Vegetables

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

Beet Armyworm Alert # 2

We continue to find high beet armyworm populations in many crops. In addition to the crops listed last week, they have also been found causing defoliation in apples as well as feeding on the rinds of watermelons. Remember, the pyrethroids, Lannate and Larvin have not provided effective control. Depending on which crop you are looking at, Avaunt, Spintor or Confirm have provided the best control.

Cucumbers.
Although we have not had reports of beet armyworm feeding on fresh market or pickling cucumbers, we know that we can find larvae in the field. Since larvae have been found feeding on watermelon vines, anything is possible at this point. Be sure to watch for larvae and possible feeding. The only available and effective option at this point would be Spintor at 6-8 oz/acre.

Watermelons.
There have also been reports of beet armyworms feeding on the rinds of watermelons. Spintor is labeled for armyworm control on melons and should provide good control at 6-8 oz/acre. Remember, it does have some contact activity, but it is also a stomach poison so enough leaf area should be present to get the product to work well.

Cabbage.
Economic levels of diamondback (DBM), cabbage looper (CL) and beet armyworm (BAW) continue to be found in cabbage. A treatment should be applied if 5% of the plants are infested and before larvae move deep into the hearts of plants. If DBM and CL 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 or Confirm (8 oz/acre) will also provide control. If beet armyworm is the predominant, Avaunt, Confirm or Spintor should be used.

Lima Beans.
Be sure 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. When possible, fields should be scouted twice a week to effectively time insecticide applications. If you are using Lannate, the rate will depend on the larval size at the time of treatment. If worms are small, 1.5 to 2 pts. per acre will be adequate. However, if the worm size is mixed at the time of treatment, 3 pts./acre will be adequate. There are no thresholds for beet armyworm; however, a spray
should be considered when worms are small and you can find 20% of the plants defoliated. Lannate, Mustang or Capture can be used to control corn earworm, lygus and stinkbugs. If beet armyworm is causing problems, Spintor is labeled on lima beans and will provide good beet armyworm control.

**Peppers.**
At the present time, all peppers should be sprayed on a 5 to 7-day schedule for corn borer, corn earworm, fall armyworm and beet armyworm control. Orthene or Address will not provide corn borer control; however, we are limited to 2 applications. A pyrethroid or Lannate will be needed for earworm control. If beet armyworms are present, Avaunt, Spintor, or Confirm will provide the best beet armyworm control. Depending on the pest complex present, a combination of products will be needed. Avaunt is a stomach poison, so you should not evaluate control for 3-4 days after treatment. It stops insects from feeding immediately; however, worms may still be observed on plants. Spintor is a stomach poison, but it also has contact activity.

**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. Beet armyworm can also be found defoliating snap beans. There are no thresholds for beet armyworm; however, a spray should be considered when worms are small and you can find 20% of the plants defoliated. Lannate will only provide control of small larvae. Spintor is also labeled on snap beans and will provide good control of beet armyworms. After the pin stage, Lannate, Capture or Mustang should be used for corn borer and earworm control. 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).

**Spinach.**
Small beet armyworm and webworms have been found in recently emerged fields. 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. 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. The unusually high beet armyworm population may result in the need to treat multiple times this fall.

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

**Cucurbits.**

**Downy mildew on cucurbits** is present here on the Delmarva Peninsula. The disease can be recognized by brown to gray sporulation that occurs on the underside of leaves. The sporangia can be seen with a 10X hand lens and appear as barely distinguishable black or purple spots. All cucurbits are susceptible to downy mildew and cool wet weather, like we are now experiencing, is very favorable to this disease. Several fungicides have specific activity on downy mildew. Gavel was recently registered for use on melons, summer squash and watermelon (but not winter squash or pumpkin). Acrobat is available for use on cucurbits under Section 18 status for 2002. Ridomil Gold/Bravo or Ridomil Gold/Copper are also effective against Downy mildew.

Acrobat is specific for control of oomycetes, such as the organism that causes downy mildew, and should be applied with a broad-spectrum fungicide. Ridomil Gold/Copper or Ridomil Gold/Bravo should be applied every other week and be alternated with a broad-spectrum material like Bravo, Equus or Echo. Read labels carefully, some muskmelon cultivars are sensitive to Gavel.

**MELCAST for Watermelons.**

*From the University of Maryland and University of Delaware*

**Latest EFI values from local weather stations**

Any questions please call (410) 742-8788

**EFI Values (Environmental Favorability Index)**

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

<table>
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<tr>
<th>Location</th>
<th>08/28/02</th>
<th>08/27/02</th>
<th>08/26/02</th>
<th>08/25/02</th>
<th>08/24/02</th>
<th>08/23/02</th>
<th>08/22/02</th>
<th>08/21/02</th>
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<td>Charles Co.</td>
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<tr>
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<td>3</td>
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</tbody>
</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.

