

NOVEMBER 2021

# THE PRODUCE PAGES

Serving the fruit and  
vegetable growers of  
Eastern New York

## 2021 Pea Variety Trial

Feature Story

*Crystal Stewart Courtens  
and Natasha Field, CCE ENYCHP*

Very little work has been done to explore either varieties or growing techniques for fresh market peas in the last decade, although there have been both breeding advances and shifts in growing technique as the use of high tunnels has become more prevalent. This trial seeks to explore emerging varieties of shell and snap peas and to determine the suitability of a wide range of pea varieties to high tunnel production.

The second year of this trial was planted in a high tunnel at Philia Farm in Johnstown, NY, on March 24th, 2021. All varieties were trellised, a best practice for tunnel growing. Three replications were planted in a randomized complete block design. Each replicated plot was five feet long. Varieties were harvested until they either stopped producing pods or the pods became unmarketable. Data were

collected on yield per plot, pod size, and taste.

The original plan was to have a paired comparison to the tunnel trial outside but due to unusually high seedcorn maggot pressure, this planting failed and was removed.

The weather was extremely hot in the early season and had an effect on the taste of the peas in the second week of harvest, lowering average taste ratings compared to 2020. The peas grew and produced extremely well this year and overall yield may not be repeatable in other locations and years.

Cornell Cooperative Extension  
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The *Produce Pages* is a monthly publication of the Eastern New York Commercial Horticulture Program. For more information about the program, please visit our website at <http://enych.cce.cornell.edu/>.

*Serving the Educational and Research Needs of the Commercial Small Fruit, Vegetable and Tree Fruit Industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties.*



#### Shell Varieties

- Lincoln
- PLS 14
- PLS 534
- PLS 560
- PLS 566
- PLS 595

#### Other Varieties

- Parsley Pea

#### Snap Varieties

- SS 141
- SS 32
- SS 473
- Sugar Daddy
- Super Sugar Snap
- Tendersweet

### Notable Varieties

**Shell:** Lincoln was the highest yielding variety by a significant margin but it is susceptible to powdery mildew and we saw that right at the end of harvest. Lincoln seems to be good in tunnels early but there may be issues with PM in the field. Both PLS595 and PLS566 yielded similarly but we like the pod size and extremely uniform fill of PLS595 better.

**Snap:** Super Sugar Snap continues to dominate yields. Notably, it really needs to be trellised for best production. SS141 also impressed with yield. SS32 was interesting due to its small pod size but it produced a huge amount of pods to make up for that smaller pod size and yielded very well.

For more comparative information, see the data tables at the end of this report.

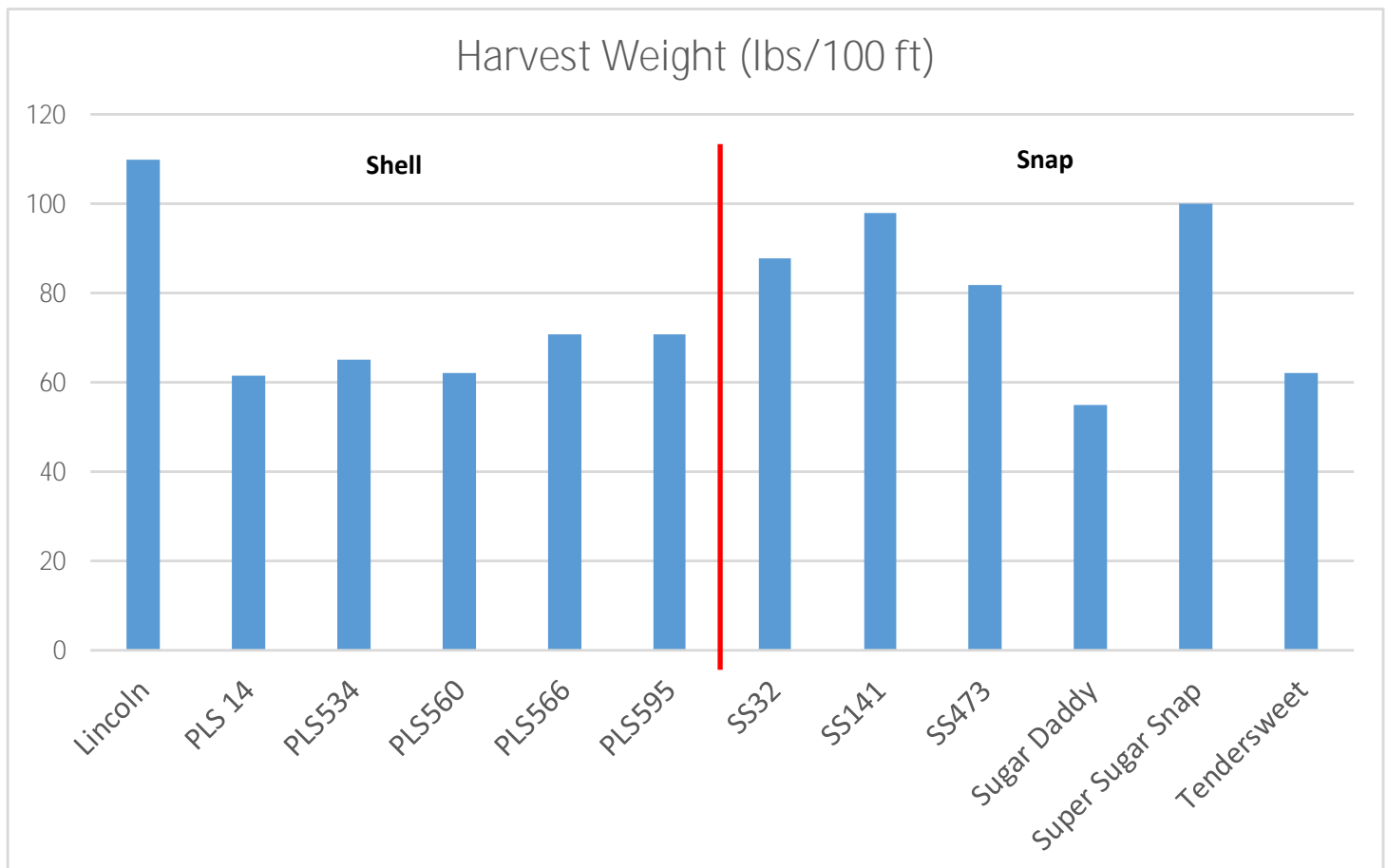
### Details for Shell Peas

#### Lincoln

- From Fedco Seeds: "Vines up to 3' bear 3-3½" slender curved pods with heaviest production in mid-July. Consistently 6-8 peas per pod. Susceptible to PM and other diseases so a good choice only if you can get on your ground in early spring. Tolerant to common wilt race 1".
- Total of 264 oz harvested over 14 days equal to 110 lbs per hundred foot row
- Longest days to maturity, short harvest window of about 2 weeks
- Had some powdery mildew issues in the high tunnel towards the end of harvest.
- Averaged 4 out of 5 for taste
- Tasty and sweet

#### PLS 14

- From Pure Line Seeds: "Plants are 24-30" tall with plenty of foliage and vigor. The plant stems and leaves are an attractive dark blue-green, while pea pods themselves stand out against the foliage with bright green color for n easy harvest."
- Had some powdery mildew issues in the high tunnel towards the end of harvest.





