Weekly Update

This spring two-spotted spider mites got an early start due to the hot, dry weather in April. The warmer weather this week, plus slightly drier conditions have allowed them to become a real problem in some fields. This is not a great time as picking has commenced everywhere and control products range from 0 days to harvest interval (DHI) in the case of Brigade, to 3 DHI for AgriMek and Savey. Still if the threshold of 5 mites/leaf out of 60 mature leaves has been reached, it would be better to do something now rather than wait for the population to get so big that it’s much harder to control them – especially since we are rather early in the mite season.

A hand lens will help you scout for these pests. As you become familiar with looking for them, look for small yellow spots on the upper leaf surfaces as an indication of feeding. Brownish dry areas on the lower leaf surfaces are more characteristic of damage. The heavier the damage the more this brownish feeding injury occurs resulting in the more typical descriptor of “bronzed” leaves. Heavy feeding can result in stunted plants and sparse regrowth after renovation.

Chemical control options include Acramite, Savey, Zeal, Vendex, Portal, Brigade, Danitol, Suffoil-X and organic JMS Stylet oil. If you opt to use oil, remember not to tank mix with Captan and avoid spraying oil within 14 days of sulfur. -LGM

Mite Control Options In Berry Crops - John Wise, Rufus Isaacs and Larry Gut, MSU Extension. This article, reprinted in the New York Berry News, has been adapted from its original content to reflect products registered for use in mite control in NY State.

Mites can be significant pests of fruit crops. There is an array of miticides available for control of the European Red Mite (ERM), two-spotted spider mite (TSSM) and rust mites (RM), such as blueberry bud mites. But their performance characteristics are not all alike.

The following table (page 2) is designed to summarize several key variables that can help you determine which miticides are optimal for your integrated pest management program.
Early tomatoes are being infected by Early Blight and Septoria throughout our district. The wet, cloudy weather pattern that we have been stuck in is especially conducive to these diseases. In some cases we have seen plants stay wet for days at a time. The diseases splash from the soil or old stakes to the plant, and then may splash from leaf to leaf and plant to plant. It is important to treat for these diseases to prevent defoliation or even plant death. The first step is to be able to tell the diseases apart.

**Septoria leaf spot** (*Septoria lycopersici*) is one of the most destructive diseases of tomato foliage and it occurs worldwide wherever tomatoes are grown. Once infections begin, they can spread rapidly from lower to upper tomato canopy. Lower leaves will die and fall off, leaving lower fruit exposed and susceptible to sun scald.

Symptoms consist of circular tan to grey lesions with a dark brown margin that appear on lower leaves first, after the first fruit set. With a 10X hand lens, these black specks can be seen in the center of the lesions. Unlike early blight, the lesions do not develop concentric rings. Fruit infection is rare, but lesions occur on foliage, stems, petioles, and the calyx. Seed infection is possible, but rare. Once introduced, Septoria is spread by splashing water, insects, workers, and equipment.

**Early blight** (*Alternaria solani*). Early blight occurs on the foliage, stem, and fruit of tomato and also occurs worldwide. It first appears as small brown to black lesions on older foliage. The tissue surrounding the initial lesion may become yellow, and when lesions are numerous entire leaves may become chlorotic. As the lesions enlarge, they often develop concentric rings giving them a ‘bull’s eye’ or ‘target-spot’ appearance. As the disease progresses, plants can become defoliated, reducing both fruit quantity and quality. Fruit can become infected either in the green or ripe stage through the stem attachment. Fruit lesions can become quite large, involve the whole fruit, and have characteristic concentric rings. Infected fruit often drop and losses of 30-50% of immature fruit may occur. On potato, foliar symptoms are quite similar though complete defoliation rarely results. The concentric rings in the lesions are fairly diagnostic for this disease, and help to distinguish it from either late blight or Septoria.

Images of both diseases are found on page three and can be used for comparison.
Management of Septoria Leaf Spot and Early blight:
Some varieties of tomato with early blight resistance or tolerance are available, however most tomato cultivars are susceptible to Septoria leaf spot. Adequate nitrogen fertility throughout the season can help delay disease development; lower leaves become more susceptible as the nitrogen demand increases with fruit load and older leaves decline in nitrogen. Rotate out of tomato crops for at least two years, control susceptible weeds, and incorporate debris after harvest. Reduce the length of time that tomato foliage is wet by using trickle irrigation, wider plant spacing, and staking. Keep workers and equipment out of wet fields where possible.

