**Vegetables**

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

**Cabbage.**
Continue to scout for diamondback and cabbage looper larvae. Cabbage looper is still the predominant species being found. A treatment should be applied if 5% of the plants are infested and before larvae move deep into the hearts of plants. If both insects are present, Avaunt, a Bt, Proclaim or Spintor will provide control. If cabbage looper is the predominant species, Confirm or a pyrethroid will also provide control.

**Lima Beans.**
Earworm, lygus, green cloverworms and stinkbugs are present in lima beans throughout the state. 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 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 5-7-day schedule for corn borer, corn earworm and pepper maggot control.

**Snap Beans.**
All processing snap beans in the bud and pins stages should be treated with Orthene for corn borer control. Asana or Capture will also be needed at the pin spray for earworm control. At the present time, two sprays with Asana, Capture or Lannate will be needed between the pin spray and harvest for a combination of corn borer and corn earworm control. All fresh market snap beans should be sprayed on a 7-day schedule with Lannate or Capture.

**Sweet Corn.**
All fresh market silking sweet corn should be sprayed on a 2-3-day schedule throughout the state.

**Lima Bean/Downy Mildew Update Twilight Meeting**

Date: Monday, September 10, 2001
Time: 5:00 – 7:00 p.m.
Place: West Farms, Milford, Delaware
More Information to Follow Next Week.
Vegetable Diseases - Kate Everts, Extension Vegetable Pathologist, University of Delaware and University of Maryland; everts@udel.edu

MELCAST for Watermelons
EVI Values (Environmental Favorability Index)
Do not use MELCAST if there is a disease outbreak in your field, it is a preventative program. Any questions, please call David Armentrout at (410) 742-8788 or e-mail: da88@umail.umd.edu

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Watermelon Fields should be sprayed with a fungicide when 30 EFI values have been accumulated by the weather station nearest your fields. Add 2 points for every overhead irrigation. After a fungicide spray, reset your counter to 0 and start over. If a spray has NOT been applied in 14 days, apply a fungicide and reset the counter to zero. The first and last day above can be partial days so use the larger EFI value of this report and other reports for any specific day.

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

Field Crops

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

Soybeans.
Corn earworm larvae continue to be found in soybeans in Kent and Sussex Counties. Although an occasional field has reached threshold levels, generally we are finding between 1-4 per 100 sweeps. If we are going to see an increase in populations, we should see it by the end of this week or early next week. All fields should be sampled through the middle of September; especially fields where blossoms are present. The treatment threshold is 3 per 25 sweeps in narrow row fields and 5 per 25 sweeps in wide row fields. We are also seeing an increase in green cloverworm populations. During the pod-fill stage, a treatment is needed if you find 15% defoliation.

We have also had reports of isolated stinkbug problems in soybeans. Stinkbugs are most damaging at early podfill that is after full size pods appear and have small seeds formed. Stinkbugs inflict mechanical injury to the seed as well as aborted pods. The degree of damage caused by this insect depends to some extent on the developmental stage of the seed when it is pierced by the stinkbug's needlelike mouthparts. The younger the seed when damaged, the greater the yield reduction. Although late season infestations may not affect yield, bean oil content and germination will be reduced. Information from the south indicates that a treatment may be needed during pod-fill if you find 2 stinkbug adults and/or nymphs per 10 sweeps. Remember
both the green and brown stinkbug can cause damage. However, do not confuse the brown stinkbug with the predatory stinkbug - the spined soldier bug. You can tell the two apart by looking at the "shoulder area": The brown stinkbug has rounded shoulders where as the spined soldier bug has a prominent spine on each "shoulder."

We are also getting a number of questions about soybean aphid. In 2000 and 2001, this aphid caused significant losses in soybeans in the Midwest. In 2001, it has been found in New York and southeast Pennsylvania. A number of folks in Delaware - including IPM personnel, the Delaware Department of Ag, consultants and agribusiness reps have been sampling fields for soybean aphids since early July. In 2002, the Delaware Department of Ag intends to do an in-depth survey for this aphid. To date, they have not been detected in Delaware. We will keep you informed if we find any present in the state. Here is some additional information about soybean aphid:

**Biology and Life History:** This aphid overwinters in the egg stage on buckthorn and moves to soybeans in the summer. The optimum temperature for development is 68-75 °F. In general, populations peak in vegetative stages (V-2) to bloom (R-1 to R-2) and then decline. Early in the season they are found on new trifoliates and new leaves on side branches. In July, they move lower in plant on undersides of leaves, petioles and on pods. It is the only aphid known to truly colonize (i.e. reproduce) on soybeans.

