



**Pest Management Professionals
have waited many years for this.**

DuPont™ Altriset®
TERMITICIDE



There was a hole in the termite industry. We've filled it.

With DuPont™ Altriset® termiticide there is no need to compromise termite control performance with the desire for reduced environmental impact. The team of scientists at DuPont™ have developed a novel, non-repellent termiticide, with a mode of action like no other termite control product. Laboratory and field study results prove Altriset® halts termite feeding within hours, while delayed mortality allows increased insecticide transfer to provide complete termite elimination, critical to long-term structural protection. This is reassuring for homeowners as no further structural damage will occur and the source of the problem is removed. Even better, the physical/chemical properties of Altriset® enable it to remain in the soil for an extended period, providing years of continuous protection.

Altriset® is the first and only liquid termiticide that has been classed as an unscheduled poison by the Australian regulatory authorities. This has resulted in no requirement for personal protective equipment (PPE) to be worn when mixing and applying Altriset®. Furthermore the targeted, unique mode of action of Altriset® provides very low toxicity to mammals, birds, fish, earthworms and even honey bees. Pest management professionals can now use a product in confidence, knowing there is “minimal risk” to themselves, their customers and the environment.

DuPont™ Altriset® Termiticide Profile.

- Eliminates termites from structures in less than three months (when used in accordance with the label).
- Stops termites feeding within hours.
- Provides residual protection for a number of years (Australian trials are ongoing).
- Mode of action like no other termite control product.
 1. Non-repellent chemistry – termites will pass through Altriset® treated soil without detecting it, allowing them to pick up a lethal dose.
 2. Affects insect muscles (not the nervous system like other termiticides).
 3. Affected termites increase their aggregation and mutual grooming, helping to spread Altriset® to others until the entire colony becomes exposed.
- Favourable environmental and toxicological profile.
 - Unscheduled poison
 - No PPE required
 - Very low toxicity to non-target animals (mammals, birds, fish, earthworms and even honey bees).

With world-class performance and an unparalleled safety and environmental profile, Altriset® is the solution the termite industry has been waiting for.



The new terminology for termite control.

Why should you choose Altriset® over any other termiticide?

Its novel chemistry delivers a unique combination of powerful and effective chemistry that's fast, long lasting and environmentally smart – something your customers are sure to appreciate.

Altriset® uses breakthrough chemistry developed by DuPont scientists, who have spent years studying the natural insecticide substances found in the environment. Mimicking these natural substances is an important innovation in pest control. In fact, Altriset® is the first major innovation in termiticide technology for over 10 years.

Altriset® is the first termiticide product featuring an active ingredient from the anthranilic diamide class of chemistry. This class was inspired by research into the insecticidal properties of a natural substance found in the bark of trees and shrubs of the genus *Ryania*. Calteryx®, the non-repellent active ingredient in Altriset®, is a synthetic compound that affects insect muscles (other liquid termiticides affect the nervous system). This unique chemistry is one reason why the U.S. EPA has awarded Altriset® reduced-risk status for use as a termiticide treatment and the Australian regulatory authorities have classified it as an unscheduled poison.

Altriset® is the first professional liquid termiticide that does not require any specific first aid intervention if anyone is accidentally exposed. As a result of this favourable toxicology profile, the wearing of special protective equipment such as overalls, goggles and gloves is not required when applying Altriset® to homes. This makes for a more comfortable experience when applying in hot and humid conditions. People and pets can also enter the treated zone immediately after application as opposed to having to wait for it to dry.



Agrow Awards 2007

Most Innovative Chemistry

DuPont™ Calteryx® Chlorantraniliprole insecticide.

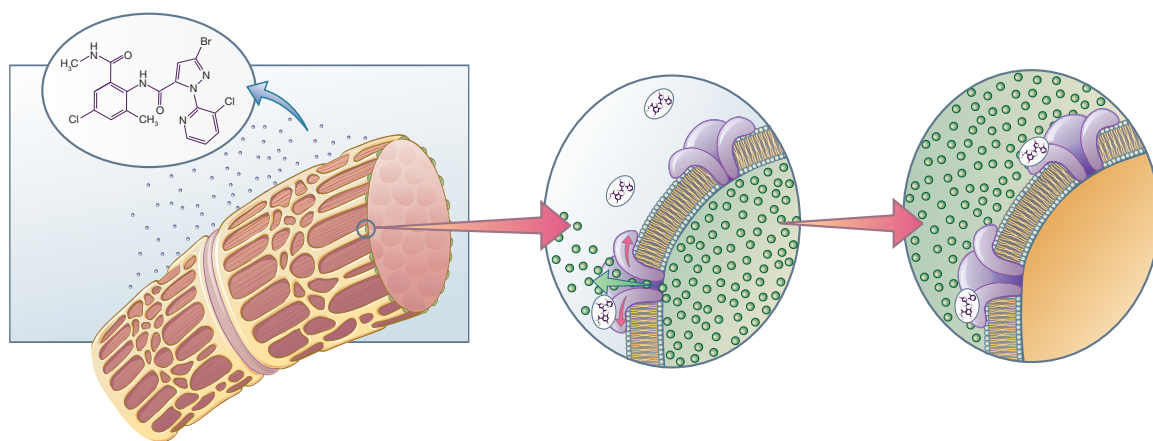


The termite facts you'll want to inspect.

