**Soybean Rust Update**

Scouting for soybean rust continues on kudzu patches from Florida northward to southern Illinois, and westward to Texas. Many of the soybean sentinel plots have been planted in most southern and some mid-western states. Soybeans in sentinel plots have emerged as far north as central Illinois. Currently, there are no reports of rust on newly planted soybean in 2006 including volunteer plants. Rust has been confirmed in five counties in Alabama, 11 in Florida, four in Georgia, and one in Texas. **No new positive counties have been reported since the first week of March.** Recent rains have improved the previously dry conditions across the south. (From May 3 national soybean rust commentary, [http://www.sbrusa.net](http://www.sbrusa.net).) The sentinel plots in Sussex and Kent Counties are planted. Planting began on April 18. Each sentinel plot will be planted with a Group III and a late maturing Group V variety.

**Vegetables**

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

**New Label**
On April 28, 2006 Rimon® 0.83EC insecticide, marketed by Chemtura Corporation, received federal approval for use on head and stem brassica crops including cabbage, broccoli, cauliflower, Brussels sprouts, Chinese mustard and kohlrabi. Label is not available on CDMS yet.

**Asparagus**
Be sure to sample fields for asparagus beetle adults, especially on field edges. As a general guideline, a treatment is recommended if 2% of the spears are infested with eggs. Since adults will also feed on the spears, a treatment is recommended if 5% of the plants are infested with adults. In past years, Sevin, Lannate, or permethrin have provided control.

**Cabbage**
Continue to scout fields for imported cabbage worm and diamondback larvae. With the warmer weather, we could see an increase in moth egg laying activity. As a general guideline, a treatment is recommended if you find 5% of the plants infested with larvae. If both insect species are present, Avaunt, the Bt insecticides, Proclaim or Spintor have provided control.
Peas
Continue to sample peas for aphids. With the warmer weather, we could see a rapid increase in populations. On small plants, you should sample for aphids by counting the number of aphids on 10 plants in 10 locations throughout a field. On larger plants, take 10 sweeps in 10 locations. As a general guideline, a treatment is recommended if you find 5-10 aphids per plant or 50 or more aphids per sweep. Be sure to check labels for application restrictions during bloom.

Potatoes
Begin sampling the earliest planted and emerged fields for Colorado potato beetle adults, especially if an at-planting material was not used. A treatment should not be needed for adults until you find 25 beetles per 50 plants and defoliation has reached the 10% level. We have also started to catch the first corn borer moths in black light traps.

Sweet Corn
Be sure to scout emerged fields for cutworms and flea beetles. As a general guideline, treatments should be applied for cutworms if you find 3% cut plants or 10% leaf feeding. In order to get an accurate estimate of flea beetle populations, fields should be scouted midday when beetles are active. A treatment will be needed if 5% of the plants are infested with beetles.

Understanding FRAC Groupings Part III:
Vegetable Growers’ Guide to Understanding the Strobilurin Fungicides (FRAC Group 11)

Andy Wyenandt; Extension Plant Pathologist, Rutgers University

The strobilurin, or QoI, fungicides (FRAC group 11) have been on the market for a few years now and have been extremely useful in controlling a broad spectrum of common vegetable pathogens. Interestingly enough, the basic strobilurin compound (or chemistry) was initially identified and isolated from a natural compound in a common wood rotting fungus associated with trees. You may know some strobilurins as azoxystrobin (Amistar or Quadris), trifloxystrobin (Flint) or pyraclostrobin (Cabrio and Headline). All strobilurin fungicides inhibit fungal respiration by binding to the cytochrome b complex III at the Q0 site in mitochondrial respiration. Simply said, the fungicide works by inhibiting the fungi’s ability to undergo normal respiration. As you can see, the strobilurin chemistries have a very specific target site, or mode-of-action (MOA). Although highly effective, any fungicide chemistry like the ones in FRAC group 11 with a very specific MOA may lose efficacy (i.e. become less effective).