**Damage from Soybean Aphid:** Feeding damage from aphids can result in a 28% reduction in yield. It is also known to vector soybean viruses including soybean mosaic, peanut mottle, and bean yellow mosaic. Damage symptoms will appear as reduced height, leaf distortion and reduced vigor.

**Identification:** When it was first detected in the Midwest in 2000, many thought it was the melon aphid. It is a very small aphid, yellow in color with black cornicles ("tail pipes") and a clear tail. Melon aphids are very similar except that the tail area is black. If suspect samples are found, please contact your county agent or Joanne Whalen at 302-831-1303. Samples will be sent off for confirmation.

**Buckthorn Plant**

**Could We Find Soybean Aphids in Delaware?** The answer is yes. However, this aphid uses buckthorn as an overwintering host and this plant is not prevalent in our natural landscape. It is used by homeowners as a landscape plant, so some buckthorn species are present throughout the state. Although we commonly find single aphids on soybean leaves throughout the season (usually green peach aphids), the only suspect field was in Maryland in 2000. This field was sprayed before the aphid species was identified so to this date it has not been officially confirmed as present in Maryland or Delaware.
**Corn Hybrid Twilight Field Day**  
**Date:** Tuesday, September 11, 2001  
**Time:** 5:00 PM - 7:00 PM  
**Place:** UD Corn Research Plots, Pratt Farm, Smyrna.  
**Directions:** From Rt. 13, head east on the Smyrna-Leipsic Road, go about ½ mile. Farm is on the left. Signs will be posted.  
**Dinner:** Dinner will be provided

All corn producers are invited to attend our Corn Hybrid Field Day at the University of Delaware Corn Research Plots near Smyrna. The Scuse's are our cooperating farmers for these trials. You will get to see a large number of varieties from many companies side by side. In addition, UD Corn Breeders and Extension Crop and Pest specialists will be on hand to talk about the research they do and critical considerations with growing corn in DE. Pesticide and CCA credits will be given.  

Phone 302-697-4000 or 302-831-2506 to register by September 10. Anyone interested is welcome to attend. For more information or special needs to attend this meeting, phone ahead of time.

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**Matching Forage Species to Soil, Site, Climate, and Grazing Animal Characteristics** - Richard W. Taylor, Extension Agronomist; rtaylor@udel.edu

Too often we plant a pasture mix and expect it to select for us the most desirable species for the field. Species selection should be a well thought out process. Selection must be designed to not only meet your grazing system goals, the nutritional requirements of species and class of livestock, but also to match the soil, site, and climate characteristics on your farm. In addition, you must match forage species productivity characteristics to your grazing goals such as supporting livestock during lactation or breeding season or supporting grazing at specific times such as fall and early winter or mid-summer. Whether intending on grazing horses, dairy or beef, sheep, goats, or an exotic species, new grazing managers should not buy a farm without regard for the site and soil characteristics needed for successful grazing. Let’s briefly look at the characteristics of some forage species available to mid-Atlantic producers.

Kentucky bluegrass (KyBG) is productive in cool, moist weather usually seen in the spring or early summer and is most likely to be used only in northern New Castle County in Delaware. The grass requires fertile, well-drained soils and does not grow well if the soil temperature is less than 50°F, so substantial top-growth is not likely until mid-to-late April. It is not suited to droughty sites. It is highly palatable, very aggressive under favorable growing conditions, and the grass of choice on most horse farms. Keep the pasture between 2 and 6 inches tall for the best productivity and least weed pressure.

Orchardgrass (OG) is adapted to moderately poor to well-drained soils and has some heat and drought tolerance (more than KyBG and timothy). It can grow on shallow reasonably infertile soils, but responds well to nitrogen (N) fertilizer. It begins growth in early spring and grows well in late fall, but not as good as tall fescue (TF). One-third to two-third of total production can occur in times other than the spring flush normal to cool-season grasses. It establishes readily, can be seeded no-till, and has some shade tolerance. In southern Delaware, leaf diseases can cause reduced stand longevity.

Reed canarygrass (RGC) is adapted to a wide range of soil and climate conditions. It is the best grass to choose for wet soil conditions and tolerates flooded conditions well. It also has excellent drought tolerance once established, but growth and production will be limited without water. Digestibility is very high and palatability is good if low-alkaloid varieties are seeded. It begins growth in early spring and grows until frost, but must be rotationally grazed. It does best as a monocrop stand, responds well to high N rates, but is very slow to establish.
Annual, perennial, tetraploid ryegrasses (A, P, T-RG) are adapted to a wide range of soil types and have some drought and flooding tolerance, but even PRG and TRG are relatively short-lived. These are best in short rotations and planted with legumes. They all are highly palatable and very digestible. They grow in cold soils (even some in mild winter periods), but are dormant or unproductive in summers if hot and dry. Ryegrasses are very aggressive during establishment, can be seeded no-till or conventionally, and are very responsive to N fertility.

