Vegetables

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

**Cucumbers.**
Both pickles and slicers should be watched for increases in aphid and cucumber beetle populations. Fresh market cucumbers are very susceptible to bacterial wilt vectored by cucumber beetles. Although pickling cucumbers grown in high-density rows can compensate for about a 10 percent stand loss, beetle feeding can reduce plant growth. If moderate feeding can be found on the cotyledons and/or the first true leaves and there is a history of bacterial wilt on your farm, a cucumber beetle spray should be applied. Thiodan, a pyrethroid or Lannate will provide control. A treatment should be applied for aphids if 10 to 20 percent of the plants are infested with aphids. Thiodan or Lannate will provide control.

**Peppers.**
If fruit is ½-inch in size or larger, peppers should be sprayed on a 7 –10 day schedule for corn borer control. Rohm Haas now has available an acephate formulation (same active ingredient as Orthene) called Address 75WSP. If Orthene or Address are used, a 10-day schedule will be adequate and they will also provide pepper maggot control. 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. If no fruit is present, be sure to watch for larvae tunneling into the main stems of peppers. Stem tunneling has been reported in peppers on the lower Eastern Shore. Sprays must be applied before larvae move into the stems to achieve effective control.

**Potatoes.**
Continue to monitor fields for Colorado potato beetle and European corn borer (ECB) egg masses and larvae. We are starting to see an increase in the number of corn borer infested terminals. If sprays are applied according to BLT catches, 3-4 applications will be needed for corn borer control. Earlier in the season, we were finding higher than normal levels of potato aphids. In general, populations were controlled by beneficial insects. We are now starting to see an increase in green peach populations, especially in fields where Admire was not used at planting. Potato aphids are generally found throughout the plant. In comparison, green peach aphids are found on the undersurface of the lowest leaves. From bloom until 2 weeks from harvest, the treatment threshold is four per leaf. If melon aphid can be found, the threshold should be reduced by one-half. If green peach aphid is the predominant species, Provado or Monitor will provide control. Lannate or Provado will provide melon aphid control. Fulfill (pymetrozine) received a federal label for potatoes last fall. This material, marketed by Novartis, is a selective aphicide, providing excellent control of both green peach and melon aphids. The use rate is 2.75 oz/acre. Aphids stop
feeding immediately after application; however, they may remain on the plants for 2-4 days before they die. We are also seeing an increase in potato leafhopper populations. With the predicted hot weather, adults and nymphs can quickly cause damage. Sprays should be applied if you find 5-10 adults per 10 sweeps and/or one nymph per every 10 leaves. A pyrethroid or Provado will provide control.

**Snap Beans.**
Continue to watch seedling snap beans for economic levels of thrips and leafhoppers. Rohm Haas now has available an acephate formulation (same active ingredient as Orthene) called Address 75WSP. Processing snap beans that are in the bud to bloom stage should receive an Orthene or Address treatment for corn borer control. If corn borer catches are in the 2 to 5 per night range, a second treatment of Orthene will be needed on processing beans at the pin stage. Once corn borer trap catches reach 2 to 5 per night in your area, fresh market snap beans should be sprayed at the pin stage with Lannate or Capture. If corn borer catches remain above 5 per night, sprays should be applied on a 7-day schedule until harvest.

**Sweet Corn.**
Continue to sample for European corn borer in late whorl to pre-tassel stage corn. Significant corn borer moth catches in mid-May have resulted in high populations in late whorl to pre-tassel stage corn (38 – 45% infested plants). The treatment threshold is 15% infested plants. Once corn borer larvae begin to bore into the midribs, you will not achieve effective control. Corn earworm larvae can also be found in whorl, pre-tassel and tassel stage fields. As fields begin to tassel, be sure to apply your first application when ear shanks are first visible to prevent larvae from moving into the ears. Fresh market silking sweet corn should be sprayed on a 4-5 day schedule in most areas of the state. In the Bridgeville, Little Creek, Seaford and Wyoming areas, sprays are needed on a 3-4 day schedule. In the Milford area, we have seen a significant increase in corn earworm moth catches (22 moths in 2-days). Any early silking sweet corn in the Milford area should be sprayed on a 2-3 day schedule. Be sure to check our website [www.udel.edu/IPM/latestblt.html](http://www.udel.edu/IPM/latestblt.html), for the most recent BLT catches in your area. Trap catches are updated 3 times per week on the website.

