

## Vegetable IPM Message

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### Crop Conditions

Several recent storms brought more rain. This was welcome in the Southeast and east, where it was needed and was limited to one to two inches. However it was overwhelming in areas of Franklin and Berkshire County, where up to seven inches brought severe flooding. Standing water has re-appeared in some fields.

Cucumber harvest has begun, with cabbage, lettuce, summer squash, broccoli, basil, and plastic corn still going strong. Corn grown on bare ground is beginning to come in. Tomatoes and peppers are doing well but will come in late. Nights have still been relatively cool.

Pepper growers can relax for another couple of weeks, as the second ECB flight has not yet begun. However, if pepper maggot is historically a problem on your farm, watch for oviposition stings on fruit (esp. cherry peppers) and control adults if stings are found.

### Agitation Tips

Proper agitation, either mechanical or bypass, is important in keeping pesticides properly mixed in the spray tank. All dry materials, including wettable powders and dry flowables, can settle to the bottom of the spray tank if they are not properly agitated. The best results will be obtained if sprayer agitation is continuous from the time the pesticides are added to the tank until spraying is complete. Some growers use the PTO (power take off) lever to start and stop the sprayer while keeping the valve to the spray booms open. This usually happens when the boom valves are located on the sprayer and hard to reach from the tractor seat. When the PTO is off, agitation stops. For a quick turn around at the end of the field, this will usually work. Be careful, however, when the PTO is left off for longer periods of time (cleaning or changing nozzles, moving irrigation pipe, etc). If a few minutes have passed, close the boom valves and start the PTO to re-agitate the tank. If this is not done, it is likely that a large amount of pesticide will be sprayed in the first pass causing over-application and then under-application further down the field. One final note: be sure that water soluble spray packets are completely dissolved in the tank. Use of liquid fertilizer may prevent these packets from dissolving.

--Rich Bonanno

## Snap Beans

**Mexican bean beetle** has arrived in snap beans. Look for coppery brown, spotted adults that look like large ladybeetles, yellow-orange egg masses, or bright yellow, oval spiny larvae. A beneficial insect, *Pediobius foveolatus*, is now commercially available for Mexican bean beetle control. This small, non-stinging, parasitic wasp attacks and kills Mexican bean beetle larvae. The parasite does not overwinter here, but provides excellent long-season control of the beetles. This wasp has been tested in snap beans and soybeans in New Jersey and Maryland. A single release, timed so that wasps can attack bean beetle larvae, can provide control. Wasps reproduce in the field and are still present when the second generation hatches out. To pronounce *Pediobius*, say "pee-dee-oh-bee-us". To purchase *Pediobius* contact:

ARBICO, 800 -827-2847 (AZ), <http://www.arbico.com/>  
The Beneficial Insect Company (NC), 336-973-8490  
<http://bugfarm.com/>  
Rincon Vitova (CA), 800-248-2847  
<http://www.rinconvitova.com/>  
The Green Spot (NH), 603-943-8925

For more information, you can contact: Carol A. Holko, Maryland Department of Agriculture, Plant Protection and Weed Management Section, 410-841-5920 , <http://www.mda.state.md.us/plant/mex.htm>

Scout each new bean planting for **potato leafhopper** by checking the undersides of leaves. Damage is greater in plants that are infested early in their growth. Thresholds are two hoppers per foot of row in seedlings, five per foot of row after seedling stage. Orthene will provide control for about 10 days and dimethoate for about 7 days, based on research trials; Sevin and Lannate are also labeled.

## POTATO & EGGPLANT

The summer generation of **Colorado potato beetle** adults has begun to emerge. Large larvae of the first generation drop to the ground and burrow in the soil to pupate for 10-14 days. Adult emergence is earliest in non-rotated, early-planted fields. You will see small round holes in the soil where adults came out. For the first day or two after emergence, the wing covers of new adults are soft. Also, the translucent hindwings underneath the hard striped wing covers are clear or light pink (as opposed to older adults, whose hindwings are bright red). Where larval control was poor in the first generation, this flush of new adults can be very damaging -- especially in eggplant and in potato which is stressed from other causes (such as leafhopper).

**Potato leafhopper** numbers are still high in both potato and eggplant. Check undersides of leaves for adults or nymphs. On eggplant, University of Connecticut recommends a

threshold of one to 1.5 leafhopper per leaf. This year leafhoppers are worse than usual and numbers may be high enough to cause damage if uncontrolled.