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**Field Crops**

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

**Soybeans.**
Continue to sample soybeans for corn earworm and beet armyworm. Although beet armyworm will not feed on pods until populations are high, they can cause significant defoliation. Since double crop beans can not tolerate a great deal of defoliation, you will need to consider defoliation as well as pod feeding when making a treatment decision for beet armyworm. Once plants are blooming and through the pod-fill stage, the defoliation threshold is 15%. The treatment threshold for pod feeders is 3 per 25 sweeps in narrow fields and 5 per 25 sweeps in wide row fields (20-inches or greater).

In many cases, corn earworm is the predominant species. Remember Ambush, Asana, Mustang, Pounce, Warrior (all pyrethroids) or Larvin will provide control. Lorsban is also labeled, but we have only seen control of small larvae. Although mite populations have significantly crashed in most locations and the current weather should help to further reduce or eliminate populations, Lorsban may be an option for both pests but only if corn earworms are small. It would be better to mix Lorsban (1 pt/A) plus a pyrethroid to get the best control of both pests, especially since most fields have mixed size larvae. Be sure to use the higher rates of the pyrethroids if mixed larval sizes are present at treatment time. The corn earworm rate for Larvin is 10-16 oz/acre. When possible, try to wait until 1/3 of the earworm population is 3/8 inch long before treating. If the current rain continues for a few days and we get cooler evening temperatures and warm day temperatures for an entire week, we may see crashes in earworm populations. If beet armyworm is the predominant species, Steward should be used at 7.2 oz/acre. It will provide beet armyworm and corn earworm control. There have been reports of Bt insecticides combined with pyrethroids providing control of beet armyworm and corn earworm on the Eastern Shore of Virginia. However, the Bts have only provided control of small beet armyworm and will not provide satisfactory control if mixed populations are present. Lorsban also has an armyworm label; however, we have no local data on soybeans. Information and experience from North Carolina indicates that Lorsban has provided poor control of beet armyworm. However, some is being tested in our area and we will let you know the results.

As if spider mites, earworms and beet armyworm have not caused enough trouble in soybeans, soybean aphid has been detected for the first time in Delaware in New Castle County. As part of a cooperative survey between the Delaware Soybean Board, University of Delaware and Delaware Department of Agriculture, 30-50 fields have been surveyed weekly since early June for this aphid. Teri Guy from the Department of Agriculture was the one who found these infestations in New Castle County. Populations were low in all locations and it appears predators have reduced populations. All four fields were full-season soybeans. It still appears that these aphids migrated in on wind currents and we do not feel they overwintered in Delaware. Although it looks like they should not cause problems this year, it would still be wise to be on the lookout, especially in double crop fields. In the Midwest,
populations are light this year. Here are a few guidelines as you look for soybean aphids:

(1) The critical stage for treatment appears to be late vegetative to R2 stage -- best timing is mid-July to early August
(2) Treatment at flowering would be recommended if aphids are abundant on most plants. Current guidelines from the Midwest say treat if you find 25 or more aphids per leaflet.
(3) Late season treatments have not shown to be beneficial
(4) The following products are registered and have provided effective control: Asana, Furadan, Lorsban, Mustang, Penncap-M, Pounce and Warrior.

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

U.S. Soybean Prices Currently Undervalued

Commodity markets are likely to remain a mixed bag until the release of the September report and perhaps well into harvest. The weekly crop condition ratings released Monday afternoon pushed both U.S. corn and soybean crop ratings up slightly in the good to excellent category, with 42% of the corn crop and 46% of the soybean crop now rated good/excellent.

Oil World a respected German newsletter released a report recently contending that U.S. soybeans are undervalued at current stock levels. Recent rains, resulting in some recovery in the U.S. soybean crop, will not be sufficient to prevent demand rationing for U.S. soybeans in 2002/03. Bottom line, higher prices ahead.

World Demand for Soybeans is seen up 7-8 million tons this year, with world production rising only 1 to 2 million tons. In addition, world wide production for the main soybean competitors (rapeseed and peanuts) is reduced this year. The drop in U.S. soybean production for the '02 crop is modest as compared to damaged oilseed crops elsewhere in the world. For example, Canola production in Canada is currently projected to be half of normal for the '02 crop, a 13 year low.

**Marketing Strategy**

Corn, soybean, and wheat prices still have room for recovery from current levels. Much depends upon USDA’s September crop estimates. The trade is divided on whether they think crop size estimates will be higher or lower in the September report. The uncertainty prevailing in the commodities markets does not warrant advancing sales at this time.