**Late Blight Update - Bob Mulrooney, Extension Plant Pathologist; bobmul@udel.edu**

**Disease Severity Value (DSV) Accumulations as of May 31, 2000 are as follows:**
*Remember that 18 DSV’s is the threshold to begin a spray program*

<table>
<thead>
<tr>
<th>Emergence Date</th>
<th>DSV’s May 31</th>
<th>Recommendation</th>
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<tr>
<td>April 14</td>
<td>93</td>
<td>7-day, low rate</td>
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<tr>
<td>April 21</td>
<td>66</td>
<td>7-day, low rate</td>
</tr>
<tr>
<td>April 27</td>
<td>51</td>
<td>7-day, low rate</td>
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<tr>
<td>May 20</td>
<td>33</td>
<td>7-day, low rate</td>
</tr>
<tr>
<td>May 24</td>
<td>6</td>
<td>No Spray</td>
</tr>
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</table>

**Accumulated 0 DSV’s since the last report.**
All potatoes that have reached greenrow before May 20 need to be protected with fungicide.

Although the predictor is calling for low rates, I would suggest a medium rate for potatoes that are approaching bloom. I have given you the predictor recommendations even when the spray schedule calls for 5-day intervals. I know that is not possible for many growers but it does indicate that conditions are favorable.

Reminder for **pink rot control** to apply Ridomil Gold MZ or Flouranil when tubers are nickel-size and repeat 14 days later.

Keep in mind also that you cannot apply more than 11.2 lbs. active ingredient of the EDBC fungicides such as Dithane, Manzate, Polyram,
etc, or 15 lbs. of Dithane DF or other similar products. Including either chlorothalonil (Bravo) or Quadris into the spray program is suggested if you need alternatives. Quadris is very active against early blight and would be recommended for early blight susceptible varieties especially when conditions for early blight are favorable, which usually occurs in the next several weeks.

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

**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. Any questions please call Phil Shields at (410) 742-8788 or e-mail: ps136@umail.umd.edu

<table>
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Watermelon Fields should be sprayed with a fungicide when 30 EFI values have been 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 zero. The first and last day above can be partial days so use the larger EFI value of this report and other reports for any specific day.

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

**Cool, Wet Conditions and Plant Stunting from Herbicides -** Ed Kee, Extension Vegetable Crops Specialist; kee@udel.edu

Delmarva experienced very cool, wet weather for a period that preceded and extended through the Memorial Day weekend. These conditions have predisposed some vegetable plantings to stunting, or “holding back” the growth of young seedlings and transplants. With cool, cloudy conditions the growth rate is slowed, or even stopped. Herbicides may be absorbed by the young plant, and instead of being metabolized and broken down quickly in the crop, it moves slowly, and concentrations of the herbicide accumulate, affecting plant growth. Often, with improved weather, the plants begin to grow out of the stunting and recover nicely.

In some cases, this has been aggravated by injury from blowing sand, again contributing to the stress the young plant must contend with.

Under these combinations of conditions, any field that has an application at the upper level of its labeled rate, is susceptible to this type of injury. It is prudent to use the lower recommended rates in
the earliest plantings to avoid this type of stunting. Often injury is most severe in cases where over-
application has occurred.

For example, the urea family of herbicides, which includes the watermelon herbicide Sinbar, are photosynthetic inhibitors and are relatively nonselective at high rates. That is, at high rates they do not differentiate between which plants they affect. Most of these types of herbicides are applied to the soil, although a few also have foliar activity. They inhibit photosynthesis in much the same manner as triazines. Injury from urea herbicides can look very similar to injury caused by triazines. Severe injury may cause the entire leaf to turn yellow and die. After root uptake and translocation to the leaves, inhibition of photosynthesis occurs rapidly following exposure to sunlight. Seedlings affected die rapidly. Plants only slight affected recovery quickly and develop into normal plants. Roots are not affected and appear normal.

Occasionally, for example, Sinbar could cause injury if sprayed over the top of plastic mulch and high concentrations wash into the hole where the young plant is establishing itself. Using the correct rate of 2 to 3 ounces and applying the material well before transplanting to allow the material to wash off or dissipate from the plastic will help avoid this situation.

