Weather conditions are favorable for the development of powdery mildew. A table of targeted fungicides for cucurbit powdery mildew is provided.

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Did the past week's rains bring on a new flush of weeds in your Cole crops? Here is information on post-emergent herbicide options.

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Gray mold infections in greenhouse tomatoes can be prevented. Learn how to minimize the risk to your crop.

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Rhizoctonia solani, a soil pathogen, causes damping off, wirestem, bottom rot and head rot of cabbage seedlings. Learn how to control it on your farm.

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VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

Volume 13 | Issue 11 | June 21, 2017

Photo: Judson Reid

Cornell University
Cooperative Extension
Cornell Vegetable Program

Management of Powdery Mildew

Darcy Telenko, CCE Cornell Vegetable Program

Powdery mildew has been identified in squash that have lush vine growth. Dry weather combined with small pockets of water (from drip irrigation or excessive rain) can create a humid climate, perfect conditions for powdery mildew. The fungus appears white and seems to speckle the plant like sprinkled powder on a surface (Fig. 2). Most powdery infections will occur on stems and leaves closest to the soil where moisture is highly concentrated. At first the white specks will be small (Fig. 1) but over time will spread through the plant and if left untreated which can drastically reduce crop yield.

Resistant (tolerant) cultivars are available in cucumber, melon, squash and pumpkin. Fungicides programs sprayed on a seven-day interval as soon

Figure 1. Initial signs of powdery mildew on a zucchini leaf. *Photo: David Ludwig, CCE CVP*

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VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension regional agriculture team, serving 13 counties in Western New York.

The newsletter is a service to our enrollees and is intended for educational purposes, strengthening the relationship between our enrollees, the Cornell Vegetable Program team, and Cornell University.

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Help us serve you better by telling us what you think. Email us at *cce-cvp@cornell.edu* or write to us at Cornell Vegetable Program, 480 North Main Street, Canandaigua, NY 14424.

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Cornell Vegetable Program

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The next issue of VegEdge will be June 28, 2017.

Rain this past week seems to have brought on a new flush of weeds in cabbage. Remember it's best to control when they are small; most post-emergent herbicides are labelled to control weeds less than 4 inches. *Photo: Darcy Telenko, CCE CVP*

continued from cover – Management of Powdery Mildew

as powdery mildew is discovered in a field can minimize losses from this disease. **Apply fungicides for a powdery mildew in rotation to manage resistance (in the use directions on many labels; typically, 1 or 2 consecutive spray maximum) and to ensure effective control if resistance develops.** In addition, sulfur is a very effective, inexpensive product for powdery mildew. Oils (several botanical and mineral oils available) are also a good choice. Chlorothalonil and copper have broad-spectrum activity. Copper also effective for bacterial diseases. Mancozeb is recommended when only downy mildew is occurring. QoI* and Ridomil fungicides are not recommended due to resistance. (*Amistar, Cabrio, Quadris, Flint). See table below for 2017 recommendations for targeted fungicides for cucurbit powdery mildew from Dr. Margaret McGrath.

Figure 2. Powdery appearance on the leaf surface.
Photo: Darcy Telenko, CCE CVP

Targeted fungicides for cucurbit powdery mildew, when they received U.S. federal registration for this use, when resistance detected, and current status and use recommendation. Fungicides are listed by FRAC code.
Prepared by M. T. McGrath, Cornell University. Updated 6/7/17.

Trade name	Active ingredient	FRAC Code	When labeled in U.S.	Resistance confirmed	Status or current use recommendation
Benlate [z]	benomyl	1	1972	1967	discontinued
Topsin M [z]	thiophanate- methyl	1	subsequent	Cross resistance	not recommended
Bayleton	triadimefon	3	1984 (April)	1990 (1986 suspected)	discontinued
Nova, Rally [y]	myclobutanil	3	2000	PCR	not recommended
Procure [y]	triflumizole	3	2002	PCR	recommended
other DMIs [y]	multiple	3	subsequent	PCR	not recommended
Proline [y]	prothioconazole	3	subsequent	PCR	recommended
Pristine, Endura	boscalid	7	2003 (July)	2008	not recommended
other SDHIs	multiple	7	subsequent	Cross resistance	not recommended
Luna [x]	fluopyram	7	2012	PCR	recommended
Quadris [z]	azoxystrobin	11	1999 (spring)	2002	not recommended
other QoIs [z]	multiple	11	subsequent	Cross resistance	not recommended
Quintec	quinoxyfen	13	2007 [w]	2015	recommended. Use sparingly
Torino	cyflufenamid	U6	2012 (July)		recommended. Use restricted to twice
Vivando	metrafenone	U8	2014 (spring)		recommended

[z] Resistance to FRAC code 1 and 11 active ingredients is qualitative, thus pathogen strains are either resistant or sensitive. Cross resistance is complete and renders all products in the group ineffective.

