various plumbing circuits, spray the mixture out through the boom and nozzles.
- You can now shut off your sprayer
- Remove the boom end caps or plugs and allow the liquid to drain out.
- Replace the boom end caps or plugs.

#### **Foam markers**

Completely drain the foam marker tank and the solution lines that go out to the boom ends. Use compressed air to blow out any remaining liquid in the foam marker lines. Clean or replace the particle filter in the bottom of the foam solution tank. Now you can fold the booms and put them into the cradles.

#### **Lube and Bolt Check**

Once the sprayer is dry, go over the whole sprayer from one end to the other looking for any signs of structural wear. This might show up as signs of movement of frame members or fatigue cracks.

- Any cracks in the frame components or wheel spindles should be repaired immediately.
- Touchup any areas of bare metal to protect against rust.
- Tighten all loose nuts and bolts to recommended torques on structural members.
- Inspect tires for cuts, embedded foreign objects and general tread condition.
- Torque wheel studs to recommended levels.
- Check wheel bearings for adequate grease; repack with grease if necessary.
- Grease and lubricate the whole sprayer as outlined in the operator's manual.

#### **Electronics**

Monitors and rate controller consoles are usually mounted inside a tractor cab. These units should be carefully removed and cleaned of any dirt accumulation. Store these units in a cool dry place preferably under cover. Coil the electronics cable that is attached to the sprayer. Use a soft bristle brush to remove any dirt in the cable connector blocks. Apply a thin film of electrical grease on the connector pins to prevent oxidation, which may cause poor contact. Fasten this coiled cable to a structural support of the sprayer to keep it from falling to the ground.

Make a big tag to hang on your sprayer that reads "WINTERIZED".

Store your sprayer in a clean dry building.

*(Source: Ontario Ministry of Agriculture, Food and Rural Affairs Fact Sheet Series)*

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### **Upcoming Meetings:**

**Jan 5-6, 2009** Farmer To Farmer Conference: Answering Questions on the Vegetable Farm. Fairlee VT. For more information go to <http://www.nofavt.org/annual-events/vegetable-farmer-to-farmer-conference>

**Jan 7, 8 or 9, 2009** Greenhouse IPM Workshop. Manchester ME, Durham NH, or Burlington VT. For more information go to <http://www.uvm.edu/vtvegandberry/meetings/TriStateGHWorkshops09.pdf> or email [Cheryl.frank@uvm.edu](mailto:Cheryl.frank@uvm.edu)

**Jan. 9, 2009**, NEV&BGA and Extension All Day Winter Meeting, Chicopee, MA. For program and registration information contact John Howell at [howell@umext.umass.edu](mailto:howell@umext.umass.edu).

**Jan 10, 2009** Direct Marketing Conference, NOFA-VT. S. Royalton VT. For more information go to: [http://www.nofavt.org/upcoming-event-details.php?e\\_id=1663](http://www.nofavt.org/upcoming-event-details.php?e_id=1663)

**Jan 15, 2009** Highbush Blueberry School. Augusta ME. For more information go to: <http://www.uvm.edu/vtvegandberry/meetings/Highbush%20BlueberrySchoolMaine09.pdf>

**Jan. 15, 2009.** Massachusetts Fruit Growers' Association Annual Meeting and UMass Extension Winter Fruit Program

<http://www.massfruitgrowers.org/2009/mfga011509announcement.pdf> 9AM to 3PM. UMass Cold Spring Orchard, Belchertown, MA. 2.0 pesticide re-certification credits will be offered. Pre-registration by Friday, January 9 – MFGA Member: \$40 per person (lunch included), Non-MFGA Member: \$50 per person (lunch included). After January 9 or at the door – \$60 per person (lunch included). Pre-register at <http://www.massfruitgrowers.org>

**Jan 17, 2009** NOFA-MA Winter Conference. Worcester MA. For more information go to:

<http://www.nofamass.org/conferences/w2009/index.php>

**Jan. 17 2009 9:00 - 11:30**, *Introduction to Berry Growing*, Cornell Cooperative Extension Cayuga County, 248 Grant Avenue, Auburn, NY 13021 To register or for additional information, contact Cornell Cooperative Extension at 315.255.1183 or go to [http://www.hort.cornell.edu/extension/commercial/fruit/Berries/calendarpdf/Intro to Berry Growing09.pdf](http://www.hort.cornell.edu/extension/commercial/fruit/Berries/calendarpdf/Intro%20to%20Berry%20Growing09.pdf)

**Jan. 19-21 2009**, *North American Strawberry Growers Annual Meeting*, New Orleans, LA For complete program and registration information go to <http://www.nasga.org/>.

**Jan. 22, 2009** CT Vegetable and Berry Growers Meeting. Vernon CT. For more information and directions go to:

<http://www.hort.uconn.edu/ipm/veg/htms/2009vegconf.htm>

**Jan. 23-25, 2009** NOFA-NY Conference. Rochester NY. For more information go to: <http://www.events.org/nofany-conference/cpage.aspx?e=16387>

**Feb. 3-5, 2009**. *2009 Mid-Atlantic Fruit and Vegetable Convention*, Hershey Lodge and Convention Center, Hershey, PA. For more information contact William Troxell at 717-694- 3596 or visit [www.mafvc.org](http://www.mafvc.org).

**Feb. 6-7, 2009** NH Farm and Forest Expo. Manchester NH. For more information go to: [www.nhfarmandforestexpo.org/](http://www.nhfarmandforestexpo.org/)

**Feb. 7, 2009**. NEV&BGA and Extension All Day Winter Meeting, Waltham, MA. For program and registration information contact John Howell at [howell@umext.umass.edu](mailto:howell@umext.umass.edu).

**Feb. 9, 2009** VT Vegetable and Berry Growers Annual Meeting. Montpelier VT. For more information and directions go to: <http://www.uvm.edu/vtvegandberry/meetings/09%20Montpelier.pdf>

**Feb 10-12, 2009** NY Fruit and Vegetable Expo. Syracuse NY. <http://www.nysaes.cornell.edu/hort/expo/>

**Feb. 11-13 2009**, *New York State Fruit and Vegetable Expo and Becker Forum* Syracuse, NY. For complete program and registration information, go to <http://www.nysaes.cornell.edu/hort/expo/>

**Feb. 14-15, 2009** NOFA-VT Winter Conference. Randolph Center VT. For more information go to

<http://www.nofavt.org/annual-events/winter-conference>

**Feb. 24-26, 2009** Harvest New England Agricultural Marketing Conference. Sturbridge MA. For more information go to <http://www.regonline.com/builder/site/Default.aspx?eventid=652438>

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