TOBACCO

BLACK BEETLES IN FLOAT PLANTS
by Lee Townsend

Small black beetles were reported burrowing into media in outdoor transplant float trays late last week. Based on the description (specimens have not arrived yet), they appear to be small dung beetles that are flying in from the surrounding area. There is no apparent feeding on the plants but many seedlings are uprooted as approximately 3/8 inch long beetles dig down into the media in the trays. Similar incidents have occurred in the past, with dung beetles being the culprits.

The hard body and wing covers of beetles makes them a challenge to control even with a direct spray of an insecticide. Orthene is registered for application to plants in float systems and is the only alternative but may be only partially effective.

CORRECTLY USING MEFENOXAM-CONTAINING FUNGICIDES IN BURLEY AND DARK TOBACCO FIELDS COULD BE A VERY IMPORTANT STEP IN DISEASE CONTROL
By William Nesmith

Mefenoxam is the active ingredient in the fungicides Ridomil Gold EC and Ultra Flourish. Thus, these two fungicides contain the same active ingredient but the rate of active ingredient (a.i.) is different. Ridomil Gold EC contains 4 lbs a.i./gallon while Ultra Flourish has 2 lbs a.i./gallon. The two products have been equally effective in our side-by-side tests in Kentucky when used at the same rate of active ingredient and timing.

These fungicides can be an important tool for controlling black shank, blue mold, and Pythium in the field, where these pathogens are sensitive to this chemistry. Mefenoxam-resistant strains (Some like to call them insensitive strains, but I prefer resistant strains when communicating with users.) are present for all these diseases. In fact, with blue mold, resistant stains are widespread and represent the most common strains present in Kentucky since 1995, greatly reducing the benefit of this chemistry in blue mold control. Furthermore, these chemicals should not be considered the primary tool in the control of any disease. Instead, they are important supplements to other disease control methods. Crop rotation and resistant varieties are especially critical to the control plan with root diseases. Other chemicals are important for blue mold control. Mefenoxam will not control diseases caused by bacteria, Rhizoctonia or Fusarium species.

These fungicides are labeled ONLY for soil-directed application - preplant only, or preplant plus layby, or preplant plus 1st cultivation, and layby. Current labels do not support use of the cultivation or layby treatments unless the preplant application has also been made. Both labels prohibit all uses in greenhouses, transplant production, transplant water, and foliar applications.

Using the proper rate, the appropriate application/placement method, and the correct timing are important to achieving successful control with mefenoxam chemistry. These materials are very water soluble and leach rapidly from soils, so they must be place carefully and supplemented to achieve long term control. They are also degraded fast by microbes in the soil, especially in fields with a long history of their use. Mefenoxam performs best when used prior to infection (in a preventive role) rather than waiting until the disease is damaging the crop, but this chemistry also has some rescue potential.
The pre-plant applications should be made in at least 20 gallons of water per acre and incorporated 2-4 inches. Our data have long supported the benefits of including a series of pre- and post-plant applications, especially under moderate to strong black shank pressure. Drop nozzles are needed for best results from post-plant applications. Position these nozzles so the spray is deposited mainly on the soil and under the plants, insuring the soil at the base of the plant stem is included, then covered by cultivated soil. This is so important that several growers have resorted to hand-help sprayers and walking-on the application, to insure the coverage. Remember that the active ingredient has strong, upward systemic activity in the plant, so it is moving away from where it is needed for root disease control. Thus, foliar deposits play little or no role in black shank and Pythium control, furthermore, chemical deposited on leaves may be phytotoxic at these rates. The label does not support applications later than layby (final cultivation) to avoid residues issues in cured leaf.

Our studies have shown that "float-plants" are more susceptible to black shank than are plants produced in traditional plant beds. There are probably multiple reasons for this, but in part, it may be due to the "transplant medium" remaining with the plant all season and providing a highly conducive environment for Phytophthora and Pythium to persist and develop near the critical tissues at the base of the stem. Consequently, sequential applications of mefenoxam fungicides (preplant, cultivation, and layby) and more careful direction of the cultivation and layby treatments have become increasingly important with use of the float plant. Also, many growers are incorporating the chemical too deeply, especially when it has been impregnated on fertilizers. Be especially careful with incorporation of the preplant applications if you are using small, shallow-planted transplants. It is important to set the transplant into the zone that has the chemical to achieve control of black shank and Pythium.

The following table should be of assistance in helping growers plan their scheduling of sequential applications of Ridomil Gold EC and Ultra Flourish for black shank control. Our studies have demonstrated that the preplant + layby or preplant + 1st cultivation + layby have provided the best control of black shank in most of our tests.

