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COOPERATIVE EXTENSION

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NEW HAMPSHIRE VEGETABLE, BERRY & TREE FRUIT NEWSLETTER

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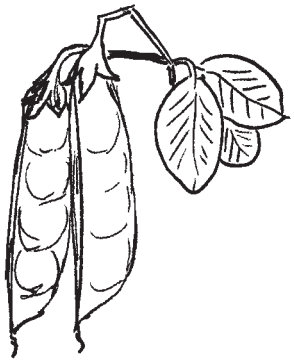


Some Notes On Fire Blight In Apples

By Cheryl Smith, UNHCE Plant Health Specialist

This spring, the simultaneous timing of hail events with warm wet weather and late bloom meant a high risk of fire blight infection for some locations in New England. As a result, despite preventative measures, fire blight is showing up in some commercial orchards. I spoke with Dave Rosenberger (Cornell University, Hudson Valley research station) and got his recommendations on what growers can do to minimize the spread of the problem. I've summarized them below. This info also applies to ornamental nurseries that may have ornamental Malus species that are impacted.

Should I prune?

- Pruning is recommended if the trees are young (< 7 yrs), or if the trees have not set terminal bud. (once terminal bud is set the spread of the bacterium slows).
- If many mature trees are infected, it is best to wait to prune during the dormant season. (avoids stimulating new growth which is very susceptible, and avoids re-infection into the cuts)
- If individual trees are severely infected, it may be wise to remove the whole tree. (If many trees are infected, see note below on 'decision-time'
- Any cuts should be made 12" below infected area (discolored tissue). This also includes the central leader if it is infected.
- 'Ugly stub' cuts can be used. It may be best to cut into 2yr old wood and leave a stub that will be removed during the dormant season
- Pruning should be done in dry weather. But... if wet weather persists, it's better to get the strikes out before they get further established in young trees (It is best to disinfect pruners if pruning in wet weather)
- Root suckers should be pruned (they are highly susceptible), but this should only be done in dry weather, and shouldn't be done under trees that are heavily infected (to avoid bacterium splashing down on the cut suckers where it would gain easy access to the root stock)
- Leave prunings in the center rows until they have dried down (especially DON'T carry out prunings if the trees are wet!
- Sanitizing pruners: some mixed info on this... Dave felt it was important on young trees, but Paul Steiner feels it's a waste of time & the 'ugly stub' method works. My thought is to err on the side of caution until new growth stops, and to make sure to disinfect with young trees.

What else should I do now?

Steptomycin should NOT be applied now...too high a risk for resistance to develop. Even after a hail event, streptomycin is only recommended in the first 12 hours or so.

Apogee should NOT be applied now. It is too late to slow tree growth.

Copper: If the crop is a loss (due to hail), or if there is no crop (young trees), a copper can be applied now and again in about 2 weeks. The copper causes phytotoxicity on the fruit. Growers should be sure to use a copper formulation that says it can be applied during the growing season, and that they should be sure to note that the rate is much less that would be applied as a dormant spray.

Next season

- Prune ugly stubs and any strikes that were left for the dormant pruning BEFORE ANY new growth starts.
- Dormant copper sprays should be applied.
- If blight was present this year (2007), streptomycin should be applied during bloom in 2008.
- Apogee can be applied beginning at petal fall (see New England Tree Fruit Pest Management Guide for rates & timing)

Decision time

If the orchard is severely infected, growers will need to make a judgment call to determine if the block is a complete loss. If labor is limited, is it worth doing the pruning required and still likely have fire blight present?

A good source of info on this can be found at: http://pmo.umext.maine.edu/apple/AppPestReport.html. Click on the June 15th report!

European Corn Borers In Pepper

Despite its name, the European corn borer (ECB) doesn't just attack corn – it is also the most widespread and damaging insect pest of pepper in the Northeast. The tell-tale sign of the corn borer is an entry hole with a pile of frass (feces) at the stem end of the fruit near the calyx. If you were to cut the fruits open, you would find a small ECB larva inside the fruit, often feeding on the placenta and walls near the seeds. Affected pepper fruits eventually become soft packets of rotted mush, because the entry wound of the ECB predisposes the fruit to bacterial soft rot.

