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Berry News

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North Country—Clinton, Essex, northern Warren and Washington counties

Berry phenology: Brambles: blossoming on floricanes raspberries beginning in most areas. Floricanes may be short due to last years drought. Primocane emergence is good and vigorous. Blueberries: Late varieties still in bloom, but most plantings are at bud set and beginning green fruit. Strawberries: Green fruit, some areas might begin picking 1st berries within the week.

Pest focus— Tarnished plant bug on strawberries and soon on raspberries. Botrytis sprays remain important. Scout for root insects.

Capital District—Albany, Fulton, Montgomery, Rensselaer, Saratoga, Schenectady, Schoharie, southern Warren and Washington counties

Berry phenology: raspberries blooming with some green fruit. Floricanes may be short due to last years drought. Blueberries at green fruit, sizing beginning. Most areas the crop looks very good. Strawberry harvest has begun south of Albany. Day neutral berries in high tunnels winding down. Day neutrals on plastic seem to be lagging behind June bearers under row cover. Ribes, elderberries and honeyberries at fruit set and green fruit.

Pest focus— continue to scout for TPB while green fruit stage on strawberries and keep an eye on slug damage. Check new plantings for strawberry rootworm adult feeding. Make note of weak growth in bearing patches and check for grubs feeding on roots a little later in the season. Blueberries keep an eye out for small canker lesions.

Mid-Hudson Valley—Columbia, Dutchess, Greene, Orange, Sullivan and Ulster counties

Berry phenology: Brambles are in full flower with lots of fruit set on early varieties. Floricanes of raspberries may be short due to last years drought. Blueberries are at various stages of green fruit. June bearing strawberries have begun harvest in most areas. Overwintered day neutral strawberries are reported to look a bit rough.

Pest focus—Be looking for large numbers of spittle bug. Monitor for spotted wing drosophila. Keep an eye on raspberries for cane borers, and elderberries for borers as well.

Tour of Nourse Farms

SAVE THE DATE!!! Tuesday, July 23rd

Eastern NY growers have an opportunity to tour the premier Berry Plant Nursery in the Northeast—Nourse Farms in Whately, Massachusetts. Nate Nourse will be conducting a tour of the raspberry plantings where we'll be focusing on methods for pruning and trellising these plants.

To see more of the nursery, visit <http://noursefarms.com/>.

More information about timing, car pooling and cost will be announced later.

Tarnished Plant Bug

Written by S. Spangler, A. Agnello, and G. Schaefers, Cornell University. Edited text and photos from the New York State Integrated Pest Management Program, fact sheet. For the full fact sheet, visit www.nysipm.cornell.edu/factsheets/berries/pests/tpb.pdf.

Tarnished plant bug, *Lygus lineolaris* (TPB) is a major pest of strawberry and brambles but also affects apple, peach, and pear along with many other important crops.

TPB is a “true bug”, with piercing-sucking mouthparts. Adults are one quarter inch long, oval, and somewhat flattened. They are greenish-brown with reddish-brown markings on the wings. A distinguishing characteristic is a small but distinct yellow-tipped triangle in the center of the back, behind the head.

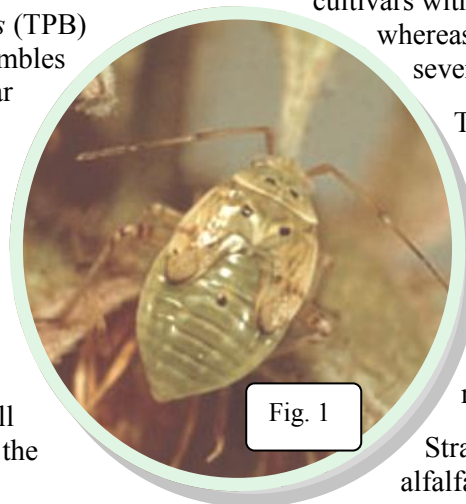
TPB overwinters as an adult under leaf litter, mulch, and in other protected places. At the end of April, these adults become active and begin laying eggs in crop and weed hosts. Usually this overwintering adult population peaks in early May in New York State, but this year the adults seem less prevalent so far. Two to four indistinct generations can occur annually, with development from egg to adult taking 30 to 40 days.

