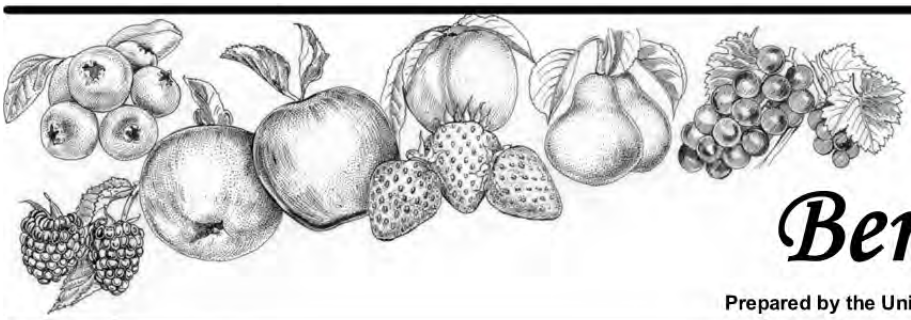

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Berry Notes

Prepared by the University of Massachusetts Fruit Team

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IN THIS ISSUE:

SHORTS:

New England Vegetable & Fruit Conference – This biennial conference, with over 30 sessions covering a wide variety of topics, 10 Farmer-to-Farmer peer learning workshops, and a trade show with over 100 vendors, has become a premier educational event in New England. Session topics range from Innovative Ideas for Small Acreage to Food Safety, and Fertilizer Decision Making to Hard Cider. For more information go to http://www.newenglandvfc.org/. To register go to http://www.newenglandvfc.org//registration.html Pre-register by November 30, 2015 to receive the discounted registration price. See an overview of the whole program at: CONFERENCE AT A GLANCE To see the program brochure or to register by mail go to: http://www.newenglandvfc.org/NEVFC15%20Brochure.pdf

New Plant Nutrient Regulations - New Plant Nutrient Regulations (333 CMR 31.00) were promulgated and published on June 5, 2015. The Department developed these regulations in response to "An Act Relative to the Regulation of Plant Nutrients" (Act) passed by Massachusetts Legislature in 2012. The regulations ensure that plant nutrients are applied in an effective manner to provide sufficient nutrients for maintaining healthy agricultural and non-agricultural land, including turf and lawns, while minimizing the impacts of the nutrients on surface and ground water resources to protect human health and the environment.

The Act and regulations establish standards for the applications of plant nutrients to agricultural land and non-agricultural turf and lawns. The regulations for non-agricultural turf and lawns became effective on June 5, 2015. The regulations for agricultural land will become effective on November 5, 2015.

The Department is developing outreach and educational materials to assist agricultural producers, turf professionals and homeowners with the implementation and compliance with these regulations. **Information, resources, and FAQ's are now available on MDAR's website.** The Department will also provide outreach at various agricultural events and meetings. If individuals or groups are interested in meeting with Department representatives for more information, training, education, or outreach, please contact Taryn LaScola, Taryn.Lascola@state.ma.us. For technical questions regarding the regulations, please contact Hotze Wijnja, Hotze.Wijnja@state.ma.us, 617-626-1771.

STRAWBERRY

Winter Mulch for Strawberries

Sonia Schloemann, UMass Extension

An important fall job in commercial strawberry production is mulching. Strawberries are commonly grown in cold climates, such as the northern US and Canada, but the strawberry plant itself is actually quite vulnerable to cold injury. Research has shown that, without mulch, strawberry crowns can suffer damage at temperatures below 12°F and unprotected strawberry plants can suffer desiccation damage from drying winter winds. A protective mulch can protect strawberries from cold by providing insulation, and from desiccation by providing a barrier against drying winds. Mulches will also protect plants from injury caused by soil heaving, which results from freezing/ thawing cycles during the winter. So, a key to consistent quality strawberry production in cold climates is in protecting the plants from severe temperatures or temperature swings through the practice of mulching.

Production systems can also affect the need for mulching. Plants on raised beds, for example, are more vulnerable to cold and desiccation injury than plants in level plantings, especially in locations that are exposed to strong winter winds. Annual production systems, such as fall planted plasticulture, may utilize less hardy or disease susceptible cultivars. As we will see, mulching practices must adapt to these new systems.

When should the strawberry grower plan to apply mulch? Research suggests that a good timing guide is to apply mulch after three consecutive days with a soil temperature of 40°F or below. This soil temperature usually occurs after multiple frosts, and when the plants have slowed growth in response to cooler temperatures. It is best to apply mulch before the soil freezes solid. In New England mulches are applied in late November.

What is a good mulch material? The traditional mulching material for strawberries in New England is straw. Straws from wheat, rice, oats, or Sudan grass work well. Straws coarser than Sudan grass are not recommended. Straw should be clean, free from weed seed, and contains a minimum of grain seed. Strawberry growers can produce their own straw, often cutting the straw before the grain seed is viable. Store straw for mulching in a dry area. Occasionally, grain seedlings can become a weed problem the following spring; an application of sethoxydim will give good control.

