



KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • AGRONOMY

On line at - <http://www.uky.edu/Agriculture/kpn/kpnhome.htm>

Number 838

March 1, 1999

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TOBACCO

1999 CHEMICAL OPTIONS FOR DISEASE CONTROL IN TOBACCO TRANSPLANT PRODUCTION SYSTEMS

By William Nesmith

Tobacco transplant production in Kentucky occurs in greenhouses, float-beds, and traditional ground beds. Diseases can be a limiting factor to successful transplant production in any of these systems as well as providing diseased transplants which serve as important sources of pathogen introduction to the field. Disease potential is especially high in the float-bed systems (both outdoor and greenhouse), because these provide near ideal conditions for many diseases of the root, stem and foliage to develop once the pathogens have been introduced.

Control of transplant diseases is achieved through careful management of the production environment, excellent sanitation associated with everything going into the system, avoiding plant stress, and timely application of pesticides. Both the incidence and severity of diseases in seedling production can be greatly reduced through chemicals involved with fumigation, sanitation and preventive spray programs. Unfortunately, adequate labeled materials are not available for use

in transplant production. Furthermore, many pesticide manufacturers have elected not to label their products for use in tobacco transplant production because of the risks associated with fungicide resistance and product liability under such high disease potential.

In June 1998, EPA re-stated its position concerning pesticide use in the greenhouse. That position is that labels must specifically cite the greenhouse and greenhouse-crop-stage as a site, if the product is to be used in greenhouse production systems. Also, EPA's Regional Office in Atlanta, GA., continues to advise that if the product is to be used in float-beds (within greenhouses or outside), then specific instruction must also be included on the label to either avoid contamination of the float water or guidelines on proper disposal of treated water. In other words, the float-bed is a different site than the traditional ground bed, because of this special requirement of water protection/disposal.

Therefore, the only fungicides labeled for use for any tobacco transplant production in Kentucky are Ferbam and Dithane DF, which are covered by special state labels (24-c). The national labels on Ridomil Gold and Ultra Flourish specifically prohibit treatment of transplant production sites. Streptomycin, an antibiotic, is labeled only for tobacco beds (traditional ground beds), but is not

labeled for greenhouse use nor does the label cover float-beds.

Based on our interpretation of the labels and EPA rulings, the following chemical control options are labeled for disease control in Kentucky tobacco transplant production as of March 1, 1999:

GREENHOUSE AND/OR FLOAT-BEDS -

- For use against: Anthracnose, Blue Mold, and Damping off due to Rhizoctonia and Fusarium -

DITHANE DF at 0.5 lbs/100 gallons of water (one-two teaspoon/gallon). Spray preventively on a 5-7 day schedule starting when plants are about the size of a dime and continue until transplanting to the field. [Note the rate is lower for greenhouse and floats than in the outdoor soil plant beds.] Use 3 gallons of spray material per 1000 sq. ft. while plants are small, but increase gradually to 6 to 12 gallons as plant size and canopy increase. Be sure sufficient water is used to wet the base of the stems with run-off to increase the potential control of damping off. Avoid contamination of the float-water during applications. This use is labeled under a 24-c in Kentucky, which expires June 16, 1999.

- For use against: Blue mold and Botrytis Suppression-

FERBAM GRANUFLO at 1.5 - 3.0 lbs/100 gallons of water. Spray preventively twice weekly starting when seedlings have the first true leaf or immediately after plugging with the plug-and-transfer system. Apply as a fine spray to the point of run-off, using 3 gallons of spray material per 1000 sq ft when seedlings are small increasing gradually to 6 to 12 gallons as plants increase in size and the canopy increases. The label has a specific restriction to avoid contamination of the float-water. This use is labeled under a 24-C in Kentucky, which expires June 16, 1999.

In Kentucky tests, Dithane DF has caused damage to seedlings under certain conditions (especially if the float-water becomes contaminated), but it clearly has provided superior control of blue mold in the outdoor float-beds compared to Ferbam. In greenhouse plantings, significant difference have not been observed in the control of blue mold given by Ferbam and Dithane, but Ferbam was superior to Dithane in Botrytis control at the labeled concentrations.

