Vegetables

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

**Cabbage.**
Diamondback (DBM) levels have increased significantly in untreated fields. However, we can still find both DBM and cabbage looper in fall cabbage fields. The treatment threshold is 5% of the plants infested. If both species are present, Avaunt (3.5 oz/acre), a Bt, Proclaim (3 oz/acre), or Spintor (4-5 oz per acre) will provide control. If cabbage looper is the predominant species, a pyrethroid, Intrepid (8 oz/a) or Confirm (8 oz/acre) will also provide control.

**Cucumbers.**
Continue to watch for aphids in pickling and fresh market cucumbers. A treatment should be applied if 10 to 20 percent of the plants are infested and populations are increasing. Lannate (3 days to harvest) should provide aphid control. Fulfill will also provide control. A penetrating surfactant (e.g. LI-700 or AD-100) is recommended with Fulfill. Thiodan has also provided control as long as populations are not exploded at the time of application.

**Lima Beans.**
Continue to scout fields for lygus bugs, stinkbugs and corn earworm. For lygus and stink bugs, treatment should be considered if you find 15 adults and/or nymphs per 50 sweeps. A treatment is recommended for corn earworm if you find one worm per 6 foot of row.

**Peppers.**
At the present time, all peppers should be sprayed on a 5-7 day schedule for beet armyworm, corn borer, corn earworm, and fall armyworm. You should also watch for increases in aphids and spider mites. If aphids are present and leaves are not curling, Lannate at 1.5 pt/A (3 days to harvest) should provide control. Actara (0 days to harvest), Assail (7 days to harvest), Fulfill (0 days to harvest), and Provado (0 days to harvest) will also provide aphid control. A penetrating surfactant should be used with Fulfill. Agri-Mek, Capture or Kelthane are labeled for spider mite control in peppers.

**Snap Beans.**
Sprays are still needed at the bud and pin stages on processing snap beans for corn borer control. A corn earworm material will also be needed at the pin spray for corn earworm. After the pin spray, sprays will be needed on a 5-day schedule until harvest, except in the Greenwood area, where sprays are needed on a 4-day schedule. Since this can change quickly, be sure to check our website for the most recent trap catches and information on how to use this information to make a treatment decisions in processing snap beans (http://www.udel.edu/IPM/traps/latestblt.html) and our link to http://www.udel.edu/IPM/thresh/snapbeanecbthresh.html. As soon as pin pods are present, fresh market beans should be sprayed on a 5 to 7-day
schedule. Lannate, Capture, Mustang MAX or Warrior should be used.

**Spinach**
As soon as plants emerge, fields should be scouted for webworm and beet armyworm larvae. Controls should be applied when worms are small and before they have moved deep into the hearts of the plants. Also, remember that both insects can produce webbing on the plants. Confirm, Intrepid or Spintor will be needed for beet armyworm control. If webworms are the predominant species, Ambush, Pounce, Confirm (6-8 oz/acre), Intrepid (8-10 oz/acre) or Spintor (4-8 oz/acre) should be used. Generally, at least 2 applications are needed to achieve control of webworms and beet armyworm.

**Sweet Corn.**
Fresh market silking sweet corn should be sprayed on a 2-3 day schedule throughout the state. Be sure to check our website for the most recent trap catches and information on how to use this information to make a treatment decision in fresh market sweet corn (http://www.udel.edu/IPM/traps/latestblt.html and http://www.udel.edu/IPM/thresh/silkspraythresh.html).

