Ants

Pesticide Safety Technical Note

Number 1

OFFICIAL

Contents

Ants

Ants belong to the family Formicidae, within the order Hymenoptera. This order also includes bees and wasps. Ants are of ecological importance for their roles as predators and scavengers, in seed and pollen dispersal, and in soil structure. In Australia there are over 4000 known species of ants. Only a handful of these (mostly introduced species) are considered pests. Pest ants often nest in and around buildings, congregate in food preparation areas and have the potential to spread disease. Ants feed on a wide variety of foodstuffs and can be predators or scavengers.

They are social insects that usually live-in permanent nests. In adverse conditions a change of nest site is not uncommon. Colony sizes vary; nests can range from a few dozen, to millions of individuals. Larger colonies

consist mostly of sterile wingless females which form castes of ‘workers’. Workers may be specialised, for example into minor and major (or soldier) castes. These perform specific tasks, such as feeding and caring for the immature forms, and appear physically different. Nearly all ant colonies have fertile males called ‘drones’ and one or more fertile female called ‘queens’. Contrary to common belief ants are not related to termites and cannot damage sound timber.

Morphology

Most species of ant have three distinct body segments: head, thorax, and abdomen. Small, constricted abdominal segments (the pedicel) connect the thorax and abdomen, giving the ant a ‘waist’. When viewed under a powerful lens, the pedicel may contain projections called nodes, which are useful in identifying the ant species. Ants have compound eyes and ‘elbowed’ antennae. The ‘elbowed’ antennae and constricted abdominal segment make ants distinct in their physical appearance when compared to other insects. Ants may or may not have wings. If wings are present, the forewings are larger than the hind wings.

Life cycle

The life cycle of an ant consists of four stages: egg, larva, pupa, and adult. Eggs are small and ovoid in shape. Fertilised eggs become females (usually sterile workers), but at certain times also fertile females (which can potentially become queens). Unfertilised eggs become males. The larva is a white grub with a narrow head. Adult workers feed the larvae and after sufficient feeding and several moults, the larva pupates. The pupa is similar in shape to the adult but is usually soft, white, and inactive. In some species the pupa is protected by a silk cocoon. Once the adult emerges, its cuticle hardens and darkens. The development from egg to adult may take from six weeks to very long periods, depending on the species, season, and food availability.

Communication

Ants communicate with each other using chemical signals called pheromones. Ants use pheromones to leave trails for food sources, to send alarm signals for help and to differentiate between caste groups. Pheromones are detected by ants through their long, thin antennae, which can also perceive smells.

Chemical control methods

Cleaning up and limiting food particles and residues around the house may reduce infestations. Food left outside (for example pet food) can also attract ants near the house. A number of pesticide formulations can be used for ant control.

Sprays

Surface sprays may be applied to nesting sites, travel routes such as cracks in paths, walls, skirting boards and door frames, and areas where ants gain access to the building such as windowsills, door jambs, wall voids, cupboards, cracks, and crevices. When combined with good hygiene, surface sprays should provide suitably long-term prevention. Be aware that space sprays are only of limited use in ant control. They can be applied to sites of activity but are more useful for treating nests located in enclosed spaces.

Dusts

Dusts may be applied directly to nesting sites, or sprinkled lightly on surfaces where ants travel. Dusts are particularly useful in sensitive areas such as electrical power boxes and in roof voids. Dusts are not effective outside as they may become unsettled, and they must remain dry to be effective. They should always be applied lightly and carefully to avoid the risk of human’s exposure to them.

Baits

Ant baits are useful when sprays and dusts cannot be used (for example in hospitals), or when the nest cannot be located. Baits are particularly useful in controlling some species of ant, but baiting may be a relatively slow procedure, so it requires patience and perseverance. The bait is collected at feeding sites by workers, who return to the nest and distribute it to the rest of the colony. If successful, this results in eradication of the entire colony. The bait must be a formulation that is attractive to the species being controlled. When placing baits, the safety of children and pets should be considered.

General treatment procedure

Unless otherwise specified, the following provides a general protocol for the treatment of ant infestations:

- Inspect the house and surrounding area, following ant trails to locate nesting sites and determine where ants are entering and feeding.
- Identify the species of ant and determine the most appropriate control measures.
- If possible, treat the nest directly. Direct treatment of the nest usually provides the most effective control. Alternatively, treat the surfaces where ants are most active, using either sprays or dusts. It is important that any barrier treatments are comprehensive as ants are adept at finding new routes to a food source. Use baits as appropriate, or where other forms of pesticide cannot be used.
- Clean up food particles and other attractants.
- Ensure the client understands that hygiene levels must be maintained to achieve complete control. Follow-up treatments may be required for severe infestations.

Major pest species

Singapore Ant

Figure 1 Singapore Ant

(Monomorium destructor)

Singapore ants are an introduced species. They are light brown in colour with a darker posterior abdomen. These ants are 1.5 - 3mm long and can inflict a painful sting. Singapore ants are attracted to plastics in electrical, irrigation and other equipment. They frequently nest in power sockets and chew on electrical wiring and have been responsible for electrical fires. They form slow-moving trails and feed on a variety of foodstuffs, probably preferring animal-based materials to sweets.

