

Fire ant treatments

Products used to treat fire ants in NSW

Fire ants (*Solenopsis invicta*) are one of the world's worst invasive species, with the ability to severely impact our environment, economy, agricultural industries, health, and our Australian way of life.

This guide aims to help NSW residents understand the treatments used to eradicate fire ants detected in NSW.

Pyriproxyfen

Insect growth regulating hormone, also called an IGR. The product used is called *Distance®* Ant Bait and contains 5 g/kg of the active ingredient **pyriproxyfen** in a bait made of corn grit and soybean oil (see the <u>product label</u> and the <u>Safety Data Sheet</u>). *Distance®* Ant Bait is used to treat fire ants in NSW under APVMA permit PER87728.

s-methoprene

Insect growth regulating hormone, also called an IGR.

The product used is called *Engage®* Ant Bait and contains 5 g/kg of the active ingredient **s-methoprene** in a bait made of corn grit and soybean oil. It is an un-registered product approved for use under APVMA permit (see the product label on page 5 of the <u>APVMA</u> permit PER81094 and the Safety Data Sheet)

Engage® Ant Bait is used to treat fire ants in NSW under APVMA permit <u>PER81094</u> or <u>PER90213</u>.

Fipronil

Residual contact insecticide.

The product used is called *Termidor® Residual Termiticide and Insecticide* and contains 100 g/L fipronil (see the <u>product label</u> and the <u>Safety Data Sheet</u>) *Termidor® Residual Termiticide and Insecticide* is used to treat fire ants in NSW under APVMA permit PER14458.

These products are registered or approved by the Australian Pesticides and Veterinary Medicines Authority (APVMA) and used according to the product labels or APMVA permits. Their application in NSW is regulated by the NSW Environment Protection Authority.

How do the products work?

Pyriproxyfen (contained in *Distance®* Ant Bait) and **s-methoprene** (contained in *Engage®* Ant Bait) work like



A note on product labels, safety data sheets and permits:

The product label is a legal document that outlines how the product can be used (including target pest, crop or situation, application methods, and weather conditions), as well as re-entry and withholding periods, storage, disposal, safety, and first aid instructions.

All users are required to follow the label instructions.

The Safety Data Sheet (SDS) details the product's ingredients and the potential health hazards of chemicals present. It also provides first aid and precautionary information for accidents or spills, along with safe transport, handling, and storage guidelines. This information is essential for toxicologists, medical professionals, and safety personnel.

Label and SDS warning statements communicate the product's toxicity hazards. The directions, restraints, and critical comments ensure the product is used safely. To protect the environment, including plants, animals, and humans, the APVMA assesses the human health and environmental risks before registering any product or issuing a permit for its use.

APVMA permits, which are also legal documents, allow a product to be used for a purpose not specified on the product label, such as the treatment of fire ants in NSW.

All conditions outlined in the APVMA permit must be followed by all users. The permit overrides any label statement where there appears to be a conflict in conditions or instructions.

*Important Information:

Fire ant treatment in NSW can only be done by officers authorised under the NSW Biosecurity Act 2015. It is an offence for an unauthorised person to treat fire ants in NSW. This information is provided to help people in infested areas understand the treatment process.



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a contraceptive, reducing the queens' ability to produce eggs and preventing new workers from developing.

Once all the existing worker ants have died of natural causes the queen starves as there are no workers left to feed her.

This process can take up to three months. The production of new queens and males is prevented, stopping further spread from the colony.

These products are used to treat areas around houses with hand-held spreaders, and large areas of land with broadcast treatments where fire ants are suspected to be present.

A mated queen can fly up to 5 km from the nest and establish a new colony.

For successful eradication, this 'flight risk zone' must be treated to destroy any new colonies not yet visible on the surface.

After the baits are spread, the corn grit and soybean oil break down within 3 days.

Fipronil (contained in *Termidor® Residual Termiticide and Insecticide*) is used to treat fire ant nests through a technique called *direct nest injection*.

In this process, the fipronil is injected directly into the nest and rapidly kills the queen and all the workers it contacts by disrupting their nervous systems.

Key information:

After the IGR baits are spread, the corn grit and soybean oil break down within 3 days.

Where have these products been used to treat fire ants in NSW?

In NSW both **pyriproxyfen** and **s-methoprene** have been used to treat the flight risk zones around the infestations at South Murwillumbah and Wardell.

The baits were applied using hand-held spreaders, vehicle mounted spreaders, drones and helicopters depending on the area to be baited, physical access, terrain and the number of dwellings.