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- Total of 147 oz harvested over 13 days equal to 61 lbs per hundred foot row
- Short harvest window of about 2 weeks
- Averaged 3.8 out of 5 for taste
- Bright flavor and a little sweet, not a strong taste

#### **PLS 534**

- From Pure Line Seeds: “PLS 534 is a second early Afila developed at Pure Line Seed’s research facility. Double pods filled with 8-9 peas create fantastic yields. This pea is resistant to Fusarium Wilt Race 1, Race 2, and Fusarium Root Rot.”
- Total of 156 oz harvested over 4 weeks equal to 65 lbs per hundred foot row
- Longest harvest window of 5 weeks
- Averaged 3.8 out of 5 for taste
- Sweet and delicious

#### **PLS 560**

- From Pure Line Seeds: “The long pointed pods of PLS 560 fill to the tip with 10-12 dark green peas of excellent flavor. These nice, light green pods really stand out against the dark blue-green foliage. A strong-stemmed variety – it holds upright throughout the season, making harvest quick and very rewarding.”
- Total of 149 oz harvested over 2 weeks equal to 62 lbs per hundred foot row
- Short harvest window of about 2 weeks
- Averaged 3.8 out of 5 for taste
- Strong pea flavor

#### **PLS 566**

- From Pure Line Seeds: “Recent trials of PLS 566 have shown this pea’s capability to return tremendous yields. These long light green pods really stand out against the strong, dark blue-green Afila vine. With two pods per node and 10-12 peas per pod.”
- Total of 170 oz harvested over 3 weeks equal to 71 lbs per hundred foot row
- Averaged 3.5 out of 5 for taste
- A little bland but still tasty

#### **PLS 595**

- From Pure Line Seeds: “Plants will produce long pods, with on average 11 peas in each pod. Pure Line says: “Fresh market customers are raving about the ease of hand-picking due to high set of pods in plant and upright plant type.”
- Total of 170 oz harvested over 3 weeks equal to 71 lbs per hundred foot row
- Largest pods of all the shell varieties, 10 or more peas to a pod
- Averaged 4 out of 5 for taste
- Sweet and tasty



## Details for Snap Peas

### SS 32

- From Pure Line Seeds
- Pre-commercial so no information available
- Total of 211 oz harvested over 4 weeks equal to 88 lbs per hundred foot row
- Small pods, but well filled
- Lots of small pods
- Averaged 4.3 out of 5 for taste
- Very sweet and tasty

### SS 141

- From Pure Line Seeds: "Compact plant that forms a heavy set of extra-long, extra tasty pods that ripen within a short window. This strongly improved snap pea offers very high yield potential. Suitable for multiple succession plantings."
- Total of 235 oz harvested over 4 weeks equal to 98 lbs per hundred foot row
- Averaged 3.3 out of 5 for taste
- Not very sweet but tasty

### SS473

- From Pure Line Seeds
- Pre-commercial production so no information
- Total of 197 oz harvested over 3 weeks equal to 82 lbs per hundred foot row
- Averaged 3.5 out of 5 for taste
- Interesting taste, very nice

### Sugar Daddy

- From Pure Line Seeds
- Total of 132 oz harvested over 3 weeks equal to 55 lbs per hundred foot row
- Had some pod fill issues, with severe curving and only one pea per pod, possibly due to the heat
- Averaged 4 out of 5 for taste
- Strong pea flavor and a little sweet

### Super Sugar Snap

- From Harris Seeds: "This improvement to the original Sugar Snap offers earlier maturity, PM resistance, and intermediate resistance to bean leaf roll virus. Super Sugar Snap's tall 4 to 5' vines need support."
- Total of 240 oz harvested over 4 weeks equal to 100 lbs per hundred foot row
- Biggest pods and plants were extremely tall
- Averaged 4.3 out of 5 for taste
- Bright, refreshing taste, delicious

### Tendersweet

- From Pure Line Seeds: "Heavy yielding variety with extra-large, stringless pods. Vigorous plants keep yielding for multiple picks."
- Total of 149 oz harvested over 4 weeks equal to 62 lbs per hundred foot row
- Averaged 4.2 out of 5 for taste
- Good pea flavor, tasty



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## Other

### Parsley Pea

- From Pure Line Seeds
- Garnish peas
- Interesting to grow, tasted like peas, very tasty!
- 5 feet filled a half size harvest tote, so definitely good yielding. Trellising and keeping them clean may be a little bit of an issue depending on how and when you harvest. They have the leaves instead of tendrils so they aren't able to grab a trellis in the same way. We did think the Florida weave worked decently with them since the garnish parts flopped over the twine to hold the plants up. Might be worth harvesting 2/3 of the ends and keeping 1/3 for support. You might need to do multiple plantings as they are pretty determinate with regular removing of garnishes. We recommend using clippers to harvest.



**Thank you to Pure Line Seeds, Fedco Seeds, High Mowing Seeds, and Harris Seeds for providing seed for this trial!**

## Fall Scab Inoculum Reduction Strategies for Problem Orchards

David A. Rosenberger and Kerik D. Cox, edits by Mike Basedow

While scab was relatively light in 2021 throughout much of the Eastern NY region, there may be some problem blocks here and there that would benefit from inoculum reduction strategies this fall. The objective of inoculum reduction is to eliminate a large proportion of the ascospores that would otherwise be produced in overwintering leaves. Fungicides applied next spring will be more effective when applied in these reduced inoculum orchards. Inoculum reduction strategies have no value in orchards that did not have apple scab last year. Thus, the need for inoculum reduction must be assessed on a block-by-block basis, and in some cases may be needed only for scab-susceptible cultivars within a block. Ascospore reduction strategies will be beneficial for treated blocks even if the neighboring block is not treated, because studies have shown that effects of ascospore dissemination from large inoculum sources are usually visible only on those trees

