UK COOPERATIVE EXTENSION SERVICE
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# KENTUCKY PEST NEWS

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## TOBACCO

### CHEMICAL OPTIONS FOR MANAGING DISEASES ON TOBACCO TRANSPLANTS
**by Kenny Seebold**

Healthy and vigorous transplants serve as the foundation for a successful tobacco crop. Tobacco producers in Kentucky are faced with several diseases each year that have the potential to cause serious losses, and the majority of these can be managed with an integrated strategy that includes cultural practices and fungicides/bactericides. In a previous article (KPN No. 1151, Jan. 28, 2008), the value of cultural practices such as sanitation, exclusion of pathogens and other pests, and management of the float-bed environment was discussed. This week, we'll focus on using fungicides to manage fungal and bacterial diseases on tobacco transplants.

The most commonly encountered fungal diseases in the float system in KY are, in order of importance, Pythium root rot, target spot, Rhizoctonia damping-off, Sclerotinia collar rot, anthracnose, and blue mold. The latter does not occur each year, but can be devastating when it appears on tobacco seedlings. Bacterial diseases are found less frequently and include black leg (bacterial soft rot) and angular leaf spot/wildfire. Black leg is by far the most common of the bacterial diseases seen in float systems.

The following is a summary of labeled chemical products that can be used in the float system to manage diseases in 2008. Detailed information on these products and their use can be found in ID-160 (2008 KY Tobacco Production Guide) or in PPFS-AG-T-8, the 2008 Fungicide Guide for Burley and Dark Tobacco.

Agricultural streptomycin. This material, an antibiotic, is sold as Agri-Mycin 17 and Firewall. Apply at rates of 100-200 ppm (1-2 tsp of product per gallon of finished spray) for control of angular leaf spot/wildfire and suppression of black leg. Use the lowest rate for prevention and the higher rate when disease is first observed. Apply 3-5 gallons of solution per 1000 sq. ft. of bed as a fine mist to achieve thorough coverage.

Dithane DF. Mancozeb, the active ingredient in Dithane DF, is the only broad-spectrum fungicide labeled for use in the float system. Adequate control of anthracnose and blue mold can be achieved with Dithane DF, and the material will suppress Rhizoctonia damping-off and target spot. The use rate is 0.5 lb of product 100 gallons of finished spray, or 1 tsp per gallon. Apply 3-12 gallons of solution per 1000 sq. ft. as a fine mist; increase spray volume as plants grow to get thorough coverage of leaves and stems. To avoid injury, begin applications when plants are dime-sized or bigger and continue on a 5-7 day schedule until transplanting. It has been reported that Dithane DF may be in short supply in 2008, so secure a supply of this material early if you plan to use it in the float bed or field.

Terramaster 4EC. Excellent control of Pythium root rot is possible if Terramaster EC is used as part of a preventive program. Proactive management of Pythium root rot is the recommended course, since diseased root systems are ideal targets for other root pathogens, such as *Phytophthora nicotianae* (the black shank pathogen) or *Fusarium*, after the tobacco is transplanted. Even if curative treatments of Terramaster are used, a certain level of disease remains and increases the risk of loss to soilborne pathogens after setting.

For preventive use, apply 1 fl oz of Terramaster per 100 gallons of float water 3 weeks after seeding or when roots first enter the water. Follow up 2-3 weeks later with a second treatment at 1 fl oz/100 gallons of float water. Finish with a third application of 0.8 fl oz/100 gallons of float water two weeks after the second application. In systems with new or adequately sanitized trays, one or two applications beginning at 3-4 weeks after seeding should provide good protection against Pythium root rot. For producers still using the plug-and-transfer system, make the first application of Terramaster 1 week after plugging to allow initiation of root growth and minimal risk of injury. If disease appears prior to planned treatment with Terramaster, use the curative rate of 1.4 fl oz/100 gallons of float water, beginning no earlier than 3 weeks after seeding. Make a second application, if needed, at 1-1.4 fl oz/100 gallons of float water 2-3 weeks after the first treatment.