- For control of Tobacco Mosaic Virus-

MILK (Whole or skim at 5 gals /100 gallons water or dried milk at 5 lbs/100 gallons water per 100 sq. yds. of plants). Spray plants 1 to 24 hrs before handling them. This treatment has also been used successfully prior to clipping of large plants, but it can be very messy unless the system dries well following the application. It should be combined with washing the hands at 15 minute intervals either in the clean milk solution or a phosphate detergent. This treatment is warranted if TMV susceptible varieties are being used or in mixed houses with resistant and susceptible varieties.

TRADITIONAL-TYPE OUTDOOR, SOIL PLANT BEDS -

- Soil Fumigation for control of Soil-borne pathogens - Fumigant options include: gases, liquids, and granules.

Gases - include products containing methyl bromide or methyl bromide + chloropicrin. Methyl-bromide should be used under a plastic tarp at the rates of 9 to 18 lbs/ 1000 sq feet of bed (see labels for specific rates on each product). Methyl bromide + Chloropicrin should be applied at 9 - 13 lbs/1000 sq ft depending on the product used. Bed sites should be prepared as if ready to seed then fumigated for best results. Expose the site to fumigant for at least 24 hrs, plus 24-48 hrs of aeration prior to seeding.

Soil temperatures should be above 55 F during the fumigation period and soil moisture should be sufficient to support germination. Gases fumigants are extremely poisonous, so follow safety precautions statements.

Liquid-fumigants - include products containing SMDC (metham sodium) and marketed under such names as Vapam and Sectagon, but other products may also be available in some areas. They should be used at the rate of 1.5 gallons/1000 sq ft of bed, injected into the soil to a depth of at least 4 inches or more, or drenched into the soil with at least 40 gallons of water/1000 sq ft of bed area, then covered immediately with plastic tarp. The tarp should be left in place at least 24-48 hrs, but a long aeration period of 21 days is needed prior to seeding. Light tillage of the soil during the aeration period may be helpful to speed escape of the fumigant. Be sure that tillage equipment is very clean to avoid

re-contamination of the soil.

Granule fumigants - are available as dazomet, sold as Basamid, and used at 7.5 lbs/1000 sq ft of bed. The availability of this product is limited in Kentucky currently, but it is an effective fumigant when used correctly. Since it has a very long aeration requirement (14-50 days), its use in the spring in Kentucky is greatly limited. Granules should be spread evenly over the bed site and incorporated to a depth of 8 inches, then the site sealed completely with plastic. Leave the plastic in place at least 5 - 7 days, then aerate the site until it is safe to seed, as determined by use of a germination test.

- Use Bordeaux mixture (bluestone-lime mixture) as a drench to the soil when the plants have emerged and again 10 days later. This treatment will control algae and aid in the control of diseases caused by bacteria (wild fire, angular leaf spot, and blackleg). Follow the label EXACTLY as to mixing instructions, because bordeaux mixture can be toxic to tobacco seedlings. Do not apply this mixture to large seedlings. The target is actually the soil and not the tobacco plant.
- Sprays of Streptomycin are highly effective in control of most bacterial diseases of the bed, especially angular leaf spot, but streptomycin-resistant strains are present in Kentucky. Sprays can begin as early as the two-leaf stage and should be repeated weekly until transplanting. This treatment may also slow or suppress blue mold under certain conditions, but cannot be relied on to control blue mold. The material should be applied as a 100 ppm solution (1 teaspoon of Streptomycin 17% WP to a gallon of water), using 3 to 5 gallons of material per 1000 sq ft of bed. On beds receiving bordeaux mixture, it is not necessary to start the streptomycin sprays at the two-leaf stage, rather they can be delayed until plants are about the size of a dime, unless bacterial leaf spots are observed earlier. Do not mix streptomycin with other spray materials. Since streptomycin is locally systemic, best results are achieved when it is applied under conditions of slow drying (such as just before dark).
- When plants are about the size of a dime, begin weekly sprays with fungicides: Ferbam is available in several formulations with a national label for outdoor beds, but Dithane DF use is supported by a 24C label that expires June 16, 1999. Ferbam should be used at 1.5-3.0 lbs/100

gallons of water (3 to 5 tablespoons per gallon) and Dithane DF at 0.5-1.0 lbs/100 gallons (1 Tablespoon per gallon). Use 3 gallons of spray mixture per 1000 sq ft of bed while plants are dime-size, increasing to 6 gallons on large plants nearing transplanting size. Thorough coverage of the seedlings is very important. These fungicides are broad-spectrum and will control or suppress a range of fungal diseases associated with the bed, including metalaxyl-insensitive strains of blue mold. The weekly sprays should continue until transplanting time. Should a broad-spectrum fungicide be needed prior to the plants reaching dime size, use Ferbam. Dithane DF can cause serious damage to small seedlings, but it has the better efficacy once seedlings are larger and the canopy is dense.

