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## **Storing Winter Squash and Pumpkins**

Jonathan R. Schultheis, Extension Horticultural Specialist; Charles W. Averre, Extension Plant Pathologist Department of Horticultural Science North Carolina Cooperative Extension Service, North Carolina State University

[At the end of each season, there always seems to be a change in the weather brining on a rush to get pumpkins and winter squash out of the field. Then later in the fall or early winter, there are calls about pumpkins or winter squash breaking down before their time. To get ahead of the game, you need to think about harvest and be ready to deal with an onslaught of tons of vine crops coming out of the field seemingly all at once. Below is a great article laying out the harvesting of pumpkins and squash in advance. ed. R. Hadad, CCE Cornell Vegetable Program]

#### WHEN TO HARVEST

Immature squash and pumpkins do not store well; therefore, be sure that fruit is mature before harvesting. Mature butternut, acorn and hubbard type squash have very hard skins that cannot be punctured with your thumb nail. Additionally, as squash mature, the fresh, bright, juvenile surface sheen changes to a dull, dry-appearing surface. Most true pumpkins have softer skin than those mentioned above but will exhibit the same surface appearance alterations.

Dead vines do not necessarily indicate the squash and pumpkins on the vines are mature. When vines die prematurely from disease, stress or early frost, fruits are usually immature,



Produce auction pumpkin sale. 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 in <u>two weeks</u> on September 15, 2021.

## Accumulated Growing Degree Days, 8/30/21

Julie Kikkert, CCE Cornell Vegetable Program Accumulated Growing Degree Days (AGDD) Base 50°F: April 1 - August 30, 2021

Location**	2021	2020	2019
Albion	2474	2260	2023
Arkport	2108	1957	1762
Bergen	2226	2200	1943
Brocton	2247	2171	1984
Buffalo*	2417	2355	2052
Burt	2121	2134	1865
Ceres	2004	1905	1870
Elba	2125	2098	1856
Fairville	2155	2157	1863
Farmington	2196	2169	1880
Fulton*	2146	2136	1874
Geneva	2239	2240	1985
Hammondsport	2118	2174	1884
Hanover	2232	2151	1967
Lodi	1843	2298	2024
Niagara Falls*	2370	2249	1966
Penn Yan*	2332	2333	2077
Rochester*	2279	2246	2145
Sodus	2323	2118	1822
South Bristol	2121	2130	1863
Varick	offline	2362	2086
Versailles	2151	2095	1929
Williamson	2118	2111	1809
* Ainn - nt - t - ti - n -			

\* Airport stations

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

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of low quality, and will not store as successfully as those grown on healthy vines which die naturally.

#### **GUARD AGAINST INJURY**

Whether in a home, garden or commercial planting, special care should be exercised to protect harvested fruit from excessively high (>95°F) and cold (<50°F) temperatures, asphyxiation, and mechanical injuries such as scratches, cuts or bruises. Not only are mechanical injuries unsightly, they also provide an easy entrance for various rot-producing organisms. Packing lines and all conveyances should be padded with old carpeting, foam rubber or similar shock-absorbing material. Ideally, large fruit, such as pumpkins, should not be stacked on top of each other. Padding material, such as grain straw, should be used liberally if fruits have to be stacked during harvest. If they must be stacked for shipping, they should never be more than three fruit deep.

#### **CURING AND STORAGE**

Storage facilities should be equipped with accurate temperature and humidity controls, and a system to provide at least one air exchange per day. A fan to provide air circulation is also recommended to maintain uniform temperature and

humidity throughout the storage room. There is limited information on the value of a curing period. Except for acorn types, which lose their quality during curing, experience tends to support a 10-day curing period with 80 to 85°F and a relative humidity of 80 to 85%. After the curing period, maintain temperatures as indicated in Table 1.

Table 1. Recommended optimum storage conditions for pumpkins and winter squashes

Туре	Relative Humidity	Temperature Conditions	Approximate Length of Storage	Remarks
Pumpkins	50 to 75%	50 to 55°F	2 to 3 months	Fruit should be mature. Don't store with apples.
Hubbards	70 to 75%	50 to 55°F	5 to 6 months	Stores well.
Acorn	50 to 75%	50°F	5 to 8 weeks	At temperatures >55°F, surface becomes yellow and flesh becomes stringy.
Butternut or Buttercups	50 to 75%	50°F	2 to 3 months	Keep from getting too cold.

