UConn Extension and Department of Plant Science and Landscape Architecture

CROP TALK

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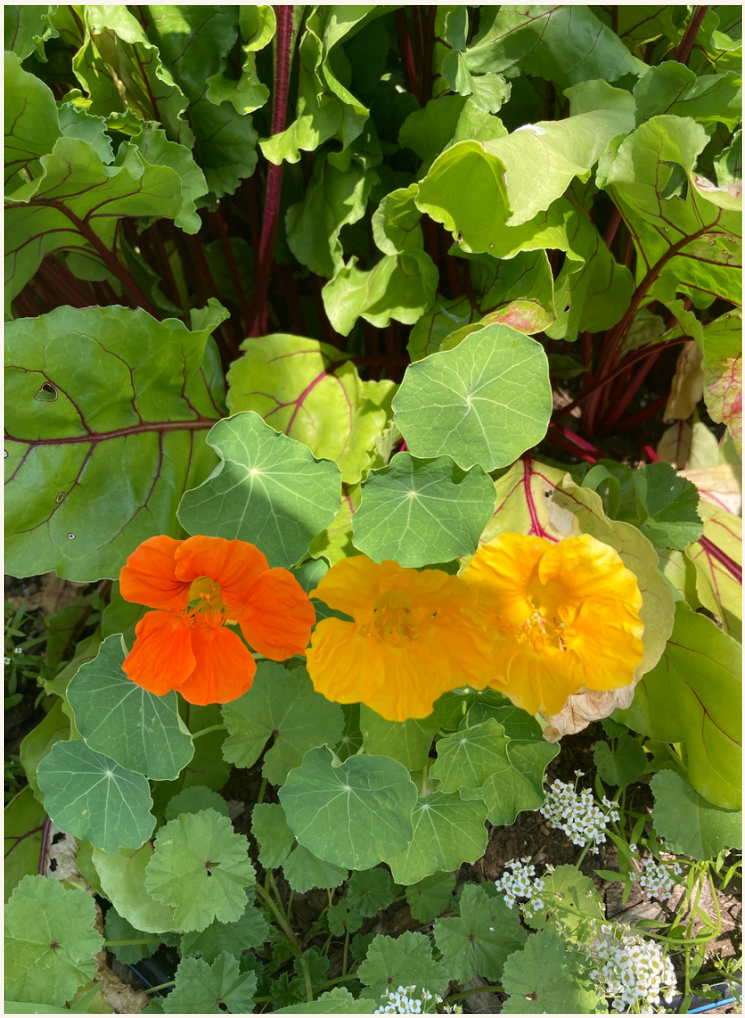

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COLLEGE OF AGRICULTURE, HEALTH AND NATURAL RESOURCES

EXTENSION & PLANT SCIENCE AND LANDSCAPE ARCHITECTURE

Welcome Maggie Ng!

UConn Extension IPM is pleased to welcome Maggie Ng as our newest team member!

Hi! My name is Maggie Ng. I'm from Los Angeles, California. I originally found myself in New England to attend Hampshire College in Amherst, Massachusetts. I have stayed in the Northeast since graduating in 2018, and this is my first month at UConn! I will be working as the Outreach Assistant for the Vegetable Program. I'm most excited about connecting with farmers themselves, and acting as a resource for support in helping a grower achieve their goals.

I am coming from the University of Massachusetts Amherst, where I also worked in Extension as a departmental assistant for the Vegetable Program, with responsibilities ranging from administrative support to on-farm research and technical assistance. My area of interest is in climate change and agriculture—I am most interested and invested in supporting farmers in exploring and implementing climate change mitigation and adaptation strategies in vegetable farming. This can encompass issues related (but certainly not limited) to pests, diseases, or abiotic stresses (heat, drought, and other extreme weather events). I got interested in this subject through working as a farmer on diversified vegetable farms, and experiencing these issues first-hand. Bearing witness to the resiliency and innate adaptability of farmers and their operations was an invaluable experience and informs my work every day.

I am excited to explore Connecticut, and hope to build community within and outside of the farming world in this region. In my time outside of work, I love to swim, take photographs, go to music shows, watch movies, eat good food, crochet, and hang out with my cat. I look forward meeting many of you this fall. I will be reaching out to schedule farm visits, but please don't hesitate to reach out to me as well! I can be reached at maggie.ng@uconn.edu.

