



UMASS
EXTENSION



Vegetable Notes

For Vegetable Farmers in Massachusetts

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CROP CONDITIONS

As this week nears to a close, we are reminded that there are no sure bets with Mother Nature. It seems that we lost a month, with temperatures more like late September than late August these past few days. Summer squash and zucchini have all but shut down and other fruiting vegetables have slowed their growth. Is it possible that we have seen our last 80 degree day for the year? To top it off, hurricane Ernesto may be coming to visit this weekend, bringing with it diseases and insects from the south. On a more positive note, the cooler weather has been wonderful for greens, lettuce, and brassicas. In any event, the season is not over and vigilance in the field is still needed.

--Richard Bonanno, UMass Extension

SWEET CORN UPDATE

Rain over this past week has helped produce some delicious corn for the end of the season. The rain shouldn't stop those growers using the direct-oil method from applying oil to the corn silks, but it has prevented many growers from keeping on their recommended four day spray schedule. The four day schedule is still warranted in most parts of the state, but temperatures have been cool, so if you've had to stretch your spray intervals you will, hopefully, be ok. The usual pattern of heavy **corn earworm** captures in the east and moderate captures in the west of the state seems to have reversed, with a trap in Pittsfield capturing 123 corn earworm in one week and 85 moths (from two traps) being recorded in Deerfield over the past week. Meanwhile Still River in central MA reports cool wet conditions and CEW trap captures of only 8 over the past week; the same was reported in Rehoboth in eastern MA. Never fear, however, as respectable numbers are still present in the east, with Tyngsboro captures at 42 moths this week.

The **European corn borer** flight has dropped off throughout the state. **Fall armyworm** captures have remained high in some parts of the CT valley. CEW sprays should take care of any FAW. If you still have corn that is pre-silk you may want to do a scout for new FAW damage and spot treat any infested areas.

Organic growers using oil treatments to the silk should note that the recommended day of application (6-8 days after 50% of field in silk) is based on slightly warmer conditions than we have been seeing this week- corn development has been slow, and luckily, so has caterpillar development. Therefore, it is more important to look at the stage of the corn and see that the silk is starting to brown than to treat on a specific day after silk initiation, otherwise you may end up with too many unfertilized kernels on the ear because the ears were too young to be treated. It is always a good idea to carefully husk some representative ears of corn to see how many silks are still attached: if >1" of the corn still has silks hanging on after the ear has been gently shaken, then you may want to wait a bit this week. I treated a block of corn on day 9 after 50% silk.

We can expect hurricane Ernesto to bring up more CEW and possibly more FAW over the Labor Day weekend. Check traps twice a week if possible to keep a close watch on flight patterns. Don't put your sprayers away yet!

--Amanda Brown and Pam Westgate, UMass Extension

European Corn Borer Thresholds

Pre-tassel-Silk: 15% or more of plants scouted are infested

Silk: 5 or more moths caught in pheromone traps in one week, or 5% of plants are infested.

Fall Armyworm Spray Thresholds for Pheromone traps and Field Scouting

Whorl Stage: 30% or more of plants are infested

Pre-tassel stage to emerging tassel 15% of plants are infested (add # plants infested with ECB)

Silk: 3 or more moths captured per trap per week: Spray silk every five to seven days; five days if captures continue to be over 3 moths per week.

Moths/Night	Moths/Week	Spray interval
0-0.2	0-1.4	no spray
0.3-0.5	1.5-3.5	every 6 days
0.6-1	3.6-7	every 5 days
1.1-13.0	7.1-91	every 4 days
Over 13	Over 91	every 3 days

Corn Earworm thresholds apply only to silking corn up to 5-7 days before harvest. Lengthen spray intervals by one day if maximum daily temperature is less than 80 degrees F.

