PEST ALERTS: Potato Leafhoppers have arrived: check your beans, eggplants, and potatoes - see article; Onion thrips are real, nymphs now present; How are your garlic scapes this year? See any Anthracnose? Please report if so; Ants systematically attacking kale plants in a sandier soil - please report if you see similar damage; Imported Cabbage Worm very heavy, locally, on large brassicas; Some diamond back moth activity on Brassicas; Cercospora now seen on direct-seeded beets; heat damage on high tunnel cukes - see article; Squash vine borer moths caught in traps in New Hampshire - they are active here, no doubt; Mexican Bean Beetles have been seen in the Valley in Massachusetts - be on the lookout; the very first European Corn Borer moths trap catches are rising everywhere; Basil Downy Mildew has been seen in garden centers on seedling packs - check what you are bringing in for retail sale - source not identified.

You need cooling! - Baby I’m not fooling!

High tunnels are great, of course, for season extension. But in northern climes, the biggest benefit, aside from the added 4 to 6 weeks of (typically) freeze-free spring growing is the simulated VERY long summer inside of this environment. But the heat can be intense. One hundred and seven degrees was recently measured at midday in a tunnel containing cucumbers. Do cucumbers or tomatoes like this kind of heat? No! That’s crazy hot!

Most experienced tunnel growers have seen tomato blossoms shrivel and/or fail to set fruit during periods of high temperature, and this is, of course, a direct hit on your fruit yield. A phenomenon known as stigma exsertion, the over-elongation of the stigma which prevents pollen from landing on it, is one reason for failure to set fruit (see above.) Pollen germination is also severely reduced at a temperature of over 100°F. (By the way, overnight temperatures over 75°F can also reduce fruit set.) Also consider that if you do not lower your plants over the course of the season, your blossoms will be up high in the tunnel where the heat really accumulates. Furthermore, it is well documented that high temperatures during fruit ripening are associated with yellow shoulders, blotchy fruit, internal white tissue, and...
other disorders. This is often in combination with inadequate available potassium. That’s more yield loss. Research has shown that at above ambient temperature of 93°F, ripening-associated ethylene production is reduced.

And yet another issue is sunscald on fruit. Israeli researchers determined that a combination of ambient heat plus light cause it to develop. Gordon Johnson at University of Delaware describes three degrees of sunscald. Necrosis is where skin or fruit tissue dies on the sun exposed side of the fruit because of fruit skin temperature reaching between 100 and 110°F. Sunburn browning causes loss of pigmentation but the cells are still intact and occurs at about 5°F lower. Photooxidative sunburn is when shaded fruit is suddenly exposed to bright sun, like after a heavy pruning or storm damage. This is that terrible bleached-out skin that’s often seen on pepper fruits on plants whose limbs have grown too heavy for the fruit load.

Cucumber fruits can sunscald as well. The excessive heat in the aforementioned high tunnel caused some severe damage to growing points, killing quite a few. The first pick of Corinto fruits also had a condition called hollow heart, in which the fruit expands faster than the pulp inside can expand and fill.

Since high tunnels are (generally) passively cooled, effective ventilation is critical. Rollup sides are essential. Typically, this is from the “hip board” down to the ground. Hip boards, however, should not be at hip height unless you are Kareem Abdul-Jabbar; chin height is more like it. End walls should be well ventilated. Usually, this involves large double doors, often with a big enough opening to drive a tractor through. Less common but very effective is roof venting, because hot air rises... It’s easier to build this feature into the tunnel at the time of assembly than it is to
Potato Leafhoppers: They’re not just a potato pest… and they’ve arrived for the season

Some sources state that they feed on over 100 plants, including the economically important crops such as alfalfa, soybean, snap beans, apples, potatoes, raspberries, strawberries, and grapes. PLHs do not overwinter in northern states—they survive and reproduce year-round in Gulf Coast States and adults migrate northward during spring. They are in the Order Homoptera, Family Cicadellida, the Leaf-hoppers. [Note: since my time in graduate school, insect taxonomy researchers did away with this order, yet in recent years, because of newer DNA sequencing technology, it may be “IN” again.] All members of this order have sucking mouthparts and saltatorial (jumping) hind legs. They fold their wings in tent-like fashion over their abdomens. They go through what is called “gradual metamorphosis,” which is characterized by a nymphal form gradually enlarging in several stages of molting, each time leaving behind a shed exoskeleton. In the penultimate stage (each stage is referred to as an “instar,”) structures called wing buds develop. At the final molt, these buds expand into full wings. This is opposed to “complete metamorphosis,” in which the final nymphal stage forms a pupa. Inside the pupa, an extraordinary process takes place in which tissues are broken down and rebuilt into a completely different adult form.

