UMass Extension
Vegetable Notes
For Vegetable Farmers in Massachusetts since 1975

Volume 28, Number 8

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In this issue:

Sponsors

This is our second year of fundraising to help keep this publication going, and accessible to growers at no cost. We have raised over $8,000 so far this year in support of the production of Vegetable Notes! Thank you to the many farmers and businesses in Massachusetts and around New England who donated. We are so grateful for your work, and for your support of our program. The farmers and businesses below contributed at the sponsorhsip level. We are very thankful for their generosity.

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Crop conditions

Recent rains and warm weather have really helped boost some warm season crops like pepper, eggplant, and melons along—whether in the field where they are establishing nicely or in the greenhouse where they put on a lot of quick growth before going out into the field. The first of the strawberries are even rolling in! Unfortunately the weeds also enjoyed the heat and rain, and cultivation is a high priority task this week for many farms. Sweet potato slips are going in and fall pumpkins are being seeded. Folks are now harvesting lettuce, chard, pak choy, salad greens, radishes, and salad turnips, while asparagus is starting to slow down. On the pest front, we are experiencing Beetle Mania! All beetles on solanaceous crops in this week's pest alert emerged in a Franklin Co., MA field on Thursday evening of last week and were at threshold by Friday afternoon the following day! Also emerging late last week were striped cucumber beetles, and brassica flea beetles continued to be a hassle. For those reliant upon row cover for beetle control, consider using insect netting like Proteknet which protects crops from insects without increasing the temperature under cover. Now that crops are established, growers are thinking about summer cover crops as a way to fill bare spots in crop successions or to build soil in a fallow field.

This farmer is making the most of his fallow field, mowing down rye and vetch that was planted in mid-August of last year. After letting the cover crop break down for a few weeks, he will be establishing sorghum sudan grass to build even more organic matter in this field to be ready for a Spring crop in 2017. Photo, K. Campbell-Nelson

Pest alerts

Allium: Onion Maggot: Has reached peak emergence (735 GDD base 40F) of the overwintering generation across MA. If active, maggots should be feeding now and can be especially damaging to crops before the 5 leaf stage, though become less active as soils heat up. Row cover put down before emergence, insecticide treated seed or in-furrow drenches at planting are the most common treatments. If maggots are found now (averaging 1 per plant), then chloropyrifos is the only labeled option. Treatment of adults is rarely effective.

Purple Blotch: Since the rain on Monday, the risk of infection with purple blotch has jumped to "High Risk" for most locations in MA, according to the NEWA Onion Disease Forecast. Begin a preventive spray program now if your alliums have reached the 5 leaf stage, especially if you have struggled with this pathogen in the past and if you are using a biological pesticide such as a *Bacillus subtilis* material. Maintain a regular labeled spray interval and rotate among classes of fungicide chemistries if you are using targeted materials such as Group 2, 3, or 11.

Asparagus: Fusarium crown rot (photo) was diagnosed in Franklin Co., MA this week in a field with multiple cultivars and years of planting. Symptoms can look like *Phytophthora,* but instead of having soft, water-soaked lesions, the crown tissue is firm. Many growers in the eastern US were forced to abandon asparagus crops in the 1960s due to this disease and the pathogen appears to be present in most former asparagus field soils. Move beds if this disease is found in your field. Fungicide applications have been largely ineffective. Preventive measures include choosing well-drained, sandy soils and planting tolerant/resistant cultivars such as the 'Jersey' series.

Fusarium crown rot on asparagus. Photo, E. Stark

Brassica: Cabbage aphids have been reported on outdoor kale near overwintered kale in Barnstable Co., MA. This is the earliest report of this pest we have received. As more brassica crops are over wintered in tunnels, it is not surprising that this pest is overwintering with them.

Flea beetles continued to be above threshold in brassica fields across MA this week, and even the less favored waxy leaved

crops (kale, cabbage, broccoli) were being attacked. Treat if 10% of plants have damage or if there is an average of 1 flea beetle per plant.

