UNIVERSITY OF ILLINOIS EXTENSION
# HOME, YARD & GARDEN PEST NEWSLETTER
College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign
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## Last Issue for 2002

This is the last issue of the *Home, Yard, and Garden Pest Newsletter* for 2002. The 2003 issues will begin in the spring, probably in early to mid-April. The newsletter will be available on the Internet and in paper form next year. Unfortunately, the paper subscription fee will rise to meet increased costs. The Internet version continues to have free access.

Thank you for your continued interest and support. As always, if you have suggestions for articles or improvements in this newsletter, please let us know. *(Phil Nixon)*

## 2003 Pest Handbook

The *2003 Commercial Landscape and Turfgrass Pest Management Handbook* will be available for purchase in December 2002. This handbook contains the University of Illinois Extension recommendations for the control of weeds, diseases, and insect pests on professionally maintained turf, trees, shrubs, and flowers. It is written for the professional landscaper, golf course superintendent, lawn-care professional, arborist, and other commercial horticulturists. It replaces the 2001 edition of the same title.

The handbook will be available both in paper form and on searchable CD. The printed form will cost $15 per copy, $25 for the CD, and $32 for the set of both. It will be available through your local Extension office or by calling (217)333-2007 and requires an additional postage and handling charge. It will also be available at Pesticide Applicator Training Clinics and other Extension meetings this winter. *(Phil Nixon)*

# PLANT DISEASES

## Spreader–Stickers

At a recent presentation, I was asked whether a spreader-sticker should be used with all fungicides. This question led to many other questions, some of which I could answer and some I needed to research. There were many who had the same concerns.

**What is a spreader–sticker?** Spreader-stickers are adjuvants added to the spray mix, intended to help coverage of the product on the plant material and to slow chemical residue loss. The spreader component is a surfactant that reduces the surface tension of water. This allows the product to spread across the leaf more uniformly and allows the active ingredient to be better absorbed by the plant. You have probably seen water bead up on leaves, especially on waxy-covered leaves or leaves with many hairs. Spreaders release water surface tension so the droplets don't bead up. The sticker component increases the adhesion of spray drops to the leaf and slows loss of the chemical by rain. Many stickers are also surfactants and are marketed as spreader–stickers.

**Should I add an adjuvant to my spray mix in all situations?** The scientific literature suggests that testing is needed on each fungicide and spreader–sticker combination. Research has shown that combinations vary in effectiveness against specific pathogens. In fact, chemical effectiveness can actually decrease with some combinations. Because of different interactions between fungicides and spreader–stickers, pesticide labels often have specific directions for types of spreader–stickers to use. In some cases, a spreader–sticker is already part of the product. This is the case with Remedy, a Bonide product containing potassium bicarbonate and used to control black spot, downy mildew, powdery mildew, and a variety of other foliar diseases. The label specifically states: "Do not mix with other pesticide products or spray adjuvants." In cases such as this, adding more spreader–sticker could cause some plant phytotoxicity or other unexpected problems.

**Can I use a homemade spreader–sticker?** We've been down this road before; and the above information should explain why this is not a good idea. There is also the question of how much to use to be effective and still avoid runoff of the product. If you are insistent on using your own formulation on your plants, at least try it out on a few first to determine if injury follows in the next days or weeks. Such sprays are at your own risk. Commercial applicators should be able to find many spreader–sticker product options.

**Where can I find spreader–stickers?** Some of the home gardeners I spoke with at a recent workshop

stated that they could not find a spreader–sticker in local stores. Others found them readily. You may need to check a few stores and concentrate on larger garden centers to find spreader–stickers. A quick Web search recently showed that Bonide makes Turbo Spreader–Sticker in 8-oz bottles. Ferti-lome produces an 8-oz Spreader–Sticker, a PT Spreader–Sticker, and a GL Spreader–Sticker. There are many other products by other companies as well. As a take-home message, always read the directions (checking the fine print) for both the fungicide and the adjuvant label before making any chemical applications. *(Nancy Pataky)*

### Ash Tree Help Needed

Ash tree species are fast growing and provide a quick source of shade. They are relatively easy to grow in Illinois. For these reasons, you will find many ash trees in landscapes in Illinois. Most are in good health, but some have been plagued with problems, including ash yellows, ash decline, and Verticillium wilt. The problems, which can be found throughout Illinois, are discussed in detail in issue no. 7 of this newsletter.

