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Berry Notes

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UPCOMING MEETINGS

Hoop House Symposium Videos Online - The Samuel Roberts Noble Foundation has posted three videos from its Basic AG Hoop House Symposium. The videos include a five-minute piece on types of structures, a nine-minute piece on construction materials and end-wall options, and a 16-minute segment on site selection and preparation and hoop house installation. Click [here](#) to see more.

25 years of Northeast SARE - A celebration of 25 years of program operations includes interviews, money matters, and program history. From 'Where does an idea begin?', to 'And where does it lead?', 'Lessons learned, a look ahead', 'Building a culture of respect' and 'Betting the farm', and more, the Northeast SARE program has built a reputation for advancing important grassroots innovations and an extensive resource library for all growers and producers in the region. To read more click [here](#).

Funding Available for Farm to School - Yesterday, the U.S. Department of Agriculture Secretary Tom Vilsack **announced** the release of a request for applications for the third round of USDA's **Farm to School grants**, including the addition of a new funding track for training events and conferences. These grants help to improve the health and well being of students through school meals that incorporate locally produced foods, educate children about food, and create new and expanded markets for local food producers. Click [here](#) to read more.

2014 MassAggie Workshop Series lineup announced. Each year the UMass Stockbridge School of Agriculture and the UMass Center for Agriculture offer one or more workshop series on topics of general interest to homeowners and small scale farmers. In the past workshops have been offered in fruit tree grafting, pruning, wildflower identification, and cider making. Click [here](#) to see this year's lineup.

Winter Freeze Injury to Strawberry Crowns

Sonia Schloemann, UMass Extension

Strawberries are susceptible to winter injury in two primary ways. The first is damage to roots from the heaving of soil that can result from cycles of freezing and thawing in the spring. This heaving action can snap roots and lead to problems with root infections in the wounded tissue. The other way in which strawberries can suffer damage in the winter is from freezing of crown tissue.

The strawberry crown is actually a compressed stem structure with layers of vascular tissue that forms a cylinder with vascular tissue running spirally in two directions. (See Fig. 1.) Inside this lignified or woody vascular tissue is a fleshy pith that can easily be injured and turned brown by the formation of ice crystals at low temperatures. The critical temperatures will vary with the variety of strawberry.

Most of our Northern varieties can withstand crown temperatures of between 10 to 14°F. This is why mulching for winter protection is so important for this crop. At these temperatures, not only is the pith damaged, predisposing the tissue to infection by various pathogens, but the vascular function of the outer layer of cambium tissue can prevent normal transport of water and nutrients in the plant.

Freezing injury is easily seen by cutting the crowns length wise and looking for damaged tissue. (Be aware that if left exposed to air for a while, this tissue will oxidize and turn brown like an apple when it is cut

open.). Uninjured pith at the center is a creamy white when first cut. With slight injury to the crown, but not measurable in its effect on the plant, browning of the lower part of the pith occurs.

Moderate injury, seen as a deeper browning, will result in noticeable damage to the plant (i.e., general weakening, slow growth, fewer blossoms and reduced yield), Lethal injury, where vascular tissue has been killed, will exhibit deep browning and blackening of the outer cambium and result in plant death.

If you suspect winter damage in your strawberry field, go out and cut some crowns a week or two after the ground has thawed. If a high percentage of crowns show severe injury, it may be necessary to plow the field down and enter into a rotation cycle for a few years.

This will help purge the soil of high levels of pathogens that may build up on the decaying strawberry crowns. Low levels of damage can be nursed through to better

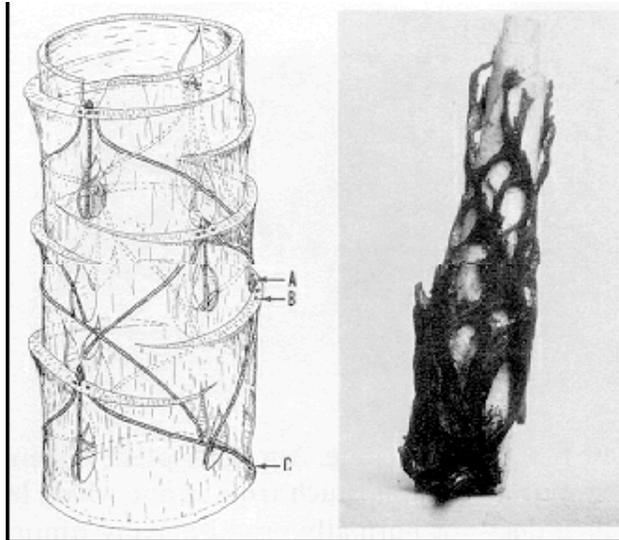


Figure 1. Morphology of the strawberry crown. (from G.M. Darrow, *The Strawberry: History, Breeding and Physiology*; <http://www.nal.usda.gov/pgdic/Strawberry/darpubs.htm>)

