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Agriculture and Natural Resources

Retail Nursery and Garden Center

IPM News

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Fall is for Fertilizing

All types of lawns are actively growing during the fall months. Fertilizer applied at this time will help ensure that turfgrass is vigorous enough to outcompete weeds and resist other potential pest problems.

For best growth, most lawns need to be fertilized two to three times a year, at least once in fall and once in spring. Nitrogen is the only nutrient that turfgrass needs on a regular basis. However, it may be beneficial to apply a complete fertilizer containing nitrogen, phosphorus, and potassium at least once a year.

Your store probably carries both quick-release and slow-release fertilizers. Although more expensive, slow-release fertilizers have several advantages over quick-release products. They release nitrogen over a period of 8 to 10 or more weeks, thus feeding the lawn for a longer period and

making it unlikely they'll burn the turf even if accidentally over-applied in some areas. They are also less likely to leach or run off with rain or irrigation.

Examples of slow-release products include sulfur-coated urea, urea formaldehyde, isobutylidene diurea (IBDU), and organic fertilizers such as composted manure or bone meal. Quick-release products include ammonium nitrate, ammonium sulfate, calcium nitrate, and urea.

It is very important to apply the right amount of fertilizer, which varies according to turf species. Refer your customers to the UC IPM Web site for help in determining the correct amount of fertilizer to apply. The site includes a calculator that allows you to customize your turf species and location to find out how much fertilizer to apply and when to apply it.



S. E. Lock, UC

Figure 1. A drop fertilizer spreader.

Be sure your customers have the correct type of spreader and that they know how to calibrate it properly. Drop spreaders are the best choice for assuring even fertilizer distribution.

To access the calculator or for more information about fertilizing lawns, visit <http://www.ipm.ucdavis.edu/TOOLS/TURF/MAINTAIN/fertilize.html>.

IPM Workshop for Retail Stores Set for Oct. 30

Register now for the next UC IPM workshop scheduled for Oct. 30 in Santa Clara, and get yourself and your staff up to speed on home and garden pests, pesticides, and resources to consult when customers' pest questions arise!

Similar to our last two workshops in Oakland and Sacramento, this hands-on train-the-trainer workshop is designed especially for retail nursery and garden center employees, managers, owners, and affiliates. Training topics will include landscape pest identification, navigating the UC IPM Web site, and less toxic pesticides.

The cost for the training is \$40 and includes a set of Landscape Pest Identification cards, materials, lunch, and a certificate of completion. See the workshop Web site at <http://ucanr.org/sites/IPMretail/> to register, view the agenda, see directions, and more. **Don't miss out—sign up today!**

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Termites Are Flying

As fall approaches, you may have customers reporting that termites are flying around their property or even within their home. Customers will want to know what these insects are and what to do about them.

The first thing to do is to confirm that the insect is a termite and not an ant. Ants and termites can be distinguished by observing antennae (ants' antennae are elbowed, termites' aren't); wings (ants have a smaller hind wing than forewing, termite wings are the same size); and waist (ants have a thin "wasp" waist, whereas termites have no waist) (Figure 1).

Winged termites (Figure 2) will swarm in late summer, fall, and early spring, especially after rain, looking for new nesting sites. Ants are more likely to swarm in spring.

If it is a termite, the next step is for the customer to determine if they have a termite problem. Termites may be flying in from decaying wood in the landscape or a neighbor's property. There is no need for management if they don't have an infestation in their house or other valuable structure. Even a few winged termites found within the house may not be cause for alarm—they may have come from an outside swarm.

To determine if termites are infesting the home, advise the customer to inspect the basement or crawl space for termite damage or signs of termites such as the mudlike shelter tubes subterranean termites construct to travel from their nests in the soil to wood parts of the building (Figure 3) or the distinctive fecal pellets of drywood or dampwood termites (Figure 4).