When winter squash are removed from storage, they should be marketed or consumed immediately, as rot can develop quickly. Black rot, dry rot, and bacterial soft rot are the principal causes of spoilage in stored winter squash.

### NY Sweet Corn Trap Network Report, 8/31/2021

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

Statewide, 27 sites reported this week. European corn borer (ECB)- E was caught at 4 sites and ECB-Z was caught at 5 sites. The hybrid ECB was caught at three of the five sites trapping for it: Seneca Castle (1), Penn Yan (6) and Hurley (1). Corn earworm (CEW) was caught at 25 sites with 24 sites high enough to be on a 3, 4, 5 or 6 day spray schedule (see table below). Fall armyworm (FAW) was caught at 24 sites this week. Western bean cutworm (WBC) was caught at only 8 sites this week, Average trap catch for all the moths decreased this week, though CEW and FAW flights are still pretty high.

Averaç	ge Corn Earworm		
Per Day	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 80F for the previous 2-3 days.

It is important to correctly identify the larval pests in your corn so that management practices can be altered when needed. Here are images of the four larval pests that the Sweet Corn Pheromone Trap Network monitors (see images – ECB-E and Z look identical). To help with identification please also see the <u>Sweet Corn Larval Pest</u> <u>Identification fact sheet</u> (https://ecommons.cornell.edu/ handle/1813/57328).



WBC larva in CE

CEW larva in sweet corn

ECB larva in sweet corn



the inverted 'Y' on head capsule.

#### WNY Pheromone Trap Catches: August 31, 2021

Location	ECB-E	ECB-Z	ECB Hybrid	CEW	FAW	WBC	DD to Date
Batavia (Genesee)	0	1	NA	5	0	1	2266
Bellona (Yates)	0	1	0	73	45	0	2233
Brockport (Monroe)	NA	NA	NA	NA	NA	NA	2330
Collins (Erie)	0	8	0	6	0	0	2175
Eden (Erie)	0	0	NA	36	6	0	2286
Geneva (Ontario)	NA	NA	0	NA	NA	NA	2223
Hamlin (Monroe)	NA	NA	NA	NA	NA	NA	2258
Leroy (Genesee)	0	0	NA	71	12	0	2233
Lyndonville (Orleans)	0	0	NA	2	40	0	2243
Oswego (Oswego)	0	0	NA	9	7	0	2024
Panama (Chautauqua)	0	0	NA	1	0	0	2040
Penn Yan (Yates)	2	28	6	28	3	2	2170
Portville (Cattaraugus)	0	0	NA	7	2	4	2025
Ransomville (Niagara)	0	0	NA	2	15	9	2362
Seneca Castle (Ontario)	2	0	1	10	74	0	2188
Williamson (Wayne)	0	0	NA	56	32	NA	2149
ECB: European Corn Borer: CEW: Corn Farworm: FAW: Fall Armyworm: WBC: Western Bean							

Cutworm; NA: not available; DD: Degree Day based on accumulation starting April 1 (base 86/50) to estimate second generation ECB development

## Monitoring for European Corn Borer in Peppers

Elizabeth Buck, Cornell Cooperative Extension, Cornell Vegetable Program

Three years ago I could say with confidence that growers could concentrate their European corn borer (ECB) management activities based on the ECB numbers in the Sweet Corn Pheromone Trap Report (located on page 3). The report shows when European corn borer adults are active in your area. Once adult flight activity picks up, pepper growers should scout their fields looking for the pale to cream colored, fish scale-patterned egg masses on the undersides of leaves. Scouting should be done twice a week and extend about 10 days after the end of the flight period. Remember from last week's issue of VegEdge, you have to scout twice a week because eggs can hatch in only 4 days in warm weather and because you have to spray right at hatching to get effective control.

Lately, figuring out the risk windows for European corn borer damage is more difficult. For a long time there have been 2 races of ECB present in NY, called race E and race Z. Think of them as two different colors of Labrador retrievers, black for race E and yellow for race Z, if you will. Lately there's a new race of ECB showing up in NY called the hybrid race. I'm going to refer to it as the chocolate lab.