The warm, southerly air flow in the spring brings leafhoppers northwards and they usually begin to reach Southern New England by late May to early June. You can detect their presence by shaking bean or potato foliage, preferably with some backlighting. You will see very light green, one-eighth inch, translucent insects scatter. When feeding, in which they draw nutrient-rich cell sap from leaves, they are simultaneously pumping in fluid which is phytotoxic. This is the cause of “hopper burn.” Early in the period after their arrival, hopper burn will not be evident. But within a few weeks, you may start to see yellowing on leaf edges, which eventually curl (upwards on potatoes, downwards on beans) and turn brown. Female leafhoppers inject eggs into leaf tissue using their ovipositors. Nymphs hatch in 7 to 10 days depending on the degree of warmth. Nymphs pass through 5 instars and become adults by about two weeks later. They are brighter green than adults, cannot fly, and move sideways in a crab-like motion. They spend most of their time on leaf undersides.
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

REGISTRATION INFORMATION WILL BE FORTHCOMING
Above: No, this is NOT some kind of dangerous stinging wasp! But it fooled you, right? This a Squash Vine Borer MOTH, a perfect example of Batesian Mimicry. When you go out walking in the squashes and pumpkins in the daytime starting in early July, these moths are pretty obvious. Females are busy laying their eggs (Left) down near the bases of the plants. Depending on the degree of warmth, eggs take 9 to 11 days to hatch. Larvae (Below Left) burrow into the stems within hours after that. They are then pretty safe to do what they do, which is to burrow their ways upwards into stems. Along the way, they destroy the vascular tissue which conducts water and nutrients to the growing tips and developing fruits.

Squash vine borer is often a local problem- one farm has them really bad, other farms are untouched. Sanitation is an important control to reduce overwintering pupae in old vines. Another option is to turn crop residue under by deep plowing. If eggs are found, you can attempt to spray B.t. (Kurstaki or Azawi strains are active on caterpillars) at the base of plants, but this has to be done repeatedly as more and more eggs are laid and hatch out. A big canopy of leaves makes this difficult, but it’s still better to maintain well fertilized plants that can withstand the damage.

Above: This butternut plant is under attack. It won’t survive, but more advanced winter squash and pumpkin plants can survive if they’ve already “pegged down” roots in multiple locations. BUT- if you are growing over plastic mulch or ground fabric, they won’t be able to form those new roots.
Because of intense cucumber beetle pressure at certain sites, more cucumber growers are using exclusion netting to completely cover the open space under the roll-ups as well as on end walls. There is a danger, however, that resistance of air movement through this kind of screening fabric will not allow the house to get down close to ambient air temperature. This may be the reason for the intense heat in the case mentioned above during the last heat wave. It may be necessary to use shade cloth (30% splits the difference between keeping the house from overheating while not blocking too much light). Dr. Wenjing Guan at Purdue University looked at various effects of using shade cloth on high tunnels. Certainly it helped bring down temperature by 3 to 4°F when light intensity was high, but not when light intensity is low. She did find that shade cloth reduced the amount of unmarketable fruit, and this included reduction of skin cracking, which happens as a result of dramatic changes in soil moisture content. (Ever grow Sungold cherry tomatoes and have a big rainstorm in August?) This is because shade cloth reduces soil surface evaporation and reduces plant transpiration (evaporation + transpiration = “evapotranspiration.”) The lower temperature also slows expansion of fruit pulp, thus exerting less pressure on the skin.

It is suggested that 30% shade cloth is especially good during hot summers on indeterminate tomatoes that are fastidiously pruned. We don’t seem to have summers that are NOT hot… and so it may well be that shade cloth is going to be part of standard summer high tunnel management in our part of the world.

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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]
LEAFHOPPERS Continued from Page 3

Rapid increase in numbers, even in the nymphal stages, means a rapid increase in the numbers of mouthparts embedded in leaves, and that causes a rapid appearance of hopper burn by late June to early July. Some crops tolerate hopper burn better than others. Red potato varieties react very strongly to it, as do young plantings of snap beans. The purple-leaved varieties of eggplant from East Asia seem to tolerate damage with less loss of productivity. However, hopper burn damage is often compounded by foliar diseases like common bean blight, early blight on potato and eggplant, and verticillium on eggplant.

If you are near a hayfield, be aware that a mowing in July could send leafhoppers right over to your plantings. Pay attention to your neighbor’s activities.

Controlling PLH is not absolutely necessary on all farms in all years, but there are some fields that are infested every year without fail. If you feel that spraying anything at all is not an option, you can use lightest weight row cover. This can simultaneously keep Colorado potato beetles off of potato and eggplant. For organic farms that do spray, Dr. Galen Dively (UMD) published efficacy data in 2020 showing 80% control of adults and 85% control of nymphs using pyrethrum/azadirachtin mix (Azera), with slightly less control using plain pyrethrum (pyganic.) There are several conventional insecticide options. But remember: if using insecticides, be they conventional or organic, bee mindful of bees! Spray either very late in the day or early in the morning when bees are not out foraging. And if beans are in full bloom, you have missed your chance. Bumblebees are partial to potato and eggplant but those flowers close up rapidly so there not nearly so many bees on the plants at one time as is the case with beans. BEE CAREFUL!
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 micro-lending, 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.

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.

The RISBDC employs a dedicated, experienced and knowledgeable staff of business counselors and administrators who can assist you in growing your business.

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