The decision on whether to use **pyriproxyfen** or **s-methoprene** is based on distances from waterways and weather forecasts.

In NSW, **fipronil** was applied directly to the fire ant colonies at Murwillumbah and Wardell using direct nest injection.



Gi cc

Granular bait (corn grit and soybean oil) containing an insect growth regulator such as pyriproxyfen or s-methoprene.





Direct nest injection with fipronil mixed with water.

How is their use restricted?

Pyriproxyfen (*Distance®* Ant Bait) is not allowed to be applied:

- directly to water
- within 8 metres of waterways when using ground-based equipment
- within 20 metres of waterways when applied from aircraft*





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- in areas where poultry are feeding or grazing (but poultry can feed and graze baited areas 24 hours after application) *
- ▲ where rain is expected within 6 hours
- *See the label and permit for full details on application.

s-methoprene (*Engage® Ant Bait*) is not allowed to be applied:

- over grain cropping areas other than cereal grains
- into water bodies at a distance greater than 1.5 metres from the bank
- in orchards/ tree crops where produce is harvested from the ground and bait is likely to contact fallen produce
- directly to crop plants where washing does not occur after harvest*
- where heavy rain or irrigation is expected within 3 days

*See the label and permit for full details on application.

Fipronil (*Termidor® Residual Termiticide and Insecticide*) can only be applied to confirmed fire ant nests, and only directly to the nest itself and minimally to the 1 m area around the nest using the manual nest injection method. It is not allowed to be applied:

- to surrounding areas
- ▲ as broadcast treatment by aerial application
- if the application is likely to cause runoff of the product or contamination of streams, rivers or waterways
- ▲ to excessively wet soils
- immediately after or during heavy rain
- ▲ to areas to be cut or grazed for stock food unless the 28 days withholding period is observed

Aerial treatment

Distance® Ant Bait and Engage® Ant Bait have been dropped by helicopters or drones in certain parts of NSW where properties are over five hectares in size. Termidor® Residual Termiticide and Insecticide is never applied from any type of aircraft.

Helicopter and drone use is regulated by the Civil Aviation Safety Authority (CASA). CASA requires helicopters to drop bait more than 150 m from houses. Helicopters are GPS tracked to monitor bait distribution.

Pilots avoid houses and water tanks when delivering bait. Property owners and tenants are consulted so that safe and effective treatment is planned for each property. CASA regulations prevent drones from being flown over densely populated areas or within 30 m of a person.

Certified organic production lands

NSW organic producers who are notified of future broadcast treatment over certified organic properties, should consult their relevant bodies to ensure compliance.

How much is applied?

Both *Distance®* Ant Bait and Engage® Ant Bait granules are applied at the rate of 2 kg per hectare but the amount of **pyriproxyfen** or **s-methoprene** in that amount of bait is only 8-10 g per hectare.

For the average 500 m² residential block, this equates to 100 g of bait (less than one cup) and 0.5 g (as much as a paper clip weighs) of active ingredient being applied to the whole property.

Termidor® Termiticide and Insecticide (containing **fipronil**) is applied in a highly diluted solution which is injected down into the nest to spread through the underground tunnels and chambers.

The low dosage does not raise alarms with the ants but kills them within hours.

The amount of **fipronil** injected into each nest (0.25 g per litre of water) is about the same as the amount of fipronil in a monthly flea and tick treatment for a large dog.

Are these products safe for humans, pets, livestock, horses, bees, poultry or native ants?

Pyriproxyfen (Distance® Ant Bait)

Pyriproxyfen can be harmful to some aquatic life and can't be used close to waterways.

Studies show there is no evidence that **pyriproxyfen** causes harm to the general population and there is also no evidence of adverse effects of this compound on the human immune system.

Pyriproxyfen has been assessed by the World Health Organization (WHO) for use in drinking water as a control for mosquitoes carrying dengue fever.

The Organisation declares **pyriproxyfen** is 'unlikely to present an acute hazard' when used in accordance with product labels.

Pyriproxyfen is used in flea treatment for cats and dogs and in household insect pest treatments.



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s-methoprene (Engage® Ant Bait)

In Australia, **s-methoprene** has been approved by the Australian Pesticides and Veterinary Medicines Authority (APVMA) for use in potable drinking water for treatment of mosquitoes, and is safe for humans, animals and the environment.

The World Health Organization also approves use of **s-methoprene** in drinking water and water bodies to control the spread of mosquito borne diseases.

