PEST ALERTS: Potato Leafhoppers NYMPHS now plentiful - more individuals means more hopper burn on Beans, Eggplant, Potatoes, and even Chard and Beets - also Dahlias, Raspberries and Strawberries; Onion thrips nymphs now plentiful; Black Rot seen on cabbage in MA; continue to monitor central growing points of large Brassicas for caterpillars; heat damage on high tunnel tomato blossoms, broccoli heads; Ozone damage on cucurbits and brassicas from this past week's heat wave; Squash Vine Borer moths very active; the very first European Corn Borer moths trap catches are rising everywhere; Western Flower Thrips-borne viruses taking off on greenhouse basil and hanging pots - use the summer months to completely clean out all weeds and year-round specimen plants - seal greenhouses and cook if it's possible, otherwise, make sure there is a significant freeze period this coming winter to kill thrips and whitefly.

Thinking Diagnostic Thoughts

We Ag Extension specialists love our roles as crop disorder sleuths. We identify problems and suggest, at the least, mitigation measures and at the most, safe and sound solutions. As YOUR experience accumulates over the years, you are, no doubt, beginning to identify some of your own issues. Some of these were caused by embarrassing mistakes that you made, never to be confessed (and some of these are really embarrassing.) But more often, things just happen to your crops. Sometimes, those things could be within your control, had you taken precautions or used more appropriate cultural practices, and other times, like a plague of locusts, there’s nothing you could have done about it.

Identifying problems is usually an exercise in logic. At its root, it is quite similar to the thought process used in science. Knowledge is developed, not through a process of proving that things are, but rather, that things aren’t. It’s much easier if you first cast aside theories that are obviously out of the question. At that point, you are left with a small handful of hypotheses that are worth considering in depth.

There is nothing wrong with using your past experience to definitively identify common issues which are pretty much dead-ringers. For instance, early blight on tomato foliage is usually pretty consistent looking (target-shaped lesions, usually on the lowest leaves at first). Or Mexican bean beetles shredding bean foliage is pretty unmistakable.

But very often, we are confronted by mysterious disorders that don’t ring any of those obvious bells. At that point, our brains switch into “Diagnostician Mode.” At first, we notice superficial resemblances to other, easy-to-recognize disorders. But then we begin to focus in on particular details that might then

Need to discuss? Got something you need looked at? URI Extension: 401-256-7393/andy_radin@uri.edu, hfaubert@uri.edu
cause us to dismiss these more obvious answers.

For instance, consider that you are looking at a pepper plant that, from what the grower told you, started wilting at the tip a few days ago, but now, the whole plant is wilting. It had been a good shade of green up until the tip started wilting, but now all of the foliage is a paler green. When we see wilt, our first thought is that the plant isn’t getting enough, or even any water. But checking the soil moisture, it’s fine, and it even turns out that it was irrigated the night before. That should have brought the plant out of the wilt, assuming enough water was put on. This suggests that the roots aren’t functioning properly: they are unable to draw water out of the ground.

This could be a sign of a root rot. Could there be too much water in the soil? And could this be causing the dreaded *Phytophthora* crown rot of peppers? Roots may also fail to function if there are insects busy feeding on nutritious fine roots as fast as they can grow, which is typical of the feeding of various white grubs.

At this point, it’s necessary to look at this plant within the context of the larger planting. Are several adjacent plants similarly afflicted, or is this the only plant with the symptoms? Our little brain encyclopedias tell us that if it IS *Phytophthora*, we would see it in areas of the field that stay wet for several days after a rain. And furthermore, multiple plants would be afflicted within an irregularly shaped patch (as opposed to confined to one row.) But no, this is only a single plant, and it is not in a historically poorly-drained spot on the field. And root-feeding insects would typically also affect an irregularly shaped patch of several plants.

This suggests that this one plant is under direct attack. At this point, the little brain encyclopedia kicks in again, reminding us that peppers are a common host for European Corn Borers. We examine the plant, bottom to top, and with our trusty imaginary pocket knife (I never carry one, Heather always does), split open the stem to discover a pinkish caterpillar. There’s yer problem.

This process is often much faster than the time it takes to read this article, particularly if it’s morning and the caffeine has been consumed and the brain is firing on all 8 cylinders. Usually, all of the above thoughts are spinning around in my at once. But it begins with the most basic visual evaluation: water status, color, and stature, in comparison to other plants in the vicinity. Having some knowledge of the variety or type helps, too (paste tomato vs cherry vs slicing, for instance.) And then there is the questioning: Have you ever seen this problem here before? When were these seeded or transplanted? What information resource did you use to guide your fertilizer application rate, and what exactly did you apply? Are you irrigating and if so, how often and by what means? What was planted here last year? Was there a cover crop over the winter? How long has this ground been in production? Have you sprayed anything at all on it, and if so, what and when? Did you soil test in the last year and do you have it handy?