Calteryx®, the active ingredient in DuPont™ Altriset® termiticide, is a synthetic compound that affects the ryanodine receptors in the insect muscle fibre. The ryanodine receptors in these targeted pests are 400 to 3,000 times more sensitive to anthranilic diamides than the receptors in mammals. This is one of the key reasons why Altriset® has little effect on most non-target animals.

Studies have proven that Altriset® is highly effective against termites, stopping them feeding within hours, which prevents any further damage to the property that is infested. Laboratory tests have shown that termites coming into contact with Altriset® quickly acquire a lethal dose. Once affected by Altriset®, termites will begin to exhibit increased aggregation, enhanced grooming and contact with other colony members. Eventually affected termites will become more lethargic and show signs of muscle paralysis; decreased coordination and mortality will ultimately occur within several days. The delayed mortality and increased colony interaction are key reasons why Altriset® is so effective.

Altriset® mode of action



Phase 1 Exposure

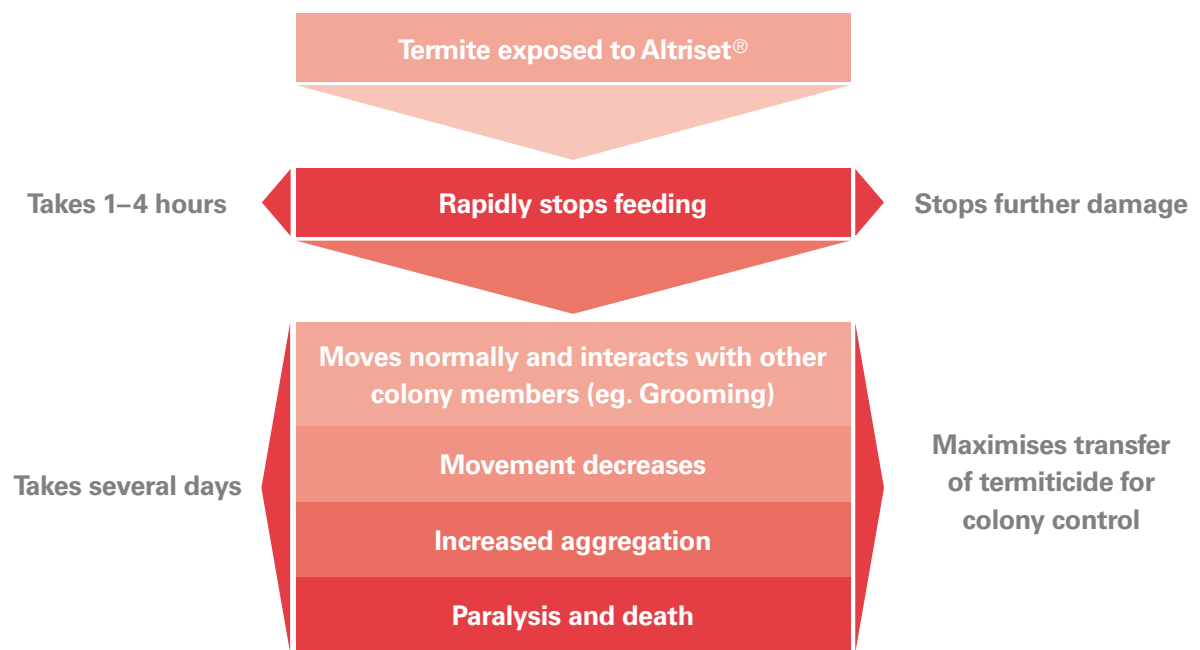
Insect comes in contact with or ingests Calteryx® the active ingredient in Altriset® insecticide.