Life cycle of the ECB

The adult ECB is a moth. Some strains have multiple generations per year, and others have only one. The adults emerge from their overwintering sites (late season host crops from the previous year, most commonly corn stubble) at varying times, depending on the strain. The females start laying eggs 3-4 days after they emerge. You can see the small translucent white egg masses on the undersides of leaves. Adults lay eggs for about 10 nights, as long as nighttime temperatures are above 55F. Eggs start hatching in 3-14 days (depending on temperature). Once the eggs hatch, the larvae burrow in to the tops of fruits that are greater than 1 inch in diameter. Therefore, peppers are at risk if they have fruits when the ECB moths are flying.

Cultural controls

Moths overwinter in crop residue; therefore removal or incorporation of corn stubble and pepper crop residue before the winter will reduce overwintering. In corn, healthy plants have less damage – so although this hasn't been shown for pepper, good nutrient management may help as well. It is possible, but has not been shown, that protection with rowcovers would also prevent damage – this would require hoops or other support to keep the rowcover from damaging the top of the plant. One liability is that high nighttime temperatures (>85F) can interfere with fruit set; another is the logistical challenges associated with picking and re-covering.

When are the moths flying in New Hampshire?

In southern NH, the first generation usually flies June 15th to July 15th, and second generation is August 5th to 30th. In the Lakes region, the first generation is delayed a bit, and the second one starts a bit earlier, shortening the no-flight period between the generations. In Northern NH sometimes we just see one long flight time, June 18th or 20th through about August 25th. Timing can vary up to three weeks from year to year, so monitoring for moth activity is the best way to determine if control is needed.

As sweet corn growers know, pheromone traps are an effective way to trap moths. For information about how to purchase, and/or use traps, ask Alan Eaton to mail you his handouts. Alan can be reached at alan.eaton@unh.edu or at 603-862-1734. ECB are already being monitored in several corn fields throughout southern NH and throughout Maine and results are posted on a weekly bases. To find the latest numbers of moths caught in traps:

New Hampshire: Visit http://extension.unh.edu/agric/SCIPM/index.htm, or contact George Hamilton at george.hamilton@unh.edu or (603)641-6060.

Maine: Visit http://www.umext.maine.edu/topics/pest.htm, or contact David Handley at dhandley@umext.maine.edu or (207) 933-2100.

Insecticide controls

It is imperative that there be active material on the plants whenever the eggs are hatching, so it is important to maintain coverage whenever the threshold is exceeded. This may mean frequent applications of the softer materials which have short residual activity – be sure to read and follow the label guidelines.

First, the softer options. Despite the fact that the ECB is susceptible to Bt products (e.g. Dipel, and many others), these have not shown good results in pepper, in part because of the short residual activity of Bt and that the larvae do most of their feeding inside the fruit, once damage has already occurred. Some reports have shown good results with spinosad (Entrust or Spintor). One option that Alan Eaton suggests is to consider one spray of Bt, followed by an application of spinosad within 2-3 days. This would kill insects with two modes of action.

Other effective options include pyrethin and several pyrethroid insecticides such as cyfluthrin (Baythroid), permethrin (Ambush, Pounce), tebufenozide (Confirm), acephate (Orthene), methomyl (Lannate), and several others. Some of these have lengthy days to harvest restrictions. See the latest version of the New England Vegetable Guide for complete and up-to-date information, also online at http://www.nevegetable.org. As always, make sure to read and follow labels.

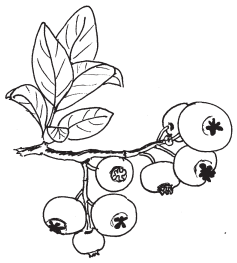
Sources of information include the Northeast Pepper Integrated Pest Management (IPM) Manual, edited by Jude Boucher and Richard Ashley.

Tissue Testing Time For Fruit Crops

As I have mentioned before in this newsletter, nutrient analysis is the most accurate way to measure plant fertility for perennial crops such as fruit bushes or trees. 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-ex panded leaves from 10-20 vines at verai son. 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-expand ed 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 or call Suzanne Hebert in the Dept. of Plant Biology at UNH at (603)862-3200.