We have a long history of trapping for the black (race E) and yellow lab (race Z) varieties. We know how many degree days it takes for the adults to emerge, how long the flight should last, and how long after peak flight eggs hatch and damage begins for race E and race Z. We know that there are two flights a year of the race E black labs and that there could be one or two flights of the race Z variety. This rich understanding of the race E and Z population dynamics allowed us to confidently recommend that pepper growers could control ECB by watching the trap counts to time scouting and/or sprays according to the flights.

## ASSESSING RISK FOR EUROPEAN CORN BORER INFESTATIONS IN PEPPER

The hybrid race undermines our confidence in relying only on the trap counts to provide high levels of control because we don't know enough about the flight and developmental windows of this (chocolate lab) race. Researchers are learning how to successfully trap the hybrid race and just starting to develop insight into how long flights last, how many flights, how long until eggs hatch, and which crops the hybrid race prefers.

So, are the corn traps a useful tool? Yes, absolutely. If there is a flight of the black or yellow lab varieties (races E & Z), you are at elevated risk of having a European corn borer infestation in your peppers. Can you rely solely on the traps? No, now we have to assume a general background level of risk during the fruiting period. Only conducting pepper scouting (and spraying) tasks based on when there are trap catches could miss ECB egg laying and infestation windows. Until we have a better understanding of how the chocolate lab hybrids behave and develop, I expect we will continue to see egg masses and damage in production windows that don't align with the predictable black & yellow lab race E and Z flights.

#### WHAT ELSE CONTRIBUTES TO ELEVATED RISK?

The race E and Z corn borers prefer to lay eggs in corn. They are picky about staging, though. Both want to lay eggs on whorl stage corn and don't bother corn very much after tasseling. If the European corn borer cannot find corn of a suitable stage they will look for other host plants. This means that pepper plantings are at higher risk when surrounding cornfields have outgrown the whorl stage and are no longer attractive to the moths. In wet springs that delay field corn planting we can sometimes have peppers get attacked because the field corn is too little to be attractive when the first batch of adults begin flying. The size of the overall population contributes to risk, with more pressure leading to more problems in peppers. For the race E black labs that have 2 generations, risk can be higher for damage in the second generation if the first generation is left uncontrolled.

## Seeking Farmer Participation: How Do You Know Your Price is Right and Your Investment is Protected?

#### Robert Hadad, Cornell Cooperative Extension, Cornell Vegetable Program

Attention produce farmers! Do you wonder about prices for your crops, hiring workers, or managing risks? The Cornell Cooperative Extension Program, NOFA-NY, and the Agricultural Justice Project are collaborating on an effort to help farmers succeed through improved financial management and better understanding of crop insurance options. Your participation and advice will make this project stronger! Please consider joining our farmer advisory board. The tasks will include review of returned farmer surveys, providing feedback on our training sessions, and assisting with the overall evaluation of the program's usefulness to farmers.

If you'd like to participate, please <u>fill out this short online survey</u>. For more information or to receive a paper version of the survey, contact: Robert Hadad, Regional Vegetable Specialist with Cornell Cooperative Extension, at <u>rgh26@cornell.edu</u>.

## Spinach Downy Mildew Becoming More Prevalent in the Northeast

Julie Kikkert, Cornell Cooperative Extension, Cornell Vegetable Program

Downy mildew (DM) is the most prevalent and problematic disease of spinach worldwide according to expert Dr. James Correll at the University of Arkansas. The disease has been observed on spinach in the Northeast since 2014 (after a break of about 15 years) and since then has become more widespread both in high tunnel and field production. Last season, I identified DM in some large processing fields in western, NY. In January 2021, I attended a webinar on spinach DM, part of the Southern New England Vegetable Growers' Webinar Series, hosted by the Universities of CT, MA, and RI Extensions. The Virtual Winter Greens Field Day webinar is available on UMass Amherst Extension Vegetable Program's YouTube channel. The webinar featured Dr. James Correll (Univ. Arkansas) who presented an overview of spinach DM biology and control, and Genevieve Higgins and Sue Scheufele from the Univ. of Massachusetts Extension who presented their work on spinach variety trials and production.

Downy Mildew in spinach is caused by Peronospora farinose f. sp. *spinaciae*. According to Dr. Margaret McGrath, Cornell, pathogens causing downy mildew are Oomycetes and thus related to the late blight pathogen. They are similarly able to produce an abundance of wind-dispersed spores capable of moving long distances, do not need leaves to be wet to infect (high humidity is sufficient), and can devastate crops. Growers should inspect their spinach crop routinely. Upper leaf surfaces will be yellow. Flipping over the leaf will reveal the characteristic purplish-gray, fuzzy growth of the pathogen. Early morning is the best time to see the spores because they are produced overnight and then dispersed during the day.

