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Tarnishing the Reputation of Your Vegetables - Tarnished Plant Bugs



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From Straw-Figures to Lasers: What's the Best Method to Scare Birds from Sweet Corn?



Content from Meg McGrath, Cornell University, and Judson Reid, CCE Cornell Vegetable Program

Downy mildew was reported on cucumber in Saratoga County, (eastern New York) on July 7th. Additional cases have been reported in New Jersey, Pennsylvania and the province of Ontario. The NY report was from a commercial cucumber planting, which suggests that there could be additional unreported cases in local gardens.

Current weather patterns are ideal for the spread of Downy Mildew. Cloud cover protects spores from UV rays. Wind threatens to move spores from known occurrences and rain brings spores from air currents down onto wet leaves.

Downy Mildew is a fast acting blight of cucumbers and also affects cantaloupes severely. Growers should be regularly scouting cucumber and cantaloupe crops for symptoms, which include yellow rectangular lesions on upper leaf surfaces and dark spores underneath. Those with internet access can use the forecast website for risk of pathogen spread to their crops plus reports of new occurrences.

Applying a protectant fungicide (chlorothalonil or mancozeb) to cucumber is warranted where risk is forecast, especially when high risk. Treating canta-



Downy Mildew is a fast acting blight of cucumbers and also affects cantaloupes severely. Photo by J. Reid, CCE

About VegEdge

VegEdge newsletter is exclusively for enrollees in the Cornell Vegetable Program, a Cornell Cooperative Extension partnership between Cornell University and CCE Associations in 14 counties.



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.

We're interested in your comments. Contact us at: CCE Cornell Vegetable Program 480 North Main Street, Canandaigua, NY 14224 Email: cce-cvp@cornell.edu Web address: cvp.cce.cornell.edu

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The next issue of VegEdge newsletter will be produced on July 21, 2021.

Accumulated Growing Degree Days

Julie Kikkert and Emma van der Heide, CCE Cornell Vegetable Program Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - July 12, 2021

Location**	2021	2020	2019
Albion	1230	1152	977
Arkport	997	985	913
Bergen	1138	1122	942
Brocton	1164	1114	978
Buffalo*	1240	1159	970
Burt	1058	1056	855
Ceres	1015	952	980
Elba	1084	1087	906
Fairville	1089	1090	891
Farmington	1135	1123	923
Fulton*	1102	1123	886
Geneva	1171	1151	978
Hammondsport	1107	1097	938
Hanover	1147	1118	973
Lodi	1011	1168	1014
Niagara Falls*	1189	1123	918
Penn Yan*	1239	1185	1031
Rochester*	1178	1156	1059
Sodus	1195		872
South Bristol	1122	1103	927
Varick	1247	1206	1049
Versailles	1108	1088	970
Williamson	1072	1062	851
* * * * * * *			

* Airport stations

** For other locations: http://newa.cornell.edu

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loupe is also worth considering. Continue checking leaves for symptoms to know when downy mildew has started to develop in a crop and thus time to apply targeted fungicides for this disease.

Given that we are in the midst of cucumber harvest, specific Downy Mildew fungicides with short pre-harvest intervals (PHI) are include in Table 1. These products do not require a license. We strongly encourage the rotation of multiple products with different FRAC codes. Organic growers may delay crop loss with copper applications.

Table 1. Downy Mildew Fungicides with Short $\ensuremath{\mathsf{Pre}}\xspace{\mathsf{Harvest}}$ Intervals (PHI) for Cucumbers

Product	FRAC group(s)	PHI (cucumber)	Notes
Orondis Ultra	40+49	0	No more than 2 consecutive applications, 4 max
Ranman	21	0	No more than 3 consecutive applications, 6 max
Tanos	27+11	0	No consecutive applications, rotate to another fungicide within 5 days

Please report any Downy Mildew cases to your local extension agent.

Tarnishing the Reputation of Your Vegetables – Tarnished Plant Bugs

Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

In between bouts of rain, the high heat seems to bring out hungry insects. One of serious culprits is the tarnished plant bugs or lygus bugs – *Lygus lingolaris* (TPB). Despite being fairly small (1/4" long adults with tinier nymphs) they cause destruction due to numbers and heavy feeding. Nymphs sort of resemble green aphids but will move around faster. Adults are tan to greenish with darker markings on their back and wings.



Tarnished plant bug. Photo from UMass Extension

FEEDING AND DAMAGE

TPB are sucking insects. They have piercing mouths that stab into plant tissue like a straw slurping up juices from leaf veins, flower stems, and fruit. The host range is wide covering small fruit, tomato, peppers, eggplants, and greens – heavily on lettuce. When the bugs pierce the plant, a toxic secretion kills cell tissue around the stab. This can lead to distortion in leaf growth, misshapen fruit and buds, as well as sunken areas on tomatoes, for instance, where the injured tissue also becomes yellow. Stink bug damage also looks similar, but stink bug injury leaves a pithy white area under the skin. Basil is also affected where feeding causes leaves to distort and have brown marks mostly on the younger leaves.