- On Tobacco Mosaic susceptible varieties, sprays of milk within 24 hours of pulling plants can greatly reduce spread of TMV during pulling of plants. Use 5 gallons of milk (whole or skim) of 5 lbs (dry) per 1000 sq ft of bed. Good sanitation practices are also needed, including washing hands frequently during pulling in a phosphate detergent and avoiding tobacco products by those handling plants. This is not needed with TMV resistant varieties.

SPECIAL NOTICE: Acrobat MZ is NOT labeled for use in any transplant production system. The Special Exemption expired on September 30, 1998 and the manufacturer has elected not to label this product for use in transplant production systems. Use of carry-over Acrobat MZ is NOT authorized for transplant production systems (Emergency Exemptions cover a period of time, not the life of the product).

PREPARING FOR FLOAT PLANT PESTS

By Lee Townsend

Sowbugs (or pillbugs) and slugs have been serious problems in some float systems. Pillbug that get into trays burrow into the media and uprooting small seedlings. Some may even feed on root hairs.

Slugs feed on plant leaves and can destroy a large number of seedlings in a short period of time. The moisture and protection around float beds is exactly what these creatures need to thrive. Both of are active now, so it is not too soon some steps can be taken to reduce their numbers.

Sanitation or elimination of shelter is one of the most important steps. Pick up and remove as many things that are lying on the ground outside float beds or greenhouses as possible. Concentrate on any items that provide shelter and keep soil moisture high. Boards, sacks, and pieces of plastic are prime problem sites.

Clip and remove grasses and weeds alongside floats or houses. A 12" inch band of bare ground, sand, or gravel may help to prevent pests from wandering close and entering the trays. Allow sunlight and air to help to keep the border areas dry. Keep the area clear until transplant production is complete. Application of slug baits along those areas now can help to reduce problems later.

CORN

WHY USE A REFUGE WITH BT CORN

By Ric Bessin

Despite the National Corn Growers Association (NCGA) mediated agreement among the commercial producers of Bt-corn seed, growers continue to receive a mixed message regarding the need for a refuge when using Bt corn. While the NCGA has announced that it and companies registering and selling the vast majority of Bt-improved corn hybrids have reached an agreement-in-principle on corn insect resistance management (IRM) for the year 2000, within our state some agribusinesses selling Bt-corn seed continue to encourage growers NOT to use corn borer refuges on their farms when using Bt corn.

The goal of the NCGA is to present a consistent, unified program to preserve the technology that is practical for growers. The five key elements of the agreement involving are Monsanto, Dekalb, Dow AgroSciences, Mycogen Seeds, Novartis Seeds and Pioneer Hi-Bred International are:

- 1) One single protective and practical corn refuge requirement for the primary corn-growing re-gion (20%) and one corn refuge requirement for the primary cotton-growing region (50%).
- 2) A clear and consistent IRM grower agreement.
- 3) Effective grower education programs.

- 4) Appropriate surveys to track grower adoption.
- 5) Continued insect susceptibility monitoring.

Despite the inconsistent message being sent to corn growers in Kentucky, using refuges with Bt corn is important and benefit growers. This article addresses the some of the key reasons why growers need to be using a corn borer refuge with Bt corn.

Spread Your Risk

European and southwestern corn borer levels are highly variable from year to year. While a producer may endure substantial corn borer losses in one year, that does not necessarily mean that the next year will bring significant corn borer problems. Several factors influence the likelihood of corn borer problems in corn, these include corn borer levels in the fall, parasitism rates, overwintering survival, spring weather conditions during moth flight, and corn planting dates. Because the Bt-corn seed is an added expense, growers want to use it where it will be economically advantageous.

