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Berry Notes

Prepared by the University of Massachusetts Fruit Team

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Volume 30, Number 9 - September, 2018

Crop Conditions:

Strawberries: June bearing varieties set next year's flower buds at this time of year. A nitrogen application now can help plants store energy in crowns and set fruit buds. Some leaf diseases and insect problems can linger and cleaning them up now will help plants enter dormancy in a healthy state. Also scout fields for weed problems that can be addressed in the fall (more on this in the Strawberry section). **Brambles:** Spent floricanes should be removed now from summer fruiting types. This allows sunlight penetration into the remaining primocanes and helps fruit bud initiation on the full length of the canes. No fertilizer should be applied at this time. Monitor for two-spotted spider mite and control if necessary. Fall raspberries are still in production but are winding down. Spotted Wing Drosophila (SWD) populations are high now and require sustained control through frequent and thorough harvest, sanitation and weekly spraying of recommended materials. See [UMass Extension Fruitadvisor SWD page](#) for more details. Be sure to rotate materials and make sure to adhere to label restrictions when only a limited number of applications is allowed. Botrytis fruit rot infections are a concern where there is a lot of carryover inoculum as days shorten and evening dew periods lengthen or if wet weather returns. See [New England Small Fruit Guide](#) for recommended materials and rates. **Blueberries:** Scout fields for weeds to prepare for late season management strategies. Flag bushes where Blueberry Scorch or Stunt viruses are suspected so they can be rogued out after leaves fall. Only non-nitrogen fertilizer applications should be made this late in the season if leaf tissue tests indicate deficiency. **Grapes:** Harvest is running a week or so earlier than last year and is underway for many table grape varieties and for some wine grapes, too. Disease management can still be necessary this late in the season, especially for fruit rots on late harvested varieties. Also keeping fruit flies (including swd) in check will help maintain high quality of fruit during and after harvest. See more in the Grape section about these topics. Fall is an important time to assess weed issues and take some corrective action.

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ENVIRONMENTAL DATA

The following data was collected on or about August 22, 2018. Total accumulated growing degree days (GDD) represent the heating units above a 50° F baseline temperature collected via our instruments for the 2018 calendar year. This information is intended for use as a guide for monitoring the developmental stages of pests in your location and planning management strategies accordingly.

Region/Location	GDD		Soil Temp (°F at 4" depth)		Precipitation (in inches)
	2-week gain	2018 Total	Sun	Shade	(2-Week Gain)
Cape Cod	341	1,973	73	70	1.23"
Southeast	351.5	2,105	73.7	69.5	3.60"
North Shore	313.5	2,071.5	70	66	3.19"
East	330.5	2,270.5	74	68	2.96"
Metro West	317	2,078	70	68	5.48"
Central	n/a	2,102.5	65	60	4.34"
Pioneer Valley	313.5	2,201	76	69	4.99"
Berkshires	295	1,929	71	66	5.26"
AVERAGE	302	2,031	72	67	3.88"

n/a = information not available

Drought conditions update: Viewing the map via the link below, dated August 21, shows Massachusetts is experiencing level D0 - 'Abnormally Dry' - in all areas of Cape Cod, Martha's Vineyard and Nantucket. The vast majority of Bristol and Plymouth Counties are also labeled D0. The rest of the state is free of any category of drought. <http://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?MA>

(Source: UMass Landscape Message #18, August 24, 2018)

STRAWBERRY

Strawberry Fall Check-List

Sonia Schloemann, UMass Extension

√ **General:** Flower bud initiation deep in the crown of the plants is happening now, determining next years' yield. So, maintaining good plant health into the fall is important. In addition to keeping up with the fertilizer program, suppressing leaf diseases improves the ability of the plant to carry on photosynthesis and store starch in the crowns. Don't let leaf spot or powdery mildew get ahead of you. Narrow the rows to about 12" and cultivate the alleys in fruiting fields and new plantings for the last time before mulching. Plant winter rye in plowed down fields as soon as possible in order to get good establishment and growth before winter.