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**Fall Forage Plantings** - Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu

For growers who experienced failure in their spring forage plantings or who had planned to establish new forage seedings this fall, this week’s rainfall offers the best opportunity to proceeding with planting. Although additional rainfall will be needed in the coming weeks to ensure the success of any seedings you make now, the advantage gained by an early September seeding date should outweigh the risks involved in planting now. Waiting for subsoil moisture levels to be completely recharged could delay planting until October or later. Late planting results in much slower forage establishment and runs the risk of winter injury. Also, keep in mind that you must have completed preparations such as soil testing, pH adjustment, fertility adjustments, and perennial weed control to help ensure long-term success.

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 week should help these fields begin to green back up. Once green-up occurs, you will need to evaluate...
these fields to see if renovation will be needed. Next week, I will offer some guidelines for evaluating your fields and some suggestions on renovating fields that appear weak.

**Fall Emergency Forage Selection** - Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu, Bob Uniatowski, Associate Scientist, bobuni@udel.edu

The rain that appears to be on its way as I write this, is just what is needed to be able to have an opportunity to establish forage plantings for emergency feed later this fall. If field conditions permit, no-till establishment of emergency forage crops will allow you to conserve much of this week’s rainfall for crop growth. Otherwise, prepare a suitable seedbed in such a way as to minimize moisture loss through evaporation.

Forage crop selection will be limited. For tonnage, the best choice is spring oats planted as soon as possible and well-fertilized. Spring oats will regrow after green chopping if moisture is available. The crop will continue growth until a hard freeze.

A second choice that can continue growth even longer although total tonnage may not be as great as with spring oats is annual ryegrass. As with spring oats, liberal fertilization with nitrogen will help increase yields. This crop will take a bit longer to reach the point when you can begin green chopping the forage, but if we have a warm fall with adequate rainfall it will continue growth as long as the daily average temperature is above 40° F and can also survive even hard freezes and begin growth if temperatures warm up.

Another choice similar to annual ryegrass but with a fall tonnage potential below that of spring oats is cereal rye. Cereal rye will be similar to ryegrass in that it can grow at low temperatures and can tolerate very cold temperatures and begin growth again if temperatures warm up. Response to nitrogen fertilizer will be limited with cereal rye although some should be applied at planting.

Lastly although suitable only for grazing, forage turnips, forage rape, and other forage brassicas could be planted as long as planting occurs by early September. These forages are best used as supplements since they will contain a high percentage of water and should be fed along with hay or other roughage. The forage brassicas are seeded at low seeding rates and can be seeded in no-till or conventional seedbeds. Most will survive the winter and provide additional grazing next spring.

**Droopy Ears in Corn** - Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu

The following article is extracted from an article on this topic published by Dr. R.L. (Bob) Nielsen (Purdue University) at the Chat ‘n Chew Café August 2002.

Although we all are use to the eventual collapse of the ear shanks in corn that leads to ears dropping down or “drooping”, the condition can occur prematurely in corn that has not yet reached physiological maturity or black layer. Black layer development is both the physical separation of the grain from the photosynthetic and nutrient conduit (the cob) and a hormonal response signaling the cessation of grain fill. Premature black layer formation can result in lightweight grain and lower grain yield.

What causes droopy ears? In times when premature ear drooping has been seen, a common denominator has been severe drought stress. Under severe drought conditions, but where a sizeable ear nonetheless exists, reduction in the turgidity of the ear shank occurs and the weight of the developing grain causes the ear shank to collapse. Collapsed ear shanks can also result from extensive tunneling by European corn borer larvae.
What is the potential impact on yield? Since the ear shank is the “pipeline” for the flow of photosynthates (sugars and starches) into the developing ear, the collapse of the ear shank prior to physiological maturity will greatly restrict, if not totally prevent, the completion of grain fill for that ear and will likely cause premature black layer development in the grain.

The timing of the onset of droopy ears determines the magnitude of the expected yield loss. Grain fill shutdown at the full dent stage of grain development (milk line barely visible at the dent of kernels), yield loss can be as much as 40 percent. Grain fill shutdown at the late dent stage of grain development (milk line halfway between dent and tip), yield losses for the affected ears would equal about 12 percent. Multiply the percentage of affected ears by the estimated yield loss per ear to get an estimate of whole field loss.

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**Weather Summary**

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<th>Week of August 22 to August 29, 2002</th>
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</thead>
<tbody>
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<td><strong>Rainfall:</strong></td>
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<tr>
<td>FINALLY!!</td>
</tr>
<tr>
<td>0.74 inches on August 28</td>
</tr>
<tr>
<td>1.37 inches on August 29</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 88°F on August 22 &amp; 23 to 71°F on August 29.</td>
</tr>
<tr>
<td>Lows Ranged from 73°F on August 23 to 60°F on August 22.</td>
</tr>
<tr>
<td><strong>Soil Temperature:</strong></td>
</tr>
<tr>
<td>81°F average for the week.</td>
</tr>
<tr>
<td>(Soil temperature taken at a 2 inch depth, under sod)</td>
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</table>

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

**Compiled and Edited By:**

Tracy Wootten  
*Extension Associate-Vegetable Crops*

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