How much mulch should be applied? A traditional, level matted row planting will require 2.5 to 3 tons of straw per acre for a 2 to 3 inch deep mulch, or about 300 small bales of average weight. Raised bed plantings and sites with strong wind may require twice this amount for adequate coverage.

How is the mulch applied? Smaller plantings may be mulched by hand by shaking out the bales of straw over the row. Larger plantings often use bale choppers to break up the straw bales and distribute the straw over the bed. Choppers are available for both small bales and large round bales.

How and when is the much removed? In the spring, when plants begin to show growth under the winter mulch (new green tissue), the mulch should be raked off the

rows to allow sunlight to penetrate and reach the foliage. Delaying removal will delay plant growth and flowering and may reduce yield. Mulch can be raked off by hand with ordinary yard rakes in smaller plantings. In larger plantings, various mechanical tools are available ranging from modified hay rakes and tedders to equipment specifically designed for the purpose.

Floating row covers as mulch. These covers are composed of a plastic such as polypropylene, spun-bonded into a fabric that is permeable to light, air, and water. Research and growers' experiences demonstrate that these covers are useful for winter protection of strawberry plantings. While floating row covers are available in several weights, only the heavier weights are recommended for winter protection. At present a widely available weight recommended for winter strawberry protection is 1.25 oz/yd^2 (42 g/m^2). A variety of fabric widths are available, with common widths ranging from 15 feet to 60 feet. This material currently costs about 4 cents per square foot. With proper care, this heavier fabric should last 3-4seasons. Floating row covers are widely used to protect annual plasticulture plantings.

Row covers are best applied on still days. Be sure to line up sufficient labor to place the row cover. If possible, use wider widths for more efficient application. The row cover edges must be anchored, as must areas where two covers overlap. A variety of methods are used to anchor the edges. Edges may be anchored with posts, rocks, or tube sand. The edges may also be covered with soil.

Once the mulch is in place, the job is not done for the winter. Monitor the planting frequently. If straw has blown off areas, replace at once. Watch the edges of row covers, and adjust anchors if needed. Repair any rips or holes as soon as possible.

Any reference to equipment or product brand names does not constitute endorsement over like products or equipment.

Strawberries and Pollinator Health: Best Practices for Growers

Grace Tuschak, Education Outreach Coordinator, NCSA

There has been a lot of attention recently on pollinator health, and it is easy to see why: approximately $15 billion annually is attributed to the value of food crop pollination. Pollinators are critical to production of many fruits, vegetables, and nuts; it is estimated that one out of every three bites of food we eat is directly dependent on pollinator activity. Pollinators (not just honeybees, but native insects like bumblebees, moths, wasps, butterflies, as well as birds and bats) are important economically in order to produce good quality fruit. Strawberries that are unevenly pollinated can result in imperfect fruit, and it is important for growers to know what they can do to protect pollinators of all kinds. If you are a pesticide applicator, you are one of the most important pieces of the puzzle when it comes to ensuring pollinator survival.

Pollinator poisoning occurs in a number of ways, some of which may be less obvious. Here are the most common causes of pollinator poisoning:

1. Drift of pesticides onto adjoining crops or plants that are in bloom.
2. Contamination of flowering ground cover plants when sprayed with pesticides.
3. Pesticide residues being picked up by forag ing pollinators and taken back to the nest/ colony.
4. Pollinators drinking or touching contami nated water sources or dew on recently treated plants.

What can growers do?

As a grower and/or pesticide applicator, here is some information about what you can do to protect pollinators on your farm:

1) Read labels!! You are legally responsible for proper application of pesticides according to the label, so never follow someone else's interpretation of it. Don't assume that all bee cautionary statements are the same – there are different levels of bee toxicity, which require different precautions. The main difference in labeling is the distinction between use when bees are "visiting" vs. "actively visiting" the treatment area.

Some products have Extended Residual Toxicity (ERT), meaning that pollinators can be poisoned from residues after the spray application, and not just from direct exposure. These ERT products are denoted by the label "Do not apply to blooming crops or weeds if bees are visiting the treatment area." Other products do not have ERT, and these are denoted by the label "Do not apply to

blooming crops or weeds if bees are actively visiting the treatment area" – meaning that if bees are in the area, hold off on spraying until you can avoid direct exposure. Spraying these products late in the day or during cooler temperatures when bees are not as active can be helpful. As always, avoid sprayer drift and spraying while it is windy out. Lastly, especially when using ERT products, avoid applying when lower temperatures could cause dew formation. Moisture can re-wet pesticides and cause increased pollinator exposure.

See Table 1 for more details on levels of toxicity and their required precautions.

Other pollinator health practices

Encouraging pollinator health is just one more reason to practicing Integrated Pest Management. Consider using insecticide only when absolutely necessary and increase reliance on cultural practices and long-term pest prevention strategies. Another very important step in ensuring that your farm is pollinator friendly is to establish good relationships with local beekeepers, especially if you rent beehives for pollination. Most bee poisoning incidents are not due to malicious intent, but rather to lack of information. Beekeepers can help growers modify their pest control programs so that little to no poisoning occurs. These alliances can help both parties adapt their management practices to ensure healthy pollination.