WEEDS AND GRAINS

TPB also feed on a wide assortment of common field weeds. These include pigweed, amaranth, lambsquarters, mustards, goldenrod, and mullein. Alfalfa, other legumes, and grain crops are attractive to TPB. It is advisable to not plant vegetable crops near these crops because when harvested, TPB will migrate over to the vegetables.



Tarnished plant bug damage on unripe and ripe tomato fruit. Note the cloudy spots on the unripened green and yellow fruit while the red tomato has many deeper skin damage with yellowing spots surrounded by dark margins. *Photo by T. Zitter, Cornell*

MANAGEMENT

This is generally difficult. Frequent applications may needed over the course of the growing season due to new infestations coming in. Also, some pesticides can kill beneficial insects which, if the TPB population is still low, the beneficials can help reduce TPB numbers. Another problem with pesticides is that with reduced overall beneficial insect numbers, two spotted spider mites can become established causing more problems. When reading pesticide labels, many don't mention TPB but list lygus bugs so be aware of this when checking.

Is Your Farm FSMA Ready? Schedule an On Farm Readiness Review

On Farm Readiness Reviews (OFRR) are a free educational service offered by the food safety NYSDAM team. These volunteer farm visits help growers get prepared for the implementation of the FSMA regulations concerning farm food safety. If you are covered by the regulations, you might want to schedule a farm visit by NYSDAM team member and a trained OFRR Extension educator. We are here to help growers understand what is expected from the regulations and how to prepare for implementation. **The OFRR is a non-binding purely educational visit that gives growers the opportunity to ask questions and gage how much preparation for the regulations is needed for their farm operation.** For more information, contact:

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Distinguishing Late Blight from Other Potato Diseases

Margie Lund, Cornell Cooperative Extension, Cornell Vegetable Program

With multiple storm systems moving through Western NY in the past couple weeks, conditions are good for disease development in potatoes, especially for fungal diseases such as late blight. If left unchecked, late blight can be devastating to fields, so it is important to know how to differentiate it from other diseases that may also present in potatoes this time of year. The descriptions below provide information on various potato diseases, and how their symptoms differ from late blight.

LATE BLIGHT

Spreads during wet humid periods, with higher disease incidence when it is cool and wet. Leaf symptoms: light to darkgreen water-soaked spots, light green halo will form around the lesion, and white spores will form on the underside of leaves. Leaf lesions will cross over the mid-vein of the leaf. Lesions and white spores will also form on stems, especially at growing points. Attention should be given especially to parts of the fields that exhibit high humidity, such as low-lying areas, along hedgerows, near weedy patches, and near water.



Late blight lesions on potato leaves, and stems. *Photo by Long Island Horticulture Research and Extension Center*

WHITE MOLD

White mold also has white spore growth on foliage, but this mold forms denser fungal growths and areas are not brown to black like late blight. Infected areas turn white in color and dark hard sclerotia will form on stems.



White mold growing on a potato stem. Photo by Ontario CropIPM

RHIZOCTONIA

White fungal growth also occurs on stems, but this growth can easily be wiped off and stem tissue under the fungus is not damaged.



Rhizoctonia fungal growth on a potato stem. *Photo by Ontario CropIPM*

BLACKLEG

Blackleg causes blackened rotting stems in potatoes. However, no white fungal growth will develop, and plants will sometimes produce a fishy smell. Rotting stems develop at the soil line and work their way up the plant.



Blackleg growth along the base of a potato stem. *Photo by Margie Lund, Cornell Cooperative Extension*

EARLY BLIGHT

Brown circular lesions form on leaves with some yellow halos, and browning on stems. However, lesions form a concentric circle "bullseye" pattern with no white spores, and stem lesions show up as flecks instead of larger infected areas.



Four early blight lesions on a potato leaf. *Photo by Margie Lund, Cornell Cooperative Extension*

continued from page 4 GREY MOLD

Dark lesions and mold spores form on leaves. However, lesions form a concentric circle "bullseye" pattern and mold spores are grey in color compared to the white spores that form with late blight.



Grey mold lesion and spores. Photo by Ontario CropIPM

ALTERNARIA BROWN SPOT

Brown lesions will form on leaves and stems. However, lesions usually start out very small and older lesions grow larger with a concentric circle "bullseye" pattern. Lesions on stems will be small and scattered spots.



