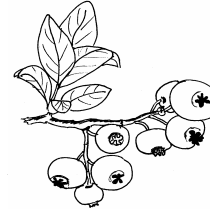


NEW HAMPSHIRE VEGETABLE, BERRY & TREE FRUIT NEWSLETTER

Volume 2:6

August, 2006

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- Tissue Testing
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PEPPER MAGGOT IN NEW HAMPSHIRE

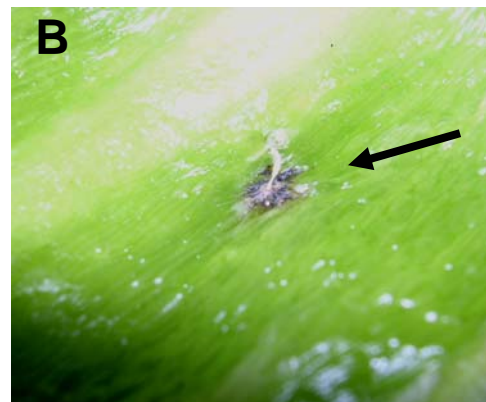
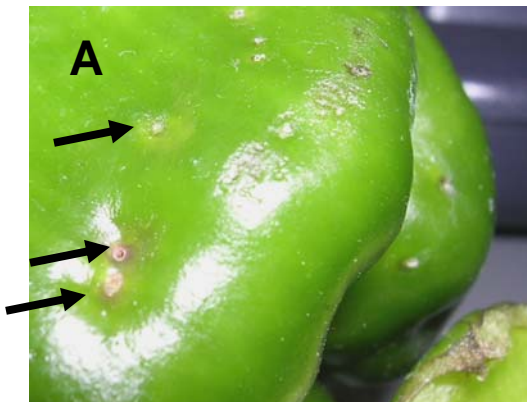
BY ALAN EATON

On July 28th, a Rockingham County pepper grower brought in fruit with unusual deep dimples. I suspected pepper maggot, and set up traps Saturday. By Sunday we had two adults. **This is the first time we've found these in New Hampshire.** The adults lay eggs in the fruit, and the eggs hatch into maggots that feed especially in the seed head, and it becomes tunneled and rotten. The injury is new to most of us, and you can imagine the reaction of customers (and health officials asked to investigate!) If the fruit they bought has maggots wriggling inside.

If you have fruit with deep dimpled spots here and there, you might have it, too. I think Hillsborough, Rockingham and possibly southern Strafford Counties are the most likely to be infested. Yes, there are controls (see the New England Vegetable Guide), but you can't kill the eggs already laid inside the fruit. Here's a link to Jude Boucher's excellent article on pepper maggot and its management, at the UConn Extension IPM page:

<http://www.hort.uconn.edu/ipm/veg/htms/pprmag.htm>

Below are photos of injury on the outside of fruits (A), and an egg deposited on a stalk on the inside of a damaged fruit (B). The photos may not be clear in black & white, but if you get the newsletter online, they are in very nice high-resolution color.



OF POMES & STONES – AUGUST THOUGHTS BY BILL LORD

The nutritional needs of mature apple trees are quite small compared to annual field crops, but no less important. As I have visited orchards around the state this summer, questions about 2 key nutrients in particular, potassium and boron, have been raised. Tissue analysis is the ideal way to determine plant needs.

Potassium (K) is needed on an annual basis in bearing orchards as it is removed in the harvested crop. In general, about 0.1 lb of potash (K₂O) is needed for K replacement for each bushel of apples harvested. Using this formula, we see that an orchard producing 600 bushels of apples per acre would remove 60 pounds of potash. This is easily supplied by 100 lbs muriate of

potash. This is the minimum need assuming there is little leaching loss and there is an adequate soil reserve of K. When soils are deficient in K, rates up to 200 lb of muriate of potash per acre may be recommended to meet current year needs and build soil reserves. Several years of good crops without adequate potassium replacement can lead to severe deficiency including premature fruit softening and drop. Spring application up to the pink stage of bud development is the preferred timing.

