

## Vegetable IPM Message

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### Crop Conditions

Cool mornings and sunny afternoons, with little rain, have been the pattern for past two weeks. Everyone breathed a sigh of relief last week after two cold nights did *not* bring frost in Massachusetts (though it did to the north of us), and even Berkshire County farms narrowly missed getting frosted. Now crops have more time to mature, and growers have more crops to harvest. Late-planted vine crops still have a ways to go to maturity (some are still setting fruit!), but there are also fields with ripe pumpkins and squash. Winter squash harvest is in full swing. Yield is down, but not always as low as was expected earlier in the season. Precious early pumpkins are appearing on farmstands, along with the full range of summer vegetables. Retail sales are strong. Most growers are reporting steady yields of tomato, pepper and eggplant, although some fields of fruiting crops are suffering from low yields and disease. September sweet corn is in good supply and of good quality. Fall crucifer crops are doing well and may have benefited from the absence of August heat stress. Farms that count on students for summer help are stretched thin on labor. Planting of cover crops continues. Everyone is hoping for more sunny, dry weather and a few more weeks before frost. See notes below on preventing frost damage in susceptible crops when the inevitable frost does come.

--R Hazzard

### E-COMMERCE SEMINAR SERIES FOR AGRICULTURAL BUSINESSES

Commerce on the Internet is exploding. Learn how your agricultural business can benefit from the Internet revolution! This seminar series is designed to help small businesses learn how to evaluate, incorporate and implement electronic enterprise strategies into their operations. Green industry and agriculture businesses are encouraged to attend.

These seminars are cosponsored by the UMass Electronic Enterprise Institute and UMass Extension. The location is Best Western Royal Plaza Hotel, Marlboro, MA. Seminars will be from 5-7:00 PM. Refreshments will be served. **Schedule and Topics:**

Nov 1: Introduction to e-Business

Nov 15: Basic Computer Literacy

Nov 29: Selling Electronically: More Than Just a Web Site

Dec 13: Selling Electronically: Technology Infrastructure

Jan 10: Selling Electronically: Supply Chain Management

Jan 24: Shopping for a Web Designer

Feb 14: Marketing on the Internet

Feb 28: Business Impact of the Internet: A Look at the Horticulture/Agriculture Industry

March 14: Maintaining and Growing Your Internet Business

March 28: Networking in the Internet World

Cost: \$75.00 per session, \$650.00 to attend all 10 seminars.

Send payment to UMass Division of Continuing Education, Goodell Building, UMass, Amherst, MA 01003 (payable to UMass Division of Continuing Education). For a course description flyer call Alice Szlosek 413-545-2484 or Kathleen Carroll at 413-545-0895.

## **PUMPKIN AND WINTER SQUASH**

If deer damage is increasing in your pumpkin and winter squash fields, it is not too late to set up an electric fence to keep deer out. Ideally a fence is put up *before* deer get in the habit of feeding in a certain area, but if pumpkins are not yet mature enough to harvest and damage is significant, it may still be worth the cost and effort. Use two-strand fence with the bottom wire 10-12 inches above the ground and a second wire at 30-36 inches. In a three-strand fence, wires can be a 12, 24, and 40 inches. Baiting with metal tabs, 30 inches apart, smeared with peanut butter, will make the deer contact the fence with its nose and tongue. Harassment (noise-making) devices may help supplement a fence in the short term. Shooting is permitted by the owner when deer are causing property damage, but local ordinances on firearms must be followed. To contact state or regional Mass. Fish and Wildlife offices for more details, call 508-336-4470. If deer populations are high around your farm, consider opening your property to hunting during the season this fall.

Is it worthwhile to spray again in pumpkins or winter squash for powdery mildew control? If you are about to harvest, probably not. If you have a very late field with fruit that still needs to grow and mature, or if you have to leave the crop in the field for a few more weeks, probably yes. A broad-spectrum fungicide such as Bravo should give adequate control at this time. A research project at the UMass Research Farm is examining the value of late-summer sprays in butternut squash.

## 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 (Associate Prof. in Hort. Science, Cornell University) is reprinted from PestMinder, Cornell Coop. Extension Lake Plains Vegetable Program, Sept 6, 2000*

With so many vegetable crops being harvested late this year, an early frost could have disastrous results. 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. Rather than just talking about the weather, 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. They come in varying lengths and widths, depending on your need. The cost can be high as it the material will cost \$500 - \$700 per acre. 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.

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.

## **SWEET CORN**

Late corn is ripening steadily and still needs to be sprayed to prevent **corn earworm** damage. Pressure is lower than it was earlier in the season, but there are still new captures calling for intervals of 4-6 days depending on the location. Cooler temperatures now (<80 °F maximum, with nights 50 and below) allow a longer spray interval by at least one day. Slower hatch also means growers can stop spraying 5-7 days before harvest begins.

**European corn borer** flight is declining, but still high enough to be of concern in silking corn and in peppers.

*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.

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