Start Clean and Stay Clean

Leanne Pundt, UConn Extension

It's best not to wait until just before you start your spring seedlings, to begin cleaning, removing clutter and organizing your greenhouses. Cleaning earlier than later helps eliminate overwintering sites for the many insect and mite pests that may overwinter in unheated greenhouses, especially during warmer winters. Removing infected and infested plant debris helps prevent the spread of diseases.

Remove all weeds inside that will harbor aphids, two-spotted spider mites, thrips, and whiteflies, slugs, and diseases such as impatiens necrotic spot virus/tomato spotted wilt virus. Low growing weeds can also promote moist conditions, favoring fungus gnats, which are a primary pest during spring propagation. With the extensive rainfall this year, weeds are also prevalent surrounding greenhouses. It's best to have a 10 to 20 ft. weed-free area around the greenhouse to prevent emigration of weed seeds into the greenhouse.

Cleaning is a two- step process with first removing organic matter and then applying a disinfectant labeled for greenhouse use.

First, sweep and remove all organic crop debris. Organic matter inactivates many of the disinfectants (oxidizing agents that kill fungi and bacteria). Microbes can also hide underneath the organic debris.

The greenhouse floor is a major source of the disease pathogens that cause root rot and damping off diseases. Sweep the floor to remove all plant debris, potting media, dust, and algae. Follow with a high-pressure water cleaning. Power wash the walls first, and then work down to the benches and greenhouse floor.

Many growers use specific greenhouse cleaners such as Pace Strip- it Pro, which is a blend of acids, surfactants and wetting agents that can be applied with a foaming attachment removing organic matter and mineral deposits without scrubbing. Applying with a former, helps to ensure better coverage and longer contact time. Allow to sit for 5 minutes before rinsing with a high–powered hose.

After the surfaces are cleaned, you can then use a disinfectant. There are many different commercially available disinfectants developed specifically for greenhouse use. Carefully read the label of the product before use. Be sure to follow all label safety precautions including recommended rates, and personal protective equipment (PPE) needed.

Some commercially available disinfectants include quaternary ammonium compounds or “Q salts” such as Green Shield II and Kleen Grow. Hydrogen peroxide and peroxyacetic acid products are available such as Xero Tol 2.0, Oxidate 2.0 and Sanidate which are strong oxidizing agents. Organic materials (OMRI listed products) include Oxidate, SaniDate, PERpose Plus and ZeroTol.

Use chlorine bleach with caution, as it is highly volatile, can irritate mucus membranes and lungs, and irritating to skin and eyes. It can also corrode metal. For your personal safety, it should only be used in a well-ventilated area. Mix fresh solutions every two hours because its efficacy drops, as the chlorine gas is lost at the liquid surface. Exposure to sunlight also reduces its efficacy.

It is best to use new plug trays every season. Access the risk of re-using plug trays especially for seedlings prone to damping off and root rot diseases. Young plants are more susceptible to diseases than mature plants. Plug trays can be difficult to clean because the inside corners trap organic debris. First, power wash or brush to remove organic debris. Then, soak in a disinfectant according to label directions and then rinse with plenty of clear water.

Clean irrigation systems before re-use. Remove the emitters and flush your lines. Use a disinfectant that is labeled for use for irrigation systems and allow it to set for several hours to overnight. Run irrigation lines with plenty of clear water to clean the system.

Plan on starting clean for successful start to your spring growing season.

For more, see:

Sanitation of Hard Surfaces Between Crops in Greenhouses
https://www.youtube.com/watch?v=n-016p1F6q4

Weed Control as Part of Sanitation Practices in Greenhouses
https://www.youtube.com/watch?v=eeAIB-KBPFw

Climate Adaptation Tactics in Vegetable Production

Maggie Ng and Shuresh Ghimire
UConn Extension Vegetable IPM Program

Introduction

Demand for fresh, local, and high-quality produce is increasing in the Northeast (Bloom et al., 2018). With climate change exacerbating many abiotic stresses, including heat, drought, flooding, and the increase in frequency of extreme weather events, it is imperative to investigate adaptation tactics for successful vegetable production.

A general warming trend is predicted by climate models in a high CO2 scenario, punctuated by drought, heat waves, flooding and rainfall intensity, and fewer frost days. New England is losing its snow cover at the fastest rate in North America (Young, 2023).

