



Vol. 1, Issue 10
July 18, 2013

Berry News

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SWD Update

On July 5th, Peter Jentsch and Mike Fargione put out a Pest Alert regarding damage to raspberry and cherry in the lower and mid-Hudson Valley. This alert was sent through an email notification to growers, but for those that do not receive email, a summary of that alert is below.

As of Monday, July 15th, we are now catching SWD adults in the Capital District and Hudson Valley. I am not aware that adults have been caught in the north-country as of this writing.

Unfortunately, we are also finding larvae in fruit. All of these incidences are still very low numbers, although in Rhode

Island they have reached population levels similar to last season with trap catches exceeding 100 adults.

All of this information indicates that beginning an insecticide

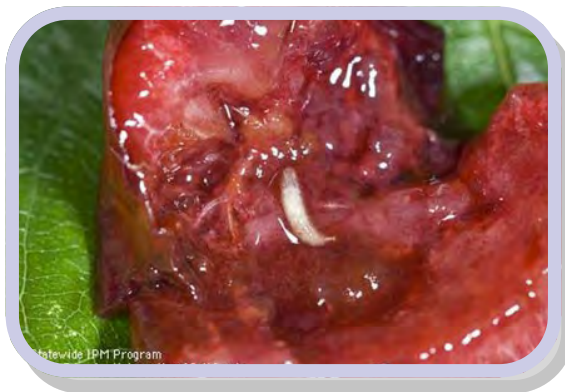
program as soon as fruit begins to color is an appropriate decision. Between sprays, it will be helpful to do a fruit assessment by picking 30-50 random intact fruit (meaning ripe, but not over-ripe or broken – certainly not from the ground) and putting them in a salt solution (1 cup salt per gallon of warm water). Slightly crush fruit and wait 15-60 minutes. If larvae are present they should move to the top of the container.

Cultural controls include picking clean, removing dropped fruit, keeping weeds down and summer pruning if the planting is dense.

Good luck with the management of this pest. Please give Jim or Laura a call if you have questions. -ENYCH Berry Team

Pest Alert: July 5, 2013 Spotted Wing Drosophila Adults Causing Injury to Raspberry and Cherry In Lower and Mid-Hudson Valley of NYS.

- 'Prelude' variety of raspberry with 18% Drosophila ovipositional injury (Treated), southern Hudson Valley.
- Sweet cherry with 70% Drosophila ovipositional injury (Untreated), southern Hudson Valley.



The spotted wing drosophila (SWD), *Drosophila suzukii*, was first observed in NY in 2011 beginning in late August. The following year it was first captured in mid-July in 2012 and in 2013 it was found in the Northeast

considerably earlier, on the 10th of June along a wooded edge in western Mass. It was then captured in apple cider vinegar (ACV) traps baited with a yeast solution in WNY on 11th of June (Loeb), in the southern and mid-Hudson Valley on the 17th (Ulrich) and 21st of June (O'Connell) respectively. On the 3rd of July, adults SWD were observed in traps placed along the border and interior of a small fruit patch in southern Orange County of the raspberry variety 'Prelude', in which we also found 2 of 25 fruit which we sampled infested with eggs. The brambles had been on a two-week SWD preventative program

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with applications made twice-weekly. Yet on the same farm in a nearby block of untreated sweet cherry, 14 of 20 or 70% fruit sampled were infested with a total of 44 eggs. *Drosophila* larva has not yet been observed in fruit, indicating the relatively early stage of infestation we are in early ripening cherry and raspberry. In 2012, very low population levels of SWD led to very high levels of fruit injury, which lead us to now recommend to growers with SWD in the region to begin pest management programs for this insect. As we are not completely certain that SWD is the causal agent we will continue observe fruit to access the adult emergence for species confirmation. Yet the find of eggs in pre-harvested and sound fruit is a strong indication of the kind of damage SWD is capable of.

We are advising that agricultural producers of stone and small fruit should pay strict attention to cherries, brambles and blueberries, monitoring fruit closely during the early stages of color and ripening while monitoring traps daily for the presence of this pest. As these commodities enter the 7-day pre-ripening period they are at greatest risk. Low levels of fly presence in traps may signify relatively high levels of fruit infestation potential in these commodities.