[y] Resistance to FRAC code 3 active ingredients is quantitative, thus cross resistance is partial (PCR). Products registered after Bayleton have higher inherent activity. Their efficacy varies.

[x] Luna fungicides contain fluopyram plus another active ingredient in a different chemical group (FRAC 3 or 11). Partial cross resistance (PCR) occurs with other succinate dehydrogenase inhibitor (SDHI) fungicides, thus Luna fungicides can effectively control boscalid-resistant strains whereas other SDHI fungicides cannot.

[w] Labeled in 2007 for use only on melons; 2009 for pumpkin and winter squash.

Stink Bugs Abundant

Robert Hadad, CCE Cornell Vegetable Program

In numerous locations across the region, stink bugs are abundant. Usually these pests are destructive to fruit like eggplant, tomato, and pepper. This season there seems to be feeding on leaves of greens.

The worst problem has been with brown marmorated stink bugs (BMSB). There doesn't seem to be direct evidence of feeding, but BMSBs have been found in transplant greenhouses on a wide variety of seedling transplants both vegetable and ornamental. Some of the damage appears to be just from the beetles climbing all over the seedlings. Lettuce, basil, late peppers, and ornamentals have been the worst hit. In two lean-to transplant houses, it did look like BMSB did feed on some pepper leaves.

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The Green stink bug is another common pest found here in WNY. Last season the Green and Brown stink bugs caused a lot of damage on tomato and pepper fruit later in the season.

Check the *Cornell Integrated Crop and Pest Management Guidelines for Commercial Vegetable Production* guidelines for a complete list of products for specific crops.

BMSB becoming more troublesome in our region. Notice the white dots on the edge of the body and the alternating white on the antennae. This distinguishes BMSB from our common brown stink bug.
Photo: G. Hamilton, Rutgers Univ Extension

Green stink bug feeding on tomato stem.
Photo: Univ. Wisconsin Extension

Brown stink bug on tomato fruit.
Photo: Univ. KY Pest Alerts

Post-Emergent Herbicide Options in Cole Crops

Christy Hoepting, CCE Cornell Vegetable Program

Goaltender and Stinger are labeled for selected Cole crops for post-emergent control of broadleaf weeds and products containing the active ingredients sethoxydim (e.g. tradename Poast) and clethodim (e.g. tradename Select Max) are labeled for post-emergent grass control.

Goaltender

- Available in New York as a Special Local Needs Label (http://132.236.168.99/ppds/518814.pdf).
- Labeled only on **broccoli, cabbage and cauliflower**, direct-seeded or transplanted.
- ***Weeds controlled:*** Provides excellent control of pigweed, good control of lambsquarters, purslane, Eastern black nightshade and Shepherd's purse.
- ***Weeds it does not control well:*** It is weak on ragweed, smartweed and mustards.
- ***Crop Stage:*** Apply to a transplanted crop after a minimum of 2 weeks after planting, and to direct seeded crops with at least 4 true leaves.
- ***Rates:*** 4 to 6 fl oz per acre per application. Up to 8 fl oz for a directed spray. A directed spray is applied in such a manner as to minimize contact with crop leaves.
- ***Maximum usage:*** Do not apply more than 8 fl oz per acre per season. If a pre-transplant treatment has previously been made, the combination of pre-plant and post-transplant treatments must not exceed 16 fl oz per acre per season.
- ***Pre-harvest interval (PHI):*** 35 days
- ***Notes:*** **Do not add any adjuvant, liquid fertilizer or pesticides to the spray mixture.** Avoid application if heavy rainfall is predicted to occur within 24 hours after planned application.
- ***Potential injury:*** Can cause leaf cupping, crinkling, stunting or necrotic lesions when applied during cool and cloudy weather. Injury is usually limited to treated leaves with new leaves emerging undamaged. Sometimes delay in maturity and yield reduction may result.
- ***Be aware that application of Goaltender within a couple days of applying a spray containing an adjuvant may also result in injury*** **– wait at least 7 days between application of Goaltender and any treatment that contains an adjuvant.**

