



VEGETABLE IPM MESSAGE

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CROP CONDITIONS

The few sunny, dry, breezy days we got this week were immensely welcome and provided a chance to run around and catch up on a lot of field work. Once it started raining again it seemed like they had never happened. When weather permits, growers are planting succession crops, cultivating, sidedressing, spraying for cucumber beetles, weeds, diseases. Maintaining planting schedules is difficult. Rain totals for the past four weeks range from 4.5 to 6.8 inches in different parts of Massachusetts; Greenfield MA logged 5.3 inches since June 1. Gradually temperatures are warming up, but nights have still been in the 40's and 50's and warm-weather crops are struggling. It's (still) a great year for greens and lettuce, asparagus, early brassicas! However, disease management of both foliar and soil-borne diseases may become a major concern. Downy mildew has been observed in early lettuce (see below).

We are getting first-harvest reports for Chinese cabbage, early zucchini and summer squash. Reports of the first silking corn came in (Hatfield), but in many areas the earliest sweet corn is no farther along than whorl stage and first harvest won't be till mid July. Delays in planting dates are compounded by low temperatures. Growing degree day accumulations are well below normal.

Greenhouse tomatoes are in full production. Early tomatoes are being trellised. Potatoes are growing well and being hilled, and Colorado potato beetle egg masses are piling up.

Diseases that are favored by long periods of high soil moisture are likely to show up in the next few weeks. This includes

Sclerotinia, which affects cole crops, beans, peppers, tomatoes, and cucurbits (see Brassicas, below). Crown rot or root rot caused by Phytophthora, Pithium or Rhizoctonia is also likely. Use the **Disease Diagnostic Lab** (413-545-1045) to help identify what you have! Visit our website (http://www.umassvegetable.org/grower_services/diagnostics_lab.html) to download instructions on submitting samples and a case history form. Samples can be sent by overnight mail from anywhere in the state. Proper diagnosis can save thousands of dollars by giving you the information you need to use the right method of control at the right time, or avoid wasting money on controls that won't work.

-R Hazzard, with contributions from R. Wick, J Bartlett, D. Dewitt, D. Rose, D. Kaplan, E. Droescher, J. Golonka, NASS Crop Weather 6/16/03

FIRE AT HIBBARD FARM, HADLEY

Last Tuesday (June 17th), a fire at Hibbard farm in Hadley, Massachusetts destroyed a barn housing the family-owned carrot packing operation and damaged a second barn. No one was hurt in the blaze, but several refrigeration units, a cultivating tractor, carrot harvester, and various other machinery and supplies were destroyed. The fire started in the back barn on the Hibbard property and spread rapidly before workers packing asparagus in a nearby shed noticed it. A neighbor on Stockbridge road called the fire department around 11a.m. when he saw smoke. The carrot assembly line had already been consumed by the time firefighters arrived, but they saved an adjacent barn with only minor damage. This barn housed the asparagus cutting and packaging

equipment. The fire was under control by 1 p.m., and it is believed to be accidental.

Wallace Hibbard, 81, the owner of the farm, has been growing crops in Hadley all of his life. His family has been producing asparagus for generations, and he sells it under the red “Hadley Queen” label. He says that while there’s no way to estimate the cost of the fire, he’s fortunate that carrots won’t be ready for harvest until August.

-Adapted by Nicholas Connor from “Carrot operation lost; second barn is saved.” by Kay Morgan and Scott Merzbach in the June 18th issue of the Daily Hampshire Gazette

YOU CAN STILL CALL JOHN HOWELL FOR ADVICE!

John Howell officially retired from UMass Extension last June, but like most people who ‘retire’ he is as busy as ever. Thanks to financial support from the New England Vegetable and Berry Growers Association and UMass Extension administration, John continues to work with the Extension Vegetable Program. One of his primary roles is to consult with individual growers about problems that come up. For anyone who has ever consulted with John about any problem in vegetable production, you know that the breadth of his knowledge is tremendous and he can advise on a wide range of production issues and crops. He can be reached by phone at (413) 259-1203 or by email at jhowell@umext.umass.edu. He is also available for on-farm visits; however in most cases there will be a fee payable to the UMass Vegetable program to cover the costs of his travel and time. He will not be at the phone on a set schedule, so if you don’t reach him, please leave a message and he will get back to you as soon as possible.