Branch dieback and decline seems to be a symptom common to the diseases mentioned. All definitely cause plant stress. With stress comes the invasion of secondary canker fungi. If we are not willing to do a little helpful management, these cankers girdle and kill branches, allowing wood rot fungi to enter larger limbs and the trunk. The result may be a slow decline and death of the tree. Because ash trees grow quickly, they can overcome some of their problems with a little help from us.

Cankers are dead areas on the stem or trunk. These are fairly easy to spot on ash. Usually the wood is darkened and sunken or roughened. Fruiting bodies of a fungus are usually visible in the canker as small, pinhead-sized spots embedded in the bark. Such spotting is found on healthy wood. The cambium in the cankered area is dead, so peeling back the bark in this area reveals brown wood below. Remove all of the dead wood now. Cut until you leave only healthy wood on the branch. You may have to use some discretion when cankers occur on the trunk or large limbs but have not girdled the wood. Because canker fungi often enter a tree on old branch stubs, be sure to use sound pruning practices. Cut branches just outside the branch collar, not flush to the trunk. Remember that the wood that is cut off is infected with a pathogen, so remove it from the site. Only work on trees in dry weather to avoid spread of the fungi involved.

Canker fungi are stress pathogens. Assess the ash and the site to determine what stress may be contributing to decline. Often drought or flooding are factors in root injury leading to tree stress. Be especially diligent about watering ash trees in drought stress. Fertilize with a balanced tree fertilizer, but avoid excessive nitrogen fertilization. This species responds very well to water and fertilizer applications. For those of you with healthy ash trees, keep them healthy by watering in drought and removing dead wood as it appears. For information on canker and dieback diseases of woody plants consult *Report on Plant Disease*, no. 636, available on the Extension VISTA Web site. *(Nancy Pataky)*

## INSECTS

### Systemic, Local Systemic, or Translaminar Insecticides: What's the Difference?

Many insecticides kill pests by contact activity. Insect or mite pests are either killed from direct contact during spray applications or by coming into contact with wet residues when moving around upon plant surfaces. Contact insecticides generally provide quick knockdown of target pests.

Many insecticides from the older chemical classes —including the organophosphates (that is, chlorpyrifos and diazinon), carbamates (methiocarb), and pyrethroids (bifenthrin, cyfluthrin, fluvalinate, fenpropathrin, and permethrin) have contact activity. However, some insecticides have either *systemic* or *translaminar* (local) properties. Older systemic insecticides/miticides that are no longer available include aldicarb (Temik) and oxamyl (Vydate). Currently available systemic insecticides include imidacloprid (Marathon, Merit), acephate (Pinpoint), and pymetrozine (Endeavor).

In addition to insecticides, several fungicides are available with systemic activity, including mefenoxam (Subdue Maxx) and fosetyl-aluminum (Aliette). In fact, Aliette is the only fungicide available that moves both up and down the plant's vascular system. However, this article primarily concentrates on the action and use of systemic insecticides.

Systemic insecticides are those in which the active ingredient is taken up, primarily by plant roots, and transported (translocated) to locations throughout the plant, such as growing points, where it can affect plant-feeding pests. Systemics move within the vascular tissues, either through the xylem (water-conducting tissue) or the phloem (food-conducting tissue) depending on the characteristics of the material. However, most systemic insecticides move up the plant (water-conducting tissue) with the transpiration

stream. Systemic insecticides are most effective on insects with piercing–sucking mouthparts, such as aphids, whiteflies, mealybugs, and soft scales, because these insects feed within the vascular plant tissues. Most of the newer systemic insecticides have minimal if any activity on spider mites because spider mites remove plant chlorophyll (green pigment) and don't feed within the vascular tissues.

Systemic insecticides may be applied directly to the growing medium, soil; or they can be sprayed onto plant leaves. Systemics applied to the growing medium and taken up by plant roots may in some cases provide up to 12 weeks of residual activity. However, they may take longer to be distributed throughout the plant. In contrast, systemics applied to plant foliage may provide up to 2 to 4 weeks of residual activity. Nonetheless, foliar-applied systemics provide quicker kill of target pests. In either case, systemics provide the plant with long-term protection from pest injury.

