The worldwide pandemic involving COVID-19 (coronavirus) has produced unprecedented challenges in the agricultural industry here and around the world. UConn Extension has curated many resources for our audiences. As the current COVID-19 situation continues to rapidly evolve, UConn Extension is here to support you by continuing to provide science-based information and resources that you expect during these challenging times.

Check out the resources at the following link:
https://blog.extension.uconn.edu/covid-19-resources/#farmers

Other great resources to check out include

The Connecticut Department of Agriculture has compiled information from various sources for your reference to help support your business and to protect yourself, employees, and consumers.

Like many of you, we are trying to figure out our marketing strategy this summer in the era of social-physical distancing. We offer pick-your-own and have a farm stand. How do we sell our products while keeping our employees and our customers as well as ourselves safe? Many questions as we all navigate the new “normal” in our lives. Some of the issues growers need to resolve:

Farm stand
Is your farm stand large enough to accommodate the 6 foot distance between people? If yes – great. But if it isn’t,

Do you offer sign up times for people to shop?
Do you have a line outside as many businesses are doing now and allow them in with a one-in-one-out policy?
If you have one door in-and-out of your stand, do you need to add a separate door so one is dedicated to “in” and one is dedicated to “out”? Structural changes that may not work or that may require town approval.
Loose produce such as beans – customers bag the amount they want – does this continue or do you offer pre-packaged produce to avoid customer handling? Or do you have staff handle and bag the produce for the customers (think the deli section of the grocery store)?
Plexiglas or some type of barrier will need to be installed between the cashier and the customer.

On-line Shopping
On-line ordering has been a blessing for some farm operations this spring with increased sales being reported.

Credit/Debit cards: This option works for those who are set up to handle credit/debit cards, it may result in increased sales, and makes curbside pickup fairly easy particularly if you provide a pickup time.
Other payment options: There are other options such as PayPal, Google Pay, Venmo, Square and many more. I am not endorsing any of these. I am throwing them out there to let you know there are other options to look at. Some may charge less than others so do your due-diligence before opting for a particular option.
Cash only businesses: There are strong suggestions that businesses should no longer accept cash to avoid handling it. With that in mind, if you are a cash only business do you offer the opportunity to order on-line with curbside pick-up in cash? Or do you add other payment options? This will cut into your bottom line (card charges) but it also may actually increase sales revenue. If you can do it, it would make it easier (and safer) for your customers and hopefully you as well.
If your business is based totally or heavily on pick-your-own, do you have enough folks to pick the crops for the orders? That is an issue we are mulling around.

Pick-Your-Own
Pick-your-own is a popular marketing method with a high number of CT farms. Families enjoy this as a fun outing, gets the kids outside, and offers an affordable way to procure large columns of fruit. Large operations with several acres of a particular crop coming in during a short time frame may be able to spread customers out across the field keeping with the social & physical distancing requirements. Of course large operations also tend to attract large numbers of customers. Farms with small acreage may not be able to spread customers out.
Many operations have a single check-in/check-out location. Depending on the volume of customers you have, you may need to have a separate check-in and check-out to keep the required social distancing requirements.

Their containers or your containers? Providing containers will eliminate needing a scale at check-in to pre-weigh their containers, as well as handling their containers. Guidelines from the Connecticut Department of Agriculture recommends supplying containers only.

Do you pre-sell by the container or sell by weight at check-out? There are pros and cons to both. Pre-sell at the beginning of the season when the field is loaded with fruit and sell by weight when the season is winding down and the picking is not as good. Just a thought.

Will you have to restrict the number of customers in the field at a single time? In order to maintain 6 foot distance between customers you have to control the number, whatever that number may be. This will depend on the layout and size of your field.

Do they sign up online or over the phone for time slots or is it first come-first serve?

Will you have to employ additional staff to enforce distance between people?

Do you assign rows, supply flags so the customer puts the flag in the field where they finish picking? That way other customers do not pick in the same area as a recent customer.