Adequate boron (B) for bearing trees is essential. I think most growers are familiar with the impact low boron can have on fruit. Unfortunately, for most varieties, these symptoms are internal only – brown, corky areas in the affected apple's flesh – so our first notice of the trouble may come from a dissatisfied customer. Some varieties may give us an external clue – Cortland, for example, will have a skin texture that is a bit rough, sort of like the surface of a football. In severe deficiency situations, fruit deformation is common. Low boron does have other potential impacts that growers need to consider. Perhaps the most important one to consider is the impact on fruit set as boron is thought to play a key role in facilitating fertilization after the pollen lands on the stigma of the flower.

Many growers routinely apply a foliar boron application pre-bloom for the express purpose of enhancing fruit set. If, for example, 2 pounds of a product such as Solubor are used, about 0.4 lbs of actual B per acre is applied. If boron is below the desired range or deficiency symptoms are evident, soil applications are also needed to correct this deficiency. The easiest way to soil apply boron is to blend boron with muriate of potash. If it is needed, ask your fertilizer dealer to add boron to your muriate of potash at the rate of 0.7 to 1.0 pounds of actual B per 100 lbs. Again, plant tissue analysis is important to insure key nutrient levels such as boron are where they need to be for optimal fruit production and quality.

The peach crop is exceptional and one thing I am happy to say I have not yet seen this year is X-disease. But I do know the wild reservoir, the chokecherry, is infected and ready to change this situation. This is the time to look for and kill those chokecherry bushes around your peach orchards. Leaves on infected ones are sporting fall-like coloring of red and yellow so they are easily spotted for your eradication pleasure.

TISSUE TESTING TIME

As Bill mentioned above, foliar nutrient analysis is the most accurate way to measure plant fertility for perennial crops. This is also the only way to confirm nutrient deficiencies/toxicities in problem areas in the field. Now is the time to take those samples! UNH Cooperative Extension offers tissue testing plus fertilizer recommendations for \$26.00 per sample. You can get forms by checking "Commercial Fruit" and "Tissue" at our web site: <<http://ceadmin.unh.edu/soils/form/index.cfm>>. The last page provides information on handling samples and filling out the forms. You may drop off forms, checks, and samples in paper bags at your county Extension office or you can mail directly to UNHCE/Dept. of Plant Biology in Durham.

How to take your sample:

- Blueberries** Sample at least 40 leaves from 10-20 plants during first week of harvest.
- Strawberries** Sample at least 40 fully expanded leaves from 10-20 plants after renovation.
- Brambles** Sample at least 60 leaves from 10-20 non-fruiting canes in early-mid August.
- Grapes** Sample 50-75 of the youngest full-expanded leaves from 10-20 vines at veraison. Separate petioles (leaf stems) from leaves, and send only the petioles for analysis.
- Tree fruits** Sample 5 leaves from each of 10 trees from late July - early August. Select shoots at eye-level from around the outside of the tree (avoid water shoots or suckers). Collect leaves from the mid-portion of new shoot growth.
- Other fruits** Collect leaves from late July through early August. Select the youngest fully-expanded leaves for analysis.

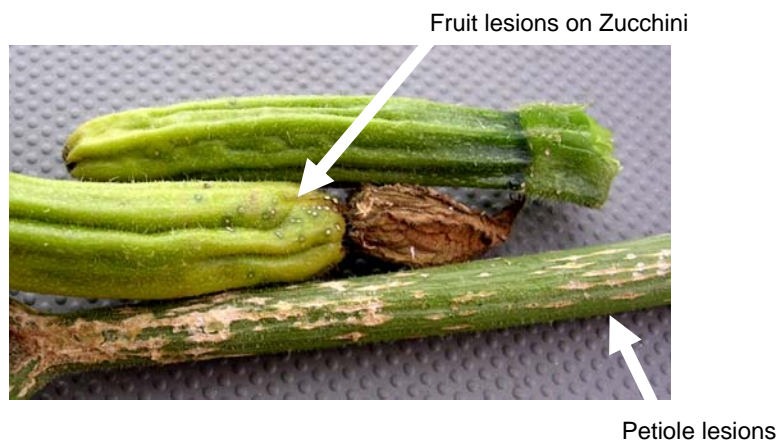
A tip: if you mark the sampled trees with latex paint, you can collect leaves from the same trees/bushes each year and see the effects of your fertilization. *Important reminder* - All samples should be placed in paper bags and air dried before mailing them. If you have any questions on leaf sampling or if you need additional forms, please contact your local UNHCE educator.