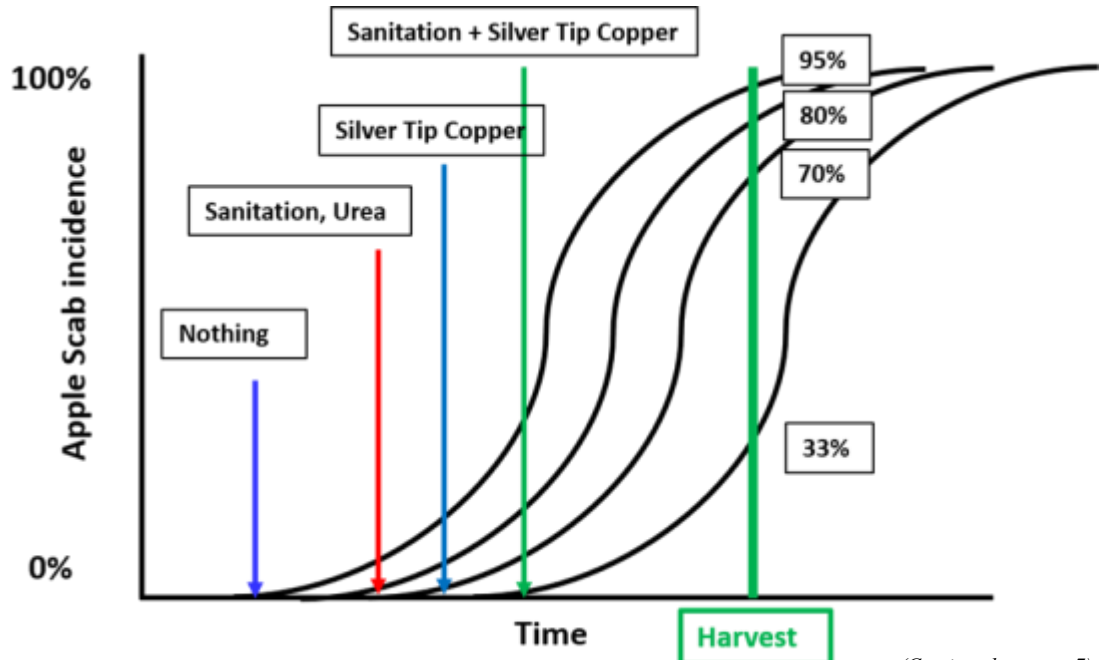
*While fall sanitation and urea will not eliminate 100% of the overwintering ascospores on the orchard floor, they can reduce inoculum up to 80% or more. This helps to decrease scab incidence the following season, particularly when used alongside a silver tip copper application and well-timed spring fungicides in an integrated scab management program.*

*Figure by K. Cox.*

located within 100 feet of the inoculum source (Gomez et al., 2007; MacHardy, 1996).

Four approaches for inoculum reduction have proven effective in controlled studies in commercial orchards:

- a. Urea sprays (40 lb urea/A) applied to fallen leaves in autumn or spring (Sutton et al., 2000).
- b. Shredding of leaf litter with a flail mower (Sutton et al., 2000).



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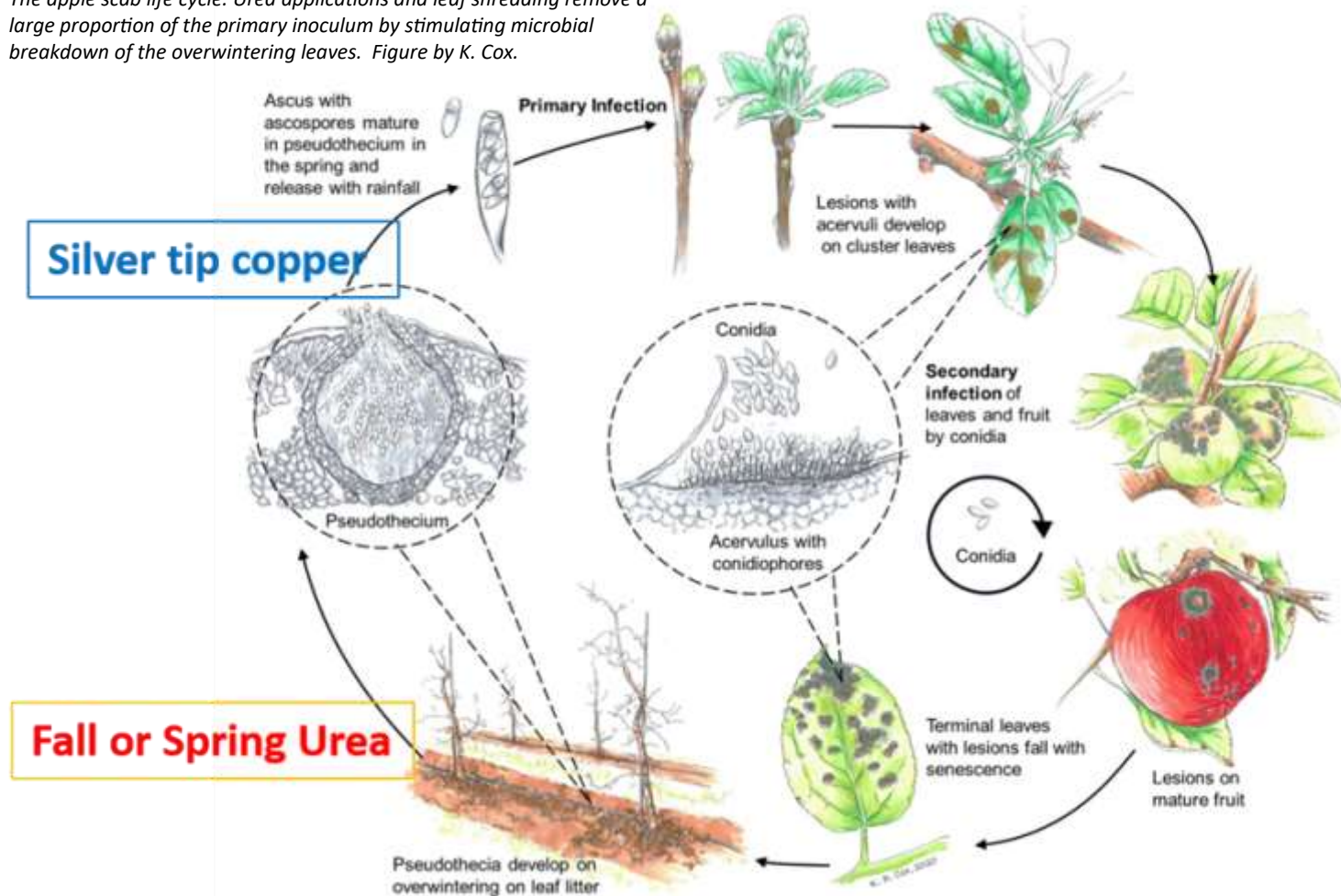
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- c. Application of dolomitic lime (2.5 ton/A) over fallen leaves in autumn (Spotts et al., 1997).
- d. Removing leaf litter by raking, sweeping, or vacuuming leaves and removing them from the orchard (Gomez et al., 2007).