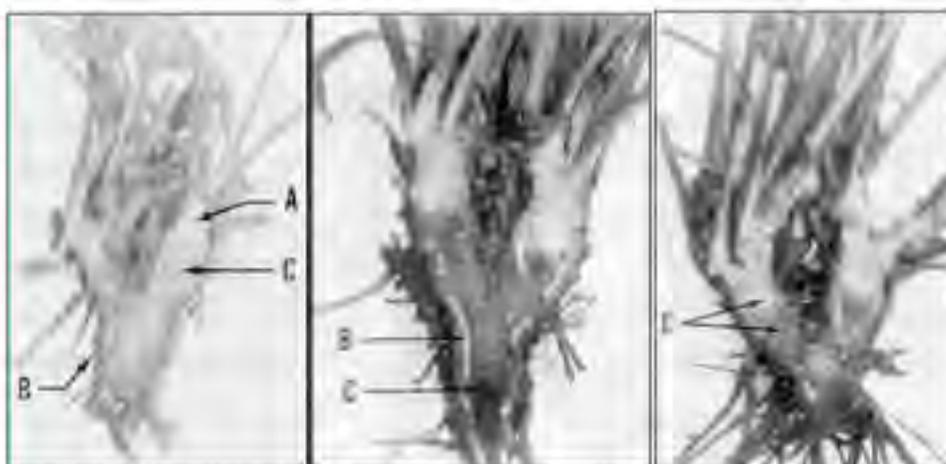


Fig 3. Cold injury to strawberry crowns. Uninjured crowns would have white centers at A. 1. The most serious injury occurs when the cambium that carries sap and food is killed. Slight recovery is shown by new cambium in 1 and 3 at B. Plant 2 would not have recovered. The darkening of the centers of the crowns (C) is caused by the formation of frost crystals that break through the cell walls and oxidation follows, as in the browning of sliced apples. (from G.M. Darrow, *The Strawberry: History, Breeding and Physiology*; <http://www.nal.usda.gov/pgdic/Strawberry/darpubs.htm>)

health by judicious irrigation, fertilization and other practices to keep plant stress low. See figures 2 and 3 below for help determining if your plants have winter

injury or some other type of crown/root damage. (Reprinted from *Mass Berry Notes*, February 15, 2006 Vol. 18, No. 2)

RASPBERRIES/BLACKBERRIES

Pruning Brambles

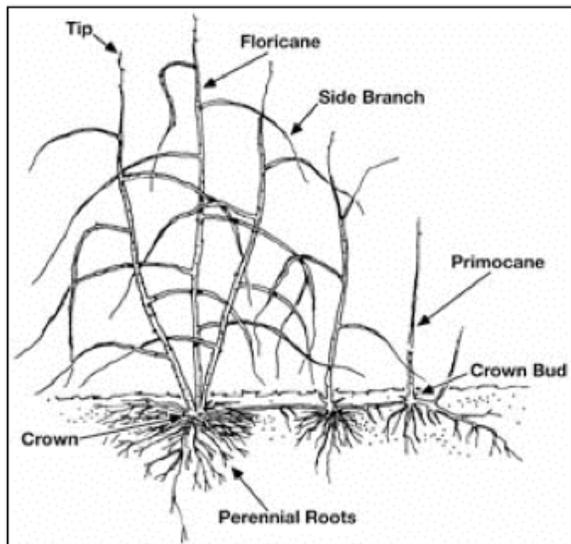
Sonia Schloemann, UMass Extension

Introduction

Once established, raspberry plants require regular attention to keep them healthy and producing well. Weed and pest management are important aspect of maintaining a productive raspberry patch. Annual pruning is also a key activity for keeping raspberries productive.

Why is pruning important?

Brambles are plants with a biennial growth habit. This means that canes are produced in one year (called primocanes), overwinter, and then flower and fruit in the second year (then called floricanes). After floricanes fruit, they are no longer needed by the plant and will die back. Removal of these spent floricanes is the first step in pruning brambles.



What are the steps to successfully prune raspberries?

Understanding of the goals of pruning will help guide how you prune your raspberries. The primary goal of is to generate optimal fruit production.

Raspberries produce fruit on floricanes (except fall-bearing types) so removing 'spent' floricanes after harvest and correctly managing primocanes results in productive plants. Secondly, you want to create good conditions for fruit production and ripening. An open growth habit for raspberry rows allows for good air circulation and drying

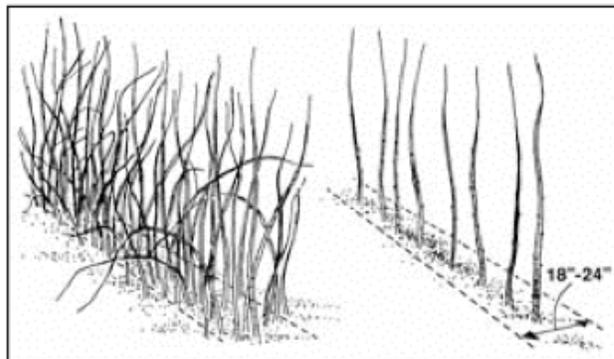
conditions which helps reduce the incidence of fruit rots. This also allows for sunlight penetration into the fruiting zone and promotes ripening and heightens flavor.

Types of Brambles:

Summer bearing types, including red, black, purple, yellow raspberries and blackberries all fruit on 2nd year canes.

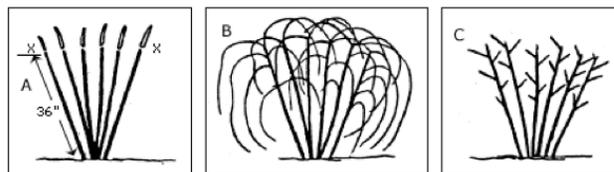
Steps in pruning summer bearing raspberries:

- 1) remove spent floricanes (fall – winter)
- 2) thin remaining primocanes to 6-8" apart, weed out spindly or broken canes, keep healthy robust canes (March)
- 3) re-establish 12-18" row width (March or later)
- 4) top remaining canes to 5" above top trellis wire (48 – 60")



Steps in pruning blackberries:

- 1) tip primocanes in summer (A) to promote growth of laterals (B); leave at least 6" above top trellis wire (summer)
- 2) remove spent floricanes (fall – winter)
- 3) thin remaining canes to 5-10 canes per plant; remove spindly/damaged canes first (March)
- 4) head back laterals (C) to 6-8" (March)
- 5) adjust overall height of canes to 6" above top trellis wire (March)



Steps in pruning fall bearing raspberries:

1) mow all canes to 2 – 3” from the ground.

