Dave’s Ramble

Torn and trampled on dreams trouble the heart; Splendor to squalor in seemingly a blink of the eye...

Years passed one by one as I traveled by the old white farmhouse. My mind suspends in time images of ladies and children fussing, cows lowing as the farmers leave the crops and assemble to render prayers of thanks for this day’s bread to break. That magnificent white columned house, oyster shelled lane beset with resting horses hitched in the shade. I am immersed in this daily lunch gathering on the porch for strengthening and encouragement, looking toward the day’s end of toil. Of truth some say that I was born in the wrong era, for who would have such longings?

I blink once, now that old house and its lady caretaker left alone to fend off ravenous time. Memories of my grandmother’s persistence against the foe, armed with duck tape, calk and paint forever masking the crumbling architecture - Assumingly, not for pride’s sake or vanity such continual preparation, but awaiting the arrival, a single day’s return of the farmers. Respect for what was and what will be. Oh! How I wanted to rescue the old home farm!

My second blink, the unimaginable, enraged I cannot contain; those circling cowardly wolves mere moments past the last breath of the noble woman begin the plunder of her estate. Their litter, gang graffiti and iniquity rape the soul of that home, while they gloat as urinating hounds. I alone am guilty. What will the ransom be for such disrespect? Causes I seek! Possibly, a lack of parenting; not enough time to teach our children about respect and honor. Perhaps blame should be laid upon grandparenting; assumptions that children care nothing about connections to their past.

Before my last blink endured, I will surround myself with children of aspirations of honor and goodwill. It’s a duty to instill in our children a connected vision of humanity: past, present and future. Teach them the necessity of dreaming, even one that is trampled and torn!
Maryland State Horticultural Society
Summer Tour
July 6, 2006

Make plans to attend the 2006 Maryland State Horticultural Summer Tour on July 6, 2006.

Tentative Schedule:
7:30 am  Depart Catoctin Mountain Orchards – (301) 271-7491 (Off Rte. 15 near Thurmont, MD)
8:00 am  Arrive Frederick (Jefferson Street McDonald’s/strip mall Park & Ride)
8:15 am  Depart Frederick
9:15 am  Arrive COASTAL SUNBELT PRODUCE – 8704 Bollman Place, Savage, MD 20763
http://coastalsunbelt.com/
10:45 am  Depart Coastal Sunbelt Produce
11:15 am  Arrive HOMESTEAD GARDENS – 743 W. Central Ave., Davidsonville, MD 21035
http://homesteadgardens.com
Tour of Production Facility (entrance on Governor’s Bridge Road)
12:15 pm  Luncheon - compliments of Homestead Gardens (held at the Production Facility)
1:00 pm  Tour of Retail Facility (on Central Avenue)
1:45 pm  Depart Homestead Gardens
2:15 pm  Arrive BOYER FARMS – 1500 Severn Road, Severn, MD 21144
3:15 pm  Depart Boyer Farms
Passengers discharged at stops:
3:30 pm  Coastal Sunbelt Produce
4:30 pm  Frederick (Jefferson Street McDonald’s/strip mall Park & Ride)
5:00 pm  Catoctin Mountain Orchard (Thurmont, MD)

PLEASE REGISTER BY JUNE 30, 2006. For registration information please contact Cindy Mason at 301 432-2767 x301. Cost: $30.00 per person (includes beverages on bus, tour bus*, & materials – lunch provided by Homestead Gardens)

*NOTE: All participants must pay entire registration fee regardless if they ride the bus or not.

Cut Flower Conference & Tours
July 18-19, 2006

Lectures: (July 18th): College of Southern Maryland – Prince Frederick, MD
Tours: (July 19th): Three Cut flower operations in Calvert and St Mary’s Counties

For more information call 301-596-9413.

Turf Farm Field Day
University of Maryland Paint Branch Turfgrass Research Facility
July 19, 2006

This year, the turf farm will have its Annual Field Day on Wednesday, July 19th. As usual, our field day is geared more towards professional golf course managers and landscape contractors, although everyone is invited. The field day will include a morning session for general turf managers and an afternoon session oriented towards the needs of golf course managers.

If you have any further questions, please give me a call: David Funk, Facility Manager, Paint Branch Turfgrass Research Facility, 395 Greenmeade Drive, College Park MD at:301 403-8195, Cell 301 335-4208 or dfunk@umd.edu

Field Crops Research Twilight Barbecue & Ice Cream Social
CMREC, Upper Marlboro Farm
August 24, 2006

You are invited to attend a twilight wagon tour of the University of Maryland Upper Marlboro Research Farm, on Thursday, August 24, 2006 from 4:30 p.m. to 8:30 p.m. Maryland Cooperative Extension will host this Field Crops Research Twilight Barbecue & Ice Cream Social.

Served after the barbecue, “Old-fashioned” homemade ice cream! It’s “old fashioned” ice cream because we will be using a 1929 Fair-Banks Morse antique gas engine to do the cranking.

This event will highlight all field crops, agronomic and horticultural research projects currently conducted at the CMREC Upper Marlboro Farm, possibly including but not limited to the following:
◆ Bt Sweet Corn
◆ Entrust Study on Potatoes
◆ Vineyard Projects - Table and Wine Grapes
◆ Corn Stalk Nitrate Test Study
◆ P Phyto-Remediation Grain vs. Forage Systems
◆ Peach & Beach Plum Research
◆ Ethnic and Specialty Vegetables
◆ Strip-Till/No-Till Vegetable Production Techniques
◆ Blueberry Project

Animal Health Requirements for Showing in Maryland

In order to exhibit/show livestock in Maryland, you must have an approved copy of a Certificate of Veterinary Inspection (CVI). Each animal must be identified on the certificate. The CVI for Maryland exhibitors must be filled out, completed, and signed by an accredited veterinarian within 45 days of the first exhibition. Faxed certificates will not be accepted. Incomplete forms will be returned.

Within 45 days of your first show, you should have your animals inspected by an accredited veterinarian. After completing the CVI, you should mail or hand carry it (along
with a copy) to the Animal Health Lab in Annapolis, the Frederick Lab, or the lab in Oakland.

All animals will be inspected for general health upon arrival to the show. Those showing clinical signs of any contagious or infectious disease will be removed from the show or fair. The State Veterinarian reserves the right to the final determination. In such cases the health certificate may be modified, suspended, or revoked.

Approval of all entries for the first showing in Maryland will extend in 60-day increments through the show season, providing that the status of the herd/flock or animal(s) does not change. The CVI must be signed and dated on the reverse side by a MDA animal health official at each event to extend the 60-day effective date.

The 2006 Fair-Show Requirements and CVI can be downloaded from the MDA web site at:
www.mda.state.md.us/animal_health/

Scrapie requirements
All sheep and goats, regardless of age or sex, must be from flocks registered in the scrapie control program and so identified by a) USDA approved tags, b) a legible registration tattoo, or c) an approved premise tattoo, before going to a Maryland fair or show.

TB and Brucellosis
Goats originating in Maryland from herds not under quarantine or restriction, are not required to be tested for Brucellosis or Tuberculosis for shows in Maryland.

Out-of-state exhibitors
All out-of-state entries must be accompanied by a valid interstate Certificate of Veterinary Inspection. An approved copy of the certificate must be forwarded by the State of Origin to the Animal Health Section.

Edamame: Edible Soybeans
University of Maryland
Below are links to Dr. Bob Kratochvil's edible soybean (edamame) trials in Maryland. Note that “Natto” soybeans are a high grade small soybean used in Japan for tofu and other processed foods.

2005 Food and Specialty Trait Soybean Variety Evaluations:
http://www.nrsl.umd.edu/extension/crops/soybeans/2005FoodSoybean.doc

http://www.nrsl.umd.edu/extension/crops/soybeans/2004FoodSoybean.doc

Other Related Links:
Edible Soybean Production and Marketing, ATTRA
http://attra.ncat.org/attra-pub/ediblesoybean.html

Marketing New Crops, University of Kentucky
http://www.uky.edu/Ag/NewCrops/soybeanmarketing.pdf

Soybean Rust Update
By Bob Mulrooney, Extension Plant Pathologist
University of Delaware
Soybean rust was found June 14, 2006 on kudzu in Colquitt, GA, Miller County in the Southwest corner of Georgia. This site was previously found to have rust during the winter months. This is the latest report of rust from down south. The latest storm, Alberto, has produced rain and humidity that might provide conditions for rust infection and spread. The amount of infection is still low as best we know. Still no soybean rust on soybeans.

Delaware sentinel plots are progressing from growth stage V2-V5 and full scale scouting including the additional 20 sites will begin soon. All the sentinel plots have been checked routinely and are free of rust, obviously.

Continue to check the National site (PIPE) at: http://www.sbrusa.net for the newest forecast and information.

Soybean Rust Update
By Arvydas Grybauskas, Pathologist & Associate Professor
University of Maryland
There is a new product registered for soybean rust under section 18 quarantine exemption in Maryland. The product is called Alto and is produced by Syngenta. It is another triazole (cyproconazole), reportedly more active against soybean rust than Tilt (propiconazole). Sooner or later their prepack of Quadris + Alto will become available commercially which will be their best combination product for soybean rust. We have been testing this under the name Quadris Xtra. Please note that the first label for Alto has plant back restrictions that users must be made aware of. Wheat and corn cannot be planted until 180 days have passed from the time of application on soybeans.

Another triazole product, Caramba from BASF recently received section 18 registrations in S. Dakota and Minnesota. Maryland is in line to receive the same registration and it should be coming any day now. I have not seen a label for this so I don't know if there will be plant back restrictions for this product as well.

Understanding Soybean Growth Stages: IV.
V3 to V5 – Third, Fourth and Fifth Node
Richard Taylor, Extension Agronomist; rtaylor@udel.edu
To continue the description of soybean growth stages, we now move on to the ‘Third,’ ‘Fourth,’ and ‘Fifth Node’ growth stages. Again, you should refresh your memory of the definitions covered in the first of this series so you will understand what a fully developed leaf is. V3 begins when the leaflets of the third trifoliate leaf to emerge have unrolled sufficiently that the leaflet edges do not touch
The stage continues until V4 or the ‘Fourth Node’ stage when the newly emerged third trifoliate leaf becomes a fully developed leaf (the fourth trifoliate leaf has emerged enough for the leaflet edges to no longer touch). The ‘Fifth Node’ stage occurs when counting from the soil level you have a set of unifoliate leaves (or leaf scars if these leaves have dropped off), and four fully developed trifoliate leaves (Photo 2).

Photo 1: Soybean plants in the V3 or Third Node stage at which time the leaflets on the third trifoliate leaf to emerge have unfurled enough so the leaflet edges no longer touch. This means that the fully developed leaves include the unifoliate leaves and the first and second trifoliate leaves.

Usually by the V3 to V5 stage, you can easily identify nitrogen fixing nodules on the soybean roots. Beans planted from mid-May on will be either at or approaching this stage at the time you should be scouting fields (30 to 40 days after planting) to determine if soybean cyst nematodes are of concern and are reproducing on your soybean variety. Leaf area is usually sufficient by the V5 growth stage so that foliar manganese (Mn) applications can provide enough Mn to the plant to sustain growth until near the time the plant begins the reproductive phase. Yield reductions with Mn deficiency can be significant so scout fields carefully at this stage to allow time to treat early with Mn if a deficiency is present. Weeds should be controlled at least by the end of this growth period since competition for moisture, sunlight, and nutrients is becoming strong and weeds can significantly reduce yield potential.

