



## VEGETABLE IPM MESSAGE

JUNE 20, 2002

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### CROP CONDITIONS

After holding on through a long period of wet cold weather, crops are finally taking off. Several days of sun and heat, with plenty of soil moisture, are great for all crops. Soils are drying out. More and more early corn is reaching the silk stage. Harvest now includes greens of all kinds, radishes and baby turnips, early broccoli and cabbage, kohlrabi, the first peas, greenhouse and hoop house tomatoes. Lettuce harvest is starting in cooler parts of the state. Zucchini and summer squash harvest will begin this week – plants that survived the cold under plastic or row cover are loaded with blossoms and fruit. Growers are uncovering all the warm-weather crops that were protected under plastic or floating row covers, and seeing the tremendous growth benefit of that investment. Cultivation is a priority, as galinsoga, lambsquarters, pigweed, crabgrass, and other warm-season weeds are taking off.

### FIELD DAY AT THE UMASS RESEARCH FARM, SOUTH DEERFIELD, MA. ON JULY 16

Mark your calendar for the UMass Field Day on Tuesday, July 16 from 5 to 7:30 PM. Tour this season's research projects in vegetable crops, which include:

**Flea beetle management in Brassica crops**, including insecticide trials with organic and conventional products (Platinum, Sevin, Spintor, Surround, and Row Cover); perimeter trap crops and flaming; ecology studies on the life cycle of the beetle

**Managing cucumber beetle and bacterial wilt in pumpkin**, in both transplants and direct-seeded crops, with systemic and foliar sprays; applying imidacloprid (Admire) through trickle, or as a furrow or transplant drench; using kaolin clay (Surround) and plant growth promoting Rhizobacteria (Bioyield).

**Specialty Crops Evaluations** – come as see a wide range of “new” vegetable crops that will appeal to ethnic markets in Massachusetts. More details on these crops next week.

**New specialty potato varieties** and cultural techniques for producing early potatoes.

**Late-season organic sweet corn** pest management.

**Trickle Irrigation:** John Howell will discuss trickle irrigation systems with hands-on demonstration using the trickle irrigation trailer, which is being used for fertigation and imidacloprid treatments on the farm. Come with questions!

**Directions:** From I-91 north take exit 24; turn right at end of ramp onto Rts 5 & 10 North. From I-91 south, take exit 24 and turn left at the end of the ramp onto Rts 5 & 10 North. Go north on 5 & 10 a few hundred yards to the traffic light and turn right onto Rt. 116 (toward Amherst). Proceed about one mile through another light and turn left (north) onto River Rd. just before the bridge over the Connecticut River. Go north on River Rd. past a housing development and left through the gate onto the Research Farm. Look for signs. From the Amherst-Sunderland-Hadley area, cross the Connecticut River on Rt. 116 and turn right onto River Rd. just beyond the bridge.

For more information contact: Ruth Hazzard (413) 545-3696.

### FOOD SAFETY DURING HARVEST

Good sanitation practices during harvesting can help to reduce the risk of microbial contamination of fresh produce. Soil,

fertilizers, harvesting equipment, water, workers, pets and pests can all be sources of harmful microorganisms that can cause food-borne illness. Therefore it is important that grower's set up measures to help prevent these sources of microorganisms from contaminating produce. Good sanitation practices include cleaning and sanitizing all food contact surfaces, encouraging worker hygiene and training and keeping animals out of fields, orchards and packing house.

**What do we mean by “food contact surface,” “cleaning” and “sanitizing”?:** A **food contact surface** is a surface that comes into contact with the fresh produce any time during harvesting, packing or transporting. **Cleaning** means to remove soil and residues from food contact surfaces by washing and scrubbing with soap or detergent, then rinsing with clean potable water. **Sanitizing** means to treat a food contact surface with a sanitizing solution that will kill most microorganisms. Surfaces must be cleaned first before they can be sanitized. Soil and soap residues can inactivate the sanitizing solution. A **sanitizing solution** is made by mixing a small measured amount of a sanitizer with potable water according to the directions given by the manufacturer. A **sanitizer** is a chemical compound designed to kill microorganisms. The most commonly used are chlorine bleach and quaternary ammonium compounds.

