



VEGETABLE IPM MESSAGE

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CUCURBITS: DOWNY MILDEW

Downy mildew was recently identified in butternut squash at the vegetable research farm in S. Deerfield. The pathogen, *Pseudoperonospora*, only affects cucurbits and only attacks the foliage. Defoliation may result in sun scald to the fruit. This disease usually occurs fairly late in the season because it cannot overwinter in the northern parts of the United States. It is earlier enough this year to be a concern. Bravo will control this disease when disease pressure is low but Ridomil Gold/Bravo would provide better results.

Often, the first symptoms one observes are yellow, angular or square looking spots on leaves. The underside of the leaves may be covered with a black fuzzy looking growth - this is the fungus that causes the disease. Leaves may eventually turn brown, crinkle and turn upwards as they dry. Severe outbreaks may result in the rapid death of vines, which in turn, may cause handles on pumpkins to become brown.

Downy mildew requires a period of leaf wetness and high humidity for successful infection. Heavy dews can provide adequate moisture to get this disease going. Although the fungal spores may land in your field, there has to be leaf wetness for the disease to cause problems.

--Robert Wick & Purdue University Veg. Crops Hotline No. 396, 2001

PUMPKIN AND WINTER SQUASH HARVEST AND STORAGE

Pumpkins in many fields are starting to turn orange. If the current warm sunny weather continues, more and more fruit will

color up in the next few weeks, well before peak market demand. Pumpkins may need to be held for several weeks before they can be marketed. There can be extra work involved in bringing fruit in early, especially for growers who normally have pick-your-own harvest, but we recommend that growers harvest now and store under proper conditions, if it is feasible.

Attention to curing and handling will go a long way toward improving the life of winter squash and pumpkin fruit. In fields where pumpkins are turning orange, it is worthwhile to cut and windrow the pumpkins and bring them in out of the field. This will allow the handles to cure and will protect fruit from insects, vertebrate pests, and diseases. Pumpkins are not marketable if the handle is broken off or dried up. If you need to leave pumpkins in field for pick-your-own, cut the handles from the vine to save them from advancing powdery mildew and reduce shrinkage.

As long as pumpkins are starting to turn color, they will ripen off the vine. If necessary, pumpkins can be ripened in a well ventilated barn or greenhouse. The best temperatures for ripening are in the seventies or even low eighties during the day. Night temperatures should not drop below the sixties. In a greenhouse, temperature can be managed with ventilation on sunny days. Unless it is quite cool, heat is not likely to be needed if the house is closed up at night.

Often it is not feasible to harvest pumpkins early and store them until they can be marketed, and so they must be 'stored' in the field. If vines are healthy, storage in the field can be successful for a few weeks. If the vines die back, damage to the fruit from sun and insects is more likely. In any case, it is important to scout for insects feeding on the fruit, which may include squash

bug nymphs or adults, or striped cucumber beetle. Control them if damage is evident. In fields that have a history of Phytophthora blight, Fusarium fruit rot, or black rot, field storage may increase the incidence of these problems, particularly if we have a period of wet weather or a major storm. This has been one of the causes of significant losses in recent years, and one reason that we recommend bringing fruit in as soon as it is mature.

Winter squash is also maturing in some fields. Fruit that are free from disease and haven't been subject to much chilling (below 50 oF) should be selected for long-term storage. Sorting fruit in this manner requires extra labor and may not be economical, but it should not be too difficult to separate bins of squash according to good and poor fields or areas of fields. Fruit from fields where phytophthora is present are not the best choice for storage.

Storage life depends on the condition of the crop when it comes in and your ability to provide careful handling and a proper storage environment. All fruit placed in storage should be free of disease, decay, insects, and unhealed wounds. When harvesting squash and pumpkins, it is important to handle the fruit with care to avoid bruising or cutting the skin. Despite its tough appearance, squash and pumpkin fruit are easily damaged. The rind is the fruit's only source of protection. Once that rind is bruised or punctured, decay organisms will invade and quickly break it down. Place fruit gently on pallets or in pallet boxes.