Organic and conventional controls: Early Blight

In organic systems, copper products applied after each rain may be effective in protecting plants from new infections of early blight and in slowing spread of the disease through the plant. The results of copper use in recent trials have been mixed, however. Another option is the use of a *Trichoderma harzanium* product, PlantShieldHC®. This product has had fair to good results in a three year trial in New York. Pair any chemical or biological controls with optimal cultural conditions.

In conventional systems, Quadris Top (Groups 11 + 3) provides excellent control of early blight and other labeled diseases. Make no more than 2 consecutive applications before switching to another effective fungicide with a different MOA. Do not apply until 21 days after transplanting or 35 days after seeding. Do not use on varieties where mature fruit are less than 2 inches (cherry types). Previcure Flex (Group 28) also provides good control, but was not rated as high as Quadris Top for EB control (good versus excellent) Do not apply more than 7.5 pt of *Previcur Flex/season. Always tank mix with a protectant such as Bravo, and use the most restrictive PHI and REI. Other options include Ridomil Gold + Bravo and Gavel 75DF. For a complete list of available products, please consult your 2012 *Cornell Vegetable Guidelines*. As in organic systems, develop optimal cultural conditions for your plants in addition to spraying for disease.

Organic and Conventional Controls: Septoria Leaf Spot

In organic systems copper is the best option available, and it isn’t demonstrated to be particularly effective. Minimizing soil splash onto leaves, maximizing air flow, and making routine copper applications for septoria, late blight, and bacterial diseases is the best option at this time. No effective biological controls have been identified (if you are using something that seems to be working please let us know and we will try to get it added to a trial!)

In conventional systems, Quadris is most effective at controlling Septoria. Quadris F and Quadris Opti should be used no more than once before switching to a product with a different mode of action, and Quadris Top should be used no more than twice before switching. Again, do not apply Quadris Top until 21 days after transplanting or 35 days after seeding. Do not use on varieties where mature fruit are less than 2 inches (cherry types). Bravo is very effective at preventing the spread of Septoria. Remember that as a protectant, it must be used prior to infection or to protect new foliage; it will not cure leaves which are already infected. Bravo Weather Stik at the higher rate (2 pts/A) is a good option after fruit set. -CLS
When and how to hill potatoes

If potato growing is new to you hilling may be a bit more of an art than a science. As tubers swell, especially if they have good moisture and adequate nutrients they will begin to push out of the soil. Hilling keeps the developing potatoes from being exposed to sun, which turns them green and bitter. Green potatoes contain a chemical, solanine, which is toxic in large amounts. This may not be as visible in dark fleshed varieties like blues but is just as dangerous. Here are some hints for success:

When To Hill:
When the plants are about 6 to 8 inches tall. Repeat in about 2 to 3 weeks.

How to Hill:
Hoe soil loosely around the base of the plants to within about an inch of the lower leaves from both sides of the row. You may want to make additional hillings, gradually building a 6- to 8-inch ridge down the row. Do not cover leaves or stem with soil as this will cause decay over time.

Instead of Hilling You Can….
Shallowly plant seedpieces in the soil and cover with a thick layer of clean straw or other weed-free mulch that the plants will be able to penetrate. Add more mulch as needed to keep light from reaching potatoes. A foot or more of mulch may be required. Tubers grown this way can be easily harvested by pulling back the mulch after the plants die.

Deeply plant seed potatoes 7 to 8 inches deep and skip hilling or deep mulching. The potatoes are slower to emerge, but this method requires less effort during the growing season. Deep planting is not good in cold, damp soils and it requires more work to dig the potatoes at harvest. –MRU

Sweet Corn Update

We saw this week’s moth counts decline due in part probably to the cooler conditions, but I am seeing a fair amount of European corn borer (ECB) damage in the whorls and tassels of sweet corn. I was finding larvae in various stages from newly hatched to 3rd in-star. If you have corn that was under plastic or floating rowcover, those plantings are most attractive to adult months to lay eggs in and are at the highest risk for larvae to get into the ear zone. As stated last week, traditional thresholds do not apply to those plantings and it is recommended that insecticides be timed around the moth counts. Normally we would recommend insecticides when 40 - 50% of the tassels have emerged followed by a second application 3 – 4 days later. However, because rowcover and plastic corn is ahead of normal bare ground corn, insecticide applications need to start now before a many of the tassels have emerged. It is also for this reason that using one of the newer insecticides like Coragen (chlorantraniliprole), Voliam Xpress or Besiege (both have chlorantraniliprole and lambda-cyhalothrin (Warrior)). The chlorantraniliprole part of these materials has some systemic properties that allow it to move into the plant and gives you a longer residual (7 – 10 days). Consult the Cornell Vegetable Guidelines for more information on rates and pre-harvest intervals. –CDB

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This week, onions began to show different types of biological and chemical damage. Often these things can be confused for each other so I took some pictures that should help with diagnostics.