CUCURBIT UPDATE – PLECTOSPORIUM BLIGHT

Plectosporium blight, caused by the fungus *Plectosporium tabacinum*, has been in prior years primarily a problem for pumpkins, but zucchini, some summer squashes, and *Cucurbita maxima* winter squashes (buttercup, kabocha, hubbard) are also very

susceptible. I have seen *Plectosporium* almost everywhere I've looked within the last few weeks, mostly on zucchini. The fungus prefers warm wet weather (it's happy this summer). Spores survive in the ground on decaying plant material, and are splashed by rain and wind. The key diagnostic feature is elongated diamond-shaped (some say spindle-shaped) white/tan lesions along the petioles of the leaves, which expand until vines collapse completely. Fruits have little white blisters or russetting that eventually can cover the whole fruit and provide entryways for other pathogens.

How to control it. Diagnosis is key – if you know you have it, the best control is to rotate away from summer squash and pumpkins for at least 2 years. UMass research has shown that some varieties are less susceptible, but none are immune. It's also best to choose sunny, well-drained sites for cucurbits. Avoid pockets where air and water don't drain well. The disease can also be controlled with fungicides applied at the first sign of symptoms. Chlorothalonil (e.g. Bravo) and strobilurins (e.g. Cabrio, Flint, Pristine, Amistar/Quadris) are very effective for *Plectosporium*; sterol inhibitors (Nova, Procure) are not.



Powdery mildew has shown up earlier than normal in many parts of NH. Hot weather in late June probably helped it along. Resistant or tolerant varieties may do much better this year as a result. Growers following a fungicide program should begin to treat as soon as the first symptoms are seen. Scout by looking at undersides of leaves for the characteristic white sporulation.

Leftovers that didn't sell? Do not return culls to your fields! This holds true if you are buying in zucchini, summer squash or pumpkins from Southern regions. You may be importing *Plectosporium*, scab, or even worse, *Phytophthora*, to create a long-term problem. Even though thorough composting will destroy most pathogens, there's no guarantee that all will be killed.

A basic fungicide program. To control the major cucurbit fungal pathogens (powdery mildew, downy mildew, *Plectosporium* blight, and black rot), scout and apply fungicides when you first see any signs of the disease. Once you decide to treat, apply every 7-10 days, depending on weather. According to Jude Boucher, CT growers have had good luck with a 10-day schedule. Always follow the label instructions, and do not apply sulfur or copper when the temperature is above 90F.

An organic fungicide program - apply every 7-10 days, alternate between:

1. potassium bicarbonate (Kaligreen, Milstop)
2. copper (Champion)

A conventional fungicide program - apply every 7-10 days, starting with:

1. a strobilurin (Cabrio, Flint, or Quadris) WITH copper
2. a sterol inhibitor (Nova, Procure) WITH chlorothalonil (Bravo)
3. sulfur (Microthiol disperss) WITH chlorothalonil (Bravo)
4. repeat sulfur + chlorothalonil as long as needed.

Make sure to use strobilurins and sterol inhibitors only ONCE each per season, and use with a protectant like copper or chlorothalonil each time. The following programs should control powdery mildew, *Plectosporium* and black rot. If downy mildew control is needed, several new materials are available. You'll want to tailor this program to your specific needs. To help you choose among the fungicides, see the following handy table, reprinted and slightly modified from UMass Vegetable Notes:

Relative Efficacy of Fungicides for Cucurbit Diseases (complete table at <http://ipm.ncsu.edu/agchem/chptr6/615.pdf>).

