

# Cornell University Cooperative Extension

# Eastern NY Commercial Horticulture Program

Vol. 3, Issue 5 May 22, 2015

# Weekly Vegetable Update

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# **Regional Updates**

*North Country—Clinton, Essex, northern Warren and Washington counties* Warm, mostly dry conditions continued this week. The soaking rain on May 11<sup>th</sup> reached only some sections, even in the north. Since then it's been warm, dry and

breezy so soils have dried. Irrigation is proving its value this month with new seedlings and transplants trying to get started. Row cover can protect young plants from wind as well as temperature, if held up on low wire hoops just above the leaves and growing points. Some crops don't mind being buffeted by the billowing row cover but cucumbers and melons are some of the more sensitive crops and do best when the cover is suspended just a bit. Simple 9 gauge wire can be used as quick hoops.



Captions: Rowcover held up by low hoops. Photo credit, ADI

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

Some of the region received some spotty showers over the weekend, but in most cases is was just about enough to keep the dust down for a couple of hours. Additional showers occurred Monday night, but were very scattered around the region again. Despite the heat the last couple of weeks, things are moving slowly due to the dry weather. Direct seeded winter squash and pumpkin planting will get underway for some folks later this week and will be in full swing by Memorial Day weekend.

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

After more than three weeks with little to no precipitation, the Hudson Valley finally received some much-needed rain over the weekend. Rainfall totals were over one inch throughout much of the lower Hudson Valley while the middle and upper Hudson regions received approximately half an inch. This rain came on the heels of an early-season heat wave that damaged many seedlings in the muck soils of Orange County. It will take some time to see if seedlings and stands recover and to what

Serving the educational and research needs of the commercial small fruit, vegetable and tree fruit industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

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extent. Many onions still had healthy roots prior to the rain and may recover with no lasting effects. Fortunately, more rain is forecasted for the Hudson Valley which should help alleviate the lingering effects of this unusually hot and dry Spring. Be prepared for a strong and widespread weed emergence following these rain events and remember that, whether using shallow cultivation or herbicide applications, the earlier you target a weed for eradication the better.

Flea beetle numbers continue to climb and so too the damage to the crops they love to feed on. Keep an eye in your high tunnels and greenhouses as well as the fields where I've already seen significant damage on eggplants and brassicas. Otherwise growers continue to seed and transplant after a late start to the growing season and with recent rains are happy to get a break from moving irrigation equipment around for a while.

#### Bacterial disease in tomatoes may be showing up early



This is a photo of a suspect case of Bacterial Speck on tomato. Note the black, greasy, irregularly shaped spots around the leaf margins and yellowing. These are in cell packs in the greenhouse. Please contact one of the ENYCHP educators if you see anything like this. Take sanitation steps, including the use of clean seed and field rotation, very seriously especially after last season when we saw lots of bacterial diseases in tomatoes on farms throughout eastern NY resulting in lots of inoculum hanging around to infect your tomatoes this year. Chris Smart's work from the past few seasons on bacterial canker and speck has shown that fruit are most susceptible to infection when they are young (pea size to a quarter) so that means protective copper sprays need to go on early. More next week when we get diagnostics back from Chris Smart. -TR

# **Pesticide Updates**

**Hopguard-Section 18 In NY For Varroa Mite:** A FIFRA Section 18 specific exemption has been granted to NYS for use of HopGuard II to control varroa mites in honeybees in NY during 2015. HopGuard II contains the active ingredient potassium salt of hop beta acids. Users must have a copy of the Section 18 exemption in their possession at time of use: <a href="http://128.253.223.36/ppds/542080.pdf">http://128.253.223.36/ppds/542080.pdf</a>> (Mike Helms & Dan Gilrein, *Long Island Fruit and Vegetable Update, No. 7, May 14, 2015*)