There is no certainty that growers who had corn borer problems in 1998 will have those similar problems in 1999. In years when corn borers are not a problem, growers should see no advantage in using Bt-corn and do not recover the added cost of the seed. For this reason, it makes sense that growers who have had history of corn problems spread their risk by only planting a portion of their crop to Bt corn by maintaining a non-Bt corn refuge. This will reduce seed costs across the entire farm while protecting a substantial portion of their crop from corn borers.

Evaluating the Need for and Return of Bt Corn

Planting the entire farm with Bt corn does not allow the grower to compare the performance of the Bt corn to standard hybrids. The standard hybrids in the refuge area provide an estimate of the corn borer levels on the farm and, by using the corn borer economic scale (ENT-49), the yield loss due corn borers. Any yield loss can be compared to the premium cost of the Bt seed. The results of this comparison will be used to make future planting decisions.

Effective Resistance Management

While the possibility of corn borers developing resistance to Bt corn is only a theory, insect pests have a long history of developing resistance to any pest management tactic when that tactic is used for a long period of time over a widespread area. The pesticide resistance examples too numerous to list!

Consider the western corn rootworm beetle in northern Illinois and Indiana. For more than 20 years it was effectively controlled through the use of a corn-soybean rotation. The eggs that were laid one summer in a corn field would hatch the following year in what has become a soybean field. This pest had been a problem only with continuous corn. But it adapted. Now a portion of the female beetles lay their eggs in soybean fields and rootworms have become a serious problem in first-year corn in this area. Don't underestimate the ability of insect pests to adapt!

Using a corn borer refuge on each farm planting Bt-corn is the only strategy to prevent corn borer resistance that growers have. In the unfortunate event that corn borers did develop resistance to Bt corn, growers in that area would undoubtedly lose a tremendously valuable corn borer management tool.

PERCEPTIONS OF FUNGICIDE USE ON CORN, 1998

By Paul Vincelli

A brief survey designed to assess perceptions of current and projected use of fungicides on both field corn and specialty corns was distributed to Extension Offices during the autumn of 1998. The survey focused specifically on gray leaf spot and Tilt fungicide. Gray leaf spot was a focus because of that disease's predominance as a factor limiting yields in some corn fields. Tilt was a focus because it is essentially the only currently available foliar fungicide with enough efficacy to be economically justified in certain circumstances.

The survey was distributed electronically to Extension offices; versions were provided for Extension agents, dealers, and producers. Responses received electronically or by postal mail were tabulated. For specialty corns, only responses from agents or dealers reporting at least 30 acres of speciality corn in their county or region of sale were included in the results. Responses from agents were categorized into those from counties with at least 15,000 acres of corn (listed as "Agents \geq 15,000 A")

and those with less than 15,000 acres (listed as "Agents < 15,000 A")

Results (see tables)

On *field corn*, Extension agents and dealers reported that extremely low acreages (0-2%) of field corn were treated with Tilt fungicide during 1997-98.

Extension Agents \geq 15,000 A and dealers considered hybrid selection and crop rotation to be moderately to highly important for controlling gray leaf spot; responses from Agents < 15,000 A concerning these cultural practices were mixed. Most respondents projected that fungicides would be relatively unimportant for gray leaf spot control on field corn over the next five years.

On *specialty corns*, Agents \geq 15,000 A reported an average of 5% of acreage being treated with Tilt during 1997-98; other respondents reported no use of fungicides on specialty corns. As with field corn, Agents \geq 15,000 A and dealers considered hybrid selection and crop rotation to be moderately to highly important for controlling gray leaf spot on specialty corns; responses from Agents < 15,000 A concerning these cultural practices were mixed. Many respondents—but not all—expected that fungicides will be moderately important for gray leaf spot control in specialty corns over the next five years.

Responses from producers were too infrequent to be used to draw meaningful conclusions.

Conclusions

Extension agents--especially those from counties with substantial corn acreages--and dealers considered variety selection and rotation to be important for controlling gray leaf spot in both field corn and specialty corn. They also felt that fungicides would not be important over the next five years in field corn, but many saw a significant need for fungicides in specialty corn.

Table 1. Perceptions of Importance of Variety Selection.