It can be very difficult to confirm a termite infestation, so if one is suspected, it is best to call in a structural pest management professional (PMP) who is trained in integrated pest man-

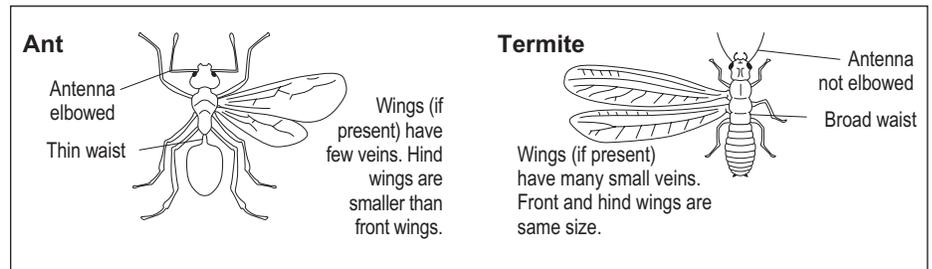


Figure 1. Distinguish termites from ants by comparing antennae, wings, and waist.



L. L. Strand, UC

Figure 2. Winged subterranean termite adults and a yellow worker.

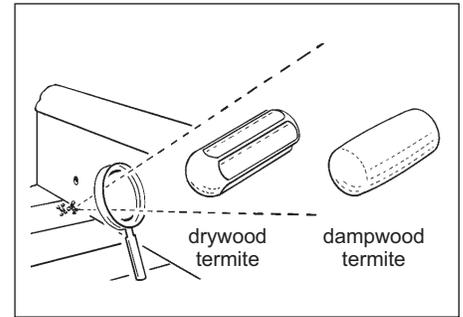


J. K. Clark, UC

Figure 3. Shelter tubes on a concrete basement wall indicate a subterranean termite invasion.

agement; the Web sites <http://www.certifiedgreenpro.org/> and <http://www.greenshieldcertified.org> offer lists of IPM-certified PMPs.

Effective termiticides aren't available to consumers, so a professional will need to be brought in if treatment is required. Some bait station products for subterranean termites are available in stores; they can help with detection



D. Kidd

Figure 4. Fecal pellets of dampwood and drywood termites.



J. K. Clark, UC

Figure 5. Winged carpenter ant.

but they haven't been shown to reliably control termites by themselves.

Outdoor flying ants rarely need to be managed, although carpenter ants (Figure 5) can infest structures. If they do, consumers can often manage the infestation themselves.

For more information about termite management, see *Pest Notes: Termites* at <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7415.html>.

For more information about ant management, *Pest Notes: Ants* at <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7411.html> and *Pest Notes: Carpenter Ants* at <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7416.html>.

—Mary Louise Flint, UC IPM and Entomology, UC Davis, mlflint@ucdavis.edu

Tiny Thrips Can Cause Unsightly Damage

Late summer can be a prime time for thrips in California landscapes. Your customers may notice the damage but often won't know the cause because thrips are so tiny they are difficult to see without a magnifier.

Thrips (in the insect order Thysanoptera) have small (less than 2 mm), slender, cigar-shaped bodies; piercing-sucking mouthparts, and fringed wings as adults. Most species range from light amber to almost black, depending on the life stage. The life cycle includes a kidney-shaped egg often inserted into plant tissue, two active but wingless larval stages, the nonfeeding prepupal and pupal stages, and a winged adult.

Common Damage

Pest thrips feed on developing plant tissues and can scar or distort leaves, flowers, and fruit. Thrips extract plant cell contents as they feed, so high-density infestations can result in leaves or petals that appear bleached or stippled (Figure 1) and often are dotted with black spots of excrement (Figure 2). Some species of thrips are efficient vectors of certain plant viruses, although this is rarely an issue in the landscape.

Thrips You'll See Most Often

Common pest species on landscape ornamentals include greenhouse thrips (Figure 3), western flower thrips (Figure 4), and the recently introduced myoporum thrips (Figure 5). Greenhouse thrips attack many woody perennials, including *Rhododendron* species, and are usually found feeding in groups on the undersides of leaves. They deposit conspicuous specks of black excrement at feeding sites.