Stinger

- ***Labeled on most Cole crops*** including broccoli, Brussels sprouts, cabbage, cauliflower, cavalo broccoli, Chinese broccoli (gai lon), Chinese cabbage (napa), Chinese mustard cabbage (gai choy), rapini, collards, kale, mizuna, mustard greens, kohlrabi (all crop group 5).
- ***Weeds controlled:*** Provides excellent control of ragweed, galingsoga and thistles, and good control of nightshades.
- ***Crop Stage:*** not specified
- ***Rates:*** 4 to 8 fl oz per acre per application, up to a total of 12 fl oz per acre per season. Cornell studies have found that multiple applications of Stinger work better than a single high rate. For example, Stinger 8 fl oz followed by Stinger 4 fl oz 2 weeks later provided better control of Perennial sow thistle compared to Stinger 12 fl oz all at once.
- ***Pre-harvest interval (PHI):*** 30 days
- ***Notes:*** Be aware of crop rotation restrictions: 10.5 months for onions and 18 months for peas and potatoes. See label for other non-vegetable crop rotation restrictions.

Due to the issues with phytotoxicity when Goaltender is tank mixed with adjuvants or is applied within 3 days of a spray containing adjuvants, **it would be best to not tank mix Goaltender with pesticides that are EC formulations** such as Select-type (active ingredient cethoxydim) herbicides. Instead, apply grass herbicides 7 days later. Herbicides work best when applied to actively growing weeds.

Gray Mold of Greenhouse Tomatoes

Judson Reid, CCE Cornell Vegetable Program

The return of moisture and cloudy weather has brought increased cases of Gray Mold on greenhouse tomatoes. This disease is caused by the fungus *Botrytis cinerea*, a common decay organism found throughout the environment. Outbreaks are not a case of carry-over inoculum from a previous season, but rather conditions in the canopy that favor infection:

- High humidity
- Shade
- Wounds or dead tissue
- Poor ventilation

Botrytis Gray Mold on greenhouse tomato truss. *Photo: Judson Reid, CCE CVP*

It follows that most Gray Mold infections are preventable if we prune regularly and avoid creating opportunities for infection such as large, ragged wounds, over-crowding and overhead flower baskets. In the rare case where the outbreak is causing fruit loss, a curative spray of a material such as Scala SC can be helpful. Scala has a 1 day PHI, and the greenhouse must be ventilated for 2 hours after application, along with a 12 hr REI. Serenade MAX, a beneficial micro-organism is labeled for organic Gray Mold control, with a 4 hr REI.

WNY Sweet Corn Trap Network Report, 6/20/17

Marion Zuefle, NYS IPM Program; http://sweetcorn.nysipm.cornell.edu

Eighteen sites reported this week. European corn borer (ECB)-E was trapped at six sites and ECB-Z was trapped at eight sites with a high count of 25 ECB-Z at the Penn Yan site. Six sites reported corn earworm (CEW) with four sites high enough to be on a 4 or 5 day spray schedule (see chart at end of post). Fall armyworm (FAW) was trapped at two sites. The first trapping of Western Bean cutworm (WBC) occurred this week at the Eden site which caught three moths.

I found egg masses, feeding damage and ECB larvae in a whorl stage field that I scouted this week. For tassel emergence corn the threshold is 15% infested plants. As the tassels begin to emerge larvae will leave the tassel and move down the plant looking for protected places to feed. Insecticide applications need to be timed to kill larvae before they bore into a new feeding location where they will be protected from sprays.

ECB egg mass on underside of leaf.
Photo: M. Zuefle, NYS IPM

WNY Pheromone Trap Catches: June 20, 2017

Location	ECB-E	ECB-Z	CEW	FAW	WBC	DD to Date
Baldwinsville (Onondaga)	NA	NA	NA	NA	NA	854
Batavia (Genesee)	0	0	0	0	0	810
Bellona (Yates)	NA	NA	NA	NA	NA	929
Eden (Erie)	0	0	15	1	3	930
Farmersville (Cattaraugus)	0	0	0	0	0	NA
Farmington (Ontario)	2	0	1	0	0	840
Hamlin (Monroe)	NA	NA	NA	NA	NA	751
LeRoy (Genesee)	NA	NA	NA	NA	NA	822
Pavilion	NA	NA	NA	NA	NA	NA
Penn Yan (Yates)	0	25	0	0	0	877
Ransomville (Niagara)	0	0	1	0	0	848
Seneca Castle (Ontario)	2	2	0	0	0	839
Williamson (Wayne)	NA	NA	NA	NA	NA	759

ECB - European Corn Borer
CEW - Corn Earworm
FAW - Fall Armyworm
WBC - Western Bean Cutworm
NA - not available
DD - Degree Day (modified base 50F) accumulation

Average corn earworm catch and recommended spray interval

Per Day	Per Five Days	Per Week	Days Between Sprays
<0.2	<1.0	<1.4	No Spray (for CEW)
0.2-0.5	1.0-2.5	1.4-3.5	6 days
0.5-1.0	2.5-5.0	3.5-7.0	5 days
1-13	5-65	7-91	4 days
over 13	over 65	over 91	3 days

Add one day to the recommended spray interval if daily maximum temperatures are less than 80°F for the previous 2-3 days.