Usually the most difficult disorders to diagnose are not plant pathogens or arthropod pests (though diseases can also be very challenging). Abiotic disorde...
Among field tomato foliar diseases, some are inevitable, some are not. Late Blight has been scarce in recent years but when it strikes, it usually kills off a lot of plants. It is not endemic to the North. The only way it can survive in colder regions is in cull potato piles—remember that potatoes are living, breathing things—and that’s what that organism requires for survival. There are not many potato cull piles around Rhode Island, though there are a few. And by the way, late blight isn’t automatically in cull piles. It is present only if the disease made it to the farm on southerly winds and weather systems and some infected tubers got harvested. Or on garden center plants brought in from the South. In fact, the last year that we saw any in RI may have been 2013. [Note: some strains of late blight infect both tomatoes and potatoes, others infect only potatoes.]

But the inevitable foliar diseases are Early Blight (\textit{Alternaria solani}) and Septoria Leaf Spot (\textit{Septoria lycopersici}). Spores of these overwinter on crop residue, as well as residues of nightshade-family weeds. Both pathogens can start infecting tomato foliage in early to mid-summer when conditions are right. Those conditions are: plants at fruiting stage, plants that are under-fertilized, particularly with nitrogen, temperatures in the 75°F to 84°F range, and extended periods of leaf wetness, which allows for spore germination. With the rain of late this week, we are in full infection period. By the way, early blight can cause serious problems on both potatoes and eggplants as well. [Note: early blight can also cause stem cankers and fruit lesions.]

Infection starts on the oldest leaves, which also happen to be closest to the soil, where rain splash can spread spores onto leaf surfaces. A mulch layer, either synthetic or organic, can reduce this route of infection. However, spores easily spread in wind-blown rain from nearby infected plants, solanaceous weeds (nightshades, horsenettle), or crop residues.

While you can’t keep field-grown tomato leaves dry, you can reduce the amount of time that leaves remain wet, which prevents a lot of spore germination. Pruning and supporting tomato plants reduces the foliage density close to the ground, allowing air to move under the canopy which can hasten leaf drying. How you prune and support the plants depends on preferences of the grower, which is often based on past experiences. It also depends on whether you are growing determinate or indeterminate. Both
Join URI Cooperative Extension and NOFA-RI at Brandon Family Farm, West Kingston, RI for A Midsummer’s Eve Crop Walk (during another year of unpredictable weather)

Take a walk through the fields as we discuss production successes and issues with farmer Alby Brandon and Andy Radin of URI Cooperative Extension, including:

- Pest and Disease Management: ID, Prevention using Cultural Practices and Variety Selection, and Control Options
- Weed Control
- Soil Amendments and Fertilization
- Watering Practices
- Cover Cropping

**Wednesday July 7, 4:30 to 6:30 PM**

592 Fairgrounds Rd
West Kingston, Rhode Island 02892

TWO PESTICIDE APPLICATOR RECERTIFICATION CREDITS

REGISTER FOR THE MEETING [HERE](#)
**Pest Spotlight**

**OZONE INJURY**

**Heat Waves** are often associated with “temperature inversions,” where hot air from higher up in the atmosphere gets trapped at the Earth’s surface. That air has a higher concentration of natural ozone, and some crops are particularly sensitive to it, including cucurbits and brassicas. Photos: Shuresh Ghimire, UConn Cooperative Extension.

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**Why manage cucurbit powdery mildew?**

**Meg McGrath, Cornell University, Riverhead, Long Island, NY**

Growers ask: since powdery mildew is a foliar disease of a fruiting crop, is it really necessary to manage it? It may appear not to be as fruit generally are mature in the vining cucurbits when leaves die due to powdery mildew.

However, this disease causes leaves to die prematurely which in some crops can lead to fruit maturing early (cantaloupes). Winter squashes, in particular acorn, appear mature long before they are ready to harvest. Leaves need to remain healthy until fruit matures so they develop full flavor and sugar content.

When powdery mildew is not managed, melons in particular lack flavor due to low sugar content and taste bland. Winter squashes also won’t store as well and loss of protective leaves renders fruit prone to sunscald.

Pumpkin fruit color may not be as deep orange in the absence of powdery mildew control, and their handles usually are not an attractive green due to powdery mildew developing on them and they turn brown, shrivel, and cannot be used to pick up the fruit when their vine dies prematurely because of powdery mildew.

Additionally, powdery mildew can increase plant susceptibility to other diseases, notably gummy stem blight (aka black rot). Fruit production declines and ends prematurely when powdery mildew is not managed in bush type cucurbits (zucchini and summer squashes). While very rare, occasionally powdery mildew can develop directly on immature cucurbit fruit.
(brought on by local environmental conditions) are slippery in that some plants are more predisposed to them than others. Even if the crop is impeccably healthy, extreme heat or a very chilly night can cause damage. So can excessive or insufficient water. Or locally poor soil conditions.