None of these approaches will eliminate 100% of the ascospores, but any one of them can reduce inoculum production by **80% or more**.

Urea applications to the orchard floor work by stimulating microbial breakdown of overwintering leaves. When using urea for inoculum reduction, each acre should be sprayed with 40 lbs of feed grade urea fertilizer dissolved in 100 gallons of water. It may be necessary to dissolve the urea prills in hot water before dumping them into a sprayer, because the prills may dissolve slowly in ice water pumped from a pond in late fall or early spring. Take care to flush the sprayer pumps with water afterwards since the urea is caustic and can corrode a pump over time. Applications as late as green tip can still reduce the numbers of ascospore available during peak discharge periods between tight cluster and bloom. The use of orchard floor urea may also reduce inoculum of other diseases (e.g. Marssonina blight, Bitter rot, and Black rot) as it hastens decomposition of leaf litter, fruit drops, and pruned shoots that harbor the pathogens causing foliar diseases, cankers, and summer fruit rots.

*The apple scab life cycle. Urea applications and leaf shredding remove a large proportion of the primary inoculum by stimulating microbial breakdown of the overwintering leaves. Figure by K. Cox.*



In addition to orchard floor applications, urea can be applied to leaves still on the trees in late fall. However, this is less effective if the leaves do not fall off the trees within seven days, as the nitrogen will instead be taken up by the tree and will then be less available for leaf breakdown (Sundin and Irish-Brown, 2011).

Urea fertilizer contains 46% actual nitrogen in a highly soluble form. The portion of the urea spray that falls within the herbicide strip beneath the tree canopy (or inside the drip-line) will ultimately contribute somewhat to nitrogen fertilization of the trees whereas the portion of the spray that is applied to the sodded row middles will be utilized primarily by the ground cover. Nitrogen fertilizer rates may need to be adjusted accordingly for orchards where urea is applied in spring. Using urea at less than 40 lb/A may have some effect on inoculum reduction, but benefits of lower rates of urea have not been adequately researched.

Where the addition of nitrogen is undesirable for horticultural reasons, leaf shredding with a flail mower may be a better option for reducing scab inoculum. Shredding leaf litter with a flail mower can reduce inoculum in several ways. First, it provides more “edges” in the leaf litter for invasion by the microflora that cause the leaves to decay. Second, if flail mowing is done in spring, the chopping action will result in re-orientation of most leaf pieces on the orchard floor and many ascospores will discharge into the soil rather than into the air. Effective leaf shredding can be accomplished only with a flail mower that is set so low that it nearly scalps the sod in the row

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middles. Effectiveness is also dependent on having a level orchard floor and on being able to shred most of the leaves beneath the tree canopy. This can be accomplished by raking or blowing the leaves into the row middles before mowing, or you can offset the mower to reach underneath the trees.



Shred leaves with a flail mower that is set so low that it nearly scalps the sod in the row middles. Offsetting the mower will allow you to shred as much of the leaves beneath the tree canopy as possible. Image by OMAFRA.

Dolomitic lime has not been widely tested as an inoculum reduction technique, but it was effective in Oregon when applied after leaf drop in autumn at 2.5 ton/A. Lime presumably works by raising the pH of fallen leaves so that they are suitable for invasion by bacteria and yeasts. Effectiveness of lime applied in springtime has not been

evaluated, and effectiveness of autumn applications may also be reduced in areas where leaves remain frozen or covered with snow through most of the winter.

Leaf removal by raking or vacuuming leaves is being practiced in commercial orchards in Europe. Specialized equipment is required. This approach is more feasible for high-density manicured orchards than for older orchards with wide tree canopies. Removing leaves from orchards may be the most effective option for organic orchards because, if done carefully, it can reduce ascospore availability to almost zero.

#### **Relevant Literature:**

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Sundin, G., and A. Irish-Brown. 2011. Reduction of overwintering inoculum in orchards with apple scab. *Michigan State University Extension*. 22 October 2021. <[https://www.canr.msu.edu/news/reduction\\_of\\_overwintering\\_inoculum\\_in\\_orchards\\_with\\_apple\\_scab1](https://www.canr.msu.edu/news/reduction_of_overwintering_inoculum_in_orchards_with_apple_scab1)>.

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## **Carrot Root Decay at Harvest Time**

Julie Kikkert, CCE Cornell Vegetable Program

It's been a good growing season for carrots in western, NY once we passed initial establishment problems from dry planting conditions in many fields. Carrot tops have been vigorous for the most part and growers have done a good job with fungicide applications. However, now that carrot harvest is underway there can be some previously undetected root problems. Several pathogens can cause decayed carrot roots. In addition, insects can tunnel into roots causing blemishes and wounds for bacteria and fungi to enter. Let's look at the most common root diseases you might see at harvest time in NY:

### **Cavity Spot (*Pythium violae*; *Pythium* spp.)**

Symptoms of cavity spot are irregularly shaped and depressed lesions that run across the tap roots. Several species of *Pythium* may cause cavity spot, with *Pythium violae* being one of the most important. Roots may become infected at an early stage but become visible only after a considerable time. Susceptibility increases as the carrot matures and older carrots can become



Cavity spot. Photo : Lindsey du Toit, Washington State University

infected quickly. The disease is thought to be associated with high soil moisture either early or late in the growing season, as well as with high nitrogen levels.

### **Rhizoctonia Crown Rot, Foliar Blight, and Crater Rot (*Rhizoctonia solani*)**

Crater rot can be common in New York when conditions are warm and moist, especially when carrots are grown in short rotations with

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*Rhizoctonia rot on carrot roots.*  
Photo: Robert L. Wick, Univ. Massachusetts

other susceptible hosts. Infections begin on the tap root, often where lateral roots emerge. The lesions enlarge and develop into brown and black sunken cankers. The lesions may penetrate

several millimeters into the taproot, which distinguishes them from *Phythium* spp. which are much shallower. Foliar blight and crown rot are the same disease expressed on the plant in different locations. Crown rot can result from infections on either the crown or on the main root. Early symptoms are horizontal dark brown lesions, which can later develop into black sunken cankers that may penetrate several millimeters into the taproot and petioles. Tops may die in patches in the field. Infections can occur early in the season but may not be detected until much later. The fungus easily spreads from plant to plant and thus, high plant densities and narrow row spacing will increase the severity of the disease, especially under moist conditions. Excessive hilling under moist conditions will also increase disease. It is advised to rotate fields out of susceptible vegetable crops.