What are the tools used for pruning?

Hand tools such as loppers and hand pruners can be used for pruning raspberries. All tools should be sharp and clean at the outset. Select the appropriate tool to remove wood as cleanly as possible to avoid unnecessary injury to the plant. Leather gardening gloves are also recommended to prevent thorns from injuring or irritating bare hands.

Summary

Learning to master the art and science of pruning raspberries takes time and practice. Contact your University Extension Educator for updated information on pruning. Make sure your raspberries are pruned each year to keep them healthy and to maximize fruit production and increase the overall fruit quality.

Illustrations from PennState Small Scale Fruit Production Guide used by permission.

BLUEBERRY

Pruning Blueberries

Sonia Schloemann, UMass Extension

Why is pruning important?

Blueberry bushes that have not been pruned on an annual basis become overgrown in both height and branch density and as a result are less productive (Figure 1). Proper pruning of blueberries is key to maintain plant size, shape, and fruit production (Figure 2).

What are the steps to successfully prune a blueberry bush?

Understanding of the goals of pruning will help guide how you prune your blueberries. The primary goal of is to generate fruit production. Blueberries produce fruit on ‘young’ wood so removing ‘old’ wood and continuously generating ‘young’ wood results in productive bushes. Secondly, you want to create good conditions for fruit production and ripening. An open growth habit for bushes allows for good air circulation and drying conditions which helps reduce the incidence of fruit rots. Also, an open habit allows for sunlight penetration into the fruiting zone and promotes ripening and heightens flavor.

Are individual blueberry varieties pruned differently?

There may be slight variations in how certain varieties are pruned. Each variety may produce a different number of new canes each year; however, the overall plant structure is generally the same. Most high-bush blueberry varieties will respond similarly in terms of vegetative growth, fruit production, and quality of fruit following general pruning.

Can young blueberries be pruned the same as older, mature bushes?

Young bushes generally require less pruning to remove undesirable growth. Mature bushes normally require more selective cuts to maintain a desired shape, plant structure, and productive fruiting wood. The key to pruning young plants is to focus on setting up the overall plant structure that will make the bush fruitful for several years. Bushes that are seven years old and older will need to have a few mature canes removed to maintain a balance between

older canes that are becoming less productive and young canes that are not quite into full production.



Figure 2. Blueberry bush after pruning.

How to approach a blueberry bush when pruning:

- 1) Visually size-up the blueberry bush from all sides and imagine what the plant should look like when pruning is completed.
- 2) First remove all diseased and broken canes or ones growing too low to the ground.
- 3) Next, canes that are eight years old or older should be removed.
- 4) Remove all but the 2-4 most robust new canes produced the previous year.
- 5) Ultimately, the bush should be:
 - a) narrow at base,
 - b) open in the center, and
 - c) have a balance of multi-age canes throughout the bush.



Figure 1. Blueberry bush before pruning.

How should older, overgrown blueberry bushes be pruned?

Blueberry bushes should be rejuvenated to improve fruit production and maintain proper shape. This may require that several old canes be removed and the bushes be pruned to fit the desired shape. Rejuvenating bushes can be quite a challenge if there has been no annual pruning done for several years. The first approach would be to remove any diseased or broken branches. Secondly, depending on the overall number, the oldest two or three canes should be removed to open up the plant structure.

As with any blueberry bush, the center of the plant should be open to sunlight and air movement. The base of the bush (at the top of the root crown) should be tighter than the middle to upper portion of the bush. All branches that are touching and crossing should be removed. Sometimes, the best approach is to cut down the entire bush and allow it to regrow from the roots. This will eliminate any fruit production for a couple of years, but results in a rejuvenated and productive bush thereafter.

What are the tools used for pruning?

Hand tools such as loppers, hand pruners, and handsaws can be used for pruning blueberries. All tools should be sharp and clean at the outset. Select the appropriate tool to remove wood as cleanly as possible to avoid unnecessary injury to the plant. Hand pruners can be used to effectively remove one-year-old wood. If the wood is two or three years old, it is suggested that a lopper or saw be used to cut through the heavier wood. Occasionally wood is too thick or positioned in such a way that it is difficult to cut cleanly with loppers or handsaws. In such a case, a cordless reciprocating saw is an excellent tool.

Summary

Learning to master the art and science of pruning blueberries takes time and practice. Contact your University Extension Educator for updated information on pruning. Make sure your blueberries are pruned each year to maintain the size and shape of the bushes to maximize fruit production and increase the overall fruit quality.

Illustrations from PennState Small Scale Fruit Production Guide used by permission.

GRAPE

Balance Pruning Grapes

Joe Fiola, University of Maryland

I. Critical Step in Maintaining/Adjusting Vine Balance

A major theme of viticulture is that for a vine to consistently produce high quality fruit it must be “in balance.” That means that the amount of vegetative growth (shoots and leaves) is just right to properly ripen the reproductive growth (fruit load). Too little fruit may lead to an over-vigorous vine, shaded fruit and lower quality. Too much fruit may decrease vigor to a point where there is not enough photosynthetic area to properly ripen the crop leading to under-ripe fruit and reduced quality.

