



Vermont Vegetable and Berry News –March 12, 2019
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TESTING HIGH TUNNEL SOILS

In established tunnels with relatively high organic matter (compared to the field) it is helpful to use the UMaine soil test lab's "long-term high tunnel test." See: <http://anlab.umesci.maine.edu/>

The cost is \$25, and the lab runs both the Saturated Media Extract (SME) test, as well as the regular field soil test (modified Morgan's extract). The SME test measures water-soluble, immediately available nutrients and the field soil test measures nutrients held in reserve, extracted with a weak acid. Both tests measure soil pH and organic matter, but the SME test results also include soluble salts (electrical conductivity) and available N (as nitrate-N and ammonium-N) which are important measures for tunnel soils, and potting mixes.

To get accurate SME test results make sure your potting mix or soil has been moist and warm (room temperature) for at least a week. Send a pint (not a cup as for field soil test) to the soil test lab. UMaine copies me on VT test results so I can provide suggestions if you like.

FINDINGS FROM 2018 TOMATO TUNNEL STUDY

With funding from both the Vermont and the New England Vegetable and Berry Grower Associations, Extension personnel from MA, ME, NH, RI and VT collaborated to collect data about cultural practices plus soil and leaf nutrient levels in 20 tunnels growing in-ground tomatoes across the region. UMass and UMaine soil test labs did the analyses.

Some findings: production practices vary a lot, as do yields, which ranged from 1 to 5 pounds per square foot. (That's equivalent to 20 tons to 100 tons/acre!) Transplant dates ranged from the end of March to the end of May, and spacing ranged from about 3 sq. ft. to over 7 sq. ft. per stem. A significant conclusion: fertilizer rates should be based on yield goals, not "one size fits all" and we are working to adjust our recommendations accordingly.

Some suggestions for improving tomato tunnel performance:

- Estimate your target yield, then track yield (weight fruit or just count boxes)
- Consider tighter plant spacing, if appropriate (though this could increase disease pressure)
- Measure soil compaction, and address if needed (by subsoiling, or using raised beds)
- Add irrigation lines for uniform soil moisture (4 lines per bed or row may be needed)
- Keep up with leaf pruning (to improve air flow, stimulate reproductive growth)
- Scout often; be prepared to manage pests (don't let aphids, powdery mildew, etc. get going)
- Adjust soil pH to mid-6's, aim for organic matter 6%+ (build OM over time)
- Monitor available and reserve soil nutrient levels (use the long term high tunnel test)
- Provide sufficient N, P and K needed for high yields typical of tunnels.

Here are slides that summarize the tomato tunnel study:

<http://www.uvm.edu/vtvegandberry/Pubs/TomatoHighTunnelStudy2018.pdf>

HABITAT PLANTINGS FOR BENEFICIAL BUGS IN HIGH TUNNELS

Cheryl Frank Sullivan and Margaret Skinner

University of Vermont Entomology Research Laboratory

Beneficial insects such as pollinators and natural enemies can be an important tool for managing insect pests of high tunnel or greenhouse vegetables and ornamentals. Providing attractive habitat to beneficial insects can contribute to better yields and lower pest populations. Plant-mediated IPM systems (e.g., indicator, banker, and habitat plantings) are innovative tools to manage good bug and bad bugs in high tunnels, at low cost. We have conducted many projects to evaluate these IPM systems for high tunnel crops across the Northeast.

In high tunnels, we tested habitat plantings of alyssum, bush beans, marigolds, borage and dill in tomatoes. These plants provide pollen and nectar to feed the beneficials in the absence of prey. They also act as indicator plants for early detection of pests and natural enemies. Bush beans are very attractive to spider mites and serve as an early warning system of an impending outbreak. Alyssum as a habitat plant can support natural enemies in high tunnels and landscape settings. Its tolerance to heat and cold, prolific flowering pattern throughout the growing season, non-invasive nature and ease of care make it a top choice as a habitat plant. It attracted large numbers of parasitic wasps, predatory bugs and syrphid flies all season long.

