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Vegetable & Fruit Headline News

The University of Maryland Extension Agriculture and Natural Resources Profitability Impact Team proudly presents this bi-weekly publication for the commercial vegetable and fruit industry.

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Spring Observations from WyeREC

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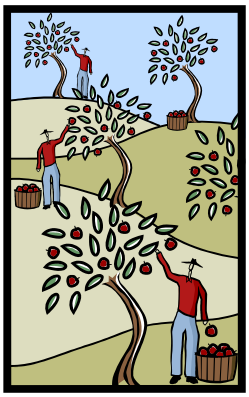

Peaches:

- ✓Shuck fall is complete. Now and for the next several weeks, this is an important period for peach scab control. Sulfur can be used for brown rot control at this time, but materials that target scab (ie. Captan or others) should be used.
- ✓Fruit at this stage is also very susceptible to bacterial spot. Favorable conditions for epidemics include persistent winds along with heavy rains or long periods of moisture or humidity. Coppers or Terramycin should be applied any time wet and windy weather is expected. **Special Warning on Phytotoxicity:** Be very careful when tank mixing Captan and coppers. Captan/copper combinations should be avoided after long periods of overcast skies. Also be careful with buffering solutions in tank mixes.
- ✓Cat-facing insects, (tarnished plant bugs and native stink bugs) can be more prevalent in orchards that have weedy or clover ground covers. The first line of defense against these insects is a good ground cover management program. Although pyrethroids can provide good control of many insect pest at this time, expect mite populations to increase if pyrethroids are used now.

Apples/Pears:

- ✓Bloom is almost complete in apples. Recent rains induced the first scab infection period with a 2nd infection period predicted for this weekend. Sprays for scab should also include materials for cedar-apple rust control.
- ✓Later blooming varieties need to be protected for FireBlight if weather conditions warrant anti-bacterial sprays.

Strawberries:

- ✓Field-grown plasticulture Chandler berries began ripening this week. Continue fertility management as indicated through leaf/petiole sampling and analysis. Sampling should be done every two weeks during bloom and harvest.

- ✓Remember to consider resistant management when choosing materials for disease and insect control. **Read and follow the label for all pesticides**.

Spring Vegetable Crop Update

Vegetable Crop Insects –
Joanne Whalen, Extension IPM Specialist
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Asparagus:

✓Continue to check asparagus spears for eggs as well as adult beetles feeding on spears. As a general guideline, a treatment is recommended if 2% of the spears are infested with eggs. Since adults will also feed on the spears, a treatment is recommended if 5% of the plants are infested with adults. For a picture of asparagus beetle eggs, adults and larvae please refer to the following link: **http://www.extension.umn.edu/distribution/horticulture/M1199.html**

Melons:

✓As soon as plants are set in the field, begin scouting for aphids, cucumber beetles and spider mites. When sampling for aphids, be sure to watch for beneficial insects as well since they can help to crash aphid populations.

✓As a general guideline, a treatment should be applied for aphids when 20 percent of the plants are infested, with at least 5 aphids per leaf but before populations explode.

Potatoes:

✓As soon as plants emerge, be sure to sample fields for Colorado potato beetle adults, especially if an at planting material was not used.

✓ A treatment should not be needed for adults until you find 25 beetles per 50 plants and defoliation has reached the 10% level.

Significant Seed Corn and Cabbage Maggot Damage Possible in the Next Few Weeks

Jerry Brust, IPM Vegetable Specialist
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The unusually warm and dry spring we have had up to now has led many growers to transplant some of their melon and other vegetable crops early. The cool wet weather we have had in the last few days will make some of these fields vulnerable to seed corn maggots *Delia platura* (SCM) or less commonly found in cucurbit fields cabbage maggots, *Delia radicum* (CM). Both species overwinter in the soil as a maggot inside a brown case. In March and April small, grayish-brown flies emerge. Adult flies are most active from 10 a.m. – 2 p.m. and are inactive at night, in strong winds and when temperatures are below 50° F or above 80° F. Female cabbage maggot flies seek out and lay eggs on the lower portions of stems of young host seedlings or in nearby cracks in the soil. Within a few days the eggs hatch and the tiny maggots burrow down to the roots and begin feeding. SCM eggs are oviposited in soils with decaying plant material or manure. The adults are also attracted to the organic media around the roots of transplants and germinating seeds. That is why fields that have been fumigated can still have problems with SCM. Maggots will move into small stems and move up the plant causing a swelling of the stem just above ground level, while also causing root collapse and decay. If these stems are split you will usually find the white cylindrical larvae (figs. 1, 2 and 3).