CROP INSIGHTS

Lots of plant stress out there from hot dry winds then pummeling rains and standing water.

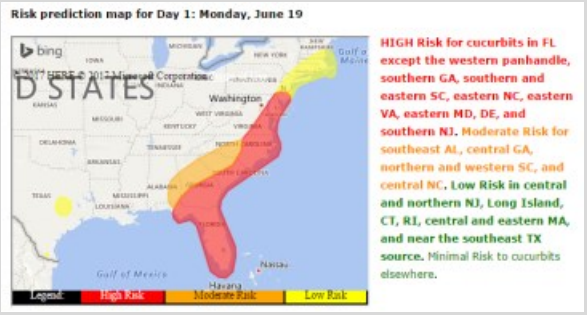
Aphids are rampant on squash, peppers, beans, and brassicas.

CRUCIFERS

We are starting to see many soilborne disease issues including those caused by Rhizoctonia, Sclerotinia and Fusarium.

CUCURBITS

There is still minimal risk for downy mildew based on the forecast in western NY but the risk is moving up the coast (see map). New positive reports from North Carolina and Georgia. If you suspect downy mildew please contact us, so we can verify. We have found the start of powdery mildew on the underside of squash leaves and near the crown where there's high moisture. Proactive management fungicide applications will help limit the spread and severity of these diseases in a field. Remember to rotate resistance groups and apply with protectant fungicides like chlorothalonil, copper, or mancozeb. Cucumber beetle populations are high in pockets around the region.



CDM risk map available @ http://cdm.ipmpipe.org/current-forecast

DRY BEANS

Wet soils continue to plague many farms across the region and growers have found it difficult to get dry beans planted. Some bean fields have also had a lot of water damage from gully-washers or plants sitting in waterlogged soils. Western bean cutworm was captured in sweet corn traps in Eden this week (see the Sweet Corn Trap Network Report). Traps in dry beans will be going out soon.

ONIONS

It's summertime! The summer solstice triggers bulbing in onions. The crop has grown like crazy this past week. Early transplants have 2 inch bulbs already, and some fields have grown 1.5 leaves over the past week, and shot up in height. Healthy foliage translates into healthy big bulbs. Now, we enter into the leaf management phase of onion production including control of leaf diseases, Botrytis leaf blight, Stemphylium leaf blight and downy mildew, and onion thrips. Onion thrips continued to only creep up this past week in the muck-production areas and still remain well below the spray threshold of 1.0 onion thrips per leaf. With bulbing on the horizon of transplanted onions, it may make sense to apply first application of Movento this week, because Movento does not work as well on older plants that are bulbing. Aside from that, if thrips pressure is still less than 0.4 per leaf, growers should have at least another week before they need to spray for onion thrips. Botrytis leaf blight (BLB) counts increased this week bringing several more fields close to the spray threshold of 1.0 BLB lesion per leaf. Onions that have 4-5 leaves should be monitored closely for BLB and sprayed when counts reach the threshold; several fields will likely be sprayed for BLB this week. Bravo 1.5 – 3 pts is best choice for BLB control at this time – see last week's article. There have been no reports of downy mildew (DM) as of yet, and only high risk areas with strong history of DM would benefit from protectant sprays of mancozeb. Note, that mancozeb has no activity on BLB. For the most part, Stemphylium leaf blight (SLB) fungicides are not necessary at this time either, much more on fungicide recommendations on SLB in upcoming issues.

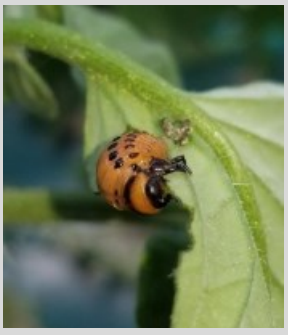
Looking forward to seeing you at the **Oswego Onion Twilight Meeting this Thursday, June 22** at John Dunsmoor Lake Elizabeth farm in Oswego, where we will tour an onion herbicide trial and see some exciting results.