Background: The adult, larva and egg forms resemble the common vinegar fly, *Drosophila melanogaster*, and other fruit flies species that affect rotting or fermenting fruit. The spotted wing drosophila, however, readily attacks undamaged fruit at the onset of color change. If SWD flies have been observed in traps, the fruit will then need to be protected during the early stages of ripening through to harvest to control the adult female fly prior to egg laying and larva as these commodities are at greatest risk emergence. Once the maggot emerges from the egg it moves into the fruit and is well protected.

Potential for Economic Impact: The potential for significant impact from this pest, especially for mid-summer and later-maturing small fruit, is very likely as populations increase. We have observed marketed fruit unknowingly contaminated with SWD larvae resulting in consumer complaints. In regions where SWD is present, growers have resorted to frequent pesticide applications thereby increasing economic and environmental costs as well as potentially disrupting established IPM programs.

June Bearing Strawberries – Post Renovation Considerations

For the most part, strawberry growers were reasonably happy with yield and fruit quality this year. This is a testimony to disease management efforts because the last part of the season was exceptionally rainy, but *Botrytis* infection was average or even slightly below average. The first fungicide sprays put on before the rainy weather began in earnest probably saved the season for many.

Berry plants actually don't mind the wetness, but they don't

Monitoring: To sample for the SWD, a simple homemade trap can be constructed using a clear pint deli container with (16) 3/8" holes drilled along the top edge of the container to which is added 3-4 ounces of wine or cider vinegar and a one to a few drops of liquid dish soap, changed weekly, and hung with 'coat hanger' gauge wire bent into a 'U' at both ends for hanging. Yellow sticky cards can be added but draining the adult flies onto a fine mesh screen also works quite well. The spotted wing of the male and the large dark amber toothed ovipositor of the female are the primary determinants for identification. A 30X magnifier will be needed to see the ovipositor.

Management: Tables of NYS labeled insecticide options including efficacy rating are available at the Cornell SWD webpage: <http://www.fruit.cornell.edu/spottedwing/mgmt.html>. Review the label especially with regards to restrictions such as pre-harvest intervals, number of days between applications, total applications per season and other limitations including intervals between applications for resistance management purposes. Have the labels, including the 2(ee) in hand for each application.

In cherry, brambles and blueberry we are recommending applications of effective insecticides at first adult capture or first egg, continuing at 3-4 day schedules with trap presence of adult fly in these commodities.

Organic: Entrust SC has received a NYS label for use in organic production with a 2(ee) registration for SWD. Experience so far in California and Oregon indicate that the insecticide formulation of Entrust 80WP is the most effective option for SWD control in organic production. Rotating Entrust with the organic pyrethrum insecticide Pyganic is recommended in Michigan to achieve some resistance management of the pyrethrum. We have not found pyrethrum products to effectively control the adult SWD or reduce oviposition in laboratory studies.

Harvested fruit should be held in cold storage (34° F for 48-72 hours) to reduce egg hatch and larval survival. Preliminary studies have shown harvested fruit emersion in 1% vegetable oil (Amigo, Loveland Products) for >5 minutes significantly reduces hatch and survival of SWD in fruit. Cultural control of the insect by removing infested fruit from the patch and freezing or deep burying will help reduce infestation levels.

like the combination of wet and hot weather. I am seeing a lot of leaf spot/blight in fields. Many growers were able to renovate before this heat kicked in – which is a good thing. The excessive heat can make it difficult for plants to generate new growth, so if it looks like the plants are not pushing new leaves, by all means water them if you haven't had rain for more than 3-4 days. This year our soil is so moist that I'm hoping this won't be an issue.

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Mid-Season Bramble Problems

We've started to see all kinds of issues with brambles. The intense heat and high humidity that followed the exceptional rainfall in June and early July has certainly added to the disease and insect pressure. Below are a few problems to keep your eyes out for.

Phytophthora Root Rot – I'm not sure how those on poorly draining soils will be able to avoid some plant loss from this disease this year. It is just too wet. *Phytophthora* is a water mold that is present in most soils. Infection occurs when soils are saturated. The plant exhibits the disease when it is stressed – ie with very hot weather. The fungus causes plant wilting and then death. A good diagnostic cue is reddish brown streaking in the cambium tissue. You can usually see it easily when you scrape the bark off the cane. Chemical treatment with Ridomil gold 2.5GR, Alliete 80 WP or Actonovate AG can provide some benefit, but it is most effective when used in combination with site selection/modification for good drainage and proper selection of cultivars.