The adult flies are often found dead, stuck to vegetation during periods of warm wet weather (like we had in early April). These flies have been infected by a fungus, *Entomophthora sp*. These infected flies usually will be found at the top of a tall object in the field such as a grass seed head or a field-flag (fig. 4). Just before the fungus kills them they cement their body via their mouthparts to the tall object and die. If you look closely you'll see the body is filled with the white fungus that has ruptured between the segments (fig. 5). Being on a tall object allows the spores of the fungus to move longer distances and infect more flies than if the fly had died on the ground. Even though we have had a dry spring, I still have seen many fungus infected dead flies this year. Unfortunately, the infection rate is not enough to reduce the SCM population and stop infestations.

Soil temperatures two inches deep in the planting hole that are at or above 70° F reduce SCM egg laying and larval survival. If soil temperatures are above 70° F at planting but fall below this level for several days in a row (which they have just done), SCM adults will begin to oviposit eggs at the base of transplants. When wilted transplants are inspected in the field, maggots are often not found (they have already pupated), but their tell-tale damage can be seen as a hollowed out stem or root held together by a few strands of plant material. The use of treated seed or in-row banding of an insecticide gives some control of SCM, however, replacing dead transplants is the only solution after SCMs kill a plant. Once seed corn maggot damage is noticed, it is too late to apply control procedures. Thus, economic thresholds are not useful and all management options are preventative.

Figs 1, 2 and 3. Swollen stem of cucurbit plant with collapsed rotting roots. When stem is cut open the white maggots often can be found.

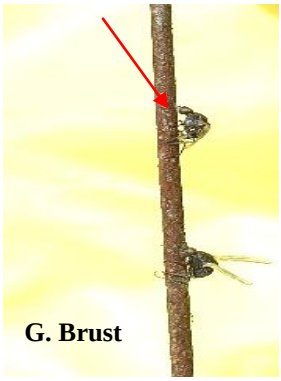

Fig 4 Two SCM flies killed by a fungus stuck to a field-flag via their mouthparts

Fig. 5 Adult SCM killed by a fungus - white strands coming out of abdomen

Scout Emerging Potato Fields for Seed-Born Late Blight Infections

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There have been several reports of late blight from Florida. The most recent was a report from north Florida in the Hastings area that was identified early, fungicides were applied and the situation is under control. This is a reminder that there was late blight in many of the seed producing areas last season. In spite of all the precautions and seed testing that occurs to reduce the chance of seed tuber infections, infections can occur if the weather is right and the seed is infected.

Be sure to be checking fields as they emerge for any seed born infections. Apply fungicide sprays of mancozeb or chlorothalonil once the plants begin to touch down the row. There is a late blight monitoring website http://usablight.org/ that you can use to see what is happening around the country with late blight on tomato and potato.

Early Season Pythium and Phytophthora Control in Pepper and Tomato

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With the dry spring we've had thus far, it's easy to forget about Pythium and Phytophthora! The same question always comes up about this time of year when growers begin to start thinking about transplanting their tomato and pepper crops. "What should I do to help prevent Pythium and Phytophthora?". In years past, the answer was simple, apply mefenoxam (Ridomil Gold SL, Ultra Flourish, 4) or metalaxyl (MetaStar, 4). Problem solved, right? In the past, that answer was right, but with resistance development in Phytophthora (*P. capsici*) to both mefenoxam and metalaxyl, the correct answer isn't so simple anymore. It's important to remember that both chemistries will work very well *as long as* resistance hasn't been detected on your farm.

How do you know if you have resistance? The easiest way is to follow efficacy. If the chemistries no longer provide the control they once did, then there is a good chance you have mefenoxam-insensitive Phytophthora populations present on your farm. There are also lab services which test for resistance. Remember, once resistance develops it can linger around for a very long time. Therefore, proper crop rotation and resistance management is critical before resistance has the chance to develop. Our options for pre-transplant applications include a Ranman (cyazofamid, 21) drench one week before transplanting for Pythium in tomatoes as well as Previcur Flex (propamocarb HCL, 28) for the suppression of Pythium and Phytopthora in tomatoes and peppers. Phosphite fungicides, such as ProPhyt and K-Phite (FRAC code 33) can also be applied as a pre-transplant drench in the greenhouse.

Additionally, there are a number of biologicals such as *Trichoderma*, *Streptomyces*, and *Bacillus* products which can also be used in the greenhouse to help suppress soil-borne pathogens. Remember, the biological need to be applied without conventional fungicides.