In late-planted, double crop beans, flowering can begin once the plant reaches the V4 stage of growth although in single-crop plantings flowering will not occur until the days shorten to the appropriate day length (actually the nights lengthen to the point at which the variety is triggered to turn reproductive) following the longest day of the year (June 21).

Dry weather early, combined with high overwintering soybean cyst nematode (SCN) numbers and SCN susceptible soybeans can result in early season stunting of soybeans. This is particularly true for sandy knolls or other places that are more drought prone. Of course other causes can result in soybean stunting so soil testing, herbicide carry-over and other issues should not be ignored when trying to diagnose situations like this. It usually takes about 28-32 days from planting to see the white and yellow cysts on the roots to aide in a diagnosis. Soil testing to check for SCN if other causes can be ruled out will help in making a diagnosis.

Practically all plants contain detectable amounts of nitrates and sometimes nitrites. Excessive nitrate accumulation occurs when the uptake of nitrate from the soil exceeds the plant’s ability to use it for protein synthesis. This can result from a number of environmental factors as well as human factors. Typically, nitrates can accumulate in most forages when high rates of nitrogen (especially nitrate forms of nitrogen) are applied to hay or pasture grasses. New research from The Pennsylvania State University has led us to propose changes in the nitrogen (N) recommendations from a set
amount per acre to an amount per ton of expected yield. At the time the fertilizer is applied, the producer will not always know if drought or other factors will reduce yield significantly below the expected target. Therefore, there may be times when too much N is applied and the risk of nitrate poisoning will increase.

Let's look at some of the factors involved in nitrate accumulation other than just rate of N applied and also examine some of the possible management options open to the producer:

1. Plant species differ in their ability to accumulate nitrate, so species selection at planting is important or, in a season when nitrate toxicity is of concern, pastures or hay fields containing certain species should be closely monitored. Some of the species high in nitrate potential include the fescues (probably festuloliums as well), ryegrasses, small grains, millets, and sorghums (sudangrass, sorghums, johnsongrass, etc.). Forbs that can also accumulate nitrates include horsenettle, lambsquarter, morningglory, and the pigweeds. Note that this is not meant to be an exhaustive list.

2. Plant parts differ in the level of nitrate that is accumulated. Seed stalks generally contain the most nitrates with higher levels in the lower stalks (closer to the soil level). If grazing or haying, graze or mow at a higher stubble height than normal if nitrate toxicity problems are thought to be a concern. Leaves accumulate the next highest level of nitrate with seeds or gain having the least.

3. Stage of growth matters since younger growth contains more nitrates than mature forage. If turning livestock out on immature grass, hungry livestock are less likely to selectively graze leaves rather than stems that contain more nitrates. Feed hay to livestock before turning them out onto fresh pasture so they will be more likely to be selective for leaves. Also, always test fields of concern prior to releasing livestock on them. The Delaware Department of Agriculture can test samples for you but be sure to contact them ahead of time for instructions and to be sure the testing lab has time to run the samples.

4. This year the drought conditions make nitrate accumulation likely in many pasture and hay fields that have been fertilized with N fertilizer. In any season following fertilization, nitrate accumulation can sometimes occur during periods of cool, cloudy weather when the plants are accumulating nitrates but do not have enough sunlight to convert them to proteins and amino acids. The quantity of nitrate in a plant which is dangerous to ruminant animals is sufficient for only 2 to 4 days of active plant growth. Problems created by weather can usually disappear but the plants rapidly grow out of it until later in the season. If wet weather occurs later in August and September it is often seen again. In our area it is the one common disease that can look like soybean rust when the spots are small.

5. Other management options include dilution by feeding forages known to be low in nitrates. Ensiling forage is another way to reduce nitrate levels although very high nitrate levels (10,000 to 20,000 parts per million) will not be reduced to levels that are not of concern. Always have questionable forage tested before feeding to ruminants.

6. Acid soil and phosphorus deficient soils can increase the amount of nitrate plants accumulate. Maintain your soil pH at 5.5 or greater and be certain adequate phosphorus is available by testing your soil on a regular schedule.

7. Lastly, you can save money at the same time as you reduce your risk of nitrate poisoning by reducing or eliminating N fertilization during extreme droughts such as we are experiencing this year. We've shown in the past that N fertilization of some crops during severe droughts can actually reduce yields and stands. If an adequate stand of legume is present in a pasture or was present at the beginning of the year, the legume or the residual from the legume should be enough to maintain a pasture's productivity should we get adequate rainfall at some point.

Soybeans and Septoria Leaf Spot
A Soybean Rust “Look Alike”
Bob Mulrooney; Extension Plant Pathologist;
University of Delaware, bobmul@udel.edu

Septoria leafspot is usually the first foliar disease that is seen in soybeans. With the return of moisture and cooler temperatures it will be found on the first true leaves (unifoliate) on beans that are emerging now. It can cause some early leaf spotting and dropping of those first leaves but the plants rapidly grow out of it until later in the season. If wet weather occurs later in August and September it is often seen again. In our area it is the one common disease that can look like soybean rust when the spots are small.

Septoria brown spot on soybeans

Agronomic Crop Insects
Joanne Whalen, Extension IPM Specialist;
University of Delaware, jwhalen@udel.edu

Alfalfa
We are starting to see a significant increase in potato leafhopper populations – both adults and nymphs. Remember, once yellowing has occurred you have already experienced yield loss. Damage can happen quickly, especially when plants are small. Although cutting can help to control populations, fields should still be scouted within a week of cutting for leafhoppers. The treatment thresholds are 20 per 100 sweeps on alfalfa 3 inches or less in height, 50 per 100 sweeps in 4-6 inch tall alfalfa and 100 per 100 sweeps in 7-11 inch tall alfalfa.
**Soybeans**

We continue to find bean leaf beetle feeding in the earliest planted fields. A treatment for bean leaf beetle may be needed from plant emergence to the second trifoliate when you find 2 beetles per foot of row and a 25% stand reduction. You should also look for grasshoppers, especially in no-till fields. We continue to see an increase in activity of small nymphs. In general, the treatment threshold for grasshoppers is 1 per sweep and 30% defoliation. Multiple applications are often needed for grasshopper control. In addition, you should also begin sampling for spider mites.

**Soil pH and Crop Performance Revisited**

Gordon Johnson, Extension Agriculture Agent, UD, Kent County; gcjohn@udel.edu

Each year we troubleshoot many problems in Delaware crop fields and soil pH is often at the root of these problems. Dead spots, stunted areas, yellowed crops and poorly performing parts of fields may be due to improper pH. Already in 2006 we have attributed poor vegetable and field crop performance in a number of fields to low pH (below 5).

As a definition, pH is a measure of the hydrogen ion activity, a basic chemical property of solutions. The pH number that you see is a negative logarithmic scale. This means that for each decrease in pH unit, there is a 10 fold increase in the hydrogen activity. A pH of 7 is neutral, below seven is acid, and above 7 is alkaline. With the chemistry lesson over, from a practical aspect, pH affects many chemical and biological processes in the soil. Soil pH impacts mineral nutrient availability, release or tie up of toxic substances, root growth (and as a result, overall plant growth), microorganism activity, mineralization of organic matter, and the activity and breakdown of organic molecules such as herbicides and insecticides.

In Delaware, for most crop plants and soils, a soil pH in the range of 6.0-6.5 should be targeted. Of course, there are exceptions. For example, alfalfa needs a higher pH (6.5-7.0) and blueberries need a lower pH (4.5-5.0).

With this important role, it is critical that soil pH be monitored and adjusted on a regular basis using liming materials. In fields with variable soils, this means that separate samples should be taken where there are different soil types, where soils have been managed differently in the past (different tillage practices, for example), where different crops have been grown, or where different fertilizer and liming programs have been used. Special attention should be paid to take separate samples from areas such as sandy knolls, clay bottoms, ditch spoils, cleared woodland, and where soil has been disturbed (construction zones, areas where roads were in the past, old homesteads and places where buildings once stood, past feedlots and pastures, manure pile locations, etc.). Liming should be adjusted to account for these differences. Variable rate liming is suggested where large differences in pH are found in crop fields or where there are specific spots with low pH.

The most common problems encountered in crops related to pH are: 1) stunted or dead areas where the pH is below 5.2 and 2) chlorotic (yellowed) crops at pH levels above 6.3. At low pH levels (below 5.2) we commonly find deficiencies of magnesium and calcium, root growth stopped due to toxic levels of aluminum, and toxicities of other metals such as manganese. At high pH levels (above 6.3) we commonly see deficiencies of manganese; less commonly zinc and copper. In greenhouses using organic media, and in turf on sandy soils, iron deficiencies are also common at high pH levels. Sensitivity to high pH and manganese deficiency are crop dependent. Soybeans, barley, and wheat are most commonly affected. Corn, grasses, and alfalfa are less sensitive but still can be affected.

While soils on Delmarva are naturally acid and soil pH will naturally drop over time, large or rapid drops in pH may be related to excessive leaching rains or irrigation, poor drainage, or heavy use of ammonium or urea-based nitrogen fertilizers. High pH soils are most commonly due to over-liming.

For additional information on pH, Dr. Richard Taylor has several detailed articles on the subjects of how soils become acid and how to manage manganese deficiencies at high pH levels in past issues of the Weekly Crop Update (see the July 2 and July 9, 2004 issues for example). Archives of the WCU are at: [http://ag.udel.edu/extension/wcu/index.htm](http://ag.udel.edu/extension/wcu/index.htm)

**Cautions with Alternative Liming Materials**

Gordon Johnson, Extension Agriculture Agent, UD, Kent County; gcjohn@udel.edu

Each year we receive questions on different materials being sold or given away as liming products. This has included waste lime, byproducts from industrial processes and manufacturing, lime-stabilized biosolids, wet limes, and waste materials from construction. Indeed, many of these materials may be effective in moderating soil pH, but it is critical to understand what is in these products or wastes, the chemistry of how they will react in the soil, and how they compare with standard agricultural liming materials.

Materials based on limestone such as waste limes and wet limes need to be directly compared to standard pulverized agricultural lime. To make valid comparisons you will need to obtain laboratory analyses of the materials, commonly done in state regulatory laboratories (the Delaware Department of Agriculture will provide this service). A typical analysis will report the following: moisture percentage, calcium and magnesium percentages; total neutralizing value (also known as calcium carbonate equivalent), fineness reported as percentages passing through different sieves (20, 60, 100 mesh for example), and effective neutralizing value which is based on a combination of fineness and total neutralizing value. The finer the lime, the greater the effective neutralizing value. Wet limes will have more moisture and will spread in a different manner. You need to compare how much of the alternative material will need to be spread to equal the neutralizing ability of dry pulverized lime and adjust so true costs can also be compared. In addition, consider whether
or not the material is based on high magnesium (dolomitic) or high calcium (calcitic) limestone.

