



VEGETABLE IPM MESSAGE

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CROP CONDITIONS

Harvest of summer and fall crops is going strong. Retail markets were very busy through the Labor Day weekend. Drought has taken its toll on crop weight or size in many fields, and scattered rains this week were too late to make a difference in most non-irrigated fields. However, overall crop quality – for tomatoes, corn, pumpkins, butternut, onions -- is excellent. Dry sunny weather is excellent for fall harvesting. Growers are turning under crop residues and seeding cover crops while continuing to harvest. Cold nights will have an impact on crop growth and fruit quality.

PEPPERS

European corn borer flight is declining. There is always a question of when one can stop spraying for Ecb in pepper, relative to the captures. At the onset of the second generation, the threshold number of 7 moths per night has been tested experimentally over several seasons and it has been shown that starting sprays one week after reaching that threshold provides control of ECB. We have been using that threshold successfully for 7 years in Massachusetts. However, the threshold for stopping sprays has not been tested experimentally. During this time, we are at the end of the generation, which means that new egg-laying is declining and may well be over. In addition, nights are growing colder. When night temperatures fall below 55 °F, ECB moths are not active during the night. With lower temperatures overall, degree day accumulation drops dramatically, so any eggs which might be present are slow to

hatch. Larval feeding rates decline. In Mass. and Connecticut pepper IPM programs, working directly with growers, we have used 20 moths/week as a cut-off number for when to stop insecticide applications at the end of the season. Growers using this threshold have had effective control though to the end of the season. However, as a cautionary note, there could be a situation where this would not be adequate. Sometimes there is a partial third generation of ECB. In warm summers, where frost holds off through September, second-generation larvae have time to pupate and emerge as moths. If ECB captures INCREASE at this time of the year, that is the reason. If bell peppers are being harvested throughout September, and if there is warm weather, and there is an upsurge in ECB flight, I'd recommend growers apply a late-season insecticide for ECB.

--R Hazzard

END-OF-YEAR WEED SCOUTING

It is worthwhile to take the time to check your fields for weed problems at this time of year. A quick scouting can alert you to problems that will be expensive to solve if they get out of control and can give you clues that will help you in designing your weed management program for next year.

Things to look for when you scout:

How Many? How dense are the weeds? If weeds are very dense, they may be having an impact on your yields. This is especially true if these weeds emerged early in the season, when competition is greatest. If weeds come into your field during the period of greatest crop growth, you may want to consider changing your weed management program.

Which Weeds? Identifying weeds can help you identify potential problems before they get out of hand, and can help you decide if you need to modify your weed control program. Weeds like **yellow nutsedge**, **hedge bindweed**, and **quackgrass** are spreading perennials, which have underground parts that enable them to spread throughout whole fields. Because these weeds can be very damaging, and are very difficult to control, they are worth "nipping in the bud." In addition, keep an eye out for annual weeds which are new to your field or increasing in numbers. Some weeds can be very difficult to control in some or all of the crops in your rotation. **Galinsoga**, for example, is hard to control in cole crops, peppers, and squash. **Nightshades** are difficult to control in tomatoes for growers who rely on herbicides for control, because they are in the same family as tomatoes. **Velvetleaf** is hard to control in sweet corn. Spot treatment with Round-up, or hand pulling or hoeing, is worthwhile to eradicate small patches of particularly threatening weeds.

What worked? It is also useful to look at the whole field and evaluate the effectiveness of your weed control efforts. If some weeds are generally escaping, identify them. They may point to weaknesses in your herbicide or cultivation program. If mostly grasses, or mostly broadleaves are escaping, it may mean you need to adjust either the rates or the timing of your grass or broadleaf herbicides. You may also find the *New England Vegetable Management Guide* useful. This manual contains a chart listing the effectiveness of vegetable herbicides on most of the common weeds in New England. You can use this guide to find an herbicide labeled for your crop which might give better control.

Where are the weeds? Weeds in the rows or planting holes are much more damaging to crop yields than between-row weeds. Weeds in rows may be an indication that cultivation equipment needs adjustment, or cultivation needs to be done earlier. Mapping weedy spots, and keeping some kind of permanent record of weed surveys, can help you evaluate your weed management over the years.

What to do now? Once crop harvest and weed scouting is complete, disk or till the fields to destroy existing annual weed growth and to reduce or prevent weed seed dispersal. If perennial weeds such as bindweed or quackgrass are present, consider an application of Roundup before cold weather arrives. Time spent on these tasks now will greatly improve your level of weed management next season.

--R Bonanno

PREVENTING DAMAGE FROM AN EARLY FROST

The following article by Steve Reiners (Cornell University) is reprinted from PestMinder, Cornell Coop. Extension Lake Plains Vegetable Program, Sept 6, 2000

Be prepared for an early frost. Use more costly methods of frost protection on your most profitable crops. By protecting your crop from that first frost, you may add weeks to your growing season.

There are two types of frost, advective or radiation. Advective frosts occur when a cold front sweeps into an area. Winds are typically gusty, clouds may occur and the thickness of the cold air layer may reach more than a mile high. One seldom sees the first frost of the season under these conditions. The first frost is typically a radiation frost. These occur under a clear sky and calm winds. Typically an inversion layer develops. The term inversion means that atmospheric conditions are inverse or opposite of normal daytime conditions when air temperature decreases with height. In an inversion, cold air collects near the ground while warmer air lies above this trapped cold layer. Typically, we may have 3 - 5 weeks of good weather following a frost but the crops have already been damaged or killed. There are several things that growers can do to minimize the effects of the first radiation frost. These include:

Harvest Early - A crop like tomatoes is very sensitive to frost. If you have no way to protect plants, you may want to harvest all fruit that are in the mature green stage of ripening. Fruit harvested at this stage will still ripen, albeit not with the same flavor as fruit harvested with some color. Since you will need to store the fruit, wash in a chlorine bath. Dry and place in boxes in

a warm, dark location with some air movement. Tomatoes do not need light to ripen, in fact, light will slow ripening. Store where the temperature does not go below 55F. Lower temperatures will cause the fruit to be poorly flavored.