The first step in achieving proper vine balance is choosing the proper training system for that variety on that site. The next step to annually adjust and maintain that balance is through dormant pruning. Mature grapevines require annual pruning to remain productive and manageable. An average grapevine will have 200 to 1000 buds on mature canes capable of producing fruit. If all of the buds were

retained it would result in the over-cropping scenario described above.

To avoid this situation, researchers have developed a method of pruning to balance the fruit productivity and vegetative growth that will give maximum yields without reducing vine vigor or wood maturity. This procedure is appropriately referred to as “Balanced Pruning,” as the amount of pruning is based on the vigor of the vine.

Here are some of the specifics of proper balanced pruning:

- The way to quantify vigor is through vine size, which is determined by the weight of one-year-old cane pruning.
- To balance prune a grapevine and estimate the vine size, roughly prune the vine, leaving enough extra buds to provide a margin of error.

- Then weigh the one-year-old cane prunings (small spring scale) that you just cut off and apply the weight to the pruning formula to determine the number of buds to retain per vine.
 - For Concord vines, the pruning formula is 30+10, which means leave 30 buds for the first pound of prunings plus 10 buds for each additional pound. A vine with three pounds of prunings would require a total of 50 buds, 30 for the first pound plus 10 for each additional pound.
 - Here are some other variety examples and their "typical" bud count formula. Remember, each variety will behave differently in different environments, so these are meant to be suggestions and used as a starting point and adapted for the vigor of your site.
- To final prune that vine, continue to prune the spurs or canes until you have remaining the number of buds you calculated from the pruning weight formula for that vine.
- Remember we are ultimately looking for 3-5 shoots per linear foot of row during the growing season, depending on the cluster size of the specific variety. Future Timely Viticulture issues will address timing and other critical issues.

II. Timing

Pruning a vine causes it to deacclimate similarly to a warm spell, so do not prune (especially very sensitive varieties) when you know you will experience very serious cold shortly afterwards.

The best thing to do is to try to delay pruning as long as practically possible. If you could accomplish all of your pruning in the last two weeks of March that would probably be best, although that is typically not enough time for most commercial vineyards.

Delayed pruning also allows for better estimation of winter injury to buds so that adjustments in bud number can be made.

If you cordon prune it is sometimes best to "rough prune," maybe down to 12-16 inch spurs initially and then down to your final 2-3 bud spurs.

- This "rough pruning" will inhibit the development of the critical count buds on the spurs you are maintaining compared to cutting directly back to a 2-3 bud spur.
- For early budding varieties (Chardonnay) pruning to final 2-3 bud spur is accomplished only after danger of late frosts has passed.

As much as possible, prioritize your pruning schedule according to the relative susceptibility to winter injury of each variety.

- Prune vines on the best sites first and the worst sites last.
- Prune American varieties first
- Followed by the cold resistant hybrids (Foch, Baco Noir, Seyval)
- Followed by the more cold sensitive hybrids (Vidal, Traminette Chambourcin)
- Save the vinifera for last, doing the least cold sensitive first. (Riesling, Cab Franc)
- And the more sensitive vinifera (Merlot?) for very last.

- You may have developed a feel for the "relative" cold sensitivity of the vinifera varieties at your site based on experiences in test winters. Remember, the relative hardiness may change from region to region and vineyard to vineyard.

- Also early budding varieties (Chardonnay) should be pruned as late as possible to delay bud break and avoid late frosts. Rough prune first as described above, and only make final cuts down to count buds after all danger of frost has passed. (**Source:** Maryland Timely Viticulture, March 2012)

SPECIALTY CROPS

Pruning Elderberries

Patrick Byers, University of Missouri Extension and Andrew Thomas, University of Missouri Southwest Center

The American elderberry (*Sambucus canadensis*) is a medium to large multiple-stemmed shrub or small tree. During our initial investigations into elderberry culture in the Missouri Elderberry Development Program, we noted that elderberries in a wild undisturbed state produced flower cymes of varying sizes on shoots of different ages. The bloom season was often extended over several weeks, with a corresponding fruit harvest season of 3-4 weeks. We were excited to note, however, that disturbed plants, such as those regularly cut back by mowers, often produced a crop of large cymes on the new shoots that grew the following season after the mowing.

Elderberries are for the most part harvested by hand, and we were interested in developing cultural management strategies that could make this tedious (and expensive)



part of growing elderberries more efficient. For example, could we develop a pruning strategy that resulted in larger flower (and fruit) cymes, a concentrated ripening period,

and a presentation of fruit cymes that made harvest easier? We were also interested in developing pruning methods that streamlined pruning that without sacrificing yield or fruit quality.

We designed a pruning trial to evaluate 4 pruning methods: annual removal of the plants to the ground; removal of the plants to the ground every 2 years; touch up pruning that maintained older shoots; and unpruned plants. We included three elderberry cultivars or selections in the trial, planted in a replicated fashion with 6 replications, and established the research plantings at 2 sites in Missouri. The plantings were established in 2000, and the study was conducted for 7 years.

As might be expected, many interactions among the research variables were noted in the study, and in particular it was difficult to make general statements regarding yield and pruning method. However, cyme number and size were more clearly and consistently affected by pruning treatments than were yields, and manipulation of cyme number and size appears practical and achievable with pruning. Annual pruning generally resulted in the production of fewer, larger cymes across both locations and all three cultivars. This same response was evident on plants that were pruned to the ground bi-annually; during the year of pruning, fewer larger cymes were produced, with cyme number increasing and cyme size decreasing the subsequent year. These results suggest that cyme number and size are directly affected and can be precisely manipulated by pruning. Indeed, this aspect of elderberry pruning management may be more important than yield effects. In most cases, producers

would prefer harvesting fewer, larger cymes rather than more numerous, smaller cymes in terms of harvest efficiency and post-harvest handling.

