UNIVERSITY OF ILLINOIS EXTENSION
HOME, YARD & GARDEN PEST NEWSLETTER
College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign
Illinois Natural History Survey, Champaign

No. 8 • June 14, 2000

Drift Complaints: What You Should Know

Of the 120 or so pesticide-misuse complaints received each year by the Illinois Department of Agriculture (IDOA), about 60% of them involve pesticide drift. Across the nation, there is growing concern about pesticide drift and increasing numbers of formal complaints. Whether or not pesticide drift (both reported and unreported) is actually increasing, the bottom line is that formal complaints are on the rise and the IDOA and University of Illinois Extension are being asked to get involved in these complaints more often. Regardless of whether you file a drift complaint or are accused in such a complaint, it's a good idea to know the basics of the complaint process and what resources are available to you.

The IDOA and Extension have important but different roles in assisting citizens of Illinois in dealing with pesticides. These roles are based on the IDOA's responsibilities to administer and enforce the laws related to the use of pesticides and University of Illinois Extension's responsibilities to educate and solve problems. This spring, IDOA and Extension took a day to educate one another about their respective roles in drift complaint cases and discussed guidelines for handling drift complaints.

What are the roles of the University of Illinois Extension in a drift complaint?

The University of Illinois Extension has a role in education and problem solving. Through the Pesticide Applicator Training (PAT) program and other educational efforts, Extension provides information that helps to prevent drift from occurring in the first place. In a typical year, the PAT program alone reaches more than 14,000 commercial and private pesticide applicators and operators with pesticide safety and drift-reduction information. Surveys indicate that our efforts have a positive impact on the overall safety of the application industry.

As a neutral third party, unit and center-based educators, state specialists, and the University of Illinois Plant Clinic often play a major role in problem solving and diagnosing injury symptoms. Typically, this involves ruling out pest, environmental, or nutritional problems and often ruling out specific classes of herbicides. This type of information is often useful in settling disputes informally. Through informal mediation, many pesticide-drift complaints are resolved before a written complaint is submitted to IDOA or a civil law suit is filed.

If you choose to involve Extension in the process, you should keep two things in mind: (1) problem solving in a drift complaint is complicated, and the outcome may not please either party; and (2) not every Extension staff member is comfortable with (or is trained in) identifying herbicide injury and ruling out all the other possible explanations for damage to the range of crops and ornamental plants grown in Illinois. For these reasons, you may be referred to another educator or to a state specialist. In many cases, there simply may not be enough evidence to make a clear-cut decision as to the cause of the damage or enough information to determine the short- or long-term effects of the damage.

To request assistance from Extension, contact your nearest University of Illinois Extension office, which will direct your case to the appropriate educator or specialist. If you send samples to the University of Illinois Plant Clinic directly, please note that the Plant Clinic does not offer opinions on chemical injury to ornamental plants. If chemical injury diagnoses are requested for crop plants, state specialists are consulted to render an opinion based solely on the sample, its symptoms, and facts provided (be sure to include all relevant information). Keep in mind that the Plant Clinic does not perform pesticide-residue tests, and without such tests, the cause of a symptom cannot be attributed to pesticide drift with 100% certainty. However, it is possible for clinic staff and specialists to rule out other possible causes and establish whether the likely cause is drift.

What are the roles of the Illinois Department of Agriculture in a drift complaint?

The IDOA has three roles that impact its handling of pesticide-drift complaints. These roles are (1) educa-

tion and licensing of applicators and operators via the PAT program, (2) investigation of complaints, and (3) enforcement of pesticide laws. The roles of IDOA are determined by laws and statutes passed by the Illinois legislature or the federal government.

