



Vol. 2 Issue 8
July 10, 2014

Tree Fruit News

ENYCH Program Educators:

Fruit

Dan Donahue
Phone: 845-691-7117
Email: djd13@cornell.edu
Tree Fruit

Laura McDermott
Cell: 518-791-5038
Email: lmg4@cornell.edu
Berries

James O'Connell
Phone: 845-691-7117
Email: jmo98@cornell.edu
Berries & Grapes

Vegetables

Chuck Bornt
Cell: 518-859-6213
Email: cdb13@cornell.edu

Amy Ivy
Phone: 518-561-7450
Email: adi2@cornell.edu

Teresa Rusinek
Phone: 845-340-3990 x315
Email: tr28@cornell.edu

Crystal Stewart
Cell: 518-775-0018
Email: cls263@cornell.edu

Maire Ullrich
Phone: 845-344-1234
Email: mru2@cornell.edu

Business and Marketing

Bob Weybright
Phone: 845-797-8878
Email: rw74@cornell.edu

Layout:
Carrie Anne Doyle

Content Editor:
Dan Donahue

Pest and Weather Data

Degree Day Accumulations		
Location	Base 43 F	Base 50 F
Peru	1495.9	958.4
Watermill	1417.2	820.7
Clifton Park	1571.2	1015.0
Marlboro	1692.3	1085.3
Hudson	1746.7	1146.3
Highland	1767.1	1146.3

In this issue of Tree Fruit News:

- Bifenthrin Section 18 Approved for BMSB
- GAPS Help
- Top Ranking US Counties for Apple Acreage
- Time for a Tree Nutrient Check-Up
- USDA Pollination Study
- Hudson Valley Summer Beetle Management
- Thoughts on this year's Premier Apple Forum
- Weather Data to Date: Summary and Discussion

Upcoming Pest Events	DD Range (43F)
American Plum Borer 2 nd flight begins	1548-2090
Codling Moth 1 st flight subsides	1249-1839
Lesser Appleworm 2 nd flight begins	1418-2002
San Jose Scale 2 nd flight begins	1628-1986
Pandemis Leafroller flight subsides	1426-1660
Obliquebanded Leafroller 1 st flight subsides	1603-2039
Apple Maggot 1 st oviposition punctures	1605-2157
Redbanded Leafroller 2 nd flight peak	1554-2002
Comstock Mealybug 1 st flight peak	1505-1731
Spotted Tentiform Leafminer 2 nd flight peak	1384-1800
Dogwood Borer peak catch	1470-1908
Oriental Fruit Moth 2 nd flight peak	1470-1980

Insect Trap Catches (Number/Trap/Day) (Highland, NY)		
Pest Species	Count	Count
Lesser Apple Worm (LAW)	1.4	0.5
Oblique Banded Leaf Roller (OBLR)	4.5	2.9
Tufted Apple Budmoth	3.7	3.1
Oriental Fruit Moth (OFM)	2.7	4.1
Red Banded Leaf Roller (RBLR)	5.4	3.8
Spotted Tentiform Leaf Miner (STLM)	50.2	62.9
Codling Moth (CM)	1.6	0.4
Variegated Leafroller	0.6	0.3
Apple Maggot (AM)	0.0	0.04

Bifenthrin Section 18 Approved Against BMSB in the Hudson Valley

By Peter Jentsch, Cornell University Dept. of Entomology

Bifenthrin receives an emergency exemption use permit (Section 18) to control brown marmorated stink bug (BMSB) on apples, peaches and nectarines in Orange, Dutchess and Ulster Counties of NY.

Bifenthrin is one of the most effective insecticides for use against the brown marmorated stink bug (BMSB). Its use is limited to apples, peaches and nectarines in Orange, Dutchess and Ulster Counties of NY. Applications should be considered as the first step in managing the insect, considering the 30 day interval between applications. The first application, upon trapping or observational threshold, can be made along the orchard, bordering deciduous woodland and hedgerow or clusters of host trees such as black locust, tree of heaven, maple, & ash. Over the past three weeks we have seen the insect on fruit and/or captured in pheromone traps. First observation along the orchard perimeter or using a 40 BMSB per trap per week

are presently the thresholds we are recommending for the first application to reduce damage from BMSB.

The EPA and NYS DEC have renewed an emergency exemption use permit (Section 18) for the pyrethroid bifenthrin to control brown marmorated stink bug on apples, peaches and nectarines this year. The regional application request was submitted to EPA from the mid Atlantic states of DE, MD, NC, NJ, PA, VA, WV and NY state.