Flea beetle on kale. Photo, K. Campbell-Nelson

Imported cabbage worm eggs have been found on the underside of brassica crops in Barnstable Co., MA. Keep an eye out for eggs and emerging larvae.

Cucurbit: **Striped cucumber beetle,** along with many other beetles in this alert, emerged seemingly overnight on Thursday of last week in Franklin Co., MA. Imidacloprid was very effective when applied to a pumpkin crop well above threshold. This pest was also observed above threshold on summer squash in Barnstable Co., MA. Scout 25 plants twice per week from crop emergence to 3 leaf stage, then weekly. Count beetles per plant and note damage to leaves and stems. The economic threshold depends on the crop. To prevent bacterial wilt in highly susceptible crops such as cucumber, muskmelons, summer squash, and zucchini, treat when there is 1 beetle for every 2 plants. Less wilt-susceptible crops (butternut, watermelon, most pumpkins) will tolerate 1 or 2 beetles per plant without yield losses. Spray within 24 hours after the threshold is reached. Many growers are now growing seeds treated with thiamethoxam and are achieving early season beetle control.

Potato flea beetle on eggplant. Photo, K. Campbell-Nelson

Set out traps for **Squash vine borer** in thick stemmed cucurbits such as squash, or giant pumpkin this week to monitor the arrival of this pest which was first captured on June 10th in 2015 at 545 GDD base 50°F. This pest has emerged earlier than the published models have established at 900 GDD base 50°F (Table 1), so be sure to start trapping early. Treatment threshold is 5 moths per week. Sources for traps and pheromone lures include Gempler's, Great Lakes IPM, and Trece. Heliothis traps used for European corn borer and corn earworm work best.

Solonaceous: **Potato Flea Beetle** (which is a different species than the flea beetle found on brassicas) was at threshold on transplanted eggplant in Franklin Co., MA this week and found in tomato, potato and eggplant in Barnstable Co., MA as well. Treat newly set eggplant or tomato transplants if they have 2 flea beetles per plant, 3" to 6" tall seedlings if they have greater than 4 beetles per plant, and plants over 6" tall if they have 8 beetles per plant. Potatoes can withstand more damage; sweep young plants 25 times and spot treat potatoes along field edges if 50 beetles are found in the sweep net.

Colorado potato beetle on eggplant. Photo, K.Campbell-Nelson

Colorado potato beetle Adults were found on Friday in large numbers in Franklin Co., MA on eggplant and potato but no eggs or larvae yet. Treat eggplant when you find 2 small or 1 large larvae per plant (if plant is 6 inches or smaller). For early to midseason potatoes, scout 50 stalks and treat if 25 or more adults, 200 or more small larvae, or 75 or more large larvae are found.

Three lined potato beetle eggs and adults were found on potato in Washington Co., RI and adults were found on potato and tomatillo in Franklin Co., MA. Sometimes this insect can be confused with striped cucumber beetle. No thresholds have been determined for this pest and they do not usually cause economic injury to crops. Larvae carry piles of excrement on their backs…gross! They do prefer tomatillos.

Three-lined potato beetle on potato. Photo, K.Campbell-Nelson

Sweet Corn: Traps are out and **European corn borer** counts are climbing in some parts of the state while other locations are still not seeing any moth activity (Table 2). Adults are expected to emerge at 374 GDD base 50°F, which only a few of our locations in MA have reached (Table 1), yet we are capturing moths in traps. While GDD models can be helpful indicators, trapping is the best way to know for sure if this pest has emerged. One location in Eerie Co., NY has captured **Fall armyworm** and **Corn earworm** already! Corn is up 20" in Washington Co., RI after plastic was removed. Some growers are on to their 3-5th plants already. No insecticide action is necessary now. If your corn is

6-12" tall and moths are present in your location, in which case, you should be making your first releases of *Trichogramma ostrinea*. *T. ostriniae* may be ordered from IPM Laboratories in Locke, New York, 315-497-2063 (www.ipmlabs.com). Order well in advance! Place your order based on acreage after you have made your first planting.