Timothy is a short to intermediate lived species. It is best suited as a hay species since little to no growth occurs under warm, dry conditions in mid-summer. Timothy is weakened by frequent cutting or grazing regimes. It heads in late spring or early summer, and for this reason like brome grass it is not well adapted to mixtures with alfalfa where the alfalfa is cut at late-bud or early bloom. By itself, late maturity can be an advantage on poorly drained sites. The best growth from timothy occurs when day temperatures are between 65 and 72° F.

Tall fescue (TF) is a long lived, deep-rooted grass adapted to a wide range of soil and climate conditions. It tolerates both acid and alkaline soils (pH 4.5 to 9.5). TF tolerates poor drainage, especially in winter, has excellent drought resistance although productivity declines, and grows well at low temperatures (35 to 40° F). Fescue provides the greatest number of grazing days per year of any species grown in our area. TF tolerates close grazing but does best rotationally grazed. Endophyte infestation can lower animal performance and interfere with breeding, so it is best to grow it with a legume in the mixture. It is very slow to establish (not as slow as RCG) and is weak as a seedling. Use mixtures with legumes and not other grasses since palatability differences among grass species occur. TF responds well to N fertilization.

Smooth brome grass (SBG) is best suited to fertile, well-drained soils and areas of low to moderate summer temperatures. Once established, it can survive periods of drought and extreme temperatures. SBG is better than OG, timothy, and KyBG in areas with low rainfall and high temperatures. Brome grass goes dormant in dry, summer periods, but begins regrowth in the fall if moisture is available. Poor stand establishment and susceptibility to seedling and leaf diseases have restricted its use in our area since we are on its southern edge of adaptability. It is best suited as a hay crop.

Other species are available, but have significant limitations. Hybrid bermudagrasses (HBG) can survive in this area for years if winters are not too open and cold. Until recently, HBG has only been established from sprigs or long-hay and this has limited its adoption. Research at Delaware State University is looking at a new seeded-type HBG but it will be a time before the evaluation is completed. Other warm-season grasses such as switchgrass, big bluestem, indiangrass and Eastern gamagrass can be grown to fill the summer slump but seed is expensive, establishment slow, and their utility limited especially as grazing forages.

Of the species discussed above, we often find that our choices are narrowed down to TF and OG in the southern areas of the state and TF, OG, and KyBG in the northern portions of the state. If slow establishment is not a concern and rotational grazing is planned, another option for all regions is the low alkaloid varieties of RCG. RCG is especially important for wet sites.

For those considering new forage plantings you can discuss your plans and choices with your local county ag extension agent, the researchers at Delaware State University, or with the small farms extension personnel at Delaware State. I also will be happy to discuss forages with you or I can put you in contact with any of the folks above. My phone number is (302) 831.1383 (office) or (302) 545.2395 (mobile) and my email is listed above.
Corn/Sorghum Nitrates Toxicity in Livestock - Richard W. Taylor, Extension Agronomist; rtaylor@udel.edu

For certain areas of the region primarily in northern Delaware, certain areas of Kent County Delaware, and southern New Jersey, rainfall has been well below normal for this year and has resulted in severely drought stressed corn. When a factor such as drought stress interferes with normal corn or sorghum or sudangrass growth and there is a large amount of nitrate in the soil from either manure or from a planned commercial fertilizer application, nitrates can build up in plants to levels that are toxic to livestock. The level of nitrates in the tissues is in direct response to increasing fertilizer nitrogen (N) application rates and is generally greater from nitrate containing fertilizers than from ammonium sulfate or urea forms unless conditions after fertilization favor the rapid conversion of these N forms to nitrate. Nitrates also accumulate with delayed application of fertilizer such as with sidedressing at 12 to 18 inch crop height.

The highest concentration of nitrates is generally in the lower third of the stalk or plant stem. If moisture conditions improve while the crop can still grow, the conversion process of nitrates to plant proteins accelerates and nitrate levels fall toward normal levels. This does not always occur since corn may have begun to senesce or with sorghum/sudangrass growth often ceases in September when cold nights shut the crop down.