A period of curing can contribute to storage life. This may be done in windrows in the field -- especially with a series of warm, dry days -- or by placing squash in a warm dry atmosphere (70-80°F) such as a greenhouse for up to two weeks. This pre-storage treatment permits rapid drying of the outer cell layers, and when combined with a dry atmosphere for storage inhibits infections that can take place at this time. Removal of the stem from squash (butternut, Hubbard, etc.) will also decrease the amount of fruit spoilage because the stems frequently puncture adjacent fruit, facilitating infection. Furthermore, any clean cuts during the curing period often heal over and are no longer a source for injury or infection.

Take care to avoid subjecting squash to 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.

After curing, move squash or pumpkins to a dry, well-ventilated storage area. Pressure bruises can also reduce storage life, so avoid rough handling, tight packing, or piling fruit too high. Fruit temperature is kept as near to the temperature of the air as possible to avoid condensation which can lead to rot. Ideally, the storage environment should be kept at 50-55 F with a relative humidity of 50-70%. Low relative humidity increases water loss, resulting in reduced weight, and if excessive, shriveling of fruit. High relative humidity provides a favorable environment for fungal and bacterial decay organisms. Under the right conditions, sound disease-free pumpkins or squash fruit should have a storage life of 8-12 weeks or more. Even if it is difficult to provide ideal conditions, storage in a shady, dry location, with fruit off the ground or the floor, is preferable to leaving fruit out in the field.

As you plan for storage and marketing, keep in mind that the market for pumpkins seems to get earlier every year. Fall decorative displays include pumpkins, and those displays begin showing up as Labor Day approaches. One of the best solutions to early-maturing pumpkins may be finding an early market.

--John Howell, Ruth Hazzard & Liz Maynard (Purdue)

PEPPER:

Keep up regular sprays for **European corn borer**, as ECB flights are still high in most locations (see table). The recommended interval depends on the material used: Acephate (Orthene , 7dh) or tebufenozid (Confirm 2F,7dh) can be applied at 10-14 day intervals; spinosad (SpinTor,1 dh) or permethrin (Pounce, Ambush, 3 dh), at weekly intervals, and Bt products (Match, Crymax, Javelin, 0 dh) twice weekly.

Provide regular, adequate water to prevent blossom end rot.

TOMATO

Crops with more than 2 weeks of harvest left should continue to be sprayed for early blight and bacterial diseases. Conditions have continue to be favorable for early blight and a 10-day spray schedule is recommended for early blight. The DSV accumulation for the South Deerfield Research Farm was 24 DSV's in the past 14 days. The threshold for fungicide application for control of early blight (15 cumulative DSV's since the last spray) was reached in 10 days. If bacterial disease is present, weekly applications of copper are recommended.

DSV VALUES, AUGUST 8-22, 2001 SOUTH DEERFIELD RESEARCH FARM

Date	DSV's/Day	Date	DSV's/Day
Aug 8	2	Aug 16	1
Aug 9	2	Aug 17	1
Aug 10	0	Aug 18	2
Aug 11	2	Aug 19	2
Aug 12	0	Aug 20	2
Aug 13	4	Aug 21	2
Aug 14	2	Aug 22	1
Aug 15	1	Total for past 14 days	24 DSV's

--R Hazzard, J Howell, S. DeGray

TOMATO FRUIT DISORDERS

There are several fruit disorders of tomato that are the result of infection of the plant or fruit by various fungi or bacteria. There are also fruit disorders that do not result from infection by an organism; they result from some condition which occurred during the season that changes the fruit quality. This article will focus on these types of physiological disorders. The disorders discussed here are catface, growth cracks and yellow shoulder.