Aphids - Aphids transmit several viruses to raspberries. The main vector of raspberry mosaic complex in North America is the large raspberry aphid (*Amphorophora agathonica*). Raspberry leaf curl virus is transmitted by the small raspberry aphid (*Aphis rubicola*). Aphids may also cause the petioles of leaves to twist and curl when they feed on them. There are a number of insecticides labeled for use on raspberry aphids – many are the same materials labeled for leafhopper control (see below).

Leafhoppers cause the upper leaves of primocanes to curl up, develop a yellowish cast, and reduce their growth. There are a number of insecticides labeled for control of leafhopper.

Field Resistance of Red Raspberry Varieties to Phytophthora Root Rot

Partially Resistant	Susceptible	Very susceptible
Latham ¹	Heritage ¹	Titan ¹
Killarney ¹	Taylor ¹	Canby ¹
Boyne ¹	Newburgh ¹	Ruby ¹
Prelude ²	Royalty ¹	Lauren ²
Anne ²	Josephine ²	Encore ²
Nova ²		Polana ²
Caroline ²		NY253 ²
NY258 ²		

Source:

¹ W. Wilcox and M. Pritts

² Courtney Weber and Jeremy Pattison 2003, Cornell Univ.



Plant wilting, marginal leaf scorch and cane death. Credits: C. Stewart.

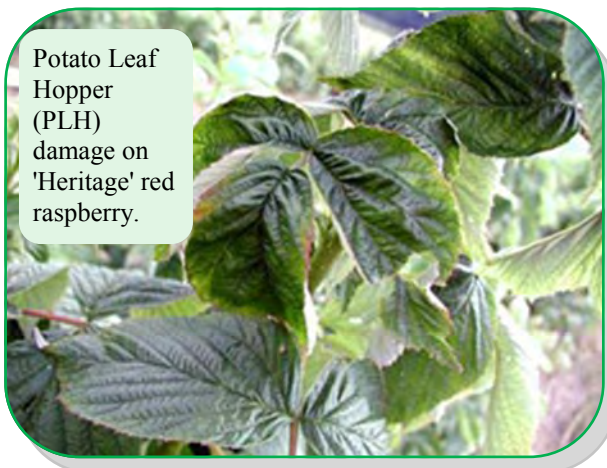


Vascular streaking shown as brownish red discoloration. Credits: OMAFRA



Feeding damage from aphids. Photo: LRM

Please consult the Cornell Guidelines for control details: <http://ipmguidelines.org/BerryCrops/Default.aspx>.



Potato Leaf Hopper (PLH) damage on 'Heritage' red raspberry.



PLH nymph.



Small raspberry aphid. Often you can see feeding injury on the leaf mid-rib.

Photo courtesy of Cornell Berry Diagnostic Tool, <http://www.fruit.cornell.edu/berrytool/index.html>

Both photos courtesy Cornell Berry Diagnostic Tool, <http://www.fruit.cornell.edu/berrytool/index.html>

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For those of you that haven't renovated yet, the recommended protocol is below. If you are concerned about your ability to irrigate you may not want to mow the plants, but tilling to narrow rows will make for a tidier, better yielding planting next year. While tilling, throw an inch of soil on the remaining crowns. This will improve winter hardiness.

The high humidity will encourage leaf spot diseases, so you may need to spray for them, and the earlier you make this decision, the better your control for the rest of the summer will be. The three diseases that you may run into are Leaf Spot, Leaf Scorch and Leaf Blight. All 3 diseases typically appear first as small purple spots (lesions) on leaves but become more distinctive as the lesions age.

For **Leaf Spot** look (*Mycosphaerella fragariae*) for lesions that have a light brown to gray to whitish center bordered by a thin reddish purple margin. 'Jewel', 'Canoga', 'Cardinal', and 'Lester', have some resistance.

Leaf Scorch (*Diplocarpon earlianum*) lesions look like large purple to reddish to yellow patches dotted with purple lesions. The centers of these lesions do not become white, brown, or gray, as with Leaf spot or Leaf blight. As the disease progresses the leaves brown, wither and curl, becoming "scorched" in appearance. 'Allstar', 'Jewel', 'Canoga', 'Cardinal', 'Cavendish', 'Earliglow', 'Lester', and 'Redchief' have some resistance.