One of the best ways to hone your diagnostic skills is to see other growers’ operations. Since we have had the opportunities to look in on so many farms, we recognize many common disorders. That’s why you should attend the Midsummer’s Night Crop Walk (ok, it’s a little after Midsummer’s Night, but close enough) at Brandon Family Farm at 4:30 PM on Wednesday, July 7. The farm is located at 592 Fairgrounds Rd, West Kingston, RI. You can register at this site. And by the way, RIDEM has approved two pesticide applicator recertification credits for this meeting if you are a certified applicator.

Stay tuned for another crop walk in early August… Who will host it? Could it be YOU?
To Be Announced!

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Do you use the

**New England Vegetable Management Guide?**

We are redesigning it and we would like your opinions on some options

**Please…**

*Take the short survey so we can provide the features that you will use*

[New England Vegetable Management Guide User Survey]
types can be supported by basket weave, cages, or stakes, but only determinates should be allowed to sprawl on the ground, though not without mulch, and not without winding up with more disease problems, particularly on fruit. If you apply a lot of N to determinate tomatoes, they become dense, out of control monsters if left unchecked. But again, also do not under-fertilize. If you remove some of the initial branches on determinates, you will have better quality tomatoes with a lot less disease. That’s especially so if you support them in some way. The vertical orientation also reduces problems with sun scald. This disorder can be particularly bad if there is a lot of foliar disease because as the lower leaves shrivel and die, the fruits become more exposed. Foliage is important, but as the plants grow, lower leaves can be removed. That’s also hard to do if the plants aren’t supported in some way. When removing those leaves, though, make sure to really remove them from the field if you are seeing any lesions from either of these diseases. Put them in the trash, or take them for a drive into the woods somewhere.

Unfortunately, there is no truly correct spacing for tomato plants, partly because it very much depends on what types of tomatoes they are and also what their growth habits are. It’s very convenient to suggest 2 feet within row, 5 feet between rows, but it also depends on how much you will manage the plants. But do avoid packing them in: managing the vines is more difficult, picking is a pain, and disease problems are always worse.

As important and widespread as these diseases are, it seems that it’s been hard to find good genetic material for resistance breeding. There are a handful of varieties that have some degree of resistance, but that doesn’t mean you won’t see any disease, so further measures may be necessary. Meg McGrath, Cornell plant pathologist based in Long Island, has assembled a massive tomato variety resource page at this link. Note that it can be viewed in spreadsheet form as well—look for links on that page.

Protectant fungicides can be used successfully to slow the spread of disease and increase the weeks of quality tomato production. Protectant fungicide keeps germinating spores from being able to penetrate the leaf surface tissue. Therefore, it needs to be in place before anticipated periods of wet foliage. BUT: if the forecast is for widespread heavy thunderstorms or extended periods of rain, most of it will wash off, and so it is better to apply immediately after. You can’t know just how much rain is going to fall, but when all we seem to get are two tenths and three tenths of an inch, it’s probably worth it to keep the plants covered with a spray application.

For organic production, only allowable copper products will give protection; there are several formulations. Copper octanoate soap is more expensive but you get the same protection while applying less actual copper. For those using synthetics, chlorothalonil is among the best, and it’s very inexpensive and easy to get. It also has merely a 12 hour re-entry interval.

Late blight hasn’t reached New England in recent years but URI Cooperative Extension will monitor and warn.
YOUR Partners in Rhode Island Agriculture

Consisting of six primary program areas, the Rhode Island Division of Agriculture works to sustain, promote and enhance Rhode Island's agricultural viability today and for generations to come.

Farm Service Agency (FSA) is an agency of the U.S. Department of Agriculture (USDA) that serves all farmers, ranchers and agricultural partners through the delivery of effective, efficient agricultural programs for all Americans. There are 48 programs that they administer, including microloans, direct farm ownership loans, farm storage facility loans, non-insured crop disaster assistance, and much more.

A complete list of programs can be found at this link. They are located at: 60 Quaker Ln, Suite 62, Warwick, RI (401) 828-3120 Option 1

NRCS, a federal agency, helps landowners develop conservation plans, create and restore wetlands, restore and manage other natural ecosystems as well as advise on storm water remediation, nutrient and animal waste management and watershed planning.

United States Department of Agriculture
Natural Resources Conservation Service

NRCS is located at 60 Quaker Lane, Suite 40, Warwick, RI 02886, Phone: 401-828-1300, Option 1 fax: 855-924-4748 https://www.nrcs.usda.gov/wps/portal/nrcs/main/ri/contact/state/

The Rhode Island Agricultural Energy Program is a competitive grant program for the implementation of agricultural projects that improve energy efficiency and facilitate renewable energy. It is a collaborative project of RI RC&D, the RIDEM, Division of Agriculture, and Office of Air Resources and the Office of Energy Resources.

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Contact: Jo-Anne Pacheco, Program Coordinator, RI Farm Energy Program, Rhode Island RC&D info@rifarmenergy.org 401-500-0399 www.rifarmenergy.org