**Herbicide Burn** – Usually this is post-emergent damage. Symptoms are a splatter-pattern of tan spots on the leaves ranging in size from tiny dots to pea-sized. They are rarely regular in shape and can even look like drips. They are a solid, consistent light tan in color. Often damage is heavy in one area of the leaf and tissue dies. The other side of the leaf will continue to grow normally where it was not burnt and this variation in growth rates is what causes the pig-tailing/leaf curling/bending that is symptomatic. Significant spotting or even pig-tailing has been shown to not decrease production. However, I have my suspicions that heavy post-emergent use, particularly after bulbing has initiated, may increase bacterial infection rates. However, we also know that high weed populations and high levels of hand-weeding can also increase bacterial rates.

**Botrytis** – Probably the most difficult to identify because it is subtle in its appearance. New lesions are merely a cloudy or hazy spot on the leaf. The oblong lesions are small at around ¼ inch (5mm) from tip to tip. As the lesion ages, you can begin to see a tan/yellow dot in the middle of the hazy area. This spot is where the spore entered the plant. As the lesion continues to age (and all of this happens in about a week) the dot grows a bit and becomes more prominent. Often the leaf will crack through this center dot. Look for lesions on older leaves and leaf tips. The older the leaf tissue (or longer it has been exposed in the case of the tip) the more chance it has had to become infected. Threshold for control is still 1.0 lesion per leaf. So, if you have a 4-leaf plant, that’s 4 lesions on the whole plant and if you have a 6-leaf plant, that’s 6 lesions, even if all of the lesions are on 1 leaf. Do not use oldest leaves that are less than 80% green tissue in your accounting.

**Thrips Feeding** – Thrips feed by scratching at the cell surface, exposing the yummy cell center and sucking out the cell contents. Their damage looks like the leaf has been scraped or lightly physically damaged. At first, the damage is only a different shade of green but as the cells die, the spots become tan or white as they dry out. Look at center leaves for damage. Thrips are not fond of the sunshine and hide in the apex of the plant during the day. At night, when they feel free to roam, they will consume cells up and down the leaves but most damage will still be concentrated to the center or in folds.

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**Websites of Interest**

- Diagnose pest and disease problems using color pictures: [http://vegetablemdonline.ppath.cornell.edu/](http://vegetablemdonline.ppath.cornell.edu/)
- Cornell Guidelines for fruit and vegetables: [http://www.nysaes.cals.cornell.edu/recommends/](http://www.nysaes.cals.cornell.edu/recommends/)
- USDA Fruit and Vegetable Market News: [www.marketnews.usda.gov/portal/fv](http://www.marketnews.usda.gov/portal/fv)
These pictures were taken on June 4, 2012. These small, raised, blister-like spots (called uredinia) erupting with round orange spores (urediniospores) are characteristic for rust diseases. These spores are dispersed by wind to other plants. The dark brown spots contain another diagnostic type of rust spore called a teliospore. Pustule is another name for rust spots. Small, white flecks are the initial symptom of rust.

Leaves on severely affected plants turn yellow, wilt, dry up, and die prematurely. Garlic bulbs on such plants can be significantly reduced in size and quality, with affected bulbs often lacking their protective dry outer skins thereby leaving them prone to shattering during harvest.

Rust primarily affects garlic. It has occurred rarely in North America. Bulb onion, leek, chive, shallot, and wild species of Allium are also susceptible to some pathogen strains, but may only be affected when growing near garlic with rust. Leek, shallot, and elephant garlic have not been found to be susceptible to rust strains present in North America.

Initial sources of the rust pathogen for a farm or garden are infected planting material and spores dispersed potentially long distances by wind from infected garlic in another planting. Once introduced to an area, the pathogen can survive overwinter in affected crop residue and also in volunteer plants and weeds.

Infection occurs when temperature is between 41 and 77 F (54-70 is most favorable) and relative humidity is at least 97% for 4 hours. At least 9 days after infection, pustules are present with spores. Development of rust is promoted by dense plantings and when conditions are too dry, too wet, nitrogen fertilization is excessive, or plants are otherwise stressed.

Manage rust by using pathogen-free planting material, separating susceptible crops, managing related weeds, rotating land where garlic is grown, and applying fungicides when conditions are favorable and the pathogen is known to be present.