If a written pesticide-drift complaint is submitted to IDOA within 30 days of when the damage was first noticed, then IDOA will investigate the complaint. The investigator assigned to the complaint will collect information and evidence to assist IDOA in determining whether or not pesticide drift occurred. The investigator's role is to remain neutral and collect information, not to determine what caused the injury. Based on information collected by the investigator, IDOA administrators will make a determination of pesticide drift. In its enforcement role, IDOA may send a warning letter to the applicator, assess a fine, or revoke an applicator's license.

How do you respond to signs of pesticide misuse?
Before doing anything, both parties should make an effort to discuss the suspected drift incident and rule out other possible causes of the damage. As previously mentioned, Extension can play a valuable role in this process. In cases where the cause of the damage remains unclear or where the parties will not work together, a formal complaint may be necessary. The pesticide-drift complaint process is started by calling the IDOA's Bureau of Environmental Programs at 1-800-641-3934 (voice and TDD) or (217)785-2427 for a complaint form. Complaint forms must be received by the IDOA within 30 days of the incident or within 30 days of when the damage was first noticed. Complaints filed after that will be kept on record but no administrative action can be taken.

What is the complaint process?
Once a complaint is filed with the department, a field investigator is assigned the case. In most cases, the inspector will interview the complainant and inspect the site. Various types of samples such as plants, water, or soil may be collected for analysis at an approved laboratory. The investigator may also interview applicators in the area, examine pesticide records, and collect weather data in an attempt to determine the nature and cause of the damage. The field investigator will then submit a report to the department for review.

Both parties will receive written notification if the department finds a violation and takes enforcement action. Penalties range from advisory or warning letters to monetary penalties of $750 to $10,000 depending on the type and severity of the violation. Penalties are determined through a point system defined in the Illinois Pesticide Act. Even if a violation of the Illinois Pesticide Act cannot be substantiated, both the complainant and the alleged violator will be notified in writing of the complaint's status. Remember, the department's role in pesticide misuse incidents is limited to determining whether a violation has occurred. IDOA *cannot* help complainants recover damages.

What are some resources for drift information?
For more information about drift, injury symptoms, and drift-reduction strategies, refer to the *Illinois Pesticide Applicator Training Manual: Private Applicator* (1999) or the *Illinois Pesticide Applicator Training Manual: General Standards* (1995). Both manuals are available through your local Extension office. In addition, the Illinois Pesticide Safety Education Web site has a section covering these same topics (www.aces.uiuc.edu/~pse/facts/drift.html). We plan to greatly enhance the drift section, so be sure to visit it periodically for updates. *(Bruce Paulsrud, John Masiunas, and Mark Mohr)*

INSECTS

Dursban Uses Reduced

On June 8, the U.S. Environmental Protection Agency (USEPA) released a revised risk assessment on chlorpyrifos, sold as Dursban, Lorsban, and under other trade names. The main results of this action for ornamental plants is to eliminate the uses by residents and restrict turf use. This is a massive undertaking as there are 147 companies that have 803 labeled products containing chlorpyrifos. Production of residential-size containers of chlorpyrifos, the small containers typically sold to the public in garden centers and hardware stores, will stop by December 1, 2000, with formulators (pesticide producers) stopping sales by February 1, 2001, and retailers will not be able to sell these small containers after December 31, 2001. The only exception is baits in child-resistant packaging.

Homeowners will be able to use chlorpyrifos for as long as they have it. There is no date when homeowners can no longer use the insecticide. By December 1, 2000, remaining chlorpyrifos uses for landscapes and indoors will either be reclassified as restricted-use pesticides or packaged in large containers that are unlikely to be purchased by the general

public. There are also restrictions on nonresidential uses. Use in indoor and outdoor areas where children could be exposed, such as schools and parks, will be cancelled according to the same schedule for residential-size containers. In addition, in areas where children are not likely to be present, that is, golf courses, road medians, and industrial-plant sites, maximum application rates will be reduced to 1 pound of active ingredient per acre. This 1 pound of active ingredient per acre rate is the same as that currently recommended for all turf insects except for the higher-labeled rates for billbugs, mole crickets, and white grubs. Chlorpyrifos use is not suggested by the University of Illinois on billbugs and white grubs due to control inconsistency.