Fruit ripening date was, in many cases, significantly affected by the pruning treatments in this study. The predominant trend was that pruning plants to the ground delayed fruit ripening by several days, and also tended to reduce the number of harvests, focusing the harvest window into a narrower timeframe. Furthermore, because all growth on such plants is new shoots, uniformity of flowering, fruiting, and ripening is achieved. For producers, this system of pruning management would likely increase harvest and post-harvest efficiency, and any potentially lower overall yields might be considered a reasonable trade-off for the greatly simplified pruning and harvest.

We feel that annual pruning of elderberry plant to the ground may be a sound approach for many, though not all American elderberry cultivars. Observations in other studies indicate that not all elderberries selections or cultivars reliably produce fruit on new shoots. We also have noted that European elderberry (*Sambucus nigra*) often does not produce blossoms and fruit on first year shoots.

Reference:

Thomas, A.L., Byers, P.L., & Ellersieck, M.R. (2009). Productivity and characteristics of American Elderberry in response to various pruning methods. *Hortscience*, 44(3), 671-677.

Pruning Gooseberries and Currants

B. C. Strik and A.D. Bratsch, Oregon State University

Prune when the plants are dormant in late winter. Red currants and gooseberries fruit in a different way from black currants, so you should prune them differently.

Red currants and gooseberries

These produce most of their fruit on spurs that are located on 2- and 3-year-old wood. Canes (stems arising from the base of the plant) that are 4 or more years old are no longer productive; remove them when you prune. After pruning, a healthy bush should have 9 to 12 main canes--3 to 4 each of 1-, 2-, and 3-year-old canes. Remove all canes older than 3 years and canes that are damaged or diseased. Prune to form an open center and remove canes that are low to the ground.

After planting, a yearly pruning schedule would look like this:

Year 1. At the end of the planting year, remove all but 6 to 8 of the most vigorous canes during the dormant period. Make your pruning cuts as close to the ground as possible.

Year 2. At the end of the second season, leave 4 or 5 new 1-year-old canes, and keep 3 or 4 of the 2-year-old canes.

Year 3. Keep 3 to 4 canes each from 1-, 2-, and 3- year old growth.

Year 4. At the end of the fourth and following years, remove the oldest canes and keep 3 to 4 new 1-year-old canes to replace the older canes you removed.

Black currants

Black currants produce best on 1-year-old wood. Strong 1-year-old shoots and 2- or 3-year-old canes that have an abundance of strong 1-year-old shoots are the most productive.

When you prune, keep a total of 10 to 12 canes per mature bush -about half should be 1-year-old shoots. You can leave a few more shoots if the plant vigor is very high. Remove all shoots that are more than 3 years old. Make your pruning cuts close to the ground.

Because black currants bear most of their fruit on 1-year-old wood, you can prune them to produce on alternate

years. In this system, prune plants to the ground during the dormant period. This causes the plant to produce many new shoots; no fruit will be produced the season after pruning. Don't prune the plants in the next dormant period, other than removing diseased wood or weak growth.

The following year, they fruit on the 1-year-old wood. Prune your plants to the ground again the following dormant period, repeating the cycle. In this system you get fruit produced every other year on a particular plant. To get fruit each year, you can have half your plants fruiting in one year and the other half the next.

If you're growing black currants in a hedgerow, it's simplest to follow the alternate-year pruning method.

Training to a trellis. Currants and gooseberries can be grown as a fan shaped bush on a trellis. Plants trained this way look attractive and produce a good crop of well colored fruit. To train to this system, plant rooted cuttings along a trellis with 3 to 5 wires. Space single plants at 3 to 4 feet. Tie side branches to the wires as they develop. To develop a narrow fruiting wall, use the pruning techniques mentioned for the type of currant or gooseberry you're growing. This system requires a lot of labor and patience—only gardeners with a lot of experience should try it! (*Source: Oregon State University Home Horticulture Publication EC 1361, online at <http://extension.oregonstate.edu/catalog/html/ec/ec1361/>*)

GENERAL INFORMATION

Polar Vortex: The Possible Good and Bad of Winter 2014

Marvin Pritts, Cornell University

Frequent visits from the polar vortex this winter have caused many fruit growers to be concerned about this year's crop potential. Front page headlines suggest that grape growers are already seeking government funds to help with the loss. Peach growers are also anticipating a limited crop. But what should berry growers anticipate?

Berry crops enter a time of dormancy when the water exits the plant cells and they become relatively resistant to cold temperatures. So long as temperatures drop slowly in fall, plants acclimate, go dormant and then can tolerate quite cold temperatures. This past fall was a relatively good year for acclimation, so there is not likely injury due to a sudden drop in temperature before acclimation occurred. Most injury to berry crops happens when water re-enters the tissues when weather warms in spring, and then this is followed by another period of intense cold. This water freezes and expands, injuring vascular tissues and buds. The good news is that temperatures this winter have stayed relatively cold. This is far better for the plant than winters in which the temperatures fluctuate dramatically. These fluctuations could still come, but so far they have been few.

