Vegetable IPM Message
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Crop Conditions

Tomatoes, peppers and eggplants are beginning to trickle in. Demand is high, supply is low. "Chance of sun" is big news. A chance to spray would be welcome. Fields with heavy soils are soggy again and sometimes inaccessible for harvest or spraying. Corn continues to ripen slowly. One grower reported that seventy-day corn planted in late April was harvested 100 days later.

Leaves were wet 24 hours a day for five of the past 7 days -- almost one continuous leaf wetness period, at temperatures between 60 and 75. This is an *extremely* favorable condition for both bacterial and fungal diseases. Preventative spray schedules for disease on potato crops should be 5-7 days, weekly on tomato and cucurbits.

Peppers

Fruit set is reported to be good, but fruit is slow to mature. **European corn borer** flight is getting underway and captures have exceeded 7 per week in many locations (see table below). Insecticide applications should begin one week after captures reach this threshold. This delay is safe because of the time required for mating, egg-laying and egg hatch before any fruit will be infested. The number of applications of Orthene allowed on peppers has been reduced to 2 this year. This will require a shift in materials for some growers. When limited to two applications, the best time to use them may be during peak egg hatch (mid August). More on alternatives next week.

Bacterial leaf spot has been observed in some fields. Leaf symptoms begin as small dark green or water-soaked spots, which turn into black or brown spots of dead tissue. Advanced symptoms are irregular brown blotches and blighting along margins or on the whole leaf. Severely affected leaves drop from the plant. Copper applications on a weekly basis are recommended if you see symptoms.

TOMATO and POTATO

Given wet conditions, regular fungicide intervals (weekly) are critical to keep foliar

diseases in check. Include copper if bacterial diseases are present. In tomato, **early blight** is progressing. Bacterial diseases (**bacterial canker and bacterial speck**) have been observed in some tomato fields. No **late blight** has been reported in New England to date but is present in the Midwest, eastern NY, and Pennsylvania. Scout both tomato and potato fields, especially lowest or wettest sections. Check lower leaves, stems and tomato fruit as well as growing points and more visible foliage. During times when foliage is wet from rain or dew late blight infection causes irregular small to large black areas with a fine white fuzz of sporulation. Late in the day it will dry up and turn brown with a yellow-green halo on leaves and sporulation will be harder to see. Infected tomato fruit have irregular marbled brownish areas of dry rot.

--parts adapted from C.R. MacNeil & Julie Kikkert, NYS

NITROGEN

As you might expect, nitrogen levels in most soils are low. Many of our soils will supply a significant amount of N, which is released as microbes consume organic matter. Wet, cool soils are not conducive to microbial activity and this reduces the amount of N that becomes available for crop uptake. Also, as excess water moves down through the soil, some of the nitrate N, regardless of the source, is leached from the root zone. In many fields, additional N is needed to make up for the reduced availability. Some soils that are high in organic matter have adequate levels of N this year. These soils may supply excessive amounts of N in a so called "normal" year.

Many growers are waiting for the soil to dry enough so they can get into fields to apply N. Nitrogen can be applied with irrigation, especially trickle irrigation. No, I haven't lost my marbles! You can apply adequate N through trickle irrigation without applying much water. From seven to ten lb. per acre per week is appropriate as a replacement for sidedressing or topdressing. On some sandy soils, it may be beneficial to also apply a similar amount of potassium. This can be done using potassium nitrate. There is little or no benefit or need to apply phosphorous in this manner. Phosphorous fertilizers may react with other elements in the water, forming precipitates that can clog the emitters in a trickle irrigation system.

When purchasing a fertilizer material for use in an irrigation system, be sure it is easily dissolved in water. Some fertilizers are coated with a waxy substance to reduce caking in the bag, but they are not suitable for this use.

--John Howell

Cucurbits

Crop maturity in pumpkin and winter squash covers a wide range. Fields that succeeded in getting off to an early (or, what would be considered "normal") start have good-sized fruit. However many fields were planted late and have grown slowly, and are just

beginning fruit set.