**Vivando-New Fungicide Registered In New York:** Vivando contains an active ingredient (metrafenone) in a new chemical group (FRAC Group U8). Metrafenone has activity specific for powdery mildew. With mode of action different from other fungicides with targeted activity for powdery mildew, Vivando will be a valuable tool for managing these diseases. It was registered in NY in October 2014 for use on grapes (main label) and in February 2015 for use on cucurbits and fruiting vegetables (supplemental labels). Remember that the entire label and the supplemental label must be in the possession of the user when applying. These and other NYS pesticide labels can be viewed and downloaded at: <htp://pims.psur.cornell.edu/ProductName.php>. Vivando has exhibited excellent control of powdery mildew in pumpkin in fungicide evaluations conducted recently at Long Island Horticultural Research and Extension Center. It is recommended used in alternation with other fungicides with targeted activity for powdery mildew (Quintec, Torino, Procure) in order to manage fungicide resistance, which has been a major issue with this disease. Vivando rate is 15.4 fl oz/A. Maximum number of applications per year is three with no more than two consecutive. Restricted-entry interval is 12 hours. Pre-harvest interval is 0 days. Plantback restriction is 365 days for crops that are not labeled. *(Margaret McGrath, Long Island Fruit and Vegetable Update, No. 7, May 14, 2015)* 

# **Cucurbits: Using imidacloprid applications for Striped Cucumber Beetle control**

I know some early summer squash has gone in the ground this week and the next couple weeks we will really get geared up for direct seeding and transplanting the majority of our winter squash and pumpkins, so it's time I dusted off the figuring out rates article for using imidacloprid (Admire Pro, Advise etc.) for striped cucumber beetle control (SCB).

First and foremost, I know that many of you have been using the FarMore treated seeds for SCB control. This product has been working very well when you are direct seeding the crop. However, in many cases for early summer squash or even pumpkins and other crops we might be using transplants, you should not be relying on FarMore to give you control once you move those plants to the field. Why? The active ingredient in FarMore for SCB has a residual of about 2-3weeks. Therefore, most of your transplants are older than that when they are planted so there will be no control once they are planted, which is why you need to either scout aggressively after transplanting or apply another treatment before planting. Second, you need to know what formulation of imidacloprid you are using. Imidacloprid has many different brand names now including Admire Pro Systemic, Advise, Widow, Alias, etc. However, you need to carefully read the label to make sure that the application you want to use is actually labeled for that use! Third, you need to be very aware that the percent or amount of active ingredient may vary from product to product so you need to adjust rates accordingly. For example, Admire Pro Systemic (4.6 lbs per gallon) has over twice as much active ingredient in it than Advise 2F (2.0 lbs per gallon).

Most of the labels allow a "Planthouse Application" and I think it is easiest is to apply it to the transplant flats a day or two prior to transplanting. Use a very low rate (0.02 ml/plant of a imidacloprid 2F or 2 pounds ai per gallon formulation) to treat transplants about 1 day prior to planting in the field. It can be applied with a backpack sprayer, Dosatron or other injection watering system or with a watering can. To determine the amount needed, multiply the number of plants in your flat x .02 ml. Then multiply that number by the number of flats you have to plant. You need to use enough water to sufficiently soak to soil mix evenly. Be sure to rinse the plants off after the application so that the imidacloprid gets washed into the soil. It needs to be taken up by the roots to be most effective. Remember, know your formulation - if you are using Admire Pro, the recommend rate is 0.44 fluid ounces (13.2 ml) per 10,000 transplants (note this is the rate for controlling aphids and whiteflies in cucurbit transplants. It is not labeled for control of SCB as transplant treatment). When measuring out this small amount of product it might be handy to have a couple different sized syringes on hand that measure in milliliter (ml). Also remember that if you don't have a syringe that has ml on it, 1 milliliter is equal to 1 cc.

If you are using plastic mulches with drip tape, you could use

the drip system to apply the imidacloprid. However, it may take a couple of days for the plants to recover from transplant shock and reached the material leaving them vulnerable to insect attack. If you decide to use the drip system, be sure you have all the appropriate back-flow preventers on your system. I would calculate the rates based on the acreage you have under plastic the same way you determine fertigation rates. For example, if your bed spacing is 7 feet, divide 43560 by 7 feet to get 6,223 linear ft per acre. If your plastic width (the area covered by the plastic) is 2.5 feet, multiply your linear ft of 6,223 x 2.5 ft = 15,558 square ft per acre. To convert this back to acres, divide 15,558 by 43,560 sq ft. per acre to get 0.36 acres. Using the 24 ounce per acre rate of imidacloprid, multiply 24 ounces per acre x 0.36 acres for a total of 8.6 ounces of imidacloprid to mix and inject into the system.