Bifenthrin is a pyrethroid sold under the trade names of Brigade WSB (10% bifenthrin, EPA Reg. No. 279-3108, FMC Corp.), Bifenture EC (25% bifenthrin, EPA Reg. No. 70506-227), and Bifenture 10DF (10% bifenthrin, EPA Reg. No. 70506-227, United Phosphorus Inc.).

Regardless of the product used, a maximum of 0.08 to 0.2 lb.[AI]/acre/season will be allowed, with no more than 0.5 lb. a.i. per acre applied per year with multiple applications made at a minimum of 30 day intervals; a restricted entry interval (REI) of 12 hours and pre-harvest interval (PHI) of 14 days must be observed.

When applying either of these materials for BMSB control on apples, growers must have possession of the Section 18 label, which can be found at http://pmep.cce.cornell.edu/regulation/sec18/2013/Bifenthrin_s18_let_0613.pdf.



Tedd's trap using pheromone combination lures in peach. Image by Peter Jentsch



BMSB adult on peach. Image by Peter Jentsch

GAPS Help?

Remember to call the Orange CCE office if you want help with writing your GAPS plan or need to get ready for your first inspection. We have a staff person that is prepared to help you take the next steps needed to get that inspection and to be GAPS certified.

This Fall, we plan on having more 2-day classes across the region for those who have yet to get started with their plans or investigating "what it takes".

Please call Maire Ullrich 845-344-1234 with questions or to make an appointment with our GAPS specialist.

2012 Census: Bearing and Non-bearing Apple Acreage - Top Counties

Data compiled by Alison De Marree, Cornell Cooperative Extension

#	2012 US County	Apple Acres	#	2012 Eastern US County	Apple Acres	#	2012 Western US County	Apple Acres
1	Yakima Co, WA	50,270	1	Wayne Co, NY	20,387	1	Yakima Co, WA	50,270
2	Grant Co, WA	43,471	2	Adams Co, PA	12,039	2	Grant Co, WA	43,471
3	Okanogan Co, WA	20,774	3	Kent Co, MI	11,592	3	Okanogan Co, WA	20,774
4	Wayne Co, NY	20,387	4	Orleans Co, NY	5,475	4	Benton Co, WA	16,380
5	Benton Co, WA	16,380	5	Frederick Co, VA	5,114	5	Franklin Co, WA	11,151
6	Adams Co, PA	12,039	6	Ulster Co, NY	4,819	6	Douglas Co, WA	9,546
7	Kent Co, MI	11,592	7	Oceana Co, MI	4,299	7	Walla Walla Co, WA	7,724
8	Franklin Co, WA	11,151	8	Ottawa Co, MI	4,014	8	Chelan Co, WA	6,996
9	Douglas Co, WA	9,546	9	Henderson Co, NC	3,881	9	Adams Co, WA	5,522
10	Walla Walla Co, WA	7,724	10	Berrien Co, MI	3,675	10	Umatilla Co, OR	2,946
11	Chelan Co, WA	6,996	11	Van Buren Co, MI	3,113	11	Santa Cruz Co, CA	2,423
12	Adams Co, WA	5,522	12	Clinton Co, NY	2,730	12	Sonoma Co, CA	2,393
13	Orleans Co, NY	5,475	13	Niagara Co, NY	2,663	13	Kern Co, CA	2,351
14	Frederick Co, VA	5,114	14	Berkley Co, W.VA	2,607	14	San Joaquin Co, CA	1,625
15	Ulster Co, NY	4,819	15	Muskegon Co, MI	1,903	15	Canyon Co, ID	1,555
16	Oceana Co, MI	4,299	16	Mason Co, MI	1,605	16	Utah Co, UT	1,007
17	Ottawa, Co MI	4,014	17	Columbia Co, NY	1,579	17	Hood River Co, OR	890
18	Henderson Co, NC	3,881	18	Newaygo Co, MI	1,515	18	El Dorado Co, CA	839
19	Berrien Co, MI	3,675	19	Worcester Co, MA	1,460	19	Fresno Co, CA	768
20	Van Buren Co, MI	3,113	20	Leelanau Co, MI	1,314	20	Stanislaus Co, CA	700
21	Umatilla Co, OR	2,946	21	Grand Traverse, MI	1,200			
22	Clinton Co, NY	2,730	22	Franklin Co, PA	1,194			
23	Niagara Co, NY	2,663	23	Monroe Co, NY	1,126			
24	Berkley Co, W.VA	2,607	24	Bedford Co, PA	1,100			
25	Santa Cruz Co, CA	2,423	25	Washington Co, MD	1,036			
		263,611			101,440			189,331

Please note that there are 9 major apple producing counties in Washington State which totaled 171,834 apple acres in 2012. Apple acreage has increased both in Washington State and in Wayne, Orleans, Monroe, Dutchess & Clinton Counties, NY since 2012. Washington State can easily produce 175 million bushels of apples during an “on year”. We expect that 2014 will be an “on year”.