Why is that? Fungal populations have the ability to develop resistance to certain fungicide chemistries over time. For example, let’s say we apply a QoI fungicide on pumpkin for powdery mildew control and we estimate 99% control of the powdery mildew population after the first application. Two weeks later we apply another QoI fungicide and control 90% of the population. Finally, we apply a third QoI fungicide application (six weeks after the first) and control 10% of the population. Why isn’t the fungicide controlling powdery mildew like it once did earlier in the season? Let’s keep in mind that we know this particular group of fungicides (FRAC group 11) has a specific MOA. Therefore, each time the fungicide is applied it acts against the fungus in the same exact way, by interfering with fungal respiration by binding at the cytochrome b complex! Eventually, the fungus ‘figures’ this out, and a small segment of the population ever so slightly undergoes a change (i.e. a mutation) to avoid being controlled by the fungicide. How small does the change in the fungus have to be? Well, in a ‘technical sense’, a single nucleotide polymorphism of the cytochrome b gene leads to an amino acid substitution of glycine with alanine at position 143 of the cytochrome b protein (Kuck and Mehl, 2003). For us, knowing the specifics on the technical jargon isn’t so important - its understanding what is at stake. So, if we hear someone speak about G143A resistance development to the QoI fungicides (where resistance is already known to develop in cucurbit powdery mildew and downy mildew), we know what they are talking about and how important it is! So much so, that if powdery mildew develops resistance to one strobilurin
compound it may develop what is known as cross resistance and become resistant to all chemistries in FRAC group 11, even if only one chemistry was used! So even though we were controlling a large portion of the powdery mildew population at the beginning of the season, there was another powdery mildew population developing that has resistance to the QoI fungicide. Eventually, the QoI resistant population becomes much larger than the population we were controlling, the fungicide doesn’t work anymore, and, as we all know, powdery mildew eventually takes over the entire field.

So, how do we avoid the chances for fungicide resistance like this to develop? It’s simple, don’t let the fungus ‘figure out’ what it is being sprayed with and do this by rotating different fungicide chemistries (i.e. FRAC groups). Proper fungicides rotations are necessary when fungicides with specific MOAs are used in spray programs for controlling important diseases. That’s why it is so important that labels are followed precisely and that certain classes of fungicide chemistry are not mis- or overused. All strobilurin fungicides should be tank mixed with a protectant fungicide, when possible. Remember, tank-mixing fungicides with a high risk for resistance developing (i.e. FRAC group 11) with protectant fungicides, which have a low risk for resistance developing (FRAC groups M1-M9) helps to reduce (and/or delay) the chances for resistance development. Never tank mix strobilurins together and never apply any strobilurin fungicide (either the same chemistry or different chemistry) in consecutive applications! Remember, Amistar acts against the fungus the same way as Flint does and so on. Even though you are spraying two different chemicals, each has the same MOA and is acting against the fungus in the same exact way.

**Headline Label for Lima Beans - Kate Everts; Vegetable Pathologist, University of Delaware and University of Maryland; keverts@umd.edu**

The EPA recently approved a supplemental label for Headline that includes succulent lima beans. Headline (active ingredient pyraclostrobin) is labeled to manage foliar diseases including anthracnose. In addition, this label includes directions for management of Asian soybean rust (*Phakopsora pachyrhizi*) in the event that Asian soybean rust is present or predicted to be in the area (see information on Soybean Rust, above). Rate of application is 6 to 9 fl oz/A for all diseases and a maximum of two sequential applications may be applied in one season. Headline has a PHI of 7 days. Headline was previously labeled for snap beans.

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**Section 18 for Reflex on Snaps - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu**

The State of Delaware has been granted a section 18 label for use Reflex in snap beans. Reflex use rate is 1 pt/A, for one application per year. Reflex must be applied at least 30 days prior to harvest. A copy of the label is available online at [http://www.rec.udel.edu/Update06/Reflex06.pdf](http://www.rec.udel.edu/Update06/Reflex06.pdf) or contact Lisa Collins at 856-2585 x544 or lcollins@udel.edu.