In another study, we established habitat including alyssum, coreopsis, blue cornflower, Indian blanket, cosmos, sunflowers and zinnias. These provide a diversity of floral shapes, sizes and heights throughout the growing season. Many pest-fighting pollinators and other natural enemies were observed in these plantings. Some were natural enemies that are often purchased to manage notorious nursery pests such as aphids and thrips. For example, the insidious flower bug (*Orius insidiosus*), also called the minute pirate bug, is a predator of many small, soft-bodied insects. When prey is scarce they consume pollen and nectar. Their small size allows them to search for prey that hide deep within blossoms.

Habitat plantings are easy and inexpensive for growers to start themselves. To learn more about how to get started using plant-mediated IPM systems, contact Cheryl Frank Sullivan at cfrank@uvm.edu and/or view the following pages from our website:

<https://www.uvm.edu/~entlab/index.html>

<https://www.uvm.edu/~entlab/Greenhouse%20IPM/UVMGreenhouseIPM.html>

<https://www.uvm.edu/~entlab/Landscape%20IPM/LandscapeIPM.html>

<https://www.uvm.edu/~entlab/High%20Tunnel%20IPM/HighTunnelIPM.html>

The full version of this article, with color photos, is posted at:

<http://www.uvm.edu/vtvegandberry/Pubs/HabitatPlants.pdf>

SIGN UP FOR 2019 CAPS BY APRIL 1

CAPS (Community Accreditation for Produce Safety) is a voluntary, practical approach to documenting on-farm practices that reduce food safety risks. CAPS was developed by the VVBGA, UVM Extension and the Vermont Agency of Agriculture.

CAPS uses an on-line platform to help growers write and implement a produce safety plan, and then upload evidence documenting that implementation. Growers receive a CAPS e-certificate after successful peer review of their plan and verification documents.

Create an account and register for the 2019 CAPS Program and certificate here:

<https://ciids.org/vvbgga/farmer>

The 18 requirements for CAPS certification are here:

<https://practicalproducesafetyvt.files.wordpress.com/2018/08/overview-of-caps-requirements.pdf>

More information on CAPS-PLUS, the top-tier certificate program designed for larger regional market access, and FSMA covered farms, is here:

<https://practicalproducesafetyvt.wordpress.com/caps-plus-certificate/>

Financial aid is available to make CAPS possible, regardless of farm size or income. Questions? Contact CAPS coordinator Hans Estrin a hestrin@uvm.edu or phone/text 802-380-2109.

NEW FACT SHEET ON DRIP IRRIGATION AVAILABLE

Are you looking to get started with drip irrigation, or expand your system? Confused about how to integrate fertilizer injectors? Want to know more about backflow preventers? A new UVM Extension Fact Sheet presents the most common components and options in drip irrigation systems, accompanied by estimated costs. Additional materials at the end of the fact sheet will point you towards resources to help you design your own irrigation system, as well as other sources of information and cost-share programs.

See: http://www.uvm.edu/vtvegandberry/Pubs/UVM_dripirrigation.pdf

BRASSICA PESTS - WEBINAR SERIES

These on-line workshops, funded by Northeast SARE, will be held Fridays from 12-1pm. Please allow a few minutes before noon to download the program, sign-in, and get acquainted with the program. See dates in the schedule below. Each workshop will be ~30 minutes of presentation with 15-30 minutes for your questions. Questions can be sent in ahead of time by email (sscheufele@umass.edu), or participants can post questions during the seminar via chat-box. Register for each online workshop with the links in the schedule below. You will receive a link via email to join the workshop when the time comes. You can join by computer to see the live-streaming presentation and Q&A, or join by phone to just listen in.

March 15: Cabbage aphid biology, management, and research updates

Becky Sideman and Anna Wallingford, UNH Extension

<https://attendee.gotowebinar.com/register/5632438925769797644>

March 22: Caterpillars 1: Cabbage Looper and Diamondback moth

Dan Gilrein, Cornell Cooperative Extension-Suffolk County

<https://attendee.gotowebinar.com/register/4206484494863656972>

March 29: Caterpillars 2: Imported Cabbageworm, Cross-Striped Cabbageworm

Ana Legrand, UConn Extension

<https://attendee.gotowebinar.com/register/7198846071786482700>

April 5: Cabbage maggot biology, management, and research updates
Faruque Zaman, Cornell Cooperative Extension-Suffolk County
<https://attendee.gotowebinar.com/register/2223946282727978508>