At transplanting applications now include Ranman (cyazofamid, 21) in the transplant water or through drip irrigation for Pythium control. There is a section 2ee for the use of Previcur Flex (propamocarb HCL, 28) + Admire Pro (imidacloprid) in transplanting water for Pythium control. Presidio (fluopicolide, 43) now has a label for drip application for Phytophthora control when conditions are favorable for disease development. Additionally, phosphate fungicides, Pro-Phyt and K-Phite (FRAC code 33) can also be applied through drip irrigation at transplanting to help suppress Phytophthora blight. Unlike in the past, there are a number of good options for early season control of these pathogens, it just takes a little bit more planning ahead of time. For further details on use and crop labeled please refer to the specific fungicide label. **Remember the label is the law.**

Managing Forage Radish Cover Crops that Fail to Winter-kill

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Departments of Entomology[1] and Environmental Science and Technology[2]

Forage Radish and Winter-killing

Forage radish, a winter cover crop now widely adopted by growers in the mid-Atlantic region, provides multiple and unique benefits, compared to other cover crops. One of its most attractive features is that it achieves multiple benefits during its fall growth and then is normally winter-killed. Its early winter-kill and rapid decomposition also provides weed free, warmer and drier soil conditions in early spring. This eliminates the need for tillage/herbicide and allows earlier spring planting.

Generally, a cold period of several days with night time low temperatures below 20°F is required to completely kill forage radish. In Maryland, forage radish is usually frost-damaged in December and dies completely during longer cold spells of January. The chances of achieving complete winter-kill can be increased by avoiding two conditions at cover crop planting that tend to make the plants less susceptible to frost. These are late planting and N deficiency. Younger, later-planted and/or N-deficient forage radish plants will resist early frost damage. In addition, it seems to

require less severe temps to kill the plants early in fall than later in winter as the plants seem to increase their cold resistance with repeated exposure to mild freezing temps as the winter progresses.

During the 12 year period (2000-2011) during which forage radish research was conducted in Maryland, good winter kill was observed in about 45 of 50 site-years of research. Most of the instances in which forage radish re-grew in spring after partial frost damage in winter were in the lower eastern shore or locations protected from cold winds. However, between Dec 2011-Mar 2012 the eastern US experienced one of the warmest winters on record, with only four days (January 3, 4, 16, and 19) when the minimum temperature dropped below 20°F as recorded at Beltsville, MD. (Figure 1). With this unusually warm winter, most of the forage radish in Maryland and other states in mid-Atlantic region was not completely winter- killed and grew back as temperatures rose in early March. Many farmers found they had green cover crops where they were expecting only decaying residues. Some farmers had even interplanted forage radish with their small grains. This situation created much interest in how we can best terminate or manage forage radishes that failed to winter-kill.

Methods and time to kill non-winter-killed forage radish cover crop

In most cases, leaves re-grew on intact or partially damaged roots or on the plants whose growing points were not damaged because of slow growth in the fall due to late planting and/or less available soil nitrogen. However, spring growth of forage radish, especially if tissues have been frost-damaged, is not nearly as aggressive as in the fall. Forage radish is not nearly as competitive in spring as other Brassicas, for example rapeseed (canola), can be. It is also much easier to terminate in spring than other Brassicas.

Even though a lot of green regrowth in March may look scary, the forage radish regrowth is easy to manage and should not pose any serious problems. Forage radish regrowth in early spring can be killed mechanically by mowing and/or tillage, or chemically by herbicides. With any of these methods, it will be best to wait for the radish to bolt – to send up a flower stalk. It is much easier to completely terminate the radish plants in the bolting or flowering stage as compared to the vegetative stage. New shoots may regrow from tubers left alive below ground if it is killed during the vegetative stage.

Mowing is a practical method to terminate radishes in spring without disturbing the soil by tillage. If mowing for no-till radish regrowth control, the mower should be set as low as possible. One should avoid making tire tracks as far as possible - that is, it is best to mow when soil is firm and dry and the use of a side-mounted mower would be ideal. Otherwise, some radish tubers will just be bent over by the tractor tires and then missed by the mower blade. Mowing can completely control regrowth if applied at the right time and stage of growth. Tillage after mowing can be used to provide additional assurance that the radish will not regrow. Tillage is most effective in terminating the radish if it can be timed so that it is followed by a few dry sunny days.