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**Agronomic Crops**

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

**Alfalfa**

Be sure to sample all fields after cutting for alfalfa weevil larvae and adults feeding in the crowns, especially if you did not treat before cutting and you do not see any re-growth. Do not assume that lack of re-growth is only due to the dry weather. Weevil larvae and adults can significantly hold back re-growth.

**Field Corn**

Be sure to scout fields from emergence through the 5-leaf stage for cutworm damage, even if an at-planting cutworm treatment was used. Be sure that you do not confuse cutworm and bird damage. You can distinguish bird damage from cutworm damage by the pattern in the field. Generally longer strips of damaged plants, plants
pulled out of the ground, and/or plants cut high that are compressed at the base of the stems, all indicate bird damage. Although birds can cut plants off at the soil surface, they tend to pull plants out of the ground. In addition, if you look closely you will see “bird prints” near the missing plants or holes where birds have pulled plants out of the ground.

Small Grains
Continue to scout fields for cereal leaf beetles, aphids, true armyworm and grass sawfly.

Agronomic Crop Diseases

Bob Mulrooney; Extension Plant Pathologist; bobmul@udel.edu

Wheat
Dry weather and low humidity are responsible for the low occurrence of fungal and bacterial disease so far. There is powdery mildew in some scattered areas on the lowest leaves and it does not appear to be moving higher at the present time. Continue to scout wheat. If no powdery is present, waiting until flowering and assessing the disease situation and the weather forecast might be worthwhile. At that time a strobilurin fungicide such as Quadris or Headline could be applied for glume blotch and the other Septoria diseases as well as tan spot if wet weather should set in after flowering. This late application will also produce clean, bright straw and protect against sooty molds should the heading period be rainy and harvest is delayed. Those are big ifs but something to consider. Remember that scab in wheat depends on wet weather during the flowering and none of the currently labeled fungicides provide control of this disease. Stripe rust has not been seen yet on Delmarva as far as I know, but another reason to keep scouting.

Barley
The only disease seen so far is the spot blotch form of net blotch caused by the fungus _Drechslera teres_. These oval reddish brown to brown spots on the leaves can be very numerous on susceptible varieties, but little is known about their impact on yield in this area. Most of the yield loss is from flag leaf infections. The Province of Alberta in Canada reports a 1.5% yield reduction from net blotch. Given the condition of the barley crop in general, control would not likely be justified. For anyone interested in malting barleys, net blotch reduces brewing quality by reducing carbohydrates in the kernels.

Canopy SP is Back

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

Last year DuPont opted to no longer make or sell Canopy or Canopy XL for use in soybeans. Last fall we removed both of these products from our weed management guides. However, in January, I was made aware that Canopy will be back in the marketplace for use in soybeans in 2006. Unfortunately, we had already published our regional guides so Canopy is not included in there, but it is labeled for this year. Canopy SP is a prepackaged mixture of Classic and Sencor. The use rates are 4 to 6 dry ounces. The 4 oz/A rate will provide 3.4 oz of Sencor and 1.71 oz of Classic. Canopy is a broad-spectrum herbicide for control of many troublesome broadleaf weeds. In addition to controlling many summer annual weeds, Canopy will also control horseweed (marestail) that has begun to bolt. The first option for horseweed is use of 2,4-D (1 qt for more consistent control), but if you are within a week or two of planting, the Canopy is a better option.
Crabgrass Control in Corn - Mark VanGessel, Extension Weed Specialist; mjv@udel.edu

Grass control is likely to be poor this year in corn due to lack of rain to “activate” the herbicide. It is best to scout your fields earlier than normal to check for breaks in grass control. The biggest concern is crabgrass, which is difficult to control with postemergence grass herbicides. There are a number of herbicides to control grasses postemergence in corn. These herbicides include the active ingredients nicosulfuron - Accent; nicosulfuron plus rimsulfuron - Steadfast, or Steadfast ATZ; or foramsulfuron - Option or Equip. Accent Plus will not control crabgrass, while the other products will only control small crabgrass (labels specify 1 to 2 inches). There is no restriction for Accent or Steadfast for minimum size, while Option states applications should not be made before V-1 stage. Be diligent and scout your fields early for need of postemergence herbicides, particularly with crabgrass.