The eggs are very small (about 1 mm) and are generally laid in the plant tissue of weeds and grasses, but can also be laid in crops. Eggs hatch into nymphs about seven days after being laid. The young nymphs are pale green and resemble aphids, but differ from aphids in that they are more rapid in their movements, and have no cornicles (backward-pointing structures that resemble short stems). Newly hatched nymphs are the same size as the eggs and remain greenish throughout the first 5 stages of their life. Later instars turn brown and develop wing pads (fig. 1).

TPB nymphs and adults feed on individual achenes (seeds) of the strawberry which prevents growth of the receptacle. This damage leads to the “cat-faced” or “button-berry” fruit that is often characterized by apical seediness (fig. 2). To distinguish this deformity from other causes (such as

poor pollination), look for hollow seeds resulting from TPB feeding. Often these hollow seeds are straw brown.

Most damage occurs around petal fall, with less occurring prior to or during bloom. In New York State, June-bearing cultivars with early fruits have been almost free of injury, whereas later-maturing cultivars have been more severely damaged.



TPB damage on blackberries and raspberries can resemble TPB damage on strawberries. Moderate injury to the achenes may be covered over and go unnoticed as the surrounding drupelets enlarge, but when the fruit is eaten, the damaged area will feel like a hard pit. More severe feeding on buds, blossoms, and developing berries can result in fruit that is deformed or undersized.

Strawberry plantings near weedy areas or alfalfa are likely to attract migrating TPB.

Mowing or removing weed hosts near plantings is one way to control TPB. However, adjacent weedy fields and alfalfa plots should not be mowed or disturbed just before or during the strawberry blossom period, because doing so stimulates movement of TPB into the plantings.

Many predators and parasites attack TPB, but little is known about the beneficial effects of these insects in strawberry plantings. However, ongoing work is being done and large scale sampling may prove that there has been some real headway made in establishing parasitoids in the northeastern US. Work done by Dr. Bill Day from the USDA. Beginning about 1978, entomologists at the USDA-ARS European Biological Control Laboratory, now located in Montpellier, France, collected *Peristenus* wasps in Europe and shipped them to the USDA-ARS Beneficial Insects Research Lab in Newark, Delaware. Reared wasps were first released in northern New Jersey in 1979, with continued introductions through 1987, for control of tarnished



plant bug on alfalfa. By 1983 *Peristenus* was recovered in low numbers and was determined to be established there by 1988. Within a few years parasitism levels began to rise, reaching 50% by 1990-92. By 1988-90 it had become the dominant parasite species in northern New Jersey and was spreading to the northeast. Since then this parasite has been found in six new states including Pennsylvania,

(Continued on page 3)

(Continued from page 2)

Massachusetts, New Hampshire, Vermont, Connecticut and New York. Monitoring for the parasitoid continues.

The need for chemical treatment is determined by scouting for nymphs in flowers and green fruit. Nymphs are monitored just before blossoms open until harvest. To monitor, shake flowers or fruit over light-colored saucers and count the nymphs caught (fig. 3). Treatment is needed at levels of 1 to 2 nymphs per inflorescence.

There are no scouting thresholds for TPB in brambles. Growers are advised to periodically inspect the developing berries for evidence of feeding.

A number of insecticides are labeled for control including Assail, Brigade and Danitol and organic compounds include Pyganic and Mycotrol. For further information about control, consult the [Cornell Berry Guidelines](#).



Strawberry Root Insect Pests

Strawberry Rootworm – Strawberry Rootworm (*Paria fragariae*) is a pest of strawberries and other plants in many parts of North America. Only 1 generation occurs per year.

Adult strawberry rootworm is oblong and copper-colored with dark streaks on the back. Body size is about 3 mm long. The adults are very she and resemble a flea beetle. The adults overwinter as beetles in plant debris. Larvae are cream-white grubs that feed on roots from late spring to early summer.