Lime stabilized biosolids and other lime stabilized wastes also need to be compared to standard pulverized lime. Ask what type of lime and how much was used in the stabilization and get the analysis of the final product (stabilized biosolid). They should provide you with a calcium carbonate equivalent so that comparisons can be made. Most commonly quicklime (calcium oxide) or hydrated lime is used in the stabilization (other alkaline materials have also been used and are replacing lime in some treatment plants). Quicklime and hydrated lime have higher neutralizing values that pulverized lime. However, some of the lime is reacted in the stabilization process. The actual liming value will then need to be adjusted (again a calcium carbonate equivalent should be provided by the source treatment plant). In addition, when applying biosolids, a nutrient management plan will need to be in effect to account for the other nutrients provided by the biosolids.

There are many industrial and manufacturing by-products that can be used as liming materials. These commonly have a base element (calcium, magnesium, sodium) in oxide, hydroxide, or carbonate form. Comparisons need to be made based on the basic element provided and the neutralizing ability of the material. One recent analysis we received was waste from an antacid manufacturer. It was high in moisture (40%), had 3 and 6 % calcium and magnesium respectively, had significant amounts of aluminum and iron, had a calcium carbonate equivalent of 42% and had an effective neutralizing value of 29%. While this material could be used to lime crop fields, you would need over 2.5 tons to equal a ton of pulverized lime. In addition, it is much higher in magnesium than “high mag” lime and only should be used on fields where magnesium fertilization is needed. This material would raise magnesium levels significantly in the soil.

Other products or wastes are sometimes touted as liming materials but really are not. Gypsum and crushed wallboard would be examples. These are calcium sulfate. While the calcium may fill exchange sites on soil colloids, the sulfate ion will not effectively neutralize the hydrogen that is released. Therefore, gypsum generally does not change soil pH to any degree.

Poultry manure is sometimes mentioned as having liming value. There are several basic minerals that are excreted in poultry manure, somewhat dependent on the quantity of minerals that are being fed to the birds. There is therefore no exact value for how much liming value that the manure will provide. The best measure of this will be to run frequent pH tests on fields that receive poultry litter.

Hot Weather and Volatility with Dicamba & 2,4-D

Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

It is not recommended to spray dicamba or 2,4-D when the temperature is expected to be 85 degrees or hotter; or spray late in the day when temperatures drop below 85.

Spraying Post-Emergence Herbicides During Dry Weather

Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

The severely dry weather we have been having comes at a time when many fields need a postemergence herbicide application. For irrigated fields, be sure the field is well watered before spraying, so that weeds are not under stress and the herbicides have a chance to work well. For dryland fields the situation is not so easy. The best advice is to wait for rain then spray as soon after the rain as possible. Spraying during the dry weather reduces the herbicides’ effectiveness because the weeds are not undergoing normal metabolism and the leaf surfaces have thicker layers of waxy cuticle to prevent water loss. The thicker cuticles make it more difficult for herbicides to penetrate into the leaf. Some weeds may not look stressed in the field, but chances are they are not going to be effectively controlled. I have not had very good luck with adding a lot of different surfactants, oils, or nitrogen solutions and having a significant amount of improvement in weed control over normal adjuvant use. Based on greenhouse research, drought affects contact herbicides (i.e. Reflex, Aim, Liberty) similarly to translocated herbicides (i.e. Roundup, dicamba, Callisto). Also there were no generalities that we could make based on weed susceptibility to a given herbicide (highly effective herbicide on a given weed species). We hypothesized, for instance, that herbicides that are expected to have good to excellent control of a given species would perform better under drought than herbicides that typically are rated as fair. But the research showed this was not the case. So my advice is wait for rain if the field is dryland. If you feel you must spray, at least stay in the early evenings when the plants begin to unroll so that there is more leaf area exposed, and the humidity is higher so that the droplets do not evaporate as quickly.

Leaf Burn in Melons

Mark VanGessel, Extension Weed Specialist; University of Delaware mjv@udel.edu

There has been much talk about leaf burning on watermelon and cantaloupes when hooded sprayers are used. Most of this injury is temporary since most of the products used in row middles are not translocated in the plants. Sandea is the one product that stands out as a translocated herbicide, but it does not cause leaf burn. Using hooded sprayers with low pressure (20 psi); slower speeds (3 to 5 mph); and keeping the curtains in good condition and running them on the ground will reduce drift that causes much of the burn. Also, applications to wet or moist soil surfaces increase the amount of leaf burn.
Finally, cantaloupes are more prone to leaf burn than watermelons.

**Pickling Cucumber Weed Control**

Ed Kee, Extension Vegetable Specialist; kee@udel.edu

Planting for pickling cucumbers began last month on the Eastern Shore of Maryland and in Delaware. Curbit and Command can be considered as an effective standard treatment for preemergence use. On the earliest plantings, we recommend 1.5 pints/acre of Curbit and 4 ounces/acre of Command. When the soil is warmer, there is merit in increasing the rate of Curbit to 2 ounces per acre to improve broadleaf weed control when there is less risk of crop stunting as the weather warms.

Strategy is a jug-mix of Curbit and Command. 1.5 pints of Strategy delivers 1 pint of Curbit and 4 ounces of Command. We would recommend adding ½ pint of Curbit to the mix, if Strategy is used. One pint should be added as the weather warms to reflect the same recommendation stated above.

Sandea is also available for preemergence and post-emergence treatments. It is especially useful for nutedge and other broadleaf weeds. The rate in either case is 0.5 to 0.66 ounces per acre. Read the label and the Commercial Vegetable Recommendation Guide for further details on timing, use of surfactants and other important information. Do not use if organophosphate insecticides have been applied to the crop. Check the label for plant back or carry-over restrictions for subsequent plantings.

Select 2EC and Poast 1.5 EC are also labeled for post-emergence grass control. Again read the label for complete directions.

Mechanical cultivation is still an important component of a pickle weed control program. If the tractor-mounted harvesters will be used, it is important to minimize soil ridging from the cultivator operation. The ridges prevent the harvester pick-up reel from getting low enough to gather all pickles.

**Cultivation and Postemergence Herbicide Treatment**

Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

Questions have come in about whether to cultivate first or spray first for weed control. Keep a few things in mind. Weeds are easier to control when they are small but consider which option is going to be more effective when weeds get larger. Cultivation will control the weeds between the rows but not in the row. Those weeds in the row are the ones you need to base your decision on whether to spray first. More often than not, it is better to spray first, then cultivate. Also, weeds not completely killed with cultivation are more difficult to control with herbicides.

**Note this assumes that the herbicide is the right herbicide for the weed(s) in your field. The weeds that emerge after cultivation are going to be much smaller and have less impact on yield (if any impact at all). Setting your cultivator so it runs only 1 to 2 inches deep will slice through the weeds and not disrupt the herbicide layer. This in turn will limit the number of weeds that will emerge due to cultivation. It is generally recommended to wait a minimum of 5 to 7 days between herbicide treatment and cultivation.**

**Lumax and Camix Now Registered for Sweet Corn**

David H. Johnson, Penn State Southeast Research and Extension Center

Lumax and Camix, two soil-applied herbicides that have been labeled in field corn for the past few years, are now registered for sweet corn. Both products, made by Syngenta, contain mesotrione (also the active ingredient of Callisto, a postemergence herbicide which was registered for sweet corn last year), and s-metolachlor, the active ingredient in Dual II Magnum. Lumax also contains atrazine, and therefore is a restricted use herbicide and you must have a valid pesticide license to purchase and use the product. Camix is not restricted use. Lumax and Camix can be used Preemergence only on sweet corn. The labels warn that they should not be used after the corn has emerged, or severe injury may result. There are no restrictions on the types of sweet corn that it can be used on, nor are there any insecticide restrictions. Lexar, a similar product, is not yet registered on sweet corn.

Both Lumax and Camix give residual control of a broad spectrum of annual weeds, including grasses and broadleaves. Problem weeds for Pennsylvania sweet corn growers that are controlled by Lumax include crabgrass, foxtails, fall panicum, common lambsquarters (including triazine-resistant biotypes), morningglories, nightshade, pigweeds, smartweed, velvetleaf, and wild buckwheat. Partial control of common cocklebur and common and giant ragweed is also claimed. Additional control can be achieved by adding more atrazine to the spray mixture. Since these products are applied to the soil surface, they need to be activated by rainfall or irrigation soon after application for best weed control. If no rainfall occurs, a light cultivation can help activate the products.

Camix has a similar weed spectrum as Lumax, but the label does not include wild buckwheat, and cocklebur and ragweed control will probably be less than Lumax because of the lack of atrazine in this product.

In Penn State University studies, partially funded by the Pennsylvania Vegetable Marketing and Research Program, Lumax has shown good weed control and sweet corn crop safety. At the Penn State Southeast Research and Extension Center near Landisville in Lancaster County, Lumax gave excellent common lambsquarters and redroot pigweed control, and did not injure any of the sixteen commonly grown sweet corn varieties tested.

Users of Lumax and Camix must be aware of rotational crop restrictions, especially if they are considering other vegetable crops. As we I wrote in the February 2006 Vegetable & Small Fruit Gazette, growers must wait at least 18 months from the time of application before planting vegetable crops. Other products containing
atrazine, such as Bicep II Magnum, Bullet, Cinch ATZ, and Guardsman Max (including the “Lite” versions of these products) also have 18-month restrictions on planting rotational crops.

When planning your weed control program for sweet corn, growers must consider the crops they want to plant into their fields the following year when choosing herbicides. For those planning to grow vegetable crops in those fields the following year, choose herbicides with less residual activity to avoid the potential for injury and illegal residues in their harvested crop. **Always refer to your product labels to ensure you can legally plant your planned rotational crop after use.**

### Fusarium Wilt of Watermelon

Kate Everts; Vegetable Pathologist, University of Delaware & University of Maryland; keverts@umd.edu

I have had several samples of watermelon plants with Fusarium wilt in the past week. Symptoms in young plants are wilting, usually without necrosis, and a distinct vascular discoloration. Infected fields may appear to recover; however symptoms often reappear later in the season when the vines produce runners. Wilting then becomes more severe as fruit increase in size and plants appear water-stressed even under conditions when soil moisture is adequate. Wilt occurs on crown leaves first, then on runners and eventually on the whole plant. Infected stems may have a red, brown or black gummy exudate and the vascular system of the plant is discolored.