Use of chlorpyrifos for professional termite control will be phased out by the end of 2005. After December 31, 2000, the rate of application will be below that for which there is reliable data on its effectiveness against termites. Use of chlorpyrifos for mosquito control will continue to be legal but only by professionals.

For all of these uses, there are control options that are at least as effective, except for borer control on trees and shrubs. Lindane is labeled and is effective in most situations as a borer treatment, but it appears likely that lindane will lose its labeling within a few months. Dimethoate, sold as Cygon, is labeled and effective against many borers but is not labeled for many trees and shrubs other than most needled evergreens. Although it appears that professionals can still use chlorpyrifos to control borers in landscapes, the publicity that these restrictions are getting may make it unwise from a customer-relations viewpoint.

These changes are due in part to the Food Quality Protection Act of 1996. Under that law, all uses of a pesticide must fit into a risk cup that covers all exposures by residents and especially children. In addition, repeated research studies have shown that the nervous systems of rat fetuses do not develop properly when exposed to even relatively low levels of chlorpyrifos. These studies showing that chlorpyrifos crosses the placental barrier cause additional concern about the exposure to children. About 50% of chlorpyrifos is used in and around the home. Cancelling residential use should greatly reduce this level and concurrently reduce exposure. Undoubtedly, recent research that shows that chlorpyrifos is tracked into homes from its presence on turf also added to the concern. There apparently is no other new research on toxicity that is driving these decisions.

In summary, all residential uses end in about 18 months, except for bait stations. All emulsifiable concentrates will become restricted-use pesticides, and all other formulations will be packaged in large quantities that are unlikely to be used by homeowners. Additional information can be obtained at USEPA's Web site: http://www.epa. gov/pesticides/op/chlorpyrifos.htm. *(Phil Nixon)*

Insect Pests Susceptible to Control

There are several insect pests that we have been reporting on that are very susceptible to control at this time. Pests susceptible to insecticide application at this time throughout most of the state include bagworm, black vine weevil, euonymous scale, European pine shoot moth, and mimosa webworm. *(Phil Nixon)*

Imported Willow Leaf Beetle

Now is the time to be on the lookout for the imported willow leaf beetle, *Plagiodera versicolora*, which is a pest of most willows and poplars. This beetle is primarily a problem in the northern third of Illinois. If left unchecked, this beetle can cause severe aesthetic damage to plants in landscapes.

Adults are black to greenish blue. The adults hide during the winter under loose bark or in protected places on the tree trunk. In spring, they feed on foliage and lay glossy, pale-yellow eggs on the underside of leaves. These eggs hatch into small (7 to 10 millimeters long) black larvae that feed on the leaf undersides. The larvae cause the most damage as they feed on the leaf tissue, leaving only the leaf veins. After feeding, the larvae enter into a pupal stage, which generally lasts 3 to 4 weeks. There may be two to three generations per year.

Treatment of imported willow leaf beetle is generally not required on plants in which the damage is not noticeable. However, large numbers of imported willow leaf beetle may warrant control. Pest-control materials that are recommended include *Bacillus thuringiensis* 'tenebrionis,' carbaryl (Sevin), and spinosad (Conserve). *Bt* 'tenebrionis' is only effective on the larval stage. *(Raymond Cloyd)*

Holly Leafminer

The holly leafminer, *Phytomyza ilicis*, is one of at least seven species of leaf-mining flies that feed on holly (*Ilex* spp.). It feeds primarily on English/European holly, *Ilex aquifolium*. Heavy infestations of holly leafminer may result in every leaf on a plant being mined. This may cause plants to drop many

leaves, which reduces the plant's aesthetic appearance until new growth begins next spring. There is one generation per year.

