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Veg Edge Weekly

Cat Facing & White Mold in Greenhouses & High Tunnels

by Judson Reid, Cornell Vegetable Program

Scouting this week in heated greenhouses turned up cat facing on tomatoes (Fig. 1). The exposed seeds, zippers, and other fruit malformation occurs when temperatures are 60° to 65°F during the day and 50° to 55°F at night. Larger fruited varieties are more susceptible. This damage occurs to the flower then manifests itself in the fruit. In high tunnels, where there is no night time heating the problem can be worse. Thin affected fruit as soon as possible to allow the plant to allocate resources to those that will make the grade.

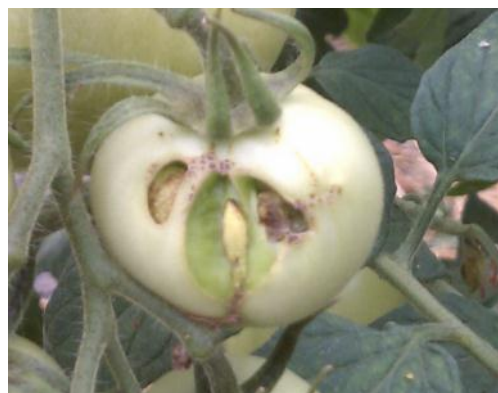


Figure 1. Cat facing on tunnel tomato.
Photo: Judson Reid, Cornell Vegetable Program

White mold, caused by the fungus *Sclerotinia sclerotiorum*, was confirmed in several greenhouses as well. Like cat facing, this is a problem that began several weeks ago and now shows itself. This fungus overwinters in the soil with its hard, seed like sclerotia, which then germinate and send out spores in the spring. Pruning wounds are often the entry point for the disease, which hollows out the stem, producing more sclerotia (Fig. 2). The plant then wilts. This final collapse often occurs as the plant is maturing fruit and water demand is at its highest (Fig. 3). The bad news



Figure 2. Pruning wounds are often the entry point for white mold.
Photo: Judson Reid, Cornell Vegetable Program



Figure 3. Wilting due to white mold.
Photo: Judson Reid, Cornell Vegetable Program

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with this disease is that infected plants cannot be saved. The good news is that the infection does not move from plant to plant at this stage. To reduce white mold:

- Prune suckers as small as possible to reduce wound size.
- Trellis with clips instead of twisting twine around the stem.
- Mulch uncovered soil in the spring with straw or ground cover to prevent sclerotia germination.
- Manage for low relative humidity.
- Remove infected plants without spilling sclerotia. ■

Managing Molds in Snap Beans

J. Kikkert, CVP: Early planted snap beans are already coming into flower, which means it's time to control pod molds. Gray mold (GM) develops in dense plant canopies when the weather is warm and moist. White mold (WM) requires both moist soil conditions and leaf wetness (a light dew is enough). Dry soils and high temperatures will inhibit the development of this disease. White mold is most abundant when temperatures range from 55-60°F, but will develop at temperatures as high as 85°F. Scout fields with a history of white mold. Sclerotia in the top 1" of the soil surface will germinate and produce mushroom cups and spores that will subsequently infect the plants.

If the weather is conducive to disease, Dr. Dillard (Cornell) recommends two fungicide applications: first at about 10-40% bloom (since % bloom increases about 20% per day) and a few days later (100% bloom) according to weather conditions and label limitations. Your first spray will include open blossoms, buds, and blossom initials. Do not wait too long to apply the first spray.

There are several options for control of WM and GM in beans. Relatively new, is Cannonball WP, active ingredient fludioxonil labeled on snap beans for both WM and GM. For a comparison of Cannonball with other fungicides in New York see the 2012 Empire State Expo Proceedings <http://www.hort.cornell.edu/expo/proceedings/2012/Processing/Processing%20Dillard.pdf>. In a 2009 summary of research trials over a 10 year period Topsin M provided effective WM control 90% of the time. Endura was effective on GM in 81% of the trials. A tank mix of Topsin M (0.7 lb or 14 fl oz) and Endura (5.5 or 5.9 oz) provided effective control of GM (86%) and WM (95%) in 20 trials. Other tank mixes can be used including, Bravo plus Topsin M, Rovral plus Topsin M, and Bravo plus Rovral with varying effectiveness on WM and GM.

Regardless of the fungicides selected, good spray coverage is needed. Best results have been obtained using high gallonage (50 gal/A minimum) and high pressure (100 to 200 psi). Fungicide sprays must be directed towards the blossoms for good control.

If you think your white mold control isn't working, you could be dealing with Phytophthora blight instead. This disease might already be present because it has been so wet. Look for dying leaves and foliage where heavy downpours occurred. When it gets on the pods, they become whitish and shriveled. Dr. Dillard is very interested to find beans with Phytophthora blight. If you have suspicious samples, contact a member of our team and we will get it to the Dillard lab for confirmation. White mold, gray mold and Phytophthora blight often occur in the same field. ■



White mold on snap beans.