Management of Fusarium wilt has been accomplished in the past through long rotation (5 to 6 years), planting resistant cultivars, and fumigation. However, fumigation may fail to control disease because Fusarium can quickly reinvade fumigated ground. The presence of a new race (race 2) on Delmarva and an increase in acreage of seedless watermelon has led to an increase in Fusarium wilt (few seedless cultivars have resistance to this disease). Dr. Xin-Gen Zhou tested several seedless watermelon cultivars in 2005 to identify tolerance or resistance to Fusarium wilt. The field was very highly infested with race 2 of the pathogen, however you can see how the cultivars compare to each other.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Source</th>
<th>Wilt incidence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triple Crown</td>
<td>Seedway</td>
<td>100 a*</td>
</tr>
<tr>
<td>Tri-X Brand</td>
<td>American</td>
<td>97 ab</td>
</tr>
<tr>
<td>Carousel</td>
<td>Sunmelon</td>
<td></td>
</tr>
<tr>
<td>Solid Gold</td>
<td>Seedway</td>
<td>96 ab</td>
</tr>
<tr>
<td>Gem-Dandy</td>
<td>Willhite</td>
<td>95 ab</td>
</tr>
<tr>
<td>Imagination</td>
<td>Seedway</td>
<td>95 ab</td>
</tr>
<tr>
<td>Buttercup</td>
<td>Seedway</td>
<td>91 abc</td>
</tr>
<tr>
<td>Sugar Heart</td>
<td>Siegers</td>
<td>91 abc</td>
</tr>
<tr>
<td>WX55</td>
<td>Willhite</td>
<td>88 abc</td>
</tr>
<tr>
<td>Crisp N Sweet</td>
<td>Siegers</td>
<td>86 abc</td>
</tr>
<tr>
<td>RWMB096-VP</td>
<td>Rogers</td>
<td>86 abc</td>
</tr>
<tr>
<td>4830</td>
<td>Willhite</td>
<td>85 abc</td>
</tr>
<tr>
<td>RWMB089-VP</td>
<td>Rogers</td>
<td>83 bc</td>
</tr>
<tr>
<td>Millionaire</td>
<td>Seedway</td>
<td>76 c</td>
</tr>
<tr>
<td>Revolution</td>
<td>Sunseeds</td>
<td>58 d</td>
</tr>
<tr>
<td>Seedless Sangria</td>
<td>Seedway</td>
<td>37 e</td>
</tr>
</tbody>
</table>

*Values in each column followed by the same letter are not significantly different at $P = 0.05$ based on Fisher’s LSD test.

### Are You and Your Fields Prepared for Phytophthora Blight?

Andy Wyenandt; Extension Plant Pathologist, Rutgers University

Last summer the first reports of Phytophthora blight in pepper came during the first week in June. Fortunately, up through this week, the month of May has been relatively dry, making conditions mostly unfavorable for the development and spread of many vegetable diseases. That has changed slightly over the past few days with the arrival of much needed showers.

Do you have areas in fields which favor Phytophthora blight development, such as low, poorly or slowly drained areas? Has water pooled in rows after the first extensive rainfall of the summer season? Were tomatoes, eggplant, or cucurbit crops grown in the same field last year? Now is the time to answer some of these questions. Poorly drained soil or soils that pool water for extended periods after rainfall are extremely conducive for Phytophthora blight development. These areas should be avoided at all costs, especially if Phytophthora has been a problem in the same field in the past or a susceptible crop was planted in the field last year.
Take adequate measures to make sure any excess rainfall does not pool, especially at the ends of rows either on bare ground or between black plastic mulch. Dig diversion ditches to allow excess water to run off and away from the field. Along with appropriate fungicide applications at planting (i.e. mefenoxam, etc.) fields should be scouted regularly and poorly drained areas should be noted. Any infected plants should be removed from the field. Removing infected plants early, although time consuming, may help to remove an early-season source of inoculum, thus helping reduce the chances for further crown, stem and/or fruit rot development later in the growing season. Besides avoiding poorly drained areas and removing sources of inoculum, cultural practices such as removing plastic mulch in low and poorly drained soils before symptoms of Phytophthora appear may help to keep the soil dry and keep water from pooling. Taking preventative precautions is extremely important when it comes to controlling a disease such as Phytophthora blight; any measures which can be done to reduce the chances of it developing should be taken.

Bacterial Spot and Speck of Tomato
Andy Wyenandt; Extension Plant Pathologist, Rutgers University
Both bacterial diseases can cause serious problems in the field if infections begin in the greenhouse prior to transplanting. Symptoms of spot and speck look very similar on infected leaves. Lesions are small, circular, blackish-brown and, with time, develop a halo or yellowing of tissue surrounding the lesion. As lesions develop they can coalesce (join together) and can cause premature death. Infections can occur on all parts of the tomato plant and can easily be spread during transplant trimming with contaminated equipment and by workers’ hands. Tomato plants with suspected symptoms can be treated with streptomycin (Agri-Mycin 17, Agri-Strep, 25) at 1 lb/100 gallons, or 1.25 teaspoon per gallon prior to transplanting every 4 to 5 days. After transplanting apply Actigard (P) at 0.33 oz/A, or fixed copper (M1) at 1 lb/A plus a mancozeb (Dithane, Manex II, Manzate, Penncozeb, M3) at 1.5 lb/A, or ManKocide (M1 + M3) at 2.5 to 5.0 lb/A, or Cuprofix MZ (M1 + M3) at 1.75 to 7.25 lb/A on a 7-day schedule.

MELCAST and TOMCAST
Kate Everts; Vegetable Pathologist, University of Delaware & University of Maryland; kceverts@umd.edu
MELCAST for Watermelon
The weather based forecasting program MELCAST has begun for 2006. MELCAST is a weather-based spray scheduling program for anthracnose and gummy stem blight of watermelon. If you received a report in 2005, you should have received the first 2006 report last week. If you are not receiving reports and would like to, please call Lisa Collins at (302) 856-2585 ext. 544 and give us your name and fax number or e-mail address. In addition, this information is available on the web at: http://www.agnr.umd.edu/users/vegdisease/vegdisease.htm.

To use MELCAST for watermelons, apply the first fungicide spray 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 is applied, reset your counter to 0 and start over. If a spray has not been applied in 14 days, apply a fungicide, reset the counter to 0 and start over. Please call if you have any questions on how to use MELCAST on your crop (Kate Everts at (410) 742-8789).

Because of widespread resistance to Quadris in our area, chlorothalonil (Bravo, etc.) or Pristine plus chlorothalonil alternated with chlorothalonil is recommended when spraying according to MELCAST. If a serious disease outbreak occurs in your field, return to a weekly spray schedule.

MELCAST for Cantaloupes & TOMCAST for Tomatoes
In addition to MELCAST for Watermelon, we have two models that are designed to help you make spray-timing decisions on diseases of cantaloupe and tomato. MELCAST for cantaloupes is a fungicide application program for Alternaria leaf blight. It can be used by anyone growing a powdery mildew resistant variety such as Athena. To use MELCAST for cantaloupe, apply the first fungicide spray when the cantaloupe 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 20 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, reset the counter to 0 and start over.

TOMCAST is a spray forecaster for leaf blights and fruit diseases of processing tomato. However, it does not work for bacterial diseases or for late blight. In fields that were not rotated away from tomatoes and in late-planted fields begin sprays shortly after transplanting. In all other areas begin sprays when crown fruit are one-third their final size. Additional sprays can be scheduled using TOMCAST. Sprays should be applied after accumulating 18 DSV’s (disease severity values) since the last fungicide application. Scout fields for bacterial diseases and late blight. If bacterial speck or spot or late blight occurs additional sprays are warranted (see Delaware Extension Bulletin 137 or Maryland Extension Bulletin 236: Commercial Vegetable Production Recommendations).

These disease models are available at: http://www.agnr.umd.edu/users/vegdisease/vegdisease.htm.

In addition you can receive the models by e-mail or fax. To sign up please call Lisa Collins (302) 856-2585 ext. 544.
Bacterial Leaf Spot on Pepper
Kate Everts; Vegetable Pathologist, University of Delaware & University of Maryland
keverts@umd.edu

Bacterial leaf spot (BLS) is a common problem in peppers. Initial lesions are small brown or black spots that have a yellow “halo”. Lesions will expand and be irregular and infected leaves often will fall off the plant. There are several pre-plant practices that will minimize damage from this disease. For information on cultivar resistance, seed disinfection, minimum rotation and transplant production see Delaware Extension Bulletin 137 or Maryland Extension Bulletin 236.

Once the plants are in the field, scout weekly for BLS symptoms. If possible, where disease is not widespread, rogue infected plants. Protect pepper plants and reduce the spread of BLS with applications of fixed copper at 1 lb. active ingredient/acre plus maneb 80WP at 1.5 lb/acre. Begin applications shortly after planting and apply on a 7 to 10 day schedule.

Two practices also may minimize losses to BLS during the growing season. First, avoid field operations when the foliage is wet because the bacterium is easily spread in water. Second, maintain a high level of fertility to help the plants replace leaves lost due to disease. However, do not over-fertilize, because fruit set and yield may be reduced.

Potato Late Blight Alert
Kathryne L. Everts, Associate Professor, Plant Pathology, University of Maryland
keverts@umd.edu

I received an e-mail from Dr. Alan MacNabb, Pennsylvania State University that he has confirmed the presence of late blight on tomato in Lancaster County, PA. The infestation appears to have been caught in the very early stage and the grower is aggressively treating it. Also, the weather has not been overly conducive for disease development. Dr. MacNabb reports:

“Original source of the disease organism is unknown; close scouting of nearby fields will continue. I am recommending immediate application of a "systemic" plus a protectant for all fields within a 50+ mile radius of Lancaster Co.”

I hope that all of you that are near this occurrence will watch for development and send suspect tomatoes and potatoes to an appropriate lab for diagnosis. As Alan suggests, tomato and potato growers within a 50 mile radius should apply a systemic plus protectant for this disease. (Some Maryland fields will be within the radius.) Other growers should scout their fields. I will update you as new information becomes available.

Potato Disease Advisory #9
June 8, 2006
Bob Mulrooney, Extension Plant Pathologist, Delaware University

Late blight Advisory
Disease Severity Value (DSV) Accumulation as of June 7, 2006 is as follows:
Location: Byfield Farms field east of Magnolia, DE.
Greenrow: April 23, flower buds present May 24.

Remember that 18 DSV’s is the threshold to begin a spray program for late blight

<table>
<thead>
<tr>
<th>Date</th>
<th>Daily DSV</th>
<th>Total DSV</th>
<th>Spray Recs</th>
<th>Accumulated P days*</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/25-26</td>
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<td>7</td>
<td>None</td>
<td>238</td>
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<td>263</td>
</tr>
<tr>
<td>5/30-31</td>
<td>1</td>
<td>9</td>
<td>None</td>
<td>279</td>
</tr>
<tr>
<td>5/31- 6/1</td>
<td>1</td>
<td>10</td>
<td>None</td>
<td>287</td>
</tr>
<tr>
<td>6/2-6/3</td>
<td>3</td>
<td>13</td>
<td>7-day</td>
<td>305</td>
</tr>
<tr>
<td>6/3- 6/4</td>
<td>0</td>
<td>13</td>
<td>7-day</td>
<td>314</td>
</tr>
<tr>
<td>6/4-6/5</td>
<td>2</td>
<td>15</td>
<td>7-day</td>
<td>323</td>
</tr>
<tr>
<td>6/5-6/7</td>
<td>1</td>
<td>16</td>
<td>7-day</td>
<td>342</td>
</tr>
</tbody>
</table>

* P days- We use the predictive model WISDOM to determine the first fungicide application for prevention of early blight as well. The model predicts the first seasonal rise in the number of spores of the early blight fungus based on the accumulation of 300 physiological days (a type of degree-day unit, referred to as P-days) from green row. To date, 342 P-days have accumulated at the site near Magnolia. Once 300 P-days have accumulated, the first fungicide for early blight control should be applied, if fungicides have not been applied within the last 7 days.