PEPPER

Keep an eye out for aphids. Examine ten sites throughout field. Treatment should begin before population exceeds five nymphs per leaf. Natural enemies help suppress aphid infestations such as ladybug larvae and minute pirate bug (*Orius*). Increases in aphid infestations are sometimes associated with application of broad spectrum insecticides that have killed natural enemies.

POTATO

The earliest potatoes have been hilled and are just getting ready to close rows, while some folks are still planting!!! Watch for leafhopper and Colorado potato beetle, reports of high numbers throughout the region. See Dr. Nault's table on pesticides available for managing pests in potato https://rvpadmin.cce.cornell.edu/uploads/doc_422.pdf for more information. And for potato leafhopper https://rvpadmin.cce.cornell.edu/uploads/doc_577.pdf.



Colorado potato beetle larvae.
Photo: Bethany Hunt, CCE CVP

Reports of Dickeya from New England in the variety Norwich. Growers who purchased Norwich from Canadian seed haven't seen the disease.

PROCESSING CROPS

There are still some challenges with planting due to wet soils. Growers are working to plant where dry ground exists as conditions have varied throughout the area. Weed management is critical during the early growth of crops and before weeds become too large. Root rots are starting to show up in fresh market crops and are likely in peas and beans at this time as well. Make sure to scout and manage leaf spot diseases in carrots and beets. Potato leaf hopper is being reported across the state in low to moderate numbers. Cruiser seed treatments should protect beans through flowering.

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continued – CROP Insights

SWEET CORN

We have our first ears and silks in early planted corn. Keep an eye on trap counts – we have enough corn ear worm in Erie County to be on a 4-day spray program to protect ears. A few fall army worms and western bean cutworms have also been trapped. We have found active feeding and egg masses in fields near the traps.

Sweet corn ears silking (left) and ears beginning to form (right).
Photos: David Ludwig and Darcy Telenko, CCE CVP

Late Blight Risk Update

Darcy Telenko and John Gibbons, CCE Cornell Vegetable Program

Late blight severity values have reached the threshold at all locations, except four (Ceres, Fairville, Geneva, Kendall, and Lodi). The threshold for risk is 18 SVs and within about a week of reaching 18 SVs growers need to apply fungicide on all potatoes 4+ inches tall, and on all field tomatoes, to protect them against late blight. Once you've applied your first fungicide, use Simcast or early blight P-Days to help schedule your fungicide applications for the remainder of the season.

Again, there are no new late blight confirmations this week. We will continue to watch the national occurrence map to track late blight movement.

Late Blight Severity Values* 6/20/17

Location**	Total	Forecast 6/21-6/23	Location	Total	Forecast 6/21-6/23
Albion	51	5	Lodi	0	2
Baldwinsville	27	2	Lyndonville	18	2
Bergen	20	2	Medina	21	2
Buffalo	31	3	Niagara Falls	25	3
Ceres	14	2	Penn Yan	27	1
Elba	20	2	Rochester	34	3
Fairville	16	2	Sodus	28	2
Farmington	25	1	Versailles	27	2
Gainesville	58	2	Volney	35	4
Geneva	1	1	Wellsville	37	2
Kendall	16	3	Williamson	24	2
Knowlesville	53	2	Wolcott	28	2

* Severity value accumulations start 5/12/2017

Death of a Seedling: Beets and Carrots

Julie Kikkert, CCE Cornell Vegetable Program

Large swings in weather conditions this spring have put a lot of stress on germinating seeds and seedlings. Seeds that were planted within the past two weeks have either been subject to hot, dry conditions or saturated soils. A number of years ago, I was called to diagnose a field of beets in which the seeds were just not coming up. While dry conditions and hot temperatures can delay germination, seeds dug up from the field and observed with a microscope were determined to have been killed from hot temperatures while they were in the process of germinating.

Beet and carrot seedlings have thin, fragile stems which make them susceptible to heat, wind and diseases while they are young (Figure 1). The most common disorders are listed:

Figure 1. Young carrot seedlings (center) are susceptible to heat and wind damage. The larger barley nurse crop helps protect them from wind damage.
Photo: Julie Kikkert, CCE CVP

Heat Canker

High soil temperatures and direct sunlight can cause tissues to die at or near the soil surface as the stems heat up. Very

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small seedlings will collapse all together. Older plants may survive when only the outer layers of the stem are killed. However, the flow of nutrients from the foliage to the roots is inhibited causing a swelling above the canker (Figure 2). The plants then wilt and break off at the crown. Muck soils are most conducive to this injury. Damage may be more prevalent on the south or south-west side of stems.