Material	Downy Mildew	BlackRot	Plectosporium	Powdery Mildew	Fungicide Group
Azoxystrobin (Quadris)	++	++++	++	++++	11
Pyraclostrobin (Cabrio)	++++	++++	++++	+++	11
Trifloxystrobin (Flint)	+	++++	++++	++++	11
Pyraclostrobin + Boscalid (Flint)	+	++++	++++	++++	11
Chlorothalonil (Bravo)	++++	++++	+++	++	M5
Mancozeb (Mancozeb)	+++	+++	+++	+	M3
Myclobutanil (Nova)	-	-	-	+++++	3
Triflumizole (Procure)	-	-	-	+++++	3
Cymoxanil (Curzate)	+++	-	-	-	27
Famoxadone + Cymocanil (Tanos)	++++	-	-	-	11+27
Propamocarb (Previcur Flex)	++++	-	-	-	28
Zoxamide + Mancozeb (Gavel)	++++	++	++	+	22+M

Thanks to the UConn Vegetable IPM page, UMass Vegetable Notes (vol 17, issue 12), and other sources.

UPCOMING MEETINGS AND EVENTS

Wed Aug 9. **Tree Fruit Twilight Meeting**, UNH Woodman Horticultural Research Farm, Durham, NH. Topics will include assessing damage in orchards for crop insurance claims. Contact: George Hamilton at (603)641-6060. **TF, PAT credits.**

Thurs-Sun. Aug. 10-13. **NOFA Summer Conference**. Amherst, MA. For detailed program or to register online, visit www.nofa.org or contact Deb Pouech at nofasc@herbsnhoney.com or 860-684-0551. **AC, O, H.**

Tues Aug 15. **Massachusetts – Brassica Twilight Series**. Brox Farm, Dracut, MA. 5-8pm. Contact: Ruth Hazzard, 413-545-3696. **V.**

Tues-Wed Aug 22-23. **North American Strawberry Growers' Assoc. Summer Tour**. Portland, ME. To see a detailed program or to register, see <http://www.nasga.org/> or contact Donna Buckley at 207-581-3878 or dbuckley@umext.maine.edu. **SF.**

Thurs Aug 24. **Vegetable Twilight Meeting**, Kieth Farm, N. Haverhill, NH. Topics: vegetable breeding (Dr. Brent Loy), sweet corn IPM, tomato and pepper variety trials, and late summer disease & insect issues. Contact: Tom Buob at (603)787-6944. **V, PAT credits.**

Thurs Aug 24. **Bramble Field Day**, Nourse Farm, Whately, MA. 3-7PM. Contact: Sonia Schloemann, 413-545-4347. **SF.**

Thurs Sep 14. **Vegetable and Tree Fruit Twilight Meeting**, UNH Woodman Research Farm, Durham, NH. Topics: winter squash and pumpkins, apple scab management, variety trials, cut flowers and mums. Contact: Suzanne Hebert at (603) 862-3200. **AC, PAT credits.**

Thurs Sep 18. **Farming off the Grid: Solar Power on Small Farms**, Willow Pond Community Farm/CSA, Brentwood, NH. 3:30-5:30. Setup and operation of solar pumps for irrigation & washing, solar-powered fencing, and more. Contact: Nada Haddad at (603) 679-5616. **AC, O.**

Sun Sept 24. **CT – Brassica Twilight Series**. Upper Forty Farm, Cromwell, CT. 10am-1pm. Contact: Ruth Hazzard, 413-545-3696. **V, O.**

Wed Oct 25. **CT – Brassica Twilight Series**. Holcomb Farm CSA, West Granby, CT. 3-6pm. Contact: Ruth Hazzard, 413-545-3696. **V.**

Wed-Fri Nov. 1-3. **2006 New England Greenhouse Conference**. Worcester, MA. Detailed workshops on plant nutrition, alternative energy and growing vegetables in greenhouses, and more. Contact: Cindy Delaney at 802-655-7769 or visit www.negreenhouse.org. **F, V.**

Tues Nov. 14. **MA – Brassica Twilight Series**. Sidehill Farm, Ashfield, MA. 2-5pm. Contact: Ruth Hazzard, 413-545-3696. **V.**

Meeting topics: F = flower, O = certified organic, SF = small fruit, TF = tree fruit, V = vegetable, AC = all crops, H = homeowner. PAT credits = pesticide applicator recertification credits available.

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