Phytophthora blight on snap beans.



Gray mold on snap beans.

Seeking Vegetables/Fruits for Rochester-area Urban Farm Stands

Mitch Gruber, Foodlink

FoodLink, Inc. has developed a program to supply urban neighborhood groups in Rochester with produce from regional fresh market farms. They will pay competitive prices for cases and bushels of the following:

- Collard Greens
- Sweet Corn
- Cabbage
- Onions
- Cucumbers
- Potatoes
- Bell Peppers

Fruits (stone fruit, berries) are also sought in case and bushel quantities.

Farms participating in this purchasing program can also expect increased quantities of produce needed for a value-added processing entity, also coordinated by FoodLink, Inc. later in 2012. They have the capacity to pick up produce at the farm, and other delivery arrangements can be made.

If you have an interest in finding out more about prices, quantities, and scheduling, please contact:

Mitch Gruber
Foodlink, Inc.
1999 Mt Read Boulevard
Rochester, NY 14615
mgruber@foodlinkny.org
585-328-3380 x113 ■

WNY Sweet Corn Pheromone Trap Network Report, 6/26/12

Abby Seaman, NYS IPM Program

European corn borer trap catches remain zero or in the low single digits this week. Scout tassel emergence stage fields for larvae and feeding damage in the emerging tassel. The treatment threshold at tassel emergence is 15% infested plants. In heavily infested fields, treat when 25-50% of tassels have emerged and just started to open, and again when 75-100% are open. This may be less than one week. In fields with lighter infestations, one application, at 50-75% tassel emergence may be enough. Good timing and coverage at tassel emergence, combined with low trap catches means that the tassel emergence sprays may take you to harvest where corn earworm are not being caught. But, scout silk stage fields for small larvae and egg masses to confirm. Focus on the ear zone, from the leaf above the top ear to the leaf below the bottom ear, scouting for ECB egg masses or newly hatched larvae. The treatment threshold in silk stage fields is 5% infested plants.

Corn earworm are being caught at several locations, with numbers high enough to determine spray intervals in Eden (see the table below). No fall armyworm were caught this week, and western bean cutworm were caught in low numbers at several locations. ■

WNY Pheromone Trap Catches: June 26, 2012

Location	ECB -E	ECB -Z	CEW	FAW	WBC
Baldwinsville (Onondaga)	1	2	3	0	NA
Batavia (Genesee)	0	0	0	0	0
Bellona (Yates)	NA	NA	NA	NA	NA
Eden (Erie)	0	0	9	0	1
Farmington (Ontario)	0	1	0	0	0
Hamlin (Monroe)	0	1	0	0	1
LeRoy (Genesee)	0	5	0	0	4
Lockport (Niagara)	0	2	0	0	0
Olean (Cattaraugus)	0	0	0	0	0
Penn Yan (Yates)	1	1	0	0	0
Spencerport (Monroe)	0	0	3	0	0
Waterport (Orleans)	3	0	0	0	0
Williamson (Wayne)	0	0	0	0	NA

ECB - European corn borer
CEW - corn earworm
FAW - fall armyworm

WBC - western bean cutworm
NA - not available

Average corn earworm catch			
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.

Dates...

July 11 – NYS Onion Industry Council Summer Tour and Meeting, hosted by Ken Dathryn Farms in Sodus, NY. Registration at 9:45 am. Featuring field demonstrations of new seed treatments for onion maggot and Chateau herbicide crop tolerance and weed efficacy. Hot lunch will be provided. 2.0 DEC credits will be available. Contact Christy Hoepting for more info (cah59@cornell.edu; 585-721-6953).

July 17 - Vegetable Weed Day, 8:00-11:30 am, H.C. Thompson Research Farm, Freeville, NY (10 miles northeast of Ithaca, Fall Creek Rd, Rt 366 extension). DEC and CCA credits have been requested. **Pre-registration deadline: July 13.** Registration \$8.00 includes: coffee (beverage), doughnuts, and informational trial packet. Contact Maxine Welcome to pre-register: 607-255-5439; mw45@cornell.edu.

July 17 - Field Crop Weed Control, 2:00-5:00pm, Robert B. Musgrave Research Farm, Aurora, NY (Poplar Ridge Rd, connects 90 and 34B). Contact Maxine Welcome to pre-register: Phone 607-255-5439; mw45@cornell.edu.

August 2 – Annual Elba Muck Onion Twilight Meeting – mark your calendars, more info to follow. Contact Christy Hoepting (cah59@cornell.edu; 585-721-6953).