√ **Nutrition:** Nitrogen fertilizer should be applied to bearing beds in early September to bring your seasonal total up to 100-120 lbs actual N/acre. Most growers apply about 70-80 lbs N/acre of nitrogen on at renovation. The fall application should provide another 30-40 lbs N/acre (more on soils with low organic matter content). This stimulates good root growth in the fall and supplies nitrogen needed for flower bud initiation. New fields need to have a total of 80 - 100 lbs/acre of nitrogen with about 40 lbs applied in the fall. Ammonium nitrate (35% N) is a good fertilizer for the fall application. If your leaf tissue analysis shows deficiencies in magnesium or boron, early

fall is a good time for foliar applications of Epsom salts (15lbs/100gal/acre) for magnesium and Solubor (3lbs/100gal/acre) for boron. Don't make these applications on hot humid days, however, or phytotoxicity could result. Read the labels.

√ **Weeds:** Weed management in the early fall is focused on cultivation and hand weeding/hoeing. Postemergence grass herbicides you should consider using are Poast® or SelectMAX®. These will only work on relatively small grasses. Big clumps of crabgrass will have to be pulled by hand. However, quackgrass can be knocked down by cultivation or mowing and then treated when new growth is less than 6" high. One note of caution; Poast®, which is used with a crop oil surfactant, can injure strawberry foliage in cold weather. I would recommend its use as a spot treatment at this time of year rather than a broadcast treatment of the whole field. Chateau® can be applied as a preemergence material to row middles to control broadleaf weeds in the fall, but should not be allowed to contact strawberry foliage. Other materials for treating weeds in row middles include burndown materials like Gramoxone® or Scythe® with no systemic translocation. Weed management later in the fall can include applications of preemergent materials such as Devrinol®, Ultra

Blazer®, Prowl H2O®, Spartan® and Sinbar®. Read labels carefully before use. See the [New England Small Fruit Pest Management Guide](#) for more specific information.

√ **Diseases:** Clean up severe infections of leaf spot and powdery mildew. Rally®, Cabrio® and Pristine® may be good materials for this use. Organic options for leaf spots include copper products such as Nu Cop® 50WP but consult label for sensitive cultivars. Organic options for powdery mildew include Oxidate®, JMS Stylet Oil®, potassium bicarbonate products and sulfur products (again, consult label for cautions on sensitive cultivars). Healthy leaves are important at this time of year to supply the plant with the energy to produce flower buds for next year's crop and to store energy in the roots for the first flush of growth next spring. Apply Ridomil Gold®, Aliette WDG®, Prophyt® or Phostrol® in September or early October in

areas where Red Stele has been identified. Organic growers can use Actinovate AG® but this is best used prior to disease onset. It is best to apply these materials when the soil is beginning to cool but before heavy fall rains begin. This should not be considered an alternative to good site selection for strawberries. See the [New England Small Fruit Pest Management Guide](#) for more specific information.

√ **Insects:** Check fields for infestations of leafhopper, mites or aphids. Generally, plants can take a fair amount of feeding by these insects, but heavy infestations can be a problem. And, aphids in particular, can vector virus especially when they are in the winged form and can diseases and should not be allowed to build up disperse to other fields. **Dayneutral fields should continue to be treated for spotted wing drosophila until harvest ends.**

RASPBERRIES/BLACKBERRIES

Raspberry Fall Check List

Sonia Schloemann, UMass Extension

√ **General:** Remove all spent floricanes as soon as possible after harvest. This allows good sunlight penetration in to the current season's primocanes which improves fruitfulness and vigor. Encourage hardening off of canes in summer bearing varieties of red and black raspberries and blackberries by avoiding nitrogen fertilizers and supplemental watering at this time. Fall bearing raspberries can still benefit from irrigation in dry weather to help maintain fruit size.