With **Leaf Blight** (*Phomopsis obscurans*) the nearly circular spots have wide reddish purple margins and brown centers. Most distinctive are lesions that start at the leaf margin and look V-shaped.

To control these diseases post renovation there are a number of fungicides labeled for use on leaf spot including Captan, Rally, Cabrio and Pristine, but only copper and Topsin-M are labeled for use on leaf scorch and leaf blight. Applications should begin when disease appears and continue on a 14 to 21 day schedule. If favorable conditions exist, ie high humidity and warm temperatures, you should shorten that interval. If repeated applications are necessary, it is recommended that fungicides be alternated.

There are other foliar diseases of strawberry including powdery mildew and angular leaf spot, so if symptoms in your field do not line up with the 3 diseases discussed here, consider the other foliar diseases. Another post-renovation problem is **strawberry rootworm**. I saw some of this in a planting in the western part of the region earlier this spring. The regrowth looks like Japanese beetles are feeding heavily on the emerging foliage, but you never see beetles. If new leaves appear shot-holed, then you may need to scout for the nocturnal rootworm. Use a flashlight at night. You are looking for a threshold of 10 to 20 adults per sq foot is a lot. For control, the guidelines only list pyrethrins, Assail has strawberry rootworm listed on its new label at 4.5-5.3 oz/A. This may be more effective than Pyganic.



Leaf spot

Leaf scorch

Leaf blight

Photos courtesy of OMAFRA website: <http://www.omafra.gov.on.ca/IPM/english/strawberries/diseasesand-disorders/leaf-spot.html>.

For more information on managing foliar diseases: <http://www.fruit.cornell.edu/berry/ipm/ipmpdfs/strfoliardismgmt.pdf>.

Renovation Tips

If you haven't yet renovated, there is still a bit of time. This should be done very soon however (preferably immediately after harvest) to allow for good plant regrowth.

1. **Begin with weed control.** Use 2,4-D to control annual broadleaf weeds ideally right after harvest. If grasses are a problem, use Poast but don't tank mix the two herbicides. Read the label carefully as plant injury can occur with misapplication of 2,4-D.

2. **Mow strawberries** just above the crowns 3-5 days after herbicide application. Be careful not to damage crown by mowing too low.

3. **Fertilize the planting.** The main goal is to deliver nitrogen to help re-grow the canopy. Nitrogen should be applied at 25-60 lbs/acre, depending on vigor and basic soil fertility. Split applications (one now and the rest in

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Renovation Tips, continued from Page 4

4-6 weeks) are better than a single fertilizer application. This gives plants more time to take up the nutrients in the fertilizer. A leaf tissue analysis (recommended once the canopy has regrown – see article this issue) is the best way to fine-tune your fertilizer program. This will tell you what the plants are actually able to take out of the soil and what nutrients are in sufficient supply or not.

4. Subsoil! This will be very important this year as constant saturated soil has become compacted where tractor and picker traffic has been heavy. Subsoiling between rows will help break up compacted layers and provide better water movement. Subsoiling may be done later in the sequence if necessary.

5. Narrow rows and cultivate between rows. Reduce the width of rows to 12-18 inches at the base. More berries are produced along row edges than in row middles. Wider rows lead to lower fruit production (yield and quality) and increased disease pressure. Narrow rows also give better sunlight penetration, air circulation, spray coverage, and over-all fruit quality. Use a rototiller, multivator, or cultivator to achieve the row narrowing. Work in the straw between the rows and try to throw 1-inch of soil on top of the rows at this time to stimulate new root formation on established crowns and new runners.

7. Post-renovation weed control. Pre-emergence weed control should begin immediately after the plants are mowed and the soil is tilled to narrow the crop row. Apply half the annual rate of terbacil (Sinbar at 4 oz/

acre). You must mow strawberry plants first to prevent plant injury. If strawberry regrowth has started, you could really damage plants if you apply Sinbar. Sinbar should not be used on soils with less than 0.5% organic matter or on reportedly sensitive varieties such as Guardian, Darrow, Tribute, Tristar, and possibly Honeoye. Devrinol at 4 lb/acre or Dacthal at 8- 12 lb/acre can be applied at this time instead of Sinbar. Dacthal is preferred over Devrinol if the planting is weak. If Sinbar is used, apply Devrinol at 4 lb/acre 4 to 6 weeks later to control winter annuals. Be sure to water in the Devrinol. During the summer, Poast can be used to control emerged grasses. Shallow cultivation is also common during the summer months.