Phytotoxicity is a concern with Terramaster; however, the risk of damage caused by the fungicide is almost always outweighed by the benefits of its use. The most common type of injury that we see is root burn, followed by sloughing off of water roots following treatment. The degree of root burn increases when higher rates of the fungicide are used, but in nearly all cases plants will recover. Some delay of growth is also common but rarely causes lasting damage to seedlings. Foliar injury such as bleaching (whiting) and distortion of leaves is common in cases where excessive rates of Terramaster have been applied, or where the product has not been mixed thoroughly in the float bed (which results in "hot spots" in the bed). Injury tends to be worse in water with a pH above 7. We receive occasional reports of premature flowering associated with Terramaster use. It is not believed that Terramaster actually causes premature flowering, but can aggravate the situation if plants have been grown under environmental conditions known to cause this disorder. To minimize the risk of phytotoxicity, do not exceed recommended rates and take steps to ensure uniform distribution of Terramaster in float beds. If necessary, adjust pH levels in the float bed prior to treatment. Never apply Terramaster "over the top"; the risk of foliar injury increases substantially and poor control of Pythium root rot could result. Do not apply Terramaster any later than 8 weeks after seeding.

As you can see, the list of materials that can be used legally in the float system is fairly short and doesn't address all of our disease problems. For example, we don't have a labeled fungicide option for control of Sclerotinia collar rot. A number of products not included in this list show up in greenhouses and farms around Kentucky each year – it is critical to avoid unlabeled products or off-label uses. Plant injury (and loss) and worker safety are of concern, and ultimately illegal chemical use could make tobacco unacceptable to buyers. On the positive side, careful and preventive use of cultural practices and chemicals will give growers the best possible control of important tobacco diseases and allow them to build a strong foundation for the 2008 crop.

## CORN

### TELONE II 2(EE) FOR NEMATODE SUPPRESSION IN CORN
**by Paul Vincelli**

Late last year, Dow AgroSciences received approval for its request to issue a 2(ee) recommendation for its soil fumigant Telone II (containing the active ingredient *1,3-dichloropropene*). Although Telone II already had a federal label for use to suppress nematodes in corn, the label specified a broadcast application rate of 9-12 gallons of product per acre (gpa) for field crops (18 gpa for cyst nematodes). The 2(ee) recommendation is for use of 3-6 gpa by applying a single chisel per row to treat only the soil where the crop is to be planted. This is designed reduce per-acre usage of the product while still suppressing nematodes in the soil volume that the young plants will be exposed to. At the cost of $10-13 per gallon for the product, this reduces application costs, as well as environmental contamination.

To my knowledge, there would be very few situations in Kentucky where the product is likely to be needed, since most of our crop production soils are loamy or heavier. If there are any localized situations where crop production soils are sandy, where corn has been grown continuously for several years, and where yields have been declining, before using the product, it would be advisable to obtain nematode counts from a soil sample collected from such fields.

Although the University of Kentucky does assays for soybean cyst nematode, our laboratories are not equipped for quantifying corn nematodes from soil. One suitable laboratory for such assays is at Mississippi State University:

Extension Nematode Lab
190 Bost North, Room 9
Mississippi State, MS 39762-9655
phone: 662-325-2146
Contact person: Clarissa Balbalian
(cbalbali@ext.msstate.edu)

The MS lab is technically capable of performing the analysis of your soil samples, plus they have the appropriate permit (APHIS-PPQ permit no. P526P-07-04918) to re-

ceive the samples. Contact them in advance of sending the sample for appropriate paperwork.

### ARE SEED TREATMENTS ENOUGH CONTROL ON CORN?
**by Ric Bessin**

Well over 90% of the field corn may have one of several seed treatments pre-applied. The most common treatments are those that are applied at concentrations to control 'secondary' pests of corn including wireworms, white grub, seedcorn maggot, flea beetles, and seedcorn beetle. Personally, I don't like the term 'secondary' pest as when these pests are at high levels and occur in some fields on a regular basis, they are really primary pests. We have two leading seed treatment active ingredients in corn, clothianidin and thiamethoxam; they are combined with fungicides and sold as Poncho and Cruiser and ordered on the seed. Both of these are in the same chemical class and have the same mode of action. Both a systemic and are rapidly absorbed by the seed as it imbibes water during germination and later through the roots. Once inside the seedling they move throughout the plant providing insect protection above and below ground. While these seed treatments are similar in many ways there are also some subtle differences that can affect performance. The differences that I'm aware include substantial differences in solubility in water and some difference in the spectrum of insects that they manage. Each of these come in two loading rates on the seed, a 0.25 mg active ingredient per kernel and a 1.25 mg active ingredient per kernel. The higher rate is primarily intended for the corn rootworm market, the lower rate for the secondary pests. Research at UK and other universities has shown that these seed treatments are able to prevent stand loss and can help to maintain more uniform vigor during early growth stages in fields where secondary soil insect pests are present.

