Vegetables

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

**Cabbage.**
Be sure to sample fall planted fields for diamondback and cabbage looper larvae. We can find both insects in recently planted fields. 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 or Confirm (8 oz/acre) will also provide control.

**Lima Beans.**
Be sure to sample fields carefully for corn earworm, 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. Lannate, Mustang or Capture can be used to control all 3 insects on lima beans.

**Peppers.**
At the present time, all peppers should be sprayed on a 7-day schedule for corn borer, corn earworm, beet armyworm and pepper maggot control. Remember, Orthene or Address will not provide satisfactory earworm control. A pyrethroid or Lannate will be needed for earworm control. Dimethoate should still be added to the mix for pepper maggot control if a pyrethroid or Lannate are used. If beet armyworms are present, Avaunt, Spintor, Confirm or Lannate will provide the best beet armyworm control. Depending on the pest complex present, a combination of products will be needed.

**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, Lannate, Capture or Mustang should be used. Sprays will be needed on a 6-7-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 decisions 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 on a 7-day schedule from the pin stage until harvest. Lannate, Capture or Mustang should be used.

**Sweet Corn.**
Fresh market silking sweet corn should be sprayed on a 2-3-day schedule in the Bridgeville, Concord, Dover, Harrington, Laurel and Seaford areas. In all other areas, sprays are needed on a 3-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 fresh market sweet corn (http://www.udel.edu/IPM/traps/latestblt.html and http://www.udel.edu/IPM/thresh/silkspraythresh.html). Economic levels of fall armyworm can be found in most late-planted sweet corn. Insecticides must be directed into the whorls with at least 25-30 gallons of water per acre to achieve control. In addition, at least 2 applications may be needed. Lannate, Avaunt or Warrior have provided effective fall armyworm control in whorl stage corn.

**Maintain Fungicide Sprays on Watermelons** - Ed Kee, Extension Vegetable Crops Specialist; kee@udel.edu

Several growers have asked about discontinuing fungicide sprays on watermelons in light of the dry weather. If growers expect to keep harvesting, fungicide coverage needs to be continued. You are protecting new tissue resulting from leaf and fruit growth. Fungicides do breakdown and new coverage is necessary. Additionally, heavy dews can provide enough moisture to support the disease causing organism. Sprays need to protect until the last harvest is finished.

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

**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.

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<th>Location</th>
<th>08/07/02</th>
<th>08/06/02</th>
<th>08/05/02</th>
<th>08/04/02</th>
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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.

Field Crops

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

Soybeans.
It is still important to monitor fields for spider mite infestations. If left uncontrolled, this pest can cause 40-60% yield loss. Although it is tempting to give up on drought stressed fields, treated fields can recover when miticides are applied in a timely manner. Although diseased mites have been detected, the amount of natural mortality varies from field to field. In some fields we have seen populations crash from both diseases and natural enemies, and in others populations continue to increase. The treatment threshold for mites is 20 mites per leaflet or 10% of the new growth exhibiting stippling damage with mites present on leaves. The only available materials for treatment are dimethoate 4E (1 pt/A) or Lorsban (1 pt/A). Although Lorsban has provided good control, it only provides contact activity. If dimethoate is used, an acidifying-penetrant similar to LI-700 or AD-100 should be used. In most cases, it may take 2 applications to achieve satisfactory control. Also, edge treatments are not advised at this time because mites have already dispersed into the main part of the field. Edge treatments are only effective if infestations are caught early in the season before significant damage is noticed on field borders.

It will also be important to watch all soybean fields carefully for potential earworm outbreaks this year. Since the drought has resulted in open canopy situations in many fields, both full season and double crop beans will be attractive to egg-laying moths. Our experiences from the 1999 season indicate that it is important to scout for this insect on a weekly basis. As many recall, populations increased very rapidly resulting in wide spread economic losses. In addition, drought stressed fields received later season rains and many fields were very attractive to earworm egg laying. A combination of factors indicates that conditions may be favorable for an earworm outbreak in soybeans this year:

(1) Since corn has either already or is rapidly drying down, emerging earworm moths will be attracted to late planted vegetables and any open canopy, blooming soybean fields.

(2) Results of the 2002 Virginia Field Corn Survey used to predict the potential for earworm outbreaks in soybeans indicate that the potential is very high, especially compared to 2001. This could result in migratory populations heading our way in mid to late August.