A third option for transplants would be to use it in the transplant water if you are using a water-wheel transplanter. Note that there is the same concern as with the chemigation that is the plants may take a couple of days to recover from transplant shock which may slowdown the uptake. Again, I'm sorry to say that there will be math included here as well! The key here is knowing how much water you apply to each transplant, how many transplants you can plant per tank of water and how much acreage you cover per tank. For example, if your bed centers are 7.0 feet apart, divide 43,560 sq. ft. by 7 ft =6,223 linear feet per acre. Take 6,223 row feet and divide it by the number of plants you would plant per acre. If you are using 6 ft spacing between plants, you would divide 6,223 linear feet per acre by 6 ft plant spacing to get 1,037 plants per acre. Next, determine the amount of water you are putting out with your transplanter. Typically, most growers use about 4-6 fluid ounces of water per each hole punched. If you are averaging 6 fluid ounces of water per hole, take 6 fl oz and multiply it by 1,037 holes per acre and you will be using about 49 gallons of water per acre (=6,223 fl oz divided by 128 fluid ounces per gallon). If your water-wheel holds 200 gallons, then you would average about 4 acres per tank. Now to determine the imidacloprid rate: We can use the same rates as we determined for the transplant trays:. The rate of 0.02 ml per plant was found to be adequate for the control of SCB in research trials. So, in this case multiply the number of plants per acre by .02 ml or 1,037 x 0.03 ml = 21 ml per acre. You know that in this example your tank will cover roughly 4 acres so you would add 84 ml (4 acers x 21.0 ml imidacloprid per acre) or 2.8 fluid ounces (84 milliliters divided by 29.6 ml per fluid ounce). By plugging in your own spacing information, how much water you use in each hole and how much water your tank holds you can figure out how much imidacloprid to add to each tank.

In-furrow application for direct seeding: Research conducted with 2F formulations of imidacloprid has shown that 1.1 ounces per 1,000 feet of row is adequate for striped cucumber bee-

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tle control. To determine the per acre rate at different spacing's, take 43,560 square feet (the number of square feet in one acre) and divide it by your between row spacing. Take that value and divide it by 1,000. Finally, take that number and multiply it by 1.1 fluid ounces and that is the number of ounces you need to treat one acre. For example, if you plant your Jack-O-Lanterns on 10 foot centers, then you would take 43560/10 = 4,356 row feet. Divide that by 1,000 row feet: 4,356/1000 = 4.4 (this is the number of 1,000 row feet per acre per your spacing). Then take 4.4 and multiply that by 1.1

If you didn't catch last week's newsletter, flea beetles are out in abundance now, especially with the dry weather. Now is the time to protect those young plantings. You can exclude flea beetles by immediately covering transplants with lightweight row cover, making sure the edges are sealed tight. Organic chemical options include Mycotrol O (Beauveria bassiana at 1/4—1.0 quarts per acre), Entrust (spinosad at 1.25— 2.50 fluid ounces per acre), azadirachtin (various products including Aza-Direct, AzaGaurd, Neemix, Molt-X and other brands-please read label for proper rates depending on product used) and Pyganic (see label for rates). Frequent scouting and retreatment will be required and under heavy flea beetle pressure and even then you may only get some suppression with these materials. Conventional insecticides options for flea beetle include carbaryl (Sevin XLR Plus, 0.5 quarts per acre), pyrethroids (Baythroid XL at 2.4—3.2 fluid ounces per acre, Brigade 2EC or OLF at 2.1-6.4 fluid ounces per acre,

ml imidacloprid per 1000 feet = 4.8 ounces of imidacloprid 2F per acre. Most growers are aiming to apply their imidacloprid in between 5 and 10 gallons of water per acre. If you have Admire Pro, essentially you will use half that rate (2.4 ounces per acre).