#### **RESISTANT VARIETIES**

One of the best management strategies is to plant resistant varieties and to use varieties with different resistance genes to avoid DM spreading from field to field. Most spinach varieties are hybrids because there are separate male and female plants. DM resistance varies depending on what R (resistance genes) are present in the male and female plants, which are combined in the production of hybrids. There are 17 known races of spinach DM, with a possible race 18 & 19 that are being characterized in the laboratory. According to Dr. Correll, DM can occur in a field for a couple of reasons:

- 1. There is a "hole" in the resistance genes in a variety (i.e. the variety is not resistant to all races of the pathogen).
- 2. A novel strain is present in the field.
- 3. A female plant can produce some pollen and fertilize itself creating an inbred line and would only carry the resistance genes from the female plant. These are typically observed as hot spots of DM in a field where the inbred plants are scattered in the field.

So far in the Northeast, 33 isolates have been collected from 2016-2020. Of those that Dr. Correll's lab has evaluated, 5 were race 12, 2 were race 14, and 11 were one of the six novel strains – those that haven't been designated because they are not widespread enough to get an official race number.

#### MINIMIZE INOCULUM

Spinach DM only infects spinach (as far as researchers know) and the organism must complete its life cycle on spinach. It is favored by cool wet weather but can do well over a wide range of conditions. Researchers are studying the sources of inoculum, which could be volunteer plants, local gardens, or oospores on seed which could possibly infect a low percent of plants. Weeds and other crops are not a source of inoculum. **Therefore, good crop rotation is important!** Dr. Correll adds that the biology of spinach DM is complex, and it is difficult to answer where the pathogen originated in a field. Spinach DM produces two spore forms -asexual sporangia that are spread by wind or splashed rain and oospores that form from sexual recombination and can last for long periods of time in soil or on or in seed. Oospores have been found infesting spinach seed, but scientists have not been able to demonstrate in controlled trials that these oospores actually germinate and cause disease – but they could be doing so in the field.



Underside of a spinach leaf with DM lesions, note purple sporulation. *Photo by J. Kikkert, CCE Cornell Vegetable Program* 

#### **CHEMICAL CONTROL**

Many conventional fungicides are registered for DM control in spinach. See the 2021 Cornell Vegetable Guidelines. Be sure to rotate fungicide classes for resistance management. There are no effective OMRI-approved fungicides available according to Dr. Correll.

#### FOR MORE INFORMATION

The <u>Cornell Spinach DM factsheet</u> was recently updated and is available online or by contacting our office.

## **CR** P Insights

#### Observations from the Field and Research-Based Recommendations

#### CARROTS

As harvest ramps up in September, keep an eye on leaf spot diseases in fields that still have a long way until harvest. <u>Alternaria leaf blight</u> is the biggest concern because it can blow up quickly. Alternaria first appears as deep brown to black irregular spots on the margins of the leaflets. Lesions on the petioles and stems are deep brown and girdle the stems, killing them. As the disease progresses, entire leaflets may shrivel and die. Lesions are more prevalent in older foliage. <u>Cercospora leaf spots</u> may also be present, although it is more prevalent in 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>Bacterial lesions</u> are small yellow areas on the leaflets with brown, dry centers which are often surrounded by a yellow halo. <u>While sprays with Bravo fungicide (group M5) will control both Alternaria and Cercospora, 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 PHI (preharvest interval). There are several other fungicides labeled for carrots and are outlined in the 2021 Cornell Vegetable Guidelines. Choices should be based on what organisms you are trying to control, cost, and PHI. – JK</u>

#### **COLE CROPS**

Alternaria is showing up on plantings, and it appears to be enjoying the conditions. Alternaria will strike most cole crops and can cause high losses in broccoli and cauliflower. Brussels sprouts can be ruined by lesions on the sprouts themselves. Alternaria begins on the lower frame leaves and progresses up the plant, producing round lesions that contain rings. Head spots are black and in broccoli head decay follows quickly. Once Alternaria begins it cannot be managed with protectants like chlorothalonil (ie Bravo). **Alternaria is no longer reliably controlled by Quadris.** Use of other group 11 fungicides is unlikely to yield control. Effective materials include 7 day PHI materials Inspire Super and Switch, which share a common ingredient and should not be rotated with one another. Shorter PHI materials are Endura and Luna Sensation. We are collecting Alternaria for further resistance testing & research to determine effective fungicide programs, please give us a call if you're willing to submit samples.