Question: How important will variety selection be during the next five years? Please rank on a scale of 1 to 5, when 1 = not important, 3 = somewhat important, and 5 = very important.

NUMBER OF RESPONSES										
	Field Corn					Specialty Corn				
Respondents ^a	1	2	3	4	5	1	2	3	4	5
Agents \geq 15,000 A	0	0	4	4	5	0	0	2	4	1
Agents < 15,000 A	4	3	7	2	4	1	1	1	1	1
Dealer	1	0	1	0	10	0	0	1	0	6

^a Responses tabulated separately for agents in counties with at least 15,000 acres of corn, agents in counties with less than 15,000 acres of corn, and dealers.

Table 2. Perceptions of Importance of Crop Rotation.

Question: How important will crop rotation be during the next five years? Please rank on a scale of 1 to 5, when 1 = not important, 3 = somewhat important, and 5 = very important.

NUMBER OF RESPONSES										
	Field Corn					Specialty Corn				
Respondents ^a	1	2	3	4	5	1	2	3	4	5
Agents ≥ 15,000 A	0	0	2	5	6	1	0	0	3	3
Agents < 15,000 A	5	0	8	1	6	2	0	1	0	2
Dealer	1	1	1	3	6	0	1	0	1	5

^a Responses tabulated separately for agents in counties with at least 15,000 acres of corn, agents in counties with less than 15,000 acres of corn, and dealers.

Table 3. Perceptions of Importance of Fungicides.

Question: How important will fungicides be during the next five years? Please rank on a scale of 1 to 5, when 1 = not important, 3 = somewhat important, and 5 = very important.

NUMBER OF RESPONSES										
	Field Corn					Specialty Corn				
Respondents ^a	1	2	3	4	5	1	2	3	4	5
Agents ≥ 15,000 A	3	8	2	0	0	0	2	4	1	0
Agents < 15,000 A	12	3	4	0	0	2	0	3	0	0
Dealer	6	1	5	0	0	2	2	2	1	0

^a Responses tabulated separately for agents in counties with at least 15,000 acres of corn, agents in counties with less than 15,000 acres of corn, and dealers.

ALFALFA

ALFALFA WEEVIL PREVIEW

By Lee Townsend

The first chewing damage seen on alfalfa tips is often caused by clover leaf weevils. They spend the winter as partially grown larvae and are active very early in the season. These small, legless grubs have a distinct white stripe, lined with red, running down the middle of their back. Often, they are responsible for the first tip feeding of the spring. Clover leaf weevils chew C-shaped notches in the

leaves which are different from the "pin-hole" feeding by small alfalfa weevil larvae. CLW larvae feed at night and spend the day at the base of the plant. There are seldom enough of them to justify an insecticide treatment. Newly-hatched alfalfa weevil are yellow with a dark head. Their legless, grub like body becomes green as it grows and has a less distinct white stripe down the back. Alfalfa weevil larvae are always in the tips.

What stages of the alfalfa weevil can be found in fields now? Adults, eggs, and soon a few small larvae. Females will continue to lay eggs during the rest of the spring with activity picking up as temperatures moderate. Watch the degree day accumulation (base 48 F) for your area and begin to check fields when the total goes above 190. Use of treatment guidelines allows natural mortality to take its toll on this insect. A lot of bad things happen to small weevil larvae as they move up to the tips to feed. Many of them never make it to the tips to begin feeding or do not become established on the plant.

Degree day accumulations at selected sites as of February 26, 1999

Mayfield	144	Princeton	190
Glasgow	199	Somerset	158
Lexington	104	Bardstown	130

SHADE TREES AND ORNAMENTALS

DOGWOOD POWDERY MILDEW

By John Hartman

Because flowering dogwoods (*Cornus florida*) are Kentucky natives, and widely prized in the landscape, they become a cause for concern for homeowners whenever their well-being is threatened. In addition to the ever-present risk of attack by dogwood borers, crown rot, leaf spots, and the more recent threat of anthracnose, dogwoods now face powdery mildew disease. Although powdery mildew has been recorded on dogwoods for many years, it is only in the past half decade that the disease has become noticeable and damaging.