√ **Nutrition:** Based on soil and tissue test results, apply non-nitrogen containing fertilizers and lime as needed. For example, Sul-Po-Mag or Epsom Salts can be applied now so that fall rains can help wash it into the root zone for the plants.

√ **Weeds:** Now is a good time to do a weed survey and map of problem areas, so that you can use this information to develop an effective management strategy. Applications of some burndown (non-translocated) materials like Gramoxone® and Scythe® may be made in trouble spots but care must still be taken to avoid contact with raspberry canes or leaves. A late fall application of Casoron®, Devrinol®, Surflan®, or Princep® for preemergent control of broadleaf weeds next spring should be made. Apply Casoron® only when temperatures are below 40°F, preferably just before rain or snow. Most of these materials should only be used on established plantings, not newly planted fields. See the [New England Small Fruit Pest Management Guide](#) for more specific information.

√ **Diseases:** Fall bearing raspberries can suffer fruit rot problems due to increased moisture present in the planting

(more frequent precipitation, longer dew retention, longer nights) late in the growing season. The majority of this fruit-rot is *Botrytis cinerea*, gray mold. Captan 80® WDG is labeled for use on brambles. In addition Elevate®, Ph-D®, Switch®, Pristine® and Rovral® are materials available for this use. Frequent harvesting and cull-harvesting are the best practices for keeping fruit rot levels low. Thinning canes in dense plantings can also help. Scout summer bearing brambles to look for powdery mildew and treat if necessary. See the [New England Small Fruit Pest Management Guide](#) for recommended materials and rates. If Phytophthora root rot has been identified in a field, treat the affected area with Ridomil Gold®, Alliette®, or Phostrol® in September or early October. This timing is important to get the material in place in the root zone before the onset of cool wet weather (and soil) in the fall.

√ **Insects:** Now is the time to check plantings for crown borers. Adults of this pest look like very large yellowjackets, but is actually a moth. They are active in the field in August and September laying eggs. Scout the fields for crown borer damage by looking for wilting canes. This symptom can also indicate Phytophthora root rot, so when you find a plant with a wilting cane (or two), dig up the plant and check the roots for brick red discoloration in the core of the roots (phytophthora) or the presence of a crown borer larvae in the crown. Rogue out infested crowns and eliminate wild bramble near the planting, since they will harbor more of this pest. **Fall bearing fields should continue to be treated for spotted wing drosophila until harvest ends.**

BLUEBERRIES

Highbush Blueberry Fall Check-List

Sonia Schloemann, UMass Extension

√ **General:** Blueberry plants should be encouraged to harden off for the winter. This means no nitrogen fertilizer at this time. Flag bushes that show premature reddening of leaves compared to others of the same variety. This can be an indicator of infection with virus or other pathogens. If you haven't done it already, make some notes on observations from this year that might be helpful in coming years (e.g., variety performance, sections of the field that did well or poorly, how well some practices worked, or didn't, etc.). Relying on memory isn't always accurate enough. Nothing can replace a detailed field history when trying to diagnose problems.

√ **Nutrition:** Hold off on any nitrogen fertilizers. Based on leaf tissue tests and soil tests, sulfur, lime, and some fertilizers can be added now. Apply these before fall rains begin and also before adding any supplemental mulch to the plants.

√ **Weeds:** As with other small fruit crops, now is a good time to do a weed survey and map the weed problems in your planting. This information will be very useful in tailoring your weed management plan so that is effective and not wasteful. A late fall application of Casoron® for preemergent control of broadleaf weeds next spring should be made only when temperatures are below 40°F, preferably just before rain or snow. Devrinol®, Surflan®,

and Kerb® may also be used in the fall according to label recommendations. See the [New England Small Fruit Pest Management Guide](#) for more specific information.

√ **Diseases:** Weak plants can easily be detected at this time of year because they tend to turn red earlier than healthy bushes. Upon finding weakened bushes, try to determine the reason for weakness. Is the root system damaged? If so, is it likely from disease infection or root damage by voles or grubs? If the roots are healthy, could a crown borer (Dogwood borer) be the culprit? Or is stunt disease the cause? Or Scorch? Accurate diagnosis is the first step in resolving the problem and avoiding spread. Enlist the help of specialists if you have trouble determining the cause of problems.