Map out one-way movement through the field. Make sure customers understand and comply.

Customers must wear masks – maybe this will drastically reduce grazing. There is always hope.

Customers with children must keep them close to them, no roaming. This is the only way to maintain social distancing.

Wagons/carts make it easier for families with young children to pick and not figure out how they are going to carry a young child and picked fruit. However, the wagons/carts will need to be sanitized after each family uses it.

Have plenty of signage as reminders.

Make a plan to effectively deal with customers who will not comply with your rules.

Farm Entertainment

Play areas and picnic areas are popular at many farms. Recommendations are to close these areas this year. It would be almost impossible to keep kids away from each other as well as sanitize the equipment. Picnic tables would also need to be sanitized after each group is done. This adds extra labor and costs to the farm.

Corn and sunflower mazes can control access. With designs that prevent back tracking as well as communicating with customers, these should be fine.

Communication

Once you figure out how you will operate, COMMUNICATE these changes to your customers via all of your social media, at the farm stand and at the PYO field. Being very explicit will reduce confusion and problems with customers.

It will be an interesting year for all of us as we navigate what is likely to be a new way of life for a long time. The CT Department of Agriculture along with UConn Extension have developed guidelines for agricultural businesses to help deal with COVID-19. These guidelines are available on the CT Department of Agriculture website [https://portal.ct.gov/DOAG/Commissioner/Commissioner/COVID-19-Resources-for-Farmers](https://portal.ct.gov/DOAG/Commissioner/Commissioner/COVID-19-Resources-for-Farmers) and the UConn Extension website at [https://blog.extension.uconn.edu/covid-19-resources/#farmers](https://blog.extension.uconn.edu/covid-19-resources/#farmers).
Building healthy soils, integrating cover crops, and managing weeds are key elements of vegetable farms. The use of no-till and cover crops provide a wealth of soil benefits thereby improving the productivity of the farming systems. However, due to limited agricultural land, farmers often have increasing pressure to keep greater portions of their land in cash crops. Cover-crop based no-till practices allow farms to gain the benefits of cover crop rotations while still earning a financial return from the land.

No-tillage cropping systems are known to provide many benefits to soils that can improve crop productivity. Those benefits include better soil aggregate size and strength which means better soil structure, better infiltration, lower bulk density, better water holding capacity, decrease in erosion, and improved water quality. Other benefits include higher cation exchange capacity, which results in higher soil nutrient holding capacity and greater potential mineralizable nitrogen (increased soil nitrogen bank). Additionally, no-till contribute to increased organic matter (carbon) which serves as a food source for soil microbes. Soil microbes are responsible for the decay of organic matter and cycling of both macro-and micro-nutrients back into forms that plants can use.

Though no-till systems offer a multitude of soil building as well as weed control benefits, implementation is limited, particularly in cooler climates like New England with shorter growing seasons. Correct management of cover crops used in no-till practices is critical because mismanagement can lead to undesired consequences, including serious weed issues rather than effective weed control.

No-till and cover crop acres were increased significantly in Connecticut from 2012 to 2017. No-till acres was 18,153 acres (487 farms) according to 2017 Census of Agriculture, which was 54% increase from 2012. The cover crops acre was ~22,000 acres in 2017, which was 7.6% greater than 2012 (Soil Health Institute, 2019).

In this article, I present farmers’ experience and some research evidence that show the use of no-till and cover cropping can provide a wealth of soil benefits thereby improving the farm profitability.

Bryan O’Hara and Anita Johnson have been growing vegetables for a livelihood since 1990 at Tobacco Road Farm in Lebanon, Connecticut. Over the last twenty plus years of intensive vegetable growing at the farm, they constantly sought ways to improve the health and vitality of crops and soils.