Has the absolute temperature been too cold for berry crops? Strawberries should be covered with straw mulch, and if not, they will likely to have been covered with snow during the cold weather. This protects the plants from injury, so most strawberries should be fine this year. Blueberries can be injured when the temperature begins to fall below -10F, but significant damage doesn't occur in most varieties until -20F. I have seen blueberries killed back to the snow line at -30F. We flirted with -20F at many locations, so the possibility exists for some bud damage. You can determine if damage has occurred by placing some flowering shoots in a vase of water in the

house for a few days. After water moves into the tissue, cut the buds with a razor blade and look for browning (a sign of injury). The least hardy buds will be near the top of the shoot. The good news is that blueberries were at their hardiest point when the cold weather hit.

The hardiness of summer raspberries depends a great deal on the variety. Some varieties will be fine, but other may have suffered damage on the tops of the floricanes. It is relatively easy to cut some canes and place them in water in a warm area to determine if damage has occurred. The good news with raspberries is that, even with some damage, the remaining buds can compensate for bud loss by producing more and larger berries – although they will be lower down on the canes. Fall raspberries that are cut to the ground should be unaffected by the cold weather.

Thornless blackberries outdoors are likely to have suffered the greatest loss. They are marginally hardy under the mildest of winters, but in an open winter like 2014, they are very vulnerable to injury.

I am most interested in seeing how our tunneled blackberries perform, given that a single sheet of plastic does not protect from cold temperatures that much.

The big unknown factor this year was wind. We had strong winds on some of our coldest nights. Although plants don't suffer from "wind chill" like human skin (since there is little water to evaporate from woody tissue), wind can contribute to drying out of plant tissue. We may see injury that might be attributed to cold temperatures, but could have been caused by high, desiccating winds. Because this winter was so unusual, it is unclear how much the combination of cold temperatures and wind will have contributed to any observed injury.

The other hope is that the coldest winter in a century may have damaged overwintering populations of spotted winged drosophila. If that occurs, berry growers may be wishing for a winter like 2014 every year. But regardless of how cold it was here, the rest of the world seems to be warmer than ever. Australia and Argentina had record heat, Alaska was warm this winter, the Southwest was

having record temperatures, and the Sochi Olympics was barely cold enough to have snow. The only thing that is certain is that we will have to learn to live with more fluctuations in our weather patterns in the years to come. (*Source: New York Berry News, Vol. 12, No. 11. February 2014*)

That's a Berry Good Question: SWD and Winter Survivability

Cathy Heidenreich, Cornell University and Kathy Demchak, Penn State University

Q. Can we expect reduced SWD pressure this season due to our extremely cold weather?

A. We didn't have an answer to this one; and we weren't alone on that. Dr. Greg Loeb, grape and small fruit entomologist at Cornell spearheading work on SWD in NY and the NE region, didn't either, but provided the following thoughts on the topic:

"We really do not know. There are a few papers that I am aware of out of Japan looking at cold tolerance of SWD and also a paper out of Oregon. Both of these studies worked with non-adapted or poorly adapted SWD and found that adults were not able to handle temps much below freezing. Several groups are now looking at this question more carefully. We and others are showing that SWD does go into a non-reproductive phase (diapause) later in the fall and it's likely the adults have improved capacity to tolerate cold temps, at least to some extent. Probably not enough to handle the kinds of temperatures we have seen this winter in unprotected places. Of course, we would expect adults to seek out protected places such

as in the soil litter or in rotting wood, etc. But we really don't have any data on this yet. We did set up some cages without bottoms outdoors this winter (with leaf litter and with or without logs) and released flies reared from late season fruit. Around January 1st we pulled the cages off and allowed snow, etc. to accumulate. The plan is to put cages back on in March and monitor for emergence. I would guess survival will not be very good but we shall see."

So, while we're tentatively hopeful that few SWD survived, protected locations such as compost piles, brush piles, or crawl spaces may still have afforded them some protection. We expect that Northern June-bearing strawberry crops will not be affected, or will be only minimally affected by SWD once again. Numbers are still likely to increase sometime next summer, so stay tuned throughout the next growing season for updates. (*Source: New York Berry News. Vol. 13. No. 2. February 2014*)

Winter Cleaning Of Horn-Faced Bee Tubes

Nikki Rothwell, Northwest Michigan Horticulture Research Station

Cleaning horn-faced bee tubes each winter will prevent mite build up. *Osmia cornifrons*, horn-faced bee (HFB), is a pollinator that is native to Japan where they pollinate over 80% of Japanese apples. Horn-faced bees are solitary and because they are not part of a social colony like honeybees, all females are capable of reproducing and each female must forage for its own offspring. This intensive foraging behavior is necessary to supply provisions for their larvae, and this foraging activity makes them desirable as pollinators in orchard settings. HFB adults are active for 6-8 weeks, April through June, which are the peak pollinating months. These bees are easy to manage, reproduce without difficulty, and do not sting. They require minimal management because after pollination, the offspring develop in their nesting boxes and adults are not seen outside the colony until the following spring. There is only one generation of HFB per season.

We have been experimenting with HFB in cherry orchards in northwest Michigan and have had good

success with these alternative pollinators. Unfortunately, many of our HFB colonies have developed a mite problem, likely caused by the reuse of tubes for housing developing HFB larvae. The genus of mites that is causing issues on HFB is *Chaetodactylus*, and we are still in the process of identifying the mites to species. Because both the mites and HFB reside inside the tubes, the process to clean the HFB is somewhat time consuming, but can be done now during the slower winter months. From our preliminary work at the Northwest Station, we have found that regular cleaning will reduce mite populations and help with HFB regeneration and health of the bee colony.

