Vegetable Insects - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Melons.
Economic levels of cucumber beetles, aphids and spider mites continue to be found. If Agri-mek is used for spider mite control, it should not be combined with Bravo Weather-Stik or fungicides with similar stickers. These materials prevent the material from moving into the leaves. It can be combined with Quadris. Actara or Fulfill can be combined with Bravo Weather-Stik as long as an 80:20 surfactant is also used. Since most melon fields are in bloom or starting to bloom, it will be important to exercise caution when applying insecticides to avoid bee kills. Many of the insecticides labeled for melons have the following label restriction: "Toxic to bees exposed to direct treatment or to residues on blooming crops and weeds. Do not apply or allow it to drift on blooming plants if bees are foraging in the area." So, be sure to check the label before making an insecticide application during bloom. One way to reduce exposure to bees is to make applications late in the evening when bees are not foraging in the area.

Peppers.
Although most peppers are just starting to set flower buds we should see significant bloom starting next week. Although corn borer stem tunneling has been observed, we have not seen significant damage. In general, the first corn borer sprays are needed when fruit is ½-inch in size or larger. Sprays should then be applied on a 7–10 day schedule depending on material selection and corn borer pressure. Orthene or Address (both acephate) should be used on a 10-day schedule and will also provide pepper maggot control. Remember - only 2 applications of acephate at the 1 1/3 lb. per acre rate can now be used. If a pyrethroid or Lannate is used, sprays should be applied on a 7-day schedule and dimethoate should be added to the mix for pepper maggot control.

Potatoes.
Continue to sample potatoes for Colorado potato beetle, ECB egg masses and stem tunneling and potato leafhoppers. In the earliest planted fields, the at-planting treatments of Admire, Platinum and Tops MZ Gaucho are all starting to break at the same time for Colorado potato beetle control. If economic levels of larvae are found in these fields, Spintor or cryolite should be used for beetle control. In order to prevent the development of resistance, foliar applications of Provado or Actara should not be used if at planting treatments of Admire, Platinum, or Tops MZ Gaucho were used. In many fields, ECB sprays will be needed by the end of this week or early next week.

Snap Beans.
We continue to see an increase in thrips activity, especially in seedling stage beans. The thrips threshold is 5-6 per leaflet. Lannate, Asana, Capture, or dimethoate will provide control.
**Sweet Corn.**
Continue to watch the earliest planted fields for European corn borer larvae. A treatment should be applied if 15% of the plants are infested. As the earliest planted fields begin to silk, the first silk sprays will be needed as soon as ear shanks are visible. In Kent and Sussex Counties, sprays are needed on a 4-day schedule. Be sure to check the IPM website for the most recent BLT catches in your area. Trap catches are updated three times per week on the website [http://www.udel.edu/IPM/traps/latestblt.html](http://www.udel.edu/IPM/traps/latestblt.html).

**Sandea For Cucumbers** - Ed Kee, Extension Vegetable Crops Specialist; kee@udel.edu

A special local-needs 24c label has been approved for use of Sandea postemergence in Delaware, Maryland, New Jersey, and Virginia. It will help control or suppress yellow nutseedge (nutgrass), and many broadleaf weeds, including common cocklebur, redroot pigweed, smooth pigweed, ragweed species, and galinsoga.

It should be applied when the crop has 2-4 leaves and has not yet begun to run. The rate is 0.5 – 0.66 dry ounces per acre, with non-ionic surfactant at 0.25 percent of the volume. **DO NOT USE IF ORGANOPHOSPHATE INSECTICIDES HAVE BEEN APPLIED TO THE CROP.** Read the label for complete details.

Approved last year, Sandea did an excellent job in several severe nutgrass outbreaks in pickling cucumbers.

**Vegetable Diseases** - Kate Everts, Extension Vegetable Pathologist, University of Delaware and University of Maryland; everts@udel.edu

**MELCAST for Watermelons**

The weather based forecasting program MELCAST has begun for 2002. If you signed up to receive a report, it should have started this week. If you have not received any reports, please call Lisa Dorey at (302) 856-7303 and give us your name and Fax number or e-mail address. In addition, this information is available on the web at [http://www.agnr.umd.edu/users/vegdisease/vegdisease.htm](http://www.agnr.umd.edu/users/vegdisease/vegdisease.htm).

To use MELCAST for watermelons, apply the first fungicide spray when the watermelon vines meet within the row. Additional sprays should be applied using MELCAST. Accumulate EFI (environmental favorability index) values beginning the day after your first fungicide spray. Apply a fungicide spray when **30 EFI values** have accumulated by the weather station nearest your fields. Add 2 points for each overhead irrigation. After a fungicide spray, reset your counter to 0 and start over. If a spray has not been applied in 14 days, apply a fungicide, reset the counter to 0 and start over.