Some stunting of edible beans from herbicides has also been noted in the past ten days, again from the combination of cold, wet conditions, wind injury, and the absorption of herbicides, in this case Dual and Pursuit, and the subsequent delay in the young plants ability to metabolize the herbicide. Dual is an acetanilide and works by inhibiting the meristematic tissue, or growing point tissue. Again, if normal metabolism is delayed, stunting can occur.

While often frustrating and confusing, the interaction of weather, environment, and herbicidal activity is real. The combination of factors often go hand in hand to explain what we see in the field.

**Pea Harvest Report** - Ed Kee, Extension Vegetable Crops Specialist; kee@udel.edu

Pea Harvest began about May 21. While some of the earliest fields had low yields, in general, yields to date have been good. Most fields have been in the 3,500 to 4,000 pound range, with a few reaching 5,000 pounds. We have completed the early variety trial at the Research and Education Center, and will begin harvesting the late trial in mid to late June. Our twi-light meeting to visit the trial is set for June 14, at 5 PM. Everyone is welcome.

**Update on Section 18 Labels** - Ed Kee, Extension Vegetable Crops Specialist; kee@udel.edu

The following Section 18 Emergency Exemptions have been requested this year. Their status is as follows:

- **Danitol on Soybeans** Sent 5/31/00
- **Provado on Stone Fruit** Sent 5/31/00
- **Dual Magnum on Spinach** Sent 4/6/00
- **Clopyralid on Peach/Nectarine** Sent 4/5/00
- **Sprout-Nip on Spinach** Sent 12/20/99
Command on Watermelons Sent 2/1/00 Approved 4/10/00 00-DE-03
Sinbar 80WP on Watermelons Sent 2/1/00 Approved 4/3/00 00-DE-02
Coumaphos on Beehives Sent 2/1/00 Approved 3/4/00 00-DE-05
Reflex on Snap Beans Sent 2/1/00 Approved 3/2/00 00-DE-04
Quadris on Spinach Crisis Issued 4/15/00

Field Crops

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

Alfalfa.
We have received numerous inquiries in Kent County, Delaware about the lack of regrowth on alfalfa after the first cutting. I have also received calls from Pennsylvania and the Eastern Shore of Maryland describing the same situation. In some cases very early and very late harvested fields appear to be regrowing normally. In many situations, it has been seen in fields that were cut 2-3 weeks ago. Although it has been attributed to cultural practices, fertilizer, disease and herbicide injury, we feel that the main culprit is alfalfa weevil feeding on the crown buds. In most situations, damage is most severe where weevil pressure was heavy before the first cutting and controls were not applied. Although larvae may not be found at this time, it appears that the damage was done soon after cutting and larvae have already pupated. In some cases, adults can be found feeding on crown buds as well. Although we have not seen this type of damage since the late 1950’s to early 1960’s, there are numerous reports in the old literature of alfalfa weevil preventing or significantly delaying regrowth. A combination of favorable overwintering conditions and the warm weather in March resulted in earlier and heavier than normal weevil populations. The cool weather in April allowed weevils to continue to develop but was not favorable for parasites, which can help regulate populations. Since we have not experienced significant weevil populations in recent years, parasite populations may be at lower levels. Over the years, as the weevil population declines so did the parasite level. Therefore, it could take a few years for the parasite population to build back up. Recent surveys from Virginia have documented lower parasite populations in coastal plains regions compared to the Piedmont regions of the state. Since regrowth for second cutting generally comes from the stem buds, regrowth will appear very slow because plants will now have to regrow from the crown buds. Most stands should survive this damage; however, one cutting will probably be lost in these fields. In order to minimize the damage to the stand, the second cutting should be delayed for 35 to 38 days, allowing some flowers to be present before harvesting. Currently, there are still fields that have just been cut or will be cut in the next few days. If weevils were present before harvest but the field was not sprayed, fields should be checked carefully immediately after harvest for weevils feeding on new buds. As a general guideline, a treatment should be applied if you find 1-2 weevils per crown. It will also be critical to sample fields for potato leafhopper to prevent further stress to the stand. Leafhoppers have been in the area since early May. With the predicted hot weather, you can expect to see egg hatch in the next few days and nymphs can quickly damage fields. As soon as you do see regrowth, scouting should begin for potato leafhopper adults and nymphs. When alfalfa is 3-inches or less in height, the treatment threshold is...
20 per 100 sweeps. In four to six-inch tall alfalfa, the treatment threshold is 50 per 100 sweeps. In alfalfa 7–11 inches tall the threshold is 100 per 100 sweeps. In alfalfa 12 inches or taller, the threshold is 150 per 100 sweeps. If fields are extremely stressed, these thresholds should be reduced by 1/3. Ambush, Baythroid, Dimethoate, Pounce or Warrior will provide effective control.