Phase 2 Activation

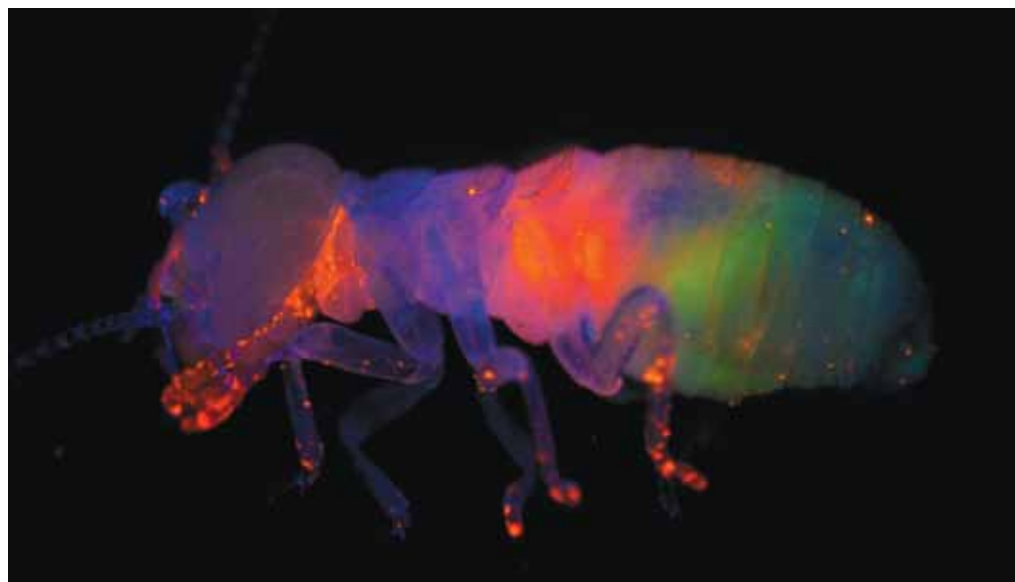
Calteryx® binds to and activates the ryanodine receptors located in the insect's muscle, and causes it to open.

Phase 3 Paralysis and Death

Calcium ions flow out of the open ryanodine receptors, depleting calcium needed for muscle contraction. Insect muscle paralysis leads to death.



This picture illustrates a termite worker that tunneled through sand treated with Altriset® at 0.05%. The worker 'picked up' and ingested large amounts of Calteryx® as evidenced by the glowing areas. The high concentration of the active ingredient on the mandibles of the termite causes the feeding cessation. The Calteryx® on the cuticle of the termite is readily passed to other termites through contact and grooming.



Altriset® rapidly stops termites feeding.

Altriset® rapidly stops termites feeding, preventing any further damage to the infested property.

Feeding cessation after exposure to treated sand

Sand treated with Altriset® label rate (0.05%)

Termites placed on sand for 1 min

Transferred to new dish with brown paper towel disks

Feeding activity measured over 72 hours

Results: Termites exposed for 1 minute to Altriset® stopped feeding – no damage to the filter paper.

Source: Stine-Haskell Research (DuPont). *Reticulitermes flavipes*.

Feeding damage



Untreated



0.05%

Feeding cessation after tunneling in treated soil

	<i>Coptotermes</i>				<i>Mastotermes</i>			
	2 hours tunnelling in treated soil	2 hours tunnelling in untreated soil	8 hours tunnelling in treated soil	8 hours tunnelling in untreated soil	2 hours tunnelling in treated soil	2 hours tunnelling in untreated soil	8 hours tunnelling in treated soil	8 hours tunnelling in untreated soil
% of filter paper eaten 3 days after tunnelling	0	2.0	0	1.7	8.3	31.7	0.7	31.7
% mortality 3 days after tunnelling	91.7	13.3	96.7	6.7	0	3.3	6.7	0

After only two hours of tunnelling through treated soil *Coptotermes* stop feeding, with high levels of mortality 3 days after exposure. The cessation of feeding also occurs in *Mastotermes*, although being a bigger termite, it takes slightly longer to occur. Feeding reduced dramatically after only two hours of exposure, dropping to virtually no feeding after 8 hours exposure. Mortality of *Mastotermes* often takes longer than 3 days, as this trial demonstrates. However, as the cessation of feeding starts shortly after exposure, you can now reassure homeowners that even though the termites continue to move around (which is good to transfer the termiticide to other termites), no further damage will occur.

Source: Agrisearch Services Pty Ltd, Gosford, NSW.

Altriset® uniquely changes behaviour.

Termites do not die immediately; Altriset® gradually affects mobility and increases aggregation, allowing for increased transfer via grooming. This delayed mortality and increased social contact accelerates transfer throughout the colony.

Aggregation effect



1/5th Altriset®:
Termites begin to group and become more social.