The most effective cleaning protocol is as follows:

Slice open the tubes with the capped ends first. This capped end is an indicator that the tube is relatively filled, or at least partially filled, as they fill the tubes from inside out. Depending on time, tubes without capped ends can be cleaned, but in the interest of time, we started with the capped tubes.

Tubes should be cut along the length of the tube, and the blade should not cut too deeply into the tube so as to not cut into the HFB cocoons inside. Essentially, cut just the cardboard tube to the depth only to open the tube -- not to slice it in half! The cutting is best performed with a sharp, thin razorblade.

Once tubes are opened (and we had to work at physically opening them because they do not just fall open), remove healthy cocoons. Healthy cocoons are small (less than 1/4"), brownish gray, and have small pellets on them. Although they do not look like much, these cocoons house live adult HFB.

After cocoons are removed, leave behind any masses of yellow pollen mixed with mites. The mites use the pollen as a food source and do not directly parasitize HFB -- they compete with the bee larvae for the pollen while the larvae are developing. If there is a pile or mess of pollen, the larva did not survive as the mites consumed the pollen and left behind the pollen remains. Hence, messy pollen is a bad sign and brown cocoons are a good sign. If you are working for a long time, store loose cocoons in the refrigerator until ready to rinse.



After all cocoons (or as many are to be completed within a day) are removed from the tubes, place the cocoons into a colander and rinse well with cool water to remove any frass, pollen or mites. We used the spray nozzle on the sink and rinsed them and gently moved them around for 30 seconds. After rinsing, dip cocoons into a 5% bleach/water solution for approximately 30 seconds. All the rinsing and dipping can be performed with the cocoons in a colander.

After the bleach solution, rinse again with cool water and lay in a single layer on top of paper towel to dry completely. Once dry, HFB cocoons are ready for

storage until spring. They can be stored in plastic deli containers with holes punched into the lid for air circulation. It would be wise to check periodically for moisture – no mold should be allowed to form.

In the spring, place 100 to 150 cocoons inside a small, dark emergence box with a 5/16" hole cut into one side. Attach or tape the emergence box inside a bucket filled with clean, empty tubes. Place the buckets into the orchard at the appropriate timing to coordinate with bloom. (*Source: Michigan Fruit Crop Advisory Team Alert, Feb. 15, 2011*)

What Is That Ugly Thing?

By Mary Concklin, UConn Extension Educator, Fruit Production & IPM

I receive emails from growers and homeowners, often with pictures, asking for the pest or the damage to their fruit and foliage to be identified. Depending on the photographic skills of the sender, most times it is fairly easy to do. (Fuzzy pictures don't lend themselves to easy identification even with my glasses on).

This past year I received some pictures of insects from growers. One insect in question was the larva stage of the lady beetle, specifically, the Multicolored Asian Lady beetle, *Harmonia axyridis*. Not exactly a strikingly beautiful insect at this stage but a very beneficial one none the less. The other was a small black lady beetle-looking insect which was the *Stethorus punctum* – a wonderful predator of mites. In both cases I wrote back to the growers telling them what the insects were, the 'bad' insects that they feed on, the life cycle of the predators and a link to Cornell's website with pictures of what the other life stages look

like. Unfortunately in both cases the insects met a quick death after the pictures were taken. When asked why, the answers were similar – didn't want to take any chances of additional problems, and, it looked like a bad insect.



Looks can be deceiving. It is the larvae stage of many predators that are voracious feeders and in some cases it is not a very pretty life stage. This is a picture of the larval stage of the *Stethorus punctum* feeding on 2-



Photo at left from www.oardc.ohio-state.edu and photo at right from University of Wisconsin.

spotted spider mites. The larval stage of the lady beetle is similar in its lack of attractiveness. The *Stethorus punctum* larvae can feed on as many as 75 spider mites per day while the adults feed on upwards of 100 per day! This is one insect you want to encourage to stay and re-produce in your orchard. Not an insect you want to destroy. *Stethorus punctum* will overwinter in the orchard as adults under fallen leaves or nearby under brush. They emerge in the spring, move to the trees, lay eggs on the undersides of leaves and actively feed on mites into the fall. Where does the 2-spotted spider mite overwinter? In brush and litter under the fruit trees and on the tree under bark scales. They will move into the trees once the food source is used up, the weeds are mowed or a drought causes their food source to dry up.

So what about eggs? Many times eggs are all that are seen when scouting and it isn't always easy to identify whose eggs they are. Looking at these two pictures, can you tell which the Multi-colored Asian lady beetle eggs are and which are the Two-spotted spider mite eggs? If not, do you spray an ovicide assuming they are a 'bad' pest, or do you wait to see what develops? The answer is – wait to see what develops. Better yet, learn to identify the different stages of fruit pests and of beneficial insects & mites.

In this case the picture on the left is the Multi-colored Asian lady beetle eggs and the picture on the right is of two-spotted spider mite eggs.

There are many sources of great information (with pictures) to help you identify beneficials and pests as well as understanding their life cycles. These include:

- Cornell's on-line source at <http://www.biocontrol.entomology.cornell.edu/index.php>;
- IPM pocket guides from Michigan State University covering apples, grapes, highbush blueberries, stone fruits and natural enemies of crops, which can be purchased at <http://www.ipm.msu.edu/publications>; and
- A newly translated publication titled "Diseases, pests and beneficial organisms of strawberry, raspberry and blueberry" which can be purchased from the American Phytopathological Society at <http://www.apsnet.org/apsstore/shopapspress/Pages/02301.aspx>.
- "Natural Enemies Handbook" from the U. of CA. (Pub. 3386). M. L. Flint and S. H. Dreistadt. 1998. To order call 510 642-2431 or 800 994- 8849; <http://danrcs.ucdavis.edu>

And if you are still in doubt, simply snap a picture, send it to me (mary.concklin@ucon.edu) and I will help you learn.