Adult females are present shortly after new leaves develop on plants. They can emerge over a 6-week period in the spring. The female lays eggs into the leaves in early to late spring. The eggs are normally laid on leaf undersides and in the midvein of individual leaves. Females pierce the leaf epidermis with their sharp ovipositor and then insert an egg into the mesophyll layer of the leaf. Egg laying can create a noticeable green blister on the leaf. The eggs hatch into yellow larvae (maggots) that are 1.5 to 2.0 millimeters long when fully grown. The larvae create narrow, winding mines as they feed between the leaf surfaces. These mines are translucent or white at first but eventually turn brown. Larval feeding can create blisters or blotches that are very noticeable. As the larva continues to feed, the mine enlarges until it is ready to pupate in late fall to winter. The larvae overwinter in the leaf mine.

Plant injury not only results from larval feeding activities but also from adult feeding. This occurs when the adult female punctures the leaf with her sharp ovipositor. The wounds created by the ovipositor allow plant fluids to flow out, which are consumed by the female. These oviposition wounds leave small, round, deep fissures that are visible from both sides of the leaf. Pest-control materials that are recommended for managing the holly leafminer include acephate (Orthene), dimethoate (Cygon), and spinosad (Conserve). Make applications in late May or early June when leaf mines first appear. The reason these materials are effective against holly leafminer is that they are either systemic (move within the water-conducting tissues) or have translaminar properties. *Translaminar* is a term used to describe materials that penetrate the leaf surface; the active ingredient then resides within the leaf tissue where the leafminer larvae feeds. As a result, these materials last longer than typical contact insecticides, and their efficacy is not influenced by rainfall. *(Raymond Cloyd)*

Plant Stress and Wood-Boring Insects

At this time of year, there are a number of wood-boring insects that attack a wide diversity of plants growing in nurseries and landscapes. The major wood-boring insects may be classified as either beetles (for example, bronze birch borer) or clearwing moths (for example, peach tree borer). Both types have larvae that tunnel and feed within the plant tissues.

The main difference is in the feeding behavior and appearance of the adult stage. Adult clearwing moths resemble bees, but the wings are nearly transparent (it appears as if parts of the wing are missing). They don't normally feed on plants, whereas adult beetles can cause plant injury by feeding on plant foliage. Wood-boring insects can kill plants directly due to larvae feeding within the phloem tissue, which reduces the plant's ability to obtain nutrients. In addition, wood-boring beetles can kill plants indirectly by serving as vectors of diseases. For example, Scolytid beetles are the primary vectors of Dutch elm disease. In addition, some wood-boring beetles (Ambrosia beetles) introduce a blue-stain fungus that clogs the water-transport system of plants.

Most of the wood-boring insects in Illinois are generally a problem when plants are stressed. So, why do wood-boring insects predominantly attack stressed plants? One reason is that healthy plants are normally able to allocate available resources (food) for both growth and defense. Plants can then protect themselves by either sealing off (compartmentalizing) insects, or they are able to tolerate insect populations while still retaining their aesthetic appearance. However, when plants are predisposed to stress, which may occur due to environmental (drought) or physical (weed-whackers or mowers) factors, it increases their susceptibility to wood-boring insects. Stress may cause plants to allocate more available resources toward growth, leaving fewer resources for defense. Wood-boring insects take advantage of this imbalance and find it easier to locate and attack stressed plants. Once wood-boring insects locate stressed plants, some insects can emit chemicals that attract other individuals to the plant, thus overwhelming the tree's defenses by sheer numbers and accelerating the time it takes to kill the plant.

However, this may be a simplified generalization as not all plants respond in the same manner. In fact, studies have demonstrated that in some situations chemical defenses actually increase in response to stress. Improper implementation of cultural practices such as watering, fertility, mulching, and pruning is a major cause of stress. Many trees have evolved to grow in forest environments, which are very different from the areas in which we expect trees to thrive. As a result, plants are highly dependent on cultural practices to ensure their survival. Thus, when conditions are not conducive to survival, plants are predisposed to wood-boring insects.