--R Hazzard, Vegetable Team Leader

PRE-SIDEDRESS NITRATE TEST: NOW IS THE TIME FOR SAMPLING

Many crops have reached or will soon reach the stage when it’s time to decide whether, and how much nitrogen to apply as a side dress or top dress. You may be wondering how much nitrogen has been leached by the heavy rains of recent weeks. The **pre-sidedress nitrate test** (PSNT) (also known as the June Nitrate Test) can help you to determine the current level of nitrogen in the soil. If you have a soil probe, the sampling takes about 20 minutes per field. (Probes are available from many ag suppliers for \$40 to \$75.) The amount of nitrate-N (reported as parts per million N03-N) in the soil is a good indicator of whether more N will be needed to complete crop growth.

To take a sample for nitrate testing, take 15 to 20 subsamples or cores from the field. Sample slices or cores should be taken to a depth of twelve inches if possible. Avoid sampling fertilizer bands or other areas, which have high concentrations of N fertilizer. Generally the best place to sample is between the rows. If plastic mulch is used, samples should be taken from under the plastic. With a soil probe you can just sample through the plastic, leaving small holes that cause no problem. Be sure to avoid any trickle irrigation tape under the plastic. Mix all the samples together and submit about one cupful to the UMass Soil Testing Lab, West Experiment Station, University of Massachusetts, Amherst MA 01003. You may contact the soil testing lab 413- 545-2311 or consult their website at <http://www.umass.edu/plsoils/soiltest>

Cloth bags are ideal for sending PSNT samples to the Soil Testing Laboratory. These bags are more convenient to use because it is not necessary to dry the samples, as long as the laboratory receives them within four days. With plastic bags you should dry the samples unless you can deliver them within 24 hours. **The lab will do the PSNT within one working day of receipt and inform you of the results.** The charge for this test is \$6.00 (include a check made out to the

University of Massachusetts). Be sure to request a Nitrate (PSNT) test. contact either Frank Mangan at, John Howell at or (FAX 545-1931). Frank Mangan (978-422-6374) and John Howell (413-259-1203) are available to consult with growers about the test results.

The PSNT is a tool growers can use to optimize N

application. Research conducted for several years at UMass, along with several years of on-farm experience, indicates that an appropriate threshold for peppers and winter squash is about 30 ppm nitrate-N. Above this level, sidedressing or topdressing supplemental N would be of no value and will likely decrease yield of butternut squash and peppers. Research in Connecticut has shown similar results in pumpkins. There is increasing agreement that a threshold of 30 ppm is appropriate for most vegetables except for sweet corn, for which the threshold is 25 ppm. Using the PSNT can save money and time, improve crop yield, and reduce the likelihood of N leaching and water contamination. Barring unusual weather conditions, PSNT levels in a field tend to be fairly consistent from year to year. Once these values are known for a field, a grower probably does not need to test every year. As a tool, the PSNT should be used along with a grower's experience and knowledge of fields. Interpretation of PSNT results should be made with regard to weather conditions such as leaching rains or soil temperatures.

--John Howell, Frank Mangan & Ruth Hazzard

DOWNY MILDEW OF LETTUCE

Downy Mildew, caused by *Bremia lactucae*, has been identified in early lettuce in Hampshire County. Downy mildew is favored by cool, rainy weather. Night temperatures of 43 to 50 and day temperatures of 55 to 70 with 100% relative humidity are ideal for disease development. This describes very well the conditions of the past several weeks! Free moisture is needed on the lettuce leaf in order for downy mildew spores to germinate. As temperatures increase, the disease disappears. Dry, desiccating winds and clear warm days will also inhibit growth. We are all ready for more days

like that!