√ **Insects:** The main worry now is for sharp-nosed leafhopper which is the vector for stunt disease. If you have determined that you have bushes infected with stunt disease in your planting, an application of malathion to the infected bushes and any immediately surrounding bushes should be made to control leafhoppers BEFORE removing the infected bushes. Failing to do this will likely cause the spread of the disease to clean bushes even after infected bushes have been removed.

Fall Control of Perennial Weeds with Herbicides

Thierry Besançon, Rutgers University

Late summer and fall are perfect times to work on tough-to-control perennial weeds such as Virginia creeper vine, bindweed, green-brier, Canada thistle, goldenrod, and poison ivy. These perennials are among the most difficult weeds to eradicate, especially because of their ability to generate new shoots from their root systems. Successful management strategies will mostly rely on herbicide that can move from the leaf to the below-ground plant parts. Timely initial application and consistency at controlling any regrowth with follow-up spot treatments are crucial for long-term control of these weeds.



Field bindweed (upper left), goldenrod (lower left) and green-brier (right) are some tough weed species of NJ blueberry and will warrant extra time for achieving successful control

Glyphosate (Roundup or other generic products) is the only postemergence herbicide labeled on blueberry that can provide good control of perennial weeds. Late summer and fall are good times for applying glyphosate as plant sap movement is mostly directed toward the roots where nutrients will be stored in anticipation of next season. Therefore, large volume of glyphosate can easily be translocated from the leaves to the roots, improving the efficiency of the herbicide at killing below-ground storage organs. It is **VERY IMPORTANT** for glyphosate to be applied when weed leaves are still green before fall colors appear.

Use extreme care not to contact crop green tissues (stems and leaves) with glyphosate. Glyphosate absorbed by crop green leaves and bark moves within the plant and can severely damage or kill above-ground and below-ground parts of annual crop and perennial trees. Weeds such as bindweed, Virginia creeper, and greenbrier may need to be pulled out of the trees so they can be treated safely. This may seem too slow to be practical, but consider what these weeds cost in lost income. For example, blueberry bushes covered by Virginia creeper vine may yield just 20% of their potential. This easily equates to a \$5 to \$10 loss per

bush. The loss is incurred each year and increases as the vines spread to neighboring bushes. Investing 15 minutes to carefully pull vines out of that bush and safely treat them on the ground is money well spent.

Glyphosate should be applied through low pressure spot treatment to limit drift movements. Glyphosate absorption will be improved if ammonium sulfate (17 lbs / 100 gal water) is added to your spray mixture. For effective control, at least 50% of the foliage should be wet with glyphosate applied as a 2% solution (see your product's label for rate necessary to reach this concentration).

Consider also "cut stump" applications for Virginia creeper or poison ivy that have large diameter stems. Apply a 2% glyphosate solution to the cambium (inner bark area) **IMMEDIATELY** after cutting the stem. Don't let time for cutting to dry as this would prevent glyphosate absorption and translocation to below-ground plant parts.

Always apply glyphosate on weeds that are actively growing and not under drought stress.

Always refer to the commercial product label for rates and additional information. (*Source: Rutgers Plant & Pest Advisory, Aug. 30, 2018*)

GRAPE

Botrytis Bunch Rot of Grapes **(Or, what's happening to my beautiful grapes??)** *Denise Smith and Patty McManus, University of Wisconsin*

According to the Compendium of Grape Diseases, Disorders, and Pests, Botrytis bunch rot (AKA gray mold) "is most severe in regions experiencing moderate temperatures and rainfall or extended periods of high humidity between veraison and harvest". Sounds like the Midwest! Unfortunately, many wine grape and table grape cultivars are at least somewhat susceptible to Botrytis bunch rot. This disease is often an unwelcome surprise at the end of the growing season just when you thought you were going to have a beautiful crop of grapes to harvest.