•Weekly European Corn Borer and Fall Armyworm and Nightly Corn Earworm Trap Captures

Location	Z I	E II	CEW (per night)	FAW
Pittsfield	-	-	17.57	-
S. Deerfield (UMass)	-	-	7	-
Deerfield	0	22	7.4	81.5 avg
Whately	0	2	19.28	-
Hadley (1)	3	2	8.8	-
Hadley (2)	2	24	6.7	4
N. Hadley	9	18	4.2	15
Sunderland	12	7	7.4	16
Easthampton	1	0	1.14	-
Feeding Hills	7	3	14.25	0
Still River	1	0	1.14	-
Rehobeth	13	21	1.14	-
Concord	2	2	0.85	0
Leicester/Spencer	1	6	6	0
Northbridge	2	2	11.85	3
Tyngsboro	5	3	6	0
Mason, NH	1	1	0.14	1
Hollis, NH	1	1	4.85	6
Litchfield, NH	0	1	2.57	13

--Thanks to our scouting network: R.Hazzard, A.Brown, K. Reidel, J.Mussoni, D.Dumaresq, D.Rose, J.Otto, T.Gallagher, J.Golonka, W.Kingsley, P.Willard, G.Hamilton, C. Leich, B. Howden, S. Clegg, J. Ward

DETERMINING EFFECTIVE COVER CROP SEEDING DATES

Well-established cover crops are effective in reducing residual soil nitrate after the harvest of corn or other crops, and nitrate released from applied manure. They hence minimize the nitrate leaching to ground water during the fall and winter months. Numerous studies have also shown that effective cover crops prevent erosion and loss of reactive phosphorus in runoff from fall applied manure. Our studies and those of others have shown that cover crops also reduced nitrate leaching in subsurface soil layers. However, the ability of the cover crop to absorb nitrate from the soil is affected by the degree of colonization of the soil by roots.

Cover crop seeding date is important for adequate canopy and root development before cool weather slows or stops growth. In an earlier study at the University of Massachusetts Crop Research Education Center this was shown to be mid-September or earlier for southern regions of New England. Later seeding dates in most years will result in less than adequate leaf growth to reduce the erosive force of rain and runoff, and the small root growth will not contribute much to stabilizing the soil or for nutrient uptake. The mid-September seeding dates for cover crops were established for their effectiveness for erosion control. Whether effective dates for erosion control are similar to effective dates for preventing leaching are unknown. **However, any delay in establishment of cover crops beyond the effective date will**

increase the amount of nitrate and phosphorus leaching.

Very little is known about the factors controlling growth and actual effectiveness of cover crops planted at different dates on ground water quality. It has been reported that cover crops planted in August had 50% more nitrogen accumulation than cover crops planted in mid to late September. Our results from 2004, which was milder than the normal fall, seem to confirm these reports for both rye and oat cover crops. Also, rye retained more of the accumulated N through the winter than oat.

--Stephen Herbert, UMass Department of Plant, Soil and Insect Sciences

CROP ROTATION

Most of the disease, insect and weed problems you will have this season have already occurred and now in addition to maintaining your control of these you need to start thinking about next season. For many pests the severity of the problem next year will be the result of what you do this year. For insects and diseases the worst practice you can do is have a dependable food source available for them year after year. The problem will likely get worse and worse. The most effective practice to avoid this is crop rotation. That is why the National Organic Program Rule requires crop rotation where it is appropriate. Now is the time to decide where crop rotation will work to disrupt the dependable food source your insects and disease pathogens hope to find.

Effectiveness of crop rotation depends on the life history and biology of the particular pest. The three characteristics that play the biggest role are:

Dispersal Ability- How well and far can the pest move? If the pest can only move short distances then by rotating your crops to a new field you can leave them behind unable to reach food before they starve. On the other hand, if the pest typically moves long distances then if you put your host crops here or there it will not make a bit of difference. For example, the potato leaf hopper comes here all the way from the Gulf of Mexico region and so chances are that which field you put you beans or potatoes in will not make a difference. In contrast, the Colorado potato beetle hibernates during the winter and essentially can only walk to potatoes when it wakes up in the spring. You do not have to move potatoes too far from last year's field to significantly reduce the numbers that find the new planting.

