



TEXAS A&M FOREST SERVICE

Forest Health: Texas Leaf-Cutting Ant

The Texas leaf-cutting ant (*Atta texana*) is a serious pest in recently-planted pine plantations in East Texas and west-central Louisiana, and in the citrus groves of South Texas. Treatments to eliminate nearby colonies are routinely required to successfully establish pine seedlings in areas where leaf-cutting ants are abundant.

In a 1981 survey of forestry industry within East Texas the Texas leaf-cutting ant was rated third in relative pest importance, exceeded only by the southern pine beetle and fusiform rust. In an average year in East Texas, this ant kills pine seedlings on nearly 12,000 acres, and control and seedling replacement costs average \$2.3 million. This insect also can be a considerable pest in residential areas within its range by foraging on ornamental shrubs, rose bushes, fruit trees or in gardens. Harvested plant material is used to cultivate a fungus which serves as the ants' principal food source.

The Texas leaf-cutting ant (also called town ant, parasol ant, or cut ant) is the most northern representative of the genus *Atta*, considered among the most destructive insects of plants in the tropical and subtropical Americas. Leaf-cutting ants are generally confined to well-drained, deep sandy soils. There are 129 Texas counties and 13 Louisiana parishes where Texas leaf-cutting ants are known to occur. This species also is reported in at least two states in north-eastern Mexico.



Texas leaf-cutting ant castes are comprised of the winged reproductives, or "alates, (female queens and male drones having wings), and wingless workers. The queen is the reproductive center of the colony and lives in chambers below the ground. Many colonies have five or more fertilized queens. Most eggs laid by the queens develop into sterile female workers. The workers (2 million or more) vary considerably in form and size; from 1/16 to 1/2 inch. Generally, large workers (soldiers) serve to protect the nest while medium-sized workers forage for plant material and construct tunnels and chambers, and the small workers maintain fungal gardens and care for brood ants.



During the spring months, some immature ants will develop into winged males and others into winged females. Workers will emerge at this time to widen entrance holes and remove all vegetation hanging over these holes. Mating flights then occur on clear, moonless nights following a rain of at least 1/4 inch, primarily in May and June. Mated females disperse, land, and then congregate with other females to establish a new colony. Each female carries with her a plug of fungus to begin a new fungal garden.

The nest area of the Texas leaf-cutting ant is marked by characteristic crescent-shaped mounds. Each mound surrounds an entrance hole. The above-ground portion of the nest consists of a central nest area (mound density > 5 mounds/yd²) and peripheral foraging mounds. Nest size

Forest Health: Texas Leaf-Cutting Ant

varies from that of a single mound (starter colony) to more than 1000 mounds occupying up to 1 acre. Underground, tunnels extend from the entrance holes to other tunnels or chambers that are constructed as deep as 25 feet.

Three types of chambers have been observed: 1) garden chambers-- where plant material is incorporated into fungal mats and where brood ants develop; 2) detritus chambers -- where waste materials are stored; and 3) dormant chambers -- of unknown function.



In addition, lateral tunnels extend to foraging mounds as far as 1' from the central nest area. Worker ants, emerging from foraging mound holes, will often construct well-defined foraging trails that extend out an additional 300 feet or more in the search of a suitable plant source.

Activity of the ants above ground depends largely on temperature, as foraging ants are highly sensitive to temperatures encountered along feeding trails. During the summer, the ants remain underground during the heat of the day, often plugging the central nest holes with soil and vegetative debris, apparently to regulate temperature and/or humidity within the nest. At dusk, when temperatures drop below 86°F, ants emerge to forage throughout the night.

In the winter, ants forage during the day primarily from entrance holes above the central nest, but sometimes remain underground for extended periods when temperatures remain below 50°F. Early spring and late fall are transitional periods when ants may be active both during the day and night.



The worker ants forage on a wide range of plant species. However, damage to pine seedlings occurs primarily during winter months (December through March) when grasses and weeds have died back and hardwood leaves have fallen. The ants forage on all species of southern pine, but given a choice the ants appear to prefer loblolly and shortleaf pines over longleaf and slash pines,

perhaps in response to differences in resin production.

When foraging on pine seedlings, the ants will completely strip the seedlings of foliage and buds and often clip off the stem at ground level and carry small plant fragments back to their nest. All seedlings within five acres or more around a central nest area can be killed within a month after seedlings are planted.

Amdro® Ant Block (hydramethylnon, Ambrands) is one of the options currently-available to control *Atta texana*. Amdro® Ant Block is distributed in 1.5 pound containers by Red River Specialties and most retail stores. The bait is easily applied by mechanical spreader or by hand (wearing gloves) to the central nest area. Applications can be made in all seasons, but treatments should be postponed during periods of prolonged rain or freezing weather. Once the bait is applied, foraging ants search out the pellets and carry them underground. The first signs of control will be a reduction in foraging and excavation activity usually within 5 - 7 days after bait application. These activities will gradually stop and the colony will become inactive within 2 to 3 weeks.

Another control option is the recently-registered insecticide PTM™, containing fipronil. When injected directly into leafcutting ant entrance/exit holes, it offers a more effective control than does Amdro® Ant Block, based on field trials in East Texas. Within 1-2 weeks following treatment, soil excavation and ant activity are greatly reduced. Within 4-8 weeks, the colony becomes completely inactive. PTM™ insecticide should be applied to the colony at least 4 weeks before tree planting is initiated.

When planting pine seedlings on deep, sandy soils within the geographical range of this insect, efforts should be made to find and treat all leaf-cutting ant colonies located in or near areas to be planted. Untreated colonies will remain a source of reinfestation and future losses. Colonies can be located most readily during the late fall and early winter when the ants are active and their mounds are not hidden by vegetation.

For more information on Texas leaf-cutting ants or control methods, contact a regional forest health specialist with Texas A&M Forest Service in Lufkin (Phone: 936-639-8170; e-mail: bupton@tfs.tamu.edu) or Austin (Phone: 512-339-6329; e-mail: jhouser@tfs.tamu.edu)