(3) Although results of our field corn survey are generally lower than last season, we are seeing a significant increase in moth catches in blacklight and pheromone traps.

(4) Weather conditions in August will determine if egg laying results in economic larval
damage. Last year, humid, wet weather caused populations to crash quickly. If the weather remains hot and dry, we may not see a crash this season. It has been our experience that you need to see at least a week of rainy weather combined with warm, humid days to get fungal pathogens to develop and spread between larvae.

So, all fields should be scouted for earworms as soon as blossoms are present. Earworms can also act as defoliators during bloom so a treatment may be needed if 15% of the plants are defoliated. The treatment threshold for pod feeding is 3 per 25 sweeps in narrow fields and 5 per 25 sweeps in wide row fields (20-inches are greater). If a sweep net is not used, a drop (shake) cloth can also be used to estimate populations. The drop cloth should be placed between 2 rows and then the plants are shaken over the cloth in 6 foot of row. A treatment is needed if you find 1-2 larvae per foot of row. When possible, treatment should be delayed until at least 1/3 of the worms are at least 3/8-inch long. In addition, watch for diseased worms since the same diseases that attack green cloverworm can also help to reduce earworm populations.

The following materials will provide corn earworm control in soybeans: Ambush, Asana, Mustang, Pounce, Warrior (all pyrethroids) or Larvin. Larvin acts by ingestion on both small and large larvae. Remember that if you are using a pyrethroid, the primary mode of action on large larvae will be ingestion. Earworms will need to feed to cause death so you will not see much activity from the contact action. Once they ingest the product, they immediately stop feeding. Therefore, fields should not be evaluated for control until 4 days after application. Small larvae are generally killed by contact as well as ingestion. It is important that you do not look at fields 1-2 days after spraying and assume control failure if large worms are present. This could result in unnecessary re-sprays.

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

**Commodity Markets Braced for Higher Prices**

Commodity markets appear to be poised for a move higher based upon a continuing decline in U.S. crop conditions for corn, soybeans, and spring wheat. The move is also expected due in part to continuing strong export demand. For example, rumors are suggesting that U.S. soybean ending stocks (02/03 marketing year) may fall to the 170 million bushel level as compared to the July estimate of 210 million bushels, due primarily to excellent export demand. The rain event this past weekend missed a large portion of the corn belt and many other contiguous grain producing states. Commodity traders are now turning their attention to the August 12th USDA Supply and Demand Report which is expected to more clearly define the perimeters concerning the size of this year’s corn and soybean crops. However, the estimates contained in the August report are not going to definitively answer the crop size question. About 1/3 of the U.S. corn crop is still in the pollination stage, which is late. This means that the ‘potential frost’ factor is likely to become a bigger concern this year, much more so than usual. USDA is expected to project a crop size for U.S. corn of approximately 9.345 billion bushels in the August estimate, anything over 9.5 billion bushels will not be believable. Commodity traders are currently trading the expected number or smaller, with private crop forecasters expecting an even smaller U.S. corn crop. Nevertheless, one would not expect USDA to take 700 million bushels out of this month’s estimate. The point being that anything near a 9.345 billion bushel estimate in the August report is likely to set corn prices back for a spell.

The spring wheat crop condition estimate now rates only 32% of the crop in the good/excellent category, the lowest in thirteen years.
Marketing Strategy

For reasons discussed above, advancing a portion of remaining new crop corn sales ahead of the crop report at $2.60 per bushel or better is advisable. Local basis bids of 20 over Dec. (Southern Eastern Shore) and 10 over Dec. (Northern Eastern Shore) or better are currently available. No new sales are advisable at this time for soybeans or wheat.

Late Herbicide Applications to Soybeans -
Mark VanGessel, Extension Weed Specialist;
mjv@udel.edu

The rains we have had lately have resulted in reconsidering postemergence herbicide applications. In most situations these are rescue treatments, but there is some concern about herbicide injury. The trade-off is herbicide injury versus yield loss due to weeds. Weed competition will be a much greater factor in reducing yields than the herbicide application, even if the plants are blooming. However, most herbicides will not kill large weeds in conventional soybeans (non-Roundup Ready soybeans), so be careful in your herbicide selection that it will provide an acceptable level of control or suppression.

