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Insec(tc)ure*:
Are you insecure about your insect cures?

A UT Urban IPM Lab Newsletter for the Pest Management Industry

Stoy Hedges

We recently lost a great leader in urban pest management. Stoy Hedges passed away at the age of 64 on Sunday, July 9, 2023. Stoy started in the industry from the ground level, employed as a pest management technician while working towards his BS at Purdue University. Stoy quickly worked his way up the ladder, moving from one company to another before landing at Terminix International as their technical director, a position he held for 25 years. About a decade ago, he started his consulting firm and served as editor of one of the most revered books in urban entomology, *The Mallis Handbook of Pest Control*. Many of you had the opportunity to learn from Stoy when he presented at Tennessee pest management meetings or those of the National Pest Management Association. For those new to the industry, there are still many opportunities to learn from Stoy's experiences. Besides his trade journal submissions, Stoy also wrote many books or field guides for the pest management technician. I've used all of his field guides in the image below at one time or another as I've problem-solved a particular pest issue (Figure 1). You may not know that Stoy regularly (almost daily?) forwarded entomological cartoons to many of us urban entomologists. There's nothing like understanding the wit in a classic Gary Larson cartoon to make you relax, smile and chuckle. We will miss Stoy. Earlier this year, several pest management professionals asked me about careers in this industry. Stoy's career is certainly one fine example to emulate. To learn more about Stoy, see http://www.pctonline.com/news/stoy-hedges-obituary/ or read a few of his books.

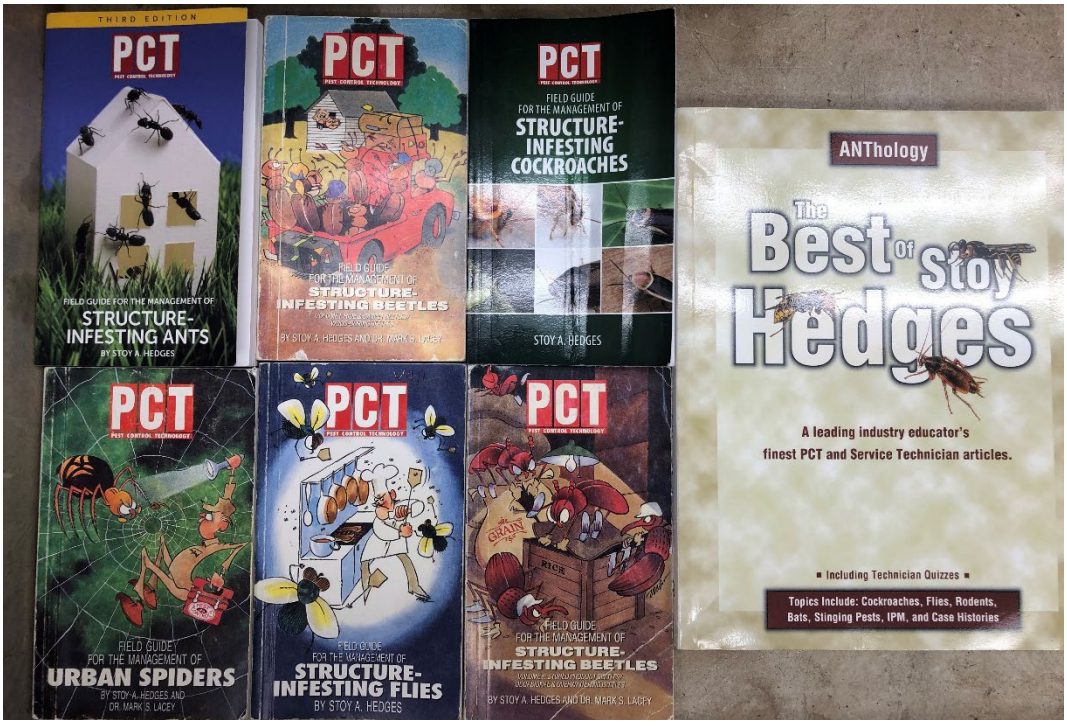


Figure 1. A sample of the pest management educational publications written by Stoy Hedges.