Figure 2. Similar to beets and carrots, heat canker in *Eucalyptus* causes a constriction of the stem at the soil line.
Photo: Edward L. Barnard, Florida Department of Agriculture, Bugwood.org

Wind Whipping

Wind blowing particles of soil can injure the stems of seedlings at the soil line. The damage is often similar to that seen with heat canker.

Seed Decay and Damping-off Disease Symptoms

Pythium spp. and *Rhizoctonia* spp. can infect seeds and seedlings of beets and carrots. *Aphanomyces cochlioides* and *Phoma betae* can also infect beets. Infected seeds may decay or seedlings may fail to emerge from the soil. Healthy seedlings that become infected after emergence may exhibit a water-soaked and necrotic area at or just below the soil line. The plants then wilt, and die causing the typical damping off symptoms (Figure 3).

Figure 3. Damping-off in beet seedlings, characteristic of both *Rhizoctonia solani* and *Pythium* spp. Note progression of disease up the stem.
Photo: Robert M. Harveson, University of Nebraska.

Wire-Stem Symptoms in Beets

(from Abawi, et al. Root Rot of Table Beets in New York State, 1986)

The stem and main root regions of 2- to 4-week-old infected seedlings that survive the post-emergence damping-off stage usually become partially or completely shriveled; giving them a thread-like appearance. The infected regions are brown to black. Seedlings with wire-stem symptoms may have normal branching fibrous root systems, or roots that are brown and at different stages of rotting. Severely infected plants are stunted and reddish-purple. If plants are stressed and the infection progresses, infected roots may rot off just below the soil surface, and result in plant death and a reduced stand. Factsheet with photos available at http://vegetablemdonline.ppath.cornell.edu/

Talkin' Tuesdays – Q&A with Cornell Vegetable Program Specialists

Elba Muck Donut Hour

Meet with Cornell Vegetable Program Specialist Christy Hoepting every Tuesday morning in the Elba muck at the corner of Transit and Spoilbank from 8:30 - 9:30 AM to ask questions and share your observations. Grower experience is combined with research and scouting information for a whole lot of talk about growing ONIONS!

Questions? Contact Christy Hoepting at 585 -721-6953.

Fresh Market Minutes

New this year! Meet with CVP Fresh Market Specialist Darcy Telenko on Tuesday mornings to ask questions and share your observations in fresh market vegetable production, weed control, and soil health.

Darcy is in Eden Valley on the first and third Tuesdays of June through August from 9:00 - 10:00 AM across from W. D. Henry & Sons, 7189 Gowanda State Rd, Eden, NY 14057.

She is in Niagara County on the second and fourth Tuesdays of June through August from 9:00 - 10:00 AM at Knead the Dough restaurant, 3678 Ransomville Rd, Ransomville, NY 14131.

Questions? Contact Darcy Telenko at 716-697-4965.

Rhizoctonia solani in Cabbage

Christy Hoepting, CCE Cornell Vegetable Program

Rhizoctonia solani causes damping off, wirestem, bottom rot and head rot of cabbage seedlings. It is a common soil pathogen, which also causes root rot of peas, beans and even sweet corn. Rhizoctonia is favored by moist soil conditions (like we've had during Spring 2017 in New York!) and a wide range of temperatures. Optimum growth of *R. solani* is between 77 and 81°F, but significant growth also occurs between 54 and 72°F, and considerably less growth below 54°F. The disease shuts down when temperatures exceed 91°F. *R. solani* may attack crucifer plants at any time during the growing season.

Damping Off. Early, seedlings may die shortly after emergence from damping off caused by *R. solani*. Leaves have a water-soaked appearance and usually have over them sparse weblike surface mycelia (Fig. 1). If Rhizoctonia does not kill transplant seedlings, they may die shortly after transplanting. Plants that survive remain unhealthy, stunted and can be invaded by secondary bacterial pathogens. Note, that Phythium species may also cause damping off. Maxim seed treatments may help to control Rhizoctonia damping off. Apron seed treatment and Ridomil fungicide only have activity against damping off caused by Phythium species.

Figure 1. Damping off caused *by Rhizoctonia solani* in cabbage transplant seedlings. Note, the water-soaked appearance and mycelial netting. *Photo: Gerald Holmes, California Polytech State University*

Wirestem. Pull up stunted plants and inspect the stem at the soil line; wirestem caused by *R. solani* will appear as a thinned and darkened area along the soil line, stem tissue will become woody (Fig. 2). Plants suffering from wirestem may be stunted or eventually die, especially if wirestem is later invaded by secondary bacterial pathogens.