8. Irrigate to activate herbicides and for plant growth. The planting should receive 1 to 1-1/2 inches of water per week from either rain or irrigation.

9. Cultivate to sweep runners into the row until plant stand is sufficient. Runners not rooted by September will not bear fruit and should be considered weeds. Coulter wheels and/or cultivators will help remove these excess plants in the aisles.

10. Adequate moisture and fertility during August and September will increase fruit bud formation and improve fruit yield for the coming year. Continue irrigation through this period and fertilize if necessary. An additional 20- 30 pounds of N per acre is suggested, depending on the vigor.

- LGM, edited from the original printing in: UMASS Berry Notes, Vol. 17, No.9, July 8, 2005)

Prepare for Foliar Nutrient Sampling in Berries

We are approaching the prime time to sample berries for foliar nutrients. This test gives a very good indication of how well the plants are pulling up nutrients from the soil, or if they are incorporating foliarly applied materials.

Each berry plant has a slightly different optimum timing, but when you collect leaves you should try to sample plants that are average looking (unless you are comparing a stressed, poor vigor area to the main planting). All leaves should free from insect damage and be from plants of the same age.

Strawberries: Collect 30 of the first newly expanded leaflets after renovation in late July or early August.

Raspberries: Collect 30 fully expanded leaflets from primocanes in early August.

Blueberries: Collect 30 fully expanded leaves from well-exposed branches in late July or early August.

Currants and Gooseberries: Collect 30 fully expanded leaves from well exposed branches in late July

Cranberries: Collect upright tips only (no more than top 2” of growth), mixing flowering and vegetative uprights for about 1 cup material between mid-August and mid-September.

Wash dirt off collected tissue, blot off excess water, place tissue in a paper bag, allow tissue to air dry and then send to: **Agro-One, 730 Warren Rd., Ithaca, NY 14850.** <http://www.dairyone.com/AgroOne/default.htm>

Some commonly asked questions about berry nutrient sampling:

Why is it important to sample berries in late July?

Blueberries often have 2 flushes of growth during season. Leaves for analysis should be fully expanded new growth

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from 1st flush, not second. Foliar analysis in new blueberry plantings may be beneficial but sometimes produce rather erratic results. This is attributed to the plants lengthy juvenile period – it takes them 4-5 years post planting to “settle down” into normal growth. Age is calculated from when plants go in the ground; transplant age is not usually included in calculation. With fall raspberries, sampling timing maybe a little tricky and it is good to have soil analysis to compliment it. For example – foliar analysis in an early fruiting year showed low Potassium but soil levels were adequate. The probable explanation was that the fruit were acting as a potassium sink so the leaves showed a deficiency.

Should you wait a certain number of weeks after fertilizer application before soil sampling?

Soil N testing is not very useful for perennial crops as levels fluctuate seasonally and over the course of the season. A suggestion is to sample PRIOR to application of fertilizer(s) in early spring or late fall. This prevents getting artificial readings from digestion of recently applied fertilizer taken up with soil samples.

I am using a Cardy meter to monitor nitrogen status in day neutral strawberries and I saw a sudden drop in

nitrogen from adequate to hardly detectable this week – is this because plants are in full production or is it because of recent heavy rains causing leaching?

Possibly both reasons are in play. N is needed to take up C to make sugars; fueling fruit. N drop to be expected during period of rapid fruit filling. Leaching plays a huge role in soil N levels.

Source for Cardy Meter:

Crops: <http://www.agriculturesolutions.com/Nitrogen-Meters/Horiba-Cardy-Twin-Nitrate-NO3-Kit-For-Crops-B-341.html>

Soil: <http://www.agriculturesolutions.com/Nitrogen-Meters/Horiba-Cardy-Twin-Nitrate-NO3-Kit-For-Soil-B-342.html>

Is it too late to apply Boron to HT fall raspberries that are not fruiting?