Studies show that low levels of **s-methoprene** such as those used in mosquito control (which are higher than levels used in fire ant bait) have no detectable effects on other water-living plants and animals.

s-methoprene is commonly used in Australia to control a wide range of insect pests including fleas on cats and dogs, mites on pet rabbits and rats, lice on pet birds, and insect pests in stored grains.

s-methoprene has been well studied by the United States Environmental Protection Agency and found to be nontoxic to mammals, birds and plants, and not harmful to the environment, ecology and landscape of treated areas.

Fipronil (Termidor® Residual Termiticide and Insecticide)

Fipronil is registered by the APVMA for use in a wide range of household products including pet care flea treatments, lawn care and termite control products.

Safety

Human health

Both **pyriproxyfen** and **s-methoprene** were assessed by the Therapeutic Goods Administration (TGA) and determined they did not require scheduling under the Poisons Standard, due to low toxicity when used in agricultural applications.

Both **pyriproxyfen** and **s-methoprene** are deemed safe by the World Health Organization (WHO) and studies show there is no evidence of adverse effects from the use of either product on human health.

As both *Distance®* Ant Bait and Engage® Ant Bait contain corn grit and soybean oil, people or animals with corn or soy allergies may react if they touch the granules.

Treated cereals, oilseeds and pulses have a withholding period of 1 day.

Permit directions require fruit and vegetables for human consumption that have had contact with the





Fire ants construct complex underground networks of tunnels and chambers. Direct nest injection floods the chambers, killing the colony within hours.

bait to be washed after harvest. Crops with edible parts underground don't need to be washed after harvest (carrots, potatoes and onions for example).

People should avoid disturbing (ploughing, mowing, watering) baited areas for 48 hours to give fire ants a chance to take enough of the bait to destroy the colony.

Termidor® Termiticide and Insecticide (containing **fipronil**) is a Schedule 5 product under the <u>Poisons Standard</u> with a low potential for causing harm. Safety directions are on the label.

Off-target impacts to people are further prevented by restricting access to treated nests until the soil has dried.

Native ants

Because they are insect hormones in a bait which is attractive to ants, both **pyriproxyfen** and **s-methoprene** may affect native ants that take the baits.

However, research shows broadcast treatments with **pyriproxyfen** or **s-methoprene** have no long-term negative impacts on native ant populations, as the native ants move back into areas once fire ants are gone.

The presence of fire ants in our local environment has a much greater negative impact on native ants than any localised impacts from broadscale treatments.

Fipronil will kill native ants, but as it is injected directly into known fire ant nests, native ants are not affected.

Bees

Pyriproxyfen and **s-methoprene** can affect bee larvae, but foraging bees are not attracted to the baits. Direct exposure from application to hive locations is unlikely due to the granular nature of the baits. Bait products are not environmentally persistent and



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degrade rapidly. Fire ants are a greater threat to bees as they take over hives and destroy bee colonies.

Fipronil is toxic to bees, but as it injected directly into known fire ant nests, bees are not affected.

Pets, livestock and horses

Engage® Ant Bait and Distance® Ant Bait are safe for use around mammals, including pregnant and lactating animals.

After the bait is broadcast, it is practically impossible for dogs, cats, cattle or horses to eat enough bait to become unwell. Cattle and horses do not need to be relocated when these products are used.

Neither product will impact the performance of racehorses and the active ingredients are not listed as banned or controlled substances by the world governing body for equestrian sports.

Fipronil is toxic to pets and livestock at high doses, but as it is only applied directly to known fire ant nests, pets and livestock will not be affected but should be kept away from the treated nest until the soil has dried.

The presence of fire ants is a much greater threat to pets, livestock and horses than the permitted use of these products.

Poultry

The Engage[®] Ant Bait (containing **s-methoprene**) and Distance[®] Ant Bait (containing **pyriproxyfen**) labels require the baits not to be placed in areas where poultry are feeding or grazing.

However, there is no evidence they cause illness or harm if eaten by poultry.

Products containing **pyriproxyfen** are used for pest control in poultry sheds. Poultry needs to be penned for 24 hours after bait application to allow the ants to take the bait before it is potentially eaten by the poultry.

Fipronil is toxic to poultry, but as it is only applied directly to known fire ant nests, poultry will not be affected if they are kept away from the treated nests until the soil has dried.

Fish and aquatic wildlife

The APVMA requires an 8m buffer zone to aquatic areas when using **pyriproxyfen** fire ant bait and prohibits applying bait directly onto water.

If baiting within 8m of water, **s-methoprene** can be used up to 1.5m from the water's edge. The APVMA has determined this use poses no risk to aquatic life, it should be noted that *s*-methoprene products are registered for use in environmental and potable waters and are commonly used to control mosquito larvae in aquatic environments.