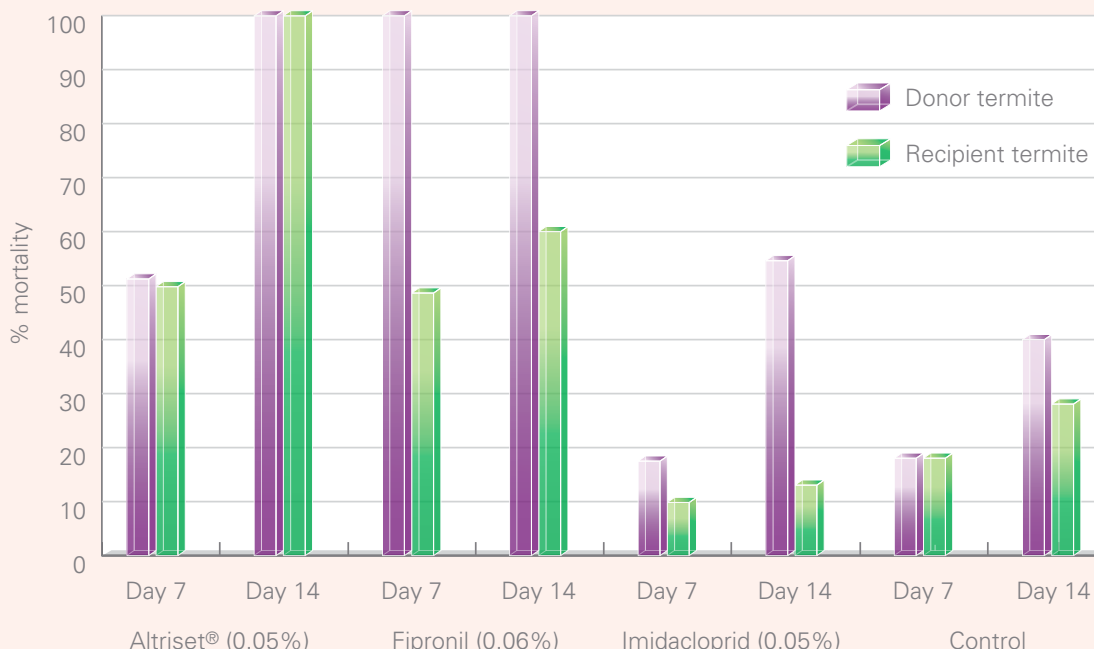
Control:
Termites are 'independent' and moving freely within petri dish.

Conclusion: Even at 1/5th label rate, Altriset® exhibits unique behavioural affects on termites. After exposure, termites aggregate, increasing the social interaction among termites. This leads to increased chance of sharing Altriset® with unexposed nest mates and more comprehensive management.

NOTE: Not all the termites in the control group can be seen because they are hiding from the light under the filter paper, which is natural behaviour for untreated termites.

Source: Stine-Haskell Research (DuPont). *Reticulitermes flavipes*.