What is it?

Botrytis bunch rot is caused by a fungus, Botrytis cinerea, that is ubiquitous worldwide and causes disease on many other plants in addition to grapes. It can also survive on dead plant tissues. The fungus spreads among plants by producing spores that are blown by the wind. Within the grapevine canopy, spores also are spread when diseased tissues physically touch healthy tissues (e.g., from one berry to the next within a cluster).



Botrytis bunch rot on red grapes. Photo courtesy of Laboratorio Enologico Toscano.

Infection occurs in favorable conditions, i.e. temperatures between 59 and 77°F and in the presence of rain or dew or very high relative humidity for an extended time. Young leaves, clusters, and shoots of grape vines may be infected early in the growing season. Any disease at this time will cause minimal damage but may provide spores to infect flowers. From bloom to berry touch young fruit clusters are highly susceptible to infection; these infections usually remain dormant until the fruit ripens or is harvested. As the berries ripen, they lose resistance to the fungus. An early symptom of berry infection is called "slip skin"; the berry skin appears shiny and is easily separated from the berry flesh when

rubbed. Later, the fungus appears on the surface of berries as tufts of gray to gray-brown fuzz. The tufts of fuzzy fungal growth distinguish Botrytis bunch rot from black rot and Phomopsis rot. The disease causes the berries of white cultivars to turn brown and the berries of red or purple cultivars to turn red. *Botrytis cinerea* can also remain dormant in the fruit clusters until after harvest, and then cause significant damage to fruit during transport or in storage. The fungus survives the winter as a hardened survival structure on canes and on leaf and fruit debris.



Botrytis bunch rot on white grapes. Photo courtesy of Ontario GrapelPM.

Winemakers sometimes use Botrytis bunch rot to their advantage. For certain cultivars and under certain weather conditions (foggy evenings and mornings and sunny afternoons), berries infected with *Botrytis cinerea* and no other fungi can develop “noble rot.” This fruit is used to make certain styles of sweet white wines.

How do I manage Botrytis bunch rot?

Because the fungal spores are present everywhere, it is not possible to exclude the fungus from your vineyard entirely. However, you can minimize the possibility of infections in your grapes by following these management practices.

- When establishing a vineyard, choose cultivars that are not highly susceptible to Botrytis bunch rot and that produce loose fruit clusters. A Review of Cold Climate Grape Cultivars which lists characteristics including disease susceptibility may be helpful in choosing cultivars.
- Increasing air circulation through the canopy is very important; practices such as proper shoot positioning, leaf thinning and hedging can help avoid prolonged periods of wetness or high humidity in the canopy.
- Apply an appropriate fungicide at bloom, bunch close, veraison, and pre-harvest. See the 2018 Midwest Fruit Pest Management Guide for information on effective fungicides.
- Reduce the opportunity for damage to the berries by using netting to exclude birds and taking care when performing any canopy management near the fruit.
- Remove fallen leaves and berries from the vineyard in the fall and canes from dormant pruning to reduce buildup of inoculum that may infect the vines in the spring. (*Source: Wisconsin Fruit News, Vol. 3, Issue 10, August 24, 2018*)

Late Harvest Insect Problems

Jody Timer, Lake Erie Regional Grape Program

The grape berry moth (GBM): The most destructive grape insect pest in the Eastern US is the native Grape Berry Moth, *Paralobesia viteana*. This insect is becoming increasingly harder to control as result of shorter residual time of insecticides, resistance to insecticides, and abandoned vineyards. GBM larval burrow into the grape berry soon after hatching, making precise timing of spray applications a critical component of control. This insect has four generations per year. Each generation increases in number exponentially if control measures are not applied to the early generations. Although in early season this insect pest has distinct peaks in generational emergence, by August the peaks have overlapped making complete control almost impossible. Growing areas with large populations require a second generational spray in July and/or August. If these sprays have not been applied and there are GBM problems in your vineyard, it is a good idea to spray for this fourth generation in September. Spray timings can be calculated by following the NEWA model recommendations. Although much of the damage may have already occurred, this spray will help prevent the

generations from starting the season next year farther into your vineyard. If you are dropping your crop from the end rows because of the excessive berry moth damage, collecting the dropped grapes as opposed to dropping them under the trellis will greatly reduce overwintering populations from remaining in your vineyard. More GBM information can be found on extension pages and on the LERGP Podcasts.