## **CUCURBITS**

**Cucumber beetle** numbers are currently low in crops of all ages. However, **bacterial wilt** symptoms are showing up in many vine crops. Symptoms include the sudden wilting of one vine or the entire plant; a yellowing, curling or, stunting of young foliage at the growing tips, resulting in a "tufted" appearance; or yellowing of the mid-leaves and older leaves, while the veins remain green. Leaves often look scorched and blighted, either along the margin or in the interveinal regions. These symptoms have been observed in pumpkin, cucumber, summer squash and zucchini.

These bacterial wilt infections came from cucumber beetle feeding on plants at the seedling stage. Once plants have > 5 leaves, and are vining, flowering, and developing fruit it is unlikely that they will acquire damaging new infections. The most critical period for new infections with bacterial wilt from cucumber beetle is from the cotyledon to the 2 leaf stage. After the 3-4 leaf stage, beetle feeding is less likely to cause plants to wilt or develop other symptoms. Once wilt shows up, it is too late to take action.

It is time to watch for **powdery mildew**. Reports of powdery mildew on pumpkin and summer squash have come in from Berkshire and Norfolk Counties. However we have not observed it in scouted fields in the Connecticut Valley or in Essex County. Look for whitish or grayish talcum-like fungal growth on the upper or lower surface of the leaves and on petioles and stems. Check 5 mid- or lower leaves at 10 locations in the field. Symptoms usually develop first on older leaves. Older plants will show it first. It can often be found on summer squash before it develops on winter squash or pumpkin. Fungicide applications should begin if powdery mildew is found on one leaf out of 50 (or anywhere in the field). Resistance in powdery mildew can develop rapidly when using systemic fungicides (marked below with an asterisk \*) so it is important to rotate different classes of systemic fungicides. When using Benlate, Topsin M or Nova, include a contact protectant fungicide (e.g., chlorothalonil). For example, use a rotation of:

Chlorothalonil with Benlate\* or Topsin-M\* (bezamidozol)

Quadris\* or Flint\* (strobilurin)

Chlorothalonil Nova\* (DMI fungicide)

Chlorothalonil alone

Chlorothalonil by itself provides good control of powdery mildew but has no systemic action, so coverage of both sides of the leaf is important (and difficult). Options for organic growers include potassium bicarbonate (Armicarb 100), monopotassium phosphate (EksPunge), or oils (SMS Stylet-oil, Sunspray Ultra-Fine Spray oil). Check

with certifying agencies on status of particular products.

**Melon aphid** is being seen at low levels. At high temperatures this aphid can reproduce rapidly to produce dense colonies on the undersides of leaves. Leaf curling and wilting can result. Nymphs and wingless adults are dark green to black at low densities, but as crowding increases colors range from dark-green to light yellow. A distinguishing feature of this species, compared to potato or green peach aphid, is that the two cornicles ("tail-pipes") at the end of the abdomen are very dark. This can be seen with a 10x lens. Scout for aphids by checking the undersides of 50 leaves in groups of 5 or 10, scattered throughout the field. If at least 20% of the leaves have 10 or more aphids, controls are recommended. Natural enemies generally keep aphid populations under control in vine crops, so it is *not* recommended to spray when numbers are low since use of a broad-spectrum insecticide can eliminate the natural controls.

## DISEASE DIAGNOSTICS UPDATE

Disease samples are coming into the diagnostic lab at a pretty rapid pace now, continuing a trend that started in early July. On cucurbits, we are continuing to see many leaf spot diseases, including angular, bacterial, and Septoria leaf spot (caused by *Pseudomonas lachrymans*, *Xanthomonas campestris*, and the fungus *Septoria*, respectively). Although the cooler nights and lower rainfall levels appear to have slowed the spread of these diseases, it is still important to distinguish between these various leaf spot pathogens when they are present in your fields. While angular and Septoria leaf spot are not considered serious diseases in this region, the bacterial leaf spot pathogen can infect fruit and cause fruit spots in the field and rot during storage. If bacterial leaf spot is found in your field, include a copper-based bactericide with your fungicide applications (such as Kocide with the fungicides Bravo and Maneb). **Bacterial wilt** (caused by *Erwinia tracheiphila*), vectored by the striped cucumber beetle, continues to be a problem as well, although infection levels have not exceeded 10 -15% of the crop.