Alternaria brown spot lesions varying from small to large. *Photo by Ontario CropIPM*

HEAT STRESS

Under heat stress, potato leaves will turn brown. Sometimes full leaves will wilt, and other times browning will occur just along the tips of the leaflets. However, no white spores will form, and brown spots will develop during times of extreme heat and dry conditions.

WATER DAMAGE

Water-soaked brown spots form with leaf yellowing surrounding the lesions. However, no white spores will form.

CHEMICAL DAMAGE

Growing points and leaves develop dark lesions. However, lesions will often only form in the boundaries of the leaf veins instead of crossing over veins. Additionally, no spores or yellowing around lesions will form.

RESOURCES

Resources for pictures of diseases listed: https://blogs.cornell.edu/livegpath/gallery/

http://www.omafra.gov.on.ca/IPM/english/potatoes/diseases-and-disorders/index.html

IYSV Hot Spots in Onion

Despite a seemingly non-stressed crop and controlled thrips, Iris Yellow Spot Virus (IYSV) hot spots are popping up in Elba muck. The best way to manage IYSV is to control thrips and prevent plant stress.



Field View – 2-3 ft pocket of onions with white tips stand out among green foliage.



Top View – Elongated white lesions are evident in infected plants. Lesions often occur in middle-aged leaves.



Side View – Elongated white lesions often occur on the leaf edge and are oriented along the long axis of the leaf with multiple lesions often slightly off-set from each other.



Excessive Leaf Dieback and Necrotic Tissue Invaded by Stemphylium



Eventually...IYSV-infected plants in hot spots die standing up. *Photos by C. Hoepting, Cornell Cooperative Extension*

CR P Insights

Observations from the Field and Research-Based Recommendations

BEETS

Our scouting on Tuesday 7/13 did not turn up any <u>Cercospora leaf spot (CLS)</u>. We did find one planting with a low level of <u>Phoma leaf spot</u> with the large lesions with characteristic concentric ring pattern. There is also a low level of <u>bacterial leaf</u> <u>spot</u> in many fields and nothing to do about that unless the field is in the seedling stage, then a copper spray may be helpful. Many weather stations in our region recorded a period of high risk for CLS based on high humidity and favorable temperatures. Long periods of leaf wetness like we experienced this past week also contribute to high risk. If you find CLS in your field at an incidence of 10% or higher and the field has a long way until harvest, then a fungicide may be warranted. Tilt or Miravis Prime are the recommended conventional products for the first spray. For organic production, the most efficacious products in our research trials are Double Nickel + Cueva, and Lifegard. - JK

CARROTS

Watch carrot fields for leaf spot diseases because of the recent humidity and prolonged periods of leaf wetness. <u>Bacterial lesions</u> are small yellow areas on the leaflets with brown, dry centers which are often surrounded by a yellow halo. Copper is labeled for Bacterial leaf blight. <u>Cercospora leaf spot</u>, caused by the fungus *Cercospora carotae*, is prevalent during hot and humid weather. Cercospora lesions are small, circular, tan or gray spots with a dead center which appear along the leaf margins causing them to curl. The Cercospora fungus attacks younger leaves. <u>Alternaria leaf blight</u> caused by the fungus *Alternaria dauci*, first appears as dark brown to black irregular spots on the margins of the leaflets. Lesions on petioles and stems are dark brown and girdle the stems, killing them. As the disease progresses, entire leaflets may shrivel and die. Lesions are more prevalent on older foliage. <u>While sprays with Bravo fungicide (group M5) will control both Alternaria and Cercospora</u>, rotation with a fungicide with a different mode of action is advisable for resistance management. Quadris (group 11) or Quadris Opti (group 11+M5) control both fungi and have a 0 day preharvest interval (PHI). There are several other fungicides labeled for carrot as outlined in the 2021 Cornell Vegetable Guidelines. Choices should be based on which disease(s) you are trying to control, cost, and PHI. - JK

COLE CROPS

Current humid and wet conditions are favorable for Alternaria leaf spot (ALS). The optimum temperatures for ALS are 75° to 82°F. See <u>Cornell Cheat Sheet for Fungicides for ALS and Head Rot in Broccoli and Other Cole Crops</u> on our website. Be mindful that the most effective fungicides for ALS are prone to fungicide resistance and rotation restrictions and maximum use rates are required by the labels. ALS control failures have occurred with Quadris (FRAC 11) in NY. Only a couple of fungicides have less than 7 day PHI. Thus, it is important to manage this disease strategically and plan ahead. - CH

DRY BEANS

Leafhoppers are showing up in dry beans, but Cruiser applications should continue to protect against damage. The presence of nymphs will indicate when the Cruiser application is no longer working. Recent wet weather increases the likelihood of white mold development in beans. An initial application of Omega 500F is recommended followed by a second application of Endura 70 WDG. The first application should be made at the early bloom stage.