“We slowly moved into no-till over the course of many years with experimentation. So, I do like to caution people to make sure it works for you before you put your whole farm into a new system because there are a lot of details.” Bryan says “We switched into no-till because

Figure 1: A field pea cover crop fills the space between two beds of young tomato plants. Later on the peas will be crushed down by foot and mulched to terminate them. (Photo from Bryan O’Hara’s book No-Till Intensive Vegetable Culture: Pesticide-Free Methods for Restoring Soil and Growing Nutrient-Rich, High-Yielding Crops, courtesy of Chelsea Green Publishing)
we saw very strong improvement in crop health, less disease pressure, quite stunning results in plant disease and insect resistances, and very reduced need for weed control. We also saw the improvement in soil structure that resulted in much less irrigation needs. All of which resulted into greater profitability because crops were more vigorous, easier to harvest, stored better, and needed less labor.”

An experiment in Blacksburg, VA, tested the effects of three cultivation techniques (conventional-till, strip-till, and no-till) on ‘Gladiator’ pumpkin production, weed pressure, soil moisture, and soil erosion in 2014 and 2015 (O’Rourke and Petersen, 2016). Overall yields were higher in 2015, averaging 20 tons/acre, compared with 17 tons/acre in 2014. In 2014, pumpkin yields were similar across tillage treatments. In 2015, the average fruit weight of no-till pumpkins was significantly greater than strip-till (13%) and conventional-till (22%) pumpkins. Weed control was variable between years, especially in the strip-till treatment. Soil moisture was consistently highest in the no-till treatment in both years of study. Conventional-till pumpkin plots lost ~9 times more soil than the two conservation tilled treatments during simulated storm events. The 2015 yield advantage of no-till pumpkins seems related to both high soil moisture retention and weed control. Research results suggest that no-till and strip-till pumpkin production systems yield at least as well as conventional-till systems with the advantage of reducing soil erosion during extreme rains.

Jamie Jones of Jones Family Farm in Shelton, CT practices no-till pumpkin production. Figure 2 taken in mid-April shows winter rye with an herbicide strip where the pumpkins will be planted in June. “We will roll the rye with a roller crimper when the rye starts shedding pollen, averaging sometime late in May”. Jamie says “We planted this winter rye late September or early October in the last fall. It followed a cover crop of sorghum sudangrass that was planted after the strawberry field was turned under in early July”.

Another research was conducted at University of Massachusetts Amherst to evaluate the nutrient cycling and weed suppressive benefits of forage radish (*Raphanus sativus* L. *longipinnatus*) cover crop mixtures to develop an integrated system for no-till sweet corn production (Fine, 2018). Treatments included forage radish (FR); oats (*Avena sativa* L.) and forage radish (OFR); a mixture of peas (*Pisum sativum* subsp *arvense* L.), oats and forage radish (POFR); and no cover crop control (NCC). Fall-planted forage radish cover crops showed successful weed suppression and recycling of fall-captured nutrients. Results indicated that POFR and OFR provided improved N cycling and sweet corn yield compared with FR and NCC. Early season N from decomposing cover crop residue was sufficient to eliminate the need for N fertilizer at sweet corn planting, thereby reducing input costs and risks of environmental pollution.

Steve Munno, the Farm Manager at Massaro Community Farm in Woodbridge, CT, also uses cover crops and no-till to improve the soil health for organic vegetable production. “The combination of peas, vetch and oats works great in the no-till system”. Steve Munno says “With a single sowing of this cover crop mix in late
summer we see significant accumulation of biomass throughout the fall from the peas and oats, an excellent winter cover protecting the soil, vigorous spring growth of vetch which produces more biomass and provides flowers for pollinators, plus nitrogen fixation (peas and vetch) and organic matter build up for the following crop”.

**Figure 3.** Steve Munno at Massaro Community Farm flail mows the vetch in late spring or early summer before it gets too unruly, then covers with silage tarps to speed decomposition of the residue and reduce weeds, then remove tarps and plant the next crop (Photo: Steve Munno).