Catface generally appears as a misshaped fruit with scars and holes appearing in the blossom end of the fruit. It may also appear as an enlargement or perforation of the blossom scar, though the fruit shape isnormal. Exposure of the blossoms to cold temperatures prior to anthesis has been linked to an

increase in the appearance of catface. Pruning of plants and high nitrogen may also contribute to the appearance of the disorder. It is best to avoid the disorder by protecting plants from cold temperature or by planting less susceptible varieties.

Growth cracks appear as splitting of the outer layer or epidermis of the fruit in either concentric circles around the stem end or radial cracking from the stem end towards the blossom end of the fruit. Cracks usually appear towards fruit maturity at the mature green stage or in less susceptible varieties at the red ripe stage. The earlier the growth crack develops, the larger it is likely to be once the fruit is harvested. Rapidly growing fruit and fruit exposed to the sun tend to crack more readily. Also cracking is more severe under hot, dry conditions followed by rainfall.

Selecting cracking resistant cultivars as well as careful management of water availability (through irrigation management and the use of plastic mulch) is the best defense against growth cracking.

Yellow shoulder disorder appears as areas under the skin of ripe fruit that range from internal white tissue to distinct yellow or green sections. The disorder involves abnormal fruit development and is not a delay in fruit ripening. The disorder appears to be related to potassium availability in the soil.

Adequate potassium fertility early on in fruit development is important in controlling the appearance of the disorder. Also, selecting varieties that have reduced susceptibility to the disorder is also advised.

Proper water management, fertility, disease control and variety selection are key factors in reducing losses due to these physiological disorders of tomato fruit. By maintaining crop health prior to and during fruit development, the highest quality fruit can be produced. High quality fruit can be assured of commanding premium prices in the market place and are always in demand.

--Chris Gunter, Purdue University Vegetable Crops Hotline, #
396, August 9 2001

UPCOMING EVENTS

Wednesday, September 26: Field Grown Cut Flowers - A Video Teleconference

The University of Massachusetts Extension Floriculture Program and the University of Massachusetts Extension Strategic Investment Fund will co-sponsor a video teleconference at Moakley Center at Bridgewater State College in Bridgewater, MA on Wednesday, September 26.

By using video conferencing, John Dole from North Carolina State University and the audience will be able to communicate with the use of a large screen TV and state-of-the art equipment. This goal of the teleconference is to provide a distance-learning arena with a dynamic program of local speakers to present cultural information on cut flowers. Topics and their respective speakers include: "Cultivar Selection" - Mitch Rand, Ball Seed Co.; "Cultural Practices for Season-Long Harvesting" - John Dole, NC State Univ., "Weed Management" - Rich Bonanno; "Preparing the Field for Planting and Fertilizing Cut Flowers" - Douglas Cox; and "Demonstration: Mechanics of Using a Fertilizer Injector to Fertilize Cut Flowers" - John Howell, all from Univ. of MA.

Whether you are just beginning, or an experienced grower, you are sure to take home a tip or two. Plan to join us for what should prove to be an exciting and informative program. To preregister, contact Tina Smith 413-545-5306 or Paul Lopes 508-295-2212 ext. 24 or mail your registration to: Extension Floriculture Program, Field Grown Cut Flowers, Rm. 203 French Hall, UMass, Amherst, MA 01003. Checks should be made payable to: University of Massachusetts. The cost is \$30 per attendee.

Directions to Moakley Center: (East Campus) From Route 495, Take Exit 7A (Route 24 North). Once on Route 24, take Exit 15 to Route 104. Take Route 104 East to stop sign (approx. 3 miles). Turn left. Proceed to rotary. Stay in right lane within rotary. Just before traffic light, bear right in front of the Shell Gas Station, thereby merging onto Summer St. (Route 104 East). Bear left through traffic light (Mobil Station on left). Go over railroad

tracks. Take next right (Burrill Ave.) The Moakley Center is the first college building on the left. Visitor parking in the Moakley Lot, which is past the Moakley Center on the left.