Tomato Disease Management Strategies for 2012

Thomas Zitter, Cornell

Tomatoes (fresh market, processing, and heirlooms) can be difficult to grow because they are susceptible to many diseases that can potentially destroy an entire field. Management strategies need to include the following:

- 1) Begin with an Early Blight (EB, Fig. 1 see “target” lesions) or Late Blight (LB, Fig. 4) resistant or tolerant variety if available for your trade. Current varieties with dual resistance included: Mt. Merit, Defiant PhR (both Irg red); Mt. Magic (Campari); Plum Regal (plum)
- 2) Crop rotation is critical to reduce overwintering inoculum for EB and Septoria leaf spot (SLS, Fig. 2, see beige centers). A minimum 2-3 year rotation out of all solanaceous crops, including weeds is helpful.
- 3) Disease-free seed is critical to elimination of bacterial diseases (Bac. Spot, Speck [Fig.3] and Canker) and tomato mosaic virus (TomMV).
- 4) Disease-free transplants are a critical control measure for all diseases as diseased transplants were responsible for the pandemic spread of Late Blight in 2009 (Fig.4).
- 5) Good air circulation and low humidity are especially important in high tunnels to reduce Botrytis gray mold (Fig. 5) and Fulvia leaf mold (Fig. 6).
- 6) If you choose to spray fungicides, then spray preventatively as determined by scouting for Early Blight, Septoria Leaf spot, bacterial diseases, and the others given. For Late Blight following the tracking maps at USAblight.org and spray preventatively.



Figure 1. Early blight (EB), *Alternaria tomatophila*



Figure 2. Septoria leaf spot (SLS)



Figure 3. Bacterial speck



Figure 4. Late blight (LB), *Phytophthora infestans*



Figure 5. Botrytis gray mold



Figure 6. Fulvia leaf mold

- 7) The following table (opposite page) provides a listing of fungicides for conventional, organic and home garden use. For commercial use, be guided by selecting fungicides to be used for the entire season by making sure they have different Modes of Action (MOA), as indicated by the Group Nos. given. To prevent resistance from developing, follow the label to avoid making sequential applications before alternating to a fungicide with a different MOA.

Partial List of Tomato Fungicides Arranged for Conventional, Organic or Home garden usage (approved for NYS)
 Prepared by T.A. Zitter, Dept. Plant Pathology and P-MB, Cornell University, Ithaca June 2012.

	Trade name	Common name	Grp(s)	PHI days	LB	EB	SLS	Gray mold	Leaf mold	Bacteria (Spck, Spot, Canker)
I. CONVENTIONAL GROWER FUNGICIDES (all rated "+" unless specified)										
A. Protectant Mode of Action (these three are used alone or as Tank Mix [TM] partner)										
	Bravo Weather Stik or OLP	<i>chlorothalonil</i>	M5	0	Yes	Yes	Yes	No	Yes	No
	Dithane DF or OLP	<i>mancozeb (mz)</i>	M3	5	Yes	Yes	Yes	No	Yes	No, can be TM with copper
	Coppers, many registered	<i>copper</i> , type varies	M1	0	Yes	Yes	Yes	No	Yes	Yes, consider TM with <i>mz</i>
B. Translaminar Mode of Action (mainly strobilurins like Quadris fungicide – must tank-mix all strobilurins with a protectant fungicide due to resistance to EB present in the state)										
	Quadris Opti	<i>azoxystrobin + chlorothalonil</i>	11 + M5	0	Yes	Yes ++	Yes ++	No	No	No
	Quadris Top	<i>azoxystrobin + difenoconazole</i>	11 + 3	0	No	Yes ++	Yes ++	No	Yes	No
	Other Strobilurins, ie. Flint	varies + TM protectant	11 + M1, 3, or 5	Can vary	Yes	Yes	Yes TM	No	No	No
C. Late Blight Specific Fungicides (Systemic* in bold; TM with protectant for other diseases)										
	Presidio + TM	<i>fluopicolide + ?</i>	43 + ?	2 or ?	Yes	Yes TM	Yes TM	No	No	No
	Revus Top	<i>difenoconazole + mandipropamid</i>	3 + 40	1	Yes	Yes	Yes	No	No	No
	Previcur Flex + TM	<i>propamocarb + ?</i>	28 + ?	5	Yes	Yes TM	Yes TM	No	No	No
	Ranman + TM	<i>cyazofamid + ?</i>	21 + ?	0 or longer	Yes	Yes TM	Yes TM	No	No	No
	Gavel	<i>zoxamide + mancozeb</i>	22 + M3	5	Yes	Yes ++	Yes TM	No	No	No
	Ridomil Gold Bravo or OLP	<i>mefenoxam + chlorothalonil</i>	4 + M5	14	US22 US23	Yes	Yes	No	No	No
II. ORGANIC GROWER APPROVED FUNGICIDES (all protectants)										
	Champ WG or many OLPs	<i>copper hydroxide</i>	M1	0	Yes	Yes	Yes	No	No	Yes
III. HOME GARDEN FUNGICIDES (all protectants)										
	Bonide Copper fungicide or OLP	<i>basic copper sulfite</i>	M1	0	Yes	Yes	Yes	No	No	Yes
	Bonide Fung-onil or OLP	<i>chlorothalonil</i>	M5	0	Yes	Yes	Yes	No	No	Yes

Abbreviations:

LB = Late blight
 EB = Early blight
 SLS = Septoria leaf spot

TM = tank mix
 OLP = other labeled product
 PHI = preharvest interval

Groups: If M before I, 3 or 5 implies multisite activity

Systemic* = Others are Curzate, Forum, phosphorous acids, and Tanos.