Plectosporuim Blight And Other Cucurbit Issues– Catch Them Early

In 2006 (last year), NH growers generally had a poor pumpkin year, in large part due to **Plectosporium blight.** Although not new any more, many growers are not familiar with having to apply fungicides to cucurbits, but without them, the chance for significant crop loss with this disease is high. Plectosporium blight, caused by the fungus *Plectosproium tabcinum,* has mostly affected pumpkins, but zucchini, some summer squashes, and Cucurbita maxima winter squashes (buttercup, kabocha, hubbard) are also very susceptible. Because the fungus prefers warm wet weather, and we have been very dry in most places, the disease is not yet showing up in most places. However, with the recent rains, things may change.

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 (e.g. Nova, Procure) are not.

Powdery mildew enjoys hot weather. Resistant or tolerant varieties do develop symptoms, but they are milder and later to develop than for susceptible varieties . 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. Powdery mildew can be managed by strobilurin and sterol inhibitor fungicides.

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 above 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
Source: NCSU, 2005

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	++++	-	-	-	11+27
Cymocanil (Tanos)					
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.

Subscriptions – This newsletter is free online at http://ceinfo.unh.edu/Agric/AGFVC.htm. Email becky.grube@unh.edu if you would like to receive email notification when a new issue is available. You can subscribe using the form available at the website above if you would prefer to receive a paper copy via U.S. mail.

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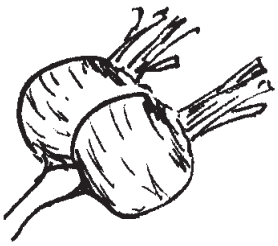
Upcoming Meetings And Events



Wed. July 18. **Haygrove Tunnel Demonstration.** Four Corners Farm, Bradford VT 6PM. 1.2 acres of Haygrove high tunnels over a variety of crops including tomatoes, beans, cukes, peppers raspberries and strawberries. For info, call 866-HAYGROVE. **F, V.**

Sun. July 22. **Haygrove Tunnel Demonstration.** Fishbowl Farm & Kennebec Flower Farm, 496 Browns Point Rd, Bowdoinham ME. 10AM. Chris Cavendish (Fishbowl) and Chas Gill (Kennebec) have three Solo tunnels, which are the first stand-alone tunnels built by Haygrove. Chris erected two Solos in the spring of 2007 for tomatoes and other vegetables. Chas is currently growing lisianthus and tuberose and trialing several other flowers. For info, call 866-HAYGROVE. **V, F, O.**

Thurs. July 19. **Raised Beds and Companion Planting Market Garden Tour.** Beetle Hill Farm, Warner, NH, 6-8PM. NOFA-NH farm tour. For info, see http://www.nofanh.org, 603-224-5022 or email info@nofanh.org. **V, O.**

Tues. July 24. **Tree Fruit Growers' Twilight Meeting.** Birchwood Orchard, Mason NH. Larry and Mary Pierce will host this meeting for commercial tree fruit growers. Bill Lord, retired UNHCE Fruit Specialist, will demonstrate summer pruning of peach trees. Contact: George Hamilton, (603)641-6060. **TF, PAT.**

Tues. June 24. **UMass IPM Field School.** Foppema's Farm, Northbridge MA, 4-7pm. Hands-on training for pest monitoring in vegetable crops. This meeting features disease identification and management in cucurbits, scouting for summer insects in sweet corn, and blueberry IPM. Contact: (413)577-3976 or umassvegetable@umext.umass.edu. Workshop fee $20. **V, TF, SF, PAT.**

Mon. July 30. **Organic Vegetable Production for CSA Farm Tour**. Willow Pond Community Farm, Brentwood, NH. 6-8PM. NOFA-NH farm tour. For info, see http://www.nofanh.org, 603-224-5022 or email info@nofanh.org. **V, O.**

Tues. July 31. **NH Vegetable and Fruit Growers Twilight Meeting**. Edgewater Farm, Plainfield, NH. Pooh and Anne Sprague operate a highly diversified farm featuring bedding plants, strawberries, blueberries, mixed field vegetables, and greenhouse tomatoes. We will tour the farm and learn about how they produce and market their crops. UNHCE specialists will be on hand to answer questions. Contact: Seth Wilner, (603) 863-9200. **SF, V, PAT.**

Wed. Aug. 8. **NH Vegetable and Fruit Growers' Twilight Meeting.** Woodman Horticultural Farm, Durham NH. 5:30-8:00 PM. See and hear about the latest UNH research on vegetable crops, ornamental horticulture, fruit crops, and more, and enjoy local refreshments! Contact: Suzanne Hebert, (603)862-3200. **V, SF, TF, PAT**.