Host Specificity- How many different kinds of plants does the pest feed on? If the pest is very specific in what it eats it is easier to choose an alternative crop to plant where the pest is overwintering. On the other hand, if the pest feeds on many crops (or weeds) then it is difficult to avoid a food source for it and it will probably be waiting for you no matter where you move your crop or how long you wait to plant it again. For example, the tarnished plant bug,

which is a major pest on lettuce (browning of the midrib), strawberries (catfacing), eggplant (feeds on tiny buds and they drop) and broccoli (brown beads in head), also feeds on about 300 weeds and so really does not depend on your crops to survive. In contrast, the species that causes Septoria leaf spot on tomato can only survive on plants in the tomato family (tomato, eggplant, potato, petunia, black nightshade, etc) so it is not that hard to plan a successful crop rotation to leave it without a host to feed on.

Persistence- How long can the pest survive without a host? This is a critical question because some diseases can persist in some sort of resting spore for very long periods of time waiting for a host to appear again. Most insects need food every season or they starve and many diseases can only survive a year or two without a host. For example, the pathogen that causes late blight of potato and tomato can only survive on living tissue and so in New England it really only makes it from season to season on potato tubers. Proper handling of culls is key to managing this disease. In contrast, the pathogen that causes white mold of beans, carrots, tomato, lettuce, etc. can form resting bodies called sclerotia that are able to just sit in the soil for many years without any host.

So, now is the time to look around the farm and see what you have for pests and learn which ones can be managed with crop rotation and then make plans. Crop rotation, in addition to a tool for pest management, is very important for managing nutrients in the soil and for controlling weeds.

Rotations used to control weeds include rotations with other crops as well as rotation with fallow ground or ground put into cover crops instead of cash crops. Fallow periods allow the grower to periodically till the ground which kills growing weeds and stimulates weed seeds to germinate that later can be killed by the next tilling. This practice is of course bad for the soil structure, but in situations may be the best approach for cleaning up a field before going back to good soil building practices. In situations where weeds are totally out of control the fallow period may be long and include lots of soil-damaging tillage. But, later, once the weeds are under control, the fallow period can be shortened and most of the rotation can be with cover crops instead of bare ground and tillage.

- Basic rotation plans to control weeds, in addition to rotating with fallow periods, include:
- Rotating vegetable crops that are hard to cultivate and keep weed clean with those that are easy
- Growing short season crops that allow half a season for cover crops
- Alternate early season crops with late season crops to allow attacking spring weeds one year and fall weeds the next

- Take land out of production and grow a series of short season cover crops such as oats, then buckwheat, then oats for the fall

Rotations used to manage soil fertility include planting fall cover crops to avoid loss of the many nutrients left after crop harvest, rotations of heavy feeding crops with light feeders, rotating crops that tap shallow soil with those that tap deep soil and rotating nitrogen fixing green manures with cash crops. Using crop rotation with nitrogen fixing legume green manures is a prime way that farms can reduce their environmental impact. Not only are nitrogen rich fertilizers environmentally costly to produce they also may indirectly lead to excessive phosphorus in the soil. Typically, farmers and gardeners determine how much soil amendment to add based on the nitrogen analysis of the material and many materials typically used to add nitrogen (ex. Manures, organic waste, etc) also add phosphorus. After years of this practice it may result in excessive phosphorus in the soil that may end up as pollution in surface water. Using nitrogen fixing crops in a rotation adds nitrogen to the soil with no other nutrients.

It is time to plan your rotation now. For more information on using green manures in crop rotations, including fall cover crops, call the MOFGA office, (207) 568-4142, and ask for a copy of MOFGA Fact Sheet #10 Using Green Manures.