Argentine Ant

Figure 2 Argentine Ant

(Linepithema humile)

Argentine ants are slender, brown in colour and between 1.5 – 3mm long. They have eyes close to the base of their antennae and no spines on the thorax. They are an introduced species and do not produce a smell when crushed. Argentine ants travel in slow-moving, well-defined trails up to three or more ants wide. They are able to climb over anything placed in their way. They are often seen on the trunks of trees and shrubs as their primary food source is the sweet honeydew produced by aphids and scale insects.

Argentine ants prefer sweet foods but may also eat meat and dead insects. They usually nest outside, in the bases of tree trunks, around the edges of buildings and paths, and in lawns. They may move indoors in wet weather. There are multiple queen ants in each nest and multiple nests may be interconnected with an exchange of queens and workers. Argentine ants do not have a soldier caste. An entire infestation from a single colony can cover several hectares. An entire block may need treatment for Argentine ants. The

perimeter of the block should be sprayed, as should the foundations of the building (for half a meter up and out from the foundations). Nests, trails, edges of paths, driveways, the butts of trees, large shrubs, and the areas around rubbish bins and taps should also be treated. Ants can re-colonise from a neighbouring area within two weeks, and a second spraying is often required.

Whitefooted House Ant

(Technomyrmex albipes)

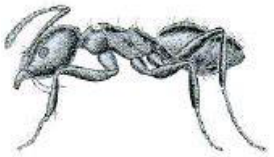

Figure 3 Whitefooted House Ant

Whitefooted house ants (also known as Black ants in Victoria) are shiny black ants, uniform in shape and size, 2.8 - 3.5mm long. They have a large abdomen and under a microscope, these ants have light-coloured feet. They are an introduced species and bite, but don't sting. Whitefooted house ants are most common in moist, forested habitats and are more active at night. Worker ants frequently enter houses through small cracks and, on finding a suitable food or water source, form trails with many workers travelling between their nest sites and the food source.

In general, they nest outdoors but will sometimes establish small nests indoors (for example in wall cavities, behind cupboards and skirtings, and even small empty storage containers) near a well-maintained food supply. These ants prefer sweet foods but will also eat meats. Each nest has one winged queen and many fertile, wingless 'intercastes' which has enormous reproductive potential. At some point 'budding' of the colony may take place, where a wingless reproductive and a large number of workers (who carry larvae and pupae with them), leave the parent colony and establish a new colony a short distance away.

Therefore, mass migrations of ants, carrying their white babies in their mouths, may be observed. These ants can often be controlled using baiting methods. This will require some patience, and fresh bait will need to be put out daily. If ants are re-infesting from a nest outside, spraying of the nest, and perhaps walls or building foundations may be required.

Black House Ant

(Ochetellus glaber)

Black house ants are 2.5 - 3mm long, and intensely black in colour with a sometimes subtle, purplish-green iridescence. They are smaller and stockier than the Whitefooted house ant and produce a distinctive strong odour when crushed. However, the smell is reportedly undetectable to some. These ants bite, but don't sting and are an introduced species. Black house ants may import and tend aphids and other bugs on domestic pot plants. They nest outside around the edges of paths, rockeries, and other structures, and commonly nest indoors in ceilings, cavity walls and subfloor areas. They prefer sweet foods but will eat a variety of foodstuffs.

Pharaoh's Ant

(Monomorium pharaonis)

Figure 4 Pharaoh's Ant

Pharaoh's ants range from light yellow brown to darker brown in colour. They are 1.5 - 3mm long and do not produce an odour when crushed. Pharaoh's ants are an introduced species with no soldier caste. These ants are found in large colonies, with many queens. They commonly nest within the warmer areas of buildings (areas adjacent to heating ducts for example). They are frequently found in hospitals and nursing homes. The workers may forage over large distances for food.

The Pharaoh's ant prefers high protein foods such as meat and blood as well as fatty foods and vegetables. Pharaoh's ants should not be sprayed as this will fragment the colony, causing groups to 'bud', or split-off to form new colonies. Fragmenting the colony tends to worsen ant infestations. For best results, place baits in all

locations that the ants have been detected. This strategy may take months to achieve control but is the most effective and comprehensive method.

Coastal Brown Ant

Figure 5 Coastal Brown Ant

(Pheidole megacephala)

Coastal brown ants are shiny and light to dark brown in colour. Workers are 1.5 - 3mm and soldiers 3.5 - 4.5mm with large heads and powerful jaws. They give a relatively painless sting and are an introduced species. These ants generally nest outside around paths and rockeries, where trails may be seen. In an infestation they are often located in the walls of houses, in wall crevices and behind skirtings. They prefer food of animal origin, including dead insects, meat, and grease. There are multiple queens in each nest and nests are characterised by a number of interconnected holes.

Carpenter Ant

(Camponotus spp)

Sometimes called sugar ants, Carpenter ants are one of the most common and widespread groups of ants in Australia. Species vary greatly in size and colour, ranging from about 2.5 - 14mm in overall length, and from brown to pale brown in colour. They don’t sting but may bite. Carpenter ants rarely enter houses. Nests are commonly found in decaying wood, soil, between rocks, among the roots of plants and in twigs on standing shrubs or trees. These ants seldom tunnel into dry, sound wood, preferring to excavate moist, rotting wood and other soft materials to make nests. Thus, the Carpenter ant rarely causes structural damage. Carpenter ants are usually nocturnal, will often travel long distances for food, eating live and dead insects as well as sweet foods and household waste. Ensure the client understands that hygiene levels must be maintained to achieve complete control. Follow-up treatments may be required for severe infestations.

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