Aquaculture farms are only treated with *Engage® Ant Bait*, and only by ground-based methods.

Fipronil is highly toxic to fish and aquatic wildlife but as it is only applied directly to known fire ant nests and is not used where it could cause run-off or contaminate waterways fish and aquatic wildlife will not be affected.

Other products used in Queensland

In Queensland, the National Fire Ant Eradication Program uses and recommends other products including *Synergy Pro* (containing a mixture of hydramethylnon and **pyriproxyfen**) and *Advion Fire Ant Bait* (containing indoxacarb) to treat fire ants in certain situations.

Distance[®] Ant Bait and Engage[®] Ant Bait are the more suitable products for treating the infestations in NSW as they contain the required amounts of **pyriproxyfen** and **s-methoprene**.

Alternative treatments are not suitable for eradication

Several alternative treatments have been proposed and trialled for fire ants. Unfortunately, they don't achieve a high enough level of control to achieve eradication.

For eradication to be successful treatments must be able to kill the entire fire ant colony by killing every fire ant queen. Unsuitable alternative treatments are shown in **Table 1**.

Table 1: Alternative fire ant treatments

| Proposed treatment | Reason it is ineffective for fire ant eradication |
|----------------------------------|---|
| petrol | unlikely to kill the entire colony |
| soda water/ carbonated drinks | provides no successful control of any ants |
| hot/boiling water | does not kill the entire colony |
| talc power | provides no successful control of any ants |
| borax | provides control some species of ants but not fire ants |
| bicarb and sugar | does not kill the entire colony |
| sump oil | illegal and ineffective as a treatment |





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Several products registered for use on certified organic properties have also been assessed as inappropriate for fire ant eradication, as they do not achieve high enough levels of control.

Unsuitable organic treatments are shown in Table 2.

Table 2: Organic fire ant treatments

| Registered | Reason it is ineffective for fire ant |
|-------------------|---------------------------------------|
| organic treatment | eradication |

| d-limonene (citrus oil) | does not kill the entire colony |
|----------------------------|--|
| spinosad | does not kill the entire colony |
| spinosyn | does not kill the entire colony |
| diatomaceous earth | provides control of some insects but not fire ants |

PFAS (polyfluoroalkyl substances)

A 'PFAS' (Per-and polyfluoroalkyl substance) classification implies a substance is a 'forever chemical,' linked to long-term contamination of the environment.

The PFAS chemicals of highest concern to human health and the environment are **long chain PFAS**, similar to PFOS and PFOA (used in fire fighting foam).

Pesticides captured by the OECD guidelines as PFAS, including Fipronil, are **short chain PFAS**, designed to breakdown within a reasonable time frame. They are not 'forever chemicals'.

Before any pesticide can be used in Australia its persistence in the environment is examined.

Environmentally persistent pesticides cannot be approved in Australia, as a signatory to the Stockholm Convention.

A note about treating fire ants in NSW

Don't treat them yourself. If you suspect fire ants:

- ▲ LEAVE IT: Do not destroy or treat the nest. Fire ants are prohibited matter in NSW. It's illegal for a person (even a licensed pest control operator) to treat fire ants in NSW.
- SNAP IT: Safely take a clear photo or video for identification.
- ▲ CALL IT: Call the hotline on 1800 680 244, submit an online form at www.dpi.nsw.gov.au/fire-ants.

Let's keep working together to keep this pest out of NSW.

For more information on fire ants, identification, nests and how we are managing the threat to NSW, visit: <u>www.dpi.nsw.gov.au/fire-ants</u> or call **1800 680 244**.

Concerns over treatment

All products used by the NFAEP in the treatment of fire ants are registered and approved by the Australian Pesticides and Veterinary Medicines Authority (APVMA) and used according to the product labels and APMVA permits.

Their application in NSW is regulated by the NSW Environment Protection Authority (EPA).

- If you have evidence that the chemicals are being misused during treatment of fire ants in NSW, report to the NSW Environment Protection Authority: <u>Preventing pesticide misuse | EPA</u>
- If you have evidence that the chemicals are causing adverse affects on humans or animals, report to the APVMA: <u>Report a problem with</u> <u>a chemical product | Australian Pesticides</u> <u>and Veterinary Medicines Authority.</u>
- ▲ If you have evidence of Workplace Health & Safety issues during treatment of fire ants in NSW, report to SafeWork NSW: <u>Safety complaints | SafeWork NSW</u>