Now the question I ask is, are these seed treatments providing the level of control that we need? That is a difficult question to answer as it depends on the level of particular pests in a given field. In the vast majority of fields, the secondary pest is sufficient to control light to moderate levels of soil insect (excluding corn rootworm). However, there are certain fields where secondary pests are found at very high levels and the secondary rates are not providing enough control. Our research has shown us that moving to higher rates of these seed treatments when there has been a history of high levels of secondary pests have shown improved levels of control as measured by improved stands. In a few of these problematic fields, growers have also combined seed treatments with low rates of soil applied insecticides with some success.

There seed treatments are usually found on Bt corn, CB or RW, or on stacked hybrids. So these hybrids could have protection from corn borers (European and southwestern), corn rootworms, fall armyworm, black cutworm, and those pests listed at secondary pests. Can we walk away from these fields and let the seed treatments and biotech traits manage all of the insect pests for us? These have been excellent tools in Kentucky, but I don't think we should forget about insect pests during the season. First, while corn prices remain strong, input prices have increased dramatically as well. It would be a huge mistake to let an insect pest get out of control. The other reason is that we can see insect pest levels on some occasions that can overwhelm control tactics. So my recommendation would be to use seed treatments and biotech traits as needed based on field history, planting dates, and other factors that may predispose fields to higher risk, but do not discontinue to regularly monitor fields for performance and insect pests. With high investments and possibly higher returns on corn, it would be too expensive to make a mistake by letting a pest problem get out of control.

The future of seed treatments looks quite promising with additional active ingredients to control other pests such as nematodes or even to relive stress and improve vigor in certain situations.

## FORAGE

### BUTTERCUPS IN GRAZED PASTURE FIELDS
**by J. D. Green**

One of the first signs of spring is the yellow flowers that emerge from buttercup plants. Buttercups (*Ranunculus* spp.) tend to thrive in fields with poor stands of desirable forages. In fact, many fields that have heavy buttercup populations are fields that have been heavily grazed by livestock during the fall through the early spring months.

Buttercups are short-lived perennials or winter annuals that produce shiny yellow petals in the early spring. There are four different species of buttercups that may be found in Kentucky: bulbous buttercup (*Ranunculus bulbosus*), creeping buttercup (*Ranunculus repens*), tall buttercup (*Ranunculus acris*), and small flower buttercup (*Ranunculus arbortivus*), Although these plants may have somewhat similar flower heads, each of these buttercup species differs somewhat in their vegetative leaf characteristics.

Most buttercup plants emerge each year from seed during the fall or early winter months. Therefore, pasture management practices that improve and promote growth of desirable plants during these months is one of the best

methods to help compete against the emergence and growth of this plant. Whereas, livestock animals allowed to overgraze fields during the fall and winter months is one of the main factors that contribute to buttercup problems. Mowing fields or clipping plants close to the ground in the early spring before buttercup plants can produce flowers may help reduce the amount of new seed produced, but mowing alone will not totally eliminate seed production. New buttercup seed are produced during the time petals are showy. This is one reason buttercups can survive year to year and new plants emerge each year. Therefore, waiting until after flowers appear can be too late to implement control tactics.

If chemical control options are desired, most herbicides registered for use on grass pastures that contain 2,4-D, dicamba+2,4-D (eg. WeedMaster), triclopyr (eg. Crossbow, PastureGard), or metsulfuron (eg. Ally, Cimarron) will effectively control this plant. However, legumes such as clovers interseeded with grass pastures can be severely injured or killed by these herbicide products. For optimum results apply a herbicide in the early spring (February - March) before flowers are observed, when buttercup plants are still small and actively growing. For best herbicide activity wait until daytime air temperatures is greater than 55 F for two to three consecutive days. Consult the herbicide label for further information on grazing restrictions or other possible limitations.

For fields heavily infested with buttercup a variety of control tactics may be needed. Use a herbicide to help reduce the population of buttercup plants plus use good pasture management techniques to thicken the stand of desirable forages.