Spotted wing drosophila (SWD): Spotted wing drosophila, *Drosophila suzukii*, (SWD) is an invasive vinegar fly of East Asian origin that was recently introduced into the United States. It was first found in Pennsylvania in 2010. The potential infestation rate of spotted wing *drosophila* differs from other vinegar flies because the female possesses a serrated ovipositor that cuts into healthy fruit to lay eggs. Consequently, spotted wing drosophila (SWD) larvae can be found in fruit that is just ripening. During egg-laying, it is believed that sour rot and fungal disease can also be introduced, further affecting the fruit quality. All fruit flies carry yeast which can affect the quality of wine if these flies are present during winemaking. During peak temperatures, a female can lay more than 100 eggs a day. Such a high reproduction rate indicates the SWDs' high potential for fruit infestation and their potential for spreading rapidly through a vineyard, with multiple generations occurring each year. Spotted wing drosophila is now one of the most serious pests of thin-skinned fruits including grapes. At this time, no action threshold is available for SWD, so the common recommendation is to increase monitoring when one fly is captured on a farm and began a spray regiment continuing through harvest, making sure to protect fruit through to harvest using registered insecticides. Female SWD are able to lay eggs into fruit from the time of first coloring through to harvest, so this period is the window of susceptibility to SWD. Because SWD populations tend to increase in the later part of the summer, we expect late-harvested fruit, such as grapes, to experience higher pressure from SWD than those that are harvested earlier in the summer such as strawberries and summer red raspberries. A number of registered insecticides have been very effective against SWD in laboratory trials, the most effective chemicals are organophosphate, pyrethroid, and spinosyn class insecticides. Under field conditions, insecticides with fast knockdown activity have performed well at protecting fruit immediately after application. When SWD are detected it

is recommended that the spray intervals be tightened to prevent crop infestation before and during harvest.



Images Virginia extension

Spotted Lanternfly (SLF): [Editor's Note: SLF has not been found in New England to date.] This newest invasive insect has the potential to be devastating to the grape growing industry. Its preferred host is the Tree of Heaven (*Ailanthus altissima*) and grapevines. SLF aggregate feeds on vines by piercing the vines and feeding on the phloem and xylem. This feeding causes intracellular damage as the insects siphon vast amounts of phloem which reduces the vine's health and vigor. The insects excrete honeydew and the feeding sites leak sap, which causes sooty mold to form on the leaves reducing the photosynthesis. The sap also attracts secondary pests such as wasps and bees. The wounds make the hosts more susceptible to disease. Systemic chemicals are preferable and highly effective, but insect feeding is still damaging as there is a constant influx of insects from forest margins. Eggs are laid at the end of the season and the adult insects die. If discovered, egg masses should be removed immediately. Thirteen counties in southeastern PA are now under quarantine for this insect.



Images by Erica Symers

Multicolored Asian ladybird beetles (MALB): Although these insects cannot be effectively sprayed at harvest, vineyards should be scouted prior to harvesting to see if they are present. MALB feeds on damaged fruit and causes taint to wine and juice in very small numbers if harvested with the grapes.



(Source: Penn State Wine Grapes U, August 31, 2018)

GENERAL INFO

Spotted Wing Drosophila (SWD) Research Update

Jaime Piñero, University of Massachusetts

The “1-2-3” approach to SWD management provides easy-to-understand steps to manage SWD. The three main IPM components are monitoring, cultural practices, and timely application of insecticide sprays. Implementation of an “attract-and-kill” system would add another tool to the IPM toolbox against SWD. For the last couple of months, the UMass Arthropod IPM program has been conducting research aimed at developing a grower-friendly trapping system that could help make insecticide sprays more effective. The successful development of a trapping system that could help reduce SWD populations before crop harvest could potentially result in less insecticide sprayed to crops.