Odorous house ants

Karen Vail and Jennifer Chandler, UT Entomology & Plant Pathology

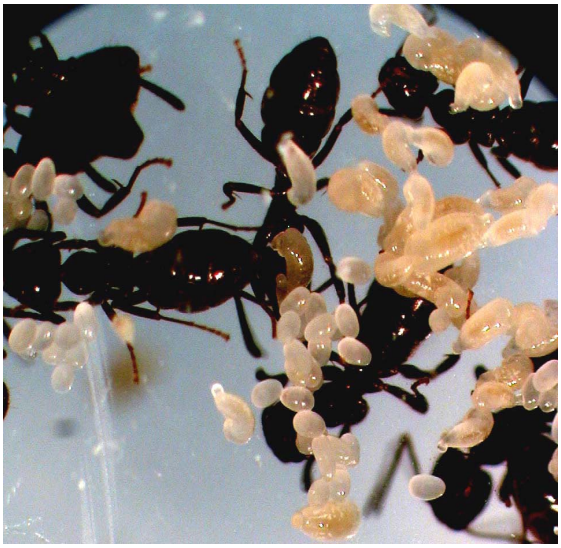


Figure 1. Odorous house ant adults and immatures as seen through the lid of a Petri dish. Photo: UT E&PP

The odorous house ant, *Tapinoma sessile* (Say), or OHA, is considered a pest when it enters structures searching for food, water or nest sites. It cannot sting but may bite if antagonized, i.e., you stick a hand into its nest and vigorously disturb the colony. Winged reproductives are occasionally encountered too. OHAs are common throughout the United States and are the most common pest ant entering Tennessee structures.

DISTRIBUTION

OHA is a small native ant found in the United States, southern Canada and Mexico. It survives in various environments from near sea level to elevations of more than 2 miles, and can be found in all the continental states. Recently, another species very similar to *T. sessile* was found in Tennessee and a few other states, but none of these finds were near structures, so it's unlikely we've confused it with OHA. (More on this when Gary Edwards, a previous student of mine, submits his paper on this new species and it's accepted.) In 2009, OHA was discovered on the island of Maui, Hawaii, and is now characterized as an invasive species.

IDENTIFICATION

OHAs are about 1/8-inch long, dark brown to black (Figure 1), and smell like rotten coconut with a hint of other odors when crushed. Some refer to this smell as a blue cheese odor. Its waist is one-segmented and lacks a prominent node or bump (Figure 2), which easily distinguishes it from other small dark ants, including the Argentine ant. The gaster or abdomen overhangs the waist making the waist challenging to see. OHA lacks a sting or acidopore (circular ring of hairs) at the end of the gaster but instead has a slit-like opening on the ventral side of the gaster one segment from the tip (Figure 3). All OHA workers are similar in size and are monomorphic.

Figure2. Flat petiole of the odorous house ant. Photo: UT E&PP

Figure 3. As with most Dolichoderine ants, OHA has a slit-like opening on the ventral side of the gaster one segment in from the tip. Photo: UT E&PP

BEHAVIOR AND BIOLOGY

In addition to their smell, odorous house ants are named accurately as they are often found foraging along the outside base of a home. Increased indoor activity is often associated with rain. OHA activity can be observed during the day and night. The greatest number of outdoor foragers will be seen when temperatures are between 70 and 86 degrees F. Foraging will continue beyond these temperatures (43-95 degrees F), but forager numbers will

decline at the extremes. In the Mid-South, other ants, such as the little black ant and *Forelius*, will replace OHA at baits at 90 degrees F or higher temperatures. In much of the USA, foraging during the winter is limited chiefly to indoors, although ants may forage outdoors during warm winter days.

Figure 4. OHA tending scale insects. Photo: Susan Ellis, Bugwood.org

OHAs use edges, ridges or other guidelines to move from one place to another. Natural (vines, trees and shrubs) and manufactured objects (siding, ground/foundation wall interface, wires, pipes, conduits, baseboards, counters, floor boards, tile grout, and others) may serve as guidelines. OHAs also may forage in abandoned subterranean termite tubes. Outdoors, OHAs feed on dead and living insects, dead animals (including those deposited by the family cat), pet food, liquid excrement (honeydew) from aphids, scales, and other sucking insects (Figure 4), and plant nectar (Figure 5).

Indoors, they feed on sweets and other human and pet foods. OHAs are often found foraging to water sources and kitchen and bathroom garbage cans.