Additional Tomato Disease Resource at: <http://vegetablemdonline.ppath.cornell.edu/DiagnosticKeys/TomKey.html> ■

CROPS

Tidbits & Insights

CABBAGE & COLE CROPS

Despite the hot weather of the past week, insect pressure remains fairly low with no reports on challenging insect pests to control. Onion thrips have been building in onion over the past couple of weeks, and are the next insect pest on the horizon for cabbage. For best control of thrips, see article on page 8.

DRY BEANS

Growers have planted a lot of acres in the past week! Some planting is still occurring though many growers are nearly finished. Germination and emergence has been rapid with the hot weather last weekend. The largest beans we've seen have two fully expanded trifoliate leaves. Remember that temperatures of 85°F are likely to result in more bean injury from post-emergence herbicide applications. Be sure to scout for potato leafhoppers (see 6/20 *Veg Edge Weekly*)! The first few Western bean cutworm (WBC) moths have been caught at some locations the last two weeks across the region, though the main period of adult emergence is expected later in July. There are 9 WBC traps in/near dry bean fields in the main NYS dry bean production area. We will keep you posted as the survey season progresses, and we'll alert you if/when WBC moth trap catches reach the threshold, warranting field scouting and possibly spraying. Just 1 out of 12 fields reached that point last year and no WBC feeding or larvae were observed.

ONIONS

Another great week for growing onions! Although, the week ended with conditions being on the dry side in some locations. Early transplants started to lodge in Elba this week. The cool temperatures early this week were perfect for bulbing. As predicted, onion thrips pressure increased over the past week with the 90 degree heat. Some direct seeded fields reached threshold and received their first insecticide spray last week. **This week, it is recommended that all direct seeded onions 6 leaves and older get their first spray of Movento, if they haven't already.** Since the spray season has started early, it is important to pace yourself to ensure not running out of effective insecticides before the end of the season: scout, use action thresholds and spray only when needed – see last week's article.

In Elba, despite less than favorable weather conditions (i.e. temps in the 90s and breezy), there is still a lot of Botrytis leaf blight (BLB), especially in direct seeded fields. Unlike thrips that disappear when you kill them, BLB lesions remain on the plant. Typically, it takes about 3 weeks to see BLB lesion numbers drop, because the plants have to grow out of the infected leaves. If a fungicide program can hold BLB numbers level (even if they are high) during this time, it is a sign that it is working. Also, once onions start to bulb and the leaves start to get tipburn as nutrients are moved from the leaves into the bulb, BLB pressure tends to drop naturally, especially in transplanted onions. Alternatively, it is during bulbing that onion plants become more prone to Purple blotch (PB). Thus, now is the time to make sure that your big onions (10+ leaves and starting to bulb) are protected against PB – see article on page 9.

PEAS

Be on the lookout for pea aphids because populations can increase rapidly during hot weather. Peas near alfalfa fields that are being cut may be particularly vulnerable. During vegetative growth of peas, aphid infestations usually do not cause economic damage. Aphid feeding on flowers and pods can reduce the number of seeds produced, particularly if aphid numbers are very high. Scout fields at flowering, early pod-set, and especially during early pod filling. Monitor pea aphid populations using a sweep net. After checking with several other states, we have determined an average threshold: if you find 25 to 35 aphids per sweep and the peas are more than ten days from harvest, insecticide treatment is recommended. There are a number of pesticides labeled for pea aphids in peas. Asana and Mustang Max have been used in processing pea fields on a small number of acres in recent years.