Correction to Last Week’s Article “Cost Control in DRYLAND Corn and Beans While Maintaining Efficiency” - Richard Taylor, Extension Agronomist; rtaylor@udel.edu

At the end of my article last week when I discussed soybean cyst nematodes (SCN) and Roundup Ready resistant varieties, I seemed to imply that the Race 3 or 3, 14 resistance in Roundup Ready varieties were no better than SCN susceptible soybeans in where Race 1 SCN infestations exist. This was not what I meant to imply. To explain the situation with SCN races, let me use an analogy also taken from Roundup Ready soybeans. An SCN race is really not a group of genetically uniform individuals but instead is a group of diverse individual nematodes that react in a known way with certain test soybean varieties. Race 1 SCN nematodes in Delaware also differ significantly in their virulence against soybeans. For the analogy, think back on the weed we all thought of as a uniform population called marestail or horseweed. After a number of years of challenging horseweed with glyphosate (Roundup herbicide), we discovered that there was a great deal of genetic diversity within the weed for tolerance and later resistance to glyphosate. Within what appeared to be a uniform population, we actually discovered a range of horseweed plants that survived and reproduced at high application rates of glyphosate. The select group of resistant horseweed plants was affected by the glyphosate even though it didn’t kill them. The same is true with when you plant Roundup Ready Race 3 and 3, 14 SCN resistant soybeans in a field infested with Race 1 SCN. Some of the nematodes find they can penetrate the soybean roots and reproduce while other nematodes from the same population cannot reproduce. For a SCN susceptible soybean variety, most if not all the nematodes would successfully reproduce on these soybeans. So, just what can you do if you feel your Roundup Ready Race 3 or 3, 14 SCN resistant soybean variety is showing areas that are not performing well? It probably won’t help much to try to determine the SCN race in a field since they do vary in their virulence. What you should do is sometime between 30 and 40 days after planting scout your fields for evidence of a reproducing SCN population. You should have some idea of where the weak spots (low yields, poor growth, yellowing plants, usually sandier sites within a field) in the field are and go to several of these sites and dig up a half dozen or so plants. Gently shake or knock off the soil from the roots and then use a 10X magnifying lens to examine the roots to check for white or yellow bodied female nematodes (cysts) that are full of eggs. The females or cysts will look like small Bradyrhizobia nodules (the nitrogen fixing nodules) that are very small, almost the size of a large grain of sand. Instead of pink, if cut open, the female nematodes or cysts will be white to yellow in color and will pop if cut open since they are not solid like a nodule. If you find 30 to 40 or more per plant, the nematode race (population) present in that field will likely be having a negative impact on soybean yield.

In summary, all SCN nematode resistant soybean varieties will have some amount of resistance to SCN but the ultimate impact on their yield potential will depend on the virulence of the race (how many individuals in that population can overcome the SCN resistance genes bred into the variety).
Understanding Soybean Growth Stages:
I. Emergence -- VE - Richard Taylor, Extension Agronomist; rtaylor@udel.edu

With everyone attuned to the need for knowing the growth stage of a soybean crop, I thought I would go through all the various stages as we progress through the growing season.

First, there are a few definitions I need to cover that we can refer back to during the year. This information will be based on the accepted system for staging soybeans that was developed by W. Fehr and C. Caviness and published in the scientific journals. Recently, there was a bit of a controversy when a new system that was published was found to differ at the reproductive stages from the Fehr and Caviness system but everyone, for now, has agreed to use the older system.