Figure 2. Cabbage transplant with wirestem. Look for darkened and thinned stem tissue at the soil line. *Photo: N. Gregory, University of Delaware*

Bottom rot. Cabbage that is at the pre-cupping and early cupping stage may become infected with Rhizoctonia from the splashing of infested soil that landed on the base of outer leaves and in the leaf axils during heavy down pours (just like what we have been having). These areas remain wet for much longer duration, thus promote infection by Rhizoctonia and the proliferation of secondary soft rotting bacteria. Also, when outer leaves of heads touch moist, infested soil, new infections can result in bottom rot, where black, sunken, elliptical lesions appear first on the undersides of the leaves (Fig. 3). Plants may recover or bottom rot may progress into head rot.

Figure 3. Dark sunken elliptical lesions of bottom rot caused by *Rhizoctonia solani* first appear on mid-rib of lower frame leaves. Infections are usually initiated from splashing of infested soil. *Photo: Gerald Holmes, California Polytech State Univ.*

Head rot. Similarly, splashing soil can result in a foliar blight caused by Rhizoctonia, with lesions on leaves similar to Fig. 3. In Rhizoctonia head rot, the infected tissues turn dark and shrink as they decay; prior to invasion of secondary bacterial pathogens, it is a dry papery decay (Fig. 4). As decay progresses, a weblike dark-colored mycelium develops between the diseased leaves. Only the leaf tissues are affected, while the stem and core of the head are not diseased. The head remains upright, dark colored, and studded with small brown sclerotia.

Figure 4. Close-up of head rot caused by *Rhizoctonia solani*: dark sunken papery lesions. *Photo: OMAF*

Control. Generally, Rhizoctonia does not spread from plant to plant. In fields with a history of vegetables and Rhizoctonia, Quadris can be applied in the furrow at seeding or transplanting. If you have a field with 1 to 2% or more incidence of Rhizoctonia/bacterial "stomp rot", Quadris may be applied over the top to help prevent new Rhizoctonia infections from occurring at the leaf axils, although targeting this infection site may be tricky. Quadris is also labeled for Alternaria leaf spot. Avoid throwing soil into the leaf axils when cultivating. Avoid over-watering during transplant production.

UPCOMING EVENTS

view all Cornell Vegetable Program upcoming events at cvp.cce.cornell.edu

2017 Oswego County Onion Growers Twilight Meeting

June 22, 2017 | 5:00 - 8:00 PM
John Dunsmoor Farm (Lake Elizabeth), 777½ County Route 53 , Oswego, NY 13126

Featuring herbicide demonstration for control of marsh yellowcress, including Prowl EC vs. H2O, incorporating Chateau into pre-emergent herbicide program, post-emergent control, tank mixes and crop safety, and new pipeline herbicides, Zidua, Reflex and active ingredient, bicyclopyrone. 2.0 DEC credits applied for in categories 1a, 10, and 23; CCA credits applied for. Dinner included.

This event is FREE! RSVP would be much appreciated. RSVP to Christy Hoepting, 585-721-6953, cah59@cornell.edu; or Kathy Stancampiano, 315-591-3478, kathys@newyorkbold.com. Contact Christy Hoepting with questions.

Fresh Market Vegetable Field Day

June 26, 2017 | 9:30 AM - 4:00 PM
CVP Fresh Market Demo Site at Partridge's on the Farm Market
4924 Ellicott St Rd (Rt 63), Batavia, NY 14020

Extension Vegetable Specialists, Darcy Telenko, Judson Reid, Robert Hadad, and Christy Hoepting along with Megan Burley, Extension Educator, Cornell Cooperative Extension Erie County, will be leading research site tours and answering questions on early pest management options for fresh market vegetable growers. Information will be provided for both conventional and organic growers at all levels of expertise.

- Weed management tools for fresh market vegetables
- Fresh market vegetable plot tour – tomato varieties and organic spray programs for disease management; cucumber varieties and organic spray programs for downy mildew; herbicide options in sweet corn; stale-seedbed techniques for weed management in root crops; weed management in root crops and zucchini
- GAPs/FSMA update
- Garlic: Tour of the trials, review of cultural and organic products for fusarium management, Q&A
- Pest management in tomato, pepper, and eggplant
- New market opportunities

Regional equipment dealers and industry representatives will be onsite to display equipment and new technology. CCA and 3.0 DEC credits (categories 10, 1a, and 23) will be available.