If pink rot or leak is a concern and no pink rot fungicide was applied at planting consider applying one of the following when potatoes are nickel-sized and repeating 14 days later. Apply in as much water as possible (20-30 gal/A):
Mefanoxam/chlorothalonil (Ridomil/Bravo or Fluranil) 2 lb/A, or Ridomil Gold/Copper 2 lb/A, or Ridomil Gold/MZ 2.5 lb/A.

Early blight and black dot. Many fields are flowering or approaching flowering and this is a good time to consider switching to an application or two of Gem, Headline or Quadris (Amistar) for early blight susceptible varieties. This can also be helpful for late season varieties including russets if stress makes plants susceptible to black dot. Make one or two applications at the end of flowering and repeat 14 days later. Apply mancozeb or chlorothalonil 7-days later between the two applications.
Potato Cyst Nematode Traced to Single Idaho Field
Bob Mulrooney; Extension Plant Pathologist; bobmul@udel.edu

Scientists looking for evidence of potato cyst nematode (PCN) in Idaho today confirmed the presence of the pest in one eastern Idaho field.

The cysts were discovered in soil samples collected by the U.S. Department of Agriculture’s Animal and Plant Health Inspection Service (APHIS) and the Idaho State Department of Agriculture (ISDA). The soil was collected as part of the investigation into the April 19, detection of the pest, which was found in routine samples taken at a potato grading station in Idaho. The nematode does not pose any threat to human health, but can reduce the yield of potatoes and other crops. There is no sign that the quality of tubers grown in Idaho has been affected.

The soil samples that tested positive for PCN were collected from a 45-acre field located in northern Bingham County, south of Idaho Falls. Production in the area is for fresh market and processed potatoes, not seed potatoes. The field is not within an Idaho Seed Potato Crop Management area, where safeguards assuring quality are monitored. As part of the investigation, more than 2,500 samples representing numerous fields associated with the grading station were tested. All other samples collected as part of the investigation have tested negative for PCN. Additionally, more than 3,000 Idaho soil samples taken since last fall as part of the Cooperative Agricultural Pest Survey (CAPS) have been negative for PCN. Based on these survey results, the PCN infestation appears to be isolated, but additional surveillance will continue.

APHIS and ISDA are implementing a regulatory program at the positive site designed to prevent the pest’s spread to other fields. The program will restrict the movement of plants and soil, and require sanitation procedures for equipment used on the regulated field. Aggressive delimiting surveys are being conducted in areas associated with the PCN-positive field. Associated areas include those areas with geographic nearness, common usage of tillage equipment, common seed sources, common irrigation water or other means.

This is a news release from USDA APHIS dated 6/13/06.

Pickle Downy Mildew
Ed Kee, Extension Vegetable Specialist; University of Delaware, kee@udel.edu

Downy mildew has been confirmed in Florida; Decatur, Georgia, and eastern Michigan. The eastern Michigan event was on slicing cucumbers. At this point, Delmarva pickle producers need to be vigilant, but not panicking. Continue to consult the N.C. State website: http://www.ces.ncsu.edu/dept/pp/cucurbit/.

Tracking the progression and reported outbreaks will be important to avoid wasting sprays if not needed, and to achieve timely control prior to infection if the organism moves north towards Delaware and the Eastern Shore.

If the organism reaches a neighboring state, begin control programs. Defining a neighboring state depends on the level of risk a person is willing to accept. For us and our geographic location, prevailing winds, etc.; I would suggest that if it is confirmed in North Carolina, we should begin to consider fungicide applications. Of course, if it leapsfrogs up to an adjacent state, we should spray immediately.

Based on last year’s commercial experience, the research results in Delaware, North Carolina, and Michigan, and other experiences, a control program should be based on Previcur Flex (1.2 pts./A) and Bravo (2 pts./A) alternated with Tanos (8 oz./A) and Mancozeb. Ground applications are recommended and preferred. It is critical to get the gallonage (as much as possible) and the pressure to obtain good coverage.

Schedules should be on a 7 to 10 day schedule, depending on environmental conditions. Hot, dry weather works against the downy mildew organism. As Dr. Claude Thomas said, “You can’t chase this disease.” In other words, preventative sprays are key to successful control. All of this makes checking the N.C. State website imperative.

Finally, last season we were confronted with irresponsible recommendations and claims regarding certain fungicides. The manufacturers made some sales, but the farmers were left with devastated crops. The fungicides recommended above are the core of the program. We are testing some new materials for efficacy and will share those results as the season progresses.

Vegetable Crop Insect Update
Joanne Whalen, Extension IPM Specialist; jwhalen@udel.edu

Cucumbers
Continue to scout all fields for cucumber beetles and aphids. Fresh market cucumbers are susceptible to bacterial wilt, so treatments should be applied before beetles feed extensively on cotyledons and first true leaves. Pickling cucumbers have more tolerance to wilt, but a treatment may be needed on machine harvested pickles if 5% of plants are infested with beetles and/or showing fresh feeding injury. A treatment should be applied for aphids if 10 to 20 percent of the plants are infested with aphids with 5 or more aphids per leaf.

Melons
With the predicted hot weather, be sure to scout carefully for aphids, cucumber beetles and spider mites. In some fields, spider mite populations are just below threshold levels. If spider mite populations are high at the time of treatment, 2 sprays spaced 5 days apart may be needed. Acramite (only one application per season), Agri-Mek, Capture (bifenthrin), Danitol, Oberon and Kelthane are labeled on melons for mite control. Be sure to read all labels for restrictions, rates and maximum allowable amounts.
Peppers
We continue to find corn borer egg masses on pepper leaves. Be sure to check local moth catches in your area hotlines.
As soon as the first flowers can be found, be sure to consider a corn borer treatment. Depending on local corn borer trap catches, sprays should be applied on a 7-10 day schedule once pepper fruit is ¼ - ½ inch in diameter. You should also continue to check fields for aphids. A treatment may be needed prior to fruit set, if you find 1-2 aphids per leaf for at least 2 consecutive weeks and beneficial activity is low.

Potatoes
Continue to scout fields for Colorado potato beetle (CPB), corn borers (ECB) and leafhoppers. Small and large CPB larvae can now be found in fields.
We can find low levels of leafhopper adults and nymphs. As a general guideline, controls should be applied if you find ½ to one adult per sweep and/or one nymph per every 10 leaves.

Snap Beans
Continue to scout all seedling stage fields for leafhopper and thrips activity. Once corn borer catches reach 2 per night, fresh market and processing snap beans in the bud to pin stages should be sprayed for corn borer. Sprays will be needed at the bud and pin stages on processing beans. Once pins are present on fresh market snap beans and corn borer trap catches are above 2 per night, a 7-10 day schedule should be maintained for corn borer.
Continue to scout all seedling stage fields for leafhopper and thrips activity.

Sweet Corn
Continue to sample seedling stage fields for cutworms and flea beetles. You should also sample all whorl stage corn for corn borers. A treatment should be applied if 15% of the plants are infested. The first silk sprays will be needed for corn earworm as soon as ear shanks are visible. Be sure to check trap catches for the current spray schedule since trap catches change quickly. Trap catches are generally updated on Tuesday and Friday m

New Insecticide Label Information for 2006
Gerald M. Ghidiu, Ph.D., Specialist in Vegetable Entomology, Rutgers University
Venom 70SG insecticide (Valent USA Corporation) was recently labeled with the EPA for use in cucurbits, fruiting vegetables, leafy vegetables, head and stem brassica, and potatoes. Venom is a new insecticide in the neonicotinoid class (active ingredient = dinotefuran), and controls many pests, including cucumber beetles, potato beetles, flea beetles, aphids, grasshoppers, Harlequin bugs, squash bugs, and stink bugs. There is a restricted entry interval (REI) of 12 hours.
Baythroid (Bayer Crop Science) has a new formulation, Baythroid XL that has a broad spectrum of activity and has a “Warning” signal word on the label. Also, several new vegetable groups have been added to the label, including leafy vegetables, cucurbits, fruiting vegetables, and toot, tuberous & corn vegetables.
Kelthane (dicofol) production will be slowly phased out and all manufacturing will be ended by June 2006. Kelthane WSP and Kelthane MF can still be distributed, sold and applied (as per label directions) legally. According to Dow AgroSciences, the US and global market for Kelthane has been experiencing a steady decline for several years as new miticide products and other technologies have been introduced. In addition, Kelthane regulatory costs continue to escalate. Given these conditions, Dow AgroSciences stated that they could not justify a commercial rationale to continue production and marketing of Kelthane.
Guthion (azinphos-methyl) labels will be terminated from “Group 2” uses. All sale of Guthion for these uses ceased as of 31 March 2006, but use of these products is allowed until 30 September 2006. For more information concerning termination of Guthion and Group 2 uses, visit the EPA’s website at http://www.epa.gov. For further information, or specific questions, contact Diane Isbell of EPA at: isbel.diane@epa.gov.
Warrior insecticide is now off-patent and several generic formulations of this insecticide are now found on the market. Taiga Z, Lambda T and Silencer are all new generic versions of Warrior. It is possible that one of these, Silencer (M-Agan product) is the old 1EC formulation of Warrior, and some workers may have skin sensitivity to this formulation (the new formulation of most brands, 1CS, supposedly has reduced sensitivity to workers’ skin).
Capture LFR (bifenthrin), from FMC Agricultural Products Group, is a new formulation that is ready to be directly mixed with liquid fertilizer to control soil insects. Fertilizers that it can be mixed with include commonly used liquid starter or pop-up fertilizers. Consult the new label for complete mixing instructions and restrictions.
Admire PRO (imidacloprid) from Bayer Crop Science is an improved, highly concentrated formulation of imidacloprid with several new improvements over the old Admire formulation. The new formulation easily mixes with water, produces no foam, remains in suspension longer and has fewer precipitates. It pours more like water and leaves little residue in the container. Because Admire PRO is more concentrated than the old formulation, there is a new rate-range for all the labeled crops, ranging from 5 to 14 oz. per acre (there is no change in the crop labels). It can be applied in numerous ways, including foliar, soil, greenhouses, drenching, seed treatments, etc. for certain crops. Consult label for all crop uses, rates, restrictions, and application directions.
Oberon 2SC, (spiromesifen), by Bayer CropScience, is a new insecticide that effectively control mites and whiteflies, and is labeled on cucurbits, fruiting vegetables, leafy greens, brassicas, and tuberous & corn vegetables. However, Bayer has announced that there is a potential for phytotoxicity if applied to Chinese cabbage (bok choy) or rapini. Bayer no longer recommends the use of Oberon 2SC on either of these crops.
Actara (thiamethoxam), by Syngenta Corporation, is no longer labeled on the fruiting vegetables crops of tomato or
The Organic Way – Crops Grown So Far in the Organically Managed High Tunnels

**Elsa Sánchez**, Bill Lamont and Mike Orzolek, Department of Horticulture, Pennsylvania State University

On November 5, 2003, we entered the transition phase with the goal of organically certifying four 17 ft by 36 ft high tunnels. We started the transition with a cash crop of four tomato cultivars in 2004. The tomatoes were planted as part of a 2 year study evaluating two fertilization and irrigation regimes (Montri, 2005). The cultivars planted are listed below:

**Big Beef** (Johnny’s Selected Seeds, Winslow, ME) is an early to mid season slicing cultivar and an All American Selection. Fruit are large (between 10 to 12 oz), red and globe-shaped. ‘Big Beef’ is an indeterminate cultivar with resistance or tolerance to verticillium wilt, fusarium wilt, root knot nematodes, tobacco mosaic virus, stemphylium wilt, alternaria stem canker and leaf spot.