Transfer of non-repellent termiticides from termites exposed to treated soil

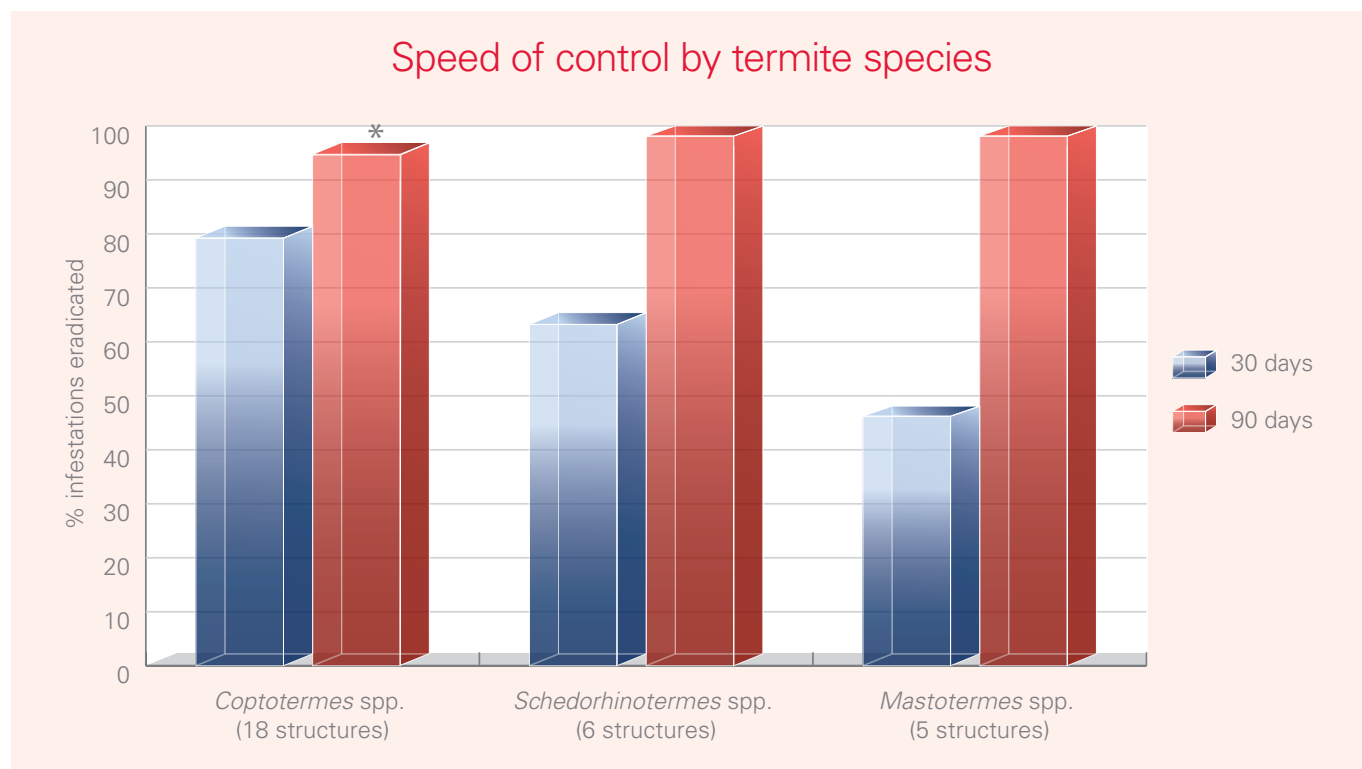


Conclusion: DuPont™ Altriset® is transferred readily from donor termites (exposed to termiticide) to recipient termites (not exposed to termiticide), resulting in 100% mortality of all termites within 14 days. Fipronil shows faster mortality than Altriset® with 100% mortality of donor termites within 7 days. However, only 60% of recipient termites are killed after 14 days suggesting that the fast action/transfer properties of fipronil are not as effective as Altriset®. Imidacloprid gave low levels of mortality and provided no evidence on insecticide transfer. The excellent transfer of DuPont™ Altriset® provides a great option for eradication of the colony.

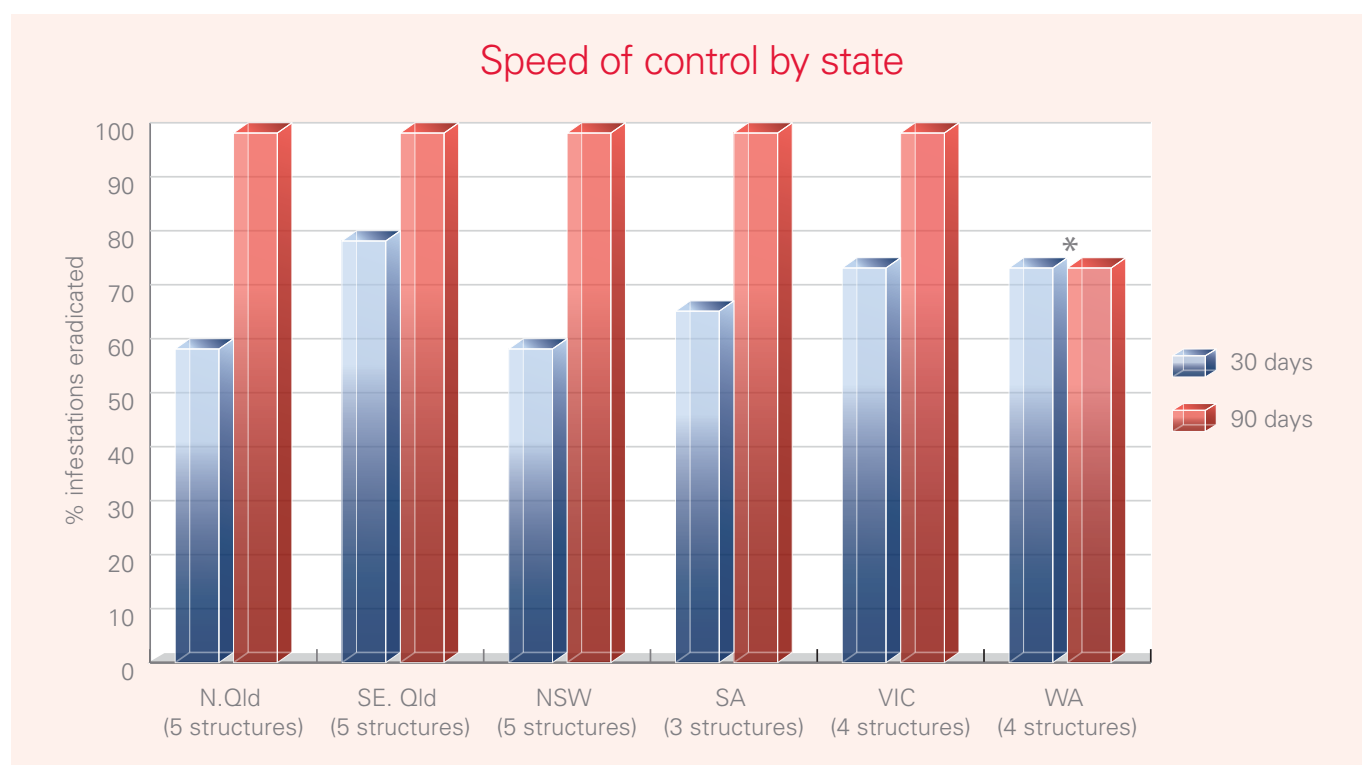
Source: Stine-Haskell Research (DuPont). *R. virginicus*.