Over- or underwatering sets off a series of physiological changes that lead to plant stress and greater susceptibility to wood-boring insects. When a plant is stressed from overwatering, resources may be allocated toward growth (that is, maintenance growth) to survive. In this case, fewer resources are allocated toward defense, which facilitates attack by wood-boring insects. Underwatering also leads to stress, as plants are unable to take up enough water to maintain normal enzymatic and metabolic functions. Plants may then allocate resources toward maintenance growth, leaving fewer resources for defense. It has been demonstrated that plants under water stress are unable to produce oleoresins, which normally act to repel beetles. Ponderosa pine *(Pinus ponderosa)* trees, for example, are more susceptible to pine bark beetle during periods of water stress. Plants that are properly watered are better able to reduce or restrict insect injury. For example, conifer trees (that is, pine and spruce) can compartmentalize, or seal off, insects and prevent them from causing severe injury. A very serious stress factor that predisposes plants to attack by wood-boring insects is prolonged drought.

Overfertilization also results in greater problems with wood-boring insects because plants may allocate more energy into growth and less into defense. The level of chemical defenses necessary for resistance to insects decreases in rapidly growing trees.

Proper mulching can lead to healthy plants. However, too much mulch or mulch that covers the plant crown (base) can cut off oxygen and suffocate plants. This increases their susceptibility to wood-boring insects. Again, plants allocate less energy into defense. Mulch should not be thick enough to cover the plant crown.

Two types of improper pruning can lead to problems with wood-boring insects: poor practices and improper timing. Examples of poor practices include leaving “stubs,” topping trees, or cutting too far back on the branch collar. These practices often make it difficult for plants to properly heal themselves. As a result, these open wounds are attractive to wood-boring insects for egg laying, or they are easy entry sites for the larvae. Improper timing includes pruning plants when wood-boring insects are most active and/or pruning when plants are most likely to produce volatile chemicals that attract wood-boring insects. For example, birch trees should not be pruned from May 1 to August 1 as this is the flight period of the bronze birch borer females, and research has shown that female birch borers are attracted to fresh pruning wounds.

Another important factor that predisposes plants to attack by wood-boring insects is plant placement. Sun-adapted plants placed in shady locations are more susceptible to wood-boring insects as less chemical defenses are produced. Similarly, shade-adapted environment. Dogwoods, for example, when located in sunny areas are more susceptible to dogwood borer. Birch trees located on the south side of a white building are more susceptible to wood-boring insects because the reflected light magnifies the intensity of the sunlight causing stress and weakening the plants’ defenses. Proper site selection will minimize problems with wood-boring insects.

Understanding why wood-boring insects attack stressed plants should lead to proper implementation of cultural practices in the nursery and landscape. This will result in having to deal with fewer problems with wood-boring insects. *(Raymond Cloyd)*

PLANT DISEASES

Verticillium Wilt

For those of you familiar with this disease, be on the lookout now. Verticillium wilt has been confirmed at the Plant Clinic on maple already this year. We have also seen many trees, shrubs, and even perennials with weather-related problems that can mimic Verticillium wilt. Read this article for some tips on how to tell what’s Verticillium wilt and what’s not.

The *Verticillium* fungus causes vascular tissue to be plugged, effectively blocking water movement in the plant, resulting in wilting of foliage and death of branches or plants. You can imagine that a root rot, root injury, trunk damage, insect injury, or any other problem that inhibits water uptake might look like Verticillium wilt. In fact, the disease is often blamed for unexplained deaths of plants. Maple, smoke tree, redbud, magnolia, and ash are some of the more common trees affected in Illinois, but there are more than 300 plant species susceptible to this fungal disease. The list includes annuals, perennials, trees, shrubs, fruits, and vegetables. We often see the problem on tomato in Illinois, which is why we recommend the VFN hybrids—those resistant to *Verticillium, Fusarium,* and nematodes. *Report on Plant Diseases (RPD)* No. 1010 discusses Verticillium wilt and contains lists of plants that have been reported as hosts of the disease.