Growers who want to take pollinator health a step further should consider planting a pollinator habitat. Providing a safe haven of pollinator forage and habitat can help mitigate the effects of pesticide exposure. Consider leaving some areas "wild" or plant flowering groundcover. Here you can find more information on what to plant for pollinator habitat and forage in the Southeast: http://pollinator.org/PDFs/Guides/SoutheastMixedForestrx5FINAL.pdf.

Remember native pollinators, too

Honey bees are exceedingly important to commercial agriculture, but it is critical to remember that other native pollinators also play a crucial role in crop production. Without a marked nesting site, it is easy for wild pollinator poisoning to go unnoticed. Many native pollinators commonly live in fencerows and other nearby wild areas so avoid spraying these areas if possible. It is also well to remember that these pollinators may be present even when honeybees are not, or after commercial colonies have been removed from the area. The impact of agricultural pesticides on native pollinators like bumblebees is not well understood, and more research in this area is needed. For example, bumblebees exhibit many of the same symptoms of pesticide poisoning that honeybees do, but toxicity of agricultural chemicals on wild pollinators like these is not fully known. Many native pollinator populations are on the decline, and some are now extinct.

Table 1. Honey bee acute toxicity groups and precautionary statements (from EPA)

Toxicity Group	Precautionary Statement if Extended Residual Toxicity is Displayed	Precautionary Statement if Extended Residual Toxicity is not Displayed
I Product contains any active ingredient with an acute LD50 of 2 micrograms/bee or less	This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.	Product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting treatment area.
II Product contains any active ingredient(s) with acute LD50 of greater than 2 micrograms/bee but less than 11 micrograms/bee.	This product is toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product if bees are visiting the treatment area.	This product is toxic to bees exposed to direct treatment. Do not apply this product while bees are actively visiting the treatment area.
III All others.	No bee caution required.	No bee caution required.

(***Source**: The Strawberry Grower, October 2015*)

Broad Mites in Blackberries

Kathy Demchak, Penn State University and Donn Johnson, Univ. of Arkansas

Broad mite (*Polyphagotarsonemus latus*) has been a pest of tropical, subtropical and greenhouse crops for over a century, and has been problematic for pepper growers in PA for the last couple of years. Now we can add blackberries to the list of crops that they frequent.

In PA, we first found broad mites on blackberries in 2013. In 2015, we found that they can contribute to a nearly total crop loss on primocane-fruiting blackberries. On these plants, bacterial issues are part of the problem with symptoms similar to those from fire blight (tissue browning and death) present. At this point, we don't know whether the two issues just happen to be present at the same time, whether injury by the mites may be contributing to tissue susceptibility to bacterial infection, or whether other interactions are coming into play. In Arkansas and North Carolina, researchers began experiencing problems with broad mites on primocane-fruiting blackberries in 2006 and a commercial grower has had problems since 2014.

Photo 1: Leaf distortion and cupping of blackberry leaves infested by broad mites. Photo credit: Donn Johnson, Univ. of Arkansas

Typical damage from broad mites is tissue distortion, reduced terminal leaf growth, either downward or upward curling or cupping of leaves (Photo 1) and flower clusters that appear compressed (Photo 2) or blossoms that dry up. Symptoms on flower clusters may not show up until the second year of infestation. Broad mites build up to hundreds per leaflet on younger terminal leaves.

Photo 2: Infested blackberry terminal growth showing upward leaf cupping and compression of flower cluster. Photo credit: Kathy Demchak, Penn State Univ.

These mites are very tiny - less than 0.2 mm (about 1/100th of an inch) as are their distinctive eggs dotted with white spots (Photo 3). These mites are difficult to see even with a 16X hand lens.

Photo 3: Greatly-magnified young blackberry fruit with broad mite female (right) and eggs (left of center). Photo credit: Sara May, Penn State Univ.

Because of the small sizes of broad mites and the eggs, symptoms of leaf curling and dying terminal foliage (Photo 4) and flower clusters are all that a grower is likely to notice.

Photo 4: Terminal dieback of blackberry plant resulting from broad mite infestation. Photo credit: Donn Johnson, Univ. of Arkansas

With citrus, the mites are found in depressions on the fruit where the females lay their eggs, and as is evidenced by the number of mites and eggs on a young blackberry fruit (Photo 5), it appears that blackberries provide a similarly desirable fruit surface.

Photo 5: Young blackberry fruit with numerous broad mite eggs and adults. Photo credit: Tim Gleason, Penn State Univ.

At this point, we mainly want to make growers aware of this potential problem in case they have seen similar symptoms (either terminal leaf and flower distortion or symptoms similar to fire blight), especially if they are growing primocane-fruiting blackberries in the field or high tunnels. We're not sure exactly why we are seeing this new mite pest on blackberry at this time or where it came from. Perhaps this pest is better able to survive in more mild winter temperatures, both in the field and in high tunnels.