For non-organic systems, spraying a combination of 2,4-D (one pint) with glyphosate (one quart) should terminate the radish plants. An alternative is Gramoxone (at 2.5 pints/acre) combined with 2,4-D (at 1 pint/acre). When sprayed in 14 gallons of water per acre with 7oz/acre of sticker, this combination gave complete kill in less than a week (personal communication, Ron Ritter). Another option is 8 oz of dicamba plus 1.5 qt of glyphosate. If radishes were planted in a small grain crop, they can be killed in spring using 0**.5** ounce of Harmony Extra (old formulation) plus 0**.5** pint of 2,4-D if applied before small grain is in its jointing stage (personal communication, Steve Groff). Radishes are also easily controlled by in-crop cultivation and by a wide array of herbicides available for post-planting application in such crops as corn or soybean.

In short, while the appearance of green re-growth in a field that was supposed to be winter-killed may look worrisome, any fall-planted radish that survives the winter will bolt very early in spring and should be quite easily managed.

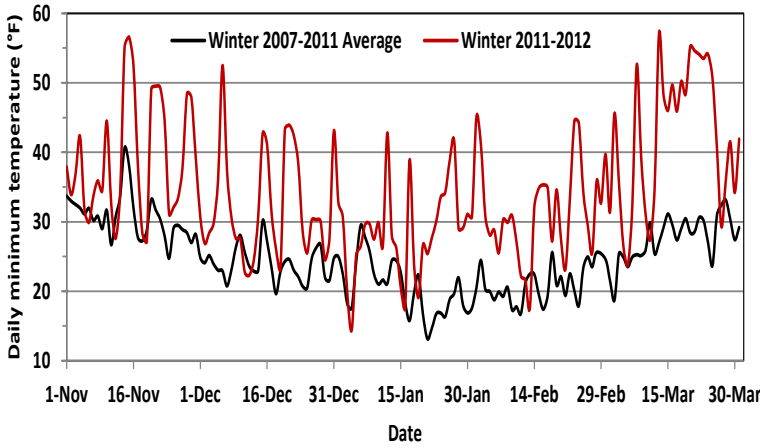


Figure 1. Variation of minimum temperature in the winters of 2007 -2011 and winter 2011-2012 at Beltsville Agricultural Research Service, USDA, Maryland.

Figure 2 Green regrowth from partially winter-killed radish tuber.

Figure 3. Radish mixed in small grain in spring after radish failed to winter-kill. This flowering stage is best time to terminate the radish.

Figure 4 Regrowth from some radish tubers but not from others. Waiting until the radish bolts will make it much easier to kill chemically or mechanically. These weak radish plants will offer little competition even if they are left alive.

Figure 5. These non-winter-killed radishes were successfully terminated with a mixture of Gramoxone and 2,4-D after they had reached the flowering stage.

2012 Strawberry Twilight Meeting

Wednesday May 9th
6:00 – 8:00 PM
Wye Research and Education Center
211 Farm Lane
Queenstown MD

The 2012 Strawberry Twilight Meeting at the Wye Research and Education Center will be held Wednesday, May 9, 2012 from 6:00-8:00 PM, rain or shine, at the Farm Operations Complex, 211 Farm Lane, Queenstown, MD. Directional signs will be posted.

You'll hear University of Maryland and USDA small fruit experts discuss the current season's challenges and the impact that the new fruit pest may have on the industry.

You'll see: USDA Moveable High Tunnel plots with plasticulture strawberry production; University of MD Strawberry High Tunnel plots with table top production demonstration and bio-fumigation trial; and Outdoor Plasticulture Fertility Trial plots with Chandler strawberries.

We hope you can join us for an informative evening. Pre-registration is not necessary. Refreshments will be served.

For additional program information, contact Mike Newell at 410-827-7388 or mnewell@umd.edu.

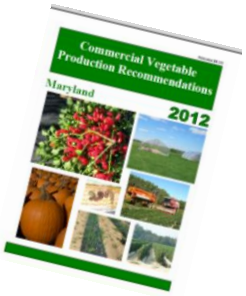
If you need special assistance to attend this program, please contact Debby Dant at 410-827-8056 or ddant@umd.edu.

University of Delaware Small Fruit Twilight

Tuesday, May 22, 2012 6:00-8:00 p.m.
Carvel Research and Education Center
16483 County Seat Highway
Georgetown, DE 19947

Participants will have the opportunity to tour experimental plots and hear about current research on June-bearing and day-neutral strawberries, blueberries and blackberries. **For additional program information, contact Gordon Johnson at 302-856-7303 or gcjohn@udel.edu**

Commercial 2012 Vegetable Production Recommendations Maryland EB 236



On-Line at:

http://www.mdvegetables.umd.edu/files/Maryland%20complete%20book%202012.pdf

Also available in a new very interactive format at the Delaware Extension site at:
http://ag.udel.edu/extension/vegprogram/publications.htm#vegrecs

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