Plant injury primarily results from adult feeding on foliage, but larval feeding if heavy can reduce plant vigor. Adult feeding can be seen over two intervals, the first (overwintering adults) in early spring and the second (summer adults) in late summer, and is characterized by an almost skeletonized feeding injury on the leaves. Figure 1 is a photo taken this week in a brand new planting of Jewel. This field was properly



rotated out of strawberries for three years and put into a buckwheat rye cover crop rotation. Strawberry rootworm has caused severe injury on this

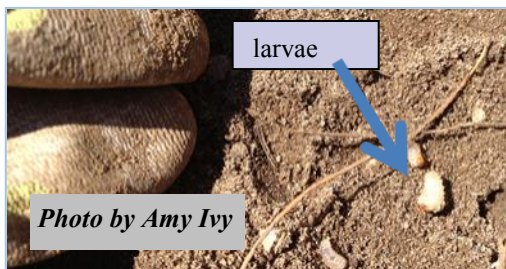
farm after rotation when the new generation of adults emerged and devoured regrowth on a planting.

There are no known resistant cultivars and no scouting thresholds established. Pyganic is labeled for use in NYS, although it has not shown to be especially effective on this infestation.

Strawberry Root Weevil (*Otiorhynchus ovatus*). In the Northeast, the three major species of strawberry damaging weevils are the black vine weevil, *Otiorhynchus sulcatus* (Fabricius), the strawberry root weevil, *O. ovatus* L., and the rough strawberry weevil, *O. rugostriatus* Goeze. Platinum is only labeled for strawberry root weevil. The timing is good right now to try



nematodes, but the soil is too dry and will need to be wetted first. According to Dr. Greg Loeb, Cornell small fruit entomologist, a well-timed insecticide application



targeting the adult weevils before they start laying eggs will help reduce pressure in fields that are

(Continued on page 4)

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experiencing damage. The insecticide application should occur within 10 days of seeing evidence of adult emergence which would kill the insect during their pre-oviposition period. This can be more challenging if there are multiple species involved. Other labeled chemicals for all species of weevil include Brigade which has 0 days PHI while Danitol is 2 days and Actara is three days. Emergence would be expected in June, but it may not be before harvest, further complicating the timing.

For root weevil, nematodes are also suggested, but they rarely make it through the winter. Dr. Elson Shields, Cornell is working on a project this summer in northern NY to try and establish perennial nematodes in a plot of strawberries that has severe root weevil infestation, so there will be more information about this long-term sustainable approach to controlling strawberry root weevil. There is an excellent webinar recording archived on the Cornell Berry website which details advances in using nematodes for control of strawberry root weevil. Access is by going to <http://www.fruit.cornell.edu/berry/webinar/archive.html#Emerging>.

White Grub Complex - Larvae of Japanese beetle, European and Masked Chafer, Oriental beetle and/or Asiatic Beetle (*Maladera castanea*) live in soil for much of the year and feed on newly planted strawberry roots, especially plantings following sod or on lighter soils. The C-shaped grubs are all a light tan with a brown head and six legs. Symptoms of white grub injury on strawberry plants include stunted growth and plant dieback. Adult beetles feed on plants, but their larvae feeding on roots

cause much more damage.

There are no scouting thresholds established nor any known resistant cultivars. Growers should avoid following sod or pasture crops with new strawberry plantings. On such sites, plow the field and let it lie fallow or put in a rotational cover crop such as sudan grass or buckwheat for at least one to two seasons prior to planting strawberries. Avoid establishing new strawberry plantings next to large grassy fields that serve as a source of these beetles and their larvae.



Photo: D. Shetlar

Labeled insecticides include Admire Pro and Platinum. Platinum should be applied as a furrow spray at transplanting or as a post-transplant drench either in trickle irrigation or as a pre-plant hole treatment. Irrigation should follow within 24 hours to move the material into root zone.

Mycotrol (*Beauveria bassiana* strain GHA) is an organically approved product that should be applied when insects first appear; typically a 7-10 day interval occurs before control is seen.

White grubs can do an enormous amount of damage in a short period of time. If you are growing berries on a light soil and sense that vigor and leaf size is deteriorating, dig up plants this summer and check the roots. -LGM



Photo courtesy of Jeff Miller

At left is a photo of a fruit that may have **fruit injury** or the infection may be caused by **Botrytis infection**. If it were frost damage we would likely see more shrunken achenes, although when looking through images online many, as evidenced by the photo at right from [University of California fact sheet](#), show similar damage with relatively well formed achenes. Regardless of the actual cause there is little doubt that Grey Mold is exacerbating the problem due to the dark centers in the misshapen area. Another great reason to be on top of your Grey Mold spray schedule. -LGM



Cornell Cooperative Extension and the staff assume no liability for the effectiveness of results of any chemicals for pesticide use. No endorsement of any product is made or implied. Every effort has been made to provide correct, complete, and current pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly and human errors are still possible. These recommendations are not substitutes for pesticide labeling. Please read the label before applying any pesticide. Where trade names are used, no discrimination is intended and no endorsement is implied by Cornell Cooperative Extension.