Heat stress is of particular concern in the Northeast, with heat waves projected to increase in frequency in Connecticut by up to 8 per year by 2050. Interestingly, frost and freeze events are also of concern in this region, as we witnessed this past spring. Immense crop loss can result from unexpected or unseasonable drops in temperature (Anyah et al., 2019). Such stresses amplify concerns regarding crop growth, pollination, pest and disease pressure, and yield and quality of marketed produce. There are tactics for adaptation that show promise and warrant further investigation and discussion. Use of tools such as tunnels, row covers, insect netting, shade cloth, synthetic mulches, landscape fabrics, and tarps create controllable microclimates, mitigating some negative effects of the aforementioned abiotic stresses and putting the power back into the grower's hands. In this article, we will explore each tactic in detail and their potential benefits and drawbacks.

High, caterpillar, and low tunnels

High tunnels, also known as hoop houses or polytunnels, are typically covered with a translucent polyethylene film and have a frame made of metal or PVC pipes. They trap heat from the sun which allows early planting in the spring and late harvests in the fall, and frequently result in an increase in crop yields. High tunnels also shield plants from adverse weather conditions like heavy rain, hail, or strong winds, reducing the risk of crop damage. These structures can also deter certain pests and diseases, reducing the need for chemical interventions (Janke et al., 2017).

Caterpillar tunnels, also known as low-cost tunnels or mini-tunnels, are smaller and more affordable versions of high tunnels. They consist of metal hoops covered with plastic sheeting. Caterpillar tunnels are easy to assemble, making them accessible to small-scale growers. These tunnels can be moved to different locations to allow for crop rotation.

Low tunnels are the most basic form of tunnel structure. They consist of hoops or arches made of wire or plastic, covered with plastic sheets. Low tunnels provide localized protection, creating a unique microclimate for individual rows or plants. This is especially useful for frost-sensitive crops. They effectively shield crops from insects and birds without the need for chemical pesticides. Low tunnels are suitable for extending the growing season in smaller, targeted areas.

Row cover and insect netting

Row covers are synthetic, spun-bonded fabrics that are placed over crops to create a microclimate, typically to retain heat, increase humidity, exclude pests, and protect sensitive crops from frost or freeze. They can be used as “floating” row covers that are placed directly over crops such as brassica, lettuce, greens, onions, and sweet corn, or draped and secured over wood, metal, or PVC supports for crops that have tender and exposed growing points such as tomatoes, peppers, and vining crops. Insect netting, such as Proteknet or other similar materials, can be used in the same fashion as row cover. However, insect netting is specifically for excluding insect and bird pests, and does not provide the same temperature control as row cover (McDermott et al., 2020). Insect netting is a great alternative to ensure pest exclusion when the use of row cover would cause excessive heating.

Row cover comes in heavy, medium and light weights. Heavier weights are thicker, more durable, and can be used to increase temperatures by up to 8°F (Traunfeld, 2023). Such temperature increase can push plant growth along significantly during cooler periods of the growing season, or when fast, vigorous plant growth is preferred. Protection to about 25°F is possible with a heavy weight material (Hochmuth, 2022). Medium and light weight row cover can be used during warmer periods when coverage is needed for pest control, and light weight cover can be kept on from transplant to harvest, dependent on ambient temperatures (Mahr, n.d.). Row covers must be removed at bloom for fruiting crops to encourage bee or wind pollination.

Row covers have been found to enhance yield of a crop, primarily through temperature and humidity moderation (Hochmuth, 2022). Such moderations can result in earlier production of cooler season crops, and increases in yield by up to 25% in some covered cucurbits (Helbacka, 2002).

The efficacy and durability of row cover or insect netting is contingent upon its proper use (Bernitz, 2020). Some drawbacks of row cover or insect netting are the ease of use, excessive heating compared to ambient temperatures, and quality of the material. Many who have implemented row cover will know well the struggles of using it. It can tear or rip easily, it gets picked up by the wind when attempting to install it, it is an additional cost, and it lasts anywhere from 1-3 years but can be difficult to extend its life past a few growing seasons. Additionally, pests can become trapped beneath cover or netting, or pests that overwinter in the soil may emerge under the cover. Weed pests similarly will benefit from the use of row cover. Removal and replacement of the cover to cultivate or hand weed will be necessary for sufficient control. However, yield enhancements under row cover, in most cases, outweigh the negatives or drawbacks associated with its use.