Western bean cutworm trapping has begun at 11 locations in the region (Avoca Hill, Avoca Valley, Caledonia, Pavilion, Penfield, Penn Yan E, Penn Yan N, Riga, LeRoy, Wyoming, and Wayland). All trap locations collected low numbers of moths this week, and numbers are expected to increase over the next couple of weeks. Currently all trap locations are below the 50 cumulative moth threshold for scouting, and peak flight is expected around the end of July to early August. - ML

ONIONS

Enjoy! Take a picture to freeze this moment in time! The onion crop is stunning right now! Following last week's rain the canopy is lush and green to the tips and huge! Onion thrips and leaf diseases

Western bean cutworm (WBC) trap set date and WBC adult numbers by date for each dry bean trap location

Dry Bean Location	Trap Set	7/6/21	7/13/21	Cumulative WBC
Avoca Hill (Steuben Co.)	6/29/21	5	4	9
Avoca Valley (Steuben Co.)	6/29/21	1	1	2
Caledonia (Livingston Co.)	6/29/21	0	9	9
Pavilion (Genesee Co.)	6/29/21	0	0	0
Penfield (Monroe Co.)	6/29/21	0	1	1
Penn Yan E (Yates Co.)	6/30/21	0	1	1
Penn Yan N (Yates Co.)	6/30/21	0	2	2
Riga (Monroe Co.)	6/29/21	0	2	2
LeRoy (Genesee Co.)	6/29/21	1	15	16
Wyoming (Wyoming Co.)	6/29/21	0	3	3
Wayland (Steuben Co.)	6/29/21	6	5	11

are well under control. Although recent conditions with ample rainfall, overcast skies, extended periods of leaf wetness, and thick crop canopies with poor aeration creating a humid microclimate seem favorable for disease, we have not yet

seen an increase in Botrytis leaf blight (BLB) halos and necrotic spots, while Stemphylium leaf blight (SLB) continues to appear secondary in most fields during our scouting efforts on Monday and Tuesday. However, there are a couple of fields in Elba where SLB is definitely primary and has progressed to the point where it is on the verge of excessive leaf dieback. Given the current canopy conditions, most growers are ensuring very good SLB fungicides be applied this week, including FRAC 3 + 3 in some fields, in hopes that Viathon + Tilt will halt SLB progression and launch the crop into the home stretch so that the crop does not finish dying standing up. We have also been talking about stepping up downy mildew protection as a "crutch" to hold up our "limping" SLB fungicides to veer off an uncontrollable DM-SLB complex. A stepped-up program would include Ridomil and Orondis products, which in 2015 on-farm fungicide trial provided significantly 25% better control of DM infection than mancozeb and other typically used DM fungicides (e.g. FRAC 11) – see article on page 8. Although conditions are not perfectly favorable for DM (nighttime temperatures too warm), I am no longer comfortable leaving this crop unprotected. Although the stepped-up program may not be necessary at this time, including a fungicide for DM in this tank mix is recommended.

There was not much movement in onion thrips over the past week, and Movento has been working great this year with many fields getting 2-3 weeks of protection from the residual (= the ride with momentum of Movento). Next in sequence is Agri-Mek or Minecto Pro, which could be followed by Radiant and then Exirel, if need be. <u>Cornell recommendations and strategic plan for managing onion thrips in onions</u> can be found on the Cornell Vegetable Program website. - CH

PEAS

The pea season is winding down. There are still some nice-looking processing pea fields out there, but this week has been one of muddy harvest and high risk for slug and snail activity. - JK

POTATOES

SNAP BEANS

Potato leafhopper adults are present in fields and should be monitored. Treatment is recommended at a threshold of 15 nymphs/50 leaves. - ML

Simcast forecasting indicates that <u>all weather stations</u> have surpassed or will surpass the 30 blight units (BU) needed to trigger a spray for late blight. Continued wet weather throughout the region makes potatoes susceptible to late blight development, so a fungicide application is recommended for all locations. The chart assumes use of a susceptible potato variety, Reba, and an application of chlorothanlonil on July 7. For locations that are not close to a weather station, forecast information should only be used as a *general indication* of how favorable weather has been for late blight. There are no reports of late blight on a national level. - ML