**Soybeans.**

At this time, grasshoppers and slugs continue to be the predominant insect pest in no-till soybeans. Damage can be confused because both pests can reduce plant stands. If slugs are causing the damage, you should see "slime trails" on the leaves and slugs will be found under the no-till stubble. Just like field corn, there are no extremely effective controls for slugs in soybeans. Straight nitrogen applied over the top of soybeans has resulted in significant crop injury. Recently, applications of N diluted 50% with water (10 gallons N and 10 gallons water) have provided mixed results with little crop injury. Applications of UAN or other nitrogen formulations applied before planting or crop emergence, have also provide some degree of control. As far a labeled insecticides/ molluscicides, Deadline M-Ps and Deadline Bullets, from Pace International, have provided fair to good control but are expensive. The use rate is 10-40 lbs per acre. Grasshopper controls will be needed if they are reducing stands or you find 30% defoliation and one grasshopper per sweep. Asana, Sevin, or Warrior have provided the most consistent control in recent years. Thrips and leafhoppers can be found on seedling soybeans. A treatment will be needed if you find 8 thrips per leaflet or 8 leafhoppers per sweep. If both insect pests are present, the threshold of each insect should be reduced by one-third. A pyrethroid or dimethoate will provide effective control of both insects.

**Small Grains.**

If you have not checked your wheat and barley fields for armyworms, be sure to check fields during the next week. Since armyworm egg laying activity was delayed, be sure to check wheat fields that received an early application of a fungicide/insecticide combination. We have received reports of armyworm activity in fields where materials were applied in early April. Larvae ranged in size from ¼ to ½ inches long. The barley threshold is one per foot of row and the wheat threshold is two per foot of row. Be sure to check label restrictions for days from application to harvest.

**Grain Marketing Highlights - Carl German, Extension Crops Marketing Specialist; clgerman@udel.edu**

**Volatility in Grain Prices is Increasing**

Commodity prices reacted negatively this past week to the change in the National Oceanic Atmospheric Administration's (NOAA) change in the drought forecast and the rain event that occurred throughout a widespread area of the corn belt on May 25th and 26th. The net effect of this event was to move the severe drought forecast further south and, for the time being, out of the heart of the corn belt. Does this mean that the weather market is finished for this year, not by a long shot. As soon as temperatures heat up, traders will place new emphasis upon the low subsoil moisture levels that exist through much of the corn belt region receiving the beneficial rainfall this past weekend. That scenario is likely to put back some of the weather premium that was taken out of the market this past week.

The next major event to occur in the commodities market will be corn pollination in the midwest, which is expected to be occurring around July 4th. Without any major surprises coming out of next week's USDA's June crop report, commodity markets are not expected to do much until we reach the pollination period. December corn closed at $2.46, November soybeans closed at $5.33, and July wheat closed at $2.77 in overnight Project A trading.
Reevaluating Seeding Rates for Grain Sorghum - Richard W. Taylor, Extension Agronomist; rtaylor@udel.edu and Bob Uniatowski, Extension Associate—Field Crops; bobuni@udel.edu

We recently began a reevaluation of sorghum drilled seeding rates as part of a project sponsored by the Maryland Grain Producers Utilization Board. Growers have found that when significant rain is received at the right time even very poor stands of sorghum have produced as much as 145 bu/A. We have also noticed in the last few years that some sorghum hybrid seed for sale has consistently been larger which makes planting lower populations easier. We do not know if this trend towards larger seed is due to weather patterns in the seed production areas or if the seed fields are receiving supplemental water. If seed fields are being irrigated, larger seed for planting should continue.