Figure 5. OHA feeding on rhododendron nectar. Photo: UT E&PP

OHAs do not build nests within mounds of soil; rather, they nest opportunistically. Outdoors, OHA nests in pre-existing spaces that provide some moisture and protection from the sun. They may nest under, near or in logs, landscape timbers, stones, patios, leaves (Figure 6), debris, structural siding (including that laid on the ground), stacked wood or firewood, mulch, pine straw, bee hives, dog houses, or near iris rhizomes. OHA eggs and larvae can stick to each other and to surfaces (Figure 1); they have been found along with workers and other nest members behind the stems of English ivy growing vertically along a building. In dry summers, objects that retain moisture, like porous pieces of wood on the ground, may be more suitable for nesting by OHAs.

Figure 6. OHA nest between layers of leaves. Photo: Jennifer Chandler, UT E&PP

Indoors, they may be associated with food or moisture and can be found beneath the edges of carpets and toilets, in cabinets or drawers, near or under garbage cans, and in other similar places. Indoor nests are often associated with outdoor nests. For example, OHAs foraging on an outside house wall contained dyed sugar water fed to ants nesting in a kitchen cabinet. Either the same ants foraged indoors and outdoors, or the indoor ants shared the liquid food with the outdoor ants in a process called trophallaxis. Often, many nests are present outdoors, with a few found inside.

Figure 7. OHA worker (top left) and three queens. Photo: UT E&PP

OHAs are polygynous (with many queens per colony) (Figure 7), but queen number varies. In natural situations, such as forests, colonies tend to be small and monogyne (with one queen). However, in disturbed, urban environments, many queens and tens of thousands or more workers may be present in a colony with many nests. Workers are more dominant when present in larger numbers (urban environments) than in smaller numbers (forests). In the Midwest, OHAs from colonies with many nests will coalesce to a few in the fall and then expand the number of nests through spring and summer. Even

though this ant has been considered a pest for about 100 years, mating strategies used by OHAs have yet to be completely understood and may include both mating flights and in-nest mating.

MANAGEMENT

Because indoor OHAs are often in contact with outdoor OHAs, management efforts during the warmer times of the year can often be directed to the outside to impact the indoor ants. Steps to manage OHAs include:

1. Correctly identify the ant. See Identification above. OHAs do not readily feed on plant oils. A fire ant bait, which often contains soybean oil, will not be attractive to OHAs and will fail. Argentine ants are very similar to OHAs in appearance, behavior, bait preferences and nest sites; however, worker numbers in Argentine ant colonies exceed that in OHA colonies. While OHA and Argentine ants are managed similarly, confuse Argentine ants with OHAs, and an insufficient quantity of bait may be applied.

2. Remove conducive conditions that allow OHAs to thrive. Determine the food, water and harborage that the home and near landscape (within 10 feet) provide to OHAs and then move/remove as many as possible. See https://www.mypmp.net/2020/09/17/study-environmental-modifications-reduce-oha-numbers/ for an example of how modifying the environment alone reduced OHA populations around a home.

Outdoor items to consider for removal:
• Mulch, pine straw, leaves and wood, siding or debris on the ground.
• Ivy growing on/near the structure.
• Stacked firewood.
• Landscape timbers (use formed blocks or other solid objects instead).

Other outdoor practices to reduce OHA near the structure:
• After pets feed, remove the food bowl and place it in a sealed Ziploc bag or wipe the food bowl to remove any crumbs.
• Manage aphids, scale, mealybugs and other sucking insects on landscape plants close to the structure. Not only will this reduce the food available to the ants, but it could make ant baits more attractive by eliminating competing food sources.
• Trim tree and shrub limbs touching the structure.
• Plant nectar-producing plants away from the structure.
• Dispose of carrion left near the structure.
• Move outdoor garbage cans away from the structure (Figure 8).
• Regularly clean garbage cans.
• Fix dripping faucets.
• Seal pipe penetrations into the structure and other potential ant entryways.

Indoors:
• Clean spills promptly.
• Wash honey jars after use.
• Store food properly to prevent ant access.
• Remove waste regularly, including before vacations, or seal garbage bags when not in use.
• Seal pipe penetrations and similar ant entry points inside the structure.
• Fix leaks quickly.
• If not using ant bait, wipe foraging trails with soapy water or cleaner to remove the pheromone the ants follow. Repeated wiping of indoor trails may discourage these ants from foraging indoors.

Figure 8. Move garbage cans away from the structure. Ants overwintered in the door frame and moved under the garbage can when temperatures warmed in the spring. Photo: UT E&PP

3. Monitor and inspect to locate nests and areas of activity. To help find OHA nests and activity, place index cards with a smear of honey (Figure 9) every 10-20 feet around the base of the structure (Figure 10). Check the cards in 40 minutes and count the number of OHAs. (If cards are left longer than 40 minutes, the ants may abandon the card when all the honey is consumed, or other ant species may locate and defend the food source.) Follow the ants back to their nests and note the nest location.