In both instances where broad mites were problematic in PA, the blackberries were grown in high tunnels, but they are ones from which the covers are removed for the winter. Since the tunnel climate is generally conducive to increased mite populations, their numbers may have increased, regardless of whether the cover was removed for the winter or not. Interestingly, there is some evidence that they may be able to gain mobility by attaching themselves to whiteflies.

So, what can one do to control broad mite infestations? First, keep watch for them, and if you notice just a plant or two exhibiting suspicious symptoms, rogue it out along with a couple of plants to each side of it. It appears that it is possible to hold the problem at bay, or slow it down greatly by utilizing this simple practice. Practices similar to those that would assist with controlling two-spotted mites (conserving natural enemies, releasing predatory mites early enough and at timings that would allow them to establish in the planting, and avoiding use of broad-spectrum insecticides) may be beneficial, though there is currently very little information in this area.

Few miticides are labeled for use on blackberries at this time, resistance development is a huge concern, and efficacy data is somewhat limited, so we will need to do some work before making recommendations on miticide usage. Stay tuned for more news on this front.

Acknowledgement: Thanks to Sara May at Penn State's Plant Disease Clinic for assistance in diagnosing this problem in Pennsylvania.

Additional Reading/References:

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Johnson, D. 2014. Broad Mites Damaging Blackberries. Arkansas Fruit and Nut News, Vol. 4, Issue 7, Sept. 5, 2014.

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(***Source**: Penn State Fruit Times, Nov. 10, 2015*)

Rust Diseases On Raspberries

Pam Fisher, Ontario Ministry of Agriculture, Food and Rural Affairs

There are several rust diseases that attack raspberries. Rust diseases often have complicated life cycles that include alternate hosts, and most produce several types of spores. If you see rust diseases on your raspberry crops, it is important to identify which disease is present, so you can manage it effectively.

Late Leaf Rust *(Pucciniastrum americanum)*

Crops attacked: Red and purple raspberries

Alternate hosts: White spruce

Symptoms: Pale orange powdery spores on lower leaf surface, upper surfaces develop small yellow areas that gradually turn brown. Severe infections may result in early leaf drop, reduced plant vigor and yield and increased winter injury to infected canes. On fruit, bright orange powder y spore masses develop on infected drupelets.

Control: Prune and trellis raspberries to encourage air movement and rapid leaf drying. Prune out and remove old canes. If possible, remove nearby white spruce which are required for the disease to complete its life cycle. Prebloom applications of Ferbam to raspberries might help reduce infections. Currently there are no other fungicides registered for control of late leaf rust in Ontario.

Comments: Late leaf rust is common in Ontario. While summer-bearing cultivars often escape fruit infections, fall-bearing raspberries tend to develop fruit infections if weather conditions are favourable for disease development. The cultivars Heritage, Jaclyn, and Caroline seem especially susceptible.

Figure 1. Late leaf rust on raspberry leaves.

Orange Rust (*Arthuriomyces peckianus* and *Gymnoconia nitens*)

Crops attacked: All raspberry species except red raspberry

Alternate hosts: none

Symptoms: Plants develop symptoms the year following infection. New leaves are stunted, pale and spindly. Bright orange waxy pustules develop on the lower leaf surface, later becoming bright orange and powdery. Infected plants are unproductive.

Control: This disease is systemic - once a plant is infected it is always infected. Remove infected plants, preferably before orange pustules break open and spores spread to more plants. Remove wild black raspberries from adjacent woods and hedgerows.

Comments: Very common on wild black raspberries and blackberries.

Figure 2. Late leaf rust on raspberry fruit.

Yellow Rust (*Phragmidium rubi-idaei*)

Crops attacked: Red raspberries

Alternate hosts: none

Symptoms: In spring and early summer, yellow pustules appear on the upper leaf surface of young leaves. As summer progresses orange pustules are produced on the lower leaf surface, eventually turning black as the overwintering spores are produced. If infections are early and severe, the disease can cause early leaf drop and reduced winter hardiness.

Control: Purchase clean plants from a certified plant grower. Reduce inoculum by pruning out old canes and cultivating to reduce leaf debris. Several group 3 fungicides, such as Nova, Tilt and Bumper, are registered for control of yellow rust. Apply before symptoms appear.

Comments: This disease is not prevalent in Ontario, although it is common in the Pacific Northwest. Yellow spots on the upper leaf surface can help growers distinguish between yellow rust and late leaf rust, which does not produce symptoms on the upper leaf surface.

Figure 3. Orange rust on black raspberry.