* When not given here, refer to the New England Vegetable Management Guide for scouting thresholds and treatment options.

Table 1. Accumulated Growing Degree Days (F): 1/1/16 - 6/01/16

Location	GDD (base 40°F)	GDD (base 50°F)
Western, MA		
Ashfield	845.5	309.5
South Deerfield	966.2	363.4
Pittsfield	847	297
Central, MA		
Bolton	974	368.4
Northbridge	982.9	340.5
Phillipston	825.6	305.3
Eastern, MA		
Ipswich	880.1	283.3
Weston	1049.3	391.2
Seekonk	1145	410.6
Hollis, NH	948.5	354.8
Burlington, VT	873.9	380.4
Newport, RI	979.1	294.1

Table 2. Weekly total sweet corn trap counts for the week of 5/24/16 – 5/31/16

Location	ECB	FAW	CEW
Western, MA			
Amherst	0	-	-
Sheffield	12	-	-
South Deerfield	2	-	-
Whately	10	-	-
Central, MA			
Leominster	-	-	-
Bolton	-	-	-
Eastern, MA			
Barnstable Co.	1	-	-
Sharon	-	-	-
Swansea	-	-	-
NH			
Litchfield	8	-	-
Hollis	12	-	-
Mason	0	-	-
Eerie Co. NY	8	1	1

European corn borer (ECB), Fall armyworm (FAW), Western bean cutworm (WBC), Corn earworm (CEW). Dashes indicate traps have not yet been setup.

KNOCK WEEDS OUT AT CRITICAL TIMES

Written by Mark Schonbeck, Virginia Association for Biological Farming for eXtension March 23, 2010. This is an excerpt, to read the full article please visit eXtension here: http://articles.extension.org/pages/18882/knock-weeds-out-at-critical-times

The "control" part of organic weed management aims to remove weeds that threaten current or future production at the least possible cost in labor, fuel, machinery and potential harm to the soil. Trying to eliminate every weed on the farm would likely lead to red ink, and can defeat efforts to build healthy soil. Thus, the farmer must continually evaluate: do I need to kill the weeds in this crop now? When are the critical times for weed control during the course of the season? For the organic farmer, critical times for weed control are those points at which cultivation or other measures will most effectively protect current and future crops from the adverse effects of weeds. Critical times include:

- When the crop is planted
- When flushes of weed seedlings are just emerging
- During the crop's minimum weed-free period

- When perennial weed reserves reach their minimum
- Before weeds form viable seed or vegetative propagules

Start with a Clean Seedbed. Weeds that emerge before or with the crop have a greater impact on crop yield than later-emerging weeds. Planting into a clean, weed-free field is essential. Remember that an apparently clean seedbed prepared just a few days before the vegetable is planted may have millions of germinating weed seedlings per acre that have not yet visibly emerged. Whenever possible, plant immediately after the final step in preparing the ground – whether that step is harrowing, rototilling, incorporating amendments, shaping the beds, or strip-tilling the crop rows.

For many crops, blind cultivation can be used to keep the seedbed clean until the crop is up. Larger-seeded vegetables can be rotary-hoed to give them a head start. Weed seedlings that beat slow-germinating crops like carrot to the punch can be removed by flaming. Some farmers time this operation by covering a small patch with a pane of glass. When the crop first emerges under the glass, the field is flame-weeded. The rest of the crop then emerges a day or two later, in a clean field.