Late Blight Risk Chart, 7/14/21

Location	Blight Units 7/7-7/131	Blight Units 7/14-7/16 ²	Location	Blight Units 7/7-7/13	Blight Units 7/14-7/16
Albion	31	12	Hammondsport	40	20
Arkport	37	13	Knowlesville	46	16
Baldwinsville	32	16	Lyndonville	41	21
Bergen	45	17	Medina	48	17
Buffalo	38	20	Niagara Falls	42	18
Burt	39	17	Penn Yan	42	20
Ceres	41	21	Rochester	49	14
Elba	46	20	Sodus	48	17
Fairville	40	17	Versailles	42	17
Farmington	49	17	Wellsville	49	21
Fulton	42	17	Williamson	21	10
Geneva	41	16			

Calculated using a May 26 crop emergence date, last fungicide application July 7, cultivar Reba

Harvest of the processing crop is underway with good yields on the first plantings. On the other end of the

1 Past week Simcast Blight Units (BU) 2 Three-day predicted Simcast Blight Units (BU)

spectrum, growers are trying to find dry ground to get new plantings in. Beans that were flowering during extreme heat likely have reduced yields or split-sets. Flooded fields and wet spots because of recent heavy rains put plants at risk of drowned roots and diseases such as Pythium crown rot and Phytophthora capsici. Fields with a history of Sclerotinia white mold and with dense canopies are most at risk for developing white mold. Rainy weather is highly favorable! Flowers become infected and disease spreads to the rest of the plant. A first fungicide should be applied to fields at risk when there is an average of 1 open flower/plant in 10% of the plants; a second application may be considered at 100% bloom (this may happen within a day or two in some varieties in warm weather). Research in the Pethybridge group at Cornell focused on the products Endura, Topsin 4.5 FL, and Omega 500F. Each of these products is highly efficacious when applied at optimal timing and there was no significant difference in the disease control between the products. In further teasing out the optimal application timings, our research has shown that the optimal timing of Topsin 4.5 FL is at 10% bloom, and that this product is not effective when applied at 100% bloom. Furthermore, there is no benefit to a second application. Conversely, disease control with Omega 500F was not related to timing (10% or 100% bloom) and there was no benefit from a second application even when applied at 100% bloom. For growers who were not able to put on a spray at 10%, then Omega 500F would be the choice product to use. Timing of the other possible fungicides was not tested. For organic growers, the most efficacious and reliable product from year to year is Double Nickel (Bacillus amyloliquefaciens strain D747). Both the LC and 55 formulations are equally effective. While labeled at the rate of 1 to 2 quart/acre, there was no benefit of the higher rate, and thus 1 quart/acre is recommended. - JK

Onion Downy Mildew Prevention the "Crutch" for "Limping" SLB Fungicides to Manage DM-SLB Complex

Christy Hoepting, Cornell Cooperative Extension, Cornell Vegetable Program

Onion plants that are infected with downy mildew (DM) are quickly invaded by Stemphylium leaf blight (SLB, Fig. 1), and when conditions are favorable, a DM-SLB complex may defoliate an onion crop in just 2 weeks. Now that many of the SLB fungicides (e.g. FRAC 7 Luna Tranguility and Miravis Prime, FRAC 3 Inspire Super/Quadris Top and Tilt, FRAC 2 Rovral and FRAC 9 Scala) are "limping" due to development of fungicide resistance, it is unlikely that the SLB part of the DM-SLB complex can effectively be controlled, and the crop could "die standing up" instead of lodging properly. When an onion crop dies standing up, this often results in reduced bulb size and quality including bacterial bulb rot and/or sprouting due to ineffective uptake of sprout inhibitor. Under these circumstances, it may make sense to be extra diligent about preventing downy mildew.



Figure 1. DM-SLB complex: Downy mildew infection site where necrotic tissue has been invaded by Stemphylium leaf blight in onion. Both diseases need to be effectively controlled to prevent excessive leaf dieback and plants dying standing up. *Photo by C. Hoepting, CCE*

CONDITIONS THAT FAVOR DOWNY MILDEW

- Cool temperatures (less than 72°F) and wet conditions, especially when there is heavy dew at night. Check! Temperatures have generally been cool over the last couple of weeks.
- DM spores are produced at night and are easily blown long distances in moist air. They can germinate on onion tissue in 1.5

to 7 hours when temperatures are 50 to 54°F. Not so much – nighttime temperatures have been in the low 60s.

 High daytime temperatures (> 74°F) and short or interrupted periods of humidity at night can prevent sporulation. Check! Daytime high temperatures have been > 74°F.

DM is typically of most concern in onions once the heat wave of summertime passes and when cool nights and heavy dews are common. Even though current nighttime temperatures have been too warm for optimum DM spore production, the cooler temperatures, frequent rainfall events and overcast conditions have resulted in extended periods of leaf wetness that do favor DM. Also, the onion crop canopy is thick and lush with reduced aeration, which creates a humid microclimate favorable for disease.