--excerpted from the August 25, 2006 Pest Report by Eric Sideman of the Maine Organic Farmers and Gardeners Association

UPCOMING TWILIGHT MEETINGS

1. Renewable Energy for Farms and Greenhouses - A Series of Twilight Meetings

**Wind and Solar Energy
Thursday, September 7, 2006
3:00 PM – 6:00 PM**

**Lion Spring Farm, 236 Dedham , St. Dover , MA
Host: Bob Loebelenz**

Lion Spring farm is a small diversified farm that breeds Massachusetts Thoroughbred horses. The farm also grows vegetables and herbs for local gourmet restaurants and raises chickens that supply farm fresh eggs for retail sale. On site there is a 4.8 kilowatt photovoltaic system and 3.1 kilowatt wind turbine all feeding a battery bank.

Additional Speakers:

Wind and Solar at Sylvan Nursery - Jim McBratney, Sylvan Nursery, South Westport, MA. Sylvan recently installed wind and solar for energy for their offices. Jim will share his experience with the licensing process.

State Funding Opportunities for Renewable Energy- Representative of, Renewable Energy Trust, A division of the Massachusetts Technology Collaborative, Westborough,

MA

Wind Turbines and Solar Power for Farms and Greenhouses - Mark Howland, The Wind Technology Company, E. Freetown, MA

Getting Started - Getting Funded - Getting Power- Don Campbell, Consultant, Donald Campbell Associates, Northfield, MA . Don will talk about the process of fitting a farm's needs to the types of renewable energy systems currently available including solar hot air systems to supplement heating needs

Directions to Lion Spring Farm, 236 Dedham St. Dover MA

From West, take I-90 East. Take exit #14 onto I-95 (Rte 128) South toward South Shore - go 4.1 mi Take exit #19B/Highland Ave. onto Highland Ave. toward Needham - go 1.7 mi Bear Right on Chapel St - go 0.2 mi Chapel St becomes Chestnut ST - go 1.6 mi Continue on Dedham St. - go 0.8 mi Arrive at the farm, on the Right.

2. Brassica Crops on Diversified Farms Twilight Series

**Upper Forty Farm
86 Nooks Hill Road, Cromwell, CT
Sunday, September 24, 2006
10 am – 1 pm
Host: Kathy Caruso**

Kathy Caruso's huge selection of tasty traditional and heirloom vegetable varieties have earned Upper Forty Farm a wide following at West Hartford Farmers Market and a dedicated group of Community Supported Agriculture (CSA) shareholders. Kathy, her husband Bennett, and her son Andy grow vegetables, flowers, and herbs and keep a small flock of laying hens on 3.5 cultivated acres. The specialty of the farm is seeking out and producing a diversity of vegetable varieties, particularly heirloom varieties, chosen for flavor, novelty, and other unique characteristics. In a recent case study, Kathy reported that she was growing 99 varieties of tomatoes, 35 varieties of hot peppers, and 18 varieties of potatoes. In the Brassica project, Kathy has focused on developing a system for broccoli production and on getting a better handle on soil fertility and soil amendments.

Directions to Upper Forty Farm 86 Nooks Hill Road, Cromwell, CT

From I-91, take exit 21 toward Cromwell/Berlin. At the end of the ramp, turn left onto Route 372. Follow 372 for about 2.5 miles, then turn left onto New Lane. At the end of New Lane, turn left onto Main Street (Route 99). The road forks almost immediately at the Holy Apostles Seminary – take the right fork onto Prospect Hill Road. Then, turn right onto Nooks Hill Road. You will pass through a narrow un-

derpass under the railroad bridge – be careful here. Upper Forty Farm is on your right.

Vegetable Notes, Ruth Hazzard, editor and Kate Reidel, Assistant Editor. *Vegetable Notes* is published weekly from May to September and at intervals during the off-season, and includes contributions from the faculty and staff of the UMass Extension Vegetable Program, other universities and USDA agencies, growers, and private IPM consultants. Authors of articles are noted; author and photographer is R. Hazzard if none is cited.

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