September 8th: Field Day Open-Pollinated, Disease Resistant Vegetables For The Northeast

This event will be held at Cornell's Varna Fields Ithaca, NY from 9 a.m.-3 p.m. Co-sponsored by NOFA-NY and Cornell University, the day offers the vegetable grower the chance to talk with vegetable breeders using traditional breeding methods to produce disease resistance in commercial vegetable varieties.

These varieties are not offered for sale by large seed producers because they are open-pollinated, but they have the same qualities of flavor and productivity, as well as disease resistance, as do the hybrids these companies produce from them and sell to us. A group of Cornell University vegetable breeders are renewing their emphasis on open-pollinated vegetable varieties for the Northeast. On September 8, the field trials for a wide variety of vegetables will be open for visits and breeders will be on hand to discuss the properties of their vegetables.

For more information contact: Brian Caldwell @ (607) 687-4020 or online bac11@cornell.edu.

SWEET CORN

European corn borer flight remains high – some sites had higher captures this week, while some declined slightly. The few blocks that are still in pretassel should be scouted, as some are reported to be above threshold. Any blocks in silk should be sprayed for ECB on at least a weekly basis. However, **corn earworm** has arrived in higher numbers at some locations and should be the deciding factor in your spray schedule. It appears to be trickling in to the region in a patchy, unpredictable pattern, so that within each region there is significant variation. Some sites are still reporting 0 moth captures! If you are checking your own trap, make sure to move it into fresh silk, which attracts the most moths and is a good indicator of the corn earworm pressure. Check it at least twice weekly. It can be nerve-wracking at this time of year to get captures of 0 moths, (even worse than

catching high numbers!)but these traps and lures do prove reliable. The Scentry nylon traps, baited with Hercon lures for *Helicoverpa zea* are the recommended trap/pheromones combination and have provided reliable captures for many years. Change lures every two weeks.

For growers who are making vegetable oil/Bt applications directly to silk, using the Zea-later, remember that timing is important. As corn earworm pressure increases, it is more critical to apply as soon as ears are pollinated and fertilized, ie, when silk begins to wilt. This occurs approximately 5-6 days after silk initiation.

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

- Note: spray intervals can be lengthened by one day if daily maximum temperatures were below 80 °F for the previous 2-3 days

SWEET CORN TRAP CAPTURES AND SCOUTING DATA AUGUST 10-23

Town	Date	ECB Z1	ECB E2	TOTAL ECB	CEW	% PT
Berkshire Region						
N. Bennington, VT	August 16	13	11	24	0	--
Stephentown, MA	August 15	1	1	2	0	--
Sheffield	August 21	9	15	24	1	--
Conn. River Valley North to South						
Westminster, VT	August 21	47	187	234	1	--
Putney, VT	August 21	51	36	87	1	0%
Plainfield, NH	August 23	15	5	20	0	--
Hatfield	August 20	6	12	18	0	17%
South Deerfield	August 20	1	30	31	3	30%
Whately *	August 21	9	30	39	--	--
Hadley	August 21	17	33	50	6	--
Amherst	August 20	21	31	52	5	10%
Southwick	August 21	2	23	25	10	--
Feeding Hills	August 20	9	13	22	2	15%
East/Central MA, North to South						
Ipswich	August 21	5	8	13	0	16%
Dracut	August 23	27	67	94	7	--
Stow	August 22	38	57	95	27	--
Bolton	August 23	27	9	36	1	--
Sutton	August 23	7	11	18	40	--
Monson	August 22	3	16	19	0	--
Leicester	August 22	4	5	9	1	--
Little Compton, RI*	August 22	71	48	119	66	

- Next to Pepper field.
- Data from southeastern Massachusetts is not available this week.

--Data provided by D Riggs, J Mussoni, A Rodgers, P Westgate & R. Hazzard. Many thanks!

Vegetable IPM Newsletter, Ruth Hazzard, editor. Stephanie DeGray, assistant editor. The Vegetable IPM Newsletter 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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