MANY FUNGICIDE CHOICES FOR DM PROTECTION

Table 1 outlines results of an on-farm DM fungicide trial conducted in Elba in 2015 to give you an idea of the relative performance of different fungicide options. There are also other fungicides not included in this trial that are labeled in onion for DM.

RIDOMIL GOLD BRAVO AND ORONDIS PROVIDED BEST DM CONTROL

- Note, that even the best products provided only 75% control. Incidence (No. plants infected) in that trial was 100%, but the number of lesions (infection sites) per plant was reduced from 15 in the untreated to 4 in the best treatments.
- Ridomil Gold Bravo and Orondis had significantly fewer lesions per plant than Dithane (a.i. mancozeb) 3 lb, which control DM by 55%.
- Ridomil has a high risk for fungicide resistance and should be rotated with another FRAC group after two consecutive applications.
- Label for Ridomil Gold Bravo allows for a maximum of 5 applications at the 2.5 pt rate. Ridomil Gold Bravo 2.5 pt contains Bravo Weatherstik 1.4 pt (= low rate).
- Orondis is available as Orondis Opti (+ Bravo) or Orondis Ultra (+ Revus). Each allow for a maximum of 4 applications at the high rates (Opti 2.5 pt; Ultra 8 fl oz). Labels restrict no more than two applications before moving to another mode of action.
- Orondis products provide at least 2 weeks of residual activity. When using them in a program, you may wait 2 weeks before making another DM fungicide application. Ideally, you should rotate to another FRAC group to avoid 4 weeks of DM exposure to Orondis.

SAMPLE DM FUNGICIDE PROGRAM WITH BEST DM FUNGICIDES

- Week 1: FRAC 49. Orondis Ultra 8 fl oz
- Week 2: FRAC 49. No DM fungicide application this week Orondis residual activity doing its job protecting the plant.
- Week 3: FRAC 4. Ridomil Gold Bravo 2.5 pt
- Week 4: FRAC 4. Ridomil Gold Bravo 2.5 pt
- Week 5: FRAC 49. Orondis Ultra 8 fl oz
- Week 6: FRAC 49. No DM fungicide application this week Orondis residual activity doing its job protecting the plant.

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SLB FUNGICIDES THAT HAVE ACTIVITY ON DM

- Quadris Top FRAC 11
- Viathon FRAC P07
- Gavel FRAC 22 + M03

When using these fungicides for SLB, the DM component of these premixes may be used for DM protection.

- In 2015 fungicide trial, efficacy of FRAC 11 fungicides varied among products (42-68% control), but generally was not significantly different than mancozeb 3 lb.
- Gavel (46% control) was also not significantly different than mancozeb 3 lb.
- FRAC P07 in Viathon and Rampart had significantly more DM lesions than mancozeb 3 lb. During highrisk or high pressure of DM, you should not rely on P07 alone for DM protection.

Table 1. Relative performance of fungicides for control of downy mildew, Elba, 2015 (Hoepting): No. DM lesions per plant – 7 days after third consecutive weekly fungicide application (Aug 27).

Fungicide and Rate/A	FRAC Group ¹	Rating for Risk of Fungicide Resistance for DM active ingredient	No. DM lesions per plant	Control (compared to untreated)
Non-treated control			14.9 a²	
BEST!				
Orondis 1.6 fl oz ³	49	Medium-High	3.7 h	75%
Ridomil Gold Bravo 2.5 pt	4 (+ M5)	High	3.9 h	74%
FRAC 11:				
Reason 5.5 fl oz	11a	High	4.7 gh	68%
Quadris Top 14 fl oz	11b (+ 3)	High	5.8 e-h	61%
Merivon 9 fl oz	11c (+ 7)	High	8.7 cd	42%
Other:				
Dithane (mancozeb) 3 lb	M03	Very low	6.7 d-g	55%
Rampart 2 qt	P07	Low	9.3 bc	36%
Revus 8 fl oz	40	Low-Medium	7.7 c-f	48%
Gavel 2 lb	22 + M03	Low-Medium	8.0 cde	46%
Zampro 14 fl oz	40 + 45	Medium-High	7.6 c-f	49%
Omega 16 fl oz	29	Low	9.3 bc	38%

1 **FRAC**: Fungicide Resistance Action Committee. Bold indicates FRAC group for active ingredient with activity on DM.

2 Numbers in a column followed by the same letter are not significantly different, Fisher's Protected LSD test, p < 0.0000.

3 The Orondis tested in this trial included only the active ingredient, oxathiapiproline. This a.i. is commercially available in premixes of Orondis Opti (= Orondis + Bravo) and Orondis Ultra (= Orondis + Revus).