### UD IPM Black Light and Pheromone Trap Counts

**Average Number of Moths per Night:**
**September 1 to September 4, 2003**

<table>
<thead>
<tr>
<th>Trap Location</th>
<th>European Corn Borer Black Light</th>
<th>Corn Earworm Black Light</th>
<th>Corn Earworm Pheromone Trap</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kent County</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dover</td>
<td>2</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Harrington</td>
<td>27</td>
<td>58</td>
<td>7</td>
</tr>
<tr>
<td>Killens Pond</td>
<td>3</td>
<td>17</td>
<td>0.5</td>
</tr>
<tr>
<td>Little Creek</td>
<td>3</td>
<td>17</td>
<td>-</td>
</tr>
<tr>
<td>Milford</td>
<td>6</td>
<td>41</td>
<td>34</td>
</tr>
<tr>
<td>Rising Sun</td>
<td>1.5</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>Wyoming</td>
<td>1</td>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>

*Numbers can change quickly.* For the most recent trap counts, access the website at (http://www.udel.edu/IPM/traps/latestblt.html) or call 1-800-345-7544 (in-state); 1-302-831-8851 (out-of-state). Counts are updated on Tuesday and Friday.

**Vegetable Crop Diseases – Bob Mulrooney**  
*Extension Plant Pathologist; bobmul@udel.edu*

**Lima Beans.**
*Downy mildew* caused by the fungus, *Phytophthora phaseoli*, was detected this Wednesday in the Milford vicinity on C-Elite Select. The recent weather conditions have been very favorable for downy mildew. Growers should be scouting fields regularly for the presence of downy mildew. Once downy mildew is detected in an area fungicides should be applied preventatively. Copper fungicides such as Champ DP or Kocide 2000 or other labeled copper fungicides are good preventatives, but if downy mildew is detected in a field or a nearby field the recently labeled Ridomil Gold/Copper is recommended at 2.0 lb/A followed by a full rate of a copper fungicide 7 days later.

A revised 24(c) label for Ridomil Gold/Copper is available for Delaware at [http://www.rec.udel.edu/Update%2003/Updatepdf.htm](http://www.rec.udel.edu/Update%2003/Updatepdf.htm). This replaces the one that was available last week. A correction of active ingredients applied was the reason for issuing the revised label. A 24(c) label is also in effect in Maryland.
Downy mildew on baby limas.

Lima bean pod rot was also seen on lima bean pods. This can look very similar to downy mildew but only the pods are infected not the petioles (leaf stalks) or the racemes (flower stalks) that you see infected by downy mildew. Pod rot is caused by the soil born fungus *Phytophthora capsici* and there are no chemical controls for this disease. There are no resistant varieties and crop rotation away from susceptible crops such as lima beans, cucumbers, peppers, watermelons, squash, cantaloupes, and tomatoes for 5 years is recommended.

Sweet Corn.
Leaf diseases in late processing sweet corn have been detected on susceptible hybrids. Southern corn leaf blight, anthracnose leaf spot, and common rust have been observed.

**Field Crops**

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

Forages.
We can now find low levels of webworms and fall armyworm in alfalfa and mixed stands, and fall armyworms grass hay fields. With the heavier fall armyworm populations in late-planted corn, emerging moths will be looking for attractive places to lay eggs. If fall armyworm is observed immediately after a cutting, a treatment may be needed if you find five or more per square foot in established stands. A treatment may be needed for webworms if you are greater than 2 weeks from harvest and 25 percent of the terminals have webbing. Baythroid, Mustang MAX and Warrior are all labeled for webworms and small armyworms in alfalfa. If fall armyworm is the predominant species, Steward should be considered in alfalfa. Sevin is labeled for alfalfa, pastures and grasses grown for seed.