Shade cloth

Another promising tactic is the implementation of shade cloth, either installed above field crops or over high tunnels/greenhouses. While shade cloth is manufactured in 10-90% densities, 30% density is typically used in our climate to assess the impacts of shade on crop productivity, soil moisture and temperature, and air temperature, and has shown promise in lowering ambient temperatures and reducing light intensity (Johnson, G. & Ernest, E., 2020). Continuous exposure of tomato truss to high temperatures (day/night temperatures of 90/79°F) significantly reduces the number of pollen grains per flower and decreases their viability (Pressman et al., 2002). Shade cloth can mitigate heat extremes and manage large fluctuations in ambient temperatures, especially affecting pollen viability and fruit surface temperature, the latter being an important factor in sunburn potential (Maughan et al., 2017).

There are slight concerns regarding yield reduction, however using the proper density shade at critical time periods can alleviate such concerns. Research suggests that timing the application of shade cloth during sensitive periods of fruit development can help reduce physiological damage and increase both yield and quality in certain crops (Maughan et al., 2017). While there typically is not a marked increase in number of fruit, the quality and size of fruit is significantly improved compared to unshaded plants (Ernest, 2022).

There is not an abundance of research testing the impacts of shade cloth on yield, marketability, and soil or air temperatures. This warrants further experimentation and is a developing area of interest.

All photos in this article courtesy of Maggie Ng, UConn Extension Vegetable IPM Program

Synthetic mulches

Conventional polyethylene and biodegradable plastic mulches can be used in production to control weeds, soil moisture, soil temperature, and to increase crop yield. Additionally, these mulches generally provide erosion protection, and a reduction in nutrient/fertilizer leaching as well as evapotranspiration, leading to increased soil moisture (Gheshm, 2020). Different types of mulches have different results. Overall, mulches have been shown to manage fluctuations in temperature, while black plastic mulch raises soil temperatures, and white (or white-on-black) and silver mulches lower soil temperatures (Snyder et al., 2015). Plastic mulches (both polyethylene and biodegradable) have been shown to dramatically increase yield and nitrogen mineralization, while having no negative effects on marketability of the product (Samphire et al., 2023).

Soil moisture regulation is a crucial element of using plastic mulches. This is achieved through reduction of evapotranspiration from the soil surface through covering planted areas, which can be particularly advantageous in drier environments (Ma et al., 2018).

While there are many advantages to implementing plastic or biodegradable mulch, there are still some disadvantages. For instance, mulches don't allow for natural soil cooling from precipitation, which can result in higher overall soil temperatures when compared to bare ground (Ghimire et al., 2020). The cost of mulch, both the material and time and labor necessary to install it, can be substantial to take on year after year, especially since mulches can't be reused. This leads us to the last downside—the environmental cost of using polyethylene mulches. Non-biodegradable mulches create extra waste on the farm, and must be removed and disposed of properly. Removal of mulch can be frustrating, since it requires specialized equipment plus a fair amount of hand labor.

Biodegradable mulches, unlike polyethylene mulch, are tilled after use and will biodegrade in the soil. While they cost slightly more than conventional mulches, the savings would be substantial at the end of the season as the mulch removal and disposal costs are avoided. Before purchasing, users should verify that the biodegradable mulch product meets biodegradable mulch standards. Some relevant standards include EN 17033, ASTM D6400, ASTM D5338, and TUV-Austria OK Biodegradable Soil. Current biodegradable mulch products do not meet National Organic Program (NOP) standards for use in certified organic systems.

Landscape fabrics

Landscape fabric has features similar to plastic film, but its durability permits multi-year (5-7 years) use, which would reduce excessive waste produced from the typical single-season use of polyethylene film. It conducts water and air and conserves them in the soil. It can be used in beds as well as in row middles. Controlling weeds in the row middles leads to a reduction of insect pests and diseases surviving in non-crop hosts. Seeing as they are bulky and generally require manual installation, they are primarily used in small areas such as high tunnels and garden-size plots.

Tarps, solarization, and soil steaming

Black plastic tarp, commonly obtained as a silage cover, is applied to the soil surface for a duration of 3-6 weeks for multiple purposes. It can serve to establish a stale seed bed, terminate cover crops, regulate soil moisture, and elevate soil temperature. It smothers the weeds by obstructing sunlight and creates a warm and moist environment beneath it. Consequently, it fosters a vibrant soil ecosystem, promoting the presence of earthworms and beneficial bacteria, but can also attract small rodents and slugs. There are logistic challenges in using black plastic tarping, including applying and securing the tarps, moving them across fields, and potential water ponding.