Late-Summer Pasture and Hay Seedings -
Richard W. Taylor, Extension Agronomist,
rtaylor@udel.edu

As mid-August approaches, many of us may begin thinking about planting new forage seedings for pastures or hay production. We might also be thinking about reseeding some of last spring’s fields due to poor establishment this summer because of the continuing drought conditions.

Late summer or early fall is a good time to establish forage plantings since many annual weeds that emerge with the crop will be controlled by the first frost of the winter. Fall is also an advantage in that the crop is able to complete much of the establishment process during the off-season so there is less down time than with a spring seeding. This can be especially true in summer drought years when late summer production is minimal if available at all. Below are some tips to remember during the process of seeding forages.

- Remember a forage establishment if successful will be for many, many years so be sure to soil test ahead of time and make lime and fertilizer (phosphorus and potassium) additions prior to seeding. This will allow you to work the materials into the plow layer. After establishment, all fertilizer and lime applications will be on the soil surface. Only nitrogen moves quickly through the soil. For example, lime effects move downward only about 1 inch per year.

- Calculate a budget for the seeding and weigh the benefits and costs of seeding at the high end (or 1.5 times) of the recommended seeding rate. I often see more consistent success at the higher seeding rates although long-term yield levels may not be any higher.

- Avoid the use of companion crops such as oats. Although a companion crop does provide a minimal amount of early cash flow from the sale of either grain or straw, forage establishment is often greatly delayed and can even lead to poorly
established stands that continue to yield below expectation.

- Much of the demand for hay now is for grass hay. If the market moves back to demanding grass: legume mixtures, legumes such as red clover and white clover can easily be introduced into pure grass stands using no-till or even frost-crack seeding.

- Do not proceed with new seedings until we receive enough rain to wet not only the surface soil, but also the deeper subsoil. New seedings do not have well established root systems so moisture stress can be particularly harsh on establishment. Being certain that the surface and subsoil layers have enough moisture to carry the new seedlings into the winter will be important for long-term success of your planting. Sandy to sandy loam soils can hold about 0.08 inches of water per inch of depth while silt loams hold about 0.16 inches of water per inch of depth. Also, remember that if the rain comes in a short duration downpour, much of the water runs off the surface before having a chance to soak into the soil.

- After the end of September, the risk of establishment failure increases dramatically especially if the temperatures turn cold early in the fall or we experience a harsh winter.

- If you prefer to renovate your grass pasture or hay field instead of replanting it, consider doing weed control this fall to clean out broadleaf weeds. Additional grass seed or even a compatible legume can be overseeded early next spring to thicken the stand. We often see producers overseeding with a minimal amount of grass or legume-grass seed each spring or every other spring to help maintain hay or pasture stands.

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**Corn Silage Harvest Concerns** - Richard W. Taylor, Extension Agronomist, rtaylor@udel.edu

In the last week, I’ve observed farmers beginning to chop corn fields to make silage. In a drought year, one of the major concerns with using drought-damage corn is the potential for the corn to accumulate nitrate to a degree that is toxic to livestock. Corn is not the only plant that should concern growers when it comes to harvesting fields for silage. In addition to corn, soybeans, grain sorghum, sudangrass, millet, and the sorghum sudangrass hybrids have been shown to accumulate nitrates. Also, weeds including jimsonweed, johnsongrass, lambquarter, nightshade, pigweed, Pennsylvania smartweed, Canada thistle, and the docks also accumulate nitrates so there could be concern from these sources if weed control was inadequate in the silage crop.

Drought does not always lead to high nitrate levels in plants since some moisture must be present in the soil for the plant to absorb and accumulate nitrate. Late-planted corn that has produced little top growth because of severe drought conditions may not be as much of a risk as an almost normal corn crop (with respect to height) where moisture was available for early season growth and nitrate uptake. Crops that were fertilized with surface applications of manure may also not be as great a risk if inadequate soil moisture were available for the normal mineralization of the organic nitrogen in the manure.

Nitrate is not in and of itself toxic to animals, but when ingested at high levels it can cause a disease known as nitrate poisoning. In ruminant animals, the nitrates normally found in forages are converted by digestion into nitrite, and then this in turn is converted into ammonia. The bacteria in
the rumen convert the ammonia into protein. If cattle ingest large quantities of a crop containing high levels of nitrate-nitrogen, an accumulation of nitrite can occur in the rumen. Nitrite is ten times as toxic to cattle as nitrate. Toxicity occurs when the nitrite is absorbed into red blood cells and combines with the hemoglobin to form methemoglobin. This latter compound is not near as efficient at transporting oxygen to cells as the hemoglobin is. An animal’s heart rate and respiration increases as oxygen starvation of the cells and tissues occurs. The blood and tissues turn blue to chocolate brown, muscle tremors develop, the animal begins to stagger, and eventually the animal can suffocate.

