WORMS -- WORMS -- WORMS !!!

AT THIS POINT, WE CAN FIND CORN EARWORM AND BEET ARMYWORM IN JUST ABOUT ANY CROP THAT IS GREEN. THE LIST OF CROPS DAMAGED EXPANDS EACH DAY TO INCLUDE SOYBEANS, SORGHUM, ALFALFA, FORAGE GRASSES, FRUIT AND MOST FALL VEGETABLES. I HAVE PROBABLY LEFT ONE OUT SO IF IT IS GREEN -- ESPECIALLY AFTER THE RAIN -- BE SURE TO LOOK FOR "WORM DAMAGE". IN FORAGES AND TURFGRASS, WE ARE ALSO FINDING ECONOMIC LEVELS OF FALL ARMYWORM AND TRUE ARMYWORM SO BE SURE TO CHECK ALL CROPS CAREFULLY TO DETECT PROBLEMS WHILE THE WORMS ARE SMALL AND BEFORE SIGNIFICANT DAMAGE HAS OCCURRED.

Vegetables

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

In general, beet armyworm can still be found in many crops. In addition to cabbage, beans, and peppers, they have been found feeding on watermelon fruit, pumpkins, cucumbers, and apple leaves. The pyrethroids have provided poor control -- even at higher rates. Lannate, Larvin and Orthene have also provided poor control. In many cases, Spintor is labeled on a wide variety of crops and will provide good control. Where Avaunt and Confirm are labeled, they will also provide good control.

Cabbage.
Continue to scout for diamondback (DBM), cabbage looper (CL) and beet armyworm (BAW). If DBM and CL are both 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 or Confirm (8 oz/acre) will also provide control. If beet armyworm is the predominant, Avaunt, Confirm or Spintor should be used.

Cucurbits.
High beet armyworm populations have been found in a few cucumber fields in Sussex County. They continue to cause damage on watermelon rinds as well. Again, the only labeled material that has provided consistent control is Spintor. It has a one day wait until harvest in cucumbers and a 3-day wait until harvest in watermelons.

Lima Beans.
Be sure to continue to sample fields carefully for corn earworm, beet armyworm, lygus and stinkbugs. A treatment should be applied if you find one corn earworm per 6 foot of row or 15 tarnished plant bugs and/or stinkbugs per 50
sweeps. Since corn earworm populations are high and moths are readily attracted to blooming fields, multiple applications may be needed to achieve control. Also, if Lannate is used, be sure to use the high rate of 2-3 pts/acre if mixed larval sizes are present at treatment time.

**Peppers.**
At the present time, all peppers should be sprayed on a 5 to 7-day schedule for corn borer, corn earworm, and beet armyworm control.

**Snap Beans.**
Processing snap beans in all areas of the state should be treated at the bud and pin stages for corn borer control. Orthene or Address should be used at the bud and/or pin stages for corn borer control. In all areas, a pyrethroid should be combined with Orthene at the pin spray for earworm control. After the pin stage, sprays will be needed on a 5-day schedule from the pin spray until harvest. 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 decision in processing snap beans (http://www.udel.edu/IPM/traps/latestblt.html and http://www.udel.edu/IPM/thresh/snapbeanecbthresh.html). You should treat fresh market snap beans for corn borers, corn earworm and beet armyworm on a 5-day schedule from the pin stage until harvest.

**Spinach.**
As soon as plants emerge, be sure to scout for beet armyworm and webworms. Controls should be applied when worms are small and before they have moved deep into the hearts of the plants. Since Lannate cannot be applied before plants are 3-inches in diameter and it only provides control of small larvae, Confirm or Spintor will be needed for beet armyworm control. If webworms are the predominant species, Ambush, Pounce, Confirm (6-8 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 in all areas of the state. Since corn earworm catches continue to be high and fall armyworm can be found in silk stage corn, you should consider combining Lannate LV at 1.5 pt/A with the highest rate of a pyrethroid. 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).

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

**Snap Beans and Sweet Corn.**
Be on the lookout for snapbean rust in fall plantings. When it is first observed apply chlorothalonil (Bravo, Equus, Echo) or Nova and repeat every 7 days.