Lounsbury et al. (2018) tested whether reusable plastic tarps, an increasingly popular tool for small-scale vegetable farmers, could be used to augment organic no-till cover crop termination and weed suppression in New Hampshire. The authors no-till transplanted cabbage into a winter rye (*Secale cereale* L.)-hairy vetch (*Vicia villosa* Roth) cover crop mulch that was terminated with either a roller-crimper alone or a roller-crimper plus black or clear tarps. Tarps were applied for durations of 2, 4 and 5 weeks. Across tarp durations, black tarps increased the mean cabbage head weight by 58% compared with the no tarp treatment. This was likely due to a combination of improved weed suppression and nutrient availability. Plastic tarps effectively killed the vetch cover crop, whereas it readily regrew in the crimped but uncovered plots. However, emergence of large and smooth crabgrass (*Digitaria* spp.) appeared to be enhanced in the clear tarp treatment. Although this experiment was limited to a single site-year in New Hampshire, it showed that use of black tarps can overcome some of the obstacles to implementing cover crop-based no-till vegetable productions in northern climates.

Bryan also shares his experience using tarps “Black and clear tarps are often superior to tillage events as some weeds can survive the tillage events, but tarps are really effective at giving us weed free surface to begin planting or seeding into”.

**References**


Soil Health Institute. 2019. Progress report: Adoption of soil health systems based on data from 2017 U.S. Census of Agriculture. Soil Health Institute, Morrisville, NC
Battling Broad Mites

By: Leanne Pundt, Extension Educator, Commercial Horticulture

Unlike the more familiar and easily recognized two-spotted spider mite, broad mites and their damage may not be as familiar to growers and their damage is often misdiagnosed.

The tropical or subtropical broad mites do not overwinter in Connecticut, but may be introduced on incoming plant material. New Guinea impatiens, garden impatiens, begonia, gerbera daisy are some of their more common ornamental hosts. Broad mites can also infest vegetable bedding plants especially peppers. When transplanted into the field, pepper plants may be stunted, with distorted leaves and rough-skinned, russet-colored fruit developing later in the growing season.

![Image 1 & 2: Outer leaf edges turn downward and terminal buds are killed on pepper transplants on left). Pepper fruits become scabby and rough skinned in the field. Photos by L. Pundt (on left) and J. Boucher (on right).](image)

As broad mites feed, they inject a toxin from their saliva, so leaves become twisted, hardened and distorted with bronzed lower leaf surfaces. With high populations, young terminal buds can be killed. Broad mite feeding prevents normal leaf expansion and this causes a **downward puckering along the leaf edges**. Broad mite damage may be confused with boron or calcium deficiencies, cold temperature injury (especially on warm-loving New Guinea impatiens), or physiological disorders. Damage often occurs suddenly and it may be spotty or limited to a specific cultivar. It may persist long after the broad mites are gone.

![Image 3 & 4: Outer leaves turn downward and growing point is killed on New Guinea Impatiens. See infected plants on the top of photo on the left and infected plant on right. Photos by L. Pundt](image)
Life Cycle and Biology

High temperatures of 70° to 80° F and 80 to 90% relative humidity favor their development. Female broad mites lay from 30 to 75 eggs on the leaf surface over an 8 to 13 day period. Broad mites can complete their life cycle from egg to adult in as little as one week's time.

Identification

Broad mites are too small to be seen without the aid of a microscope or with practice, a well-lighted 20 to 30x hand lens. To confirm broad mites, it is best to look for their eggs. Broad mite eggs are elliptical and covered by small whitish bumps or tufts that look like rows of diamonds on their upper surface. (Two-spotted spider mite eggs are round and translucent). Even when broad mite eggs hatch, their empty egg-shells retain this dotted appearance. As you can see broad mite eggs are relatively large in size compared to the adults. Eggs are also strongly attached to the leaf. Look on the youngest leaves or collect leaves during humid conditions to increase your chances of finding broad mites.