Symptoms of Verticillium wilt include wilting and yellowing and death of leaves, branches, or entire

plants. Chronic symptoms may include stunted and chlorotic foliage, leaf scorch, slow growth, abnormally heavy seed crops, and dieback of shoots and branches. The vascular tissue is discolored in a striped or streaked pattern, usually brown, black, or light to dark green. As far as we know, only ash does not produce some type of vascular discoloration when infected by this fungus. The presence of vascular discoloration is the best method of distinguishing Verticillium wilt from some of the other look-alike problems listed above. In terms of diagnosis and confirmation of the disease, the vascular discoloration is the most significant symptom. Samples taken for laboratory culturing (except ash) must contain this discoloration for valid results. Tissue must be alive but showing active wilting. The ideal branch section would be thumb thickness, 8 to 10 inches long, alive, and containing vascular discoloration. This fungus is relatively slow growing. Fungal isolates that develop in laboratory cultures usually grow for about 7 days before the fungus can be positively identified.

Most plant species will not readily recover from this disease. In fact, it is probably more typical for infected plants to die. Still, some fast-growing trees have been able to wall off the fungus through compartmentalization and continue to grow well for many years. I have seen this happen on a few maples and ash. There are no chemical cures for the disease, and resistant varieties are available for only a few plant species such as strawberry and tomato. Management recommendations include removing dead wood, watering trees in periods of drought lasting two weeks, and fertilizing in the fall to improve tree vitality. Although we may not be able to save an infected plant, identification of the problem has great implications for the future. The *Verticillium* fungus is soilborne and can survive for 5 years or longer in the soil. If a susceptible species is planted as a replacement plant, it too will become infected. Do not grow susceptible crops on land where *Verticillium* has been confirmed. A rotation of 5 years or more for vegetables and flowers may help reduce the amount of inoculum in the soil.

For more information about this disease, consult *RPD* No. 1010, which is available at an Extension office or on the Web at http://www.ag.uiuc.edu/~vista/horticul.htm. *(Nancy Pataky)*

Cladosporium of Peonies

This fungal disease occurs each year, showing up first in the spring before blooms appear. It is most common on older varieties and will not kill the plants, but it will cause them to become weakened and malformed each year, thus affecting plant vitality.

Cladosporium paeoniae is the fungal pathogen that causes small, circular, red or purple spots to appear on the upper surface of young leaves just before the peony blooms. Later, the spots appear on the underside of leaves. The lower sides on infected leaves soon turn a dull chestnut brown, while the upper surfaces appear as glossy dark purple. As the host tissues mature, the lesions enlarge rapidly and may form large, irregular blotches that make affected plants unsightly. Stem and petiole lesions are short, reddish brown streaks at first. The lesions on stems near the soil line become somewhat sunken or pitted and tend to merge and darken. Spots on all plant parts remain purplish or brownish red throughout the season. Because of the diverse symptomology, red spot, leaf blotch, or measles are all names for the same fungal disease that affects all aboveground parts of peony.

Fungicides will not be effective at this time of year. If you have a problem with this disease, consider replacing plants with newer resistant varieties, or mark your calendar now to spray next year. Fungicides are used to protect new foliage as it emerges. Sprays are initiated when new growth is 2 to 4 inches tall and are continued following label directions until flowers begin to open. The addition of a spreader-sticker will help coverage. Also to help manage the problem, in the fall of each year, you should remove all old tops to ground level and destroy, bury, or remove these from the garden. Mark your calendar now, or you will likely forget to do this task.