**Rust** can be a problem in late sweet corn as well. Keep scouting fields and look at the lower leaves of small plants. If infected plants are in the whorl stage or younger, apply a fungicide and repeat every 7-14 days depending on the product. Apply Tilt, Quadris, mancozeb or chlorothalonil.

**Lima beans.**
We have not seen any downy mildew (figure 2) yet, but we have seen Phytophthora pod rot (figure 1) caused by **Phytophthora capsici** in a field of irrigated limas. Now is the time to be thinking about applications of 2
lbs./A of Champ DP or Kocide 2000 for the control of downy. Prevention is the best control rather than waiting to see the disease. **Pythium pod rot** is also present in fields that have good vine growth and lots of rain. Pythium causes very fuzzy looking white fungus growth on the pods and sometimes leaves that are touching the ground. Copper fungicides applied for downy mildew might provide some control of Pythium otherwise there are no chemical controls.

**Phytophthora capsici** only infects lima bean pods

**Figure 1. Phytophthora Pod Rot**

**Figure 2. Downy Mildew**

Downy mildew will be seen on pods, petioles, and flower stalks (racemes).

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**Field Crops**

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

***WORMS -- WORMS --- WORMS !!!***

Please read alert on page 1.

**Soybeans.**

Continue to sample soybeans for corn earworm and beet armyworm. We can find all sizes of larvae indicating a new hatch before the rain. Usually, we don't encounter a lot of small corn earworms or new infestations in September. However, at this point we are seeing new larvae so you will need to continue scouting fields, especially those that are flowering and trying to set and fill pods. Although economic levels of both continue to be found throughout the state, it will be important that you time treatments to avoid the need for multiple applications. When possible, try to wait until 1/3 of the populations is 3/8-inch long before treating. With the recent rains, cool
evenings and warm days, we should start to see diseases attacking corn earworms. Be sure to watch for diseased worms before making a treatment decision. In addition, corn earworm will begin to enter their diapausing (overwintering) stage at the end of September so do not treat too quickly. If you feel you have not gotten the best control after spraying, be sure to get a worm sample to me or your county agent. We may have a mixed population of corn earworm (*Helicoverpa zea*) and tobacco budworm (*Heliotothis virescens*) which comes from the south and is much tougher to kill.

In comparison, the beet armyworm is a more tropical insect so only a killing frost will really reduce populations. We are not sure if the same fungal pathogens will attack them so be sure to continue to sample carefully for beet armyworms. We are seeing a second hatch of small larvae this week and defoliation has increased in many fields. We have also found beet armyworm in soybeans in all three counties. Steward has worked very well on mixed populations and fairly large beet armyworms. Although it was not clear how well the Lorsban worked last week, we did another field scale trial on Tuesday. A quick evaluation at one day after treatment indicated that it may have done a good job on beet armyworm. It was applied by air at 2 pts/acre of product and 5 gallons of water/acre. We will do a more detailed evaluation on Friday and let you know how it worked. Last week, Lorsban did not appear to work very well on corn earworm so we are not sure it will be the product of choice if mixed populations are present. We are still getting mixed reports on how well Larvin has performed against beet armyworm.

**Forages and Small Grains.**

As indicated above, economic levels of corn earworm (CEW), beet armyworm (BAW), fall armyworm (FAW) and true armyworm (AW) have been found defoliating alfalfa and forages grasses in Delaware and the Eastern Shore of Maryland. In Virginia, a heavy infestation of FAW was reported on bermudagrass in Southampton County. Be sure to sample all forages for these insects. Although we have no specific thresholds for defoliators in these crops, a treatment should be considered when larvae are small and before significant defoliation occurs.