It's never too late to apply Boron and there is no best time of year to apply it. If your soil B level is short, you should put it on when you can, but if you are applying Boron in the middle of the summer, it is best to apply through drip irrigation to avoid foliar burn. You can also apply Boron to the soil – this stands true for blueberries as well. -LGM

Cornell Fruit Field Day – Thursday, August 1st – Register now!

GENEVA, NY: Cornell University will host the 2013 Fruit Field Day at the New York State Agricultural Experiment Station in Geneva, NY, on Thursday, August 1st, from 8:00 a.m. to 5:00 p.m. The field day will be composed of distinct tours with two tours of tree fruit presentations and a single tour of grapes and small fruit presentations.

Fruit growers, consultants, and industry personnel are invited to tour field plots and learn about the latest research and extension efforts being carried out by Cornell researchers in Geneva and Ithaca and on commercial farms around the state. The event will focus on all commodities of key importance to New York's \$350 million fruit industry: apples, grapes, cherries, raspberries, strawberries, blueberries and other berry crops.

During lunch, equipment dealers and representatives from various companies will showcase their latest products and technologies to improve fruit crop production and protection.

The event will be held on the Experiment Station's Fruit and Vegetable Research Farm South, 1097 County Road No. 4, one mile west of Pre-emption Road in Geneva, NY. Signs will be posted. Attendees will travel by bus to the research plots to hear presentations by researchers on the work being conducted. The cost of registration is \$30 per person (\$40 for walk-ins) for all-day attendance. Lunch will be provided.

Pre-registration is required for the \$30 rate, register on-line at: <http://is.gd/ffd2013>

For sponsorship and exhibitor information, contact Debbie Breth at 585-798-4265 or dib1@cornell.edu.

For more information or to register, contact Michelle Cowles, michellecowles@cornell.edu, 315-787-2274.

Eastern NY Commercial Horticulture Program



Cornell University
Cooperative Extension

NOURSE
The Best Berry Plants since 1932



Sponsoring:

Tour of Nourse Farms - Tuesday, July 23, 2013

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 will be focusing on methods for pruning and trellising these plants. To see more of the nursery, visit <http://noursefarms.com/>.

Departure: 8:00 am Clifton Commons Mall

(second pick up point to the south will be determined; pick-up locations will depend on attendees location/preferences).

\$20 per person includes transportation, box lunch and tour. \$12 each additional attendees from farm.

For more information contact Laura McDermott 518-791-5038. **Register by July 19** using form below or register online at http://cdvsfp.cce.cornell.edu/event_preregistration.php?event=100. Checks should be made out to CDVP; mail to Marcie Vohnoutka, CCE Rensselaer, 61 State St., Troy, NY 12180.

Name (s): _____

Phone # (where you can be reached that morning): _____

Address: _____

Dietary requirements for box lunch: _____

Weekly and Seasonal Weather Information

Site	Growing Degree Information Base 50 ^o F			Rainfall Accumulations		
	2013 Weekly Total 7/09—7/16	2013 Season Total 3/1 - 7/16	2012 Total 3/1—7/16	2013 Weekly Rainfall 7/09—7/16 (inches)	2013 Season Rainfall 3/1—7/16 (inches)	2012 Total Rainfall 3/1—7/16 (inches)
Albany	221.7	1320.1	1513.3	2.23	20.84	14.79
Castleton	213.0	1326.9	1503.1	1.01	15.31	14.34
Chazy	236.0	1168.1	1562.9	0.79	18.07	11.92
Clifton Park	207.6	1265.1	1410.3	0.31	19.46	17.66
Clintondale	215.8	1441.6	1138.3	NA	NA	12.03
Glens Falls	199.7	1158.6	1263.0	0.37	15.96	12.83
Granville	200.7	NA	1160.0	0.37	NA	17.06
Guilderland	179.5	1122.8	1417.4	0.19	5.36	5.45
Highland	211.6	1423.9	1570.5	0.16	13.63	15.57
Lake Placid	141.3	773.9	NA	0.45	18.63	NA
Montgomery	218.1	1333.9	1428.5	0.32	13.49	NA
Monticello	190.1	963.0	1241.0	0.01	0.18	0.75
Redhook	201.6	1331.0	1442.0	0.11	13.43	11.84

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. *CCE provides equal program and employment opportunities.*