April 12: Flea beetle biology, management, and research updates
Dan Gilrein and Faruque Zaman, Cornell Cooperative Extension-Suffolk County
<https://attendee.gotowebinar.com/register/4188913199540448268>

NUTRIENT MANAGEMENT AND SOIL HEALTH PRESENTATIONS

The following slide presentation from recent workshops are posted at:
<http://www.uvm.edu/vtvegandberry/NMWorkshops2019.html>

Managing Soil Organic Matter for Nitrogen. Wendy Sue Harper
Nitrogen Availability. Becky Maden
Nutrient Management at Diggers' Mirth Collective Farm. Hilary Martin
Nutrient Management for Vegetable Farms. Becky Maden
P and N Management. Katie Campbell-Nelson
Soil Sampling and Test Interpretation. Becky Maden
Soil Health and Nutrient Dynamics. Kirsten Workman
Soil Conservation Practices for Vegetable Farms. Vern Grubinger
Soil Fertility at Jericho Settlers Farm. Christa Alexander
Soil Health and Nutrient Management at Eveningsong Farm. Ryan Fitzbeauchamp
Soil Health and Conservation: Erosion, Buffers. Laura Johnson
Overview of farmOS. Becky Maden

HIGH TUNNEL SURVEY TO GUIDE RESEARCH

Researchers managing the project “Improving nutrient and pest management in high tunnel production” (funded by Northeast SARE) want to learn more about the practices you use and the challenges you face in your high tunnels. Your responses will inform research and outreach programs for improving nutrient and pest management in high tunnels. The short survey is at:

https://unh.az1.qualtrics.com/jfe/form/SV_0TmQgBOHqNP4M05

After filling out the survey you'll be able to enter a raffle to win: Free registration to our next High Tunnel Conference, a copy of The Greenhouse and Hoophouse Growers' Handbook, or a gift certificate for free high tunnel soil tests.

LOW INTEREST LOANS, WITH FREE BUSINESS START-UP ADVICE

Vermont Community Loan Fund is pleased to announce the availability of flexible, low cost financing for qualified agricultural borrowers through the SPROUT program, which provides up to \$60,000 with a term of up to six years. Principal payments are deferred for two years, with 1% interest payments only during that time, and a fixed 2% interest plus principal payment thereafter. These funds are intended to support farms, food producers, and forest products businesses in start-up or early stage of operations with demonstrated or projected growth. This program also provides business development and advisory services at no cost. Contact: Bonnie Smoren, Vermont Community Loan Fund, bonnie@vclf.org or (802) 224-9141.

VERMONT PESTICIDE APPLICATOR TRAINING AND CORE EXAM, APRIL 23 OR 24

Review of the Northeast CORE Manual followed by the VT Applicator CORE Exam will be offered on April 23, White River Junction or April 24, Burlington, from 9-4 each day.

This program will review the Northeast CORE Manual and Vermont pesticide regulations necessary to understand to pass the Vermont Pesticide Applicator CORE exam, which will be given after the review, from 2-4 p.m. No “category exams” will be given, they can be scheduled with VAAFM later. Coffee and pastries provided. Lunch on your own.

This review is for anyone in Vermont who uses, supervises, recommends, or sells pesticides and/or trains Worker Protection Standard handlers/workers including landscapers, nursery employees, farmers, agricultural employees. All farmers that apply pesticides of any kind and have employees should obtain their pesticide applicator license. If you already have your license, attending the workshop will provide 4 Vermont recertification credits. The exam is not required to earn credits.

It is necessary to study the CORE manual and inserts BEFORE the review to have all the knowledge necessary to pass the exam. Manuals cost \$41 and, with the required inserts (pdf downloads) must be obtained in advance from the Vermont Agency of Agriculture, Food & Markets at

<https://bit.ly/2QvR7MT>

Registration fee is \$30; after April 9, Late Registration is \$40.

Register for WRJ at: <https://www.regonline.com/2019initialcertwhiteriverjct>

Register for Burlington at: <https://www.regonline.com/2019initialcertburlington>

Questions? Or to request a disability-related accommodation to participate in this program, contact Sarah Kingsley-Richards at (802)656-0475 or sarah.kingsley@uvm.edu