Figure 9. Place honey-smeared index cards every 10 - 20 ft around the base of the structure. After 40 minutes note the count and record the number of ants. Photo: J. Chandler, UT E&PP

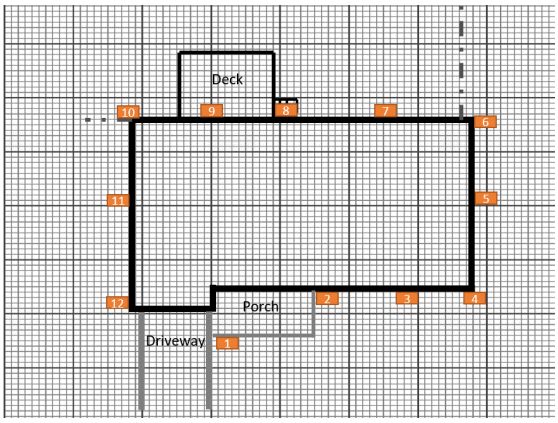


Figure 10. Illustration of bait placement around structure. After 40 minutes note where more than 10 ants are found to remember where to place baits.

4. Bait areas of activity. Bait outdoors where more than 10 OHAs are found per index card. Workers tend to bring bait back to their specific nest and not all of the colony's nests, so placing the stations where the ants are actively trailing is essential. Liquid baits are most efficiently transferred through ant colonies. Placing gel baits in stations allows the bait to stay moist as condensation occurs and rain leaks into the station. Check bait stations regularly to ensure enough bait remains (Figure 11). Gel baits also can be placed in cracks and crevices where the ants are active, but it is difficult to apply enough bait in this manner. Bait also may soak into a porous surface and become unavailable to the ants. Use sweet gel or protein baits for OHAs rather than oil-based ones. Non-repellent, slow-acting sprays can work in conjunction with baits. Avoid using fast-acting sprays, such as pyrethroids, near baits to prevent killing workers before they can transfer the bait back to the colony.

Figure 11. Liquid ant bait is easily transferred throughout the colony. Using large stations, such as the Antopia®, helps reduce the number of refills needed. Place stations where greater than 10 ants were found per card, but always follow bait and label directions. Photo: UT E&PP.

Baiting indoors where ants are active as a sole treatment will most likely provide a short-term reduction in indoor ant foraging. Tens of thousands of workers may be present outdoors, so when an indoor nest is eliminated, it is usually just a matter of time before outdoor ants replace them. Indoor baiting could also encourage indoor foraging. Once baits are placed, do not wipe ant trails or otherwise disturb ants foraging to bait.

5. Treat nests. Because many nests can be found around a structure, it isn't easy to locate all of them. Treating nest sites as the sole treatment method would be most effective when just a few small nests are present.

Finding nests sites may involve lifting objects to expose the nest. Inspect and treat nests simultaneously to avoid disturbing the ants and causing them to move before treatment.

6. Treat perimeter, entryways and areas of activity. A typical perimeter treatment involves spraying the ground/foundation wall interface; the siding/foundation wall interface; and the area around doors, windows and vents. Changes to pesticide labels have restricted the areas where perimeter sprays can be applied. Read labels carefully to avoid misapplying the pesticide and possibly causing unintended run-off. Treat areas of ant activity if allowed by the label. Both slow-acting and fast-acting perimeter treatments can dramatically reduce the number of outdoor foraging OHAs, but they may slowly affect indoor ant activity if baits have not been used.

Figure 12. A fipronil perimeter treatment in combination with liquid bait stations placed where ant counts were 10 or more.

Applying fast-acting crack and crevice sprays or dusts to ants indoors will have little effect on outdoor OHA populations and may prolong indoor activity. Avoid applying fast-acting insecticides to interior cracks and crevices as the sole treatment.

Grzesiek Buczkowski, Purdue University, found that *making early-season preventative treatments when colonies are still small is much better than making curative treatments on extremely large late-season populations*. Although his currently unpublished studies involved multiple bait and spray treatments over multiple seasons, they did not include fipronil.