Soil solarization can be achieved by using transparent plastic sheets and sealing their edges. By covering the prepared soil with transparent plastic during the hot summer months, from as short as one day to a few weeks depending on solar radiation levels, soil temperatures are elevated to levels lethal to numerous soilborne pests, pathogens, and weed seeds. Growers are also exploring other innovative tools such as soil steaming to combat soilborne pests, pathogens, and weed seeds, especially in high value space such as high tunnels. These tools reduce reliance on chemical pesticides, making them environmentally-conscious options.

Conclusion

The adaptation tactics discussed above demonstrate significant promise by offering effective solutions. The utilization of tools such as tunnels, row covers, insect netting, shade cloth, synthetic mulches, landscape fabrics, and tarps empowers growers to establish more controlled microclimates, effectively mitigating adverse effects and restoring control to the hands of the grower. While these methods do involve additional expenses, they consistently result in improved crop yields and enhanced quality. Growers should exercise their own discretion when incorporating these techniques into their farming plans. In closing, these strategies provide a practical means of addressing climate-related challenges in agriculture, enabling growers to optimize their yields and achieve higher-quality produce.

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Rainfall & Root Rots in Commercial Fruit Operations

Evan Lentz
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Introduction

The success and profitability of farming is largely dependent on the weather each growing season. In some cropping systems, the weather outside of the traditional growing seasons is also of concern – such as sub-zero temperatures in late winter desiccating the flower buds of stone fruit. With perennial crops, special attention needs to be given to the overall trends in weather over many years, as these crops are expected to grow and yield fruit for decades. These climatic considerations can help us to understand the needs of various crops as they perform differently from year to year. Perhaps the most influential climatic factor in agriculture is precipitation. This year, we experienced an unprecedented amount of rainfall during the month of July, 13.93 inches. The rainfall in July of the past three years suggests the reality of climate instability with rainfall totaling 2.66, 10.15, and 0.98 inches for 2022, 2021, and 2020 respectively. This annual swing between floods and droughts can be frustrating as each brings its own challenges to growers.

This year, excessive rainfall caused flooding and periods of standing water at many farms. As a result, observations of plant disease caused by soilborne pathogens were numerous. Of those observed, the three most prevalent were Blueberry Root Rot, Phytophthora Root Rot of Apples, and Black Root Rot of Strawberries. The excessive free moisture in water-logged soils is problematic for many reasons, the first being the stress brought on by the plant roots not having access to oxygen. This stress can increase a plant's susceptibility to a host of diseases. For these diseases, free moisture also acts to quickly move pathogens around the soil environment and to plant roots, increasing the number of affected plants. Although each disease is unique, the factors that cause these diseases and their symptoms are often similar. When growers reported these issues, observations were similar: standing water in the area, a large number of affected plants, and rapid plant decline. Together, these suggest a root disease.

Blueberry Root Rot

This disease can be caused by two fungi, Pythium or Phytophthora. This season, blueberries tested positive for Pythium. Management for this disease will be the same for both pathogens. This is usually an issue in low, poorly drained, and/or heavy-soiled (lots of clay) sites. In waterlogged soil, plants are not able to access oxygen. Excessive moisture in the soil causes the fine roots to turn black and rot. Even after the area drains, plants will have severely compromised root systems. Symptoms include yellowing or reddening of leaves, defoliation, stunting, dieback, and plant death (Figure 1).

Figure 1 – Above ground symptoms of Blueberry Root Rot caused by Pythium (Lentz, UConn Extension)

The best management strategy for this disease is proper site selection. However, with our rapidly and ever-changing climate, what seemed like an adequate site 10 years ago might be somewhat problematic today. The excessive rainfall this season created standing water that lasted for days at a time in many locations. Just a couple of days under water is enough to severely compromise your plants. Other options include improving drainage (be on the lookout for climate-smart agriculture grants from CT Department of Ariculture) or applying the fungicide Mefenoxam (Ridomil Gold). This material is primarily used at planting where this issue is anticipated, with a single reapplication allowed prior to conditions favorable for disease. However, it can also be used as a drench in established plantings (either type of applications has a maximum of 7.2 pt/acre/year). This product will do nothing to help plants that are already affected by symptoms. More information in the New England Guide.