POTATOES

Potatoes in the CVP area range from emergence to blossoming. Note that while the crop has been growing rapidly it virtually stands still on 85-90°+ days. Good soil moisture is critical at the beginning of tuber initiation (just 2 – 3 weeks after emergence, given "average" temperatures) and for several weeks after, to reduce scab infection and for good tuber set. Reminder for later plantings: Nitrogen (N) uptake increases rapidly beginning at tuber initiation. Late sidedressing of N can result in high soil N rates late in the season and delayed maturity, difficulty vine-killing, and increased bruise at harvest. *From Tom Zitter, Cornell:* Black dot (BD) produces surface blemishes on tubers similar to silver scurf. The fungus infects foliage as well as tubers, stolons and roots. Infected plants may die early. Sclerotia on tubers in storage may give the tuber a grayish cast. We have experienced an increase in the occurrence of BD, some severe enough to cause sunken tuber lesions. Foliar infection usually goes undetected. Strobilurin, azoxystrobin (Quadris) or pyraclostrobin (Headline), foliar sprays are recommended, when the very first early blight (EB) symptoms are observed. Combine with a protectant like chlorothalonil to prevent resistance selection in the EB fungus. Potato leafhoppers (PLH) insert their mouthparts into leaves to suck plant sap, and

CROPS Tidbits & Insights *(continued)*

secrete a toxin which causes yellowing, then scorching, called “hopperburn.” Plants are stunted and yields can be very seriously reduced. While the adult PLHs arrive on southern winds nearby cutting of alfalfa can also result in an increase on potatoes. If you didn’t use a systemic insecticide at planting/on seed (see 6/20 *Veg Edge Weekly*) scout your potatoes ASAP! The threshold is just 1 PLH adult/sweep with a net. *From Sandy Menasha, CCE Suffolk Co:* Dimethoate can work well even at lower than labeled rates but should not be combined with copper fungicides. Organic growers can use Pyganic but will need to re-treat as new populations migrate in. Conventional growers have a wide range of insecticides, and should choose based on what other insects are present.



PLH nymph and 1/8" long adult.

SNAP BEANS

Reports suggest that potato leafhopper is present across the state now. As temperatures warm potato leafhopper populations have the potential to increase very quickly. Make sure you are scouting for them once a week. Beans with Cruiser seed treatment should be protected through bloom. For untreated beans, there are several insecticides labeled (see Cornell Guidelines). Pyganic is effective for organic beans, but multiple applications are needed.

Many of the early planted beans are in blossom this week, which means it is time to control molds (see general article) and insects such as European corn borer, corn earworm and western bean cutworm (see the sweet corn insect report). The high temperatures predicted later this week could cause flower abortion. According to Elaine Roddy, OMAFRA: Temperatures over 30°C (86°F) during flowering have a large impact on the snap bean crop. High temperatures cause flower buds and flowers to drop off prior to pollination. They may also result in the abortion of young pods and poor seed development. Beans are most susceptible to high temperature stress from early bloom to 2 cm pods. As a result, we often see a split set, where the lower (older) pods survive and a new flush of pods occurs when cooler temperatures return.

Processing bean fields that we scouted this week generally looked very good with early beans flowering heavily. No serious disease or insect problems were observed.

SWEET CORN

Harvest has begun in a number of locations and it looks like even more will be ready by Fourth of July. Still finding European corn borer worms feeding in tassels in a number of locations.

VINE CROPS

Downy mildew is still kicking up in the Ohio and maybe spreading to southern Michigan. It has also been found in South and North Carolina and Maryland. With a possible tropical storm coming up the coast or strong westerly winds out of the Midwest, we are seemingly boxed in. Start DM management programs with protectants to insure fields don’t get caught over the July 4th holiday (like the way it happened several times over the years!).

Bacterial wilt has been popping up in cucumbers even under a thorough cucumber beetle control program. These insects need to feed on the chemicals in order to die but in so doing can pass the bacteria into the plants.

Cucumber harvests have started with some nice looking fruit coming off.

Summer squash and zucchini harvests have also looked good. Some areas have had problems with incomplete pollination. This could be due to either the high heat period or some of those real cool mornings. In a couple of spots where shade and dampness was heavier, Powdery Mildew has been found on zucchini.

In a several fields where thicker organic matter was present and also where field edges were grassy, slug damage has been seen on a number of fruit in winter squash plantings. Slug bait should be broadcasted around to reduce this problem.

Squash Vine Borer: Time for Management!

Abby Seaman, Vegetable IPM Coordinator, NYS IPM Program

Many smaller scale farms have problems with squash vine borer year after year. While cultural practices can help, especially disking in abandoned crops to prevent larvae from maturing and overwintering, a trial conducted last season showed that two products allowed for organic production, a Bt aizawi product (we used Agree, Xentari is another option) and Entrust both provided reasonably good control. Agree reduced damage to an average of 12% infested plants, and Entrust to 18% compared with 60% damage in the untreated control.

Squash vine borer is not on the label for any of these products, so you must have a 2(ee) recommendation in your possession for a legal application. Download the 2(ee) recommendation here: <http://www.nysipm.cornell.edu/news/SVB2ee.pdf>.

Conventional growers have additional options, including several pyrethroid products.