Symptoms. The fungus attacks older leaves first, causing light green or yellow lesions on the upper surface of the leaves. These are followed by fluffy white growth on the underside of the leaf. Plants of any age may be affected. Lesions are angular and delineated by leaf veins as they grow larger. Eventually, affected leaves turn brown. Remove weeds and infected host debris. Conditions that prevent prolonged leaf wetness should be encouraged-for example, proper plant spacing to improve air flow. For chemical control, apply Aliette (3DH) or Quadris (0 DH) according to label instructions. Rotate Quadris with Aliette, if reapplication is necessary. Observe pre-harvest intervals.

Conditions have been favorable for downy mildew in other crops as well. Downy mildews are caused by a number of different species. Most have a narrow host range, attacking a single genus or family of plants. They cause blights of the foliage rather than root and crown rot. *Peronospora tabacina* is one of the most destructive species and causes blue mold of tobacco. This pathogen does not survive in the northern states and must travel up the eastern seaboard, hopscotching from field to field. It can also overwinter on ornamental tobacco and volunteer tobacco in greenhouses. Downy mildews of crucifers are caused by *Peronospora parasitica*. Most crucifers, including weeds are susceptible. Disease occurs when temperatures are between 50 and 60 F and plants are wet for 12 to 24 hours. The pathogen can survive in the soil by forming oospores.

R Hazzard, Bess Dicklow (UMass Disease Diagnostic Laboratory,) Rob Wick (Dept of Microbiology, UMass.) Additional Reference: IPM for Cole Crops and Lettuce, University of California.

CUCURBITS

Striped cucumber beetles are a force to be reckoned with this year. We are even catching beetles in European corn borer traps...not to mention finding them in extremely high

numbers on cucurbit plants. Scout your fields as soon as the cotyledons pop up! A threshold of one beetle per plant is recommended for most cucurbit crops, from cotyledon stage through 5 leaves. This threshold is set low to prevent the transmission of bacterial wilt. If you are setting out transplants, use imidicloprid drenches 24 hours prior to setting out. We've seen Admire-treated transplants and Sevin-treated border trap plants (Blue Hubbard) with piles of 50+ dead beetles around the plant. Several synthetic pyrethroids are also labeled. Rains have made timing of sprays difficult and reduce the residual, although we have seen good persistence of Sevin through some heavy rains. Organic growers using Pyganic 5EC at high rates have seen reasonable efficacy ("suppression") but not fully effective control. Entrust is labeled for cucurbits but efficacy is not known. Surround WP can also be applied to transplants or direct-seeded crops as a repellent in organic crops.

Early zucchinis and summer squash are at first harvest or close to it. Pumpkins and winter squash are variable – some growers have still not planted, while others are seeing 2-3 true leaves. Emergence is spotty in fields that were planted in late May – slightly later plantings are showing a better stand. Waiting to plant paid off.

CAREFUL OF SPRAY ADDITIVE USE IN THIS WEATHER

Due to overcast skies and ample moisture, plants have very thin cuticles, which may result in increased injury with postemergence herbicides. Nitrogen additives are most likely to cause crop injury with this weather. Also, consider using non-ionic surfactant rather than crop oils to reduce the risk of injury. University of Delaware data supports use of non-ionic surfactants over crop oil concentrates because it provides similar levels of weed control as crop oils with less risk of injury. This has been true in weather patterns we are currently experiencing, as well as in dry weather. (Note: When Basagran was applied alone post-emergence to control weeds in beans the addition of a crop oil concentrate improved

control though it increased the risk of crop damage in Robin Bellinder's trials. *CR.MacNeil, OWYS*)

- *M. VanGessel, Univ. of Delaware; from Ontario, Wayne, Yates & Stuben Counties Weekly Vegetable Update 6/11/03, Cornell Coop Extension, NY*