Again I cannot stress the importance of knowing what formulation of imidacloprid you have! If you need help please feel free to give me a call and I will do my best to help you determine what you have and how much you need to use! CDB

### Crucifers

Mustang MAXX a2.24-4.0 flu9id ounces per acre) or Warrior II (lambda-cyhalothrin at 1.28-1.92 fluid ounces per acre). For quick knockdown and some residual you could try some of the pre-mix materials such as Voliam Xpress (chlorantraniliprole + lambdacyhalothrin at 6.0-9.0 fluid ounces per acre) or Endigo ZC (lambda-cyhalothrin + thiamethoxam at 4.0-4.5 fluid ounces) or Leverage (imidacloprid + cyfluthrin at 3.8 ounces per acre). -CB



Asian greens are one of the favorite crops flea beetles feed on. This picture was taken in a high tunnel. See last week's newsletter for management options. Photo-TR

#### **Testing Irrigation Water for Food Safety**

Although temperatures have come down somewhat and most areas in the Hudson Valley received .5-.75 inches of rain mainly on the 16<sup>th</sup> and 17<sup>th</sup>, most agricultural fields are still in need of water for production. This is a good time of year to get your irrigation water sources tested. Although water testing is not currently required, some form of water testing for agricultural purposes will be required under the Food Safety Modernization Act which will come into effect October of this year. Once enacted, there will be an additional 2 years until the water testing comes into effect, but nonetheless, it is wise to test now. If tests are over the allowable range, you will have plenty of time to react and change your irrigation systems to comply with the rule if you start now.

As soon as you can, you should take a sample from every surface water and well water source you use. The sample needs to get to the lab within 24 hours so it is best to find a lab nearby that can perform the test you need, which is a quantified generic E. coli test. This test gives you a number (CFU = colony forming units, or MPN = most probable number) that tells you how much E. coli is in the water. This is not necessarily pathogenic E. coli, but it is a good indicator for fecal contamination. When taking water samples you must use a sterile plastic bottle, which can be purchased at a pharmacy. Do not rinse the bottle out. The sample should be taken at the point where the water enters the distribution system (i.e. – at the outflow of the pump) and put in the sterile bottle and kept on ice. Call one of the ENYCHP educators if you need help finding a lab near you.

Samples from surface water sources need to be below 126 CFU. If your sample tests high, take a few over the course of the season. They cost about \$35, and it will allow you to determine the level of risk in using your water, and it will inform you as to what steps may need to be taken to comply with future regulations.

It is also a good time to do a simple water use risk assessment. First, write down all the water sources that you use for irrigating, frost protection, and mixing sprays. Second, determine whether the water touches the edible portion of the crop. Third, determine the amount of time between the application of the water and harvest. When using surface water on the edible portion of the crop close to the time of harvest, that is the highest risk. After you have finished your risk assessments, try to work on changing your highest risk activities to reduce your food safety risks. - *ES* 

# Keeping Pesky Weeds Out of the Greenhouse







Whether growing transplants or producing a crop for harvest, practicing effective weed control and maintaining weed-free production areas is a crucial component of greenhouse and high tunnel vegetable production. While we all know that weeds growing amongst our crops can compete for light, water, and nutrients, it is important to remember that many weed species also harbor insect pests and plant pathogens and can act as sources for continuing infestations and infections throughout the growing season. Recently, I have noticed weeds getting a little out of control in a few greenhouses. Last • week I came across some eggplant that was moderately infested with two-spotted spider mites. In the corner of the same greenhouse was some lambsquarters that was loaded with the same species of mite. In this case, the application of a pesticide only offers temporary control unless the source of the problem (the weeds) is eradicated. The following are some

tips and tactics for controlling weeds in greenhouse and high tunnel situations.