Get the Weeds When They are Small. The smaller the weed, the easier it is to kill through light cultivation or flame weeding. Early in the growing season when large "flushes" of weeds often emerge, many farmers do a very shallow cultivation when weeds are in the "white thread" stage or are just emerging (long before the weeds begin to compete with the crop), rather than waiting until the field is visibly weedy. Shallow cultivation often pays because it:

- Minimizes damage to soil structure and soil life
- Minimizes light-stimulated germination of additional weeds
- Requires less fuel and less effort
- Can kill millions of newly emerging weeds per acre

This approach may be especially advantageous during early stages of crop establishment and growth. Cultivate before weeds get more than an inch tall. Some weeds develop an incredible ability to re-root and survive light cultivation once they pass this stage. Weeds two to three inches tall require more vigorous cultivation, which consumes more fuel, disrupts soil structure, and stimulates additional weed seed germination. One possible disadvantage to this "proactive" approach to timely cultivation is that it can result in multiple passes through the field to keep removing small weeds until the crop is established.

Avoiding Overcultivation: Minimum Versus Critical Weed-Free Periods. Weed scientists and farmers have a couple ways of estimating when cultivation is most important for keeping weeds from hurting the current crop. One is to ask how long after crop planting can weeds be allowed to grow before they must be removed (the "maximum weed-infested period"). Another is to ask how long the crop must be kept clean before later-emerging weeds can be allowed to remain (the "minimum weed-free period"). A third is to determine the stage(s) of development in which the presence of weeds is most likely to hurt yields (the "critical period of weed competition" or "critical period for weed control").

Assuming that the crop is planted into a clean seedbed, germinating crops and weeds start their "race" at the same time. Weeds that germinate with the crop usually do not affect the crop's growth until two or three weeks after emergence – when they first become large enough to begin competing for moisture and nutrients. This initial "grace period" during which weed can grow without reducing the crop's yield potential is the maximum weed-infested period. The farmer needs to cultivate or otherwise control weeds before the end of this period.

Weeds that emerge with or shortly after the crop have the greatest potential for causing economic damage if allowed to grow unchecked. Later emerging weeds have less effect, and those that emerge after a certain point in time no longer affect yield. This point is the minimum weed-free period.

The interval from the end of the maximum weed-infested period until the end of the minimum weed free period defines the critical period for weed control for the crop. Since the crop can be adversely affected either by early-emerging weeds allowed to persist into this period, or by weeds emerging during this period and allowed to grow, the weed control strategy should focus on keeping the crop clean through this time. If cultivation is limited to one or two passes, it must be strategically scheduled within this period, and implements designed to be effective against the largest weeds present must be used. Possible advantages to this approach include:

- Less labor and machinery time is expended on weed control

- Fewer operations are easier to schedule
- Less frequent disturbance of the soil surface can mean less surface crusting and erosion
- Larger weeds leave more residue that can further protect soil surface from degradation

However, this approach can be risky especially in vegetable crops that are not highly competitive or have long critical periods for weed control (e.g., carrot), or that need to be quite clean at harvest (e.g., salad mix). When cultivation is delayed until the beginning of the critical period for weed competition, the farmer depends on favorable conditions for effective cultivation at that time. If an untimely rain falls, the additional delay will likely result in a significant yield loss. Therefore, most Extension agents and consultants advise organic vegetable growers to "get weeds while they are small," especially early in crop development.

Keep the Crop Clean Through its Minimum Weed-Free Period. Once the early flushes of weeds have been knocked out, continue monitoring and controlling later-emerging weeds until the crop has passed through its minimum weed-free period. For vigorous vegetables this period is generally the first one-third of the crop's growing season, or four to six weeks for crops like tomato, squash, cucumber, snap bean, and transplanted brassicas; and perhaps a little longer for eggplant and pepper. Less vigorous crops like onion or carrot may need weed-free conditions for at least the first half of their life cycle, perhaps eight weeks or more. Crops differ in their inherent weed tolerance even during the minimum weed-free period. Slow-growing, weed-sensitive vegetables like parsley, direct-sown onion or carrot can suffer if weeds are allowed to reach the two-leaf stage before cultivation. Thus, it may pay to "cultivate early and often," knocking weeds out in the white-thread stage until the crop is well established. In vigorous crops like beans, sweet corn, or potatoes, one early cultivation and a second pass to remove later-emerging weeds at the two-leaf stage or even a little larger, may be sufficient.