<table>
<thead>
<tr>
<th>Option</th>
<th>Fungicide</th>
<th>Preplant</th>
<th>1st Cultivation</th>
<th>Lay-by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preplant, only</td>
<td>Ridomil Gold EC</td>
<td>2-3 pts</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Ultra Flourish</td>
<td>2-3 Qts</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Preplant + layby</td>
<td>Ridomil Gold EC</td>
<td>2 pts</td>
<td>0</td>
<td>1 pt</td>
</tr>
<tr>
<td></td>
<td>Ultra Flourish</td>
<td>2 Qts</td>
<td>0</td>
<td>1 Qt</td>
</tr>
<tr>
<td>Preplant + 1st cultivation + layby</td>
<td>Ridomil Gold EC</td>
<td>1 pt</td>
<td>1 pt</td>
<td>1 pt</td>
</tr>
<tr>
<td></td>
<td>Ultra Flourish</td>
<td>1 Qt</td>
<td>1 Qt</td>
<td>1 Qt</td>
</tr>
</tbody>
</table>

* If only Pythium and blue mold control are desired the rates can be cut in half. These materials are effective only against mefenoxam-sensitive strains.

** Multiple applications are especially beneficial with float plants and under strong disease pressure, especially in seasons with multiple or prolonged weather stresses. The rates listed are the maximum for the product.

ALFALFA

SAP-FEEDING INSECTS IN ALFALFA by Lee Townsend

Pea aphids and meadow spittlebugs are common in alfalfa at certain times of the year. These sap feeders do not produce holes in the leaves so the symptoms are limited to wilting or a generalized yellow discoloration of the leaves. Both insects are present on the first cutting in the spring and the pea aphid may be active again in the fall. Large numbers of these insects can reduce general plant vigor, and rarely may affect hay yield and quality.

Pea aphids are relatively common inhabitants of alfalfa fields in early spring and again in the fall. Adult and immatures use their piercing sucking mouthparts to feed on the sap of a variety of forage legumes including alfalfa, several clover varieties, trefoil, and vetch. They prefer young, tender growth at stem tips. Large numbers of aphids on every stem can cause plants to turn yellow and may stunt growth or reduce plant vigor. Populations in the range of 50 aphids per 10 inch stem and plants under obvious stress would be needed to justify control. Fortunately, it is unusual to see infestations in Kentucky that are this serious.
Problems with herbicide drift appear to be declining

James R. Martin, Extension Weed Scientist

AND DRIFT ADJUVANTS

MANAGING SPRAY DRIFT WITH NOZZLES

James R. Martin, Extension Weed Scientist

Problems with herbicide drift appear to be declining

Pea aphids are light green insects that are about 3/16 inch long when full grown. Adults may or may not have two pairs of delicate clear wings. The winged forms are weak fliers but can disperse long distances by wind. The nymphs, immature stages, are smaller versions of the adults that never have wings.

Pea aphids are cool season insects. They are most numerous during late spring and again in the fall. The life cycle takes about 12 days. Females can produce 50 to 100 live offspring and there are several generations each year. Pea aphids may survive mild winters in the field or spend the winter as eggs glued to the stems of various legumes.

Aphid populations are greatly affected by weather. Large numbers can develop if temperatures remain in the 50's and 60's and it is generally dry. Reproduction and development are reduced by very hot or very cold weather and heavy rainfall may knock many off of plants. A fungus disease can devastate aphid populations when humidity is high and nights are warm.

A number of beneficial insects including lady beetles and a tiny wasp can provide natural control and often may keep numbers from reaching damaging levels. Pea aphids actually may be useful in providing an early season food source for many predators.

Note: In recent years the cowpea aphid or black legume aphid has been evident at low levels in some northern and central Missouri alfalfa fields. Large numbers of aphids and their sticky honeydew waste have the potential to cause some alfalfa survival and harvest problems.

Meadow spittlebug

Spittlebug masses can be seen on alfalfa from late March through June. The immature or nymphal stages of the insect exude the frothy spittle as they feed on plant sap. While this insect could stunt alfalfa plants under some conditions, an average of 1 or more spittle masses per stem is needed to consider application of an insecticide. Chances of successful control are probably poor due to the protection from spray contact that the spittle would provide.

The spittlebug has one generation each year. The winter is spent as an egg deposited between the leaf stem and axil. Eggs hatch in the spring and the immature spittlebugs feed for 5 to 8 weeks before becoming adults. Initially, the nymphs feed at the crown of the plant, then between folded leaves and then anywhere on the plant. These nymphs do not move much after settling to feed. The brown wedge-shaped adults are active until fall but are good fliers and move extensively so they rarely cause any injury.