Commercially available lures: To monitor SWD, synthetic lures based on blends of compounds isolated from fermentation materials (mostly wine and vinegar) are commercially available. Examples include Scentry, Pherocon SWD, and Alpha-Scents lures. However, lures that are based on fermentation materials also attract a comparatively high number of other Drosophilid species (and other non-target insects), hindering trap performance and increasing sorting time.

SWD research being conducted by the UMass Arthropod IPM program: This article provides a research update on SWD trapping using commercial fruit juices. Below I present the most relevant results of various field-cage and field experiments that have been conducted since early July, 2018. While additional studies have been conducted, those results are not being presented due to the lack of space. A detailed article will be published in Fruit Notes.

Field cage experiments

Multiple bioassays were conducted in cages to compare the attractiveness of five commercial juices (grape, red tart cherry, tart cherry, pomegranate, and blueberry). Known numbers of male and female SWD were released inside 3 ft³ cages, and the response to the olfactory treatments was quantified over a 4-hour period. Results (see Figure 1 below) indicate that tart cherry, grape and pomegranate juice were the most attractive juices to male and female SWD. Blueberry and red tart cherry were statistically less attractive. Additional tests that compared the response of male and female SWD to various dilutions of selected juices revealed no difference in attractiveness of diluted juices versus undiluted material.

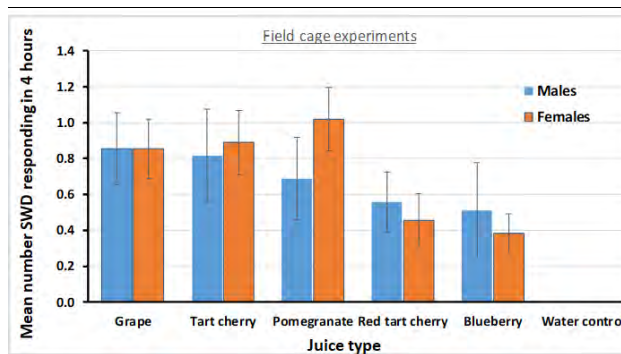


Figure 1. Male and female SWD response to five fruit juices in cages. The above bioassays involved undiluted juices. Water alone served as control.

Take-home message: Grape and tart cherry were the two most attractive fruit juices evaluated in field cages. While pomegranate was also very attractive, it was not considered for further evaluations given its comparatively greater cost and lesser accessibility.

Field experiments

Various field studies have been conducted at Clarkdale and at the UMass Cold Spring Orchard. These studies aimed at (1) evaluating various dilutions of grape and cherry juice, (2) assessing whether the attractiveness of diluted fruit juices can be increased by adding selected synthetic plant volatiles to traps, and (3) comparing the efficacy of grape and cherry juice diluted in water versus that of the Scentry SWD lure.

One of the field studies that were conducted at Clarkdale (data not shown) revealed that grape juice diluted by 50% in water was as attractive as undiluted grape juice. A separate study evaluated a 50% dilution of grape juice either, alone or in combination with selected plant volatiles against the Scentry SWD lure. Over a 3-week period, traps captured 462 males and 1,002 females. Remarkably, across all sampling dates, the 50% dilution of grape juice was significantly more attractive to male and female SWD than the Scentry SWD lure (Figure 2).