Figure 5: The elliptical, translucent, colorless eggs are covered with whitish tufts that look like a row of diamonds seen along the mid-vein. Broad mite adults are within the circle. Photo by L. Pundt

Life Cycle and Biology

Temperatures of 70° to 80° F and 80 to 90% relative humidity favor their development. Female broad mites lay from 30 to 75 eggs on the leaf surface over an 8 to 13 day period. Larvae hatch in 2 to 3 days and begin feeding. Broad mites can complete their life cycle from egg to adult in as little as one week's time.

Biological Controls

The commercially available predatory mites, *Neoseiulus cucumeris*, *Neoseiulus californicus* and *Amblyseius swirskii*, may be released preventatively against broad mites in the greenhouse.
Chemical Controls

A number of different miticides are labeled specifically for broad mites. If possible, miticides with translaminar activity that move through the leaf are preferred. Repeated applications are often needed. Not all miticides labeled for spider mites are labeled for broad mites.

For more information on the specific miticides to apply to greenhouse ornamentals, see the latest edition of New England Floricultural Recommendations: A Management Guide for Insects, Diseases, Weeds and Growth Regulators that is available from Northeast Greenhouse Conference and Expo. For specific miticides labeled for vegetable transplants, see the New England Vegetable Management Guide online at: https://nevegetable.org/table-20-insecticides-labeled-insects-and-mites-vegetable-transplants

Farm to Institution New England (FINE) Matching Needs + Surplus

MATCHING NEEDS WITH SURPLUS

FINE created a Google Sheet to match up gaps and surplus in the New England institutional food system. They welcome anyone to add, view or contact others on the list directly.

Examples of listings may include:

⇒ Those with a surplus of food that need a home (e.g. meat, seafood, vegetables, dairy, processed foods)
⇒ Those looking for local food to serve to displaced constituents
⇒ Those with a need for extra hands at their facilities (e.g. milkers, kitchen staff, drivers)
⇒ Those looking for job opportunities after their institution has closed or reduced labor
⇒ Those with additional storage space for food that needs to be preserved

Add your needs and surplus on the Google Sheet here https://docs.google.com/spreadsheets/d/1hxTCuFVUCv4ad-VI0GhOsDcYmwLXKm5chzRF6wODM/edit#gid=877771653

CHECK OUT THE UCONN IPM WEBSITE! WWW.IP.M.UCONN.EDU

⇒ New Cut Flower Page
⇒ Upcoming Virtual Events
⇒ 2019 Annual IPM Report
⇒ Pest Identification
⇒ Fact Sheets
Allium Leaf Miner in Connecticut

By: Abby Beissinger, Assistant Extension Educator, Plant Diagnostic Lab, UConn

The Allium leaf miner (*Phytomyza gymnostroma*) was first reported in the northeast in 2015, but was not found in Connecticut until January 2020. Learn more about this pest and how to prepare for it this season.

The allium leafminer is an Agromizyid, or leafmining fly, native to Poland and Germany. While leek and onion may be the most heavily damaged crops, many crops in the allium genus are susceptible, including shallot, chives, garlic, and green onion. Some species of wild onion and ornamental alliums may be hosts as well, but the full host range is currently unknown.

Adults (Fig 1a-c) lay eggs in the top of leek leaves between late March and May, by making repeated punctures with their ovipositor in the distal end of leaves (Fig. 2). These holes are the first signs of an infestation. The larva mine the leaves, creating tunnels of damage as they eat tissue (Fig 3). Larva will move down to bulb and leaf sheaths, where they pupate either in the plant or drop into the soil. The tunnels the larva create and leaf puncture holes provide good entry point for secondary fungal and bacterial infections, which can cause further damage to the crop. The second generation will emerge in September to October, laying eggs in the leaves again, and the pupa will overwinter.

Avoidance of the adult flies is one of the best prevention strategies. Covering all alliums prior to the emergence of adults (late March-May), may help exclude the pest. Alternatively, delaying planting until after the adults have emerged and their oviposition period is over, around mid-May, may be an effective strategy. If an infestation occurs, rotate out of leeks and other alliums in that area. Utilize yellow sticky cards and/or yellow bowls containing soapy water in infested fields. Contact PlantDiagnosticLab@UConn.edu to send a sample for identification.