Watch for signs of **deer feeding** and get fencing up before deer get in the habit of visiting your fields. Growers who have surrounded their fields with two-strand electric fence report that it is working well. The fact sheet *Preventing Deer Damage*, which describes this fencing, is available from our office (413-545-3696).

Powdery mildew is showing up in more fields. Look for the white, talcum-like spots on upper or lower surfaces, especially on older leaves. Where fruit is >4 inches, fungicides are recommended to prevent **black rot** on fruit. **Angular leaf spot** is also present in many fields. **Bacterial leaf spot** is much less common. It is difficult to distinguish leaf symptoms of these two bacterial diseases, but at this point the management recommendation is the same: foliar applications of copper every 7-10 days. Addition of maneb to copper products activates the copper and increases its efficacy.

In many cases fields need both fungicides for preventing black rot on fruit and to control powdery mildew, AND need copper to keep bacterial disease in check. In this case use a rotation of the following mixtures: 1) Quadris and copper; or 2) Benlate, maneb or Bravo, and copper; or 3) Nova, maneb or Bravo, and copper; or 4) chlorothalonil (Bravo), maneb and copper. All of these except the last provide benefit of systemic activity, which is important given the weather conditions and the difficulty of getting good coverage on lower leaf surfaces. A 7-10 day spray interval is recommended (the tighter interval may be better given current conditions). According to the manufacturer, **tank mixing copper products with Quadris is not a problem.** There is **one exception** however: Copper Count N may not be tank mixed with Quadris (as mentioned on the label). A non-ionic surfactant is recommended, but a silicon surfactant or oil should not (see label for details). Nova and copper tank mixtures are also OK.

Make reservations for the Twilight Meeting on Nantucket now!

The twilight meeting at Bartlett's Ocean View Farm is scheduled for September 8.

It is advisable to make reservations soon if you plan on taking a hi-speed ferry. There are two boat lines that have service to Nantucket: The Steamship authority (508 495-3278) and Hi Line (508 778-2600). Both have one-hour (hi-speed) and two-hour ships that go from Hyannis to the Island. You need to make reservations for the hi-speed ferries. If you take the two-hour ferry, you don't need reservations. The Steamship Authority has a one-hour boat that leaves Hyannis at 11:05 and gets in to Nantucket at 12:05. The Bartletts will make arrangements to bring people that are at the dock at 12:05 to their farm. If you take another boat that gets in earlier, make sure you are at the docking area by 12:05. If you arrive after 12:05, you will need to take a cab.This one-hour ride with the Steamship Authority is $42 roundtrip (the two-hour ride is $25 roundtrip). Parking at the pier in Hyannis is $10.00/day. There are boats returning from Hyannis after the meeting, so you can go to the meeting and back on the same day.You can get more information on travel at http://www.nantucket.net/trans/

Please contact Frank Mangan at 978 422-6398 or fmangan@umext.umass.edu if you plan on attending this meeting.
The Bartletts would like to know how many people will need transportation from the dock and also how many lunches to prepare.

SWEET CORN

Rust is being observed in whorl-stage sweet corn. Scout corn blocks that are now in whorl stage to determine if fungicide applications may be warranted. **Common rust** and **Southern Rust** (*Puccinia sorghi* and *Puccinia polysora*, respectively) both occur in the Northeast. Spores from both fungi do not overwinter here, but can be blown long distances and are re-introduced to the Northeast each year. Illinois is also reporting a new strain of the common rust which infects certain hybrids.

All plant parts can be infected, but leaves are more susceptible than husks. The brown pustules contain spores and occur on both sides of the leaf. Corn is more susceptible to infection prior to tasseling so later maturing varieties may have higher losses. High relative humidity, three to six hours of leaf wetness, and temperatures between 60 ^{O}F and 75 ^{O}F are ideal for disease development. Generally this disease is not a problem in corn, but conditions have been truly ideal in recent weeks.