Table 1. Rust diseases of raspberry and black raspberry

Common Name (Scientific Name)	Crops Attacked	Alternate Host	Symptoms	Control
Late leaf rust (*Pucciniastrum americanum*)	Red and purple raspberry (common in Ontario)	White spruce	Orange powdery spores on lower leaf surface, and on fruit. No distinct spots on upper leaf, but eventual necrosis.	Crop sanitation, trellising and pruning to assist with quick drying. Remove nearby white spruce.
Orange rust (*Arthuriomyces peckianus Gymnoconia nitens*)	All raspberry species except red raspberry	None	Bright orange waxy pustules develop on the lower leaf surface, later becoming bright orange and powdery.	Remove infected plants. This disease is systemic in plants.
Yellow rust (*Phragmidium rubi-idaei*)	Red raspberry (not common in onatario)	None	Yellow pustules on upper leaf surface of young leaves. Orange powdery spores on lower leaf surface turning black in late summer.	Crop sanitation and use of registered Group 3 fungicides in spring and early summer.

(***Source**: Ontario Berry Grower, November 2015*)

How To Avoid A Common Blueberry Planting Error

Mark Longstroth, Michigan State University

I am often called to look at new blueberry plantings to determine what is wrong because of poor growth. Many times the field was planted before the soil was tested and the soil pH was too high for blueberries. Blueberries prefer a soil pH of 4.5 to 5.5.

Sometimes the soil pH is fine, but the plants stopped growing early or dried up during the first dry weather of the summer, even in fields that have irrigation. When this is the case, I can often walk up to the plant and easily pull it out of the soil. The plant's roots never moved out of the peat soil that they grew in when they were raised in the nursery. This is especially true when the soil texture in the field is different than the potting medium the plant grew in before.

Blueberries are often planted in the fall. Break up the root ball at planting so new roots grow out into the native soil.

The peat mixtures used to grow blueberry plants hold water very well, but the sandy soils in many blueberry plantings do not. As the soil water drains away, there is little reason for the plant roots to grow into the relatively dry sand. This results in a small, restricted root system supporting a relatively large plant. This problem is not apparent early in the season when there are few leaves and the soils are moist. Later as the plant develops leaves, it starts to use more and more water until the day comes when the plant sucks all the water out of the little pocket of peat soil where its roots are.

I see this problem usually in sandy soils, but I also see it in heavier soils. I often see it in young plants where they just are not growing. They get off to a good start in the spring and then just stop and sit there for the rest of the year because the small root system just cannot supply enough water to the leaves to allow the shoots to grow for very long in the spring before they run out of water and stop. These plants just sit there year after year. They grow a little bit every spring and then shut down and hang on for the rest of the growing season. Often, people think the plant needs more fertilizer and sometimes fertilize them to death by giving them more and more fertilizer to get them to grow. The solution is to dig up these stunted, root-bound plants in the spring or fall and replant them. Be sure to break up the root ball and replant them.

This 3-year-old plant looked good in the field after planting. It was planted in a trench that was soil and peat. During the hot summer, the leaves dried out and it came out of the ground easily. This bush thrived after the root ball was ripped open and replaced.

Don't sacrifice a year or more of growth by being in a hurry at planting time. Be sure to thoroughly break up the root ball when you plant the plant. When you pop it out of the pot, don't just cut the edges or shake a little dirt off; pull it apart. Pull the bottom of the root ball apart so the root system is twice as wide and half as deep as it was and spread the root system out in the hole. Let the loose peat fall into the planting hole. Almost all the roots are around the outside of the soil mass where the aeration in the pot was best and this is where all the new roots will come from.

If there is a real difference in soil texture between the potting medium and the native soil, add some peat. This is especially true if the soil is mostly sand or clay. Compost or composted manures are not usually good to add to the planting hole since these materials have a higher, more neutral pH. These materials will raise the soil pH higher than blueberries like in the soil.

When you plant blueberries, your objective is to grow a big productive bush in eight to 12 years, and that bush requires a big root system. Make every effort to get the roots off to a good start so they can support vigorous growth for years to come. If the root system is restricted, that plant will always be small. (***Source**: Michigan Fruit Crop Advisory, Oct. 16, 2012*)

Now is a Good Time to Assess Your Vineyard Weed Control Program

Lee Stivers, Penn State Extension

With the grapes all harvested, and frosts already visiting the vineyards, it might seem an odd time to be thinking about weeds. However, fall is not a bad time to take a walk through your vineyard and makes some observations about weed control. At this time of year, it is still possible to recognize summer annual weeds, even those that are not frost-tolerant, as well as to identify stubborn perennials, and young winter annual and biennial weed species. You may even want to draw up a weed map of your vineyard to help you next year when making weed control decisions.

I recently took a vineyard weed walk with Rich Ripepi of Ripepi Winery and Vineyards in Monongahela. We discussed his cultural and chemical weed control practices, what worked and why, and talked about several of the weed species that we found.

The rainy season this year made it a challenge to control weeds in the vineyard rows. In early August at Ripepi Vineyard, weeds in most of the vineyard rows were weed-whacked back to approximately 8 inches in height, followed by an application of glufosinate herbicide (Rely, Liberty). Two and half months later, we see that few new weeds had emerged in this dead residue (photo 1). But in several rows where vine growth was too vigorous to allow for the herbicide application, we found a variety of annual and perennial weeds. Here's a few of the species we found, and how they might be controlled next season.