What can you do to lower the potential for the problem? First, since nitrates tend to accumulate in the lower stem of plants (the plant parts closest to the ground), raise your height of cut to at least 8 to 12 inches above the soil surface for corn and to at least 6 to 8 inches above the soil for millets, sorghums, and sorghum sudangrass hybrids. Stalks contain the highest concentration of nitrate followed by leaves and then grain. Younger plants contain more than mature plants although even mature plants can contain excessive amounts of nitrate if environmental and soil conditions are favorable. Nitrates remain high for several days following the first rain and decline thereafter only if the plant is able to resume growth.

Secondly, when in doubt test all drought-affected forage before it is fed to or grazed by animals. For forage or silage marginal in nitrate accumulation (but below the toxic level cited below), you may have success mixing the material with other forage testing low in nitrates and then feeding the mixture. If you test forage, be sure you understand the test results that you get back. Some labs report results in parts per million of nitrate while others report parts per million nitrate nitrogen. Forages containing 0 to 1,500 parts per million nitrate nitrogen are generally considered safe for livestock. To obtain the corresponding range for parts per million nitrate, multiply parts per million nitrate nitrogen by 4.5 so the safe range in parts per million nitrate is 0 to 6,500. If

the level of nitrate nitrogen is 1,500 to 4,500 parts per million, you must use caution in feeding this forage as problems have occurred at these levels. You can mix, dilute, or limit feed forage in this range. If levels are greater than 4,500 parts per million nitrate nitrogen (>20,000 parts per million nitrate), consider the forage dangerous and do not feed as it is potentially toxic.

When grazing, first feed either a dry roughage first or graze low nitrate forage to reduce the amount of affected plants ingested by hungry animals. When in doubt, test all forage and have your veterinarian or other consultant help calculate the correct ratios of high and low nitrate forages to blend to develop a safe ration for a particular class of livestock. Additional management guidelines for grazing are listed below.

- Frequent intake of small amounts of high nitrate feed helps animals adjust to high nitrate feeds and increases the total amount of nitrate that can be ingested daily without adverse effects.

- Allow cattle time to adapt to increased nitrate in the diet if levels are moderate (<9,000 ppm nitrate or about 2,000 ppm nitrate nitrogen).

- Do not overstock pastures as overstocking forces animals to consume plant parts closer to the ground and that are higher in nitrate.

- Do not strip graze or use high intensity grazing systems on pastures at risk for high nitrates as this also increases the amount of stem and stalk material consumed.

- Feed supplements to dilute the nitrate.

- Graze high nitrate pastures during the day and remove animals at night especially for the first week or two of grazing on high nitrate pastures. This helps acclimate the animals.

- Consider harvesting and feeding high nitrate forages as silage. The fermentation process can reduce nitrate levels during the ensiling process.
Also, test forage for silage after the ensiling process is completed.

- Do not feed green chop if it goes through a heat as nitrite accumulation can occur.

**Weather Summary**

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<td><strong>Rainfall:</strong> August 6 - 0.24 inches</td>
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<td><strong>Air Temperature:</strong></td>
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<td>Highs Ranged from 96°F on August 2 to 80°F on August 6 &amp; 7.</td>
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<td>Lows Ranged from 73°F on August 5 to 56°F on August 7.</td>
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<td><strong>Soil Temperature:</strong> 86 °F average for the week. (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](http://www.rec.udel.edu)

**Ag Fact**

The Amish Community in Delaware settled in 1915, migrating back East from Amish settlements in Oregon. Jacob K. Miller arrived in Dover on February 8, 1915. This strong agricultural community descends from Old Order Amish that migrated back, rather than an off-shoot from the Lancaster County community.

**UPCOMING EVENTS:**

**Wicomico Farm & Home Show**

Winterplace Park  
RT 50 & Hobbs Road  
Salisbury, MD 21804  
August 15-17, 2002

Compiled and Edited By:

Tracy Wootten  
Extension Associate-Vegetable Crops

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