While the crop is still small, those weeds emerging closest to crop plants compete most severely. Therefore, cultivation must effectively remove within-row weeds, as well as weeds between rows. Timing is critical for mechanical within-row weeding, which works only when the weeds are tiny and the crop is sufficiently large that it can withstand the effects of light cultivation. Later in the minimum weed-free period, the growing crop begins to shade out emerging within-row weeds, while weeds emerging between rows can still grow unimpeded and pose a threat. At this point, some vegetables can be cultivated with a between-row implement adjusted to throw some earth into the row to bury and thereby hinder small within-row weeds. This works well for potato, corn, tomato, broccoli, and other tall vegetables that tolerate hilling-up, but of course not for lettuce, spinach, and other vegetables whose edible parts form close to the ground.

SUMMER COVER CROPS

Following early season crops like peas, radish, or even winter wheat with a cover crop this summer is a great way to improve fields. Bare soil is subject to pounding rains, erosion and weeds going to seed. In fact, according to NRCS, farm soils in Massachusetts are most prone to erosion in early summer when we get heavy rains on tilled fields. Fill that open niche by planting a soil-improving, short-cycle cover crop. For planting in June or July, there are several good legume and non-legume choices that grow rapidly recommended by Gordon Johnson, Extension Vegetable and Fruit Specialist from University of Delaware.

Legumes

Cowpea (*Vigna unguiculata*)
Also known as blackeyed or southern pea, this crop is underutilized in our area. It is fast growing with peak biomass often in 60 days. Cowpeas can fix up to 100 lbsN/a with biomass of 3000-4000 lbs/a. Cowpeas grow well in poor soils and can handle droughty conditions. Drill at 40-50 lbs/a and broadcast at 70-100lbs/A. Certain varieties such as California Blackeye #5 and Mississippi Silver are poor nematode hosts and will be beneficial in systems where root knot nematode is a problem. See this site for nematode ratings of different cowpea varieties http://edis.ifas.ufl.edu/in516#TABLE_1. Cowpeas also can be harvested in the immature pod stage as a fresh legume so can serve dual purpose on small farms.

Soybean
Soybean can also be a good cover crop drilled at 60 lbs per acre. Forage-type soybeans produce considerable biomass and make excellent cover crops. For nematode suppression, use of root knot nematode resistant varieties may be beneficial. Edamame types can be harvested and sold in green pod stage and the residue returned to the soil for soil building, again serving a dual purpose on small farms.

Sunnhemp (*Crotalaria juncea*)
This tropical legume is used extensively for soil building in countries such as Brazil and India and has great potential in our humid tropic feeling summers. Drill 20-30 lbs of seed per acre. Sunhemp can produce very high amounts of biomass (10 ton biomass is not unheard of in Florida – amounts will be lower in Massachusetts, expect 3-4 tons). It is a high nitrogen fixing legume and can contribute over 100 lbsN/a to a following crop. Sunhemp grows very fast in the summer, reaching 6 feet or taller in 8 weeks. However, a better way to manage sunnhemp is to let it grow to about 1-3 feet tall, then mow it and let it regrow again. If allowed to get too tall and old the stems will become tough and fibrous and will not decompose rapidly. Sunnhemp is a day length sensitive crop. It will grow any time during the summer, however it will not flower and go to seed until the days start getting shorter in very late summer.