CORN

MANAGING SPRAY DRIFT WITH NOZZLES

AND DRIFT ADJUVANTS

James R. Martin, Extension Weed Scientist

Problems with herbicide drift appear to be declining

A recent study by Dr. Bryan Young and others at Southern Illinois University confirms that growers and applicators are interested in managing spray drift. They observed that more than half of the growers and commercial applicators who were surveyed, spent approximately 25 to 75 cents per acre on implementing strategies to limit spray drift. Drift control additives and low drift spray nozzles were among the methods used to manage drift by limiting volume of fine spray droplets.

While these methods are useful, they are not perfect. By increasing droplet size, either with drift-reducing nozzles or drift adjuvants, may reduce weed control by limiting spray coverage and distribution. Having some knowledge of the potential drawbacks with drift reducing nozzles and drift control adjuvants can be helpful to applicators who use them.

Additional research by Dr. Young at SIU indicated that spray nozzles and drift adjuvants affected weed control with glyphosate, but results were variable. Based on nozzle comparisons without drift agents, weed control with glyphosate applied with Turbo Teejet and Air Induction nozzles appeared to decrease in some cases but were usually equal compared with that achieved with Extended Range Flat Fan nozzles. Although Drift Guard nozzles provided similar results, they tended to have more cases where glyphosate efficacy decreased compared with Extended Rang Flat Fan nozzles.

The good news is that the average decrease in control by using drift-reducing nozzles without drift adjuvants rarely exceeded 5%. However, there was a slight trend in more cases of reduced weed control by using both drift reducing nozzles and drift adjuvants. The magnitude of reduced weed control exceeded 20% in a few instances.

Data from the SIU study showed that the control with glyphosate mixtures with 30% polyacrylamide or hydroxypropyl guar adjuvants was usually equal when compared to control with glyphosate alone. However, polyacrylamide spray adjuvant tended to have more instances where weed control with glyphosate declined than the number of cases with hydroxypropyl guar adjuvant.

While drift control adjuvants reduce downwind drift deposits from 50 to 80 %, they can impact pattern and overall distribution of spray across the spray swath. Problems with uneven spray coverage and possible skips with drift reducing agents are more likely with nozzles spaced 30 inches apart compared with those that have a smaller spacing.

The sequence of mixing products in the spray tank can also be critical to achieving the desired results with drift reducing adjuvants. There are certain polyacrylamide products that have compatibility problems with Roundup WeatherMAX. According to a report from Monsanto, the
mixing order of products plays a role in the compatibility of some polycrylamide drift reducing adjuvants. Most of the incompatibility problems can be overcome by including ammonium sulfate first, then add the polycrylamide drift adjuvant, followed by Roundup WeatherMAX. Label directions are often helpful in avoiding problems; however, when in doubt, consult company representatives for the products you are using.

SOYBEAN

EARLY PLANTING AND DISEASE
by Don Hershman

With each passing year I seem to get more questions about the consequences of planting soybean early. With corn planting progressing rapidly in the state, it will be a very short time until farmers begin planting soybean.

Unlike corn which can be planted into soils in the mid-50's F range, soybean is best planted when soil temperatures are in the mid-60's F range. When planted in less than ideal soil conditions, especially when soil is cool and wet, seed germination is adversely affected and stand establishment can be a problem. Not all stand problems are disease-related, but cool and wet soils do favor attack of germinating seed and young seedlings by a number of fungi. In my experience, P. ultimum is probably associated with 75% of the seed emergence problems in situations where quality seed is planted into cool wet soil. Occasionally, stand losses under these conditions are caused by infection by Phytophthora sojae. In some fields both pathogens may be active. When contemplating planting quality soybean seed early, consider treating seed with a fungicide containing either metalaxyl or mefanoxam; both do an excellent job where P. ultimum or P. sojae are the culprits.

If seed quality is suspect, this is often the result of infection by the pod and stem blight fungi (Phomopsis spp.). When Phomopsis-infected, moderate-germination seed is planted under less than optimal conditions, stand loss can be extensive. This situation can be helped by treating seed with any number of available broad-spectrum seed treatment fungicides. However, if soil conditions are extremely poor following planting, do not expect seed treatment of moderate quality seed to be of much value. Low germination, poor quality seed should not be planted, period!

