UMASS EXTENSION

Vegetable Notes

For Vegetable Farmers in Massachusetts

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CROP CONDITIONS

Three weeks of dry, sunny weather gave growers time to pick, cure and bring in fall vine crops (the ones that survived), and gave many fall crops a boost. Irrigation systems saw some use for the first time in two months. Fall greens and root crops are generally doing well. Sweet corn is going strong for those who made late plantings for fall, though corn earworm is still a factor. Later plantings of tomatoes are helping to fill the gaps left by earlier crops that were lost to disease. Markets seem to be strong, and the main problem is not having enough products to fill the demand. When rains came on Sept 5-7, the amount exceeded five inches in many locations; however, lack of high winds and hail meant that crop damage was not as bad as is could have been. Cover crops that were seeded during the dry spell should germinate nicely. Potato harvest and storage should take into account the possible presence of late blight (see article). Get winter squash and pumpkins out of harm's way as soon as possible – hurricane season is not over yet!

UPCOMING MEETINGS

UMASS SEPTEMBER TWILIGHT MEETING IS BEING CANCELLED. Bonanno Farm (Pleasant Valley Gardens) Twilight Meeting Wednesday, September 24, 4-7 pm has been postponed until 2009.

USING BIOLOGICAL CONTROL IN GREENHOUSES: SEPTEMBER 18, 2008

9:15 AM - 3:45 PM Sturbridge Host Hotel and Conference Center Sturbridge, MA

More growers and retailers are using natural enemies to manage common greenhouse pests. Learn from two leading experts and a panel of wholesale growers and grower retailers about the "nuts and bolts" of implementing a biological control program to manage thrips, aphids, fungus gnats and spider mites in greenhouse crops. See examples of live specimens!

More details at: http://www.umass.edu/umext/floriculture/ed_programs/flower_growers_meetings.html

Sponsored by the University of Massachusetts Extension Floriculture Program, University of Connecticut Extension Program and Northeast SARE

Contact Tina Smith, 413-545-5306, tsmith@umext.umass.edu, Paul Lopes, 508-295-2212 ext. 24, lopes@umext.umass.edu or Leanne Pundt, 860-626-6240, leanne.pundt@uconn.edu.

SAVE THE DATE! RENEWABLE ENERGY CONFERENCE FOR FARMS AND GREENHOUSES

December 4, 2008 Sturbridge Host Hotel and Conference Center Sturbridge, MA, 9am-4pm

Sponsored by the University of Massachusetts Extension Floriculture and Extension Vegetable Programs, New England Vegetable & Berry Growers Association and Massachusetts Flower Growers Association.

WILL LATE BLIGHT ON POTATO AND TOMATO COME BACK TO HAUNT US NEXT YEAR? HOW CAN WE ENSURE THE BEST STORAGE LIFE FOR POTATOES?

It has been a tough year for managing diseases, and this year the disease complex in potato and tomato included a serious and unusual outbreak of late blight. The fungus that causes it, *Phytophthora infestans*, has a fast reproductive cycle and the spores disperse throughout the region on wind and rain. Late blight was first observed in late July after several weeks of constantly wet, cool weather. The disease caused complete death of potato vines in unsprayed fields and gardens, though timely fungicide applications were able to keep potatoes healthy in many commercial fields. In tomato, the foliage seemed to be quite resistant, but we have found fruit with large dark lesions called 'buckeye rot' (see August 21 issue of Vegetable Notes). Of course, tomato foliage had already been hit hard with two other fungal diseases, early blight and Septoria leaf spot.

We know that fields and gardens throughout the Connecticut Valley are infected with late blight, and late blight has also been reported in Vermont, New York and Maine. It is quite likely that this disease is present throughout New England, but we don't know exactly the extent of its spread. Late blight can survive the winter on live potato tubers and can re-infect potatoes next year. One infected field or garden can release spores that will infect commercial fields throughout the region. Thus it is critical for both farmers and gardeners to take precautions to prevent this disease from being a serious problem next year.

We also need to be concerned about late blight infections of potato tubers, which can reduce their storage life and allow entry of soft rot pathogens.

Late Blight infection on potato tuber

Potato harvest and storage

Kill potato vines before harvest with chemical treatment or mowing. Late blight does not continue to live when the host dies unless it forms oospores, which is unlikely. When potato vines are killed any late blight is also killed. It is possible that some spores may have moved into the soil through cracks and infected tubers, though this is also unlikely. If tubers are harvested before infected vines are killed, late blight can be transferred to tubers through contact during harvesting. If some tubers should become infected, the disease will live as long as the tubers are alive.