7. Combine the above. Integrated pest management relies on multiple tactics, and managing OHAs is no exception. The best OHA management results will be achieved by combining the above practices. Correctly identifying the pest ant and correcting conducive conditions are musts when managing OHA infestations. Monitoring and inspecting to note nest location and activity is especially helpful. Combining different chemical treatments should increase pest management success. For example, combine a slow-acting exterior perimeter treatment (e.g., fipronil) with a bait in an outdoor station where ants are active (Figure 12), or apply a slow-acting spray (e.g., chlorfenapyr) to interior cracks and crevices with an exterior perimeter treatment with a slow-acting spray (e.g., fipronil).

For an example of products registered for OHA in Tennessee, see https://extension.tennessee.edu/publications/Documents/W658.pdf.

For other odorous house ant and pest ant resources, see the eXtension website at https://ant-pests.extension.org/.

VIDEO

eXtension webinar: Don't let tramp ants take over your home https://www.youtube.com/watch?v=bokqEIgNbMo

Thus article was modified from Vail, K. and J. Chandler. 2018. W 473 Odorous house ants: The most common house-invading ant in Tennessee. https://extension.tennessee.edu/publications/Documents/W473.pdf

Upcoming educational events by UT.

GET Educated.

9TH ANNUAL TENNESSEE BED BUG, COCKROACH & RODENT MANAGEMENT MEETING

WEDNESDAY AUGUST 2, 2023

UNIVERSITY OF TENNESSEE CONFERENCE CENTER | 600 HENLEY STREET | KNOXVILLE, TENNESSEE 37902

Check-in starts at 8:00 AM | Meeting 8:30 – 4:30 EDT

See https://bedbugs.tennessee.edu/resources/events/ for the finalized schedule, CEU assignment and registration information.

Have you encountered a challenging pest problem? We have previously created the bed bug, cockroach and rodent problem-solving scenarios used during this annual meeting. This year, we invite you to submit pest scenarios you want the meeting participants to solve. Remember the audience will be a mix of pest management professionals, housing personnel and social workers. An example is provided below. Please send your scenario description and accompanying photo to jchand11@utk.edu by July 26, 2023.

Self-Treaters

In every building that we've conducted building-wide bed bug inspections, residents in numerous apartments were treating the bed bugs themselves even though pest management was provided at no additional cost to them. We would find old and recently dead bed bugs. Monitors were placed under or against the legs of upholstered furniture and beds. Two to four weeks later, we returned to inspect the monitors. Sometimes living bed bugs were found, other times not. Three years later, we return for a building-wide inspection and find the bed bugs have persisted in these self-treaters' apartments! How do we change these resident behaviors, i.e., stop residents from self-treating as it is not effective?

ACE (Associate Certified Entomologist) Prep Course

Fall 2023

Are you certified in pesticide applicator category 7 with a minimum of 5 years of verifiable pest management experience in the United States? Then you may be ready to become an ACE, an associate certified entomologist. Before you can become an ACE, you will need to provide two letters of professional reference, be willing to adhere to the ACE Code of Ethics, complete the application and pay the application fee to the Entomological Society of America and pass an online test of your knowledge of structural pest control. The program and its benefits are explained in its entirety at https://entocert.org/ace. The application process is separate from the training offered below.

To help you prepare for the exam, Dr. Karen Vail, Extension Urban Entomologist of the UT Department of Entomology & Plant Pathology will provide an ACE Prep Course this fall. All training sessions will be virtual and held 5 – 6 pm on select Mondays via Zoom. A new Zoom link will be sent each week. By offering online training, we no longer limit participants to be within a few hours' drive of campus!