Time for a Tree Nutrient Check-Up

By Emily Cook, CCE Ulster County. Compiled from Agro One Soils Laboratory.

Is your fertility program working? Now (about 60-70 days after petalfall) is the time to take leaf tissue samples. Leaf tissue analysis is the best tool we have to get a picture of macro- and micronutrient levels in trees.

What to Sample

Select at least 60-100 leaves from the middle of this current season terminal shoots. **If sampling is done later than 60 to 70 days after petal fall** select the first full-sized mature leaf behind the shoot tip. Select 1 or 2 leaves/shoot from several shoots on each of several trees located throughout the area being sampled.

A minimum of 50 grams (~ 2 oz) fresh weight is needed. Select shoots that are well exposed to light. Shoots sampled should be of **average** vigor (length and diameter) from the trees in the planting.

- **Large trees:** sample 5 to 7 feet above ground level.
- **Small trees** (young, trellised or slender spindle plantings): 3 to 6 feet above ground level.
- **Avoid** excessively strong shoots (near pruning cuts) and extremely weak shoots.
- **Do not** include spur leaves.
- **Do not** include leaves that are damaged by: diseases; insects; weather or mechanical injury.
- **Do not** mix leaves from trees of different varieties.

- **Do not** mix leaves from trees of different ages.
- Trees sampled should represent the average condition within the orchard unless special samples are being taken to determine cause(s) of a distinct problem.

Collecting and Preparing Samples

Remove leaves by pulling downward so the petiole remains attached to the leaf. Place leaves in a dry paper bag or perforated plastic bag and immediately label the bag for identification. Wash the leaf samples while still fresh, before they wilt. If a large number of samples are involved they may be stored overnight in cold storage, refrigerator or ice chest to keep them from drying out. Use distilled water, available at most drug stores, for washing and rinsing the sample. Change the water if it becomes dirty or after 8 to 10 samples (whichever occurs first). Gently and lightly scrub the leaves together in distilled water. Shake to remove excess water and immediately rinse the sample in clean distilled water. Again shake to remove excess water. Spread out sample on clean paper towels until leaf surfaces are dry. Transfer sample to paper bag, with top open and dry at room temperature until the leaves are brittle.

NOTE: DO NOT let leaves to stand in water –complete the washing and rinsing process in one minute or less.

Sample submission forms can be found at <http://dairyone.com/analytical-services/agronomy-services/plant-tissue-testing-services/>

USDA Pollination Security Study is Asking for Your Input

A five year USDA project is investigating how to provide greater pollination security for Maine wild blueberries, Massachusetts cranberries, Connecticut squash/pumpkin, and **New York apples**. Researchers in all four states need input from all types of apple growers in New York from all production regions, **especially those in the Hudson Valley**, on how improve pollination on their farms. While the project focuses on native bees, all pollination alternatives are being economically evaluated. Please check with all owners and operators on your farm to make sure someone did not fill out this survey live on paper during one of the following four recent petal fall meetings (Rexford 5/27, Sodus 5/29, Albion 5/29, and Peru 6/4).

The survey was issued by Dr. Aaron Hoshide, Adjunct Assistant Professor/Faculty Associate with the University of Maine School of Economics (207-945-6830 or email aaron.hoshide@umit.maine.edu).

If your farm did not fill out a survey, please complete this survey anonymously online at the following web link: <https://www.surveymonkey.com/s/NKT2Z6G>.



Images from Dave Rosenberger online article available at <http://blogs.cornell.edu/plantpathhvl/2014/04/22/apricots-at-full-bloom/>

Hudson Valley Summer Beetle Management

By Peter Jentsch, Cornell Univ. Dept. of Entomology

The beetle complex moving through Hudson Valley commercial orchards this season include the multicolored Asian ladybird beetle (MALB), the rose chafer (RC), Japanese beetle (JB), and occasional fruit feeding adult plum curculio (PC) during the summer. During the past few days we have seen increased feeding of tree fruit and grape foliage from members of this group, especially to new succulent foliage on growing terminals. In newly planted trees and vines, this reduction of leaf tissue may lead to reduced carbohydrate production and storage, resulting in decreased establishment and overwintering success.