We are limited in our control options for these crops. Chemical selection will depend on the crop and insect species present. There are a number of products labeled for pure stands of alfalfa including Steward, Lorsban, Lannate, Baythroid, Warrior, Mustang, Ambush and Pounce. Steward has given excellent control of CEW and BAW in soybeans, but the lowest labeled rate on alfalfa is 9.2 ounces per acre. Unfortunately, we have no experience with FAW and AW. The Lorsban label claims AW control so it should work on AW and FAW. Our recent trial in soybeans suggests it should work on BAW, but at this point appears weak on CEW, which is not on the label. We used 2 pt/A which has a 21 day wait until harvest. Lannate should work on FAW and AW but has given variable control this season of BAW. It works on CEW in other crops; however, it is not on the alfalfa label. As far as the pyrethroids (Ambush, Baythroid, Mustang, Pounce and Warrior), they are all labeled for different combinations of insects. BAW has been poor with the pyrethroids this year and certain labels state control of only first and second instar (small) FAW. So, be sure to read the label for rates, use directions, days to harvest and insects controlled.

There are very few labeled options for mixed stands of alfalfa or forage grasses. At this point, only Sevin has a label on alfalfa, pastures and grasses grown for seed. It should provide only fair control of very small CEW, FAW and AW larvae. It will not control BAW. Lannate is labeled on bermudagrass pastures for armyworms, it so should control both FAW and AW, but has been variable on BAW this season.

Also, as you make plans to plant small grains, you will need to consider potential armyworm damage. In Delaware, we have seen both AW and FAW destroy fall planted grains so it will be critical to sample as soon as plants emerge. With the early corn harvest and potential early grain
planting, the earliest planted barley and wheat will be very susceptible to attack from armyworms.

**Wheat and Barley.**
As far as aphid management, we did see a few locations with barley yellow dwarf this past spring. More importantly, we did have high numbers of green bug aphid mainly in barley and early planted wheat. Although this aphid can transmit barley yellow dwarf, the greatest problems occur with direct plant damage. Unlike other aphids, this aphid injects a toxin into plants, which shuts down plant growth. Entire sections of fields were killed in Maryland. If you are unable to scout or plan to use a preventative treatment, Gaucho or Cruiser treated seed work very well to control this aphid. If you choose to scout, be sure you plan to sample your fields at emergence. Although we do not have any thresholds developed in our area, thresholds from Arkansas say a treatment will be needed in the fall if you find 10 aphids per foot of row. This aphid is a very difficult one to control. The Warrior label says 3.84 oz/acre are needed and the Mustang label states only aids in control. Remember that these pyrethroids are only labeled on wheat. The other materials labeled on wheat and barley include Lannate, malathion and Penncap. Dimethoate is only labeled on wheat.

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

**Commodity Prices Rebound Sharply**
Monthly average '02 U.S. corn and soybean prices have recorded a continual increase over the course of the current marketing year. The surge in U.S. corn prices began in May of the current marketing year. In fact, the monthly average price for U.S. corn exceeded the '96 to '00 average price in the month of August. Monthly average soybean prices are currently just under the '96 to '00 average price and currently about 80 cents per bushel higher than this time last year. Dec. '02 corn futures are currently trading at $2.80 per bushel with Nov. soybeans trading at $5.56 per bushel.

The corn, soybean, and wheat pits remain in a positive mode as we enter harvest. Harvest has gotten underway in the Southwest and Southeast, and is rapidly approaching throughout scattered portions of the corn belt. Hot/dry weather, although stated to be a disappearing factor, is still taking its toll on potential U.S. corn and soybean yields. Commodity prices are likely to move in a choppy pattern between now and the release of the September crop report. The next USDA supply and demand estimates will be released on September 12th.

**Marketing Strategy**
Basis bids in Southern Delaware are currently 35 over for new crop corn and 5 over for new crop soybeans (likely to vary depending upon the delivery point). New crop corn sales currently equate to $3.15 per bushel. New crop soybean sales currently equate to $5.61 per bushel. The market for corn, wheat, and soybeans is currently in a positive mode, with resistance for Dec. corn at $2.81 and resistance for Nov. soybeans at $5.56 per bushel.