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Blueberry Weed Control: Late Spring and Summer Options

By Eric Hanson, Michigan State University Extension, Department of Horticulture

Editors' Note: Due to heavy rains this spring, some of your herbicides may not be performing well. It is too late to apply some of these materials, but there are a few choices still available, providing you follow label directions particularly pre-harvest intervals. Also, take care that you shield plants when appropriate. Blueberries sometimes don't show damage from herbicide misapplication until later in the season or even the following season – when it's too late. Lastly, several of the herbicides listed in this article, particularly Stinger*, Matrix** and Diuron, are NOT labeled in New York at this time. Consult the [Cornell Guidelines](#) for accurate NY label information.

Pre- and post-emergent herbicides

All of these products can injure leaves and new shoots that are directly sprayed, so make sure you adjust nozzles to avoid hitting the base of bushes.

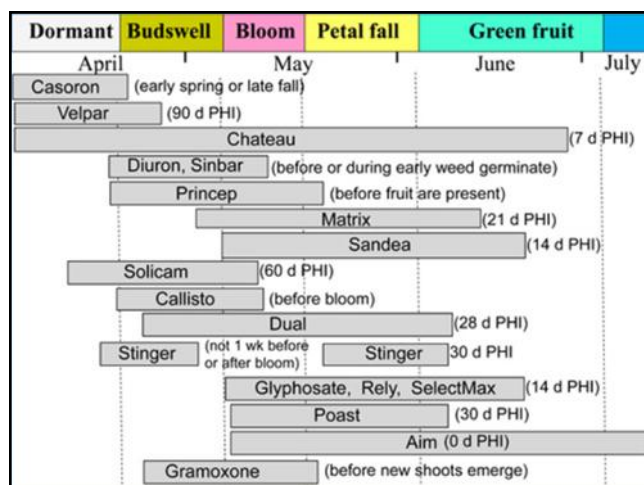
Chateau. The pre-harvest (PHI) interval for Chateau was shortened to seven days. Chateau controls many broadleaf and grass weeds, including chickweeds, dandelion, common groundsel, lambsquarters, eastern black nightshade, several pigweeds, ragweed, and most annual grasses. Chateau also provides some burn down of small weeds if combined with surfactant or crop oil concentrate (COC). Apply 6 to 12 oz of product per acre to bushes that have been in the field for two years or more.

Sandea has a PHI of 14 days, and provides preemergent and post-emergent control of many broadleaf weeds such as pigweed, ragweed, smartweed, and even yellow nutsedge. Treat nutsedge when three to five leaves are present. Two applications with non-ionic surfactant are most effective. The second application may need to be after harvest. Rates are 0.5 to 1.0 oz per acre and no more than 2 oz per year.

Dual Magnum is another effective herbicide on nutsedge, but has a 28 day PHI. Use only on bushes established at least one year. Use 0.67 oz. on young bushes on sandy soils and 1.33 oz. on large bushes on heavier soils. Only one application per season.

Stinger is a preemergent and post-emergent herbicide that

is strong on weeds in the composite and legume families, such as thistle, asters, dandelion, goldenrod, ragweed, clovers, and wild bean or groundnut. It also controls nightshades, smartweeds, wild buckwheat and plantain. Stinger has a PHI of 30 days, but also should not be applied one week before to one week after bloom. This leaves a short window of time after bloom when Stinger can be used. Stinger is a growth regulator type herbicide and is most effective when weeds are up and growing shortly after bloom or after harvest. Rates are 2.6 to 5.3 fl oz per acre, and not more than 10.6 oz per season. (*Stinger is NOT labeled in NYS on blueberries. Also, the PHI is so long that an application to early and mid season berries would not be possible.)



Matrix was just labeled for blueberries with a PHI of 21 days. Matrix controls a broad spectrum of annual grasses and broadleaf weeds. Do not use Matrix on sand soils or on bushes less than a year in the field. Apply 4.0 oz per acre once per year with non-ionic surfactant. Avoid contact with growing shoots and leaves. This product has the same mode of action as Sandea.