Sunhemp in flower. Phot, M. Hashemi

Non Legumes

Sorghum-Sudangrass (*Sorghum bicolor* x *S. sudanense*)
Sorghum-sudangrass is a cross between forage or grain sorghum and sudangrass. It is a warm-season annual grass that grows well in hot conditions and produces a large amount of biomass. Plant at 20-40 lbs per acre drilled or 40-50lbs/A broadcast. Of all the non-legumes, it is the most useful for soil building. Sorghum sudangrass will often reach 6 ft in height. Like sunnhemp, it should be mowed and allowed to regrow to enhance biomass production and have more tender material that decomposes more quickly. Expect 3-4 tons of biomass addition per acre. As a grass, to get the most growth you will need to add nitrogen fertilizer (40-80 lbs/a). If incorporated at a young stage, the nitrogen will be re-released for the following crop in the same year. Sorghum-sudangrass is very effective at suppressing weeds and has been shown to have allelopathic and biofumigant properties. Research on nematode suppression by sorghum-sudangrass is mixed with some studies showing that sorgum-sudangrass suppresses nematode levels. Choose finer stemmed, leafy varieties when available. Brown midrib types will decompose more quickly because they have less lignin.


Summer mowing of sorgham sudan grass. Photo, A. Brown

Phacelia (*Phacelia tanacetifolia*) also known as blue or purple tansy is a good cover crop for use in rotation on vegetable farms because it is not related to many crop families. This fast growing cover crop prefers mid-summer seeding. While it does not have a deep taproot, this crop is a wonderful soil aggregator in the top 2 inches. Seed at 1lb/a drilled and 3lb/a broadcast. Benneficial predators and parasitoids, bees and pollinators are attracted by the fuzzy blue/purple flowers. This cover crop will winterkill at 15°F.


Phacelia tanacetifolia. Photo, L. Rignanese, CalPhotos database

Forage-type Pearl Millet (*Pennisetum glaucum*)
Pearl millet is a tall summer annual grass that grows 4 to 8 ft. tall. It is well adapted to sandy and/or infertile soils and does well in the summer heat. Forage types are better adapted for soil improvement than the grain types. Seed at 20-30 lbs/a drilled or 40-50 lbs/A boardcast. Expect 3-4 tons of biomass addition per acre. Again, as a grass, to get the most growth you will need to add nitrogen fertilizer (40-80 lbs/a). Pearl millet has been shown to suppress some nematodes. Forage pearl millet can make a good mulch for late-summer planted no-till or strip till crops.

Buckwheat (*Fagopyrum esculentum*)
If weed suppression is the main goal, buckwheat is preferable and can be sown as early as May 20. As a broadleaf plant, it covers the ground earlier than grass cover crops, especially in early June, and out-competes weeds. Buckwheat can

be drilled at 50 lbs/a or broadcast at 70 lbs/a. A good stand of buckwheat attracts beneficial insects, improves soil tilth, and produces more biomass than any other cover crop in the short time it grows, but doesn't do well if the plow layer is compacted. It scavenges phosphorus from soil and makes it available to subsequent crops. If the field is low in nitrogen and phosphorous, buckwheat will do well without additional fertilizer. Buckwheat should be mowed about 40 days after planting or right at flowering to prevent it from going to seed. Buckwheat decomposes quickly after incorporation. The main production risks associated with buckwheat are a failed stand and letting it go to seed.

Buckwheat. Photo, A. Stone, OSU

Additional Information

Summer Soil Improving Crops for Vegetable Rotations , Gordon Johnson, Extension Vegetable and Fruit Specialist, University of Delaware.

Cover Crop Guide for Vegetable Growers: http://www.covercrop.net.

Cover Crop Mixtures and Planting Dates: http://www.hort.cornell.edu/extension/organic/ocs/reports/Cover%20Crops%20Planting%20and%20Termination.pdf

Managing Cover Crops Profitably: http://www.sare.org/publications/covercrops.htm

Cover Crop Periodic Table: http://www.ars.usda.gov/Main/docs.htm?docid=20323

-Updated for 2016 by Katie Campbell-Nelson

Events

Drip Irrigation Twilight Meeting

When: Friday June 3rd, 2016 from 3:00pm-7:00pm
Where: Brookdale Fruit Farm - 36 Broad Street, Hollis NH 03049

The purpose of this meeting is to review what drip irrigation options and strategies vegetable and fruit growers should be considering for the coming growing season. We will be presenting a hands-on demonstration on setting up a drip irrigation system. Starting from the pond to the field describing the various components of the drip irrigation system, fertigation and chemigation will be discussed.