### ALFALFA WEEVIL
**by Lee Townsend**

The alfalfa weevil is the key pest of the first cutting of established alfalfa each year. This insect is probably present in every field but most often remains below a damaging level. Natural controls usually serve to regulate populations but occasionally weevils are abundant enough to warrant treatment.

Degree day predictions provide advanced warning of first chances to see tip feeding. Current predictions for these dates are: March 16 – Princeton, April 5 – Somerset, April 9 – Lexington, and April 11 – Williamstown. Given the winter temperatures, most eggs probably will be laid this spring – I think the potential for significant early damage is low. The outlook for March calls for normal precipitation and above normal temperatures so the weevils that are present may develop rapidly by the end of the month. You can follow degree day accumulations and predictions for you area by visiting the UK Ag Weather Center at http://wwwagwx.ca.uky.edu/cgi-bin/insectdd_www.pl

Sound alfalfa weevil management decisions are based on stem sampling. Information on this method is available in Insecticide Recommendations for Alfalfa, Clover, and Pasture - 2008, available from your county extension office. As an alternative, an average of 25% to 50% damaged tips in a field with 2 or more larvae per stem provides a satisfactory treatment guideline.

Pea aphids and spittlebugs are common spring insects in alfalfa fields. They are sap feeders so they will produce no feeding holes in leaves. Sap removal by these insects is very unlikely to affect alfalfa growth and they may even serve as food for beneficial insects. Aphids will be found clustered at the tops of alfalfa plants. Spittlebug masses will be found on stems. A light green spittlebug can be found inside the frothy mass.

## FRUIT CROPS

### DELAYED DORMANT SPRAY FOR DISEASES OF GRAPES, BLUEBERRIES AND BRAMBLES
**by Chris Smigell* and John Hartman**

Application of liquid lime sulfur is an important and inexpensive way to manage many fungal diseases of grapes, blueberries and brambles. This chemical, or other similar materials are intended to be used while plants are still dormant or better yet, when they have just broken dormancy (delayed dormant). The fungicide works by suppressing overwintering fungal colonies and spores on twigs and bud scales. This important spray will reduce "primary inoculum, or the first spores released in the spring, that cause initial fungal infections on plant leaves and green shoots. By eliminating or minimizing these infections, secondary infections will be less of a problem. This spray is particularly important to help "clean up" or eradicate overwintering fungal colonies from a planting that had disease loss last year.

Liquid lime sulfur is best applied at bud swell (delayed dormant) but before leaves begin to emerge. The chemical will burn leaves if they are exposed at the time of application. Thus, if more than one-half inch of green tissue is showing in spring when it is applied, the emerging leaves may have burned edges. Application of liquid lime sulfur when the shoots have emerged much farther could place floral parts at risk. Furthermore, do not apply liquid lime-sulfur within 14 days (before or after) an oil

spray to control scale or other insects, or when the temperature is above 75 F.

Some growers may have difficulty finding liquid lime sulfur. Sulforix (also used on mites and insects) is a suitable replacement. Both compounds have the same active ingredient, calcium polysulfide. Copper hydroxide formulations, e.g., Kocide 101, Kocide DF and Blueshield 50WP, can also be used as dormant sprays for brambles, blueberries and grapes. These copper-containing compounds may also have some effectiveness for managing foliar diseases.

Growers are urged to read the label for details of delayed dormant applications. Liquid lime sulfur, Kocide and Sulforix have "Danger" (not "Warning" or "Caution") on the labels. They will burn the eyes and skin. Kocide formulations also react with aluminum piping or containers, and care needs to be taken not to let overspray get on vehicles or buildings.

Listed here are some of the sulfur and copper dormant sprays available, and what diseases they are labeled to control. See the Midwest Commercial Small Fruit and Grape Spray Guide (ID-94) for other recommendations and application rates: (http://www.hort.purdue.edu/hort/ext/sfg/).

Liquid lime sulfur is labeled for use on:

- Blueberry: phomopsis cane and twig blight; with some activity against mummy berry.
- Blackberry: anthracnose, cane blight.
- Red, black and purple raspberry: anthracnose, cane blight, spur blight; with some activity against yellow rust and powdery mildew.
- Grape: anthracnose; may also have activity against phomopsis cane and leaf spot and powdery mildew

Sulforix is labeled for use on:

- Blueberry: Phomopsis cane and twig blight, mummy berry.
- Blackberry: anthracnose, cane blight.
- Red, black and purple raspberry: anthracnose, cane blight, spur blight; with some activity against yellow rust.
- Grape: powdery mildew.