NY Sweet Corn Trap Network Report, 7/13/2021

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

Statewide, 29 sites reporting this week. European corn borer (ECB)- E was caught at 6 sites and ECB-Z was caught at 4 sites, with a high count of 16 ECB-Z at the Penn Yan site. The hybrid ECB was only caught at the Seneca Castle site this week. Corn earworm was caught at 12 sites with only five sites high enough to be on 4, 5 or 6 day <u>spray schedule</u>. The first fall armyworm (FAW) was caught this week at two sites (Bellona and Preble). Western bean cutworm numbers have really increased in just one week, with 17 sites reporting trap catches and one site already finding an egg mass.

WBC peak flight is expected late July into early August. It is important to begin scouting for egg masses even if cumulative trap catches have not reached 100, as egg masses have been found when cumulative trap catched were still in the single digits. WBC will usually lay eggs on the upper side of the top 1-3 leaves of pre-tassel corn, close to the leaf base. After tasseling has finished WBC seek out younger corn or dry beans. To scout for egg masses check the top 3 leaves of ten corn plants in ten locations throughout the field. The eggs are easy to observe if you view the leaf while holding it towards the sun. The egg mass will appear as a distinct shadow.

It takes between 5-7 days for eggs to hatch. It is critical that sprays are timed before the larvae have a chance to enter the ear. The egg mass will become purple in color approximately 24 hours before egg hatch.

WNY Pheromone Trap Catches: July 13, 2021

Location	ECB-E	ECB-Z	ECB Hybrid	CEW	FAW	WBC	DD to Date
Batavia (Genesee)	0	2	NA	1	0	2	2342
Bellona (Yates)	0	0	0	0	1	0	2328
Brockport (Monroe)	4	0	NA	2	0	1	2376
Collins (Erie)	NA	NA	NA	NA	NA	NA	2234
Eden (Erie)	0	0	NA	1	0	5	2325
Geneva (Ontario)	0	0	0	0	0	0	2320
Hamlin (Monroe)	NA	NA	NA	NA	NA	NA	2290
Leroy (Genesee)	0	0	NA	1	0	3	2307
Lyndonville (Orleans)	0	0	NA	1	0	2	2234
Oswego (Oswego)	0	0	NA	0	0	10	2080
Panama (Chautauqua)	0	1	NA	1	0	0	2062
Penn Yan (Yates)	0	16	0	0	0	1	2244
Portville (Cattaraugus)	0	0	NA	0	0	2	2020
Ransomville (Niagara)	3	0	NA	0	0	1	2315
Seneca Castle (Ontario)	0	0	1	0	0	0	2274
Williamson (Wayne)	0	0	NA	1	NA	NA	2139

ECB: European Corn Borer; CEW: Corn Earworm; FAW: Fall Armyworm; WBC: Western Bean Cutworm; NA: not available; DD: Degree Day based on accumulation starting March 1 (base 38) for WBC emergence

To determine the estimated WBC flight completion of the sweet corn sites, use the degree days in the <u>NEWA Western Bean Cut-</u> worm Flight Emergence Lookup Table. Degree days were calculated using a base 38°F but not the upper threshold of 75°F. The degree days are therefore overestimated a bit. Most of our sites fall between 1-10% flight completion.



Scaring birds out of sweet corn and other crops is not new, based on the centuries-old placement of scarecrows dressed in old clothes (oftentimes filled with straw) in fields. However, there are many newer methods from chemical control to loud noises, to laser beams. There are pros and cons to each method and varied costs as well. **Researchers agree that** scare techniques need to be started before the birds find the field, roughly 7 to 10 days before harvest begins. Once red-winged blackbirds, cowbirds, starlings, grackles and the like have tasted that delicious, sweet corn, there is no keeping them away!

In 2015-2017, the CCE Cornell Vegetable Program (led by Darcy Telenko) tested four methods of deterring birds from sweet corn fields in 12 on-farm trials: Avian control (chemical), scare-eye balloons, air dancer, and detasseling. The final report is available as a glossy hard-copy from our office or <u>find the</u> <u>report on our website along with a video</u>.

In summary, over the three years, birds caused an average of 2.8 to 11.5% loss in untreated plots. There was not a significant difference between treatments in individual years. However, when data from the three years was compiled, the scare-eye balloons, air dancer, and detasseling tools all significantly reduced damage when compared to the untreated control. Bird damage was reduced 38% with Avian Control, 63% with balloons, 77% with the air dancer, and 85% with detasseling as compared to the non-treated control. A description of these devices, along with general cost, use recommendations, and limitations is provided in the final project report.

WHAT ABOUT LASERS?