Speakers include: Trevor Hardy (Brookdale), Bill Lamont (Penn State University), Bill Wolfram (Toro), Chelsea Smith (BASF), Chad Cochrane (NRCS), Nate Nourse (Nourse Nursery), Tom Matt (Kifco), George Hamilton (UNH CE) and others.

3.5 PAT Credits have been approved for this meeting

Sponsored by:

New Hampshire Vegetable and Berry Growers' Association

For more information: Contact George Hamilton at (603)641-6060 or by email at george.hamilton@unh.edu. Individuals who require special accommodations should contact George by June 1st.

Special Topics for Pesticide Applicators

When: Wednesday June 15th, 2016 from 1:15pm to 3:30pm
Where: Doubletree Hotel, 11 Beaver Street, Milford, MA 01757

This two hour program will provide two recertification contact hours for all categories of pesticide licenses, Natalia P. Clifton, UMass Extension will discuss a variety of timely topics of importance to pesticide applicators. Topics will include EPA regulatory changes impacting pesticide applicators, events involving pesticide impacts on non-target or-

ganisms, resources for pesticide toxicity and environmental impact information, pesticide poisoning incidents, and the new draft MA state pollinator protection plan. Two pesticide contact hours for licenses in all Massachusetts categories. Contact hours are valid for equivalent categories in all New England states. The registration fee is $35.00 per person. Online registrations include an additional service fee.

For information on registering for these workshops please refer to our website at www.umass.edu/pested

Please contact Natalia Clifton, UMass Extension , 413-545-1044 or email nclifton@umass.edu

How to Conduct an On-Farm Trial

When: Tuesday, July 12th, 2016 from 3:00pm to 5:00pm

Where: UMass Crop and Animal Research and Education Center, 89 River Rd. Deerfield, MA

Ever want to apply for a SARE farmer or partnership grant? Looking to improve your farming practices through research? This workshop is for you! Farmers and Agricultural Service Providers welcome. We will provide hands-on training in setting up a replicated field plot, and include practice taking measurements and collecting data. Concepts learned can help you answer many questions through on-farm trials, but this workshop will focus on the UMass trial "**Nitrogen contribution from cover crops for vegetable crop uptake**" being conducted on multiple farms in Massachusetts this fall as a way to prepare cooperating farmers to conduct this trial.

Stay tuned for a follow-up workshop on data analysis and interpretation of results.

Free, but please RSVP: https://www.surveymonkey.com/r/OnFarmTrial

Questions? Contact: Katie Campbell-Nelson, kcampbel@umass.edu, 413-545-1051

Supported in part by USDA/NE-SARE Professional Development MA State Program.

IPM Field Walks

In this series, learn to identify and scout for vegetable pests and select integrated pest management strategies that work for you, whether you are an experienced farmer, or just starting out, organically certified or not! We will use pheromone traps to monitor pests, use a microscope to identify plant pathogens, and learn to scout in multiple vegetable crops with UMass Extension Vegetable Program staff Katie Campbell-Nelson, and Plant Diagnostician Angie Madeiras. Scouting will be followed by a discussion of effective control strategies with growers in attendance. Bring a hand lens if you have one. *Supported in part by funding provided by USDA-NIFA Extension Implementation Program, Award No. 2014-70006-22579*

June 28th, 4-6 pm
Wards Berry Farm, 614 South Main Street, Sharon, MA 02067
Farmer: Jim Ward

July 19th, 4-6pm
Alprilla Farm, 94 John Wise Avenue, Essex, MA 01929
Farmer: Noah Kellerman

August 2nd, 4-6pm
Red Fire Farm, 184 Meadow Rd, Montague, MA 01351
Farmer: Ryan Voiland

Questions? Contact: Katie Campbell-Nelson, kcampbel@umass.edu, 413-545-1051

Vegetable Notes. Katie Campbell-Nelson, Lisa McKeag, Susan Scheufele, co-editors.

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