Altriset® controls the key termite species within 3 months.

Results from Australian home trials. All treatments were soil/perimeter treatments only – no direct treatment of active termites.



Altriset® performs in different soils and environmental conditions.



*100% control was not achieved in one house in WA due to a construction design that did not allow a complete barrier treatment to be applied.

Source: DuPont trials in conjunction with various pest management companies (2009–10).

Altriset® field trials.

Field trials are completed as part of the registration process and provide an indication of the residual properties of termiticides. During these field trials 'standard' protocols are used but do not represent the situations and experience in treating structures.

The 'standard' protocols are:

Vertical uncovered treatment – a stake in the ground

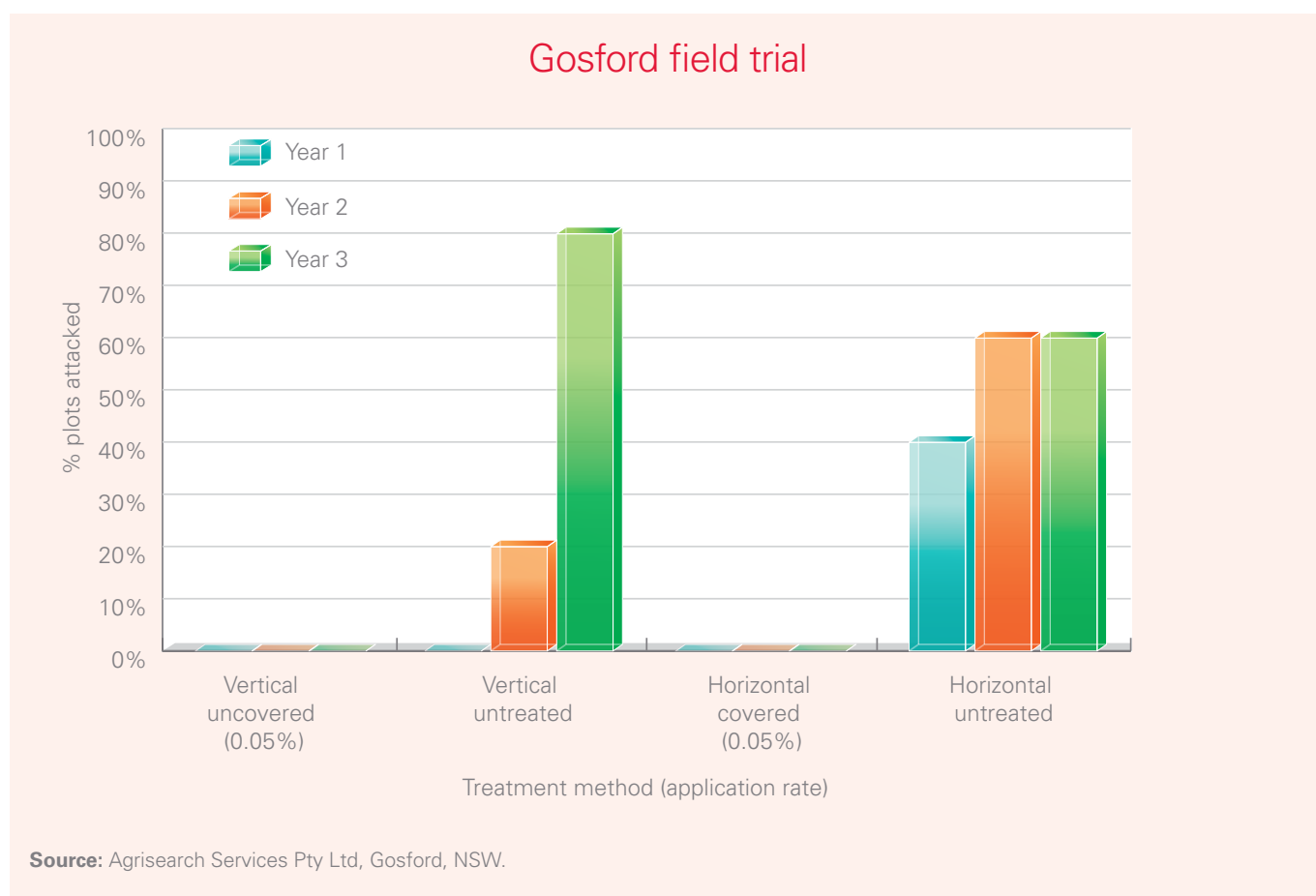
The termiticide is mixed with soil (similar to a trench treatment). This treatment is uncovered in an exposed location representing the worse case conditions. A wooden stake is placed in the middle of the treated soil.