To use the system, you need to know the following terms. **Cotyledons**, also called seed leaves, are the two fleshy leaves that are seen first as the seedling emerges through the soil. A **node** is the slightly enlarged portion of the stem where a leaf develops and if the leaf has fallen off the plant the node can still be identified by the presence of a scar where the leaf was once attached. **Unifoliate leaves** are the first true leaves produced by a soybean plant and each leaf has one leaflet. The unifoliate leaves are opposite each other at the **first node** on the main stem. **Trifoliate leaves** are all leaves produced by the soybean plant after the unifoliates. Each trifoliate leaf is made up of three leaflets and the trifoliate leaves are attached to the stem in an alternate arrangement (one on one side of the stem and the next on the opposite side and so forth). A **fully developed leaf** is one in which the leaf immediately above it on the main stem has opened. A leaf is considered **open** when the leaf has unrolled sufficiently that the leaf edges are not touching. I will cover this topic again later in the season and include photos to illustrate the point.

I will also cover how you stage a field in the next article but will begin this one with a description of two stages, one official and one in common use. The stage VP seems to be used to indicate that the beans have been planted but have not yet emerged. This is not an official term so you may see it used in a number of ways. The first official stage is called VE or emergence and occurs when the cotyledons or seed leaves are above the soil surface. A field is said to be in this stage when at least 50% of the plants are at or past the point when the cotyledons emerge above the soil surface. There is no official designation for when the beans begin to crack the soil surface but usually there is only a day or three between this occurring and VE. Next week, I’ll add in a photo to illustrate this point and we will move on to the next stage, VC or the cotyledon stage.

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

U.S. Exports Continue Strong Showing
Weekly corn, soybean, and wheat exports for the week ending April 27th were reported at levels that are adequate or better to meet USDA’s projections for the current marketing year. Corn exports were reported at 1,282,200 metric tons (mt), well above the 504,400 mt needed to stay on pace with projections. Soybean exports at 182,500 mt were well above the 134,100 mt needed to stay on track. Wheat exports of 388,800 mt were slightly above the amount needed to meet USDA’s export forecast. The report was called bullish for corn, neutral to bullish for soybeans, and neutral to slightly bullish for wheat.

U.S. Crop Planting Progress
Planting progress for the nation’s corn crop is now over 50% complete, about 10% ahead of the average pace for the past ten years. U.S. soybean planting progress, reported at 10% complete, is about 3 percentage points ahead of normal.

Funds Remain Active
Fund activity in the corn, soybean and wheat pits has puzzled many grain analysts in recent times due to the bearish fundamentals that prevail for U.S. corn and soybeans, particularly for the current marketing year.
However, it has become evident that other factors have entered into the funds interest in commodity trading. Mainly, the price of metals and energy futures are said to be having a significant effect upon the fund interest in buying corn, soybean, and wheat futures. The grain and oilseed commodities are viewed as a bargain by the hedge funds. The buying interest in grain and oilseed futures is creating sales opportunities for ’06 corn, soybean, and wheat production.

CBOT to List Ag Futures on e-cbot
The Chicago Board of Trade, one of the world’s leading derivatives exchanges, has announced that it is increasing global access to its benchmark Agricultural products by offering trading of CBOT full-sized, physically delivered agricultural futures contracts on its electronic trading platform during daytime trading hours. On August 1, 2006 the CBOT expects to begin trading corn, wheat, soybean, soybean oil, soybean meal, rough rice, and oat futures contracts on e-cbot, the Exchange’s electronic trading platform, side-by-side with CBOT open auction markets.

Trading hours for the electronically traded Agricultural contracts will be from 6:30 p.m. to 6:00 a.m., and the new daytime hours will be from 9:30 a.m. to 1:15 p.m. (Central time). The new trading hours will accommodate global customers, particularly the European and Asian time zones.