The soil-borne water mold **Pythium** (technically not a fungus, but more closely related to algae) seems to be more widespread than in past years, perhaps due to the wet weather. We've found Pythium in several crucifer and cucurbit fields around the state. Pythium is really more of a problem earlier in the season, both pre- and post-transplant, where it can cause root rot and damping-off. At this stage of the season, Pythium doesn't cause root rot per se but instead attacks root hairs, leading to more subtle symptoms such as nutrient deficiencies, wilting and stunting. In general, healthy plants at this stage of growth can withstand a certain level of Pythium infection in their roots. Since Pythium is not an aggressive pathogen, particularly under drier conditions, no treatment is necessary (treatment against Pythium at this point of the season tends to be ineffective anyway).

In tomato, we've seen the beginnings of **early blight** (caused by the fungus *Alternaria*), as well as **leaf mold** (caused by the fungus *Cladosporium*) and **bacterial canker**. All three diseases start out affecting leaves, but early blight can infect fruit and bacterial canker can invade the vascular system. Early blight is characterized by dark brown bull's eye-like lesions on lower leaves. Leaf mold causes pale yellow spots on the upper surface

of leaves and a corresponding felt-like olive green growth on the underside of the leaf. Canker causes marginal scorching, which eventually spreads throughout the foliage and stems. If canker is present, use a copper product at weekly intervals. Check the *New England Vegetable Management Guide* or call the Diagnostic lab for recommended materials.

In tobacco: **blue mold** was seen in one of the UMass greenhouses. Symptoms suggested that it had just arrived, and not lingered over the winter. Plants were destroyed and Acrobat applied to the remaining healthy plants. No sign of blue mold has been seen since, and nothing has shown up in the Connecticut Valley until a recent episode in Somers, CT.

Many of the tobacco fields are showing uneven growth. There is some **black root rot** out there (*Thielaviopsis basicola*) which may account for some of the unevenness. However, we suspect that the cool wet spring may have held the crop back. When good growing conditions returned, some of the plants did not recover fully. Low areas in particular have shorter plants and it is likely that cool wet soils have damaged the root systems. Nematode assays have revealed low populations of nematodes, although some tobacco cyst nematode has been detected. The best time to assess populations of tobacco cyst nematode is just after the stubble has been turned over. If you have tobacco cyst nematode, plow under the stubble as soon after picking as possible. This will help prevent another generation of nematodes.

Call Dr. Rob Wick at (413 545-1045) or Jeff Lerner (577-1827) with any questions. Please submit any disease samples to the Plant Disease Diagnostic Lab, Rm 109 Fernald Hall, UMass, Amherst, MA 01003.

--J Lerner, R. Wick, B. Lipke

## **SWEET CORN:**

### **CORN EARWORM ALERT!**

**Corn earworm** arrived with the weekend storm, which moved up from the south. As usual, numbers are heaviest near the coast and in the Southeast, calling for a four-day spray schedule on silk. Moths have also made their way into the Berkshires and up the Connecticut River Valley (5 day spray schedule). **European corn borer** captures are still low-- the second flight will start shortly, but is not here yet. The exception is one farm on the New York border where a one-generation strain of ECB is active. Scouted pretassel blocks have lower counts this week, many below threshold. A few **fall armyworm** are showing up in whorl stage and tassels, and in traps. Like ECB, these are best controlled before silking (use a combined ECB+FAW threshold of 15%). Unfortunately we do not have trap data from some of our regular sites this week.

## **WEEKLY SWEET CORN TRAP DATA FOR WEEK ENDING JULY 20, 2000**

<b>Town</b>	<b>Date</b>	<b>ECB Z1</b>	<b>ECB E2</b>	<b>Total ECB</b>	<b>CEW</b>	<b>FAW</b>
NY/MA Border	19-Jul	2	0	2	9	
Stephentown	18-Jul	65	0	65	7	
Plainfield, NH	19-Jul	1	0	1	3	1
Pittsfield	14-Jul	8	0	8	0	
Sheffield	18-Jul	2	1	3	7	
South Deerfield	20-Jul	1	0	1	8	
Still River	20-Jul				5	
Millis	19-Jul	3	0	3	18	0
Hopkinton	19-Jul	0	1	1	14	1
Swansea	20-Jul	1	0	1	24	5
Rehoboth	20-Jul	0	2	2	20	5
Seekonk	20-Jul	0	3	3	44	11
Rochester	19-Jul	0	0	0	75	4

*Vegetable IPM Message*, Ruth Hazzard, editor. The Vegetable IPM Message is published weekly from May to September and includes contributions from the UMass Extension Vegetable Program faculty and staff, growers, and private IPM consultants.

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