Kocide 101 and Kocide DF can be effective as a dormant spray, especially for brambles. These copper-containing chemicals are also sometimes used as foliar and fruit sprays. They are labeled for use on:

- Blueberry: Phomopsis cane and twig blight, with some activity against fruit rot; Kocide 101 can be applied at bud swell and every 10-14 days afterward, until bloom.
- Blackberry: anthracnose, cane blight; with some activity against Septoria leaf spot.
- Red, black and purple raspberry: anthracnose, cane blight; some activity against yellow rust.
- Grape: Some activity against black rot, downy mildew, powdery mildew, and Phomopsis cane and leaf spot; see cautions on p.21 of U.K. Cooperative Extension Service publication ID-94 "Midwest Commercial Small Fruit and Grape Spray Guide 2008" when using Kocide or other copper-containing fungicides on grapes.
- Strawberry: some activity against angular (bacterial) leaf spot, leaf spot, leaf scorch, and leaf blight.

Delayed dormant sprays will be much more effective in the fruit planting if good sanitation is accomplished. Dormant pruning is an important practice to remove fungal primary inoculum. Pay special attention to remove any hanging, mummified fruit, dead wood, and branches or canes with cankers or other signs of infection. Remove these infected prunings from the planting and bury or burn them.

* Mr. Smigell is U.K. Extension Associate for Horticulture.

## PESTICIDE NEWS & VIEWS

### UPDATE ON THE STATUS OF IODOMETHANE IN KENTUCKY
**by Kenny Seebold**

As reported back in October, 2007 (KPN No. 1146), the U.S. Environmental Protection Agency granted approval to Arysta LifeScience for the use of iodomethane, also known as methyl iodide, for one year on strawberries, tomatoes, peppers, ornamentals, turf, trees, and vines. Arysta's product will be marketed as Midas 50:50 (50% iodomethane, 50% chloropicrin) or Midas 98:2 (98% iodomethane, 2% chloropicrin) and appears to be a relatively environmentally friendly replacement for methyl bromide.

Several producers and agents have asked about the potential for the use of Midas in Kentucky in 2008. I learned in a recent phone conversation with a representative of Arysta that Midas has been registered for use in 29 states, including Kentucky. The product is labeled for pre-plant fumigation on the previously mentioned crops only for the control of soilborne pests (insects, nematodes, pathogens, and weeds).

There are no distributors of Midas located in Kentucky at this time, so producers wishing to use this material will have to purchase it from an out-of-state dealer. According to Arysta, the nearest distributor for Kentucky is Red-

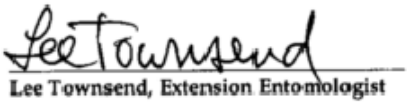
dick Fumigants (www.reddickfumigants.com), Williamstown NC. Contact Reddick at (252) 792-4615 for more information on pricing and availability of Midas. I don't have a firm idea of the cost of this product, but am certain that it will be a relatively expensive option for many growers in Kentucky. The fumigant will be packaged in bulk (cylinders); small-sized containers will not be available. Costs of material, shipping, and equipment needed to apply Midas may only be affordable to large-scale producers of higher-value crops.

It is important to understand that, while an effective fumigant, iodomethane is a dangerous, potentially lethal material if applied incorrectly. Because of potential hazards to humans and animals, Midas is a restricted use pesticide and can be used only by state-certified applicators. Additional certification from Arysta, in the form of an online course, will be required in order to purchase and use Midas. Following successful completion of the course and an examination, a downloadable certificate will be awarded that must be presented to the dealer prior to the sale of Midas. Contact the KY Department of Agriculture's Division of Environmental Services (pesticide regulation) for more information.

## DIAGNOSTIC LAB-HIGHLIGHTS

**by Julie Beale and Paul Bachi**

Most of the recent diagnostic samples have shown symptoms of non-infectious problems such as winter drying on broadleaf and needled evergreens (e.g., holly, rhododendron, arborvitae) and nutritional/cultural problems on greenhouse ornamentals. A few insect and disease problems were seen, including boxwood leaf miner injury; black knot of plum; injury from thrips and aphid feeding on greenhouse portulaca. Bacterial blight was diagnosed on zonal geranium in one greenhouse.



**Lee Townsend, Extension Entomologist**

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.

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