Soybeans.
With the increase in corn earworm trap catches this past weekend, the potential for podworms will remain moderate in late-planted beans for the next two weeks. A combination of rainy weather, cool evenings and warm days, generally results in populations crashing from disease organisms so be sure to watch for diseased worms before making a treatment decision. In addition, if most worms are large and you already see old pod damage, the damage may already be done. As we move into September, corn earworm will begin to enter their diapausing (overwintering) stage so do not treat too quickly. Begin scouting as soon as blossoms...
are present for corn earworm (CEW), beet armyworm (BAW) and fall armyworm (FAW). Low levels of corn earworm (1-2 per 100 sweeps) have been found in all counties and an occasional BAW and FAW have been found in fields in Kent and Sussex County. The treatment threshold for podworms is 3 per 25 sweeps in narrow fields and 5 per 25 sweeps in wide row fields (20-inches are greater). The following materials will provide corn earworm control in soybeans: Ambush, Baythroid, Asana, Mustang MAX, Pounce, Warrior (all pyrethroids), Steward, or Larvin. If beet armyworm is present, Steward would be the preferred material. It now has a 2ee label for use on soybeans in Delaware. Lorsban also provided good beet armyworm control in 2002. In most years, the pyrethroids will provide control of low levels of fall armyworm in the mix. However, if fall armyworm is the predominant species and if worms are larger at the time of treatment, Steward, Larvin or Lorsban should be considered. Although we have gotten control of larger FAW larvae, the pyrethroids labeled for FAW generally say control of first and second instar only.

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

Soybeans.
Downy mildew has been seen on soybeans. Look for small angular yellow spots on the upper surface of the leaf and a corresponding gray tuft of fungus growth on the underside of the leaf. This is a disease of minor importance and has never resulted in any detectable yield loss in DE.

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

Crop Condition Ratings Lowered Again.
USDA has lowered weekly crop condition ratings the past two weeks in a row. This has left commodity traders scrambling to get on the right side of potential price moves. Market analysts are now anticipating that the next supply and demand report to be released on September 11th will show a further drop in production forecasts for both the U.S. corn and soybean crops. Pre-report estimates are now indicating a possible corn crop of 9.7 to 9.8 billion bushels and a soybean crop of 2.7 to 2.8 billion bushels. If USDA lowers their '03 production forecasts in the September report, then we are likely to see new crop corn and soybean prices testing new highs form their current levels of $2.44/bu. for Dec. corn and $5.84/bu for new crop soybeans. Price gains that may occur in new crop prices are likely to be limited by, among other things, the possible effect on Southern Hemisphere plantings.

Market Strategy. Assuming new crop sales are up to date, then it is time to hold up sales and see what develops. Commodity prices could take on some new volatility going into next weeks release of the September crop report. The next six weeks promises to present good sales opportunities for finishing up '03 corn and soybean sales and in making initial sales for '04 corn, soybean, and wheat production.

Alfalfa Stand Survival in a 2003 Season of Multiple Stresses  - Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu; Joanne Whalen, Extension IPM Specialist, jwhalen@udel.edu and Gordon Johnson, Extension Agriculture Agent - Kent County, gcjohn@udel.edu

In last week’s issue of Weekly Crop Update, we talked about the effects of potato leafhoppers (PLH) on alfalfa stands. However, PLH burn was not the only problem alfalfa producers experience in 2003. Among the other problems were compaction caused by harvest weather delays, mowed hay sitting in the field or windrowed in the field for long periods, baled hay left on the
production field, delayed or infrequent harvests, and grassy weed competition.

**What impact does compaction have on alfalfa stands?**

- Compaction reduces root growth, a soil’s moisture holding capacity
- Compaction can limit immobile nutrient uptake and limit water infiltration and percolation which in wet years can favor root and crown diseases
- In an already stressed stand, compaction can cause rapid stand loss, reduced alfalfa vigor, and lead to weed invasion.

Once in place, compaction exists until the next renovation/rotation cycle. A layer of deep compaction is best alleviated by deep fall tillage when the soil has dried out and will fracture better with subsoiling equipment. Meeting these requirements can end up adding an extra half to full-season to the usual rotation cycle out of alfalfa.