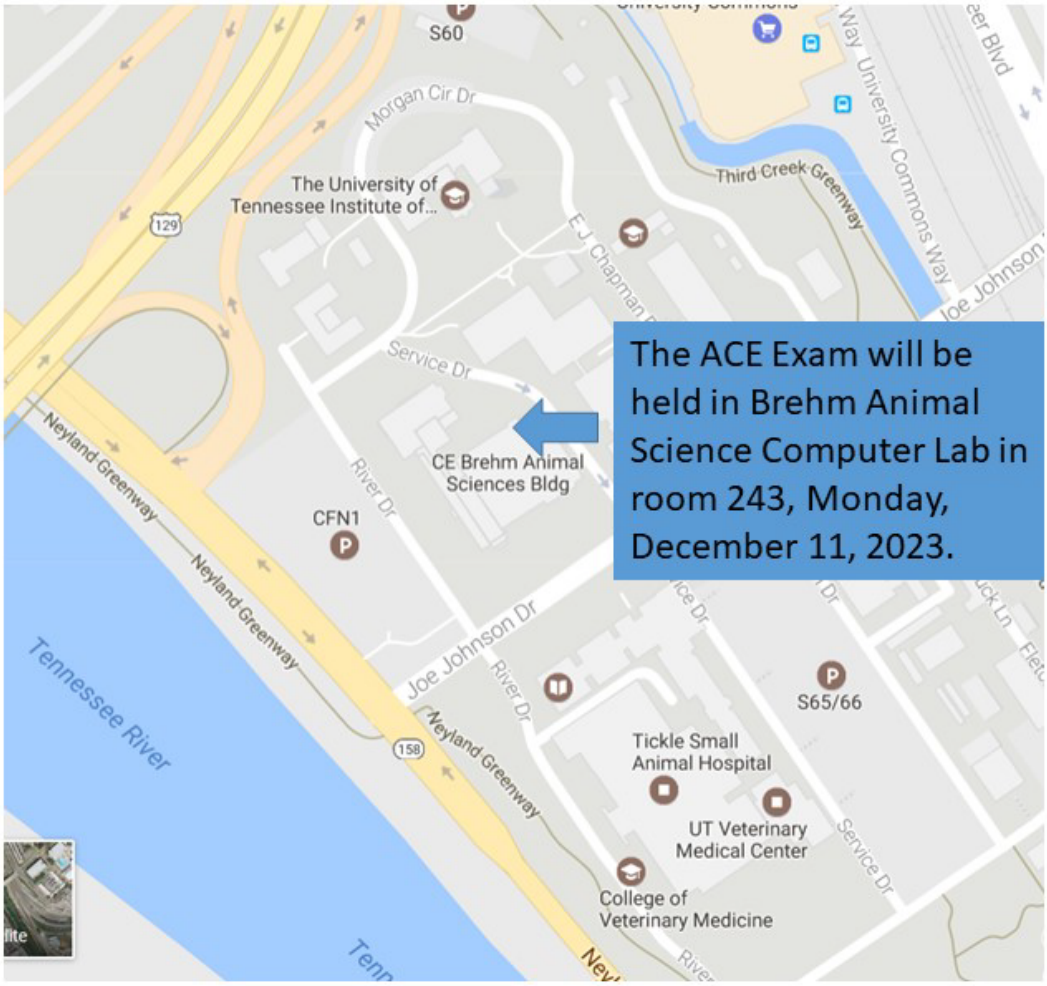
2023 Training Date	Subject
September 11	Integrated Pest Management and Tools
September 18	Insecticides and Modes of Actions
September 25	Pesticide Safety, Laws & Labels
October 2	Insect Biology and Morphology
October 9	Ants
October 16	Cockroaches
October 23	Flies
October 30	Stinging and Biting Arthropods
November 13	Stored Products Pests
November 20	Occasional Invaders
November 27	Wood-destroying Organisms
December 4	Common Commensal Pests/Review
December 10	Specimen review in the afternoon
December 11* 5 pm – 8 pm	**Exam (limited to 15)***

*The ACE exam will be given in room 243 Computer Lab of the Brehm Animal Science Building.

You can register for all classes of the ACE Prep Course at one time for a discounted price of $300 or pay $30 for each class as long as you register at least one week before the training date. Enrollment is limited to 25 per training date. One Tennessee recertification point per session. The course will only be held if at least 5 register before August 31st.

Register for the UT ACE Prep Course online at
https://tiny.utk.edu/ACEPrepFall2023

ACE Exam Location - UT Institute of Ag Campus Map



As long as it's after 5pm, you can park in lot CFN1.

We suggest you purchase the *IPM for the Urban Professional: A Study Guide for the Associate Certified Entomologist* from ESA (https://entocert.org/ace/resources) and the *NPMA Field Guide to Structural Pests* (https://ebiz6personal.npmapestworld.org/UI/ProductDetails.html?productId=703) prior to taking the training. The NPMA manual is also available as a downloadable phone app (available for Apple iOS or Google) and comes with an annual fee. The ESA study guide is discounted when you purchase it with your ACE application. In the past, shipping of the manuals has been greatly delayed, so order the manuals as soon as you sign up for the class!

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Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label and registered for use in your state.

Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), the University of Tennessee Institute of Agriculture and University of Tennessee Extension assume no liability resulting from the use of these recommendations.

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