#### **Rhoxocerosporidium Black Spot Disease (*Rhoxocerosporidium carotae*)**



*Rhoxocerosporidium black spot.*  
Photo: Sarah Pethybridge, Cornell

*Rhoxocerosporidium carotae* was first reported in the United States in 2015 in carrots grown in Essex County, NY. It appears to be fairly widespread in New York. The fungus can affect both the leaves and the roots. In roots, lesions first appear as small, dark spots on the surface. Later, circular dark brown to black lesions develop and may coalesce to cover large areas or the entire root. The pathogen is believed to only affect carrots.

#### **Cottony Rot/White Mold (*Sclerotinia sclerotiorum*)**

This disease more commonly shows up in storage, however, it can be found in crops in the field. Cottony rot is characterized by a

cotton-like, white mycelium on the lower plant parts and roots. The mycelium mounds up and turns black into the characteristic overwintering structures called sclerotia. *Sclerotinia sclerotiorum* has a wide host range including snap beans, lima beans, dry beans soybeans, cabbage, lettuce and sunflower and rotation to grain crops is recommended to reduce the soil population.



*Cottony rot.* Photo: William M. Brown, Jr.  
Bugwood.org Image 5356789.

#### **Soft/Wet Rot**

(*Erwinia carotovora* and other species)

Bacterial soft/wet rots most commonly occur in storage but may be found in the field under very wet fall conditions. *Erwinia carotovora* is most commonly associated with this condition, but other species of *Erwinia* or even *Pseudomonas* spp. can infect carrot. *Erwinia* is widespread in soil and is considered a secondary pathogen because it enters the root after there has been previous damage from root cracking, insects, or fungal infections. The tissues disintegrate quickly and turn into a soft, slimy mass.



*Watery and slimy carrot suspected to have bacterial soft rot that invaded the root in an open wound.*

Photo: J. Kikkert, CCE Cornell Vegetable Program

# Fall Weed Control in Berry Crops

Laura McDermott, CCE ENYCHP

## *Treating tough perennial weeds*

Late summer and fall is a good time to work on tough-to-control perennial weeds such as Virginia creeper vine, grapevine, milkweed, goldenrod, poison ivy and brambles. These perennials generally do not respond to soil applied herbicides, but can be managed by careful applications of glyphosate (Roundup) in the fall. Glyphosate is effective on these weeds, but will also kill berry plants. Perennial weeds succumb because the plant is moving carbohydrate reserves down into the root system at this time of year. So treated leaves quickly move the systemic herbicide glyphosate down into the crown and root. You need to treat before the leaves drop though – so the clock is ticking. Some woody weeds like Virginia creeper vine, drops its leaves early in the fall.

For spot spraying perennials:

- Use 2 percent glyphosate solutions.
- Add ammonium sulfate to improve absorption.
- Avoid all green berry tissues.
- Apply when weeds are still green.
- Spray at very low pressure to limit drift.

Use extreme care not to contact green berry tissues with glyphosate. Glyphosate can kill whole canes, plants or bushes. Weeds such as blackberry, Virginia creeper and grapevine may need to be pulled out of the bush or cane crop so they can be treated safely. This may seem too slow to be practical, but according to Eric Hanson of MSU, “consider what these weeds cost in lost income. Bushes covered by Virginia creeper vine may yield just 20 percent of their potential. This easily equates to a \$5 to \$10 loss per bush. The loss is incurred each year and increases as the vines spread to neighboring bushes. Investing 15 minutes to carefully pull vines out of that bush and safely treat them on the ground is money well spent.”

## *Fall application of preemergent herbicides*

October and November is often an effective time to apply preemergent herbicides. Fall is less busy than spring for most growers and often we have periods of good conditions in the fall. In recent years, rainy periods in the spring have hampered herbicide applications and sometimes delayed applications until after weeds have established, so control is poor. Over the last three years, we have compared spring and fall applications of several standard herbicides. Most provided comparable control in both seasons. Fall may be better than the spring for control of some weeds. Marestalk, for example, can emerge in the fall, so spring applications are too late for control.

In strawberries and cane berries, we have some relatively new materials available to NY growers that could help growers with problem weeds. Flumioxazin is the active ingredient in Chateau which has proven to be very effective as a preemergent herbicide in

established strawberry fields as well as pre-transplant and also has a special label for cane berries.

Chateau can be applied in the late fall or early spring while following the pre-emergence on dormant strawberries guidelines. Late fall application has been found to be somewhat easier to manage in region. Chateau can be tank mixed with other as long as the involved products are all registered for the same use, have different sites of action and are both effective at the tank mix or prepack rate on the weed(s) of concern. Crop oil concentrate, at 1% v/v, or non-ionic surfactant, at 0.25% v/v, may be added to help control emerged broadleaf weeds (see label for weeds controlled).

Spraying at this time also helps prevent the occasional problem of dust from treated soil causing burn on the foliage. This usually happens after a hard rainstorm causes treated dusty soil to splash upwards.

Chateau is limited to one application of no more than 3 oz per acre each season. It's a valuable chemical so choosing the best timing is important. Late fall may be the best approach for most growers in eastern NY.

Be cautious of relying on formulations like 2,4-D. That chemical needs to be used in warm soil conditions, and despite our warming autumn weather, fall isn't the best timing for good impact from that chemical.

Other preemergent herbicides that can be used in the fall include:

- Napropamide (Devrinol) requires cultivation or irrigation to a depth of 2 inches within 24 hours of application. It is only effective if that is accomplished.
- Terbacil (Sinbar) can be applied in the dormant season from mid-fall to late winter. If leaves are present when material is applied, the application must be followed immediately by 0.5 to 1 inch of irrigation or rainfall to wash the chemical off the strawberry foliage. Otherwise unacceptable injury many result. Do not use on soils with less than 0.5% organic matter. Strawberry varieties vary in their sensitivity to \*Sinbar WDG. Determine varietal tolerance under expected field conditions to avoid the potential for widespread injury. Terbacil is limited to 8 oz/A per growing season.

The trick is that all of these herbicides offer some advantage depending on what your weed pests are. Scouting now, while leaves are still on the weeds, and coming to a positive ID is important. Also, reading the label carefully. To get the newest and most complete label, visit the [NYS DEC NYSPAD](https://nysdec.ny.gov/nyspad) site. You can search for the label using the trade name, the active ingredient or the Federal ID#.

## Testing Once, Testing Twice...Keeping Plants Clean From Viruses

*Ioannis Tzanetakis, Professor/Director of the Arkansas Clean Plant Center, University of Arkansas*

Viruses can be a menace to berry crops. A single breeding selection or mother plant can easily be propagated to millions of daughter plants, and if the mother plant is infected, all daughter plants will also be infected. An infected plant could translate to poor establishment and loss of yield and could possibly lead to the need for growers to replant. For these reasons, virologists put a lot of effort into virus testing and elimination. Virus elimination is a laborious procedure in which small pieces of meristematic tissue (in the millimeter range) are excised from plants grown in conditions that are restricted for virus replication and movement and then regenerated in tissue culture.