Here are some steps to minimize late blight infection of tubers:

- Allow vines to die completely and let tubers sit in the ground for two weeks after vine kill before harvest so that skins will harden (especially if they are intended for storage).
- Take pre-harvest samples, especially shallow tubers. Knowledge about the health of the crop can guide harvest and storage decisions.
- Wash samples during harvest to check for late blight. New late blight lesions will be dry and may be unnoticeable under a coating of soil. Know the situation before the storage is full and understand storage requirements of stressed potatoes. Soft rot can develop quickly from late blight lesions and soon cause massive storage problems.
- Harvest when the soil is dry and minimize skinning and bruising. Infection at harvest is reduced in dry soil conditions and further reduced when skinning is minimized. Bypass areas with late blight infection.
- Provide adequate airflow and cool as rapidly as possible. Infected potatoes must be dried out and cooled down quickly. Late blight will progress rapidly and develop into soft rot on wet, warm potatoes.
- Minimize bruising, skinning, and cutting during harvesting and pre-storage by performing the entire operation very gently.

General guidelines for preparing potatoes for storage include:

- Remove clods and dirt before putting the potatoes into storage.
- A wound healing or curing period is necessary to prevent entry of rot organisms and to reduce water loss. Wound healing occurs most rapidly at 60° to 65° F., with 95 percent humidity, and requires from 5 to 20 days.
- If blight, other diseases, or frost damage is already present, it may be necessary to minimize or bypass the curing period and cool rapidly to the holding temperature.
- The holding period requires low temperatures of 45° F., 40° F., or 38° F. for processing, fresh market, or seed potatoes, respectively. Maintain 95 percent relative humidity.

Tomato fruit rot from Phytophthora

Watch for fruit with a 1-3 inch firm, brown spot on green or ripe fruit. As the spot enlarges, you may see concentric rings of light and dark brown bands. Under moist conditions, a white cottony fungal growth will occur. Contact the Plant Disease Diagnostic Lab (413-545-3209) and send a sample to get an accurate diagnosis. There are several species of *Phytophthora* that can cause 'buckeye rot' type symptoms on tomato, and it is important to know if you have late blight or another type of *Phytophthora*.

If fruit is infected, reduce the risk of further spread by burying it deeply or bagging it and removing it from the farm. Composting is an option IF the tomato is covered and if you can maintain the proper conditions for rapid and complete composting, otherwise there is risk that undecomposed plant material will survive the winter intact.

Late Blight infection on tomato fruit. Photo by Thomas Zitter, Cornell University

Action plan for making sure late blight dies off this winter

Potatoes in storage, tubers surviving the winter unfrozen in the garden or infected tubers in a compost are all potential sources of new infections. Spores are carried from these sources by wind to the new crop of potatoes or tomatoes. Spores can be transported 80 km (50 miles) or more from a source and 8-16 km (5-10 mi) is common.

Therefore all cull piles should be buried deeply enough so that any tubers that survive the winter can not produce viable shoots. In the fall, tubers that fall back onto the field during harvesting should not be incorporated more that a couple of inches into the soil. This insures that they will be killed by freezing, even in a mild winter.

Home gardeners should be certain to dispose of unwanted potato tubers either by burying them or leaving them on the soil surface to be killed by freezing weather. Do not save seed potatoes for next year.

Infected tomato fruit discarded in composts in late winter or early spring may be a source of infection if they do not freeze. Infected plant material that is on the soil surface should freeze, killing the late blight fungus that is in the tissue. Thus there is little likelihood that infected tomatoes would provide a source for inoculum next year, because plants will be killed by frost.

A seasonal checklist for late blight control can be found at the Univ. of Maine Potato Program website:

http://www.umaine.edu/umext/potatoprogram/Fact%20Sheets/LB%20control%20Checklist.pdf

-R. Hazzard, John Howell, Rob Wick (UMass Extension). Sources include: University of Maine Cooperative Extension Potato Program; Department of Agriculture and Aquaculture, New Brunswick, CA; University of California Cooperative Extension.

TOMATO PHYSIOLOGICAL FRUIT DISORDERS

The following problems in tomatoes (described below) are not caused by infectious diseases or even insects but are rather a result of environmental stresses on the plant.

Blossom-end rot – Characterized by light brown patches that become sunken occurring at the blossom end. Secondary organisms will usually invade the dead tissue. Blossom-end rot is caused by a localized calcium deficiency in the fruit, aggravated by unfavorable growing conditions, especially drought. Where water is limited, plant growth slows and subsequently nutrient availability is reduced. Calcium concentrations in the plant are then reduced as calcium is carried through the plant in water flow. Ensuring a steady and adequate supply of water and avoiding excess nitrogen fertilization will help to alleviate blossom-end rot.

Fruit Cracking – Concentric fruit cracking and radial fruit cracking are the two types. This is a physiological disorder that occurs as the fruit is sizing and results from variations in soil moisture and temperature. Growth cracks can occur during periods of rapid fruit growth when relative humidity and air temperatures are high or when water becomes abundantly available after a drought period. These cracks are easily invaded by secondary organisms that promote fruit rot. Varieties vary in their susceptibility to fruit cracking.