#### **DRY BEANS**

Bacterial blight has been found on dry beans in the region. Copper may help slow the spread of bacterial blight if disease pressure is still low in your field, though pesticides are generally not effective in managing bacterial diseases in dry beans. In fields that have had blight, deeply incorporate any debris remaining in the field, rotate away from legumes for 2-3 years to reduce chances of future beans being infected, and sanitize any equipment used in fields with infected beans. – ML

#### ONIONS

The vast majority of the crop has had sprout inhibitor applied and is in varying stages of lodging, which ranges from gorgeous green "heavy-weight" foliage with roots holding on to "dying standing up" with no green foliage and the roots have let go (Fig. 1). Many of the onions that are dying standing up have soft necks and are capable of lodging, but just don't have the foliage weight to fall over (= "light-weights", Fig. 1). Other plants that appear to be dying standing up have reverted back to vegetative growth (growing new leaves). Such plants do not have soft necks, will never lodge and will become "stiff necks" (Fig. 2). I also refer to such plants as "they don't know its over". Because these plants are growing new leaves



Bacterial infection on a dry bean pod. Pods will develop water-soaked spots that develop a rusty red ring around the border. *Photo by M. Lund, CCE CVP* 

instead of bulbing the bulbs will not size up and it will take longer to dry the neck down once they are undercut.

We have seen above average incidence of foliar symptoms of bacterial disease this season, a likely function of above average rainfall in July. However, we have seen very few rotten bulbs in the field and majority of foliar symptoms appear to be contained within 1-2 leaves, as opposed to having progressed to multiple leaves in center of plant. So, it will be interesting to see how much bulb rot actually transpires. Topping/harvesting onions when the neck tissue is green increases the risk of bacterial bulb rot and should be avoided. Neck tissue is dry when it does not slide between your fingers when rolled. Also, leaving 3-4 inches of neck length can buffer against bacterial infections from making their way to the bulb. See "The Rot Race" article in July 28 issue of VegEdge. If onions are topped/harvested before the neck tissue is completely dry, artificially curing them may be helpful to decrease incidence of bacterial bulb rot. Last year, we did a grower demonstration that showed that onions that were stacked in boxes on a drying wall with forced air heated to 88°F for 3 days immediately after harvest had half as much rot as those that were naturally cured (8% vs. 16%). We are planning to conduct more of these experiments this fall. -CH



Figure 1. Lodging onions range from gorgeous "heavy weight" green foliage (top left) to where foliage is almost dried down (top right) to dying standing up with mostly green foliage (bottom left) to no green foliage (bottom right). *Photos by CCE Cornell Vegetable Program* 

#### **PEPPERS**

Anthracnose is taking advantage of sun scalded spots.

#### **POTATOES**

Simcast forecasting indicates that the Arkport, Brant, Ceres, Farmington, Fulton, Rochester, Versailles, and Wellsville stations have surpassed the 30 blight units (BU) needed to trigger a spray for late blight. Many other sites are expected to surpass 30 BU by the end of the week. No new reports of late blight have been made in the last week. Late blight has been previously reported in GA, ME, NC, Ontario, TN, and WI this season. – ML

#### **SPINACH**

See the article on page 5 about downy mildew. To help in identification of other problems this season, refer to article "Spinach Leaf Disorders" in the <u>September 2,</u> 2020 issue of VegEdge or contact our office for a copy.

#### Late Blight Risk Chart, 9/1/21

Location	Blight Units 8/25-8/31 <sup>1</sup>	Blight Units 9/1-9/3²	Location	Blight Units 8/25-8/31	Blight Units 9/1-9/3
Albion	5	11	Geneva	15	13
Arkport	39	17	Hammondsport	29	13
Baldwinsville	0	12	Knowlesville	18	12
Bergen	22	11	Lyndonville	24	17
Brant	32	18	Medina	21	17
Buffalo	6	16	Niagara Falls	7	6
Burt	12	6	Penn Yan	25	20
Ceres	49	18	Rochester	31	19
Elba	28	17	Sodus	25	12
Fairville	16	18	Versailles	34	18
Farmington	38	20	Wellsville	49	18
Fulton	42	20	Williamson	5	6

Calculated using a May 26 crop emergence date. Last fungicide application Aug 25 on susceptible cultivar Reba.