- Control weeds surrounding the greenhouse by mowing, trimming, or applying herbicides ( be careful that herbicides are not sucked into the greenhouse through ventilation)
- Use sterile substrates; clean containers if reusing
- Use concrete or mulched floors; landscape fabric can be used on bare ground
- Do not allow weeds to make seed
- Manually remove weeds, including those hard to reach ones behind the heater or bench
- Treat plants with a post-emergent herbicide that is labeled for greenhouse use. Be careful of volatilization during periods of high temperatures—KB

# **Rooting Depth of Various Crops**

To follow up on last week's article about irrigation, here's an interesting chart of the rooting depths of various crops. It came from the *Cornell Integrated Crop and Pest Management Guidelines for Commercial Vegetable Production* that everyone enrolled in our program receives. This chart is a good example of the handy information this manual contains – much more than just pest management options. It came from Chapter 7 on General Culture, page 54. This chart assumes deep, well-drained soil, so it's the best case scenario. Heavy, rocky soil or shallow soil will have much more shallow rooting. - *ADI* 

Table 7.5.1 Approximate rooting depths of various vegetable crops when grown in deep, welldrained soil.

Very Shallow (down to 1 ½')	Shallow (Down to 2')	Intermediate (Down to 4')	Deep (Down to 6')	
Celery	Broccoli	Bean, snap	Asparagus	
Lettuce	Cabbage	Beet	Bean, lima	
Onion	Cauliflower	Carrot	Parsnip	
Radish	Cucumber	Eggplant	Pumpkin	
	Muskmelon	Pea	Winter squash	
	Pepper, transplanted	Pepper, seeded	Tomato, seeded	
	Potato	Rutabaga	Watermelon	
	Spinach	Squash, summer		
	Tomato, transplanted			

**2015 Weather Table**—The weather information contained in this chart is compiled using the data collected by Network for Environment and Weather Applications (NEWA) weather stations and is available for free for all to use. For more information about NEWA and a list of sites, please visit http://newa.cornell.edu/ This site has information not only on weather, but insect and disease forecasting tools that are free to use.

<b>2015 Weekly and Seasonal Weather Information</b>								
	Growing Degree Information Base 50 <sup>0</sup> F			<b>Rainfall Accumulations</b>				
Site	<b>2015</b> Weekly Total 5/11 - 5/17	<b>2015</b> Season Total 3/1 - 5/17	<b>2014</b> Season Total 3/1 - 5/17	<b>2015 Weekly</b> <b>Rainfall</b> 5/11 - 5/17 (inches)	<b>2015 Season</b> <b>Rainfall</b> 3/1 –5/17 (inches)	<b>2014 Total</b> <b>Rainfall</b> 3/1 - 5/17 (inches)		
Albany	97.5	333.9	216.5	0.06	2.51	6.26		
Castleton	96.0	318.1	213.9	0.08	2.43	6.46		
Clifton Park	97.4	329.5	191.4	0.09	1.79	6.97		
Fishkill	98.7	323.0	Na <sup>1</sup>	0.81	3.52	Na <sup>1</sup>		
Glens Falls	84.5	243.1	226.5	0.92	2.36	9.93		
Griffiss	73.9	218.1	178.5	1.52	6.95	12.82		
Guilderland	92.6	291.1	193.5	0.09	2.90	Na <sup>3</sup>		
Highland	104.2	361.0	254.2	0.57	5.17	9.67		
Hudson	106.7	349.0	241.7	0.23	3.62	8.13		
Marlboro	95.2	323.7	211.0	0.85	4.66	9.73		
Montgomery	101.0	326.7	223.0	0.08	4.20	9.84		
Monticello	74.7	224.1	135.0	Na <sup>2</sup>	Na <sup>2</sup>	5.27		
Peru	57.5	219.5	168.3	0.77	2.75	6.80		
Red Hook	96.7	323.8	257.5	0.20	4.73	2.08*		
Shoreham, VT	75.0	250.0	176.6	1.52	3.85	6.25		
Wilsboro	56.0	201.7	162.1	1.12	4.17	3.82		
South Hero, VT	60.2	220.6	144.6	0.75	3.87	7.69		
N. Adams, MA	78.8	206.3	167.5	0.05	3.00	7.45		
Danbury, CT	93.1	263.7	187.0	0.92	4.57	10.87		

Na<sup>1</sup>: The Fishkill site is new for 2015 so there is no historical data to report.

Na<sup>2</sup>: The Monticello station is not properly recording data at this time.

Na<sup>3</sup>: The Guilderland weather station was not properly reporting precipitation data in 2014 so no data will be shown for this site.

\*: Precipitation data for this site did not began until May of 2014.

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