POTATO

Potatoes are growing well and hilling is underway. Conditions have been favorable for **late blight**. In potato growing regions to the west and northeast of Massachusetts (central New York and central Maine), where Late Blight forecasting models are being used, the accumulated of disease severity values have exceed the 18 severity value threshold since the date when most potatoes emerged. It is a sure bet that the same conditions have existed in Massachusetts: long leaf wetness periods, frequent rain, cool temperatures. Reaching this threshold means that if potato late blight is in the area it can become active and lesions visible within the next 10-14 days. Inoculum levels are likely to be low, given last year's dry weather and absence of late blight in the area. However, tomato and petunia transplants brought into the area could bring late blight, and if volunteer plants or culls are infected they could produce spores. Growers should start and maintain a 5-7 day schedule of protectant fungicide such as chlorothalonil, mancozeb, maneb, Polyram or SuperTin 80. Organic growers should consider using copper products. Scout low areas of the field for symptoms of blight. These include dark green water-soaked lesions on leaves or stems, which become dark brown and brittle within a few days. Also look for fluffy white fungal growth on the underside of leaves, which is visible on dewy mornings.

Colorado potato beetle eggs have been accumulating and hatch is likely within the next week. Keep an eye out under the leaves for the first hatch. Depending on which material you are using for control, catch the larvae at before the third instar (Bt's or Agri-mek) or before the 4th instar (SpinTor and Entrust, Provado).

Potato leafhoppers have been reported in the region. Scout

by inspecting the undersides of leaves for the light-green, fast-moving adults or bright green nymphs. Threshold is 1 adult or nymph per 10 compound leaves. Consult the New England Vegetable Management Guide for recommended products.

BRASSICAS

Flea beetles are still active though some growers report that numbers are declining (can't say that's true at the research farm, however). The non-waxy brassica greens are the most susceptible to damage and most attractive to flea beetle, compared to the waxy traditional cole crops such as cabbage and kale. The latter crops become less attractive as they grow, so early control is all that is needed. Asian greens require constant vigilance all the way to harvest. One organic grower is reporting 60-70% control using Entrust...pretty good for a pest that thus far has defied attempts to knock it down with anything that organic growers are allowed to use.

This is when **cabbage root maggot** damage starts to show up as wilted plants. Soil samples taken from brassica roots in South Deerfield this week have cabbage root maggots at every life stage: eggs, larvae of various sizes, and pupae. Keep scouting new plantings!

Wet soil conditions have been a constant, which means that conditions are great for germination of sclerotia. **Sclerotinia sclerotiorum** survives in the soil by producing sclerotia, hard black structures that are 1/8 to 1/2 inch in length. Sclerotia that are within 1 to 2 inches of the soil surface germinate when the soil has been saturated for about a week and temperatures are between 50 and 70 F. In lettuce or cabbage, they may directly infect stems or leaves that touch the soil. Direct infection results in a water-soaked soft-rotted lesion at the base of a plant. With lettuce you see dropping of the lower leaves and soft rotting. As it develops, there is often a white fuzzy mold with sclerotia imbedded inside or on the surface of the head.

It is important to get this disease confirmed because the sclerotia will be present in the field for many years, with long term management implications. A five year rotation away

from susceptible crops is needed to reduce the inoculum. Other diseases can cause very similar symptoms but do not produce long-lasting spores.

One cabbage head can produce thousands of sclerotia. Hence it is worthwhile taking the time to remove infected cabbage or lettuce heads from the field. It is not likely that fungicides will be of any value in preventing disease in lettuce or cabbage because coverage of the lower leaves is nearly impossible. Once the disease has become established there is no point in using fungicides because there are no secondary disease cycles. Sclerotia which develop after infection cannot germinate until the following year.

On a woody stem such as tomato, you are more likely to see a dry bleached-looking elongated canker. Often there are sclerotia imbedded inside the stem.