What can a grower do to avoid livestock nitrate poisoning? First, if there is any question in his or her mind about the nitrate status of the crop, samples of the harvested forage should be obtained and sent to a qualified laboratory for analysis. If the nitrate levels are not high, the forage can be salvaged by diluting it with other feed or forage to reduce the level of nitrate below the level that animals will be adversely affected. Because of the potential for nitrate poisoning in drought-stressed corn (include grain and forage sorghum and sudangrass hybrids in this caution) should not be grazed or green chopped for feed. If harvesting corn (and the other forages) for silage, set the chopper high to avoid harvesting the high nitrate lower stalks. Also, properly ensiled and fermented high nitrate corn silage may become a usable feed as one-fifth to two-thirds of the nitrates can be lost during the fermentation process so always test the finished product. If the high nitrate crop is cut for hay, the nitrate levels will remain high after the curing process as it does not reduce the level of nitrates.

Lastly, what are the toxicity symptoms in livestock? Symptoms include increased pulse rate, quickened respiration, heavy breathing, muscle tremors, weakness, staggered gait and sometimes blindness. In addition if severe, the mucous membranes in the mouth will turn blue and feel cold to the touch. Contact your veterinarian immediately if you notice symptoms and keep the animals as quiet and comfortable as possible until help arrives.

Manganese Deficiency and Drought Stress on Soybeans - Richard W. Taylor, Extension Agronomist; rtaylor@udel.edu

I am still seeing manganese (Mn) deficiency symptoms in many soybean fields. Manganese deficiency is characterized by dark green veins and light green (mild deficiency) to yellow (moderately severe deficiency) to white (severe deficiency) interveinal leaf tissue. The symptoms often are most severe on the most recently emerged leaves.

For full-season soybeans and early double-cropped soybeans, it is probably too late to apply foliar Mn and obtain an economic return to the investment. However, for late double-crop beans where the symptoms are widespread and moderate to severe and the crop is still in the flowering stage of growth, foliar Mn applied at 1 to 2 lbs Mn per acre could boost yields at profitable levels. Even if you do not apply foliar Mn, you should be making note of which fields and where in the field
symptoms occur so you can monitor these areas in
the future. If wheat or barley are to be planted this
fall, careful monitoring early will allow you to
apply Mn to the small grains before they are
severely injured by Mn deficiency. You should
also note the areas so you can do soil testing to
determine the underlying problem. Check to see
if the native Mn concentration in the soil is too
low or whether the soil pH is too high, since the
higher the pH the lower the availability of Mn in
the soil.

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

**International Grains Council Lowers World
Coarse Grain Forecast**
The IGC lowered its world coarse grain crop
forecast by 12.4 million tons to 870.2 million tons
Ending stocks for the year were projected at 141
million tons, down from 153 million a month ago.
This is one of the largest decreases in the IGC's
crop forecast that has been reported in years.
USDA’s world coarse grain crop production
forecast is lower, however, their ending stocks
forecast is higher than the IGC's.

**General Comments**
Unevenness of U.S. corn/soybean crop maturity,
and variable weather conditions will send market
watchers guessing into the September crop report
as to what the impact of recent rains might be
upon 2001 crop production. Recent reports have
suggested that the U.S. corn production could fall
below the 9 billion bushel mark, with soybeans
coming in at 2.8 billion bushels or less. If the
lower crop estimates materialize, then we are
likely to see some improvement in new crop corn
and soybean prices when the report is issued.
USDA's crop size estimate would normally
become fairly firm based upon September 1
conditions, however, an uneven U.S. crop could
send the final tally to the October report. The
impact of weather reports and weekly crop
condition ratings, which have played a dominant
role in commodity price bidding these past two
months, will begin to wane significantly as we
approach harvest.

**Marketing Strategy**
Due to the uncertainty in crop size entering this
falls harvest, corn producers need to consider
firming up pre harvest sales for new crop corn
particularly where storage might not be available.
Dec. corn futures are currently trading at $2.29 per
bushel with local basis bids on the Shore being
offered at 10 over, equating to a forward contract
price of $2.39 per bushel.

Those wanting to retain staying power in the
market for previously sold grain might be
interested in the purchase of the $2.30 Dec. call,
currently valued at just under 10 cents per bushel.
The purchase of the call provides for staying
power in the market until November 24th, with
the risk for loss being the premium cost. One
should bear in mind that market analysts are
projecting a $2.45 Dec. Future as the upper range
of the price forecast, even if the lower crop
production forecasts for U.S. corn materializes.