The water solubility of systemic insecticides determines their movement within plants. Systemic insecticides, in general, are very water soluble (an exception is imidacloprid), which allows them to be taken up by plant roots or leaves. In addition, plants do not readily metabolize them. However, due to their high water solubility, they are subject to leaching and may potentially contaminate groundwater.

Systemic insecticides should be applied when plants have an extensive, well-established root system and when they are actively growing. This leads to greater uptake of the active ingredient through the vascular tissues. Applying systemic insecticides during warm, sunny days also leads to increased uptake of the active ingredient through the transpiration stream. In contrast, uptake is less in plants without well-established root systems. Also, high humidity and low light can lead to reduced uptake of systemic insecticides. Any delayed uptake of the active ingredient may result in the material's taking longer to kill insect pests. Systemics are also more effective when plants are herbaceous rather than woody, particularly on stem-feeding insects such as aphids.

Some insecticides/miticides have translaminar, or local, systemic activity. These materials penetrate leaf tissues and form a reservoir of active ingredient within the leaf. This provides residual activity against certain foliar-feeding insects and mites. Insecticides/miticides with translaminar properties include abamectin (Avid), pyriproxyfen (Distance), chlorfenapyr (Pylon), spinosad (Conserve), and acephate (Orthene). In general, these types of materials are active against spider mites and/or leafminers. Because the active ingredient can move through plant tissues (that is, leaves), thorough spray coverage is less critical when using these materials to control spider mites, which normally feed on leaf undersides.

The benefits of using systemic insecticides include (1) plants are continuously protected throughout most of the growing season without the need for repeat applications, (2) these insecticides are not susceptible to ultraviolet light degradation or "wash off" during watering, (3) there is less unsightly residue on foliage or flowers, and (4) harmful effects to workers and customers are minimal. A problem associated with systemic insecticides is that many have a single, or site-specific, mode of activity, which may lead to resistance. The selection pressure placed on pests from the continual use of systemic insecticides may result in the development of resistant genotypes. An exception to this situation is the insecticide Endeavor (pymetrozine), which has a broad, or physical mode, of activity. Endeavor kills aphids and whiteflies by blocking their stylet (feeding tube), thus preventing them from feeding. As a result, the insects starve.

Although systemic insecticides are generally considered less harmful to natural enemies, research has shown that specific predators such as *Orius* spp. that supplemental feed on plants may take up enough active ingredient to kill themselves.

Systemic insecticides can provide long-term control of insect pests without having to rely on regular spray applications. However, it is important to use proper insecticide stewardship to minimize the risk of insect populations' developing resistance to currently available systemic materials. *(Raymond A. Cloyd)*

## Scale Management

Dormant oil sprays are an effective way to manage scale insect problems. Application can be made during warm spells in the winter to greatly reduce problems during the following growing season. Of the common scale insects in Illinois, only oystershell scale and pine needle scale are not effectively controlled with dormant oil. Oystershell scale overwinters in the egg stage, and much of the pine needle scale population overwinters as eggs. Scale eggs are not controlled effectively with oil.

Applications of dormant oil can be made as long as the plant is dormant. With deciduous trees and shrubs, dormancy is between leaf drop in the fall and bud break in the spring. For some oaks, other trees that don't drop their leaves in the fall, broadleaf evergreens, and conifers, one can assume that they are dormant during the same time period that most deciduous trees and shrubs are leafless.

Apply dormant oil on days when the temperature will stay above freezing for 24 hours after application. This allows the oil to evaporate off of the tree and not soak into the plant where it may cause phytotoxicity. Because evergreens, both broad-leaved and conifers, have more relative surface area, spray them only on days where the temperature will stay above 40°F for 24 hours after application.

Some petroleum spray oils will be marketed as dormant oils. Those labeled as horticultural oil, spray oil, and other names will commonly have different rates for summer oil sprays versus dormant oil sprays. Typically, dormant oil sprays are mixed to be applied with a concentration of 2 to 4% oil. It is recommended to apply the lower rate to evergreens, using the higher rates on deciduous plants. See the label for directions on mixing and application. Petroleum oils will remove the blue bloom on Colorado blue spruce and Koster spruce and can be phytotoxic to Japanese maple, walnut, arborvitae, Cryptomeria, Japanese holly, red cedar, and smoke tree. *(Phil Nixon)*

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