Learn more by watching the recorded Laser Scarecrow Session from the 2021 Empire State Producers Expo

According to R. Brown and D. Brown, University of Rhode Island, research in laser technology to control birds increased rapidly in the 1990's when laser diodes became commercialized, in combination with increased occurrence of human-bird conflicts (Crop Protection vol 146:105652). While commercial bird deterrents using laser-beams were made available (e.g. Bird Control Group, Carpe Diem Technologies, etc.) these devices range in the thousands of dollars and are made to cover large acreages.

From Straw-Figures to Lasers: What's the Best Method to Scare Birds from Sweet Corn?

Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program

University of Rhode Island Device

Brown and Brown have developed a laser-scarecrow designed for small acreage sweet corn fields that is available for purchase as a kit for \$600 (2020-2021 price). As part of a multi-state USDA NIFA specialty crop grant for which I am a co-investigator, I have obtained and constructed 2 of these devices for testing in western, NY this year. The kits have numerous small parts and come with very detailed instructions. You can plan on 4 to 6 hours to build one kit. Data from three years of trials from the University of Rhode Island (R. Brown and D. Brown, Crop Protection 146:105652) demonstrated the effectiveness of the device. Using split-plot treatments where half of the field was covered with the 50 mW green laser beam and half was not, the non-treated control sections. The data demonstrates the potential of this technology for deterring birds from sweet corn fields. Improved design and field research is ongoing. For more information, visit https://sites.google.com/view/urilaserscarecrow/home

Effect of a laser beam treatment on bird damage to sweet corn fields. University of Rhode Island.

	Average Number o	Significance		
Trial Year	Untreated Control	Laser Treatment	(p-value)*	
2017	48.4	14.6	0.0002	
2018	23.8	13.7	0.0046	
2019	20.3	14.9	0.0332	

* A treatment is considered significantly different than the control if this value is 0.05 or less.

Cornell Device

Dr. Ali Nafchi, Precision Agriculture Specialist, formerly with the CCE Cornell Vegetable Program (currently at South Dakota State University) developed a laser scare crow of his own design. Five units were constructed in early 2021 as part of a project funded by the New York Farm Viability Institute. I, along with Marion Zuefle (NYS IPM) and Chuck Bornt (CCE Eastern NY Commercial Horticulture Program) will be testing these devices in commercial fields in New York this summer. Results will be presented at winter meetings and through other outreach avenues. We are working with the University of Rhode Island and with Dr. Nafchi and hope to combine the best features of each design.

Upcoming Events

Events are listed at CVP.CCE.CORNELL.EDU

Vegetable Pest and Cultural Management Field Meetings for Auction Growers July 23, 2021 (Friday) | 7:00 - 9:00pm David Swarey farm, Boyce Rd, Ovid NY 14521

1.75 recertification credits available in categories 23 (veg) and 24 (greenhouse). This course 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. Details on each topic will focus on field observations at the farm. FREE!

7:00 Welcome

7:05 Weed Control in Row Crop Vegetables

- Why? moisture competition; insect and disease management; Labor efficiency
- How? cultivation; herbicides; inter-row cover crops: spring seeding or winter rye; pros- and cons

7:45 Tomato and Potato Disease Updates

- Late blight and early blight updates
- Grafting for improved root-zone disease resistance in greenhouse and high tunnels

8:15 Cucurbits

- Greenhouse cucumber grafting for vigor and yield
- Downy mildew management: cucumbers, cantaloupes and watermelon
- Cucumber beetle, squash bug, stink bug
- Powdery mildew resistance and effective fungicide programs

8:45 Questions and Answer, other farm specific crop observations, and food safety news

9:00 Adjourn

DEC Recertification Credit Requirements: Attendees will present an ID and record their certification ID number, print name and sign the Recertification Training Roster. The roster will be secured by a Cornell Vegetable Program representative and only the attendees who sit for the entire course will be awarded a certificate.

For more information, contact Judson Reid at 585-313-8912.

Orleans Regional Vegetable Meeting

July 28, 2021 (Wednesday) | 6:30 - 8:30pm Gregg Rush Farms, 2021 Eagle Harbor - Waterport Rd, Albion, NY 14411

2 DEC credits available in 1a, 10, and 23. Field-walk style meeting with planned topics on soil health, pest control, and disease management. FREE! Pre-register by 12pm on 7/28 to Elizabeth Buck at 585-406-3419.

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VegEdge is the highly regarded newsletter produced by the Cornell Vegetable Program. It provides readers with information on upcoming meetings, pesticide updates, pest management strategies, cultural practices, marketing ideas and research results from Cornell University 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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Cornell Cooperative Extension Cornell Vegetable Program

For more information about our program, email cce-cvp@cornell.edu or visit CVP.CCE.CORNELL.EDU

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