Because of widespread resistance to Quadris in our area, chlorothalonil (Bravo, Equus or Terranil) is recommended when spraying according to MELCAST. If, for some reason, a serious disease outbreak occurs in your field, return to a weekly spray schedule.

**MELCAST for Cantaloupes and TOMCAST for Tomatoes**

In addition to MELCAST for Watermelon, we have added two models that are designed to help you make decisions on when to spray for diseases. MELCAST for Cantaloupes is a fungicide application program for Alternaria leaf blight. It
can be used by anyone growing a powdery mildew resistant variety such as Athena. To use MELCAST for Cantaloupe, apply the first fungicide spray when the cantaloupe vines meet within the row. Additional sprays should be applied using MELCAST. Accumulate EFI (environmental favorability index) values beginning the day after your first fungicide spray. Apply a fungicide spray when 20 EFI values have accumulated by the weather station nearest your fields. Add 2 points for each overhead irrigation. After a fungicide spray, reset your counter to 0 and start over. If a spray has not been applied in 14 days, apply a fungicide and reset the counter to 0 and start over.

TOMCAST is a spray forecaster for leaf blights and fruit diseases of processing tomato. However, it does not work for bacterial diseases. In fields that are not rotated away from tomatoes and in late-planted fields begin sprays shortly after transplanting. In all other areas begin sprays when crown fruit are one-third their final size. Additional sprays can be scheduled using TOMCAST. Sprays should be applied after accumulating 18 DSV’s (disease severity values) since the last fungicide application. Scout fields for late blight. If late blight occurs, additional sprays are warranted (see Delaware Extension Bulletin137).

The three disease models are available at [http://www.agnr.umd.edu/users/vegdisease/vegdisease.htm](http://www.agnr.umd.edu/users/vegdisease/vegdisease.htm). In addition you can receive the models by e-mail or fax. To sign up please call Lisa Dorey at (302) 856-7303.

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**Watermelons.**

From the University of Maryland and University of Delaware

Latest EFI values from local weather stations

Any questions please call (410) 742-8788

**MELCAST for Watermelons**

EFI Values (Environmental Favorability Index)

Do not use MELCAST if there is a disease outbreak in your field, it is a preventative program.

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<th>Location</th>
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<th>06/04/02</th>
<th>06/03/02</th>
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</table>
The first fungicide spray should be applied when the watermelon vines meet within the row. Additional sprays should be applied using MELCAST. Accumulate EFI (environmental favorability index) values beginning the day after your first fungicide spray. Apply a fungicide spray when 30 EFI values have accumulated by the weather station nearest your fields. Add 2 points for every overhead irrigation. After a fungicide spray, reset your counter to 0 and start over. If a spray has not been applied in 14 days, apply a fungicide and reset the counter to 0 and start over. The first and last day listed above can be partial days so use the larger EFI value of this report and other reports for any specific day.

If, for some reason, a serious disease outbreak occurs in your field, return to a weekly spray schedule.

More detailed information concerning MELCAST and sample data sheets are available on the web at http://www.agnr.umd.edu/users/vegdisease/vegdisease.htm.

Vegetable Diseases - Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu

Potatoes.
Late Blight Advisory

Disease Severity Value (DSV) Accumulations as of June 5, 2002, are as follows:
Location: Joe Jackewicz Farm, Magnolia, DE. Greenrow: April 10, 2002
Remember that 18 DSV’s is the threshold to begin a spray program for late blight.

<table>
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<th>Date</th>
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<th>Spray Recommendation</th>
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<td>23</td>
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</tr>
<tr>
<td>5/22</td>
<td>23</td>
<td>10 days low rate</td>
</tr>
<tr>
<td>5/27</td>
<td>27</td>
<td>10 days low rate</td>
</tr>
<tr>
<td>5/29</td>
<td>30</td>
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<td>7 days, mid-rate</td>
</tr>
<tr>
<td>6/5</td>
<td>33</td>
<td>10 days, mid-rate</td>
</tr>
</tbody>
</table>

Potatoes that have reached greenrow (50% emergence) by May 8 have all reached more than 18 DSV’s. Fields that reached greenrow after May 10 have not accumulated 18 DSV’s yet and would not need to be sprayed. Spray recommendations are generated by the Wisdom potato software program.

Growers should apply at least 1-2 sprays of Dithane or Bravo before plants canopy. Late blight has not been a problem here in Delaware for many years and unless you have seed from an unknown source the risk of late blight is very low.

For this greenrow date and location, we have accumulated 392 P-days as well. P-days are a measure of potato plant growth somewhat similar to growing-degree-days. When 300 P-days have been exceeded,
conditions for **early blight infection** are favorable and sprays for early blight susceptible varieties should begin if early blight is expected to be a problem.