Damage: Pustules on husks are unsightly and reduce marketability. Severe infections of leaves can result in loss of crop vigor and smaller ears. **Management:** Controls should start at the whorl or pretassel stage. By the time corn reaches silking, it is too late to prevent losses (also note days to harvest restrictions). One pustule per leaf on 80 % of the leaves prior to tasseling is the threshold level for fungicide application on moderately susceptible cultivars (reference: *Northeast Sweet Corn Production and IPM Manual*). The threshold would be lower on highly susceptible cultivars (which includes Silver Queen). The University of Illinois Vegetable website has a list of resistant and moderately resistant cultivars (www.aces.uiuc.edu/~ipm/fruits/corn/res-rust.html). Fungicide options include Tilt (14 dh), chlorothanil (Bravo or Terranil, 14 day dh), or maneb/mancozeb (Dithane, Manzate, Penncozeb, or Manex, 14 dh).

Corn earworm captures ranged from 4-8 moths per week (5 day spray schedule) in most of the state and in southern Vermont. Southeastern Mass. has higher captures, but this higher pressure does not appear to reach all the way up the coast. The southern CT Valley also had slightly higher numbers. Note that the spray schedule can be extended in cooler temperatures. If you are checking pheromone traps, don't be alarmed by all the gypsy moths! These are larger than corn earworm mothers, dark brown instead of buff-colored, and have feathery antennae instead of smooth. They are very active inside the trap. **European corn borer** flight is getting underway. Infestations of pretassel corn are still very low**. Fall armyworm** is being captured in scattered locations. Watch whorl and pretassel corn for the ragged feeding damage and caterpillars. These are best cleaned up before silk. Only one field was reported at >15% infestation in the whorl stage. **Corn leaf aphids** are present, and are developing dense colonies in some plantings. Predator numbers are also growing. Where colonies are out of control, if Warrrior or Lannate is

used for caterpillar control will this also suppress aphids.

SWEET CORN TRAP CAPTURES FOR WEEK ENDING AUGUST 3, 2000

Town	Date	ECB Z1	ECB E2	TOTAL ECB	CEW	FAW	% ECB PT**
Berkshire Region							
N. Bennington, VT	2-Aug	0	0	0	4		
Stephentown,MA	31-Jul	51	0	51	8		
Sheffield, MA	1-Aug	2	1	3	6		
Conn. River Valley North to South							
Walpole, NH	2-Aug	0	3	3	5	1	2%
Plainfield, NH	2-Aug	8	0	8	4	0	1-5%
Westminster, VT	2-Aug	0	13	13	4	7	
Putney, VT	2-Aug				5	3	
Sheffield	1-Aug	2	1	3	6		
Whately	31-Jul	3	32	35	2	0	
Hatfield	29-Jul	2	2	4	5	0	0%
South Deerfield	3-Aug	14	2	16	8		
Sunderland	29-Jul	3	5	8	6	0	0
Hadley	29-Jul	6	3	9	5	0	3%
Amherst	1-Aug	2	14	16	5	0	
Feeding Hills	29-Jul	2	0	2	11	1	3to 5%
East/Central MA North to South							

Ipswich	31-Jul	0	0	0	6	2	5% FAW
Dracut	1-Aug	3	11	14	4	2	
Stow	1-Aug	5	46	51	8	3	
Northbridge	2-Aug	3	2	5	6	0	0%
Munson	2-Aug	2	0	2	6	0	2%
Still River	3-Aug				8		
Leicester	2-Aug	0	0	0	7	1	2%
Millis	2-Aug	1	12	13	21	3	
Hopkinton	2-Aug	0	11	11	7	1	12%
Seekonk	3-Aug	1	63	64	38		
Rehoboth	3-Aug	3	72	75	18	2	
Rochester	31-Jul	5	40	45	44	4	
Swansea	3-Aug	15	15	30	74	6	

** % infestation with European corn borer in unsprayed, pretassel corn. (Blanks indicate no data is available)

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. Authors of articles are noted; author is R. Hazzard if none is cited.