Summer Disease Gallery 2

A few more maladies we are seeing in this warm, humid season...

EXTRA TIP: Don’t let your onions sit in plastic mulched beds for too long! Pull ‘em!

Need to discuss? Got something you need looked at? URI Extension: 401-256-7393/andy_radin@uri.edu, hfaubert@uri.edu

More common in the Southeast, Stemphylium is HERE

There are actually three species of *Stemphylium* which can cause Gray Leaf Spot of Tomato. While we haven’t identified them to the species level, this disease has now been found in high tunnels on four farms, and also in one substantial field planting on one of those farms. Spores really get around: disease has been uniformly distributed at each of these locations, including throughout the 1+ acre field planting.

Early stage lesions above, more advanced lesions, left.

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The lesions look like a few different diseases, including bacterial spot, septoria leaf spot, and even early blight. Identification under the microscope is often necessary. However, the three aforementioned diseases are practically non-existent in high tunnels, except on outside rows that receive rain-splash and wind directly from outside. When the disease advances, lesions coalesce and leaves turn brown and die, as seen to the right. This exposes fruits to more direct sun, which can result in sun scald. Sun scald and other ripening disorders can probably be reduced by using 30% shade fabric over high tunnels.

A recent article from the CT Ag Expt Station (view it here) makes the claim that disease is more severe on grape and cherry tomatoes but so far this year, it has appeared in similar abundance on all types of tomatoes. A resistance gene has been bred into newer varieties.

Management involves, as usual, ample spacing, good pruning and sanitation practices, use of drip irrigation rather than overhead, choosing varieties with resistance where you have regular infestations, and protectant fungicide if necessary.

Note that the literature states that this can be transmitted both through seed and through crop residue.

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**Squash Beetle Damage**

Let’s be clear: not squash bug, not cucumber beetle, but SQUASH BEETLE, a close relative of the Mexican bean beetle. This used to be a pest of the Mid-Atlantic states and southwards but it seems to be more and more commonly found in New England, often with localized populations. One such farm seems to have them every year, but this year, damage seems more significant. And it’s peculiar. Both larvae and adult cut semi-circular trenches in the leaf surfaces, presumably to cut off flow of toxic phytochemicals to the area that they consume. Do small New England populations cause economic damage? Not clear yet...
In humid, wet years, Black Rot is not an uncommon disease. The causal organism is the bacteria Xanthomonas campestris pv. campestris (Xcc). It can be introduced onto a farm from seed: it is estimated that if one seed in 10,000 carries the bacteria, it can cause a severe outbreak. However, it also overwinters in brassica crop residues and can continue to survive locally on wild brassicas, of which there are many in the Northeast. A key point is that if you wind up getting it, either remove all infected plants or plow the residue deep under. This can’t hurt to do if you also have Alternaria leaf spot, which is also very common and damaging.

Plants often get infected through the hydathodes, which are the pores on the outer edges of leaves which serve as check valves to release excess water pressure from leaves which are completely turgid from abundant soil moisture. You often see these droplets along the edges of leaves early in the morning, when leaf turgor pressure is at its maximum. These are wide-open entry points for bacteria, and black rot lesions often start out in a V-shape from the edge, inwards. Eventually it enters into the leaf veins, turning them black. As is often the case, the disease thrives in moist, warm, humid conditions. Black rot infections can create good conditions for other bacterial soft rot organisms. If you’ve ever been around rotting cabbage or broccoli heads in the field, this should strike terror in your hearts.

If you have any doubts about your seed source, consider using a hot water treatment prior to planting. This is especially the case if you or someone you know has been saving their own seeds. Crop rotation is of at least two years should be practiced. Avoid moving through wet foliage and causing injuries - these are points where infection can take place.
General protectant fungicides do provide some protection, and in order to do that, they need to be on the surface of the leaves when the disease arrives. There are a couple of good choices of synthetics to use, including mancozeb, chlorothalonil, and copper products. Organic growers only have copper, though there are biologicals and a botanical that can work well in the right settings. [Please take some time to look at this article by Meg McGrath at Cornell on biologicals: https://www.vegetables.cornell.edu/ipm/diseases/biopesticides/]

Note that use of these protectants do NOT select for resistance because they work at a very basic level, so it is OK to use them repeatedly. Good coverage is important. And so is using the right mix. Unfortunately, most labels provide guidance on the amount of active ingredient to use over an area of land, typically per acre. What if you are spraying a couple of 200 x 2.5 ft. beds with a backpack sprayer? You could actually reduce it down, proportionally so you apply the right amount of active ingredient to cover those two beds. For example, if the label calls for 1 pint per acre A.I. and you are covering a total of 1,000 sq ft, then you would divide 1,000 by 43,560 (square feet in an acre) to come up with 0.023. You then multiply this by 16 OZ (1 pint) or by 475 (milliliters in a pint, which is easier to measure). That would be 0.368 OZ (have fun measuring that) or 11 ml. This particular label actually states that you can apply 1 to 1.5 pints per acre. You may choose to use a higher rate if there is some substantial rain in the forecast or if disease has already started and conditions are right for rapid disease spread. In this case, you would multiply 11 ml by 1.5, which is 17.5 ml.

Most labels give the amount of water to use for application per acre, and this is often a range. There is a minimum amount which may be related to potential phytotoxicity that can be incurred if too strong a mix is used. And the maximum amount may be related to the degree of dilution at which point the product’s efficacy is reduced. In the case of fungicide, the idea is to leave behind a film on the leaf surfaces. If the solution is too dilute, much of the active ingredient washes off as it is applied, leaving behind an ineffective layer of protection.

When you calibrate a sprayer, it is for the purpose of applying a consistent amount of water over a known area of land. While no sprayer is perfect, anything operated with a motor, either electric or fuel-powered, is going to put out more consistent pressure and ground speed than a manual lever on a backpack sprayer and a walking human. Nevertheless, you should know how much water it takes you and your sprayer to adequately cover a known area of land which has a crop growing on it. You will tend to walk more slowly when plants are dense and have higher stature than earlier in the season, when there isn’t much foliage to cover. The later the growth stage, the more water may be required, so recalibration may be necessary. This calibration can’t be precise but it can be “ballpark” which is good enough. A key part of this process is to put a known amount of water into the tank, to spray over a known area (demarcate it with flags), and to move at a consistent speed and go through the same motions with the wand as you would if there was a lush crop. Then measure how much water is left and subtract from the original volume. It’s not a bad idea to add a little more water than your calibration to that you are sure to have enough spray to cover everything that you want to. Mixing up an additional small amount is a frustrating exercise to go through. Finally, make notes of how much A.I. and water you use, and at what stage of growth. This can useful in the future.

REMEMBER TO FOLLOW LABEL INSTRUCTIONS AND SAFETY PRECAUTIONS!!
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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 0111 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 comprehensive 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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