**Weed Control in Seedling Alfalfa** - Mark
*VanGessel, Extension Weed Specialist*
mjv@udel.edu

Getting seedling alfalfa off to a good start is
critical for a long-term quality stand. The
following herbicide suggestions are for pure
alfalfa stands. Gramoxone or Roundup can be
used prior to planting to kill emerged weeds.
Balan or Eptam can be used pre-plant
incorporated for control of small-seeded broadleaves such as pigweed or lambsquarters and most annual grasses. Residual control of either Balan or Eptam is only a few weeks. Fall postemergence treatments include Butryrac 200 (2 to 4 alfalfa trifoliates), Buctril (at least 4 trifoliates), Kerb, Poast Plus, Select, or Pursuit (at least 2 trifoliates). Pursuit provides the broadest spectrum of control, and can be tank-mixed with Buctril or Butryrac to improve control. The addition of Buctril to Pursuit will improve German moss, lambsquarters, and henbit control. Kerb will provide the best common chickweed control, but it must be applied when soil temperatures are 50°F or less and requires rainfall for activation. Applications to small weeds are critical for effective control. Poast Plus and Select are effective only on grasses, and cannot be used on alfalfa plus grass stands. Most of the labeled herbicides can cause some crop injury to the alfalfa.

**Weed Control For Grass or Mixed Pastures** - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

Weed control options are very limited for establishing a grass or mixed stand pasture. There are no products to use pre-plant incorporated or preemergence that will provide residual control and not injure the crop. Early postemergence options are also very limited. Ally, Banvel, Crossbow, or 2,4-D can be used for pure grass seedlings (they will kill clovers and alfalfa) but grasses need to be well established at time of application. Ally can injure fescue and ryegrass. Fescue injury can be reduced if Ally is tankmixed with 2,4-D. Pursuit is labeled for established mixed pasture stands (broadleaf plus grass pastures).

**Options for Harvest Aid Treatments** - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

A harvest-aid may be a consideration to dry down vegetation prior to harvesting to reduce foreign matter in the harvested grain. For corn, Defol (sodium chlorate) is labeled for applications 14 days prior to harvest and it can be applied by air. Defol will dry down plants, but it does not have herbicide activity. Dry down is slow; expect at least 14 days for dry down. Also, 2,4-D is labeled, but it must be applied by ground rig, which provides challenges for getting it where it is needed. Apply after the hard dough or dent stage. Finally, glyphosate (Roundup, Touchdown, Glyphomax) is labeled, but must be used with care due to potential injury to desirable vegetation. Apply glyphosate at 35% moisture or less and black layer has formed. Allow 7 days between application and harvest. In soybeans, Gramoxone and glyphosate are labeled. Gramoxone can be applied by air after at least one-half of the soybeans have dropped their leaves. Glyphosate (Roundup, Touchdown, and Glyphomax) are labeled for an application with either ground rig or aerial equipment. Apply to soybeans when pods have lost their color and wait 7 days before harvesting. Be sure to read the label for all precautions.

**UPCOMING MEETINGS:**

**Next Quarterly Pesticide Applicator Training and Testing**

**Date:** September 4-5, 2001  
**Location:** Kent County Extension Office Pardee Center  
The first day is training—8:30 am-4:30 pm.  
Training continues the morning of the second day, 8:30 am – noon. Be sure to bring red workbook.  
The exam starts at 1:00 pm the second day (Sept.
5.) The exam is closed book. Be sure to bring your calculator for the calibration questions.

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**Lima Bean/Downy Mildew Update Twilight Meeting**

**Date:** Monday, September 10, 2001  
**Time:** 5:00 – 7:00 p.m.  
**Place:** West Farms, Milford, Delaware  
More Information to Follow Next Week.

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**Corn Hybrid Twilight Field Day**

**Date:** Tuesday, September 11, 2001  
**Time:** 5:00 PM - 7:00 PM  
**Place:** UD Corn Research Plots, Pratt Farm, Smyrna.  
**Directions:** From Rt. 13, head east on the Smyrna-Leipsic Road, go about ½ mile. Farm is on the left. Signs will be posted.  
**Dinner:** Dinner will be provided  
Phone 302-697-4000 or 302-831-2506 to register by September 10, and for more information on the meeting.

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**Pesticide Container Recycling**

**Date:** September 20, 2001  
**Location:** Sussex Conservation District Maintenance Yard

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**Weekly Crop Update**

**Weather Summary**

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0.18 inches: August 24  
0.04 inches: August 28 |

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<th>Air Temperature:</th>
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| Highs Ranged from 87°F on August 27 to 78°F on August 25.  
Lows Ranged from 70°F on August 28 to 56°F on August 26. |

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<th>Soil Temperature:</th>
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| 80°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

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Compiled and Edited By:

Tracy Wootten  
Extension Associate - Vegetable Crops  

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