Similar to Blueberry Root Rot, apples are susceptible to the same pathogen, Phytophthora. In apples this pathogen can cause crown, collar, or root rot. Symptoms are similar to those in blueberry with discoloration of leaves, stunted/slow growth, and tree decline (Figure 2). It can often be confused with winter injury, nutrient deficiencies, or even Fireblight (which is what happened in our case).

Figure 2 – Above-ground symptoms of Apple Root Rot caused by Phytophthora (Utah State Extension)

Management strategies remain similar as well, with proper site selection and improving drainage being at the top of the list. Additionally, the Geneva series of rootstocks are all resistant to this disease, with G.16, G.41, G.935, and G.202 all being highly resistant. G.11 is moderately resistant. Stay away from M9, M26, MM 104, and MM 106 if at all possible, in questionable sites. More information can be found here.

Black Root Rot of Strawberry

Everyone's favorite strawberry disease from last year is back, with a vengeance. This root disease is a complex of pathogens, lesion nematodes, and plant stressors that work together to compromise your strawberries. Pathogens involved in this disease are Rhizoctonia, Pythium, or Fusarium. Again, the excess rain this year created the perfect conditions for this disease to thrive. Additional plant stress (nutrition or otherwise) makes plants more susceptible to this disease complex. Figure 3 demonstrates the drastic effects of the disease on the plant's root system.

Figure 3 – Comparison of roots from a healthy strawberry plant (left) and one affected by Black Root Rot (right) (L. Leandro, G. Abad, F. J. Louws, NC State Extension)

Management for this disease depends on your specific site. In poorly drained sites, drainage is recommended (NRCS or other agencies may cost-share or pay for these drains). Crop rotation is important as well – at least 3 years for fields with known Black Root Rot issues. Ideal crops to rotate to are pumpkin, corn, or cover crops such as mustard. If you must replant the same field, consider planting on mounds/hills or using raised beds. Reducing plant stressors whether they be nutritional, water-related, or pest-related should also be a priority.

There are also many materials labeled for this disease including Abound (applied at planting), Rootshield (preventive), Double Nickel (for suppression), Actinovate AG (pre-plant, or via drip irrigation), and many more. Consult the New England Management Guide for more information and materials.

Conclusion

All told, most reports of root diseases this growing season occur in less-than-ideal locations. This includes low-laying areas, poorly drained soils, or heavy soils. Although some of these plants were young, many of the locations had been in production for many years without issues. Yet, excessive rainfall made these marginal sites highly unsuitable to plant growth. Going forward, growers should pay close attention to the impact of varying weather on their farms. For more information about these diseases, management strategies, or climate instability as it relates to commercial fruit production, please contact Evan Lentz at evan.lentz@uconn.edu.

Climate Smart Farming Online Course

Starting this November!

Kicking off in **late November**, UConn Extension will be offering an **online course for new and beginning farmers** to introduce practices that can help farmers become more climate resilient. With 12 modules to choose from, you will be able to tailor this course to the exact needs that you are facing at your farm by completing both mandatory and optional modules. Some of these categories include Soil Health, Silviopasture, On-Farm Composting, Managing Water, Energy Efficiency and more.

This asynchronous course will include an overview of practices, common tools available to farmers, plus bonus materials that will allow you to dive even deeper into subject matters that you plan on implementing on your farm and want to learn more about. Presenters will include Kip Kolesinskas, Shuresh Ghimire, Jacqueline Kowalski, Ana LeGrand, and of course, farmers that are out in the field using some of these tools and practices already.

Course fee is **$60**, but at completion you will receive a **$30 refund**. Sign up will be opening soon, so keep your eyes open for announcements through the Solid Ground listserv, CT Agriculture Bulletin, and other email lists.

Funding for this project was paid for by the Climate Smart Farming: Agriculture and Forestry grant. Funding Awarded and administered by the CT Department of Agriculture.

It's Time to Thank the Squash Bees

Dr. Ana Legrand, Extension Assistant Professor,
Department of Plant Science and Landscape Architecture, UConn

When you pick that perfect pumpkin or enjoy that creamy delicata squash remember the bees behind those moments. Squash bees, bumble bees, and honey bees are key pollinators of squash and pumpkins in the Northeast. Though, in total there are 38 bee species that visit squash and pumpkin flowers in the region. Among these are generalist bees like the honey bees that collect pollen from many plant species and specialist bees who focus their pollen-gathering attention on a few selected plant species. The specialist squash bee, *Eucera* (*Peponapis) pruinosa,* is a solitary ground-nesting bee that exclusively collects pollen from plants in the Cucurbita genus. This bee's range followed the domestication of cucurbits and about 5,000 years ago it expanded its range into eastern North America following the expansion of Cucurbita crop cultivation in the continent.