The trick is to time insecticide applications to prevent newly hatched larvae from boring into the stems and feeding, which causes wilting and eventual

plant death for non-vining type varieties. We applied three weekly applications during the moth flight period, which starts around 1000 base 50 degree day accumulation or when chicory starts to flower. This year we're repeating the trial so we have pheromone traps set up to trap adult male squash vine borer. We caught the first moths in Geneva last Thursday, June 21st, and we'll put on our first spray sometime this week. ■

Best Control of Onion Thrips in Cabbage

C. Hoepting, CVP: Onion thrips (OT) are often considered the most important insect pest of cabbage. The feeding of these tiny insects causes unsightly brownish blisters and scarring on the leaves of cabbage heads, often several layers deep (Fig. 1). Damaged leaves need to be trimmed before cabbage can be marketed resulting in serious economic losses in yield and grade.

When possible, the use of onion thrips-tolerant varieties can go a very long way towards minimizing loss due to OT. For example, summer cabbage varieties, 2733 (Bejo), T541 (American Takii) and Benelli (Bejo) exhibited excellent thrips tolerance in our 2009 Cornell trial. Here, T541 had virtually no OT damage, compared to Bajonet, which had more than 4 layers affected. Information on the relative tolerance/ susceptibility of storage, kraut and summer cabbage varieties evaluated in Cornell trials from 2005 to 2009 is available online at the new Cornell Vegetable Program website: <http://cvp.cce.cornell.edu>, from the sliding menu on top, click on "cabbage". You may also contact Christy Hoepting (585-721-6953; cah59@cornell.edu).

When onion thrips-tolerant varieties are not an option, the most effective insecticide is Admire with the active ingredient imidacloprid. Several years of Cornell studies (Shelton *et al.* 2003, 2004, 2008, 2010) have consistently found that Admire provided the best control of OT when applied to the soil as a directed spray to the base of plants at transplanting and 4 weeks after transplanting. Here, Admire Pro reduced OT damage from 6 to 2 layers. The next best insecticides for OT control in these trials were foliar applications of Provado* and Movento (both available as 2(ee) labels), followed by Assail and Radiant, then dimethoate (discontinued), and finally Warrior. Admire can be an especially economic OT control option for susceptible varieties of summer cabbage.



Figure 1. Onion thrips feeding damage on cabbage.
Photo: Christy Hoepting, Cornell Vegetable Program

Tips on using Admire for control of onion thrips in cabbage:

- 1) Admire Pro (a.i. imidacloprid) has replaced Admire 2F, but there are other labeled 2F formulations of imidacloprid. The effective rate of the 2F formulation is a minimum of 18 fl oz, Cornell studies found no significant difference between 18 and 24 fl oz. Equivalent effective rate of Admire Pro would be 9 to 10.5 fl oz.
- 2) Apply to soil 4 weeks after transplanting, which can be done with nitrogen side-dressing.
- 3) Admire should have at least 4 weeks of residual (longer in Cornell studies) before foliar sprays need to be applied.
- 4) Admire is also labeled for aphids, swede midge and flea beetles, but does not control worms.

Not all 2F formulations of imidacloprid have OT on the label. For example, Nuprid 2F does, while Alias 2F and Couraze 2F do not. ■

Late Blight Risk

C. MacNeil, CVP: New LB confirmations in the past week: Long Island, central PA, NJ and VA. Late blight (LB) severity value (SV) accumulations in the CVP region during the past week were low at many locations, but medium to high at a few locations. A 7 day fungicide interval is recommended at most locations; 5 day interval where 6+ SVs were accumulated. Or rely on your farm/field and local weather specific recommendation from the LB Decision Support System (DSS). There is now a 30 min. webinar about all the features of the LB DSS and how you can use them at: <http://usablight.org/dss> Note to DSS users: You need to select a potato/tomato variety, and a first emergence date (1st potato foliage anywhere in the region, generally May 1) in order to access reports for your farm/fields on the website or receive email/text alerts.

Late Blight Severity Values* 6/26/12

Location**	Week	Total	Location	Week	Total
Albion	1	18	Lafayette	8	54
Appleton	0	6	Lodi	0	8
Baldwinsville	2	16	Penn Yan***	1	46
Buffalo***	0	22	Ransomville	0	13
Ceres	3	32	Rochester***	3	34
Elba	NA	NA	Sodus	3	11
Farmington	1	26	Syracuse***	4	43
Gainesville	2	53	Versailles	NA	NA
Geneva	0	12	Williamson	2	21

** For more sites: <http://newa.cornell.edu> Crop Pages, Potato, Blitecast

*** Airports, with RH increased to estimate field conditions

For excellent photos of LB on potatoes and on tomatoes, as well as photos of LB “imitators” go to: <http://www.longislandhort.cornell.edu/vegpath/photos/index.htm> Scroll down to your crop and click on Late Blight. ■

Summer Cover Crops

C. MacNeil, CVP, with info from Thomas Bjorkman and Brian Caldwell, Cornell: When you harvest early crops (early short season vegetables, early snap beans or sweet corn, wheat) you may have bare fields before wheat, etc. or fall cover crops can be planted. Bare soil is subject to pounding rains, erosion and weeds going to seed. Fill that open niche by planting a soil-improving cover crop in late June or in July. There are two options based on the amount of time available. Buckwheat needs to grow just 40 days while sudangrass needs 60-70 days to be effective. A good stand of buckwheat suppresses weeds, improves soil tilth in the topsoil, and produces more biomass than any other cover crop in the short time it grows. It needs no fertilizer but

doesn't do well if the plow layer is compacted. Sudangrass can produce a huge amount of organic matter, and if incorporated green before frost has biofumigant properties. It needs about 40 lbs/acre of nitrogen and the plant crowns take time to decompose, however.