**What are the effects of windrows left for long-periods on an alfalfa stand?**

As long as ruined hay is removed in a timely fashion (say within 5 to 7 days of cutting or sooner), the impact on subsequent regrowth is minimal although, in year’s where multiple stress events occur, the damage can be cumulative and therefore more than minimal. When windrow removal is delayed by a week or more or does not occur at all, the damage to the alfalfa (and even grass hay stands) stand can be substantial. The kinds of damage seen include:

- The windrowed hay reduces the amount of sunlight that reaches the crown and crown buds
- The lack of sunlight causes plants to use up root (alfalfa and red clover) or crown (many grasses) energy reserves
- Plant death can occur either as a result of the plant’s inability to renew its photosynthetic base (add enough new leaf tissue above the interference of the windrow) or as a result of inadequate root energy reserves to survive the following winter or even next harvest cycle
- Stand loss, reduction in tiller density of regrowth, or reduction in competitive leaf area can allow weed encroachment
- The presence of a layer of organic material above the plant crowns, cools the soil, reduces water loss and increases soil moisture levels, and can provide a food source for saprophytic and possibly pathogenic fungi.

**Is it better to bale spoiled hay and remove it or can it be chopped and spread?**

If the spoiled hay has not been formed into windrows and the yield level is low, chopping and spreading the residue can be a viable alternative. However, if the hay is in windrows or the yield was substantial, the probability that at least some areas of the field will be affected adversely by inadequately spread material is too great to risk so the hay should be baled and removed. Keep in mind the risk of fire with baled wet hay.

**How concerned should I be about annual grass encroaching into alfalfa fields and should I take action against the grass?**

Many producers find that as the late-July to August period approaches (usually the third or fourth harvest) many annual grass weeds invade alfalfa fields. A number of questions come to mind and are discussed below.

First, what grasses can be a problem? In irrigated alfalfa, large crabgrass often called water grass and barnyardgrass (also a major weed in rice culture) can quickly invade fields and rapidly overwhelm alfalfa in competition for light and nutrients. In dryland alfalfa, goosegrass, giant foxtail as well as both small and large crabgrass can be problem grasses. If the seed head emerges and seed set begins, foxtail will die after the next alfalfa harvest and leave the incorrect impression that little damage has been done to the stand.
How much invasion is too much? Often, the problem is not noticed until another factor (water availability or PLH injury) stunts the alfalfa. In such a situation, the fibrous root system of the grass can support rapid top growth allowing the grass to appear as if suddenly above the alfalfa. If harvest timing permits seed set by the grass, the stage is set for a rapid buildup of the weed problem. Certainly, a limited amount of annual grasses can be tolerated by the alfalfa but producers should try to be proactive in eliminating the competitive effects of these weeds before they severely impact stand. More often, the grassy weeds become established in small areas of a field where another stress has reduced alfalfa stands or vigor. These areas then expand gradually until or unless a major stress releases them to invade the remainder of the field. The bottom line is that producers should pay close attention to grassy weed encroachment and work to minimize the problem. The goal should be to control these weeds before they are able to canopy the alfalfa.

What effect does grass weed competition have on alfalfa? The fibrous root system and the ability of many of these grass weeds (the ones using the C-4 carbon fixation pathway—summer annual like corn) to better use available soil moisture and the summer heat means that the grasses can compete successfully against alfalfa for water, nutrients, and sunlight during the mid-summer period.

When annual grass weeds are present, there will be intense competition for available soil moisture and nutrients. Alfalfa needs both to support large yields, and on good alfalfa soils without supplemental irrigation, water availability often will be a problem in the mid-summer months in the mid-Atlantic region. If the weeds are able to grow above the alfalfa canopy, several problems can occur. Obviously, there will be less sunlight available to the alfalfa. The relative humidity of the lower canopy likely will increase and can lead to an increase in some alfalfa diseases, especially leaf spots and mildews.

How much time before frost is needed for alfalfa to be able to recover if the grass is controlled? Six weeks of competition-free growth should help alfalfa recover enough to survive the winter months although it would be better to control the weeds early enough to allow eight or more weeks before frost.

In summary, given that factors out of the producer’s control have caused significant stand losses, what can be done about reinvigorating the stand? If enough plants survive until the fall, producers should make certain that adequate potash is available or is applied to help the remaining plants survive the winter months. If possible, weeds and especially grassy weeds should be controlled to allow the crop six to eight weeks of competition-free recovery before a hard freeze ceases growth for the season. If in spite of all efforts, the stand this fall or next spring proves inadequate for maximum economic production, the producer should consider the following options:

1. Using no-till, interseed with orchardgrass or ryegrass (annual or tetraploid) to boost yields and thereby extend the stand life by a year or two. Fertilization should be aimed at maximizing grass growth and production.