Scientists at the University of Arkansas/Arkansas Clean Plant Center for Berries in collaboration with the Oregon Clean Plant Center conducted a study to compare new detection technologies with the current testing standards to determine whether virus detection in production operations could be improved. Instead of the two testing regimes over a one-to-two-year period, the current standard in the industry, four testing regimes over the same time period using new detection technologies was tested. Current detection tests use either a genetic testing method called reverse transcriptase polymerase chain reaction (RT-PCR), biological indexing, or both. In RT-PCR, specific sequences of RNA/DNA (the genetic code) of the viruses are detected if present within a sample. In biological indexing, indicator plants that produce symptoms when infected with a virus are used to determine whether viruses are present within a sample. The new detection technologies use a process called high-throughput sequencing (HTS), in which the RNA/DNA of all the organisms and viruses in a sample are sequenced. The sequences are then compared to known virus sequences, which allows for the detection and identification of all viruses present within a sample.

Results from the study indicated that the new testing technologies not only provided better detection than the current standard



testing methods but also had the capacity to detect new viruses, which current testing methods cannot do. In addition to these benefits, the new technologies could also eliminate a major bottleneck in the propagation pipeline by reducing the need to graft onto indicator plants, a tedious, expensive, and time-consuming step required for biological indexing.

An unexpected finding from the study was how well viruses could “hide” or go unnoticed. Independent of the technologies used, virus detection could be unreliable with some viruses not being detectable in three of four samplings. These findings indicate the need to change the testing approach and increase the number of times testing occurs over a certain period of time so that scientists can provide nurseries and producers the cleanest berry plants possible.

For more information visit: [https://aaes.uada.edu/news/virus-detection-in-berry-plants/?utm\\_source=slider&utm\\_medium=banner&utm\\_campaign=virus-detection-in-berry-plants](https://aaes.uada.edu/news/virus-detection-in-berry-plants/?utm_source=slider&utm_medium=banner&utm_campaign=virus-detection-in-berry-plants)

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## How Do You Know Your Pricing is Right and Your Investment is Protected?

*Robert Hadad, CCE Cornell Vegetable Program*

Frequently growers contact us asking about pricing for vegetable crops. This usually occurs just as the marketing season takes off. Answering this question is difficult for many reasons. There are no set rules for coming up with the appropriate prices for any crop and many factors come into play. What is needed is for growers to know what it cost them to grow it,

To understand what it costs to grow a crop, one needs to know about cost of production for each crop. In order to find out this information, one needs to be able to identify all of the inputs that go into farming from seeds to equipment to labor to fixed overhead costs. This means keeping good records as well as finding where you might have put all the records.

Sounds challenging? It is. Understanding how this all works is a win-win situation for farms. Not only will you be able to figure out how to set a price that makes a profit but all the data you collect to make this calculation will also provide a farm with great useable financial information critical for making informed business decisions.

Starting this fall, we will be running a series of classes on pricing through understanding cost of production, improving labor management/relations, and understanding crop insurance programs for your benefit.

To help us get this project off the ground, we are asking for your feedback through [this survey](#).

Please fill this out and stay tuned for updates on these trainings coming this fall/winter.



# Recognizing Fruit Rots of Vine Crops

Elizabeth Buck, CCE Cornell Vegetable Program

**Phytophthora** (fi-tof-thor-a) is a serious, long-persistent, destructive disease that can easily be spread from farm to farm on infected fruit. This disease can last a decade in the soil and attacks (blights/ melts) vine crops, solanaceous crops, and legumes. The disease is caused by an oomycete, which is a different kind of organism from a fungus. Most fungicides don't control oomycetes. Growers with phytophthora have to rely on specialized control chemistries and often must make substantial changes to their production plans and planting systems. You do NOT want this showing up on your farm, especially not because of some rotting fall vine crops brought in from elsewhere.

Phytophthora loves cucurbit fruit. A single infected fruit can produce hundreds of thousands of spores. **Initial water-soaked spots enlarge and the lesions begin to grow a fine, powder sugar like mold that generally has a white or grayish color.** Once symptoms develop, fruit rot down fairly quickly. Secondary infections of opportunistic mold and bacteria can occur. Clean looking fruit from infected fields can develop symptoms after they are picked, packed and shipped.

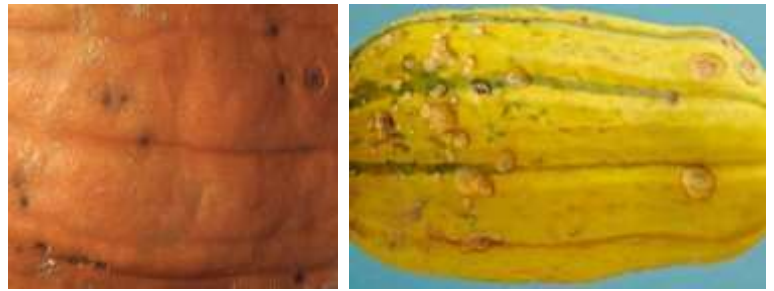
Any farms with suspected phytophthora should contact CCE for positive identification and help drafting a management plan. Growers with cases in the field should not ship fruit with phytophthora. The high integrity move is to notify your customers that there is a risk of phytophthora developing on shipped fruit and advise your buyers to dispose of rotting fruit in the trash only.



Top: pumpkin fruit with 3 water soaked and slightly collapsed phytophthora lesions in the center of the fruit. Lower left: three sporulating phytophthora lesions on a pumpkin. Lower right: Kabocha squash showing advanced sporulation on the top and right side. Note the broad water-soaked band extending out from the sporulating area on the top. Photos: Pumpkins by M. McGrath, Squash by J. Iverson.

If you believe you have received fruit with phytophthora, **DO NOT under any circumstances put that fruit into your field or cull on farm.** Phytophthora infected fruit should be bagged and put in the trash.

**Anthracnose** is a fungal disease that strikes foliage and fruit. I'm seeing a lot of anthracnose on fruit this fall. Anthracnose will progress post-harvest and cause losses in storage or after shipping. Anthracnose lesions can turn black and may eventually produce salmon-colored spores.



These three panels are showing early/ mid stage anthracnose symptoms. Symptoms vary slightly across crops. On pumpkin anthracnose causes sunken, round lesions that develop black centers fairly soon. The second image, delicata squash, shows an age range of symptoms, with small lesions and older, sunken lesions that are pale in the center and have a reddish edge. The third panel is a close up of butternut squash showing the crusty, cracked, red-edged older lesion and two slightly blistered young lesions above and to the upper right.