Horizontal covered treatment – wood under slab

The termiticide is sprayed on the surface of soil. A piece of wood is then placed on the soil and then covered with a moisture barrier and a concrete slab. This is similar to injecting under a slab, although the placement of wood between the soil and slab is not representative of normal structural situations.

DuPont™ Altriset® termiticide was challenged under these protocols in a trial in Gosford (NSW) and Darwin (NT).

The performance of Altriset® at the Gosford field site was excellent, with both high and low doses delivering 100% protection in horizontal and vertical treatments after 3 years (see chart below). Although the termite pressure in the first 2 years was relatively low, the high pressure in year 3 (due to favourable environmental conditions) provided a stern test. These trials are continuing.



The results of the Darwin trial showed protection from termites for up to 2 years. As a result of a bush fire passing through the trial site before the 2 year read, the trial was abandoned. A new trial has commenced.

Darwin field site

Photos showing the performance of Altriset® in the horizontal treatment protocol. The moisture barrier and concrete slabs have been peeled back to reveal the wood squares. The photos highlight the intense termite pressure in Darwin and the protection provided by Altriset®.



Alternating treated and untreated plots



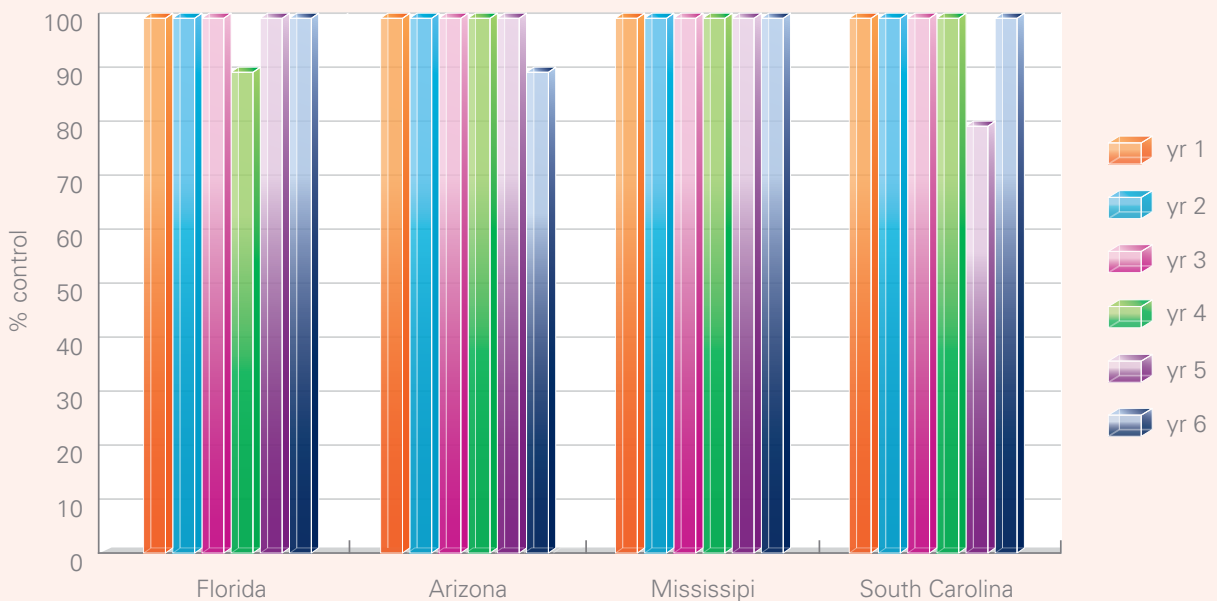
The wood in Altriset® treated plots remains intact



The wood in untreated plots is completely "eaten out" - only the mudding remains

United States field trials

DuPont™ Altriset® is also being tested in the US Forestry Service trials. The trials confirmed excellent residual control for up to six consecutive years.