Western flower thrips are common on most flowering plants when pollen is present. Generally flower thrips don't cause damage in landscapes, but high densities can scar and sometimes distort developing flowers such

as roses (Figure 6) and annual bedding plants.

A recent invader to the state, myoporum thrips causes extensive shoot twisting and galling (Figure 7), but only on several species of *Myoporum* landscape shrubs in coastal regions.

Not all thrips are pests, however, and many plant-feeding species also eat pollen, fungi, small insects, or mites. Additionally some species such as the banded-wing (Figure 8), sixspotted (Figure 9), and black hunter thrips are highly predatory and should be considered beneficial and desirable in the landscape.

Management Tools

Most of the time, healthy and vigorous plants, especially woody perennials, will be able to outgrow damage, although damaged plant parts will remain. However, there are several management tactics and products you can suggest to customers who want to reduce thrips damage.

Pruning, hosing, and barriers. Thrips species that cluster together to feed, such as greenhouse thrips and gall-forming thrips such as the myoporum thrips, can be removed by pruning out infested plant parts. In general, interior thinning or long pruning cuts will promote less susceptible tissue than shearing, heading, or short pruning cuts. Pressurized hose nozzles can be used to direct streams of water at infestations in small gardens to dislodge and remove some thrips.

Alternative plant species. For some pest thrips species, alternative plant species or cultivars resistant or unpalatable to thrips can be planted to avoid infestations. For instance, myoporum thrips attack only *Myoporum* species. Advise your customers to replace these plants with evergreen shrubs of a similar form that may be native to California and will never

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Figure 1. Greenhouse thrips causes leaves to turn silvery.



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Figure 2. Black feces and white feeding scars caused by flower thrips.



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Figure 3. Black adult and yellow larvae of greenhouse thrips.



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Figure 4. Western flower thrips adult.



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Figure 5. Myoporum thrips adult.

Thrips Can Cause Unsightly Damage

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be subjected to attack by myoporum thrips; see <http://www.plantright.org/recommended-alternatives-myoporum-laetum> for alternative species.

Biological Control. Predators such as the minute pirate bug (Figure 10), lacewings, predatory thrips (Figures 8 and 9), and predatory mites consume thrips eggs and larvae while tiny wasps parasitize thrips eggs and sometimes larvae. Encourage your customers to conserve these beneficial arthropods by providing floral resources such as pollen and nectar in the landscape and by avoiding broad-spectrum insecticide applications.

Insecticides. Chemical control of pest thrips is often ineffective. Thrips responsible for observed plant damage are often long gone once stippling, bleaching, or scarring is visible. Most thrips species seek out tight crevices, rendering them naturally protected from contact insecticides.

If customers wish to use insecticides, tell them to make sure thrips are still present and properly identified before treating. For greenhouse thrips, which are largely exposed on plant surfaces as compared to other species, you can suggest oil, soap, neem, or pyrethrin products. Direct these sprays at the undersides of infested leaves, as good coverage is required. Damaging populations of more protected species can sometimes be managed using the naturally derived insecticide spinosad. For myoporum thrips, which can be pervasive and potentially damaging to high-value landscapes, applications of dinotefuran



J. K. Clark, UC

Figure 6. Feeding scars from western flower thrips on rose sepals.



F. Dlott

Figure 8. Banded-wing thrips, a beneficial that feeds on mites and other thrips species.



D. Rosen

Figure 7. Gall and twisting of leaves caused by myoporum thrips.



J. K. Clark, UC

Figure 9. Sixspotted thrips, a beneficial that feeds on mites.

have proven effective at providing near season-long control. Always follow label guidelines and practice pesticide safety.

For more photos and information, see *Pest Notes: Thrips* at <http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7429.html>.

—Andrew Sutherland, UC Statewide IPM Program, San Francisco Bay Area, asutherl@ucanr.edu



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Figure 10. The minute pirate bug is a common and voracious generalist predator with a taste for thrips eggs and larvae.

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For more information about managing pests, contact your University of California Cooperative Extension office listed under the county government pages of your phone book, or visit the UC IPM Web site at www.ipm.ucdavis.edu.

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