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

**Soybeans.**
Several diseases have been seen this week. **Charcoal rot** mentioned previously is favored by dry weather and continues to be seen. Usually irregularly sized patches of infected dying plants are seen in the field, but this year as in 1999 we are seeing individual plants in the row infected and dead or dying. When this happens you see scattered plants dying either singly or several in a row flanked by healthy ones. Carefully dig up plants and look at the roots and lower stem. They
The other disease that was seen is **stem canker**. Stem canker causes wilting and death of scattered plants and when severe large areas are infected. Reddish-brown lesions develop first near the mid-stem nodes of infected plants from mid-season to maturity. Later the lesions turn dark, girdle the stem, and kill the plant. The tissue above and below the infected area remains green. Select tolerant varieties and rotate for control.

Forage Stand Evaluations Following Severe Stress Conditions – Part I  
*Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu*

Many pasture and hay fields have either been injured with plant density reductions or have been forced into dormancy during the long dry spell this summer. The significant rainfall this past week has helped these fields begin regrowth. Once green-up occurs, you will need to evaluate these fields to see if renovation will be needed. Last week, I said I would offer some guidelines for evaluating your fields. I’m still researching the problem so I’m not ready to give numbers of tillers per square foot or plants per square foot yet.

While you wait for me to develop those guidelines, you will need to walk across your pasture or hay fields and determine how many plants or tillers per square foot you have. To do an evaluation, make a 1-, 2-, or 4-ft² rectangle or square from wire or wood, walk across the field dropping the rectangle or square at random, count the number of tillers or live plants of your dominant grass species enclosed by your device, keep a running total, and after taking about 10 to 20 counts divide the total by the number of counts and that number by the number of square feet represented by the device. This will give you an estimate of the number of plants/tillers per square foot. Be sure to decide ahead of time how you’ll do the counts. From what I’ve seen to date, you would be counting the number of tillers in Kentucky bluegrass, smooth bromegrass, and reed canarygrass pasture or hay fields and counting plants in orchardgrass, tall fescue, timothy, and ryegrass fields.

I understand from our entomologist, Joanne Whalen, that various foliage feeders are attacking forages aggressively at this time. For fields that were nearly dead and are trying to recover by sending up new shoots or tillers, it will be important to try to protect this new vegetation since it is the only photosynthetically active tissue available to the plant and the plant’s food reserves are probably very low. Food reserves must be reestablished by late fall for the crop to survive the winter. Contact your pesticide dealer for information on products that can be used to control damaging insects and be sure to follow all label warnings and restrictions.

Another suggestion would be to fertilize grass field regrowth with nitrogen to stimulate a more rapid recovery. Finally, weed encroachment may have become an important problem with the severe stress conditions the pasture experienced this year, so be sure to read the accompanying article on pasture weed control in this issue.
Weed Management in Pastures - Quintin Johnson, Extension Associate, Weed Science, quintin@udel.edu, Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu

Successful weed control in pastures requires coordination of cultural, mechanical, and chemical controls to promote a healthy and competitive forage crop. Fall is a good time to evaluate pastures to help ensure the most productive forage possible. The first step is to evaluate forage stands to determine if pasture improvement practices are sufficient or if renovation (starting over or overseeding the same or other species) is needed. A general rule of thumb is to renovate if undesirable species and/or bare ground comprise more than 50% of the total ground cover. Soil test recommendations vary between established stands and new seedings. New seedings can be established with conventional-tillage. New seedings and partial renovations (overseeding) can be completed with no-tillage equipment. Fall renovation is almost always more successful than springtime renovation due to lower weed competition in the fall.

The best time to control topgrowth and reduce rootstock vigor and viability for many perennial broadleaf weeds (Canada thistle, horsenettle, hemp dogbane, multiflora rose, etc.) is during fall renovation. Apply 2-4 pounds active ingredient (lb ai) of a glyphosate herbicide (check label for specific recommendations). The existing sod and weeds should be sprayed at least 10 days prior to seeding (no-till renovation), tillage (conventional-tillage renovation), or killing frost. Lime and fertilizers recommended by soil testing should be incorporated thoroughly in conventional tillage systems. Care should be taken in new seedings to choose forage species that are best suited to the drainage characteristics of the site and the animals using the pasture.