CONTANS WG is a new biological fungicide which degrades Sclerotinia fungi in the top layers of the soil, thereby reducing the inoculum available to infect the crop. It is a living fungus (*Coniothyrium minitans*) which actively parasitizes the sclerotia of Sclerotinia, so the longer it has to work in the soil, the more sclerotia it will kill. It is a living organism it should not be left in a hot truck, as high temperatures can kill it. CONTANS is best applied to the soil prior to planting and from 60 to 90 days prior to the typical onset of the disease. However, given recent soil conditions, it would be worth applying to fields that have a history of Sclerotinia where susceptible crops are going to be planted this year. Contans is available through commercial suppliers, who can special order the product from Encore Technologies, or you can contact this distributor directly (www.encoretechllc.com, Plymouth MN 763-577-5958). Research on this biocontrol agent has shown promising results in lettuce and brassicas.

--R Wick and R Hazzard

ATTENTION PUMPKIN AND WINTER SQUASH GROWERS:

WINTER SQUASH PILOT INSURANCE POLICY LISTENING SESSIONS JUNE 24-25

AgriLogic, Inc., on behalf of USDA's Risk Management Agency, will be conducting listening sessions regarding pumpkin and winter squash grown in Berkshire, Bristol, Franklin, Hampden, Hampshire Counties, Massachusetts; and Hartford County, Connecticut.

The risk management needs of the Winter Squash industry and its assessment of the current Winter Squash Pilot Insurance Policy will be discussed. Input from producers, insurance personnel, and other interested parties will be used by USDA to determine if the Winter Squash Pilot Insurance Program should be continued as a pilot program, modified from its current form, terminated, or converted to a permanent program. This is your opportunity to provide feedback to policymakers!

Two sessions will be held in each location. The morning session will include the insurance industry (insurance provider

representatives, agents and adjusters, and other interested parties, including Extension Service, Farm Service Agency, and university personnel). The afternoon session has been designated for the producers and grower association representatives. The scheduled dates and locations for the meeting are:

June 24, 2003
Hampshire County Farm Service Agency
195 Russell Street
Hadley, MA

June 25, 2003
Bristol County Farm Service Agency
84 Center Street
Dighton, MA

Insurance Industry, Extension Service, and FSA: 9:00 a.m. – 11:00 a.m.
Producers and Other Interested Parties: 1:00 p.m. – 3:00 p.m.

Seating will be limited. To R.S.V.P., please call toll-free at 877-245-6442 ext. 8116 or respond by e-mail to mwilliams@agrilogic.com. For more information, please visit www.agrilogic.com/wintersquash.html.

*-Sponsored by USDA, Risk Management Agency
AgriLogic, Inc.*

SWEET CORN

Sweet corn is growing slowly; in most areas of the state early corn is still in the whorl stage. We receive one report of first silk emergence – but this is rare! For the most part, we can expect the first emergence of tassels in the coming week. Harvest is going to be *at least* two weeks behind – often more. **European corn borer** flights increased this week at all sites. Females are busy laying eggs, and egg masses are accumulating in whorl-stage blocks of corn. We have seen the very first hatched egg masses in the field this week, so we can expect hatching to increase in the coming week. **For anyone who has corn entering the silk stage this week**, sprays are recommended this week to prevent entry of those newly hatched larvae directly into the ear. Do not wait until damage is seen in scouting, for that may be too late! This is a great time to try biorationals such as SpinTor to conserve beneficials for aphid control.

For corn just reaching pretassel stage, sprays should begin based on scouting for young larvae in the emerging tassel. The following recommendations are from Abby Seaman, Cornell Cooperative Extension, NYS: Bare ground fields should be first scouted for ECB larvae at early tassel emergence. Even at a location with high ECB populations, insecticide applications in bare ground fields

to whorl stage corn did not result in improved control when compared with one or two well-timed applications at tassel emergence. Larvae feeding in the whorl are protected from insecticide applications and mortality will not be as high as at tassel emergence, when larvae feeding in the emerging tassel are exposed to the spray. Larvae will leave the tassel as it opens up and no longer provides a moist, protected feeding environment, and move down the plant looking for protected places to feed. Insecticide applications need to be timed to kill larvae before they bore into a new feeding location where they will be again protected from sprays. In fields with uneven development, two applications may be necessary, one when approximately 25-50% of the tassels have emerged, and again after 75-100% of the tassels have emerged, if the field is still over threshold.