Remember, scouting trees and plants for pests AND beneficials is a standard IPM practice, and one that is covered in the New England Tree Fruit Management Guide and the New England Small Fruit Guide. (Source: *CT Crop Talk, Vol 10. Issue 1, February 2014*)

UPCOMING MEETINGS:

Feb. 25, 2014 – *Wholesale Grower and Buyers Showcase/Networking Lunch*. 8:30-5:00. Whachusett Village Inn, 9 Village Inn Rd., Westminster MA. To register for this event please visit our [SIGN UP PAGE](#) by February 14th to reserve a space. **Contact:** Erika Zekos, Mass. Farm to School, (413) 253-3844, erika@massfarmtoschool.org, or John Waite, Western MA Food Processing Center, (413) 774-7204, johnw@fccdc.org

Feb. 24, 2014 - *Writing A Practical Produce Safety Plan Workshop*. 9am-3 pm at the Stone Grill, Morrisvill, VT. Farmer presenter: Jim Ryan, Bear Swamp Farm This one day workshop will be repeated at 5 locations. You will leave with a concise plan (for you, your customers, and your employees) and many resources. To register: <http://www.eventbrite.com/o/uvm-center-for-sustainable-agriculture-1519520706>

February 26, 2014 - *Writing A Practical Produce Safety Plan Workshop*. 9am-3pm pm at Burlington Co-Housing, Burlington, VT. Farmer presenter: Becky Madden, Intervale Community Farm. This one day workshop will be repeated at 5 locations. You will leave with a concise plan (for you, your customers, and your employees) and many resources. To register: <http://www.eventbrite.com/o/uvm-center-for-sustainable-agriculture-1519520706>

- February 28, 2014** - *Writing A Practical Produce Safety Plan Workshop* 9am-3pm at the Gateway Center, Newport, VT. Farmer presenter: Gerard Croizet, Berry Creek Farm. This one day workshop will be repeated at 5 locations. You will leave with a concise plan (for you, your customers, and your employees) and many resources. To register: <http://www.eventbrite.com/o/uvm-center-for-sustainable-agriculture-1519520706>
- March 8, 2014** – *2nd Annual Massachusetts Urban Farming Conference*. 8:30-4:30. Northeastern University Student Center, Boston MA. For more information and to register go to: <http://www.eventbrite.com/e/2nd-annual-massachusetts-urban-farming-conference-tickets-7547919029>.
- March 11, 2014** – *UMass Community Tree Conference*. 9:00-4:00 Stockbridge Hall, UMass Campus, Amherst MA. For more information or to register go to: <http://extension.umass.edu/landscape/events/community-tree-conference-sustaining-trees-sustain-our-communities>
- March 11, 2014** – *New CT Fruit Pest Management Tool: Using NEWA Weather Station Information* – Free Webinar. For more information and to register go to: <https://www4.gotomeeting.com/register/872157871>.
- March 11, 2014** - *Writing A Practical Produce Safety Plan Workshop* 9am-3 pm at the Rutland Opera House, Rutland VT. Farmer presenter: Carol Tashie, Radical Roots Farm. This one day workshop will be repeated at 5 locations. You will leave with a concise plan (for you, your customers, and your employees) and many resources. To register: <http://www.eventbrite.com/o/uvm-center-for-sustainable-agriculture-1519520706>.
- March 12, 2014** - *Writing A Practical Produce Safety Plan Workshop*. 9am-3pm at Bennington College CAPA Center, BenningtonVT. Farmer presenter: Karen Trubitt, True Love Farm This one day workshop will be repeated at 5 locations. You will leave with a concise plan (for you, your customers, and your employees) and many resources. To register: <http://www.eventbrite.com/o/uvm-center-for-sustainable-agriculture-1519520706>
- March 18** - *Building Agricultural Partnerships for Profitability*, in Storrs, CT. For more information call 860-486-9228 or email stacey.stearns@uconn.edu.
- March 22, 2014** – *SEMAP Ag and Food Conference*. GNB Voc Tech High School, 1121 Ashley Blvd., New Bedford MA For more information and to register, go to: <http://events.r20.constantcontact.com/register/event?oeidk=a07e8nej2rff911f897&llr=jp7zj6bab>
- March 22, 2014** – *MOFGA Spring Growth Conference. Unity Maine*. Every year at Spring Growth we focus on one topic and dive deeply into it with a day-long program of speakers and workshops. This year the topic is **weed control** – a perennial favorite. We will have a keynote speaker, as well as workshops and discussions on how best to control weeds throughout the season. For more information or to register go to: <http://www.mofga.org/Events/SpringGrowthConference/tabid/190/Default.aspx>.
- April 29** - *Sprayer Calibration Workshop for Fruit*, at 1 PM at Lyman Orchards in Middlefield, CT. For more information call 860-570-9067 or candace.bartholomew@uconn.edu or 860-486 -6449 or email mary.concklin@uconn.edu
- June 18-25, 2015** – *11th International Rubus & Ribes Symposium* , in Asheville, NC, June 21-25, with preconference tour to farms and research sites June 18-20. More info to come. If you are interested in being a sponsor of this event, contact gina.fernandez@ncsu.edu.

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