Our results to date should be viewed with caution since they represent only one year’s data. For loamy sands and sandy loams, the data indicated that the maximum economic yield for single-crop (full-season) sorghum was obtained at seeding rates of 1 to 2 PLS (pure live seed, the percent germination times percent purity as decimal values) per row foot. Very high seeding rates significantly reduced yields at all but one location even under irrigation at the Georgetown site. Under irrigated conditions, full-season sorghum produced 110 bu/A with a seeding rate of 0.5 PLS per row foot (target population of about 35,000 plants/A) but this was significantly lower than that achieved with 2 PLS per row foot (target population of about 140,000 plants/A). For double-crop grain sorghum, the optimum dryland seeding rate was between 1 and 2 PLS per row foot but with irrigation the best seeding rate was 0.5 PLS per row foot. Yield levels were much less than those for full-season sorghum even with irrigation.

Further studies are underway in 2000 but at this time the key components of a successful sorghum planting remain uniform distribution of seed within the row, narrow row spacing (15 inches or less), planting in warm, moist soil, and moderate target populations of 70,000 to 140,000 plants per acre. Low population stands can yield well if the right rainfall patterns occur, but since this is chancy your best approach is to try for good uniform stands.

Selecting the Right Grain Sorghum Maturity Group - Richard W. Taylor, Extension Agronomist; rtaylor@udel.edu and Bob Uniatowski, Extension Associate—Field Crops; bobuni@udel.edu

Some interesting trends were evident in the 1999 sorghum hybrid variety trial results. Sorghum grown under ideal moisture conditions (irrigated) produced higher yields for later maturing hybrids than for early-maturing hybrids. Under ideal conditions, the medium maturity group on average produced 28 percent higher yields than the early maturity group versus an 11 percent increase in the dryland (stressed conditions) trials. The late maturity group averaged 37 percent higher yields under ideal conditions (16 percent higher under water stress) compared with the early maturity group but only 7.5 percent (irrigated) or 4.1 percent (dryland) higher compared with the medium maturity group.

However, sorghum planted in a double-crop system showed trends reversed from the full-season trials. In double-crop after barley and double-crop after wheat systems, yield of the early maturity group was greater than that of the medium or late maturity groups. The change ranged from about 20 percent reduction in yield for the medium maturity group to 30 percent for the late group.

As a general rule, growers should consider planting the majority of their full-season acreage to medium or late maturing hybrids. However, in double-crop plantings, most if not all the acreage...
should be planted to early-maturing hybrids with zero acreage planted to the late-maturing hybrids.

Grain Sorghum Hybrid Selection - Richard W. Taylor, Extension Agronomist; rtaylor@udel.edu and Bob Uniutowski, Extension Associate—Field Crops; bobuni@udel.edu

Hybrid selection is an important factor in determining yield potential. For the 1999 hybrid grain sorghum evaluation trials in the early maturity group, a new hybrid, Dekalb brand DK36 performed well in the full-season and double-crop after wheat trials. DK36 also performed near the top in the large-plot, on-farm trials in Maryland. DK47 (new) also did well double-cropped after wheat. Of the hybrids previously in the trials, Cargill brand 647 was excellent either full-season or double-cropped after barley or wheat; Cargill brand 627 did well full-season; and Southern States brand SS160 had excellent yield planted after barley.

For the medium maturity group, Dekalb brand DK52 was ranked first in the large-plot, on-farm trial and performed well in all three cropping systems in the small-plot trials at Georgetown, DE. Also, DK47 (new) did well full-season and double-cropped after wheat and Southern States brand SS115 for full-season and Cargill brand 730 for double-crop after barley performed well plus had strong 2- or 3-year yield averages.

In the late maturity group which should be planted only in a full-season system, Dekalb brand DK53 was the top yielder and was new to the trials. Pioneer brand 8282 and 8305 performed well in 1999 and had the best 2- and 3-year yield averages.

In closing if you have access to the world wide web (internet), check out our hybrid performance trial web address for information on corn, sorghum, soybeans, and small grains. The web site is: http://bluehen.agd.udel.edu/deces/variety%20trials/index.html

Also since weather and especially rainfall patterns affect yield potential to a great extent, always consider planting a proportion of your sorghum acreage to hybrids from a range of maturity groups.

Weather Summary

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<th>Week of May 25 to May 31</th>
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<tr>
<td><strong>Rainfall:</strong></td>
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<tr>
<td>0.13 inches May 28, 2000</td>
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<td>64°F average for the week.</td>
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<td>(Soil temperature taken at a 2 inch depth, under sod)</td>
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Web Address for the U of D Research & Education Center: http://www.rec.udel.edu

Compiled and Edited By:

Tracy Wootten
Extension Associate - Vegetable Crops

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