The threshold for ECB and armyworms at tassel emergence is 15% infested plants. For corn borers, look down into emerging tassels for tiny larvae or frass (white to brown material about the size of fine sand). For armyworms look for ragged feeding holes and frass pellets the texture of coarse sawdust. Before any insecticides have been applied, scouting is fast and easy because any sign of feeding is an almost sure sign of live larvae, so it's not necessary to spend time finding the larvae. After the initial insecticide application, feeding damage may be from a larva that has already been killed, so finding the critter is more important for an accurate estimate of the number of infested plants.

Weed control is looking good; as long as fields are dry enough to get equipment in, cultivating has been relatively easy because corn has stayed small.

Weekly Trap Captures of European Corn Borer in Sweet Corn				
Town	Date	ECB Z1	ECB E2	TOTAL ECB
North Bennington, VT	6/18/03	11	3	14
Conn. River Valley (North to South)				
Westminster, VT	6/18/03	11	19	30
South Deerfield	6/19/03	26	46	72
Sunderland	6/19/03	23	53	76
Hatfield	6/18/03	41	19	60
Hadley	6/17/03	52	115	167
East/Central MA (North to South)				
Still River	6/19/03	29	32	61
Dighton	6/16/03	10	2	12
Rehoboth	6/18/03	33	36	69
Sharon	6/18/03	7	49	56

TWILIGHT MEETING REMINDERS FOR NEXT WEEK:

SMALL FRUIT AT NOURSE FARMS IN WHATELY, INTEGRATING ANIMALS AND VEGETABLES AT CARETAKER FARM IN WILLIAMSTOWN

June 24th: NEW SMALL FRUIT VARIETIES

A twilight meeting will be held on Tuesday June 24, 2003 at Nourse Farms (<http://www.noursefarms.com/>) in Whately, MA starting at 5:30 pm. This meeting will showcase varieties of strawberries, raspberries, gooseberries and currants. You'll have a chance to preview some of the new varieties coming out of various breeding programs. We will also discuss cultural and pest management issues that have come up this season. Please contact either Nourse Farms (413-665-2658) or Sonia Schloemann (413-545-4347) for more information and directions.

June 26th: INTEGRATING ANIMAL AND VEGETABLE PRODUCTION AND USING SOLAR POWER ON A CSA FARM

4-6 pm, Thursday June 26: To be held at Caretaker Farm, Owners Sam and Elizabeth Smith, at 1210 Hancock Rd., Williamstown, MA (413)-458-4309. Caretaker Farm has been operating as an organic vegetable farm successfully for over 35 years. The 35 acre farm has 16-24 acres in pasture, 7 acres in planned stages of vegetable production, with 3 and 1/2 planted and the remainder at rest or in rotation. Originally a market garden with farm stand and restaurant accounts, Caretaker Farm is now and has been a Community Supported Agriculture Farm (CSA) for the last decade. It has 215 CSA members or sharers who purchase a share in the annual harvest of mostly vegetables, with some small fruits and flowers. The Smiths are currently integrating animals for farm fertility and pasture and weed management, with sheep, lambs, pigs, heifers, chickens, and a cow and calf. Future plans are to market beef and lamb to farm members/sharers. They are also pioneering solar powered electric fencing, livestock feeders and will eventually install a rooftop PV for providing barn lighting and vegetable refrigeration. Directions: Caretaker Farm is located just under a half mile from the Five Corners Intersection which is marked by a blinking yellow light at the intersection of Rte. 7 and Rte. 43 near Williamstown. From Rte. 7 heading north, turn left at the intersection onto Rte. 43. Go one-half mile to the farm.

Vegetable Notes, Ruth Hazzard, Editor. Nicholas Connor, Assistant Editor. *Vegetable Notes* is published weekly from May to September and includes contributions from the UMass Extension Vegetable Program faculty and staff, growers, and private IPM consultants. Authors of articles are noted; author is R. Hazzard if none is cited.

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