Canada thistle: A common perennial weed throughout Pennsylvania, Canada thistle spreads from rhizomes. Uncontrolled, Canada thistle can form large patches in the vineyard. Glyphosate applications made in late summer or fall are the most effective chemical control. Pre-emergence herbicides will not control Canada thistle.

Foxtail: Yellow foxtail, green foxtail, and giant foxtail are all clump-forming annual grass weeds often found in vineyards. Because they germinate anew from seeds each spring, they can be controlled using pre-emergence herbicides (e.g. Chateau or Devrinol). But there are also several post-emergence grass herbicides such as Select or Fusilade that can also provide excellent control.

Hemp dogbane: Another perennial plant, hemp dogbane spreads by both rhizomes and seeds. Glyphosate herbicides will provide only fair control of hemp dogbane; glufosinate and paraquat are not very effective against this weed.

Sow-thistle: There are a number of sowthistles, both annual and perennials, members of the genus Sonchus, that are common in vineyards. Spread mostly by seeds, they form rosettes during the fall, tightly hugging the ground. Another weed species that resembles sow-thistles in form and habit is prickly lettuce. Sow-thistles are usually controlled by weed control measures used against more troublesome weeds, but they can be quite abundant in the fall.

Identifying and mapping weeds in the fall is a valuable IPM practice, and you can learn a lot from taking a weed walk through your vineyard. To help you identify the weeds you find, I highly recommend purchasing a copy of *Weeds of the Northeast* by Uva, Neal and deTomaso to use as a reference. This field guide to common weeds covers nearly three hundred weeds common to our area, and includes photos of each weed at different growth stages.

Photo 1: Good weed control continued for several months in vineyard rows where weeds were partially cut back and then treated with glufosinate.

Photo 2: Canada Thistle

Photo 3: Foxtail

Photo 4: Hemp Dogbane

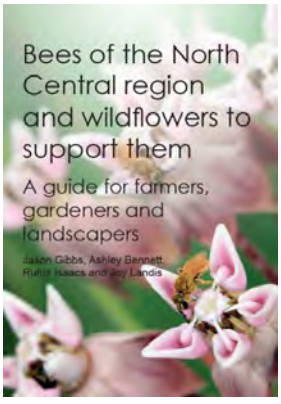
Photo 5: Sow-thistle

(***Source****: Penn State Viticulture & Enology News, Oct. 23, 2015*)

GENERAL INFORMATION

New Guide For Encouraging Pollinators Available

Rufuc Isaacs, Michigan State University



"Bees of the Great Lakes Region and Wildflowers to Support Them" is a new Michigan State University Extension publication that provides an overview of the diverse community of wild and managed bees across the Great Lakes region. Packed with photos of the most common bee species and showing photographs and descriptions of wildflowers that are attractive to bees, the guide also provides a section on bee conservation with some practical steps to take.

Bees are essential for pollination of many crops and they also pollinate flowers in the garden and in wild areas, helping to support natural systems. Approaches to supporting these insects is generally similar for all habitats: provide them with some food (flowers), give them a place to nest (habitat or artificial cavities) and don't kill them (use bee-safe insecticides or follow label restrictions to protect pollinators).

The guide contains 110 pages and is designed to fit in your pocket. The pollinator section offers great photos coupled with tips for identifying bee species, descriptions of their behavior and contribution to pollination. The featured herbaceous plants can be used in farms, gardens and urban landscapes to encourage and meet the needs of bees. Each plant's page describes preferred growing

conditions, flower characteristics, common pollinators it attracts and best companion plants. Farmers and gardeners will find useful information for exploring these fascinating and valuable insects and will learn how adding native plant diversity into gardens, fields and other landscapes can provide bees with the resources they need to survive and thrive.

"Bees of the Great Lakes Region and Wildflowers to Support Them" is available from the MSU Extension Bookstore for $10 per copy, and discounts are available for bulk purchases. Enter E3282 in the search box to find the publication. (***Source**: Michigan State Fruit Crop Alert, Oct. 21, 2015*)

Fall Weed Control In Established Fruit Crops

Bernard Zandstra, Michigan State University

Fall is a good time for application of residual and foliar-active herbicides in established tree fruit and small fruit. By mid-October, a frost usually has killed annual weeds and frozen off the foliar portion of perennial broadleaf weeds. Perennial grasses, such as quackgrass, orchardgrass and turfgrasses, survive frosts but usually retreat somewhat. By waiting to spray until most weeds are dead, more herbicide reaches the soil and long-term weed control improves.

Herbicide application in fall appears to be counter-intuitive, in that the intended activity is five to six months away. However, experience has shown that herbicides applied in fall outperform the same treatments applied in the spring. Evidently, cold soil temperature reduces herbicide degradation, and rain moves the herbicide into the upper layers of soil, where it is active as soon as weeds begin to germinate in spring. Little herbicide is lost by runoff or wind erosion during winter.