**Take a walk through your harvesting operation and check for these signs of potential food safety hazards:** Pets, livestock, poultry or wildlife in fields; Human or animal waste in fields and orchards; Sick or unclean workers; Dirty harvest containers; Produce laden with dirt or manure; Broken and dirty harvest equipment.

**What can you do?:** Wash, rinse and sanitize, when possible and practical, all crop containers before harvest. When sanitizing, use an approved sanitizer according to the manufacturer's directions. Common sanitizers include chlorine bleach and quaternary ammonia. Store sanitizers and solutions away from the produce. Cover harvest containers to keep crop dust, animals, insects and birds out. Clean harvesting aids each day with potable water. This means they should be free of visible soil and residue. Keep harvesting equipment in good working order. Set up a maintenance schedule. Train workers

to follow good hygiene practices. Do not haul produce in equipment that has been used to transport garbage, manure or animals.

**Food Safety During Packing:** Food safety in packing follows the same principles as in harvesting. Ideally the building used for packing and other post harvest operations should be constructed of materials that are easy to clean. The building should be designed to keep rodents and insects out. Counters, tables and other work areas should be made of materials that are easy to clean and sanitize such as stainless steel or other smooth, rust free, nonporous material. Plumbing fixtures should be capable of handling the crop, cleaning equipment and personal hygiene. Hot and cold water should be available with mixing sinks to allow for tempering the water. It is a good idea to clean and sanitize packing areas, floors, equipment and food contact surfaces on a daily basis.

**Take a walk through your packing facility and check for these signs of potential food safety hazards:** Building used for livestock at any time; Signs of rodent, bird or insect infestation; Holes in screens, windows and doors; Chemicals stored near food or produce; Food containers not labeled or dedicated for use; Dirty, rusty and rough food containers, food surfaces, floors and equipment; Containers stored on floor without covers; Hoses used to wash food contact surfaces and equipment; No hand-washing sink available; No running hot or cold water available for cleaning; Water supply from untested well or surface water; Workers bringing in manure and dirt on clothing and footwear.

**What can you do?:** Remodel, clean and sanitize your building if it is or was used for livestock; Install proper plumbing and fixtures to allow for hot and cold running water, mixing of water for cleaning and sanitizing. Use public water supply or tested and treated well water when cleaning and sanitizing in the packing room. Use food grade containers and store produce covered. Screen and seal windows and doors to keep rodents, birds and insects out. Invest in packing equipment, containers, utensils and food contact surfaces that are made of food grade materials and that are easy to clean and sanitize. Set up a cleaning and sanitizing schedule for the floor, food contact

surfaces, containers, equipment and utensils. Simply answer these questions: What should be cleaned? What sanitized? When should it be cleaned and sanitized? How should it be cleaned and sanitized? Who should clean and sanitize it? Who will monitor who, when, where and how?

*Adapted from the New England Extension Food Safety Consortium by Craig Hollinsworth.*

## **TOMATO: EARLY BLIGHT FORECAST IS BELOW THRESHOLD TO START SPRAYS**

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TOM-CAST forecasting logged an additional 5 DSV's this week, bringing the total to 25 Disease Severity Values (DSV's). We recommend applying the first fungicide to control early blight in tomatoes at 35 DSV's or the first week in July, whichever comes first. Fortunately, the long leaf wetness periods that occurred last weekend (June 15-16) were cool enough to be below the threshold of 55 F that is required for early blight development. However, those cool temperatures could have been favorable to late blight (see below), and growers should be on the lookout for symptoms of that disease.

## **TOMATO AND POTATO GROWERS SHOULD LOOK OUT FOR LATE BLIGHT**

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**Late blight**, caused by *Phytophthora infestans*, is much more destructive to potatoes and tomatoes than early blight. The fungus *Alternaria solani* causes early blight. Early blight can be expected to occur every year on tomato, and occasionally on potato. Conventional fungicide programs do a reasonably good job in managing early blight. On the other hand, late blight moves in very quickly and is very destructive during rainy weather when temperatures are between 65 and 70 F.