Photos: Tom Zitter.

**Bacterial leaf spot** was wide spread this summer on pumpkin and winter squash foliage following that very wet July. Now that harvest has arrived, fruit from those infected plantings are showing bacterial rot symptoms. Infected fruit have blisters with white centers that may hollow with age. A halo of water soaked tissue forms around the blisters. While these spots may seem to cause little structural impact to the fruit, marketing them is a risky proposition. Secondary rots often enter the rind through these bacterial lesions and lead to a (sometimes reeking) fruit collapse. Below are symptoms on a pumpkin (left) and immature butternut squash (right).



Photos: Meg McGrath

**Black Rot** is the fruit-attacking form of Gummy Stem Blight; the same fungal disease has two names. Black rot will progress through storage or on a stand, so it pays to sort out fruit with early symptoms. With enough time, this fungal disease will eventually cause dark to black lesions followed by fruit decay. Decay often has secondary rots associated.

Any planting with gummy stem blight observed on foliage or vines is at high risk for black rot development on fruit, and should be scouted for signs of lesions. Early symptoms are less obvious and lack the distinctive black color. Lesions begin as watersoaked spots that develop into pits. Pitted lesions may sometimes have gummy, reddish exudate (sap) or may contain black specks. Lesions continue to grow and sink and will eventually darken. Butternut often has a unique presentation of concentric brown rings on the rind, particularly on the soil side of the fruit.



Photos: A.F. Sherf, Tom Zitter, Tom Zitter, Meg McGrath.

The photo panel to the left shows early to mid-stage symptom development on pumpkin (left), mid-stage classic sunken lesions on ripe butternut (center), and the concentric brown ring presentation on butternut (right). The lower photo shows the blackening and associated water soaking on a more advanced lesion on pumpkin fruit.

**Fusarium** is a fungal dry rot that progress post-harvest. Fusarium is common in soils and so symptoms develop mostly on the underside of the fruit. Below is a progression of fusarium symptoms on pumpkin. The first symptom is light tan, circular spots or small, raised blisters that will develop wide, water-soaked margins with time (left). Those areas then sink (center) as the fungus progresses through the rind. Under favorable conditions the fruit produces pinkish and/or thick white mold (right).



Photos: Meg McGrath and Tom Zitter

## If Your Farm or Food Business is an SBA ‘Small Business’, You May Be Eligible for Funding for Grants to Help You Respond to Coronavirus

*Elizabeth Higgins, CCE ENYCHP*

The recently announced *USDA Pandemic Response and Safety (PRS) Grant Program* provides grants between **\$1,500 to \$20,000** to farmers of eligible commodities, businesses that provide post-harvest packing and sorting of specialty crops, food processors/manufacturers (including meat slaughter and processing), food wholesalers (including food hubs), all farmers markets, and businesses offering refrigerated warehousing and storage of food products to respond to coronavirus, including for measures to protect workers against COVID-19. This is the link to the website for the program [Pandemic Response and Safety Grant Program - usda \(grantsolutions.gov\)](https://www.grantsolutions.gov/).

### Important Dates:

- Application period opens October 6, 2021
- Application period closes at 11:59 p.m. Eastern Time on November 22, 2021

All applications submitted before the deadline will be considered for funding. Applications will not be reviewed on a first come, first served basis.

### What is eligible for funding?

The grant covers:

1. Workplace Safety Measures: Workplace safety measures,

*(Continued on page 14)*

(Continued from page 13)

including, but not limited to, personal protective equipment, sanitizer, hand washing stations, air filters, thermometers, cleaning supplies, or similar items.

2. **Market Pivots:** Market pivots such as transition to virtual/online sales costs (online platform development and fees, online marketing, credit card processing fees), supplies, new signage.
3. **Retrofitting Facilities:** Retrofitting facilities for worker and consumer safety (plexiglass, walk up windows, heat lamps, fans, tents, propane, weights, tables, chairs).
4. **Transportation:** Additional transportation costs incurred to maintain social distancing.
5. **Worker Housing:** Additional worker housing costs incurred to maintain social distancing or to allow for quarantining of new or exposed employees.
6. **Medical:** Unreimbursed costs associated with providing or enabling vaccinations, testing, or healthcare treatment of infected employees, including any paid leave.

You may request funds for costs already incurred and/or anticipated costs. The costs must be associated with eligible activities/outcomes implemented between January 27, 2020, and December 31, 2021. Funds will be sent as a single payment at the time of award.

#### **What should you do to be ready to apply?**

Applicants will be required to obtain a DUNS Number from Dun & Bradstreet (D&B) prior to applying for this program. D&B has created a custom landing page to streamline this process. Visit the application website (<https://usda-ars.grantsolutions.gov/>) for more information. **DO THIS ASAP!**

#### **Are You Eligible?**

USDA is focusing this first round of funding on 1) certain small sized producers, 2) food processors and distributors that meet small business size standards, and 3) farmers markets. The determination as to whether a farm is an SBA small business is different than USDA definitions for a small farm. For example, a small apple farm is a farm whose revenue is \$5,000,000/year or less over a 3 year average.

Check whether your farm or business is a “small business” using this link. [Eligibility Info - usda \(grantsolutions.gov\)](https://www.usda.gov/grantsolutions.gov/eligibility). This eligibility link also lists the eligible business types for this round of funding.

#### **What if I am Not Eligible?**

USDA is focusing this first round of funding on certain commodities due to the unique impacts of the pandemic on their businesses. According to the website, USDA may expand eligibility in future rounds of funding to include additional businesses not covered by the first round. Future rounds are dependent upon availability of funds.

#### **What if I have more than one type of eligible business (e.g. a farm and a packing house), can I apply for more than one grant?**

If the operations are registered as separate business entities with unique DUNS numbers and meet the PRS eligibility requirements, then each entity may apply for PRS funding.

#### **For More Information**

I will have a program on applying for this program on October 13<sup>th</sup> (Wednesday) at 6:30 pm. To register go to <https://cornell.zoom.us/j/92049170000>.

For more information contact me (Liz Higgins) [emh56@cornell.edu](mailto:emh56@cornell.edu).

## **The Current Cucurbit Podcast**

In this podcast series, we dive into the world of organic IPM for cucurbit crops, focusing on the experience of our interdisciplinary research project. We will expand your knowledge regarding the use of the mesotunnel production system as an IPM tool for cucurbit crops, the capabilities of living mulches for organic weeds control, our efforts in the lab testing biocontrol agents for the main diseases that attack cucurbit crops, and more!

<https://www.cucurbit.plantpath.iastate.edu/current-cucurbit-podcast>

If you have any comments or suggestions, please reach out to Dr. Mark Gleason ([mgleason@iastate.edu](mailto:mgleason@iastate.edu)) or Jose Gonzalez ([jgonzal@iastate.edu](mailto:jgonzal@iastate.edu)).