**Mountain Fresh** (Harris Seeds, Rochester, NY) is a late summer slicing cultivar. Fruit are red and large. This is a determine cultivar with resistance or tolerance to verticillium wilt and fusarium wilt.

**Plum Crimson** (Harris Seeds, Rochester, NY) is a plum or saladelet cultivar. Fruit are red, medium sized and pear or plum-shaped. This is a determine cultivar with resistance or tolerance to verticillium wilt and fusarium wilt.

**Pink Beauty** (Johnny’s Selected Seeds, Winslow, ME) is an early to mid season specialty cultivar with medium sized (6 to 8 oz) globe-shaped pink fruit. This is an indeterminate cultivar.

Transplants were grown in greenhouses near the High Tunnel Research and Education Facility. Untreated seed were sown on March 29th in Johnny’s 512 Mix (Johnny’s Selected Seeds, Winslow, ME). Transplants were planted in the high tunnels on May 13th on rows spaced 3.35 ft apart (4 rows in each tunnel) and plants were spaced 1.5 ft within a row. As a standard treatment, water was supplied to the plants using drip irrigation at a rate of 1 inch per week. Two weeks after planting each row was mulched with 6 to 10 inches of straw, in part to suppress weeds.

Nutrients were applied to meet the recommended nitrogen requirement for fresh market tomatoes of 80 to 90 lbs (Orzolek et al., 2005). Compost (1.1% total and organic nitrogen) was soil incorporated prior to planting and, in the standard treatment, Eco-Nutrients Eco-Hydro Fish 2-2-2 (Eco-Nutrients, Inc., Crescent City, CA) was applied at recommended timings (Orzolek et al., 2005).

Pest insects observed included aphids, whiteflies and tomato hornworm. These pests remained below levels thought critical throughout the growing season.

Tomatoes were harvested weekly, as they reached the mature red stage, beginning on July 26th and ending on September 20th. All tomatoes were sorted into marketable and unmarketable categories and ‘Big Beef’, ‘Mountain Fresh’ and ‘Pink Beauty’ were graded.

Tomatoes were grown in 4 different high tunnels in 2005 and data presented are from a combined analysis from 2004 and 2005. Yields were not significantly different between the two fertilization/irrigation regimes used in the study and the tables below are based on analysis combining data from both treatments.

### Mean total yield, marketable yield and number of tomatoes per cultivar.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Total Yield (lbs/11 plants)</th>
<th>Marketable Yield (lbs/11 plants)</th>
<th>Number of Tomatoes (#/11 plants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Big Beef’</td>
<td>143.5a</td>
<td>104.5a</td>
<td>270</td>
</tr>
<tr>
<td>‘Mountain Fresh’</td>
<td>137.9a</td>
<td>104.6a</td>
<td>309</td>
</tr>
<tr>
<td>‘Plum Crimson’</td>
<td>149.3a</td>
<td>130.7a</td>
<td>799</td>
</tr>
<tr>
<td>‘Pink Beauty’</td>
<td>113.2a</td>
<td>81.8a</td>
<td>316</td>
</tr>
</tbody>
</table>

Values followed by different letters within a column are significantly different at P ≤ 0.05. Data were analyzed using the Mixed Procedure in SAS Version 9.1 (SAS Institute, Cary, NC) and PDIFF was used to separate significantly different mean yields and numbers of tomatoes.

Table adapted from Montri, 2005.

### Mean number of tomatoes per grade per cultivar.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Number of tomatoes from 11 plants in each grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US No 1*</td>
</tr>
<tr>
<td>‘Big Beef’</td>
<td>174x</td>
</tr>
<tr>
<td>‘Mountain Fresh’</td>
<td>168x</td>
</tr>
<tr>
<td>‘Pink Beauty’</td>
<td>90x</td>
</tr>
</tbody>
</table>

*US No 1 = minimum 6.69 cm diameter
US No 2 = diameter between 6.35 and 7.06 cm
US No 3 = diameter between 5.72 and 6.43 cm
US No 4 diameter between 5.40 and 5.79; however, for this study tomatoes with a diameter of 5.79 or less were placed in this category and are labeled “smaller”.

Plum Crimson tomatoes were sorted into marketable and unmarketable categories according to USDA standards for Italian type tomatoes.

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Seed Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Di Cicco’</td>
<td>Johnny’s Selected Seeds (Winslow, Maine)</td>
</tr>
<tr>
<td>‘Calabrese’</td>
<td>Seeds of Change (Santa Fe, New Mexico)</td>
</tr>
<tr>
<td>‘Early Green’</td>
<td></td>
</tr>
<tr>
<td>‘Nutri-Bud’</td>
<td></td>
</tr>
</tbody>
</table>
Six-week old seedlings were transplanted on April 6, 2005. Seedlings were planted in a double row with 10 inches between rows and 14 inches between plants within a row. Four beds were planted in each tunnel. Compost and Fertrell Blue N (Fertrell, Bainbridge, PA) were applied at rates of 100 lbs per acre.

The highest yields were from ‘Nutri-Bud’ plots and the lowest from ‘Di Cicco’ and ‘Calabrese’ plots. Higher yields were observed from plots in the middle two beds compared to the outer two beds. This was likely due to microenvironmental differences. In general, ‘Early Green’ plants were harvested earliest and ‘Di Cicco’ and ‘Calabrese’ latest.

The broccoli crop was followed by a trial to evaluate straw, shredded newspaper and newspaper sheets for weed management in a cucumber crop. June 27th 2005, ‘Diva’ (Johnny’s Selected Seeds, Winslow, ME), ‘Sweet Marketmore’ (Seeds of Change, Santa Fe, NM), ‘Lemon’ (Seeds of Change, Santa Fe, NM) and ‘Prolific’ cucumbers (Seeds of Change, Santa Fe, NM) were planted in each tunnel. July 5th, the mulches were applied. The straw and shredded newspaper were applied 2 ft wide and 4 to 6 inches deep. The sheets of newspaper were applied 5 sheets thick. We collected yield and weed data as well as monitored the rate of degradation of the mulches.

The broccoli and cucumber evaluations will be repeated in 2006 and we’ll analyze the data and pass on the results after that time.

References:


Corn Earworm: Preliminary Results of Pyrethroid Resistance Tests from Pennsylvania
Shelby Fleischer, Dave Johnson, Jo Anna Hebberger, Greg Payne

Sweet corn is attacked regularly by three lepidopterans. Two of these, the corn earworm and the fall armyworm, are primarily immigrants from the south when they appear in Pennsylvania. These two are members of the same insect family, the Noctuidae, which include relatively strong-bodied species that are good flyers. The other species, the European corn borer, is a smaller species that overwinters well in our area.

Corn earworm populations in the southern U.S. have shown reductions in susceptibility to pyrethroid insecticides, where they are used to target the same insect species in cotton, sorghum, soybeans, and vegetables. Pyrethroids, however, are also the main class of chemistry currently used to protect against corn earworms in sweet corn in Pennsylvania. Examples include Asana, Baythroid, bifenthrin, Mustang, permethrin, and Warrior. We hypothesized that emigrants from southern populations showing increased tolerance to pyrethroids could affect insect pest control in the Northeast. Data testing the susceptibility of corn earworm to another pyrethroid, cypermethrin (Ammo®), has been accumulating for several years from southern and Midwestern states. Therefore, we looked at the susceptibility of corn earworms captured in Pennsylvania to cypermethrin.

We used moths collected in two methods from the Southeast Agricultural Research and Extension Center in Landsville, Lancaster County, PA in 2003, 2004, and 2005. First, we used moths collected from pheromone traps – this tests only males that have flown for an unknown distance, and are of unknown ages. Second, we collected larvae from corn ears in the field, and reared them on a diet. This tests both males and females, prior to them flying, and at a very young adult age. In both cases, adult moths were held in cages for 24 hours with sugar water prior to the bioassay, and we only tested moths that appeared healthy at the time of the test.

We used a standardized adult vial test (AVT) bioassay. The insides of glass vials were coated (in acetone) with technical grade cypermethrin. The concentrations were 5 micrograms and 10 micrograms of cypermethrin/vial. Control vials were treated with acetone alone. The acetone was allowed to evaporate, leaving a coating of cypermethrin on the glass vials. One moth was placed in each vial, the vials were capped loosely and held at room temperature, and mortality recorded 24 h after the test was initiated. In a perfect situation, we should expect to see 100% survival of the moths in the control vials, very close to 0% survival of the moths tested at the 5 microgram rate, and definitely 0% survival at the 10 microgram rate.

Survival of pheromone-trap collected moths has been relatively low in the cypermethrin-treated vials. At the 5 microgram rate, survivorship ranged from 0 – 8% in Pennsylvania. Survival at the 10 microgram rate was even lower: from 0-3% in Pennsylvania. Some of this could be due to moths that tolerate the insecticide, but some could be due to random variation. Our only way to look at the random variation was to look at the control vials. In these controls, where we expect 100% survival, we observed 72% to 100% survival.

Dramatic increases, however, were clearly evident in the survival of adults reared from field-collected larvae relative to those collected from pheromone traps. Survivorship from reared moths was 12 to 27% at the 5 microgram rate, and 2 to 5% at the 10 microgram rate, in Pennsylvania. And we had cleaner tests when using reared moths: survival of reared moths in the control vials was always 100%.

This is part of a larger project where similar tests were conducted in neighboring states: More than 22,000 moths were bioassayed in five states from 2003 to 2005. In the worst case evaluation of the data, preliminary estimation using moths reared from field-collected larvae, averaged across locations and years, show 31% survival at the 5 microgram rate and 11% survival at the 10 microgram rate.

We are currently conducting an error-checking process on the data from all states, and will look for patterns in the
survivorship results. The results reported here is a preliminary snapshot of what we found in Pennsylvania.

So what management would we advise for commercial sweet corn growers? Our results suggest that pyrethroid-resistant corn earworns occur in the northeastern U.S. each year, but that they may be fairly rare. Since we are dealing primarily with migrants, then we cannot do much to alter the selective pressure that the moths are subjected to. In other words, altering the chemicals we use here will probably not have much impact on the population genetics of the corn earworm. That will require alterations at the place where breeding is occurring, which is to the south of us. This may happen in the future, due to factors such as the newer transgenes being developed for both corn and cotton, and due to resistance management efforts in these more southerly locations. It thus helps northeastern agriculture if we participate in more regional efforts looking at these migratory species.

We have not seen, or been able to document, any field failures from Pennsylvania or other northeastern states. In the Midwest, small plot efficacy trials clearly showed a great deal of variability, including a loss of efficacy, in multiple locations in 2005. However, Midwestern growers also report using aerial application, and they expect some control against the adults with this method, and they also are not currently reporting field failures.