The temperature range for disease is wider but less destructive at the extremes. The late blight fungus is inactive above 85 F. Late blight has occurred occasionally in Massachusetts over the past five years. In a few cases, entire fields of tomato and potato were lost. **If you think you may have late blight, bring specimens to Rob Wick in the UMass Disease Diagnostic Lab, Fernald**

Hall, UMass, Amherst 01003 for confirmation (413-545-1045). Overnight mail can be sent from anywhere in the state.

For late blight on potatoes, the fungicides Curzate, Acrobat MZ and Previcur Flex can be used. These materials are not registered for tomato. Ridomil was the material of choice for *Phytophthora* but many strains are now resistant to the fungicide. The following fungicides can be used for late blight on tomato: Ridomil Gold MZ, Ridomil/Bravo, Bravo and Manzate. Ridomil Gold MZ is formulated with Manzate. The rates of Ridomil Gold MZ and Ridomil/Bravo deliver about the same amounts of Bravo and Manzate that you would have if you were to use these products alone.

## **ARMYWORM ALERT**

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It looks like common armyworm is here again – probably not on the same scale as last year, but at damaging levels in some fields. Typically, the year following a serious infestation does not bring serious outbreaks. However, George Murphy of Crop Production Services reports that they found heavy numbers of armyworm larvae feeding in field corn crops in two different fields in the Connecticut Valley, one in Deerfield and one in W. Northfield. They found one or two caterpillars (about 1 1/2 inches long) per plant and significant feeding damage. Where pheromone traps have been deployed at several locations in the Valley for the past two weeks, no moths have been captured. However, these infestations probably came from an earlier flight. There could have been an early migratory moth flight into the northeast, or it is possible that some pupae survived the mild winter.

This insect attacks grass and hay crops, field corn and sweet corn. Moths are pale gray-brown with a white dot near the center of the wing, but are seldom seen since they fly at night. Eggs are laid in folded leaves or leaf sheaths.

**To scout**, check corn for damaged leaves appear to have been shredded, which is characteristic of both the common and fall armyworms. Typically, damage begins near the edge of a field as the caterpillars move in from neighboring fields. Be particularly watchful in fields that border hay. The young worms

are pale green in color and have the looping habit of crawling until about half grown. The mature caterpillar is about 1 to 2 inches long, dark green and hairless with five whitish stripes along the length of the body. The head is a pale green-brown with darker mottling. Typically they feed at night and hide in the soil during the day. The best time to scout is in the evening or early morning. Each field should be scouted separately, because infestations can vary from field to field, even with fields that are close to each other.

Armyworms are heavy feeders on the leaves, in the whorl and in the ear. The threshold for these caterpillars in sweet corn is the same as for fall armyworm: control when damage exceeds 15% in the whorl or pretassel stages. See the New England Vegetable Management Guide for information on recommended materials.

## POTATO

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**Potato leafhoppers** are arriving in potato and need to be controlled to prevent hopperburn. If you are checking leaves, use a threshold of 1 nymph or adult per 10 compound leaves.

**Beans** should also be scouted. Leafhopper damage in beans can easily be mistaken for disease. Younger plants are the most susceptible to damage.

**Colorado potato beetle** eggs are hatching and will keep hatching rapidly with the higher temperatures. **Three-lined potato beetle** has been observed. This beetle is about the same size as the striped cucumber beetle, but has darker red-orange stripes. The yellow eggs are laid in two neat parallel rows, and are slightly smaller and darker than Colorado potato beetle eggs. The larvae do not grow as large as CPB, and do not cause as much feeding damage. They have the unusual habit of piling their frass up on top of their backs. This provides them with an excellent defense mechanism against predators. Broad-spectrum insecticides used for CPB should control these larvae, but they are *not* susceptible to *Bt tenbrionis* products such as Novodor and Mtrak.

## CUCURBITS

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**Striped cucumber beetle** is actively feeding in vine crops and numbers are still increasing. Scout fields twice weekly for threshold sprays (see previous newsletters for details).