If **pink rot** or **leak** has been a problem in the past and you did not apply a fungicide in the furrow for control, the first foliar application of Ridomil Gold MZ, Ridomil Gold/Bravo or Fluoronil should be made between when tubers are nickel-sized and flowering, then repeated 14 days later. Apply the fungicide in as much water as possible. Try to get some coverage of the soil for root uptake as well. Pink rot generally occurs in poorly drained areas or where water stands due to compaction from spray rows.

Some potato leaves are showing some interveinal necrosis and browning around the leaf edges high in the canopy. This is not a disease but a physiological condition of unknown cause. We have seen this in the past and have not bee able to determine the cause. It may be due to such favorable growing conditions that produces tender growth that burns on these very clear, windy days. Nutrition has been checked, but no conclusions could be reached.

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**Field Crops**

**Field Crop Insects** - Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

**Alfalfa.**

Continue to sample fields for potato leafhopper. Although populations have been relatively light, the current dry weather could result in a quick increase in populations. We are starting to see our first nymphs. Remember that nymphs can cause the significant damage and once you see yellowing yield loss has already occurred. We have also had reports of increased levels of alfalfa blotch leafminer. In recent years, this insect pest has been infesting fields in the Midwest. In most years, we see low levels of this pest and controls are rarely needed. However, research from the Midwest indicates that feeding damage can reduce yields by 7-20% and protein content by 10-20%. Females feed by puncturing the leaves, creating the characteristic "pinhole" damage and feeding on plant juices. Upon egg hatch, larvae create a characteristic mine in the leaf. If infestations are severe, infested fields can take on a whitish coloration. A treatment may be needed if 30-40% of the plants are infested. Fields should be treated when pinhole damage is first noticed to get effective control. Baythroid, Furadan, Lannate, Lorsban, Penncap-M and Warrior are labeled for control.

**Field Corn.**

The first ECB larvae can be found in the earliest planted non-Bt fields. Fields should be sampled for larvae by looking for infested plants and pulling out the whorl to determine if live larvae are present. A treatment may be needed at the pretassel stage when 50% of the plants are infested in irrigated corn and if 80% of the plants are infested in dry land corn. In addition, continue to watch for true armyworm larvae moving from small grains to corn. We continue to find an occasional field infested with armyworms, especially fields next to small grains. The treatment threshold is 25% infested plants with larvae one inch in size or less.

**Soybeans.**

As barley is harvested and soybeans are planted, continue to watch fields carefully at emergence for grasshopper activity. We are also seeing an increase in activity in full season no-till soybeans. Treatment of non-crop areas can be used to help reduce problems in the main soybean field. As a general guideline, non-crop areas should be treated if you find 20 or more grasshoppers per square yard. In soybeans, the threshold is one per sweep and 30 percent defoliation. Dimethoate,
Lorsban, Asana, Furadan and Warrior will provide control in soybeans, but multiple applications may be needed.

Field Crop Diseases - Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu

Wheat.
I have not seen much take-all this season, but a sample was submitted recently with take-all. Look for the blackened lower stem at the soil line. Remove the leaf sheath and the stem is black or has black streaks. Root development is very limited and the plants can be pulled easily from the soil. Plants are usually stunted and many have blank straw colored heads. It usually appears in irregular patches in the field. Rotation away from small grains for a year possibly two is usually sufficient to avoid take-all in the future.

Postemergence Control of Glyphosate-Resistant Horseweed - Mark VanGessel, Extension Weed Specialist, mjv@udel.edu

Options for controlling horseweed resistant to Roundup or Touchdown after the soybeans have emerged are either FirstRate or Classic, since additional glyphosate applications will not control the resistant horseweed. FirstRate should be applied at 0.3 oz/A and Classic at ½ to 2/3 oz/A. Note that Classic at 2/3 oz/A may cause soybean injury. Usually under these conditions the horseweed plants will not be killed, rather the plants will be suppressed. Suppression is dependent on size, with large weeds being affected less.

Dry Weather and Postemergence Spraying - Mark VanGessel, Extension Weed Specialist, mjv@udel.edu

The dry weather we have had the last few days can impact the level of effectiveness from postemergence herbicides. When plants are under stress, it is best to wait for rain before spraying. If that is not feasible, then spraying late in the
afternoon or early evening as the plants’ leaves begin to unfold is the next best option.