Pre-registration cost: $25 Cornell Vegetable Program enrollees; $35 all others. Lunch provided if pre-registered by June 22. At-the-door cost: $35 each and lunch is not guaranteed. Visit https://cvp.cce.cornell.edu/event.php?id=719 for more info. *We appreciate the support of Arctic Refrigeration, BASF, BioSafe Systems, Empire Tractor, KeyPlex Biopesticides, NutriAg USA, Oro Agri, Seedway, Siegers Seeds, and Stokes Seeds.*

2017 Vegetable Pest and Cultural Management Field Meetings for Auction Growers

June 30, 2017 | 6:00 PM
Yates County – Allen Zimmerman farm, 3351 Hoyt Rd, Penn Yan, NY 14527

July 5, 2017 | 7:00 PM
Seneca County – Levi Esh farm, 2033 Yerkes Rd, Romulus, NY 14541

August 4, 2017 | 6:00 PM
Orleans County – Albion farm TBD

August 8, 2017 | 6:00 PM
Chautauqua County – Jacob Hostetler farm, 561 Frew Run, Frewsburg, NY 14738

These courses will demonstrate pest management in fresh market vegetables in both field and greenhouse (high tunnel) vegetables; primarily for those growing for wholesale auction. A hands-on demonstration of weed, insect and disease identification in vegetables including management options such as inter-row cover crops, grafting and where appropriate, spray options will be used to educate growers. Judson Reid, Senior Extension Associate with the Cornell Vegetable Program along with CCE associates Telenko and Hadad will instruct participants and facilitate peer-based learning. Details on each topic will focus on field observations at the farm.

This event is FREE! DEC recertification credits will be available. For more information about these events, contact Judson Reid at 585-313-8912 or jer11@cornell.edu.

WNY Soil Health Alliance Summer Field Day

August 22, 2017 | 8:30 AM - 3:30 PM
Orleans County 4-H Fairgrounds Trolley Bldg, 12690 Rt 31, Albion NY 14411

Observe 8 cover crop trials and explore a soil pit, with on-site discussion led by Wendy Taheri, TerraNimbus LLC. There will also be cover crop interseeder and herbicide demonstrations. Full agenda available at http://www.wnysoilhealth.com/events/

Weather Charts

John Gibbons, CCE Cornell Vegetable Program

Weekly Weather Summary: 6/13 – 6/19/17

Location	Rainfall (inch)		Temp (°F)	
	Week	Month June	Max	Min
Albion	0.49	1.51	89	54
Appleton, North	0.35	1.17	87	56
Baldwinsville	2.11	3.93	89	52
Buffalo*	0.89	1.16	90	59
Ceres	2.03	3.21	86	55
Elba	0.46	0.88	90	54
Fairville	1.13	2.35	91	50
Farmington	1.59	1.77	87	50
Gainesville	NA	NA	NA	NA
Geneva	2.78	3.06	88	53
Lodi	0.89	1.25	89	52
Niagara Falls*	0.27	0.60	90	58
Ovid	1.67	2.16	90	52
Penn Yan*	1.41	1.88	90	54
Phelps	1.99	2.22	89	50
Portland	1.51	1.88	87	60
Rochester*	1.49	2.41	90	57
Silver Creek	NA	NA	88	61
Sodus	1.36	3.08	90	52
Versailles	0.46	0.89	88	57
Volney	0.82	2.35	90	52
Williamson	1.26	2.46	90	50

Accumulated Growing Degree Days (AGDD)
Base 50°F: April 1 – June 19, 2017

Location	2017	2016	2015
Albion	647	597	719
Appleton, North	561	484	554
Baldwinsville	672	603	741
Buffalo	675	640	740
Ceres	609	465	648
Elba	622	413	554
Fairville	616	522	NA
Farmington	616	604	704
Gainesville	NA	422	581
Geneva	652	583	716
Lodi	757	649	819
Niagara Falls	747	677	668
Ovid	703	611	778
Penn Yan	703	616	779
Phelps	652	565	734
Portland	725	593	699
Rochester	709	627	791
Silver Creek	689	551	659
Sodus	635	502	629
Versailles	711	557	692
Volney	601	NA	NA
Williamson	615	509	596

* Airport stations
** Data from other station/airport sites is at: http://newa.cornell.edu/ Weather Data, Daily Summary and Degree Days.

Cornell University
Cooperative Extension
Cornell Vegetable Program

480 North Main Street
Canandaigua, NY 14424

VEGEdge

YOUR TRUSTED SOURCE FOR RESEARCH-BASED KNOWLEDGE

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VegEdge is the award-winning newsletter produced by the Cornell Vegetable Program in Western New York. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas and research results from Cornell and Cornell Cooperative Extension. VegEdge is produced every few weeks, with frequency increasing leading up to and during the growing season.

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