Wed. Aug. 8. **UMass IPM Field School**. Golonka Farm, Hatfield MA, 4-7pm. Hands-on training for pest monitoring in vegetable crops. This meeting features scouting and management of midsummer diseases and pests of brassicas, tomatoes, cucurbits, and sweet corn. Contact: (413)577-3976 or umassvegetable@umext.umass.edu. Workshop fee $20. **V, PAT.**

Fri-Sun. Aug 10-12. **Annual Northeast Organic Farming Association (NOFA) Summer Conference.** Hampshire College, Amherst, MA. See http://www.nofamass.org/conferences/s2007/index.php for the latest info, or call NOFA-MA at (978) 355-2853. **AC, O.**

Mon. Aug 13. **Redesigning the farm plan for farm sustainabilit**y. Longhaul Farm, Holderness, NH. Workshop and farm tour. Pre-registration and a $25 fee is required for this workshop. For info, see *http://www.nofanh.org*, 603-224-5022 or email info@nofanh.org. **V,O.**

Tues Aug 14. **Vegetable and Fruit Twilight Meeting**. Dimond Hill Farm, Concord, NH. This meeting will feature crop production, building a strong customer base, and basic pest identification for mixed vegetable crops. See http://www.dimondhillfarm.com for farm information and directions. Contact Sadie Puglisi, (603)225-5505. **V, PAT.**

Tues-Wed. Aug 14-15. **Annual North American Strawberry Growers Association (NASGA) Summer Tour**. Niagara Falls, Ontario and the Niagara region of New York. See http://www.nasga.org/ for the latest info, or call NASGA at (613)258-4587. SF.

- Over -

Wed. Aug. 15. **UMass IPM Field School.** Paradise Hill Farm, Westport MA, 4-7pm. Hands-on training for pest monitoring in vegetable crops. This meeting features scouting and management of midsummer diseases and pests of brassicas, tomatoes, cucurbits, and sweet corn. Contact: (413)577-3976 or umassvegetable@umext.umass.edu. Workshop fee $20. **V, PAT.**

Tues. Aug. 21. **Agriculture Research Day**. 4-7 pm UMass Crops Research and Education Center, S. Deerfield, MA. Hear about the latest research on a wide range of topics in vegetable crops, cover crops and crops for fuel. Bring disease samples to a free onsite diagnostic clinic! Registration: $20 per person (3 or more per farm, $15 per person). Refreshments will be served. PAT credits requested. Contact: Ruth Hazzard (413) 545-3696 or rhazzard@umext.umass.edu.. **AC, PAT.**

Tues. Aug. 21. **Annual Meeting of the Cape Cod Growers' Cranberry Association.** 9am - 1pm – Umass Cranberry Experiment Station, Wareham, MA. Contact: CCCGA at 508-759-1041 or e-mail info@cranberries.org. **SF.**

Tues. Sept. 18. **UMass IPM Field School.** Howden Farm, Sheffield MA, 4-7pm. Hands-on training for pest monitoring in vegetable crops. Howden Farm is the sources of the well-known Howden pumpkin. This meeting will focus on late season diseases and fruit rots, harvest and post harvest handling of winter squash & pumpkins, and view the farm's photovoltaic-powered irrigation system. Contact: (413)577-3976 umassvegetable@umext.umass.edu. Workshop fee $20. **V, PAT.**

Sept. 21-23. **Maine Organic Farmers' and Gardener's (MOFGA) Common Ground Fair.** Common Ground Educational Center, Unity, Maine. For more information, see http://www.mofga.org or phone (207) 568-4142. **O, AC.**

Tues-Thurs. Dec 11-13. **New England Vegetable and Fruit Conference**. Center of NH Radisson Hotel, Manchester, NH. Three days of fruit, vegetable, and flower information, networking, tradeshow, and much more. Visit http://www.nevbc.org/ for the most up-to-date information. **SF, TF, V, F, O, PAT.**

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