We observed the first emergence of **Japanese beetle**, *Popillia japonica*, mid-week (2 July), a bit earlier than last year. However the emergence has been in many sites robust compared to previous growing seasons with relatively high numbers causing damage to fruit trees up to this point. Generally later tree fruit development and cooler temperatures we've experience this spring did not play a significant role in JB emergence.

As the name suggests, the Japanese beetle is a non-native beetle, indigenous to Japan. The first sighting of this beetle occurring in the United States in 1916 from a nursery near Riverton, New Jersey. It is thought that beetle larvae entered the United States in a shipment of iris bulbs entering the country, prior to the onset of commodity port of entry inspections.

The adult beetle is 0.6 inches long and 0.4 inches wide, with iridescent copper-colored elytra and green thorax and head. Females will mate shortly after they emerge from the soil only to burrow back into the sod to lay eggs, repeating this cycle through the early part of the summer. The larva or grub is cream colored and feed on roots of grasses for most of their immature life. The damage they inflict often causing high mortality to grasses in agricultural, lawn and golf course turf.

Japanese beetle are attractive to a 'congregation pheromone'. This lure has been synthesized and is used in traps baited with both floral scent and pheromone. However, studies done at the University of Kentucky suggest that traps attract more beetles than they actually trap, thus causing more damage than may have occurred were the trap not used.

The Japanese beetle is a serious pest of about 300 species of plants throughout the eastern US, and considered the most devastating pest of urban landscape plants in the eastern United States. It feeds on apple, grape, rose and a



Japanese beetle adult



Japanese beetle larva or grub.

wide variety of other trees, shrubs and weed species. Damage to plants by adult feeding results in the skeletonizing of the leaf, consuming foliage between the leaf veins. It will also feed on ripening or damaged fruit, especially to early peach and apple varieties as ripening occurs shortly after Japanese beetle emergence. Managing the beetle on ripening fruit is often difficult due to pre-harvest interval limitations of effective materials.

The abundance of the aphid complex on apple has most likely encouraged the multi-coloured **Asian lady beetle** adults, *Harmonia axyridis* (Pallas) (MALB), into Hudson Valley orchards. Populations of this predatory insect can build to very high numbers, most often for our benefit. We consider this beetle to be beneficial as nymphs and adults can consume 20-60 aphids per day respectively.

However, if cool wet weather provides aphid populations with ideal conditions for growth, they may move from feeding on foliage to fruit.

On occasion we have observed MALB nymphs follow the aphid complex over to the apple to continue their predatory activities. Yet as the larvae near maturity to

continued on next page



Multi-coloured Asian lady beetle mature larva (fourth instar). Photo credits: M.H.Rhoades

Summer Beetle Management, continued from previous page

emerge as adults they will often pupate directly onto fruit. They do this by ‘gluing’ their mouthparts onto the surface of the fruit, leaving a shallow hole or blemish in the surface of the apple. If aphids continue to be problematic, low rates on the neonicotinoid products (Provado, Assail or Calypso) will lower the aphid population while maintaining biological control agents such as the MALB, the orange cecidomyiid and cream-colored syrphid fly larvae to co-exist with the aphid complex, continuing to reduce aphid numbers while reducing the potential for fruit injury from the pupal stage of MALB.

The **rose chafer, *Macrodactylus subspinosus* (Fabricius)**, is a tan colored, long-legged and slender beetle from 8-12 mm long. The rose chafers damage plants by feeding on the flowers, newly set fruit and foliage. On roses it skeletonizes the leaves in the same way that other scarab beetles, like the Japanese beetle, do. It prefers breeding sites with sandy soils where populations will reach economic damage levels of both foliar and fruit feeding. Northern NY fruit growing regions appear to have high seasonal populations.



May beetle, June bug or June beetle is a widely distributed beetle and diverse group of plant-feeding beetles in the genus Phyllophaga, belonging to the family Scarabaeidae. These reddish-brown beetles commonly



A light brown beetle in the Scarabaeidae family, commonly known as June Bug (*Phyllophaga* sp.) is often seen in Hudson Valley orchards.



Injured fruit at harvest caused by construction of pupa case by multi-coloured Asian lady beetle.

appear in the Northeast during warm spring early summer evenings and mostly noticed in the evenings attracted to lights. June beetles vary from 12 to 25 mm (0.5 to 1 inch) and have light brown wing covers (elytra). They feed on foliage at night and if they are present you would likely see them while making early evening applications.