Squash bees are early risers, beginning their flight activity before sunrise. They can fly in low light and low temperature conditions. Female squash bees contribute to crop pollination by collecting pollen for their offspring. Male bees also contribute to pollination as they search for mates in the flowers during the morning and move pollen attached to their bodies. Male bees find shelter in closed flowers and they stay there until the next morning.

Squash bee Eucera (Peponapis) pruinosa. Photo: USGS Bee Inventory and Monitoring Lab

After mating, female bees start their nest building activities in the vicinity or next to their cucurbit host plants. They prefer to dig their nests in low clay, medium silt and sandy (>35%) soil with adequate drainage.

Nests consist of a main tunnel with laterals that lead to 4 - 5 individual chambers where the female deposits a supply of pollen and then an egg. The egg hatches into a larva that feeds on this pollen developing until it reaches a pre-pupal stage. It is in this form that they overwinter- enclosed in a papery cocoon. Around June to July, they transform into the complete pupal stage and by July adult bees begin to emerge. Adult bees remain active with nesting activities until early September. Female bees can construct several nests during their lifetime and interestingly, they often return to the sites from where they first emerge as adults.

Squash bee Eucera (Peponapis) pruinosa Photo: Susan Ellis, Bugwood.org

Immature squash bees are laying dormant now in their underground nest chambers waiting to emerge when cucurbit flowers become available next year. The main tunnel for a nest can reach 18 inches (46 cm) in depth but most egg chambers are set about 5 - 9 inches (12 - 22 cm) in depth. Check these nests out by inspecting fields or areas near cucurbit cultivation to see if nests are present. These bees are not as defensive as honey bees or bumble bees so they would sting only if directly handled or their nest entrance is blocked. Nests are usually found in groups called nesting aggregations. They can be next to the crops but also in field margins without vegetation or lawns. Look for pencil-sized holes (8 mm or less than ¼ inch) with a small soil mound around it. It is important to recognize these nests and preserve them as much as possible.

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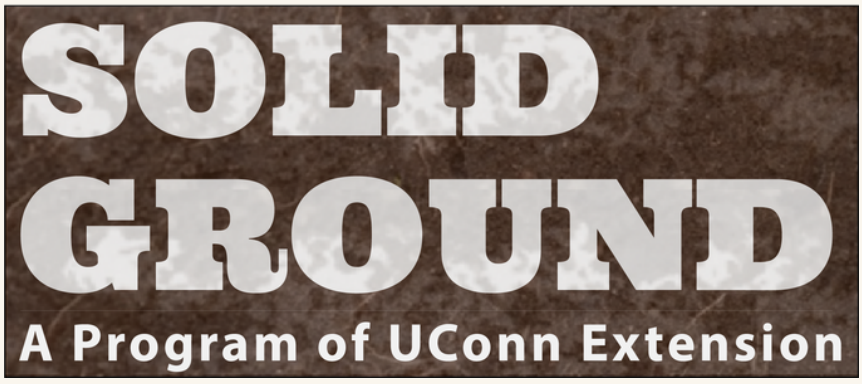
Announcements

Solid Ground Kicking Off

Can't wait to see you at a Solid Ground program soon!



The Solid Ground team at UConn Extension is getting prepared to offer a **new batch of trainings** for new and beginning farmers in the state! These trainings will be starting **later this fall/winter** with the return of our popular Agricultural Mechanic Trainings. These topics will be held in person at educational spaces, or at local farms. Other learning opportunities offered in winter 2023-2024 include: climate smart field days, business training, farm financials, grant writing, farmland mixers, plus a farm managers summit. UConn Extension continues to partner with New CT Farmer Alliance, CT Northeast Organic Farming Association, and CT Farmland Trust to deliver meaningful events for new farmers.

Also, be prepared for the relaunch of our **online Soils Course**! This 10-module online course is for growers looking to learn more about analyzing their soils, understanding soil health, assessing farmland, implementing conservation practices on the farm, and adaptation and mitigation strategies that can be used in the face of a changing climate. The course features Kip Kolesinskas, a former USDA NRCS Soil Scientist and current UConn Solid Ground Professional Soil, Conservation, & Land Use Consultant.