# Upcoming Events

## **New England Vegetable and Fruit Conference 2021-Online Light!**

December 13-17, 2021

Enjoy the New England Fruit and Vegetable Conference from the comfort of your own living room! The conference will be online this year, due to the ongoing COVID-19 epidemic. The program will be a streamlined version of our usual in-person content, with one morning and one afternoon session per day for one week, December 13th-17th. Tree fruit, small fruit, and vegetables will all be covered, and pesticide (New England and New York applicators) and certified crop advisor credits will be available. Check out the schedule, speaker line up and registration [here](#). We hope to see you online this December, and in person in December 2022!

\$50 registration fee gains you full access to the program and 3-months access to the recordings. NYSDEC pesticide recertification protocols available on the conference website.

Credits available for NY pesticide applicators:

### **Fruit (categories 1A, 10, 22)**

Berry I: 1.5

Berry II: 1.0

Tree Fruit I: 1.0

Tree Fruit II: 2.0

### **Vegetables (categories 1A, 10, 23)**

Vegetable Pests of the Year: 2.0

### **Multi-commodity (categories 1A, 10, 22, 23)**

Tillage Reduction Innovations: 1.0

Soil Health: 1.5

## **Spray Safe, Spray Well: Reducing Pesticide Use Risks for Organic and Beginning Vegetables Farmers Bilingual Online Workshop Series**

December 13-17, 2021

Join us for this free eight-part, bilingual, winter workshop series focused on the basics of when and how to use OMRI-listed pesticides on your vegetable farm. Participants in Eastern New York will also have the opportunity to receive individual on-farm follow up support from the project team in the spring and summer of 2022.

Beginning and organic farmers are often disinterested in discussing pesticide use on the farm. However, investing time in improving your spray programs and equipment can help you to spray more safely, more effectively, and spray less overall.

To register, fill out the required information at <https://bit.ly/3oG2wyp> and feel free to contact Ethan Grundberg in Spanish or English (email: [eg572@cornell.edu](mailto:eg572@cornell.edu) WhatsApp: Ethan Grundberg) with any questions.

### **An Introduction to Integrated Pest Management for Vegetable Growers**

Wednesday, December 8, 2021

### **Selecting Appropriate Sprayers and Nozzles**

Wednesday, January 12, 2022

### **Applying Pesticides Safely and Legally**

Wednesday, January 26, 2022

### **Safe and Effective Sanitizer Use in the Wash and Pack**

Wednesday, February 9, 2022

### **Is There a Place for Biological Fungicides on my Farm?**

Wednesday, February 23, 2022

### **Water Quality Considerations and Adjuvants to Optimize Pesticide Applications**

Wednesday, March 9, 2022

### **Understanding How and Which OMRI-listed Insecticides Work**

Wednesday, March 23, 2022

### **Tips to Preserve and Enhance Beneficial Insects on Farm**

Wednesday, March 30, 2022

# Upcoming Events

**November 1-7 – MOFGA Farmer to Farmer Virtual Conference.** For more information and to register: <https://www.mofga.org>

**November 2, 9, 16, 23—Design Your Succession Plan**

6:30pm—8:00pm via Zoom

Farmers and next generation farmers will receive an opportunity to develop and design a succession plan with sessions led by experts across the field. Attendees will learn through scenario-based learning how to relate real-life experiences to the farm transition process. For more information and to register: <https://enych.cce.cornell.edu/event.php?id=1581>

**November 3, 12pm-1pm – Market Evaluation**, virtual. This workshop will focus on techniques for evaluating both new and existing markets for your agricultural products.

Register: <https://cornell.zoom.us/meeting/register/tJAtdeiqrzgjGtB8J0ZuclJeKqCD5dnBWGcl>

**November 3-4 - Northeast Greenhouse Conference and EXPO**, Boxborough MA. Take a look at the [2021 NEGC Program](#) or <https://www.negreenhouse.org/schedule.html>.

Register: <https://cvent.me/L43loN>

**November 10, 2021 12 – 1 pm – Pricing Workshop**, virtual. This workshop will focus on finding the true cost of product, price to charge, and determining if it is a viable product for your agricultural business and market.

Register: [https://cornell.zoom.us/meeting/register/tJYuf-qopjsrGt1iv-Dx\\_6wgm\\_Kl0h9pd5Gz](https://cornell.zoom.us/meeting/register/tJYuf-qopjsrGt1iv-Dx_6wgm_Kl0h9pd5Gz)

**November 16 - December 21—Ag Supervisory Leadership Certificate Program**

Supervisors are critical to the success of farm businesses. They have a major impact both on employees' daily work experiences and on the production performance of the business. The Agricultural Supervisory Leadership certificate helps farm supervisors and managers learn and apply human resource management practices and leadership skills that foster rewarding workplaces and drive business results. Live, weekly Zoom discussion will be held from 3 to 4pm each Tuesday. More information: <https://enych.cce.cornell.edu/event.php?id=1579>

**December 7-9, 2021 – Great Lakes EXPO**, Grand Rapids, Michigan. For more information and to register: <https://glexpo.com/expo-schedule/>

**Dec. 8-9, 2021 Noon – 5 pm – Remote Produce Safety Alliance Grower Training Course**, virtual. Register: <https://enych.cce.cornell.edu/event.php?id=1586> by Nov. 19

**December 13-15, 2021 – New England Vegetable and Fruit Conference**, virtual

For more information and to register: <https://nevbga.com/nevfc/>

**January 10, 2022 - Becker Forum: Addressing 2022 Ag Workforce Challenges**, Oncenter, Syracuse, NY

**Jan 11-13, 2022 – Empire State Producers Expo**, Oncenter, Syracuse, NY. More information soon

**January 18-23, 2022 - NOFA-NY's 40th Annual Winter Conference**, Online

For more information and to register: <https://nofany.org/conference/>

**February 1-3, 2022 – MidAtlantic Fruit and Vegetable Conference**, Hershey, PA.

For more information and to register <https://www.mafvc.org/>.



**Cornell Cooperative Extension**  
Eastern NY Commercial Horticulture Program

The Label is the Law. Cornell Cooperative Extension and the staff assume no liability for the effectiveness of results of any chemicals for pesticide use. No endorsement of any product is made or implied. Every effort has been made to provide correct, complete, and current pesticide recommendations.

Nevertheless, changes in pesticide regulations occur constantly and human errors are still possible. These recommendations are not substitutes for pesticide labeling. Please read the label before applying any pesticide. Where trade names are used, no discrimination is intended and no endorsement is implied by Cornell Cooperative Extension.

*Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.*