Symptoms and signs. Powdery mildew symptoms may appear in mid-summer, long before the white powdery mycelium and spores of the fungus (signs) are visible. Affected parts of leaves develop a mottled yellowing or turn light green or yellow and often develop brownish patches. Yellowed leaves may drop in mid-summer. In some cases, a very

light coating of the causal fungus can just barely be seen, and occasionally, small patches of the fungus are fairly visible. Often the disease begins as barely distinguishable reddish brown or purplish irregular blotches on dogwood leaves which then develop into dark brown to tan dead patches. The combination of dead patches and leaf yellowing is most noticeable for homeowners.

The typical white powdery mildew mycelium and spores may develop abundantly on the new growth, distorting and curling these youngest leaves by season's end. Many of these curled leaves may also be scorched with brown leaf margins and interveinal dead patches. The disease increases progressively from early June to early September. Severely affected trees may appear wilted and browned by late summer. Landscape dogwoods exposed to sunlight and dry soil conditions may be especially scorched.

Cause. The fungal signs present during the summer are the asexual *Oidium* stage which produces chains of white conidia. On leaves late in the season and on fallen leaves in fall and winter, cleistothecia, (the sexual stage) of both *Microsphaera* and *Phyllactinia* spp. can be found. The cleistothecia can be seen with a hand lens and are spherical, tiny brown to black structures attached directly to fungal powdery mildew mats. Some leaves have only cleistothecia of *Microsphaera*, others only *Phyllactinia*, and others have both kinds. This suggests that we may have two different species of powdery mildew present on dogwoods in Kentucky.

Although wet leaves favor most landscape plant diseases, powdery mildew is an exception. Like other powdery mildews, dogwood powdery mildew is favored by relatively dry, but humid weather, so it is not surprising that this disease can appear in dry weather. Germination and infection does not require leaf moisture, and occurs in about 6 hours; new spores are produced in 5 or 6 days.

How powdery mildew might affect dogwoods. Powdery mildew has seriously affected flowering dogwoods in Kentucky landscapes for several years. Although it would appear to weaken trees, it does not appear to be lethal. We have observed that under high disease pressure, flower production is decreased the following year. Powdery mildew most likely reduces plant photosynthesis and increases leaf water loss through disruption of the cuticle and through the superficial fungal

mycelium. In the long run, this could weaken trees making them more prone to dogwood borer or Botryosphaeria canker. In reality, the long-term effects of powdery mildew disease development on tree health are not known. Most landscape dogwoods are grown from seedling sources, so the mildew susceptibility of individual dogwood trees in landscapes varies greatly.

Disease management. Powdery mildew can be controlled by using cultural practices, planting resistant dogwoods, and by using fungicides.

- Avoid cultural practices that stimulate succulent growth and encourage powdery mildew. These include applying nitrogen fertilizer, pruning heavily, and irrigating excessively.
- Use good cultural practices such as mulching over the root system, pruning out dead branches, and providing good air movement and light penetration by judicious pruning of nearby vegetation.
- Plant dogwood species and cultivars resistant to powdery mildew.
 - Susceptible: All *Cornus florida* seedling wild types (but individuals vary in susceptibility) and most *C. florida* cultivars. Resistant cultivars of white and pink flowering dogwoods are under development, but won't be ready for several years.
 - Intermediate susceptibility: *C. florida* 'Cherokee Brave' and cultivars of the *C. florida* x *C. kousa* hybrids.
 - Resistant: Cultivars of *C. kousa*, oriental dogwood.
 - Immune: Cornelian cherry dogwood, *C. mas.*
- If fungicides are to be used, determine which trees in the landscape are most susceptible so that applications are not made unnecessarily. Those trees most at risk for powdery mildew disease then can be considered for preventive fungicide applications. Most fungicides are capable of stopping the progress of powdery mildew infections fairly quickly, but none will restore already discolored or damaged leaf tissues. Good control can be obtained with as few as four fungicide applications made three weeks apart. Begin applications at the end of May. Effective fungicides include:
 - azoxystrobin (Heritage)
 - fenarimol (Rubigan)
 - myclobutanil (Eagle, Immunox)
 - propiconazole (Banner Maxx)
 - thiophanate-methyl (Cleary's 3336)
 - triadimefon (Bayleton, Strike)

When using fungicides for powdery mildew management, be sure that dogwoods are listed on the label and carefully follow all label directions..