Beetle control:

Carbaryl or Sevin is formulated as a liquid XLR Plus, 4F or 80S powder. Carbaryl is highly effective in codling moth, adult and nymph leafhopper and Japanese beetle control during the summer.

Calypso (EPA Reg. No. 264-806) was registered for use in pome fruit in NY in 2006. Japanese beetle was added to the label for 2008. Calypso provides control of beetles at 4–8 oz/acre, and leafhoppers, leafminers, mirids and green aphids at 2–4 oz/acre). It is not registered for use on stone fruit in which Japanese beetle can be a serious pest. Bayer CropScience has notified EPA of a voluntary cancellation of Calypso registration (thiacloprid), requesting that states allow for continued use through the existing stocks through 2016.

Assail 30SG (EPA Reg. No. 8033-36-4581) is registered for use in pome fruit and grapes in NY. Along with control of CM, OFM, apple maggot, aphids, and leafhoppers, it has been noted that Assail applied at early infestation of Japanese beetle causes the beetles to stop feeding and eventually kills the adults. Assail recently received a federal label for use in stone fruits, not yet approved in NY for stone fruit.

Leverage 2.7SE should be reserved for those situations when the pest complex to be treated is appropriately matched to the combination of active ingredients and modes of action contained in the product. Not labeled for JB on apple.

Actara* labeled for use against JB under a Section 2(ee) for suppression of JB on apple only. *continued on next page*

Beetle Management, continued from previous page

Under a Section 2(ee), the user must refer to the federally approved Actara label and read and follow all directions for use, restrictions, and precautions. It is a violation of federal law to use this product in a manner inconsistent with its labeling. The user should have this recommendation in their possession at the time of use. (<http://128.253.223.36/ppds/525546.pdf>).

Control measures for Japanese beetle

Product	Use on apple			Use on stone fruit	
	Rate/A	REI (hrs)	PHI (days)	Apple	Cherry, Peach, Nec, Apricot
Assail 30SG	5-8 oz/A	12	7	Yes	Yes
Actara*	5.5 oz/A		35	Yes	No
Calypso 4F	2-4 fl oz/A	12	30	Yes	No
Sevin 4F	1.5-3.0 qt/A	12	3	Yes	Yes
Leverage 2.7SE	3.6-4.4 oz/A	-	-	No	Yes
Provado 1.6F	4-8 oz/A	-	-	No	Yes
Imidan 70 WP	2.125-5.75 lb./A	72	7	Yes	Yes

Carefully read the label as each state and various commodities often have different use restrictions.

Taking a Break Under the Apple Tree.....

By Dan Donahue, CCE ENYCHP

Thoughts on this year’s Premier Apple Forum

I attended my first Premier Forum, June 23rd and 24th, in Syracuse, New York. It was encouraging to see close cooperation within the industry, and was really struck by the sense of optimism that pervaded the room. As you are aware, I was closely associated with the apple industry back in the 1980’s up until 2000. At the meeting, this period of time was referred to by multiple speakers as the “bad old days” of low prices, weather disasters, etc. I’m very happy to be involved in the industry again, this time in the “good new days”.

Lately, the most popular question out there is “what’s the crop looking like?” Attendees at the Forum caucused, and arrived at a 28 million bushel estimate for NY, with Michigan in at 27.25, and Washington State at 181. Overall, the NY and the East are looking at a 5 year average crop, with Washington being way up. Washington marketers appeared confident they could move this large crop effectively, while maintaining favorable pricing. Since I’d only started in this position at bloom time, and being in my sixth week on the job, I kept to myself and just observed. Of course, this is all speculation at this point, and the big pink elephant sitting in the corner of the room is whispering that no one knows how much recently planted high density orchards will contribute to the definition of an “average” crop today. Also, no one knows how much we actually produced last year. From what I’ve observed in the Eastern New York region, I’ll throw my hat into the ring and suggest that the estimate for New York is on the optimistic side of the range.