Is It Manganese or Iron Deficiency on Corn? -
Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu, Derby Walker, Jr.,
Extension Ag Agent, Sussex County derby@udel.edu and Victor Green vmgreen@udel.edu

In Issue Number 8 for May 17, 2002, we alerted you to “Watch for Manganese Deficiency on Corn”. We have found a few fields that have shown the interveinal chlorosis that is often associated with manganese (Mn) deficiency symptoms, but the fields failed to completely recover following application of foliar manganese. In one particular field (see photos below), the field-wide soil test indicated a pH of 6.4 and this alerted us to the fact that Mn might be limiting. The pH within the fertilizer band in areas that recovered following foliar Mn application was 5.0, but in areas that did not recover well the pH within the fertilizer band was 5.6. Tissue tests were obtained to discover why the symptoms were persisting and the only nutrient that showed low concentrations was iron (Fe).

Although we do not think of our soils in terms of having the potential for iron deficiency, both Fe and Mn availability are determined to a large measure by soil pH. Sprengel-Liebig’s “Law of the Minimum” essentially covers what may be happening in this situation. Although initially plants may be Mn deficient, once foliar Mn is supplied the next most limiting nutrient may be Fe and in the above case that was likely the situation. So even though foliar Mn application helped improve symptoms some, Fe was also deficient and after Mn application became the most limiting nutrient. Since Fe and Mn symptoms in corn are very similar in appearance without a tissue and soil test, it is nearly impossible to tell one from the other.

If you have fields that you thought were Mn deficient, but they did not fully recover after foliar Mn, you should tissue and soil test for available Fe to see if that is now limiting corn growth. Since many areas that had shown symptoms are gradually growing out of it as the plant roots grow deeper into the soil, we would speculate that yield impacts will be minimal since the corn will eventually (with warmer weather) send roots deep enough to pick up available iron from the more acid subsoil.

To speed the recovery of corn in areas like this, foliar Fe can be applied. One application of a 2 percent iron sulfate (FeSO₄) solution at a rate of 15 to 30 gal/A is usually sufficient to alleviate mild chlorosis. If you use an iron chelate, Fe-EDDHA is the most stable Fe chelate and is the preferred chelate fertilizer source, especially on acidic soils. Fe-DTPA has also been used.

Photo 1. Corn plant symptoms after application of foliar manganese and where tissue test indicated low iron (Fe) tissue concentrations in a sandy soil with pH of 6.4 (Sussex Co., DE) (Photo by R. Taylor).
When To Start Irrigating Corn? - Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu and Derby Walker, Jr. Extension Ag Agent, Sussex County derby@udel.edu

Dry weather during the past few weeks has reduced top soil water content to near critical levels especially on our sandier soil types and on the sandy ridges in certain fields. Corn is different from soybeans in that it does not tolerate drought stress at any stage of growth.

With many corn fields approaching sidedress stage, the number of kernel rows per ear is or has been determined. Beginning as early as the third leaf collar visible stage, corn plants begin to develop reproductive structures. By the fifth to seventh leaf collar stage, the number of rows per ear has been set. Delaying irrigation in hopes of rain or to save a little on fuel costs could end up costing you a significant amount.

Last year, we had a corn field that was delayed receiving irrigation due to pump problems. When we compared expected and actual yields at season end, we found that there appeared to be about a 25 percent loss with early season drought stress. The stress this corn was under was mostly the hidden-type of stress. Hidden drought stress occurs before you begin to see leaves curling as shown in the photo below. Because it’s not easily detected, we often overlook such stress at the risk of large yield reductions.

Photo 1. Field view of drought-stressed corn in Sussex County, DE (Photo by R. Taylor)

Photo 2. Close-up view of drought-stressed corn in Sussex County, DE (Photo by R. Taylor)
Bottom line--Irrigate corn anytime after planting if your irrigation scheduling program, soil available water checkbook method, or whatever method you prefer to use for tracking soil water levels indicates that available water has fallen below 50 percent. You need to factor in how long it takes to water the field. The longer it takes for your system to cover the entire field, the sooner you need to start irrigating to avoid dropping below the 50% available soil water. You may need to start at 60% to maintain your soil at 50% when trying to grow corn without help from rainfall.

Bagworms are Hatching – Derby Walker, Sussex County Ag Agent, derby@udel.edu

Bagworms can be detrimental to a lot of evergreen plants around the farmstead. The eggs are hatching out (about June 1 in Delaware), and it’s time to spray your plants to prevent damage. Bagworms are easiest to kill when they are small. As they grow, they become harder to kill. They usually hatch in June and will feed until late July or early August. The eggs hatch in the bags. The little worms float from one plant to another on parachutes or feed on the plant they are on. The best time to spray is in mid-June since they must eat the pesticide to die. Once they are full grown, they are almost impossible to kill.

Ag Fact

Watermelon has high concentrations of lycopene, which may play a preventative role with certain types of cancer, including esophageal and prostrate. Watermelons are a leader in lycopene content among fresh fruits and vegetables. It is also an excellent provider of vitamins A, B6, and C.