Grape juice diluted in water is an effective attractant for trapping SWD

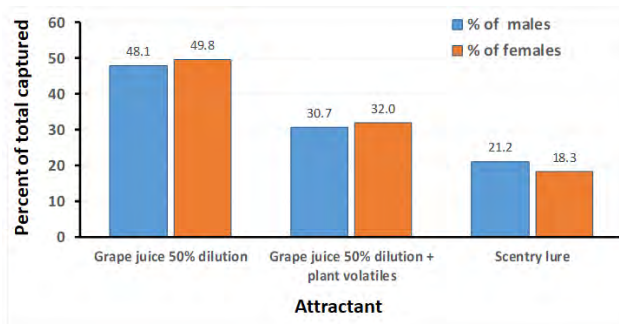


Figure 2. Male and female SWD captured by traps baited with diluted grape juice either, alone or in combination with plant volatiles versus the Scentry SWD lure.

Take-home message: A 50% dilution of grape juice was more than twice as attractive as the Scentry lure. The addition of plant volatiles to the juice affected negatively SWD captures.

Results from a separate experiment conducted at the UMass Cold Spring Orchard indicate that, thus far, grape juice diluted at the ratio of 1 part of juice in 3 parts of water (= 25% concentration) is as effective at trapping male and female SWD than the 50% dilution (Figure 3). Results are consistent across sampling dates. Experiments are underway to determine if the 25% concentration is as attractive as the Scentry SWD lure. Cherry juice dilutions and the effect of plant volatiles continue to be evaluated.

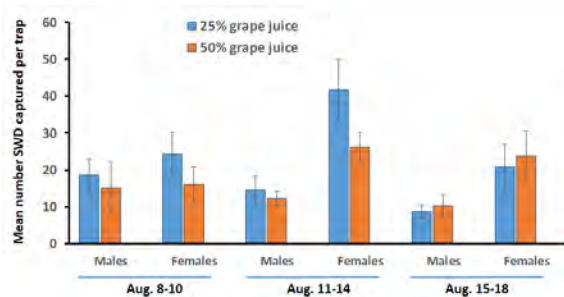


Figure 3. For each sampling date, comparison of male and female SWD captured by traps baited with 25% and 50% grape juice.

female SWD captures by traps baited with grape juice diluted 50% in water or further diluted to 25% juice (= 1 part of juice : 3 parts of water).

Take-home message: A 50% dilution of grape juice (1 part of juice : 3 parts of water) is showing to be as attractive as the 50% dilution. This preliminary result points to the possibility of using diluted juice as an effective bait for SWD trapping.

Cost considerations

In terms of costs, 42 traps can be prepared with only \$ 3.50, which is the cost of one bottle (64 oz.) of grape juice (assuming traps are already available). By mixing the content (64 oz.) of the bottle of grape juice with 192 oz. of water you can produce 256 oz. of attractive bait. This amount of bait is enough to prepare 42 traps, each having 6 oz. of the diluted juice. With the above calculations, the cost of diluted juice per trap is \$ 0.08 whereas the cost of one Scentry lure is about \$ 7.

The above research findings are for informational purposes only and do not yet represent new recommendations for SWD population reduction. The above results and the economic considerations require additional research.

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UPCOMING MEETINGS:

September 23, 2018 – *NOFA-RI Organic Strawberry Production Workshop*. 12:00-2:00pm. Brandon Family Farm, 592 Fairgrounds Road, South Kingstown, RI 02892. Free. For more information go to: <https://www.eventbrite.com/e/organic-strawberry-production-tickets-49646949362>.

September 26, 2018 – *Under the Vines Field Day: Kiwiberries, Seedless Table Grapes, Fall Strawberries*. 5:00-7:00. NH Ag. Experiment Station's Woodman Farm, 70 Spinney Ln., Durham NH. **For more information**, contact Becky Sideman (becky.sideman@unh.edu) or Suzanne Hebert (603-862-3200). Click [here](#) to view the flyer.

November 7-9, 2018 – *Great Lakes Fruit Workers Annual Meeting*. The Hotel Ithaca, 222 South Cayuga St. Ithaca, NY. For more information visit <https://greatlakesfruitworkers.weebly.com/>.

February 27-28, 2019 – *Harvest New England Marketing Conference and Trade Show*. Sturbridge Host Hotel, Sturbridge MA. More information coming soon.