On other observations, Washington State is consolidating industry organizations (Washington Horticultural Association, Washington Growers Clearing House Association, Wenatchee Valley Traffic Association, Yakima Valley Grower-Shippers Association) in order to eliminate duplication and improve performance. This makes sense since the state appears to have more

organizations that most other states have producers. What varieties should we be planting? Same old argument, do we piggyback on Washington’s marketing clout (Reds, Gala, Honeycrisp, Fuji), or tack in another direction and plant “eastern” varieties for that locally-grown edge that has been increasing in value. If experienced industry hands are able to predict the future of “club” varieties, they’re not talking. Consumers love honeycrisp, supply is increasing with more to come. There is major concern about what’s going to happen when we reach the point where the variety can’t all be moved by end of December. Not much said about the status of DPA. The new U.S. Apple Association President, Jim Blair, voiced some guarded optimism that immigration reform (for us, “guest worker”) might still happen. That was June 24th, now it appears to be off the table for this session. The industry has been working this issue for some 20 years, and should continue to press for a real solution. In the meantime, producers, researchers, and extension specialists might want to consider prioritizing how we can maximize labor efficiency and minimize labor requirements through efficient orchard design and mechanization, just in case. I can’t fail to mention that US Apple’s Wendy Brannen is enthusiastically promoting the industry on the national stage by commissioning nutritional studies and combating that unfair publicity that occasionally falls our way.

A grower/shipper recently said to me “Strong support and cooperation with Premier Apple, and the production of quality apples of the varieties that consumers are excited about, that is what has kept prices strong, and the consumer coming back for more”. Once again, it shows that industry support for cooperative organizations pays off in the long run, providing timely research, technology, and marketing support to help keep up with a changing world.

Nice chatting with you, but it’s time to get back to work!..... Dan

Note: If you would like more information on Premier Apple Cooperative, contact Bill Dodd at bill@ohioapples.com

Summary and Discussion of Selected Season to Date Weather Data

By Dan Donahue, CCE ENYCHP

Four weeks ago I summarized rainfall data for the season to date; I thought it was time to take another look. While our winter weather was decidedly colder than average, this year’s growing season has shaped up so far to be very “average”. In general, rainfall is close to our recent multi-year averages, and our accumulation of heat units is only slightly behind. Considering the late spring, Mother Nature has once again found a way to catch up.

Starting in 2013, weather stations on the NEWA network began to collect data on solar radiation, measured in langleys. I was interested to see if there was any difference between the 2013 and 2014 growing seasons, to date. While I’m not assigning any statistical significance to the data in the table below, and it’s curious why Marlboro is “sunnier” this year than the Highland Lab, since they are not far apart. Could be a little more solar energy out there for this season’s crop compared to last.

I have not received any grower reports of hail damage to the crop this season. I have one report of hail last week in northern Ulster County, but not in the vicinity of any orchards. I think “average” weather is good for increasing our potential for a quality crop, as extremes in rainfall, drought, temperature, and solar radiation can contribute to sizing, color, sunburn, and storage issues. Continued irrigation is essential since “average” rainfall is not really sufficient to size the crop to its potential. Summer rains often come as downpours where excessive runoff significantly reduces the amount of water that actually percolates through the soil profile to reach the root zone. Some of this runoff will end up in your irrigation pond, to be pumped back into the orchard at a later date. Fruit sunburn can be a significant risk when heat and solar radiation are high, and individual apples are too exposed to direct sunlight. It is a fine balancing act to train and prune trees to encourage maximum color, but not go so far that fruit sunburn becomes an economic loss.

Weather Station	Rainfall	Rainfall	DD Base 43	DD Base 43
	5 yr. Ave. 03/01-07/07	This Year to Date 03/01-07/07/14	5 yr. Ave. 03/01-07/07	This Year to Date 03/01-07/07/14
Marlboro, NY	16.54	14.66	1857.6	1692.3
HVL Highland, NY *	14.37	13.80	n/a	n/a
Hudson, NY	14.90	17.46	1724.2	1746.7
Clifton Park, NY	14.09	13.16	1683.1	1571.2
Chazy, NY **	14.35	14.24	n/a	n/a

* 3 year ave.

** 4 year ave.

Weather Station	Solar Radiation	Solar Radiation	Percent Change
	(langleys) April - July 7, 2013	(langleys) April - July 7, 2014	
Marlboro, NY	36,986	42,387	14.6%
HVL Highland, NY	42,707	40,948	-4.1%
Hudson, NY	39,749	40,714	2.4%
Clifton Park, NY	33,387	33,622	0.7%
Chazy, NY	37,434	43,620	16.5%
Group Average	38,053	40,258	5.8%

Every effort has been made to provide correct, complete and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are possible. These recommendations are not a substitute for pesticide labelling. Please read the label before applying any pesticide. This material is based upon work supported by Smith Lever funds from the Cooperative State Research, Education, and Extension.

Diversity and Inclusion are a part of Cornell University’s heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.