HOUSEHOLD

THE TROUBLE WITH “BUG BOMBS”

By Mike Potter

We continue to get questions from agents, householders, and the news media about total-release pesticide foggers, commonly referred to as “bug bombs.” Attention has heightened, in recent weeks, after a home in Lexington caught fire when the fumes from an insect fogger ignited in the kitchen. We seldom recommend these products for household insect control for the following reasons:

1. *While foggers are convenient and require little effort or knowledge to dispense, they seldom are effective against indoor pest problems.* Most foggers are designed to be placed in the center of a room on a chair or table, and activated by depressing or removing a tab at the top of the can. The entire contents are released upwards, into the airspace, where the aerosol droplets remain suspended for a period of time and then gradually settle onto floors, counter tops and other surfaces. Prior to application, drawers, cabinets and closets are supposed to be opened to enhance coverage in areas where pests are likely to be living. When applied in this manner, very little insecticide actually penetrates into cracks, voids, and other hidden locations where cockroaches, ants, silverfish, and most other household pests congregate and spend most of their time.

Many insect foggers contain pyrethrin as their primary active ingredient. While pyrethrins are somewhat effective against exposed flying insects such as mosquitoes and house flies, they are seldom lethal to cockroaches, ants, spiders, beetles, and other crawling pests. The ingredients within “bug bombs” also tend to be repellent, causing insects to scatter and move deeper into wall voids and other hard-to-reach areas.

When insecticides are needed to eliminate a pest infestation, results will be better if the spray, bait, dust, etc., is placed directly into areas where pests are likely to be hiding. Targeted insecticide applications tend to be more effective against all varieties of household pests, including fleas. Flea control products that can be dispensed by hand can

be directed under beds, behind furniture, and into other hidden locations less accessible to foggers.

2. *It is generally poor practice to allow pesticide residues to settle onto counter tops, bedding, toys, pet food dishes, and other exposed surfaces.* While the directions for use accompanying total-release foggers specify that exposed food, utensils, and food preparation equipment and surfaces be covered and cleaned before reuse, many homeowners fail to read and follow these instructions.

The extent to which the resultant pesticide residues on exposed surfaces constitute a health hazard is debatable and would depend on various factors. A potentially greater hazard is pyrethrum, a common ingredient in bug bombs which is often touted as being “natural” and “safe” since it is derived from chrysanthemum flowers. Occupants with asthma and other respiratory ailments can react severely when pyrethrins and other irritating, volatile compounds are used indoors. According to label instructions, people and pets are not supposed to remain in the treated area, but are not necessarily required to leave the house. (Coincidentally, while this article was in preparation an elderly woman in Kentucky was hospitalized after setting off several foggers and failing to leave her home.)

3. *The ingredients in aerosol insecticide products may be flammable when used or stored near open flame.* There have been a number of house fires involving foggers when homeowners neglected to extinguish pilot lights, cigarettes, etc.

In summary, there are many ways to wage a “bug war.” One of the *least* effective battle plans is to use a bug bomb. Although other methods may require a bit more study and effort, the results usually will be better and more permanent. Many times the solution is as simple as a fly swatter, vacuum, or door sweep. One of the few instances where total-release foggers might be useful is where cluster flies, paper wasps, etc. are infesting attics, outbuildings or other cluttered, hard-to-reach areas. Refer to our entomology extension publications for specific suggestions for managing these and other insect pest problems.

PESTICIDE NEWS AND VIEWS

DESPITE CLAIMS TO THE CONTRARY, FRUITS AND VEGETABLES ARE SAFE (Farm Bureau response to EWG)

COLUMBUS, Ohio (OFBF) -- "It's not in our best interest to kill our customers." That's the Ohio Farm Bureau Federation's (OFBF) reaction to recent claims made by the Environmental Working Group (EWG) that farm pesticide use is putting American consumers at risk. "The idea that farmers would do anything to harm consumers is absurd" according to Constance Jackson, OFBF's director of regulatory affairs. "Our growers are highly trained and exceedingly conscientious. For EWG to claim otherwise is offensive to both producers and consumers."