Post-emergence herbicides, such as glyphosate (Roundup), 2,4-D, clopyralid (Stinger) and fluroxypyr (Starane), are often more effective against annual and perennial weeds when applied in fall. For example, glyphosate applied in fall provides very good horseweed control into next summer. Evidently, horseweed seeds germinate in fall and the small seedlings remain alive near the soil surface. They are killed by glyphosate fall application. Glyphosate applied in the same area in early spring is less effective than when it is applied in fall.

Fall application should be made after fruit trees and bushes are dormant. Under those conditions, there is little chance for crop injury, so herbicides can be sprayed against the trunk and stems of the crop and into the center of bushes. This allows for coverage of 100 percent of the area in the tree line. In spring, new growth often appears and bark softens before herbicides are applied. This can result in tree injury.

Most of the long-residual herbicides labeled for fruit trees may be applied in spring or fall. This allows growers many choices for various combinations throughout the year. Growers normally should use at least three residual herbicides with different modes of action each year. Each time a residual herbicide is applied, a foliar active herbicide should be included in the tank-mix. In fall and early spring, glyphosate or an auxin disruptor should be used. When there is new growth on trees or bushes, paraquat (Gramoxone), carfentrazone (Aim) or glufosinate (Rely) should be used to kill weeds, but cause no long-term injury to crop plants. Inclusion of pyraflufen-ethyl (Venue) with these post-emergence applications improves burndown and broadens the weed control spectrum.

Some herbicides are more effective when applied in fall. Pronamide (Kerb) is most effective against quackgrass in fall. Dichlobenil (Casoron) granules traditionally have been applied in fall, which allowed the herbicide to disperse into the soil over winter, and provide three to four months of perennial weed control next season. The liquid formulation of Casoron appears to be equally effective in fall. However, several uses are only on the granule label.

An effective weed control plan might include pronamide plus norflurazon (Solicam) plus glyphosate in fall, followed by simazine (Princep) plus flumioxazin (Chateau) in the spring. Glufosinate (Rely, Lifeline, Reckon) or paraquat (Gramoxone) may be applied in June or July to kill emerged weeds. In fall, indaziflam (Alion) may be applied with glyphosate for preemergence control the following year. In the second spring, apply diuron (Karmex) plus oryzalin (Surflan) plus paraquat, followed in mid-season by Aim plus Venue plus fluazifop (Fusilade). Saflufenacil (Treevix) may be applied during the growing season to kill emerged broadleaves, including horseweed. It may be applied four times with zero days before harvest.

By applying herbicides several times in a season, fruit growers will improve overall weed control and reduce potential for weed resistance. They also will reduce potential of crop injury from over-use of some chemicals.

Michigan State University Extension bulletin E0154, "Michigan Fruit Management Guide," Herbicide section, contains lists of all currently labeled herbicides for each crop and the preferred time of year of application. The Herbicide section includes a table that lists the mode of action, solubility in water and the soil half-life for each herbicide. Use this table and the

accompanying herbicide effectiveness table against specific weeds to select herbicides of different modes of action for various applications during the year. In general, use at least three modes of action of residual herbicides each year for maximum weed control in perennial crops. (***Source**: Michigan State Fruit Crop Alert, Oct. 20, 2015*)

Vole Management

Mary Concklin, UConn Extension

Voles can destroy fruit trees, grape vines and berry bushes in a single winter. And if they don't kill them with their feeding, they certainly weaken the plants. Rodenticide baits are the most effective means of control although some of you have mentioned in the past you feel that the populations are getting larger with baiting. Now, before the snow flies, is the time to bait. Dr. Alan Eaton, UNH entomologist, has written an excellent vole management publication which can be found at this link, http://extension.unh.edu/resources/files/Resource003424_Rep4893.pdf. In his latest grower newsletter he wrote, "If you use one of the anticoagulants, I strongly recommend that you use some type of bait station. That maximizes the likelihood that the target organisms (usually meadow vole or pine vole) will be killed, rather than many other things. We have two types registered, Diphacinone (Ramik Brown) and Chlorophacinone (Rozol). The Ramik label specifically states the stuff is applied after harvest is complete (including drops), before spring growth, and when 3 days of rain/snow free weather are expected.

Brodifacoum is a second-generation anticoagulant available to people with restricted use permits (for use in and around buildings… not in the orchard), but I STRONGLY ADVISE AGAINST USING PRODUCTS WITH THIS TOXICANT. I think it poses too great a wildlife risk to be used.