Use the soil - Your soil serves as a heat reservoir. As it may take a while in the spring for a soil to warm, it also takes time in the fall for it to cool. A loose, cultivated field insulates the soil and prevents heat movement from the soil to the air (and around the plants). This results in frost. A more compacted soil, typical of a field near the end of the season, will lose heat more quickly to the air, protecting the plants from frost. The bottom-line - do not cultivate when a frost threatens.

Irrigate, Before the Frost - A moist soil can hold 4 times more heat than a dry soil. It will also conduct heat to the soil surface faster than a dry soil, aiding in frost prevention. In a study performed years ago, the air temperature above a wet soil was 50F higher than that above a dry soil and the difference was maintained until 6 am the next morning.

Row Covers - The use of a floating row cover can give you 2°F to 5 °F protection. The covers can be laid right over the crop and no support other than the plants is needed. You will also need additional labor to help you get the covers on the crop. The best time to apply would be in the late afternoon after the wind has died down. Remove the next morning. If you are careful and avoid ripping the covers you should be able to use the covers over several nights and even next year.

Irrigate, During the Potential Frost - Strawberry growers often irrigate their crop on a potentially frosty spring night to protect the crop. Typically, sprinklers are mounted above the crop canopy. As the water freezes, heat is released, 80 calories for each gram of water that freezes. As long as ice is being formed, heat will be released. Often the crop is coated with ice by morning. In fact, this is a major disadvantage, as the weight of the ice will cause branches to break and plants to lodge. Also, if the irrigation rate is not high enough, you may actually cause more frost damage than if you did not irrigate. That's because if the one gram of water evaporates rather than freezes, it takes 600 calories of heat with it, cooling the environment around the

plant. Compared to the 80 calories released on freezing, 7.5 times more water must be applied to provide a net heating effect. Since wind will speed evaporation, wind speeds greater than 5 MPH will make irrigation for frost protection ineffective. And once started, you cannot stop irrigating until the next morning when the sun is on the crop and the ice loosens.

Chemical Sprays - Buyer beware! Many materials will claim to provide frost protection using a variety of techniques. No commercially available product seems to be able to stand up to a replicated, scientific test. There will be some people claiming to have miracle products this fall but use them very carefully. Do not put your trust in these materials.

CUCURBITS

Harvest of pumpkin and butternut are underway. See August 23 issue for recommendations on harvest and storage. While field curing of butternut is often the most practical approach, it is also critical to avoid chilling injury. Chilling hours accumulate when squash is exposed to temperatures below 50°F in the field and in storage. Injury increases as temperature decreases and/or length of chilling time increases. Chilling injury is of particular concern with squash intended for storage because it increases the likelihood of breakdown

SWEET CORN

Corn earworm captures increased or at many locations. Where corn is still a week from harvest, continue insecticide applications for control of corn earworm. Areas of central Mass, and the northern CT River Valley have captures low enough for a five day schedule, while coastal areas and the lower CT River Valley should be on a four day schedule. The exception is a dramatically high catch in Southwick, 115 moths, requiring a three-day schedule. However, with night temperatures in the 40's or low 50's, and daytime temperatures in the 70's, spray intervals can safely be extended by one day. **European corn borer** flights are declining steadily, and new eggs and larvae are likewise on the decline (see ECB under pepper).

SWEET CORN TRAP CAPTURES AND SCOUTING DATA AUGUST 31-SEPTEMBER 6

Town	Date	ECB Z1	ECB E2	TOTAL ECB	CEW	% PT
Berkshire Region						
N. Bennington, VT	August 30	7	8	15	4	--
Conn. River Valley North to South						
Westminster, VT	September	36	62	98	4	--
Putney, VT	September	10	1	11	4	--
Plainfield, NH	September	8	0	8	1	--
Hatfield	September	6	3	9	1	--
South Deerfield	September	0	5	5	10	--
Whately *	September	14	8	22	--	--
Hadley	September	4	--	4	8	--
Amherst	September	2	8	10	7	--
Southwick	September	15	5	20	115*	
Feeding Hills	September	9	0	9	5	--
East/Central MA, North to South						
Ipswich	September	5	4	9	8	--
Dracut	September	4	7	11	28	--
Stow	September	15	9	24	48	--
Bolton	September	8	127	135	8	--
Sutton	September	6	2	8	3	--
Monson	September	0	0	0	1	--
Leicester	September	0	0	0	3	--
Millis	September	5	5	10	49	--
Hopkinton	September	18	3	21	52	--
Swansea	September	2	1	3	79	--
Rochester	September	4	3	7	88	--
Rehobeth	September	6	2	8	65	--
Little Compton, RI*	September	4	2	6	58	

* Next to Pepper Field. **Trap was placed in fresh silk: On the same farm, a trap in brown silk caught 6 moths.

--Not available

CORN EARWORM THRESHOLDS

Moths/Night	Moths/Week	Spray Interval
0 - 0.2	0 - 1.4	no spray
0.2 - 0.5	1.4 - 3.5	6 days
0.5 - 1	3.5 - 7	5 days
1.0 - 13.0	7 - 91	4 days
over 13	Over 91	3 days

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NEXT IPM NEWSLETTER WILL BE THE WEEK OF SEPTEMBER 17TH

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