Fungicide options are listed in either the *Illinois Homeowners' Guide to Pest Management* or the *Illinois Commercial Landscape and Turfgrass Pest Management Handbook 2000*. For more information on this disease, consult *RPD* No. 631, *Red Spot, Leaf Blotch, or Measles of Peonies. (Nancy Pataky)*

Rose Rosette Disease

This disease has been sighted at the University of Kentucky clinic as well as The Morton Arboretum clinic in northern Illinois. We can expect to see it in any part of Illinois now. The University of Illinois Plant Clinic has not seen a case of rose rosette yet this year, but telephone reports of its occurrence have been received.

Rose rosette is caused by a double-stranded RNA, which means that it is a viruslike disease. It cannot be cultured in a lab, and confirmation of the disease by

the Plant Clinic will be based purely on symptomology. Fortunately, symptoms are very distinct. The new growth appears deep red, both on leaves and stems. Leaves may show crinkling, distortion, or a mosaic of green, yellow, and red. An infected plant produces numerous lateral shoots that grow in different directions, giving the plant a witches'-broom appearance. These shoots are typically deep red and much larger in diameter than the canes from which they grow. Thorns on these stems are more numerous than normal, giving the stem an almost hairy appearance. Plants usually die within about 22 months of infection. Because of the way roses are propagated, rose rosette is often identified in the nursery, and infected plants are rogued before they get into the retail market. Sometimes there are escapes or plants are infected after they are planted in the garden.

The vector of this disease is an eriophyid mite, a mite so small that 20 could fit on a pinhead. Eriophyid mites are much smaller than red spider mites, which are commonly seen on plants. Grafting can also spread rose rosette disease.

Multiflora rose is the most common host of this disease, but it has been reported on cultivated flowering varieties as well. Climbers, hybrid teas, floribundas, miniatures, and a number of old variety roses have been infected. Hybrid teas typically show a color that is more yellow than red. So far, no other host besides rose has been found. Our clinic has seen a few cases of this disease on hybrid roses in the past few years.

Currently, infected plants cannot be salvaged. Plants with symptoms should be dug up and destroyed (including roots) when first noticed. It is strongly suggested that multiflora and garden roses be separated as far as possible from each other. The efficacy of mite control has been questioned in control of this disease, but if miticides are used, research suggests that the critical mite-transmission time is May and June, so concentrate your efforts in those months. For details of this disease, consult *RPD* No. 666. A Kansas State Web site with a picture of rose rosette is listed at http://www.ksu.edu/plantpath/extension/facts/rose2.html. *(Nancy Pataky)*

Home, Yard, and Garden Pest Newsletter *is prepared by Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey. Information for this newsletter is gathered with the help of staff members, Extension field staff, and others. Karel Jacobs and Donna Danielson of The Morton Arboretum also provide information and articles.*

Major authors are Phil Nixon, (217)333-6650, Fredric Miller, (708)352-0109, and Raymond Cloyd, (217)244-7218, entomologists; Nancy Pataky, (217)333-0519, plant pathologist; Bruce Paulsrud, (217)244-9646, pesticide applicator training; and Tom Voigt and David Williams, (217)333-0350, horticulturists. Phil Nixon is the executive editor of the Home, Yard, and Garden Pest Newsletter. *This newsletter is written by faculty in the Department of Natural Resources and Environmental Sciences and the Department of Crop Sciences. The newsletter is edited by Erin Cler, typeset by Oneda VanDyke, and proofread by Phyllis Picklesimer, all of Information Technology and Communication Services.*

For subscription information, phone (217)333-2666 or (800)345-6087, or e-mail acesnews@uiuc.edu. Web subscriptions are available (http://www.ag.uiuc.edu/cespubs/hyg).

U of I Extension
Newsletter Service
University of Illinois
at Urbana-Champaign
528 Bevier Hall, MC-184
905 S. Goodwin Avenue
Urbana, IL 61801

Return Service Requested

Presorted First Class
U.S. Postage Paid
Permit #75
Champaign, IL

UNIVERSITY OF ILLINOIS
EXTENSION