Catfacing –This disorder occurs during the early stages of flower bud development, 2-3 weeks before blossoming or when temperatures drop below 50F during flowering and fruit set. However, any other impediments to flower bud development can also result in catfacing. High levels of soil nitrogen and excessive pruning can aggravate the problem. Affected fruit have deep indentations and large bands of cork-like scar tissue on the blossom end of the fruit.

Blotchy Ripening – Blotchy ripening of tomatoes is characterized by areas of the fruit that fail to ripen properly. White or yellow blotches appear on the surface of the ripening fruit while the tissue inside remains hard. It has been linked to potassium or boron deficiency and to high nitrogen levels. Follow a well balanced fertilizer program to help minimize the disorder.

Puffiness – Fruit affected with puffiness appears somewhat bloated, light in weight and soft. When the fruit is cut, the cavities may be only partially filled with gel or even empty. Puffiness results from incomplete pollination, fertilization, or seed development - often a result of cool temperatures that negatively affect nutrient uptake and availability. High nitrogen and low potassium have also been linked to puffiness. Some varieties are more vulnerable than others.

- reprinted from LI Fruit & Vegetable Update, September 5 2008

SWEET CORN & PEPPER REPORT

Sweet Corn

After a few weeks of drier weather, many farmers were glad to see some rain this past week. However, tropical storm Hanna brought 5 to 7 inches of rain across Masschusetts, far more than was needed! Heavy rains and minor winds in some areas caused late sweet corn to blow down. The sweet corn season is over for the majority of growers in New England and most fields are now being cut and disked and cover crops have been seeded and are emerging.

The European corn borer flight appears to be over for the season but remember that the moths overwinter in crop debris so chop up your stalks to get a head start

Location	Z1	EII	Total	CEW	FAW
Bershires/Champlain Valley					
Pittsfield			-	51	-
CT Valley					
South Deerfield	3	0	3	-	-
Sunderland (2)	0	1	1	12.5	4
Whatley	0	0	0	39	
Hadley (2)	1	0	1	3.3	0
Amherst (1)	0	0	0	22.5	3
Easthampton	0	0	0	73*	
Central & Eastern MA					
Dracut	0	12	12	25	
Still River	0	0	0	21	
Concord	3	0	3	0	
Northbridge	2	0	2	2	
Tyngsboro	0	0	0	7	
NH					
Litchfield, NH	0	0	0	22	
Hollis, NH	0	0	0	0	

* four-night count (18.25 moths per night)

Corn Earworm Threshold		
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

on control for next year. Get rye cover down as soon as possible after harvest to take up nitrogen and store it for next year's crop.

Corn earworm counts rose at many locations this week, probably as a result of storm fronts moving into the areas from the south. Trap counts show earworm is still a threat to late corn, with a high of 73 moths caught in four nights in one field in Easthampton. For growers who are within a week of picking their latest corn, the last spray for corn earworm has already been made. For sweet corn that you expect to pick in late September or early October, continue corn your earworm sprays, but extend the spray intervals one or two days, to adjust for lower temperatures. That interval may be lengthened if the maximum temperatures are 80 degrees F or below for two or three days. Cool nights reduce moth egg-laying activity and extend the hatch time for eggs laid on silk.

Peppers

Pepper growers should be able to stop any further ECB sprays now, if they have not already done so. ECB trap counts are down and harvest samples have shown little or no ECB damage to fruit.

This will be the final corn report for the season. We would like to offer a special thanks to the farmers, Extension specialists and consultants who sent in trap counts all season. Without their generosity in time and effort we would not be able to maintain a trapping network that covers the whole state and extends northward into VT and NH. Many thanks to David Rose, Jim Golonka, Skip Pepin, George Hamilton, Paul Willard, Jim Mussoni, Charles Leich, Bruce Howden and John Bartlett for their contributions to the scouting network!

As the 2008 season comes to an end you may want to consider how your own on farm scouting program could benefit you in 2009. Throughout the season, trap captures and field infestation levels can be very different from one location to the next. By monitoring flight patterns and caterpillar activity on your own farm you may be able to save yourself some time, money and stress! For information and resources on how to do this, visit the University of Massachusetts Vegetable Program website at:

http://www.umassvegetable.org/SweetCornIPMScoutingGuide.htm

or

http://www.umassvegetable.org/soil_crop_pest_mgt/crops/corn_sweet.html

--C. Huffman, R Hazzard.

VEGETABLE NOTES WOULD LIKE TO THANK THE FOLLOWING COMPANIES FOR THEIR SPONSORSHIP:

25 Elm St., South Deerfield, MA 01373. Phone 413-665-2115.

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61 Hicks Brigde Rd.
Westport, MA
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fieldworksct@yahoo.com

If you would like to become a Vegetable notes sponsor, please contact Jessica Dizek at jdizek@outreach.umass.edu or 413 545 1445

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