Selective grass herbicides

Three post-emergent grass herbicides are labeled for

blueberries. These have no activity on blueberries or other broadleaf plants, but control annual grasses and suppress quackgrass when applied when grass is actively growing early in the season. SelectMax can be used on non-bearing and bearing bushes (PHI 14 days) at 9 to 16 fl oz per acre. Poast is another post-emergent grass herbicide for bearing (PHI 30 days) and non-bearing bushes. Fusilade is labeled only for non-bearing plants.

Post-emergent burn down materials

Several products can be used to kill emerged annual weeds and suppress or kill some perennials. All of these will damage green blueberry tissues (bark, leaves, fruit), so they need to be directed away from the crown of plants. Aim is a post-emergent burn down herbicide that is effective on small broadleaf seedlings, and has a zero-day PHI. It works well in combination with preemergent herbicides where weeds have already emerged. Aim can be applied up to harvest. Gramoxone and Rely (14 day PHI) are also burn down herbicides, but they control grasses and broadleaf weeds. Gramoxone should be applied before new blueberry shoots emerge (no PHI on label).

Lecanium Scale (*Lecanium* spp.) on Blackberry

On a recent farm visit in Ulster County, a grower asked me about the scale that was attacking his blackberries. A closer inspection revealed them to be a *Lecanium* spp (see picture), a type of soft scale and occasional pest of blackberries. Adults of this species are brown, and oval shaped about ¼” in size. Females overwinter as immature adults, completing their development in the spring. Multiple generations can be produced in a year, with crawlers (the immature stage) emerging in late May to June.



Photo by Tim Lampasona

Scales have sucking piercing mouth parts (similar to aphids) and they feed off the sap of the plant to which they are attached. As they feed, scales excrete a sticky substance known as honey dew. Growers may notice the honey dew or the sooty mold that develops from the honey dew on the foliage before noticing the actual insect. Damage to plants may consist of stunting and distorted growth, such as witches’ brooms. Additionally, the sooty mold that develops on the excreted honey dew can make picking unpleasant. It can also lead to the attraction of other insects such as bees or wasps, which may deter individuals from picking in those areas.

As previously mentioned, *Lecanium* scale is not usually a pest of concern for blackberries. Normally, there are sufficient natural predators to keep the population levels low. However, in some instances, population levels can develop to an economically important level, where a grower must take action. Growers whose plantings border wooded lots (birch, oak, and other deciduous woodland species) may be at increased risk for infestation, as these plants can serve as hosts to *Lecanium* spp scale. In situations where populations warrant an insecticide application, Esteem (Pyriproxyfen) an insect growth regulator, is labeled for the control of *Lecanium* spp scale on blackberries in New York State. Applications during the growing season should be made when the crawlers are active (late May to June). A follow up application of dormant oil in the fall after harvest may help to reduce overwintering populations. – JMO

Weekly and Seasonal Weather Information						
	Growing Degree Information Base 50° F			Rainfall Accumulations		
Site	2013 Weekly Total 5/28—6/04	2013 Season Total 3/1 - 6/04	2012 Total 3/1—6/04	2013 Weekly Rainfall 5/28—6/04 (inches)	2013 Season Rainfall 3/1—6/04 (inches)	2012 Total Rainfall 3/1—6/04 (inches)
Albany	144.0	453.8	613.5	1.23	11.43	11.63
Castleton	148.5	441.0	617.6	2.02	7.96	11.82
Chazy	132.1	417.8	643.2	0.91	9.18	8.62
Clifton Park	135.8	423.6	566.8	2.16	13.65	12.77
Clintondale	160.1	504.9	391.0	0.63	NA	9.60
Glens Falls	127.5	388.7	467.0	1.14	10.2	10.06
Granville	127.0	NA	415.5	1.49	11.92	12.67
Guilderland	136.5	405.0	520.5	0.71	2.29	5.10
Highland	157.4	515.9	654.0	0.47	5.41	9.46
Lake Placid	91.7	237.6	NA	1.67	11.05	NA
Montgomery	149.5	449.9	546.0	0.10	6.94	NA
Monticello	126.4	338.8	442.0	0.00	0.00	0.73
Redhook	153.4	450.9	603.5	1.10	5.92	9.17