2. Kill the existing alfalfa and replant after two or three weeks. Please note that many researchers feel that this option is not the best choice. Some research indicates that the problem of autotoxicity causes subtle yield loss and shorter stand survival that often is not attributed by producers to autotoxicity problems.

3. Rotate out of alfalfa and other legumes for at least a year, but preferably two years and then reseed alfalfa.
Stand Die-Off in Orchardgrass - Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu and Carl P. Davis, Extension Agricultural Agent—New Castle County;cpdavis@udel.edu

Several orchardgrass fields in the area appear to have suffered unaccountable rapid stand loss during the past growing season or two. The field shown below (Photos 1 to 5) has a pH of about 6.6 and has soil nutrient levels in the medium to optimum range. Tissue analysis in the previous year also showed all nutrients in the optimum range other than boron that was low due to the low available soil moisture level. The problem first began on a ridge near the woods and has progressed across and down the field during the past two years. Because of the wet spring and early summer, the first harvest was taken very late and may have allowed the crop to set seed. New seedling growth is evident even in areas where few if any mature orchardgrass plants remain alive. Some evidence of stand loss was present at the first harvest. Following the second harvest, large numbers of dead or mostly dead plants were evident. Growth in the affected areas was also about half that expected by the producer especially with a total of over 150 lb nitrogen per acre and ideal soil moisture.

Plant samples have been taken to submit to a plant pathologist. A limited number of samples were dug to look for grubs, but none were found. Please contact the authors if you’ve seen similar problems with orchardgrass, or if you have thoughts on the potential cause of this type of stand loss.

Photo 1. Stand loss began in the upper left corner and has spread across the field. Much of the green in the photo is crabgrass and goosegrass (Photo by R. Taylor).

Photo 2. Stand die off has proceeded up the field but there is the appearance of strips although compaction was not found to be a problem (Photo by R. Taylor).

Photo 3. Following a second harvest, small plants with little vigor are evident along with dead and dying orchardgrass crowns (Photo by R. Taylor).
Photo 4. View of dead center of orchardgrass crown with new tillers forming on the outside crown edges (Photo by R. Taylor).

Photo 5. Seedling orchardgrass emerging in dead areas (Photo by R. Taylor).

2003 Crop Management School On-line - Registration Opens - Richard W. Taylor, Extension Agronomist, rtmorgan@udel.edu

Register on-line for the 2003 Mid-Atlantic Crop Management School to be held at the Princess Royale Oceanfront Hotel and Conference Center in Ocean City, MD on November 18 to 20, 2003. To register on-line you only need a major credit card and access to the internet. The URL address for on-line registration is as follows: https://crayola.hcs.udel.edu/conf/registration/crop_management/.

To view the brochure on-line, go to: http://www.wvu.edu/~agtexten/temp/Cropmanschl.pdf

Weather Summary

http://www.rec.udel.edu/TopLevel/Weather.htm

Weeks of August 28 to September 4, 2003

Rainfall:
0.34 inches: August 29
0.73 inches: August 30
0.01 inches: August 31
0.11 inches: September 2
0.44 inches: September 3
1.06 inches: September 4

Readings taken for the previous 24 hours at 8 a.m.

Air Temperature:
Highs Ranged from 90°F on August 29 & 30 to 74°F on August 31.
Lows Ranged from 71°F on August 30 & September 4 to 66°F on August 31.

Soil Temperature:
79°F average for the week.
(Soil temperature taken at a 2 inch depth, under sod)

Web Address for the U of D Research & Education Center:
http://www.rec.udel.edu

Compiled and Edited By:
Tracy Wootten
Sussex County Extension Educator - Horticulture

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