There are insecticides that may be effective for allium leaf miner control, including both organic and conventional options. Always check the pesticide label to confirm the crop is listed, the rates, and the days to harvest intervals. This information can be found in the references section below.

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**Fig. 1A:** Adult allium leafminer. Note the yellow portions on the head and yellow "knees". **Fig. 1B:** Underside of adult allium leafminer. **Fig. 1C:** Adult allium leafminer emerging from puparium. Photos by A. Beissinger  
**Fig. 2:** Puncture holes made by adult allium leafminer. Photo by Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org.  
**Fig. 3:** Pupae of allium leafminer, and the tunnels larva mine in plant tissue. Photos by A. Beissinger.
References


Hutchinson, M. Allium leaf miner. Pennsylvania Department of Agriculture. https://www.agriculture.pa.gov/Plants_Land_Water/PlantIndustry/Entomology/Pages/ALLIUM-LEAFMINER.aspx

Upcoming Virtual Events
Farmers are eligible for Economic Injury Disaster Loan program (EIDL).
Join the Q&A this coming Tuesday evening April 28th at 7 pm
Join Zoom Meeting https://us02web.zoom.us/j/81232880571?pwd=T2lTNzlYMjNweStXTVBIKzNRTE9oZz09
Meeting ID: 812 3288 0571
Password: CT5878
We hope you can access the EIDL application on the SBA portal at any point now!
https://www.sba.gov/page/disaster-loan-applications

UMass Extension is hosting a fruit twilight Zoom meeting this coming Thursday evening April 30th from 5:30pm-7:30pm.
Click on the link below to sign up and receive the sign in information.
https://umass-amherst.zoom.us/meeting/register/tJwucOigrzkrHdXT_I7CA9WIs5SdurCqbGco

Topics: Early season Pest and Horticultural management topics including: apple scab,
Pesticide Applicator Training Credit: 1 credit pending

Looking for activities for your children? UConn 4-H has the answer!
On May 15, 1862 President Lincoln signed the Morrill Act creating the Land-Grant University system with 11 million acres of public land. By this action the seeds of what we now know as the Cooperative Extension System (CES) were planted. 4-H is the youth development component of CES.
Today, 4-H serves youth in rural, urban, and suburban communities in every state across the nation. 4-H members are tackling the nation’s top issues, from global food security, climate change and sustainable energy to childhood obesity and food safety.
UConn 4-H is working to provide youth free, fun and educational activities they can do while staying at home. The UConn 4-H contests and activities are posted on the UConn Extension blog
Check out the Youth and Families section for a variety of virtual and at-home activities!

Click here to learn more about the history Extension and 4-H
The information in this newsletter is for educational purposes. The recommendations contained are based on the best available knowledge at the time of publication. Any reference to commercial products, trade or brand names is for information only, and no endorsement or approval is intended. The Cooperative Extension System does not guarantee or warrant the standard of any product referenced or imply approval of the product to the exclusion of others which also may be available. All agrichemicals/pesticides listed are registered for suggested uses in accordance with federal and Connecticut state laws and regulations as of the date of printing. If the information does not agree with current labeling, follow the label instructions. The label is the law. Warning! Agrichemicals/pesticides are dangerous. Read and follow all instructions and safety precautions on labels. Carefully handle and store agrichemicals/pesticides in originally labeled containers, out of reach of children, pets and livestock. Dispose of empty containers immediately in a safe manner and place. Contact the Connecticut Department of Environmental Protection for current regulations. The user of this information assumes all risks for personal injury or property damage.

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2020-2021 New England Vegetable Management Guide is a comprehensive guide to current production and pest management techniques for commercial vegetable crops. The guide is available in print and may be ordered online or from the UConn CAHNR publication store http://store.uconn.edu/

When you purchase a copy of the Guide you can also receive the Northeast Vegetable and Strawberry Pest Identification Guide (Guide only, $25.00; Guide plus Pest ID Guide, $30.00).

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