So what alternatives exist for Pennsylvanian growers? First, realize that corn earworm often arrives late. Using pheromone traps on your farm, and watching the immigration roughly approximated by a network of pheromone traps, helps you gauge when this pest is arriving. Penn State Extension and PVGA help display these data at [www.pestwatch.psu.edu](http://www.pestwatch.psu.edu).

Second, we currently expect the pyrethroids to continue to work, especially at lower population densities, and most of Pennsylvania rarely gets extremely high densities.

Third, Bt-sweet corn is an option. You could use Bt-cultivars for plantings you expect to harvest in late August; or earlier. Do not expect to eliminate all sprays: Bt-sweet corn is very effective against European corn borer and corn earworm, but less effective against fall armyworm, and in the absence of any sprays we have seen problems with sap beetles, several species feeding on silks, and some aphid problems.

Fourth, tank-mixing with, or switching to, the older carbamates or phosphates (Lannate or Larvin) if high rates of immigration occurs is an option. Be careful, these are materials with lower LD50s (and thus are more toxic to humans), and while we expect them to work today, the corn earworm had a history of resistance with carbamates and phosphates in cotton many years ago.

Fifth, switching to an entirely new class of chemistry, with SpinTor® or Entrust®, is an option. This has shown to be effective in tests in New York, but less so under higher pressure in neighboring Mid-Atlantic states, and we don’t currently have much data from Pennsylvania. Sixth, there is the old method of putting oil on the silks. This has been developed as a method for growing organic sweet corn, with a backpack application method called the Zealator.

Clearly, we need some more research in this area, and regionally coordinated efforts at understanding the biology, migration, and management of the corn earworm, and other migratory noctuids. Hopefully, this report provides a snapshot of what we are currently seeing in our data.

### BT Sweet Corn Demonstration Project
Galen Dively
Department of Entomology
University of Maryland, [galen@umd.edu](mailto:galen@umd.edu)

**Objective:** To have producers observe and evaluate the control effectiveness and marketability of Bt versus non-transgenic hybrids on their own farms.

**Bt variety:** The insect-resistant variety provided for this project is BC0805. Produced by Syngenta Seeds, it is the first TripleSweet® with the added benefit of ATTRIBUTE® insect protection. Suited for main season plantings, BC0805 matures in about 82 days and has well filled ears. Typical of the TripleSweet varieties, the eating quality is outstanding with tender, sweet kernels. With Bt expression, BC 0805 has strong built-in protection against damage by European corn borers, as well as being a significant IPM tool for the control of corn earworms and fall armyworms. It is also resistant to some races of common rust (Rp1-d). I have tested this variety in field trials and found that it also has excellent ear tip coverage, thus it is less susceptible to sap beetles, which are not controlled by the Bt expression.

**Planting:** I have provided you with approximately 16,600 seeds (5 lbs) - enough for two plantings, each about 1/5 of an acre. Try to establish each planting as a separate block so that it can be sprayed if necessary; separate from your other plantings. Try to establish the first planting during late May or first week of June, so that it is ready to harvest during late August. Then plant the second one when you normally seed your last planting of sweet corn. These later plantings will allow you to experience the maximum effectiveness of the Bt corn technology under higher levels of insect pressure.

**Isolation:** Depending upon the other sweet corn varieties on your farm, you may have to isolate the Bt plantings by gene type and kernel color. The BC0805 variety is a SE type and thus it must be separated at an appropriate distance from any Sh2 varieties grown on your farm. Also, as you know, do not grow it adjacent to a white variety because it will cross-pollinate and produce some yellow kernels in white varieties.

**Insect Control:** Although Bt sweet corn provide excellent protection against infestations of corn borer, corn earworm, and fall armyworm, supplemental insecticide sprays may be needed to ensure fresh market quality ears. In the case of corn borers, control is virtually 100%, so it is very unlikely that insecticide sprays will be needed during the whorl or tasseling stages, or even during silking if corn borer is the only concern. The Bt trait also provides adequate suppression of relatively high infestations of fall armyworm during the whorl and tassel stages, thus it unlikely that you will need any pre-silk sprays for worms.
Under normal insect pressure, I expect that the first planting may need one insecticide application, while the second one may need two applications, depending on your ear quality standards. When the corn earworm moth activity is very high, a greater portion of eggs are laid during wilted or brown silk. Larvae hatching closer to harvest have a better chance of surviving and invading the Bt ear. These few larvae get sick and cause only minor tip injury (usually less than 5 kernels damaged and all at the tip). But they are still present in the ear and pose a quality problem. Under very high earworm pressure, sometimes up to 10% of the ears can become infested with small larvae.

The timing of insecticide application in Bt sweet corn is different from non-Bt corn. The optimum timing is to apply an insecticide directed at the ear zone at 100% fresh silking (usually 4-5 days later than the normal timing of the first silk spray), and a second application 4 days later, if the moth pressure continues. For fall armyworm, these worms are more tolerant to the expressed Bt protein and can damage the husk leaves and enter the ear. The same insecticide treatments recommended for corn earworm can be used to control fall armyworms.

Sap beetles also can cause ear quality problems in Bt corn, because the expressed protein is not active on these insects. Although sap beetles are usually less numerous in ears without worm damage, they can be primary invaders. On farms with known history of sap beetle problems, one supplemental insecticide spray should be applied when 50 to 75% of the ears have wilted silks (this coincides with the time when adult beetles start to laid eggs on silks). Usually one spray is enough to keep these insects from causing economic ear damage, especially in the BC 0805 hybrid which exhibits good ear tip coverage.

I will try to keep you up-to-date on moth activity and recommended treatment schedules by phone or email. If you use email, please email me a message so that I have your email address to communicate information. You can also obtain current moth activity and spray interval information from the Maryland Department of Ag’s toll-free hotlines (Eastern Shore and Southern MD call 800-492-2105; Central and western MD call 800-492-2106). Or search the MDA website at:
http://www.mda.state.md.us/plants-pests/plant_protection_weed_mgmt/plant_pest_survey_detection/output/06800report.htm

Information needed: Please notify me (see contact info below) or call your county extension educator when each planting is a week from harvest maturity. Either someone from my lab or myself will visit your farm to evaluate the ear quality of the Bt variety in comparison with the ear quality of your non-Bt corn of the same maturity. Try to kept records on the insecticide costs, time, and labor required to handle and apply insecticides on the Bt and non-Bt plantings. Ultimately, we want to collect enough information to generate a crop budget to determine if growing Bt sweet corn is profitable.

We also encourage you to sell your Bt sweet corn and to increase awareness of the reduced-risk advantages of the technology at the point of purchase. Keep track of the amount of marketable ears harvested and sold and any feedback from your customers regarding the quality and taste of the Bt corn and any concerns about the technology.

Bt Sweet Corn Project Cooperators:
Caroline Co. - Carmen Dilworth, Calvin Taylor and Tommy Wheatley.
Talbot Co. - Chip Council.
Anne Arundel Co. - James Schillinger, Ridgely Boyer and Eddie Toney.
Carol Co. - Dwight Baugher, Wayne Horner, Jim Knill and Jack Schultz.

Vineyard Management Update
Joseph A. Fiola, Ph.D.
Specialist in Viticulture and Small Fruit
University of Maryland, jfiola@umd.edu

Shoot Thinning
There have been some questions regarding the importance or necessity to shoot thin grapes. Some are concerned that they might not have large enough crop if they thin down to the suggested level of shoots. I cannot over-emphasize the importance of shoot thinning down to the recommended four to six shoots per linear foot of trellis for VSP (vertical shoot positioned) for both pest management and fruit quality reasons.

Leaving more than the recommended range will result in overcrowded, very dense canopies:
- Crowded canopies are more prone to disease because they do not dry out as quickly in the morning or after precipitation due to lack of air movement.
- Crowded canopies maintain high humidity in the canopy micro-climate that exacerbates disease problems.
- Crowded canopies limit pesticide penetration that will reduce efficiency and exacerbate disease problems.

You will see much high incidence of downy and powdery mildew in crowded canopies. Botrytis an other late season fruit rots will also be more difficult to control.

As for crop volume (yield), the recommended shoot density has been shown to give yield within the recommended range. Most of the shoots have multiple clusters and the vine has the potential to compensate when shoots are removed.

In almost all cases you will still have to drop additional clusters later to get down to the level of crop level that you can fully ripen. You can estimate and adjust your crop later in the season.

As for fruit quality, again I cannot over-emphasize the importance of shoot thinning to allow adequate sunlight into the canopy and especially the clusters.

There is lots of evidence that shows that an open canopy with good light penetration to clusters results in more uniformly ripened fruit with higher levels of secondary products and varietal character.

NOW is the best time to get this done, as the longer you wait:
- The more difficult it is to physically get into the canopy.
- The more time it will take to decide which shoots to cut.
♦ The more difficult it is to make the cuts (young shoot easily snap off with your hand - older shoot need to be cut with pruning shears to avoid damage to the cordon).
♦ The tendrils will attach and make it difficult to remove the shots.
♦ The tendrils will attach and make it more difficult to move the catch wires.
♦ Disease will get established in the canopy making it more difficult if not impossible to control later.

If your goal is ripe, disease free, high quality, fruit, this is a critical management practice that needs to be accomplished very soon.

**Downy Mildew:** The past three seasons have been tough ones for DM therefore inoculum is very high.
♦ High over wintering inoculum levels mean that early sprays are more important than they would be in a vineyard that was clean last year.
♦ Infections originating from over wintering oospores ("primary" infections) require a minimum rainfall of approximately 0.1 inch and a temperature of 52°F or higher.
♦ Spread is most rapid with night and morning temps of 65-77°F – (just like we have been experiencing recently.)
♦ Cluster rachises of some varieties are highly susceptible to infection as soon as the fungus becomes active during the prebloom period and recent research indicates that berries become highly resistant to infection about 2 weeks after the start of bloom.
♦ Downy mildew epidemics can develop quickly when it stays warm and wet for an extended period of time.
♦ Premature defoliation from DM really does reduce winter hardiness and can ultimately lead to vine death.

**Bunch Disease Management: Bloom and Botrytis.**
Most viticulturists think of Botrytis predominantly as a late season cluster problem however bloom is a time when Botrytis infection sometimes get started, depending on weather conditions.
♦ Leaf infections are not typically widespread and obvious but can be a source of inoculum for fruit infections.
♦ Botrytis infections can occur early in the season during bloom and later in the season from bunch closing on to harvest.
♦ Infections that get in at bloom (through senescing blossom parts) remain latent (dormant) until some of them resume activity and rot the berries as they start to ripen.
♦ The vast majority of these latent infections remain inactive through harvest and the fruit stay healthy although some factors such as high humidity and high soil moisture during the pre-harvest period can promote infection.
♦ Best conditions for spread are overcast, rainy weather and/or high humidity and still air.
♦ Maintaining an open copy with the proper shoot density and removal of leaves around clusters on mid- or low-wire cordon-trained vines will improve air circulation and spray penetration and reduce infection periods.