Zinc phosphide is the toxicant most commonly used in orchards, and it has almost zero risk of secondary poisoning, because it kills quickly and the material breaks down quickly. But it has a high risk of PRIMARY poisoning…killing an organism that directly eats the bait. So if you plan on using ZnP, minimize the risk of killing non-target organisms by avoiding corn as the bait (birds and others readily spot it and eat it), and avoid broadcasting it on bare spots." (***Source**: CT Fall Wrap-Up. Oct. 30, 2015*)

Draft MA Food System Unveiled at the State House in Boston

Richard LeBlanc, Mass Dept of Ag Resources

The Massachusetts Food Policy Council and Chair Commissioner John Lebeaux, (MDAR) and the Metropolitan Area Planning Council (MAPC) publicly released the draft Massachusetts Food Systems Plan on Friday, October 23 in conjunction with a celebration of Food Day. Matthew Beaton, Secretary of Energy and Environmental Affairs kicked off the program.

This exciting event offered a first-hand opportunity to interact with topic experts and provide feedback on a variety of the MA Food Systems goals. October 23 began a two week public open-comment period. Goals and strategies of the MA Food Plan were discussed including to:

- *Increase production, sales and consumption of Massachusetts-grown foods;*
- *Create jobs and economic opportunity in food and farming, and improve the wages and skills of food system workers;*
- *Protect the land and water needed to produce food, maximize the environmental benefits from agriculture and fishing, and ensure food safety; and*
- *Reduce hunger and food insecurity, increase the availability of fresh, healthy food to all residents, and reduce food waste.*

The MA Food Plan will be available at www.mafoodplan.org for comments. Over the past two years, more than 1,000 people have been involved, with input from growers, food processors, consumers, food and agricultural organizations and advocates.

The Massachusetts Food Policy Council with support from MDAR and the MAPC has facilitated the development of the draft MA Food Plan in collaboration with the Pioneer Valley Planning Commission, Franklin Regional Council of Government, and the Massachusetts Workforce Alliance. (***Source**: MDAR Farm and Market Report Extra, Oct. 2015*)

UPCOMING MEETINGS:

November 2, 2015 – *NH Pollinator Summit*. 8:30am – 4:15pm. Crappone Conference Center, Concord NH. $25-$45. For more information see http://extension.unh.edu/pollinator-summit**.**

November 8, 2015 – *Massachusetts Cultivated Blueberry Grower's Assoc. Winter Meeting*. 12:30 3:00. Harvey's Conference Center, 68 Hopkinton Rd., Rte 135, Westborough MA 01581. Program features Heather Faubert, URI Extension, speaking on "How to protect blueberry plants from Winter Moth" and SWD Update. $25 includes catered meal. $10 w/o meal. RSVP by 10/23 at EAP1226@verizon.net.

November 17, 2015 – *UNH Soil Health Workshop*. 9:30 – 3:00. $25. White Mountain National Forest Headquarters, 71 White Mountain Drive, Campton, NH, 03223. For more information go to: http://extension.unh.edu/events/files/727C1B13-5056-A432-4FB315FA85C1345A.pdf.

November 16 – 18, 2015 - *Southeast Strawberry Expo*, Embassy Suites in Concord, NC. For more information visit http://www.ncstrawberry.com/ or email info@ncstrawberry.com or call: 919-537-2287

November 17-20, 2015 – *Better Process Control School*. All Day Program. 243 Chenoweth Lab Conference Room. Food Science Building/UMass. For more information and to register, see: https://ag.umass.edu/events/better-process-control-school-umass-amherst-campus-amherst-ma-november-17-20th-2015.

December 1, 2015 - *CT Pomological Society Annual Meeting*, 8:00am – 3:30 pm at The Gallery Restaurant, 141 New London Turnpike, Glastonbury, CT. For more information contact Mary Concklin at mary.concklin@uconn.edu.

December 15-17, 2015 – *New England Vegetable and Fruit Conference*. All Day Programs. Radisson Hotel, Manchester NH. For program details and registration information, go to http://www.newenglandvfc.org/.

January 7-9, 2016 – *North American Strawberry Growers Conference.* Savannah International Trade & Convention Center, Savannah GA. For information go to: http://www.nasga.org/n-american-strawberry-growers-conference.htm**.**

January 11, 2016 - *CT Vegetable and Small Fruit Conference* at Maneeley's Conference Center, 65 Rye St, S. Windsor, CT. For more information contact Mackenzie.White@uconn.edu or 860-875-3331

January 16, 2015 – *NOFA – Mass Winter Conference*. Worcester State University. You can learn more about the conference and register at www.nofamass.org/events/wc.

January 22-24, 2016 – *NOFA-NY Winter Conference***.** Saratoga Hilton and City Center, Saratoga Springs, NY. For more info see www.nofany.org.

Jan. 25, 2016 - *Vermont Vegetable and Berry Growers Assn Annual Meeting*, Fairlee, VT. For registration information see: http://www.uvm.edu/vtvegandberry/?Page=meetlist.html.

Feb. 13-15, 2016 - *NOFA-VT Winter Conference*, Burlington, VT. For registration information see: http://www.uvm.edu/vtvegandberry/?Page=meetlist.html.

March 2-4, 2016 - *North American Raspberry & Blackberry Conference*, Williamsburg, Virginia. All-day tour on March 2, educational sessions and trade show on March 3-4. For more information, visit www.raspberryblackberry.com.