If you see any symptoms that look like these, please let Crystal know right away. This is another brand new disease to us, and we want to make sure we curb its spread if it does arrive here and that we are able to provide growers with up-to-date information about its whereabouts.
Through a state government grant called a Consolidated Funding Application (CFA), growers who want to build small inexpensive walk-in coolers or “sheds” can get up to 50% of the cost covered. The Coolbot™ is an inexpensive (~$300) piece of equipment that allows normal window air-conditioning units to be converted into coolers with capabilities to keep an insulated cooler at 32F. The table below shows the size AC unit needed to match cooler size.

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<th>Cooler Size (Feet)</th>
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The approximate cost of the entire project, including the Coolbot™, the AC unit, and the materials and labor to build an insulated cooler are $4,000-5,000. With this grant funding, this means that you can build a small cooler for only $2,000-2,500, way cheaper than a conventional cooler.

The ability to extend quality, shelf-life, and marketing window of your produce will be greatly improved by having a cooler on-site. For more information on the Coolbot™, see their website at http://www.storeitcold.com/. Included on the website are several links to plans for building a well-insulated cooler.

We need to quickly gage grower interest in this grant funding and get letters of support to move forward. Fruit growers should please contact Craig Kahlke of the LOF Fruit Team at 585-735-5448, or email at cjk37@cornell.edu. Vegetable growers please contact Robert Hadad at 585-739-4065 or email him at rgh26@cornell.edu.

**Row Covers Offer some Hail Protection**

More and more growers are experiencing the benefits of using rowcover immediately after transplanting. Many rows can be covered all at once with large sheets, held down by clods of soil, large rocks, or nylon mesh bags filled with stones. These mesh bags work especially well and are easy to lift on and off the cover edges for weeding underneath.

When applied the day of transplanting plants experience little if any damage from cucumber and flea beetles (provided proper rotation was followed and beetles do not emerge from the soil), both of which can destroy young seedlings, and the cabbage butterfly won’t be able to lay eggs on brassicas.

We’ve had two to three intense hail storms so far this year in northern NY, and rowcover provided much needed protection from the pounding hailstones as well. Rowcover can help diffuse the force of hail, spreading across the entire plant rather than small spots on each leaf. Of course there is a limit to the protection that rowcover can afford. And finding a balance between having rowcover on for protection and taking it off to weed can be tricky as well. All that said, more and more farms are finding uses for row covers, from extending the season to protecting plants from a host of uncertainties that each season brings. *ADI and CLS*

Leek that has been damage by hail. Damaged plants are more susceptible to diseases due to the many entry points into the plants.
Grower Classifieds

Do you need to buy or sell something that vegetable and small fruit growers in the Capital District might be interested in? Let us know, and we will post it here in the weekly grower Classifieds. Try to keep information short, just like with a newspaper classified. We will include up to 50 words and a small (2 inch by 2 inch) picture. This service will be free to all enrolled growers. The deadline for submission each week is Wednesday at 12 noon. If you have any questions, please contact Crystal at 775-0018 or at cls263@cornell.edu.

Upcoming meetings and notices

Farm-to-School Grants (USDA) – Apply by June 15, 2012
The US Department of Agriculture is providing funding for programs that seek to improve access to local foods in schools. Potential projects include programs that get local food on the menus of schools, education activities that encourage the participation of school children in farming and gardening, among others. Proposals should include evaluation plans as well as demonstrate the long term sustainability of the plan. For more information visit the USDA Grants site at http://www.fns.usda.gov/cnd/f2s/.

Farm Service Agency Announces Loan Program for Conservation Purposes
FSA announces the availability of the Guaranteed Conservation Loan (CL) program that will provide farm owners and operators access to credit to implement conservation techniques that will conserve natural resources. CL funds can be used to implement conservation practices approved by the Natural Resources Conservation Service (NRCS), such as the installation of conservation structures (e.g., manure digesters on farm, wind or solar generation, manure and silage storage); establishment of forest cover; installation of water conservation measures; establishment or improvement of permanent pastures; implementation of manure management; and the adaptation of other emerging or existing conservation practices, techniques or technologies. Guaranteed CLs up to $1,214,000 are available from lenders working with FSA. For more information on the Conservation Loan program, contact your local lender, local FSA office or visit the FSA website at http://www.fsa.usda.gov/.

Weekly and Seasonal Weather Information

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Growing Degree Information Base 50°F
Rainfall Accumulations

Cornell Cooperative Extension and the staff assume no liability for the effectiveness of results of any chemicals for pesticide use. No endorsement of any products is made or implied. Every effort has been made to provide correct, complete, and current pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are still possible. These recommendations are not substitutes for pesticide labeling. Please read the label before applying any pesticide. Where trade names are used, no discrimination is intended and no endorsement is implied by Cornell Cooperative Extension.

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