Mow both buckwheat and sudangrass at 40 days from planting. For buckwheat this is essential to prevent it from going to seed. The residue decomposes rapidly and is easy to manage for the next crop. For sudangrass, which grows rapidly, this is necessary to manage the large amount of plant material. Flail mowing spreads the residue more evenly. Mow sudangrass no shorter than 8" and top and root growth will resume. Mow it again in

September and immediately incorporate for biofumigation. Plan to plant a large seeded crop next spring, or use a transplanter that can handle trash well. For more details on buckwheat, sudangrass, and many other cover crops, including seed sources, seeding rates, tips for getting a good stand, etc. go to <http://www.covercrop.net> In trials at Cornell since 2005 for organic production systems, many cover crops have been grown during different seasonal time windows. How well they grew, how they competed with weeds, and the amount of biomass and nitrogen they produced, are described at: <http://www.hort.cornell.edu/extension/organic/ocs/reports/Cover%20Crops%20Planting%20and%20Termination.pdf> ■

Selecting the Best Fungicides for Managing Leaf Diseases in Onions

C. Hoepting, CVP: Generally, the first leaf disease threat of onions in the season is Botrytis Leaf Blight (BLB), which is favored by cool temperatures (optimum: 59 to 65°F) and long periods of leaf wetness. BLB tends to infect onions that have at least 3-4 leaves. The threshold to start spraying for BLB is one lesion per leaf (see June 6 issue

for info on scouting for BLB), which in a typical year is reached sometime in June. Once the onion plants get big with 9-10 or more leaves and start to bulb, and the weather in July becomes very hot, BLB often is much less aggressive and Purple Blotch (PB) becomes the most important leaf disease to manage. However, in cool rainy sum-

mers like 2009, BLB can remain an aggressive disease all season long. PB typically does not show up until early July in transplants and towards the end of July in direct seeded onions. With 2012 being early all around, the first PB lesions of the season have already been detected in transplanted onions. PB can also get a

Continued on page 10

foot hold early on plants that have necrotic tissue from herbicide injury or other causes. Optimum conditions for PB are 77°F and high humidity. In small-scale isolated onion production, PB tends to be the most important leaf disease.

Table 1 shows the relative performance of nine fungicides for their control of BLB and PB. This information was gathered from four small-plot field research trials that were conducted in Elba, Sodus, Pembroke and Linwood muck lands from 2006 to 2008 by Hoepting et al. It is important to note that these trials were conducted under relatively low disease pressure. These trials demonstrated that not all fungicides perform equally well against BLB and PB. For example, Bravo most consistently provided best protection against BLB, but was found to be poor against PB. Using Bravo + Penncozeb (or other mancozeb products) will do a good job of controlling BLB early in the season, but will quickly lose ground once PB starts to set in. Fortunately, Scala 9 fl oz + Bravo 1.5 pt was the best performing tank mix for both BLB and PB and can do a great job of providing season-long control of BLB and PB, which is why this is my top recommendation! Unfortunately, when BLB and onion thrips both need to be sprayed, now there is the Bravo and Movento tankmix dilemma (see June 13 issue) where a substitute for Bravo would be ideal. According to Table 1, Rovral and the high rate of Scala are the next best available options. Note, Rovral was trialed at only 1 pt rate in these studies and it is expected that the 1.5 pt rate would be expected to provide improved control.

Table 1. Relative Performance of Fungicides for Control of Botrytis Leaf Blight and Purple Blotch in Onions

Botrytis Leaf Blight				Purple Blotch			
Relative performance		Fungicide	Rank Score ¹	Relative performance		Fungicide	Rank Score ¹
BEST	1	Scala 9 fl oz + Bravo 1.5 pt	12	BEST	1	Scala 9 fl oz + Bravo 1.5 pt	15
	2	Bravo 3 pt	13		2	Scala 18 fl oz	23
2 nd Best	3	Bravo 1.5 pt + Penncozeb 3 lbs	20	2 nd Best	3	Rovral 1 pt	24
	4	Endura 6.8 fl oz	29		4	Switch 14 oz	26
Mediocre	5	Rovral 1 pt	30	Mediocre	5	Endura 6.8 fl oz	37
	6	Switch 14 oz	31		6	Quadris 12.3 fl oz	40
	7	Scala 18 fl oz	32		7	Pristine 18.5 fl oz	43
POOR	8	Pristine 18.5 fl oz	39	POOR	8	Cabrio 12 fl oz	44
	9	Cabrio 12 fl oz	41		9	Bravo 3 pt	47
	9	Penncozeb 3 lbs	41		9	Bravo 1.5 pt + Penncozeb 3 lbs	47
	10	Quadris 12.3 fl oz	48		10	Penncozeb 3 lbs	50