Source: United States Forestry Service (USFS) (started in 2004).

Low toxicity.

The unique mode of action of DuPont™ Altriset® termiticide has such a favourable toxicological profile it is classified as an unscheduled poison by the Australian regulatory authorities, the only liquid termiticide with this classification. Calteryx®, the active ingredient in Altriset®, has an extremely low mammalian toxicity, in fact tests show at the highest levels tested, no deleterious effects could be detected. With only the muscles of certain insects sensitive to Altriset®, it has very low toxicity to non-target organisms, such as mammals, birds, fish and even honey bees.



Acute toxicity of Calteryx® on a number of key non-target species

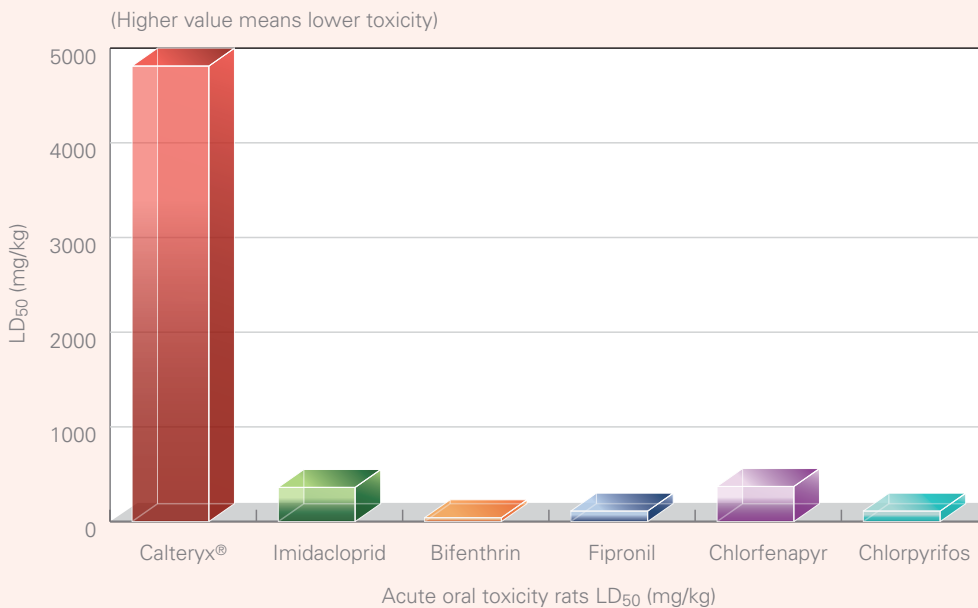
Animal Group	Species	Acute Toxicity	Toxicity Classification
Mammal	Rat	LD ₅₀ : > 5000 mg/kg	Unscheduled poison (Australia)
Fish	Rainbow Trout	LC ₅₀ : > 13.8 mg/L	Non-toxic at solubility limit
Bird	Bobwhite Quail	LD ₅₀ : > 2250 mg/kg	Practically non-toxic (US EPA)
Worm	Earthworm	LC ₅₀ : > 1000 mg/kg	Practically non-toxic (US EPA)
Bee	Honey bee	Oral LD ₅₀ : > 104 µg/bee	Practically non-toxic (US EPA)

Personal protective equipment requirements

Products	Face mask/goggles	PVC Gloves	Overalls	Respirator	Washable Hat
Altriset®	NO	NO	NO	NO	NO
Imidacloprid (such as Premise* & Prothor*)	✓	✓	✓	NO	✓
Fipronil (such as Termidor*)	✓	✓	✓	NO	✓
Bifenthrin (such as Biflex*)	✓	✓	✓	NO	✓

*Non DuPont trademarks.

Toxicity of the insecticides used in common termiticide products



Available from:

The Altriset® facts worth chewing over.

- Eliminates termites from structures in less than 3 months.
- Fast, effective results. Stops termites feeding within hours.
- Provides continuous protection for years.
- Excellent transfer properties for superior termite population control.
- The Australian regulatory authorities have classed Altriset® as an unscheduled poison.
 - No protective equipment (such as overalls, goggles and gloves) is required when mixing and applying Altriset®.
 - No specific first aid required if someone is accidentally exposed to Altriset®.
- Favourable environmental profile – as shown by low toxicity to people, pets, birds, fish, earthworms and even honey bees.
- The first major innovation in termite technology for over 10 years.

www.professionalproducts.dupont.com.au



This reference guide is not intended as a substitute for the product label for the products referenced herein. Product labels for the above products contain important precautions, directions for use and product warranty and liability limitations that must be read before using the product. Applicators must be in possession of the product label(s) at the time of application. Always read and follow all label directions and precautions for use when using any pesticide.

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