In addition, the Exchange will list its South American Soybean and Ethanol futures contracts during daytime hours on e-cbot. The CBOT’s South American contract is expected to trade from 6:31 p.m. to 6:00 a.m. and from 9:00 a.m. to 1:15 p.m. beginning Monday, May 15, 2006. The CBOT Ethanol futures contract is expected to trade on e-cbot from 6:36 p.m. to 6:00 a.m. and from 9:30 a.m. to 1:15 p.m. beginning Wednesday, May 31, 2006. Next Supply/Demand Report will be released by USDA on Friday, May 12th.

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**Announcements**

**Strawberry Twilight Meeting**
Tuesday May 16, 2006   6:00 – 8:00 p.m.
Wye Research and Education Center

*Rain or Shine!*

**Featured speakers this year are:**
Dr. Bill Turechek, USDA Fruit Pathologist  
Dr. Jerry Brust, UM Entomologist  
Mr. Michael Embrey, UM Apiary Specialist

There will be a tour of high tunnel production and field plots, followed by light refreshments.

For more information contact Michael Newell at (410) 827-7388.

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**Wye Spring Crops Twilight Tour**
Tuesday May 16, 2006   6:30 p.m.
Wye Research and Education Center

*Rain or Shine!*

This will be an opportunity to observe and discuss some of the research projects involving spring planted crops and small grains at the Wye Research and Education Center.

**Some of the current research projects are:**
Barley and wheat variety testing – Dr. Jose Costa  
Disease resistance screening – Dr. Arv Grybauskas  
Foliar fungicides on wheat – Dr. Arv Grybauskas  
Hulless barley fertility – Dr. Bob Kratochvil  
Wheat seeding rates – Dr. Bob Kratochvil

As always, we hope to be able to address any pest or management topics that are of current concern.

Refreshments provided by the Maryland Crop Improvement Association

For more information contact Mark Sultenfuss at (410) 827-7388 or msulten@umd.edu
Potato Disease Advisory #1 - May 3, 2005, Bob Mulrooney, Extension Plant Pathologist

This is the first report for 2006. If you would like a FAX or email report please call 302-831-4865, or email bobmul@udel.edu

We are using the E-WEATHER SERVICE from SkyBit, Inc. as we have in the past. The service determines specific requested weather parameters (temperature, relative humidity and rainfall) based on calculations of data from the nearest National Weather Service stations. This weather data is used in the WISDOM software program for predicting late blight and early blight and making spray recommendations.

Disease Severity Value (DSV) Accumulation as of May 2, 2006 is as follows:

Location: Byfield Farms field east of Magnolia, DE. Greenrow: April 23

<table>
<thead>
<tr>
<th>Date</th>
<th>Total DSV</th>
<th>Spray Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/23-5/2</td>
<td>1</td>
<td>none</td>
</tr>
</tbody>
</table>

Disease severity values have been accumulating very slowly so far this season. The threat of late blight from seed infection is low, but more of a potential problem than last year. Remember that these values are for potatoes that would have about 50% emergence and made a row that you can see on or before April 23.

Growers who do not want to rely only on the DSV calculations for scheduling fungicide applications should apply at least 1-2 sprays of mancozeb (Dithane, Manzate, Pencozeb, Manex II) or Bravo (chlorothalonil) before plants canopy down the row. For specific fungicide recommendations, see the 2006 Delaware Commercial Vegetable Production Recommendations Book. Late blight has not been a problem here in Delaware for many years and unless you have seed from an unknown source the risk of late blight is very low.

Weather Summary

http://www.rec.udel.edu/TopLevel/Weather.htm

Week of April 27 to May 3, 2006
Readings Taken from Midnight to Midnight

Rainfall:
No rainfall recorded

Air Temperature:
Highs Ranged from 75°F on May 2 to 60°F on April 29.
Lows Ranged from 49°F on May 3 to 35°F on April 30.

Soil Temperature:
62°F average.
(Soil temperature taken at a 2 inch depth, under sod)

The Weekly Crop Update is available online at http://www.rec.udel.edu/TopLevel/Publicat.htm

Weekly Crop Update is compiled and edited by Emmalea Ernest, Extension Associate - Vegetable Crops

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