1 Past week Simcast Blight Units (BU)

2 Three-day predicted Simcast Blight Units (BU)

Often a microscope is needed to identify the leaf spot diseases that can affect spinach. Let us know if we can assist you. For control measures, refer to the 2021 Cornell Vegetable Guidelines. – JK

#### **SQUASH**

Vines infected with virus can produce undersized fruit that ripen unevenly or have off-colors. In pumpkin this may manifest as fruit that land more in the school bus than the deep orange color range or fruit that have persistent green streaking or flecking. Such streaked fruits are displaying a mosaic and will never fully color up.

A reminder that powdery mildew weakens handles – controlling powdery can increase the marketability of your crop.

It may seem silly to spray winter squash as the vines die back and the fruit approaches maturity. Last year a number of growers got caught with a slew of various fruit rots that could have been prevented by fungicide applications in this time frame.

#### **SWEET CORN**

There's a higher than normal level of foliar diseases in corn: rust and northern corn leaf blight. Of the two, northern corn leaf blight is more prevalent. You can recognize it by the long, gray, cigar-shaped lesions. If sweet corn had a decent market, then I'd suggest treating your very late plantings that are showing this disease. This year might not be worth it.

#### TOMATOES

Late blight is just across Lake Erie. Watch the weather patterns and scout often, please. Seeing plantings with bacterial speck & spot, bacterial canker start to go backwards and fruit quality dropping as plants. Anthracnose is setting in.



Figure 2. The upright plants with green foliage are "stiff necks" and "don't know it's over", because they have reverted to growing new leaves instead of bulbing. These plants will never lodge or put on more bulb size and the necks will take longer to dry down. *Photo by S. Caldwell, CCE* 

## **Anaerobic Soil Disinfestation Workshop Summary**

#### Anya Osatuke, Cornell Cooperative Extension, Harvest New York

Central State University and the United States Department of Agriculture (USDA) organized a workshop demonstrating how to use anaerobic soil disinfestation (ASD) to organically fumigate soil. It was held on August 26, 2021 in Ashland, Ohio. The workshop was hosted by Jeni and Bob Filbrun, who manage the farm Earthin Goods.

ASD was discovered by Japanese and Dutch researchers after studying the decrease in crop diseases after field flooding. This technique is gaining traction in the United States as an alternative to fumigation with pesticidal gases. By promoting the activity of anaerobic microbes in soil for several weeks, pathogens and weed seeds can be suffocated and killed. The soil is then allowed to purge the gases for a couple days. After this the growers are ready to plant.

The demonstration at Earthin Goods was done under a high tunnel for tomato production. Jeni and Bob have been using ASD for the past 4 years in this high tunnel. Dr. Anna Testen, a plant pathologist for the USDA, walked us through the essential steps of ASD.

- 1. Plan to do ASD between mid-spring (March April) and early fall (August -September). The soil needs to get up to 85°F during the process, therefore doing ASD in colder months would not work well.
- 2. Remove all plant material from the treated areas.
- 3. Apply a carbon source to the top 6 8 inches of the soil at a rate of 0.413 lbs per square foot of area. This is equivalent to 9 tons per acre. Some people apply at rates as low as 4 tons per acre / 0.184 lbs per square foot. This demonstration used a combination of wheat mids and molasses. The wheat mids were added first. Wheat mids are hard and fine, they need to be roto-tilled into the soil to be mixed in well. Molasses should be diluted to 1/3 or 1/4 volume with water. Molasses can simply be poured onto the soil with watering cans.
- 4. Irrigate the soil so that it is fully saturated.
- 5. Cover the soil in a thick plastic to trap the gases. A plastic mulch between 2 4 mm thick works well. Do not use biodegradable mulches. Cover edges of mulch with sterile bagged soil so no air can enter.
- 6. Keep soil moist for 3 5 weeks. If soil is loamy and high in organic matter, additional watering is not required. If soil is welldrained, sandy, or gravely, irrigate during dry spells.
- 7. After 3 5 weeks, poke holes in the plastic to allow the gases to release. The soil should smell like rotting materials because the anaerobic bacteria create unpleasant gases, such as acetic acid and butyric acid.
- 8. After 5 7 days, plant your next crop.