¹**Rank Score:** Total of six rankings from best (=1) to worst (=12) from four trials conducted in 2006-2008 (Hoepting et al.). Low rank scores indicate consistently top performing fungicides. For example, for Scala 9 fl oz + Bravo 1.5 pt for BLB: 1st + 2nd + 4th + 1st + 2nd + 2nd = rank score of 12.

Highlights from 2011 Onion Fungicide Trials: Two small-plot on-farm 12-treatment trials were conducted in Elba and Pembroke in 2011. The highlights include:

- 1) Scala 9 fl oz + Bravo 1.5 pt was again the highest ranked fungicide for BLB control. Control of PB was not clear – see No. 6.
- 2) Newly labeled Inspire Super ranked poorly for BLB and overall.

- 3) Newly labeled Actigard (labeled for suppression of IYSV and bacterial diseases – more info later) appeared to suppress all leaf diseases, especially downy mildew
- 4) Newly labeled Quadris Top provided suppression of downy mildew and received high scores for plant health. It ranked mediocre for BLB and control of PB was not clear – see No. 6. It appears to have potential fit in the onion spray program – see below.
- 5) Active ingredient, mancozeb provided very good protection against downy mildew; although DM still occurred, it was much less than in the treatments that had no preventative activity.
- 6) Unfortunately, the DM in the trial skewed the PB results; because PB so closely follows DM, the PB results mimicked the DM results.

It appeared that Quadris Top may have a fit in the onion spray program that deserves some experimentation, perhaps as a rotation partner with Scala + Bravo towards the end of July through August when conditions become more favorable for DM and BLB is less of a threat. Quadris Top does not have any tankmix incompatibilities with the insecticides used for thrips control.

Don't forget to protect against downy mildew!

DM can defoliate onions like late blight can defoliate potatoes when cool and wet conditions persist. Typically, DM does not occur until the nights become cool in August and there are long periods of dew. The exception is cool rainy seasons like 2009 when it came in in July and wreaked havoc all the way to the end of the season. Getting DM in my fungicide trial last year, even though it came in late skewed my results for PB and plant health, and I was reminded of the value that mancozeb has as a protectant against this disease. A lot of growers use mancozeb as a protectant for DM season-long. Minimally, in a normal year, it should be included in the tank mix starting in early August until the end of the spray season.

Be mindful of rotation restrictions: Quadris, Quadris Top, Cabrio, Pristine, Vanguard, Inspire Super and Quilt Xcel all need to be rotated to a new chemical class after 1 to 2 consecutive sprays. ■

Weather Charts

J. Gibbons, CVP:

Weekly Weather Summary: 6/19 - 6/25

Location	Rainfall (inch)		Temp (°F)	
	Week	Month	Max	Min
Albion	NA	NA	89	56
Appleton, North	0.30	1.84	90	59
Baldwinsville	0.28	2.42	91	56
Buffalo*	0.01	2.68	85	59
Ceres	0.38	3.20	88	48
Elba	NA	NA	NA	NA
Farmington	0.25	2.89	89	53
Gainesville	0.42	2.92	88	52
Geneva	0.25	2.08	91	55
Lafayette	0.34	1.55	92	53
Lodi	0.57	2.06	94	53
Penn Yan*	0.23	2.28	92	56
Ransomville	0.41	1.84	89	53
Rochester*	0.42	4.08	92	57
Sodus	0.91	NA	92	53
Syracuse*	0.35	1.97	94	58
Versailles	0.03	2.71	86	55
Williamson	0.46	NA	92	58

Accumulated Growing Degree Days (AGDD) Base 50°F: Jan. 1 — June 25, 2012

Location	2012	2011	2010
Albion	927	723	869
Appleton, North	800	528	705
Baldwinsville	1013	922	NA
Buffalo	1049	772	881
Ceres	814	757	NA
Elba	NA	NA	885
Farmington	924	752	868
Gainesville	922	748	829
Geneva	995	840	939
Lafayette	959	829	819
Lodi	888	859	984
Penn Yan	1021	859	932
Ransomville	924	717	867
Rochester	1054	800	932
Sodus	879	727	NA
Syracuse	1067	980	938
Versailles	970	NA	NA
Williamson	969	732	902

* Airport stations

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

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