We scouted this week in a field of cucumbers where most rows were treated with kaolin (Surround WP) but one was left untreated. In the kaolin-treated rows, beetle numbers averaged 1 per two plants. Beetles were found on undersides of leaves, but there was very little new feeding damage. In the unsprayed row, we found an average of 4 beetles per plant, and new feeding damage was plentiful. It appeared that beetles were becoming more concentrated in the untreated row, as they found the treated rows unpalatable and left. The clay covers the surface and prevents the beetles from using their usual cues to begin feeding. It is a deterrent and anti-feedant, but does not kill the beetles. Despite the fact that the leaves appear completely white, the clay does not interfere with photosynthesis. Coverage of the undersides of leaves can be difficult, especially at the cotyledon stage, but try for the best coverage you can. Mix a slurry first, then dilute to the proper concentration (1/2 lb per gallon for backpack applications).

In imidacloprid-treated fields we sometimes see the opposite effect: accumulation of dead beetles in the treated area.

## GARDEN CENTER DESIGN, LAYOUT & MARKETING WORKSHOP: JULY 10, 2002

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Presented by UMass Extension Floriculture Program on Wednesday, July 10, 2002 from 9:00 AM to 4:30 PM.

Location: Bemis Farms Nursery, Spencer, MA. Judy Sharpton, Growing Places Marketing will present a hands-on workshop on to help garden retailers focus on specific improvements for their businesses. Workshop participants will bring photos and scale drawings of their retail business. Each participating business will receive a preparation packet to assist them in preparing their individual workshop materials. As a follow-up Judy will provide phone consultation on the areas of focus for the remainder of 2002. This workshop will be limited to 15

businesses. Each business can bring a maximum of three people. **Workshop fees:** \$125 if one person attends from a business, \$200 per business if more than one attends (maximum 3 attendees). Make checks payable to University of Massachusetts. Send to: UMass Extension Floriculture Program, Garden Center Workshop, Room 203 French Hall,

University of Massachusetts, Amherst, MA 01003. For more information contact Paul Lopes 508-295-2212 ext. 24 or Tina Smith 413-545-5306 or visit our website [www.umass.edu/umext/floriculture](http://www.umass.edu/umext/floriculture).

*Tina Smith; Extension Educator, Floriculture;*  
[www.umass.edu/umext/floriculture](http://www.umass.edu/umext/floriculture).

## SWEET CORN

**European corn borer** (ECB) flight has started to decline, but is still strong in most parts of the state. Corn that comes into silk at this time should be protected with weekly sprays. Scout corn blocks for ECB larvae as soon tassels begin to emerge. Look for feeding injury and young caterpillars. The threshold for sprays is 15 % of plants infested with caterpillars. Apply one application and check again within a week to determine if a second spray is needed. **Fall armyworm** has also been observed in whorl and pretassel corn. FAW attacks corn at an earlier stage than ECB, and can cause more damage to the whorl stage. Scout for this as for ECB, and treat if the combined threshold is 15%.

SWEET CORN WEEKLY PHEROMONE TRAP CAPTURES				
TOWN	DATE	ECB Z1	ECB Z2	TOTAL ECB
		IOWA	NEW YORK	
N. Bennington, VT	June 13	4	6	10
Sheffield	June 20	N/A	0	0
Walpole, NH	June 18	2	2	4
Plainfield, NH	June 18	7	4	11
Westminster, VT	June 18	9	6	15
South Deerfield	June 19	4	10	14
Sunderland	June 19	12	9	21
Hadley #1	June 19	13	11	24
Hadley #2	June 19	33	54	87
Ipswich	June 17	10	10	20
Still River	June 19	0	22	22
Belchertown	June 19	10	4	14
Rehobeth	June 20	24	4	28
Dighton	June 20	4	19	23
Sharon	June 20	9	2	11

- trap data from David Rose, Ray Pestle, Dale Riggs, J. Mussoni, Pam Westgate, Paul Willard, R Hazzard.

*Vegetable IPM Newsletter*, Ruth Hazzard, Editor and Stephanie DeGray, Assistant Editor. The *Vegetable IPM Newsletter* is published weekly from May to September 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 is R. Hazzard if none is cited.

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