Central State University filmed the event and will be releasing a workshop video later this year.

To learn more about ASD, check out <u>Ohio State University's fact sheet</u> on the subject or look through the <u>University of Florida's informative PowerPoint Presentation</u>.

It is well established that ASD is a good way to prevent diseases in vegetable crops. <u>Strawberry producers</u> in <u>California also rely on ASD as an organic disease control method</u>, and Cornell Cooperative Extension is working with Maine Organic Farmers and Garden to look into ASD's efficacy for strawberry production in the Northeast.



## Corn Earworm Management in Sweet Corn Survey

#### Anna Wallingford, Entomology & Integrated Pest Management, University of New Hampshire Cooperative Extension

Dr. Kelly Hamby, Associate Professor/Extension Specialist with the Department of Entomology at University of Maryland, is leading a team of researchers who have developed a survey to prioritize research and extension efforts for improving corn earworm management in sweet corn throughout the Northeast. We appreciate your participation in this survey and will use results to develop a grant proposal to try to get federal funding to address these needs.

Survey link: <a href="https://ume.qualtrics.com/jfe/form/SV\_9vRh1xHnDp4KEaa">https://ume.qualtrics.com/jfe/form/SV\_9vRh1xHnDp4KEaa</a>

## **Upcoming Events**

Events are listed at CVP.CCE.CORNELL.EDU

#### Dry Bean Twilight Meeting

September 8, 2021 (Wednesday) | 4:30pm - 6:00pm Duyssen Farms shop, 6861 E Bethany Rd, LeRoy, NY 14482

CCE Cornell Vegetable Program, NYS IPM, and Cornell Faculty will be attending this twilight meeting to share updates on Western bean cutworm trapping, white mold management, soybean cyst nematodes and field mapping, and pigweed identification and resistance screening. 1.5 DEC recertification credits (categories 10, 1a, 21, and 23) and CCA credits will be available. See the full meeting agenda at CVP.CCE.CORNELL.EDU

After the meeting, stick around to enjoy dinner and network with other dry bean growers and industry members. Thank you to New York Bean and Genesee Valley Bean for sponsoring the meal and meeting!

COST AND REGISTRATION: \$5. Pre-registration is required for dinner. <u>Register and pay online</u> at CVP.CCE.CORNELL.EDU or call Margie at 607-377-9109 and pay cash at the door. If you do not pre-register, you are still more than welcome to attend, but dinner is not guaranteed.

#### Virtual Twilight Workshop Series from SCRUB: Bubblers/Aerators for Greens Washing October 6, 2021 (Wednesday) | 6:30pm - 8:30pm Online

Sanitizing and Cleaning Resources for Your Business (SCRUB) is a multistate/organization collaboration of food safety educators and specialists working to assist fresh produce farmers with successfully implementing farm food safety practices. Participating in developing and assisting farmers are Extension people from Cornell, U. Vermont, Michigan St. Univ, and the National Farmers Union. To see the complete workshop topic listing: <u>https://go.uvm.edu/scrubevents</u>

October 6 is with a panel of NY growers (but don't hesitate to sign up for any of the other programs in this series and hear what growers from other states are doing!) This meeting is for growers wanting to install or improve a greens bubbler/aerator. Get feedback from growers who built/improved their own systems. Examine designs and DYI resources, as well as perceived quality and efficiency gains from bubblers as compared to other washing methods.

At the workshop, all participating growers will share their knowledge and discuss challenges, successes, plans, resources or just ask questions on operation and cleaning of bubbler/aerators. Participating farms will then be eligible for individual technical assistance with related projects. The workshop will be recorded and posted later.

Space is limited! To register, complete this form by Friday, October 1: <u>https://forms.gle/JYVeJVdfUKsGh3dz9</u> Contact Robert Hadad for more details, <u>rgh26@cornell.edu</u>

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## **Cornell Cooperative Extension** Cornell Vegetable Program

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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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Julie Kikkert, Team Leader | 585-313-8160 cell | jrk2@cornell.edu processing crops (table beets, carrots, peas, snap beans, sweet corn)

**Margie Lund** | 607-377-9109 cell | mel296@cornell.edu potatoes, dry beans, and post-harvest handling and storage

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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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