The safety of fruits and vegetables is borne out in numerous studies conducted by reputable scientific organizations. The National Research Council says "the great majority of individual toxic chemicals found in food, whether naturally occurring or synthetic, occurs at levels far too low to have any adverse effects on health." An American Cancer Society report states "agricultural uses of pesticides play a substantial role in providing high quality food products, especially fruits and vegetables, that contribute strongly to population health and to the primary prevention of cancer."

Unlike these valid sources of information, the EWG's track record shows that their studies are not peer reviewed (which is a basic tenet of sound science) and are based upon faulty scientific methodology.

"Farmers today use fewer, safer, and more highly regulated crop protectants than ever" according to Jackson. "They eat what they grow, and they're certainly not going to hurt their own families, let alone millions of consumers, who buy their products everyday. Take this latest report for what it is: another case of an activist group screaming that the sky is falling. It's nothing more than slick marketing of pseudo-science."

Some American FBFB Talking Points

! The Consumers Union report apparently is based largely on United States Department of Agriculture data that prove overwhelmingly the safety of food. The USDA 1997 Pesticide Data Program report

concludes: "... the nation's food supply is among the safest in the world and residues of pesticides, when found on the tested foods, were generally within tolerance safety levels."

! The testing of residues show that farmers are using significantly fewer pesticides than would be suggested by the worst case assessment.

! Such reports, as expected from Consumers Union, tend to be alarmist, and may drive parents to serve fewer fruits and vegetables to their children. Health organizations have repeatedly told parents that the benefits of children consuming fruits and vegetables far outweigh the risks possibly associated with pesticides.

! The National Academy of Sciences concluded in a report on diet and cancer that "the great majority of individual toxic chemicals found in food, whether naturally occurring or synthetic, occurs at levels far too low to have any adverse effects on health."

! The American Cancer Society has concluded: "Agricultural uses of pesticides play a substantial role in providing high quality food products, especially fruits and vegetables, that contribute strongly to population health and to the primary prevention of cancer."

Actual Findings from USDA AMS Pesticide Data Program 1997 Report (note: Consumers Union aggregated studies done from 1994 to 1997, but percentages will be very reflective)

! Of the 6,321 fruit & vegetable samples collected and analyzed, 13 percent were imported and 2 percent were mixed national origin. Apple juice, orange juice, pears, tomatoes, and winter squash accounted for most of the imports. This naturally means that there is a higher propensity to find residues on more domestic products. Of the 6,321 samples, only 4 had pesticide residues exceeding EPA tolerances

! DDT was NOT detected on produce, but rather DDE, a metabolite of DDT, residues were detected on only 5 percent of all samples. No samples had residues above the allowable levels established by FDA. No residues were the result of application of DDT since its ban in 1972, residues are from contaminants in the soil.

! NONE of the fruits and vegetables analyzed for methyl parathion had residue levels that exceeded even half of the established tolerance level.

! Producers rely on the use of more than one pesticide as part of an Integrated Pest Management Program. IPM programs allow producers to use less pesticide because they can rotate the use and

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insects do not build up the tolerances that would eventually require larger doses for control. Finding residues from more than one pesticide is not a concern if residues remain below tolerance levels, which virtually all residue levels do.

! Consumers Union is basing its assertion that standards are being exceeded by assuming proposed environmental standards will be accepted, these standards are being seriously questioned by scientific sources.

! CU is relying on EPA preliminary risk assessments. These preliminary risk assessments were forced to be made public, despite scientific reservations within the agency, by environmental groups.

! Advances in technology mean we can detect residues at levels virtually unheard of in the past, parts per million, billion, and even trillion. This means that it is very difficult to use a product that will not be detected, it does not mean that it would cause any health concerns to our population.

! A health effect has NEVER been linked to the use of organophosphate pesticide residues.

! Ohio farmers receive training and education in the application of crop protectant products, these

products are not applied frivolously. Additionally, the costs of these products mean farmers are economically incited not to over apply pesticides.

! Ohio farmers care about the health and safety of US consumers and exert considerable care in the use of these products, they and their families consume the same products they sell to US consumers.

! Consumers Union annually evaluates thousands of products, why have they chosen to have a press conference regarding food safety, because it sells magazines!



Scout Cat Says:

Don't forget the 1999 IPM Training School scheduled for March 24 at the UKREC in Princeton. Program starts at 9:00

AM Central Time.

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