In established grass-only pastures, many perennial broadleaf-weed problems can be treated successfully with herbicides in the fall. Available herbicides include Crossbow, Ally, 2,4-D, Clarity or Banvel, and Stinger. Grass/legume pastures can be treated if you are willing to sacrifice the legume. Clover can be reestablished with a late winter frost-seeding or no-till spring seeding after grasses have been closely grazed. Livestock should be kept off of newly seeded legumes until they are well established. Do not apply Stinger if you are planning to re-establish legumes in the spring. Because herbicides often do not provide complete control of perennial broadleaf-weed rootstocks, you may need to retreat in the spring and/or the following fall. It may be practical to delay re-establishment of legumes until perennial weed infestations are under control. If perennial weeds are in patches covering less than 10% of the pasture, spot spraying those areas with a 2% solution (2.67 oz/gal) of a glyphosate product may be the most practical and effective method. Spray weeds until wet (1 gal/1000 ft^2) at least 10 days prior to killing frost. Always be aware of grazing, haying, and slaughter restrictions on herbicide labels.

Other improvement practices should be considered as part of an overall weed management program. Properly fertilized pastures provide forage that is more competitive against weeds. Monitoring soil acidity and nutrient status by taking periodic soil samples is an effective means of minimizing weed encroachment.

Overgrazing is very detrimental to forage crops. Overgrazed forages do not recover as quickly or completely as properly grazed stands, resulting in lower forage yields and weakened or thinned stands that don’t compete as well with weeds. Rotational grazing is an important tool to successful pasture management. Fall is a good time to start thinking of the best way to implement this practice or to improve an existing rotational grazing system. A rotational system can be as simple as rotating between two pastures, or a complex system of several intensely grazed paddocks. Pastures or paddocks should be grazed to a height of 3-5 inches for tall grass species and 1-2 inches for Kentucky bluegrass. Stocking rate, paddock size, and number of paddocks should be adjusted to allow for adequate rest periods between grazing for forage regrowth.
Pastures should be mowed periodically to promote even grazing, improve forage quality by preventing grasses from producing seed heads, and reduce the competitiveness of weeds. Mowing removes topgrowth of weeds, lowers root reserves, and prevents seed production in taller growing weeds. Mow to a height of 3-5 inches. Where rotational grazing is used mowing should occur after animals are removed from a paddock or pasture. Fall is a good time to mow to prevent some of the perennial broadleaf weeds from going to seed. Postpone mowing for at least 10 days after any herbicide application. Using several classes of animals grazing in sequence can reduce the need for mowing while accomplishing the same goal.

Pastures should be dragged after each grazing rotation, or at least two times per year (late spring and fall), with a chain harrow or similar implement to spread manure. Dragging helps reduce selective grazing, promotes a more even forage stand that is better able to compete with weeds, and aids in destroying internal parasites in manure.

Pasture improvement practices are important for maintaining productive and healthy pastures and animals. Fertility, stand management, and proper animal and waste management are important to productivity, and productive forage is often the best weed management strategy available in pasture systems.

Weather Summary

<table>
<thead>
<tr>
<th>Week of August 30 to September 4, 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rainfall:</strong></td>
</tr>
<tr>
<td>0.47 inches on August 31</td>
</tr>
<tr>
<td>7.20 inches on September 1</td>
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<tr>
<td>0.03 inches on September 2</td>
</tr>
<tr>
<td><strong>Readings taken for the previous 24 hours at 8 a.m.</strong></td>
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<tr>
<td><strong>Air Temperature:</strong></td>
</tr>
<tr>
<td>Highs Ranged from 89°F on September 4 to 71°F on August 30.</td>
</tr>
<tr>
<td>Lows Ranged from 67°F on September 1 to 61°F on August 31 &amp; September 3.</td>
</tr>
<tr>
<td><strong>Soil Temperature:</strong></td>
</tr>
<tr>
<td>73°F average for the week.</td>
</tr>
<tr>
<td>(Soil temperature taken at a 2 inch depth, under sod)</td>
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</tbody>
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Web Address for the U of D Research & Education Center: [http://www.rec.udel.edu](http://www.rec.udel.edu)

Compiled and Edited By:

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