**Early Botrytis Management Program:**

♦ Early sprays are designed to limit the establishment of primary infections, and later sprays as limiting disease spread.
♦ If conditions during bloom are warm and dry, and clusters go through pollination quickly, a spray directed specially at Botrytis is NOT normally warranted.
♦ It is best to save the limited number of available sprays of the good Botrytis fungicides (Vanguard, Scala, Elevate, Rovral) for later in the season when control is paramount.
♦ If you are using one of the strobies (Abound, Flint, Sovran, and Pristine) for your pre-bloom and first post-bloom sprays, you may get some benefit from these sprays. [Flint is the only one strong enough to be labeled for Botrytis control; Pristine (strobies and boscalid) will probably provide moderate activity at the lower rate (4.5 oz) recommended for powdery mildew (Wilcox)].

**The Mid-Atlantic Berry Guide for Commercial Growers EB-242**
Contributors: Penn State, The University of Maryland, Rutgers University, The University of Delaware, , Virginia Tech, and West Virginia University.

This 205-page spiral bound guide is intended to provide information for commercial berry growers within the region.
Homeowners may use this publication for background information; however, many of the recommendations contained in this guide assume that the production is on a large scale and that producers have a commercial pesticide applicators license.
Uses of pesticides listed in this publication were current as of November 2005. However, changes in registration status may occur at any times o please consult the label before use – the label is the law. If there are differences in use patterns between the pesticide label in your possession and those listed in this guide, follow the instructions on the label. If in doubt, consult your local extension educator.

**Contents:**
- Preplant Considerations
- Soil Management and Nutrition for Berry Crops
- Pest Management
- Strawberries
- Blueberries
- Brambles
- Gooseberries and Currants

**Appendices:**
- Expanded Special Topics
- Diagnostic Services
- Nursery Sources of Berry Plants
- Production Supplies and Services
- Additional Sources of Information
SMRFM Produce Auctions
By Tom Clements SMRFM Board President

♦ 2006 SMRFM Produce Auctions will begin on June 22nd and continue every Monday and Thursday evening starting at 7:00 p.m.
♦ Also New in 2006 SMRFM will reopen the Retail Market Pavilion. Contact Tom Clement, SMRFM Board President immediately if you are interested in retailing during the 2006 growing season.

Directions: Southern Maryland Regional Farmers Market is located on Route 301 South in Cheltenham, MD (Next to the Veteran’s Cemetery). Only 10 miles south of the Capital Beltway (I-495), only 7 miles north of Waldorf.
For additional information call the market office at: (800) 533-FARM

Custom Rates Up: Are You Charging Enough?
Dale Johnson, Farm Management Specialist
University of Maryland

In light of increased fuel costs, I have received several questions regarding machinery costs and custom rates for 2006. If you are getting such questions, I would encourage you print out two documents from the internet.

The first document is the Pennsylvania custom rates survey for 2005/2006 completed by the Pennsylvania Agricultural Statistical Service. This shows the change in custom rates over the past year (they have increased). The last survey conducted by the Maryland Agricultural Statistical Service was in 2002. Norm Bennett told me that they may do it again this year, but it hasn’t been done yet. The Pennsylvania numbers are good for Maryland. The document is at the following address:
http://www.nass.usda.gov/Statistics_by_State/Pennsylvania/Publications/Machinery_Custom_Rates/custom06.pdf

The second document is a calculation of machinery costs using an engineering approach. It is by Bill Lazarus at the University of Minnesota. Bill was on my thesis committee at Cornell. He is meticulous in his calculations and THE expert on machinery costs in the United States. His document is at the following address:
http://www.extension.umn.edu/distribution/businessmanagement/DF6696.pdf

Several studies from across the United States indicate that custom rates have increased about 5% over the past year. If farmers haven’t increased their rates for several years, it is certainly justified now – 5% or higher depending on when they last increased their rates.

Crop Insurance Update
Wes Musser
Farm Management Extension Specialist
University of Maryland

Acreage Reporting DEADLINE: Participating producers are required to file acreage reports with both their crop insurance agent (by 7/15 for many spring crops) and at the county FSA office. If there are differences between the two reports, a written explanation is required. Accurate reporting of the planted and prevented planting acreage is necessary for each farm.
For late-planted acreage, report the planting completion date by field as it impacts the amount of your protection. Most disappointments at the time of loss claims result from reporting errors. Retain a copy the signed acreage report for your records.

Crop Damage Reporting Requirements (if a loss is anticipated): The insurance policies require that written notice be given to your crop insurance agent (by crop by unit -- farm):
- Within 72 hours of discovery of damage or loss,
- 15 days before harvest begins, and
- Within 15 days after harvesting is completed but not later than 7/31 for small grains in Maryland.

Don’t destroy evidence of damage until a loss adjuster evaluates it!

Small Grain: About 1,090 small grain crop insurance policies are in effect in Maryland, covering 10,000 acres of barley and more than 57,000 acres of wheat. While disease appears to not be a major concern this year, according to University of Maryland experts, crop insurance does provide some protection against poor grain quality. If your insured grain has quality damage, contact your crop insurance agent before you begin to harvest (or immediately upon discovery) and ask to talk to a crop loss adjuster to determine how to proceed to obtain maximum policy benefits. If your insured grain has poor quality, the insurance company may require that two tests be determined by the Federal Grain Inspection Service (FGIS/USDA) laboratory, a U.S. grade and a toxin identification/amount (i.e. vomitoxin PPM). Be sure that both tests are requested in communications with FGIS.

Forage Seeding Protection: Forage seeding protection is available in Allegany, Baltimore, Carroll, Cecil, Frederick, Garrett, Harford, Howard, Montgomery and Washington counties. This policy provides protection for a good stand. On acreage with a poor stand caused by bad weather, payments can range from $71 to $192 per acre, depending on your coverage level choice at time of enrollment. Premiums generally range from about $5 to $12 per acre. Coverage is available for seedings where at least 50% of the seed (by weight) is alfalfa, clover, birdsfoot trefoil, or other locally recognized forage legume species.

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Don’t destroy evidence of damage until a loss adjuster evaluates it!

Small Grain: About 1,090 small grain crop insurance policies are in effect in Maryland, covering 10,000 acres of barley and more than 57,000 acres of wheat. While disease appears to not be a major concern this year, according to University of Maryland experts, crop insurance does provide some protection against poor grain quality. If your insured grain has quality damage, contact your crop insurance agent before you begin to harvest (or immediately upon discovery) and ask to talk to a crop loss adjuster to determine how to proceed to obtain maximum policy benefits. If your insured grain has poor quality, the insurance company may require that two tests be determined by the Federal Grain Inspection Service (FGIS/USDA) laboratory, a U.S. grade and a toxin identification/amount (i.e. vomitoxin PPM). Be sure that both tests are requested in communications with FGIS.

Forage Seeding Protection: Forage seeding protection is available in Allegany, Baltimore, Carroll, Cecil, Frederick, Garrett, Harford, Howard, Montgomery and Washington counties. This policy provides protection for a good stand. On acreage with a poor stand caused by bad weather, payments can range from $71 to $192 per acre, depending on your coverage level choice at time of enrollment. Premiums generally range from about $5 to $12 per acre. Coverage is available for seedings where at least 50% of the seed (by weight) is alfalfa, clover, birdsfoot trefoil, or other locally recognized forage legume species. See a crop insurance agent for details before the 7/31 enrollment/contract change deadline.

General Forestry Correspondence Course
Registrations are now being accepted for the fall semester of the General Forestry Correspondence Course which runs from September 1-December 15. Work from the comfort of your home, using your own woodlot, a friend’s or a public forest while learning the basics of forestry, forest ecology, and forest health in this non-credit course. Find out how to protect your trees from insects, diseases and fire. Step-by-step procedures walk you through a forest inventory and
stand analysis. Explore the details of the forestry business, including tax nuances and the sale and harvest of forest products. Ultimately, the course exercises help you develop a management plan for your forest.

As part of the $300 registration fee, you receive a General Forestry Correspondence Course text notebook, separate appendices packed with resources, plus additional supplemental readings. A certificate of completion is awarded when all assignments are completed. For more information contact Nancy Stewart at the Wye Research and Education Center, University of Maryland Cooperative Extension, P.O. Box 169, Queenstown, MD, 21658; phone 410-827-8056, ext. 112; email nstewar1@umd.edu; or check out our website at www.naturalresources.umd.edu. The fall semester begins Sept. 1 so register now!

2006 MDA Pesticide Container Recycling Collection
There is one relatively close site for Anne Arundel and Prince George's County farmers to dispose of their empty and rinsed pesticide jugs. Central and Southern Maryland farmers may also drop-off their rinsed pesticide containers for recycling at the Beltsville, USDA Research Center, Building 302, Visitor Center on Powder Mill Road, on June 22, 2006; July 20, 2006; August 24, 2006; and September 28, 2006, from 9:00 a.m. to 3:00 p.m. each collection day.

Additional information on the required rinsing of the pesticide containers and the recycling program can be obtained by calling the MDA Pesticide Regulation Section Office at 410 841-5710.

Nutrient Management Update

Nutrient Management Advisor for Anne Arundel County P.G. County producers have a new Nutrient Management Advisor! Chris Dowell, who also does Calvert County’s Nutrient Management Plans, will be splitting his time between 2 counties and assisting all P.G. County producers with their nutrient management planning needs. Chris was one of the first Nutrient Management Advisors hired and has over 10 years of experience. Please welcome Chris in his new position. He will be in the P.G. County Extension office on Mondays and Tuesdays.

On a side note, come July, Anne Arundel County’s Nutrient Management Advisor, Krista Wilson, will be Krista Mitchell, following a late June wedding.

Tissue sampling season has arrived for those who produce tree fruit, brambles, grapes, and blueberries. While soil sampling is an accurate tool to assess the nutrient needs of field crops, small fruit and tree fruit need a tissue and soil sample to determine the nutrient status of the soil, and the efficiency with which the fruit can utilize those nutrients. Tissue and soil samples taken in conjunction are also the way MD Cooperative Extension creates fertilizer recommendations for Nutrient Management Plans. Tissue sampling season only comes once a year, so make sure to contact your Nutrient Management Advisor for assistance NOW, so that we will be able to update your next Nutrient Management Plan.

The MD Department of Agriculture has come out with its latest compliance numbers. Statewide, MDA estimates that approximately 84% of MD's agricultural operations are in compliance with the Water Quality Improvement Act of 1998 (the nutrient management law). MDA is hard at work trying to get everyone in compliance, so if you don't have a current Nutrient Management Plan for your operation, call your county’s Nutrient Management Advisor and have one developed. MDA has also begun random farm inspections to make sure people have a current Nutrient Management Plan and are following it, and keeping records in accordance with the law. If you have any questions about what MDA will be looking for during these inspections, consult your Nutrient Management Plan and/or contact your Nutrient Management Advisor for information.

Thanks for Partnering

Thanks for partnering with the Maryland Cooperative Extension, and supporting our programs. I also hope you enjoy this newsletter. If you are no longer interested in receiving this newsletter, please call or write the office for the removal of your name from the mailer.

Sincerely,

R. David Myers, Extension Educator
Agriculture and Natural Resources
Anne Arundel & Prince George’s Counties
Fruits and Vegetables

NACAA
National Association of County Agricultural Agents

NACAA Communication Award
Individual Newsletter
2002 National Winner

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