In the meantime, you can still access our website for information about land access, our One-On-One consultations, and lots of videos of recorded webinars, farmer's stories, marketing tactics, and more. The website will also eventually be updated to share more info about managing the business side of your farm and wading through the financial challenges that everyone faces. As programs and updates roll out, we'll be sharing on our website and sending out notifications through our Solid Ground listserv. Want to join our listserv? **Sign up by clicking here!**

UConn Extension's 2024 Vegetable and Small Fruit Growers' Conference Agenda

Save the date! January 9, 2024
UConn Student Union
2110 Hillside Rd, Storrs, CT 06268

- **Bramble: summer vs fall.** *Mary Concklin, Extension Educator Emeritus, UConn*
- **An update on agricultural labor.** Heather Callahan, US Department of Labor, Hartford District Office
- **High tunnel tomato nutrient management: findings from on-farm research in CT and RI.** *Josef Gorres, Assistant Professor, Univ. of Vermont*
- **Niche crop Aronia.** *Evan Lentz, Fruit Extension Specialist, UConn*
- **Alternaria on brassicas in CT.** *Sydney Everhart, Professor, UConn*
- **Understanding nematode parasitism to design better management strategies.** *Raquel Rocha, Agricultural Scientist, CAES*
- **Innovation in fertigation for small fruit crops.** *Trevor Hardy, Brookdale Fruit Farm, NH*
- **Biodegradable Plastic mulch for specialty crop production.** *Shuresh Ghimire, Vegetable Extension Specialist, UConn*
- **Mesotunnels for cucurbit production.** *Sarah Pethybridge, Associate Professor, Cornell University*
- **Vegetable K/P fertility trials and use of biochar.** *Haiying Tao, Assistant Professor, UConn*
- **Trap crops and insectary plants.** *Ana Legrand, IPM Associate Extension Professor*
- **Plant virus diagnostics and control- grapevine virus and potato virus.** *Washington daSilva, Agricultural Scientist, CAES*

Pesticide recertification credits and socializing hour. 4 CEU to be confirmed.
We are anticipating 30 vendors for the trade show, which will be taking place throughout the day.

Registration prices will be coming shortly and registration will open soon. Contact tolland@uconn.edu, (860) 875-3331 if you have any questions!

The University of Connecticut and CT Agricultural Experiment Station are equal opportunity program providers and employers. Please call three weeks prior to this event if special accommodations are needed.

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Ornamental and Turf Online Short Course

UConn Extension offers an online Ornamental & Turf Short Course in the fall and winter, which helps students prepare for the pesticide applicator supervisory exam.

This Short Course is an in-depth review of the information necessary to study for and pass the Ornamental and Turf/Golf Course Superintendents State of Connecticut Supervisory Pesticide Applicator Certification exam. **A student that completes all the modules, works through the quizzes, and studies the resource materials independently should be able to pass both the written and oral state exam successfully.**

This short course consists of eight modules that the student can complete independently: Pesticide Laws and Regulations, Pesticide Safety, Botany, Plant Pathology and Ornamental Plant Diseases, Entomology and Insect Pests of Woody Ornamentals, Area and Dosage Calculations, Turf Management, and Weed Management. Each module consists of learning objectives, topic sections, and slides with a recorded narrative, and closes with a quiz on the material. The modules can be completed and revisited at any time while the student is enrolled in the course.

An instructor will meet virtually with the students weekly on Wednesdays at 5:30-7 p.m. to review each module topic and answer questions. Each weekly class includes a basic overview of the subject and highlights specific pests, their biology, and control.

Expect to spend study time reviewing each module topic outside of the review class. The more time you spend studying the module topics and reviewing each module's post-quiz, the more beneficial the course will be for preparing for the final short course exam and the state exam.

NEXT UPCOMING CLASS starts Wednesday, October 4!

Fall 2023 Ornamental and Turf Short Course

Wednesdays 5:30-7 pm, from October 4 - December 13, 2023

There will be a total of 10 sessions, including 8 sessions for modules, one introductory session, and one wrap up session for questions (there will be no class on the Wednesday before Thanksgiving).

More information and Registration

If you have any questions,
please contact Alyssa Siegel-Miles, alyssa.siegel-miles@uconn.edu

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EXTENSION

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