Other disease organisms, such as Rhizoctonia solani, other species of Pythium, and Fusarium spp, can also cause stand losses in Kentucky. However, in my experience, these organisms are not major players in terms of stand establishment.

One disease commonly associated with early planting is soybean sudden death syndrome (SDS). The disease tends to be more severe in early plantings because the soil conditions that usually predominate in late April - early May tend to favor infection by the SDS pathogen, Fusarium solani f.sp. glycines. Note, however, that I am focusing on soil conditions and not actual planting date. Soil conditions can favor SDS at about any planting date, but the probability is higher that disease favorable conditions will exist in the early part of the soybean planting season. That is why SDS is not common in doublecrop soybean, but it can and does occur. The bottom line is this: if SDS has been a problem in a field in past years, find a disease resistant variety and wait until at least mid-May to plant.

If you are a commercial seed producer, or if you just produce seed for your own use, you should be aware that the seed quality problems discussed earlier in this article, caused by Phomopsis spp. infection, tend to be most severe in early planted soybean. This is especially true where maturity group 3 or early group 4 soybean are concerned. Similarly, southern stem canker also tends to be more severe in early-planted crops. This is because weather conditions that often exist early in the season tend to be more favorable to spore production and infection by the causal fungus.

There are some diseases that are little impacted by planting date, or early planting actually helps. Soybean cyst nematode, for example, is not impacted by planting date to a significant extent. Soybean mosaic virus (SMV) and bean pod mottle virus (BPMV) often have less impact on early-planted crops. This is related to the biology of the insect vectors for these two viruses (aphids for SMV, and bean leaf beele for BPMV), and the relationship between crop stage and time of infection in regards to yield loss. In early planted crops, plants usually reach the reproductive stages before populations of the insect vectors reach a critical mass. By the time the populations of vectors are substantial, the bean crop is more or less determined. However, late-planted crops can be severely damaged in the presence of the same vector population, because infection will occur when plants are developmentally younger.

So you see, planting soybean early is a mixed bag. I have just considered some of the disease aspects of this subject. Agronomics and other pests should also be considered and studied when deciding how early you can plant and still get excellent results.

MANAGING SPRAY DRIFT WITH NOZZLES AND DRIFT ADJUVANTS
(See Corn)

WHEAT

ARMYWORMS ON THE MARCH (MAKE THAT FLY) AGAIN
by Doug Johnson

Just a question. If armyworms are on the fly shouldn't they be Air Force worms?

Just as we guessed last week trap capture numbers of true armyworm are up this week. On Friday 04/18/02 (week 16) captures were 87 and 205 (average of 146) up considerably from 7 and 15 (average of 11) from 04/11/03 (week 15).

This is a little larger than the five year average of about 100.
Additionally it is higher than the corresponding date in the outbreak year (2001). However, in that year there had already been a much larger peak population and were still looking for that this year. Perhaps it is this week.

So it appears we are in for an “average” or “normal” sort of armyworm year. However, it bears remembering that insect populations in Kentucky are often scattered and intense. We are not likely to have wide spread outbreak, but that does not mean the insect will not be important in some field. It does bear scouting, especially for the next few weeks as corn comes up and wheat continues to develop.

**SHADE TREES & ORNAMENTALS**

**RESISTANCE OF DAYLILY CULTIVARS TO DAYLILY RUST**

by John Hartman

Daylilies are widely grown in Kentucky landscapes. Daylily rust, caused by the fungus *Puccinia hemerocallidis*, first became a noticeable problem in Kentucky two years ago. Plant pathologists at the University of Georgia have been studying this disease for several years. Last year, they evaluated 42 daylily cultivars under controlled greenhouse conditions (Mueller, Williams-Woodward, and Buck) and results were reported in Volume 47 of the Proceedings of the SNA Research Conference. Their results are summarized here for the benefit of Kentucky County Extension Agents who are advising daylily growers and homeowners on daylily rust disease management.

Reaction of daylily cultivars to daylily rust.

- **Resistant**: 'Buttered Popcorn', 'Carolyn Criswell', 'Chicago Apache', 'Follow Your Heart', 'Hush Little Baby', 'Mardi Gras Parade', 'Prairie blue Eyes', and 'Woodside Ruby'.
- **Moderately Resistant**: Bertie Ferris', Daring Deception', 'Ed Murray', Gordon Biggs', 'Joan Senior', 'Nanuq', 'Stella de Oro', and 'Texas Sunlight'.
- **Moderately Susceptible**: 'Advance Party', 'Anzac', 'Baja', 'Cherry Cheeks', 'Gertrude Condon', 'Ice Carnival', 'Mary’s Gold', 'Midnight Rambler', 'Pearl Harbor', 'Razzmatazz', and 'Tropical Reflection'.

Cultivars that are listed as resistant are not necessarily immune from infection. They may have restricted or few lesions compared to susceptible plants.

Daylily rust can also be managed with timely, season-long applications of fungicides. Fungicides containing active ingredients such as azoxystrobin (Heritage), chlorothalonil (Daconil), mancozeb (Fore), myclobutanil (Eagle, Immuno, Sythane) or propiconazol (Banner Maxx) will prevent daylily rust infections. Be sure to check the fungicide label to be sure that daylilies or ornamentals are on the label.

However, for sustainable management of this disease in home landscapes, use of disease-resistant cultivars is preferred.

**HOUSEHOLD**

**MANAGING CARPENTER BEES**

by Mike Potter

Many clients having been calling about the large, black bees hovering around eaves, decks, and wood siding of their homes and outbuildings. These are probably carpenter bees searching for mates and nesting sites. Carpenter bees cause cosmetic and structural damage to wood. They can also be quite intimidating and have the potential to inflict painful stings.

**The Problem** Carpenter bees are similar in appearance to bumble bees, but have different nesting habits. Bumblebees generally nest in the ground, whereas carpenter bees tunnel into wood to lay their eggs. Bare, unpainted, weathered softwoods are preferred, especially redwood, cedar, cypress and pine. Painted or pressure-treated wood is much less susceptible to attack. Common nesting sites include eaves, fascia boards, siding, wooden shake roofs, decks and outdoor furniture.

Carpenter bees overwinter as adults in old nest tunnels. After mating, the fertilized females excavate galleries in wood, laying their eggs within a series of small cells. The cells are provisioned with a ball of pollen on which the larvae feed, emerging as adults in late summer. The entrance hole and tunnels are perfectly round and about the diameter of your finger. Coarse sawdust, the color of fresh cut wood, is often seen beneath the entry hole, and burrowing sounds may be heard within the wood. Female carpenter bees may excavate new tunnels or enlarge and reuse old ones. Serious damage can result when the same piece of wood is worked year after year.

Males are often aggressive, hovering in front of people who are around the nests. The males are harmless, however, since they lack stingers. Female carpenter bees can inflict a painful sting, but seldom will unless handled or molested.

**The Solution** The best time to control carpenter bees is before the tunnels are fully excavated. For homeowners, liquid sprays of Sevin or a pyrethroid (e.g., Bayer Advanced™ Home/Lawn & Garden Insect Killer, Spectracide® Triazicide/Bug Stop, Ortho® Home Defense System/Termite & Carpenter Ant Killer) can be applied directly into nest openings, or broadcast sprayed as a deterrent onto wood surfaces attracting large numbers of bees. The broadcast spray approach is often warranted when carpenter bees are riddling large expanses of wood such as siding on a barn, wood shake roofs, or decking. Broadcast treatment is best accomplished with a pump up or hose end sprayer, targeting the wood surfaces that are most favored by the bees (fascia boards, joist ends of redwood decks, etc.). Residual effectiveness of deterrent surface applications is only about 1-3 weeks, so the treatment may need to be repeated. Individual holes that are...
already present can also be treated with a wasp and hornet aerosol spray or dust insecticide (e.g., Sevin), directed into the nest opening. Although carpenter bees are less aggressive than wasps, females provisioning their nests will sting. Consider treating in the evening or while wearing protective clothing.

After treatment, leave the holes open for a few days to allow the bees to contact and distribute the insecticide throughout the tunnel system. Then plug the entrance hole with a piece of wooden dowel coated with carpenter's glue, wood putty, or other suitable sealant. This will protect against future bees using the old tunnels, as well as moisture intrusion and wood decay.

Carpenter bees normally will not tunnel into painted wood. Therefore a more permanent solution is to paint unfinished wood surfaces, especially those with a history of being attacked. Wood stains and preservatives are less reliable than painting, but may provide some degree of repellence versus bare wood. To further discourage nesting, garages and outbuildings should be kept closed when carpenter bees are actively searching for nesting sites. The annoying flying and nesting habit usually subsides by the end of May.

INSECT TRAP COUNTS
UKREC, Princeton KY

April 11-18
Black Cutworm .................................. 0
True Armyworm ................................. 146

April 16-18
European corn borer .............................. 0
Corn earworm .................................. 9

NOTE: Trade names are used to simplify the information presented in this newsletter. No endorsement by the Cooperative Extension Service is intended, nor is criticism implied of similar products that are not named.