ParaMite®

SELECTIVE MITICIDE – AN INSECT GROWTH REGULATOR FOR CONTROL OF MITES

ParaMite®

FOR LONG-LASTING CONTROL OF MITES

SUMITOMO CHEMICAL
AgroSolutions Division

ABOUT ParaMite®

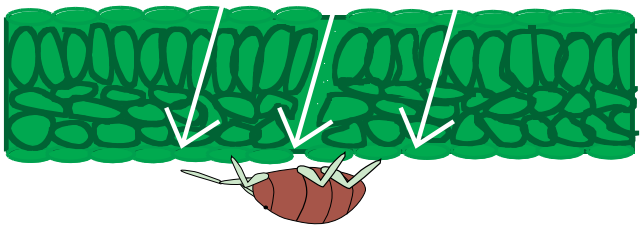
ParaMite® miticide from Sumitomo Chemical Australia is for the control of mites in a range of crops. The active ingredient in ParaMite, etoxazole, is a new chemical class and has no cross resistance to existing miticides – therefore making it an ideal rotation option in a resistance management strategy. While highly efficacious against a variety of mites, ParaMite is safe on beneficials, ensuring a good fit in an IPM program.

Mode of Action

ParaMite contains the active ingredient etoxazole from the Diphenyloxazoline group. Etoxazole is an Insect Growth Regulator (IGR), or more specifically a moult inhibitor, which has excellent contact activities against juvenile stages from eggs to larvae and nymphs, and an indirect effect on adults. ParaMite stops egg, larvae and nymph development on contact and sterilises adult females.

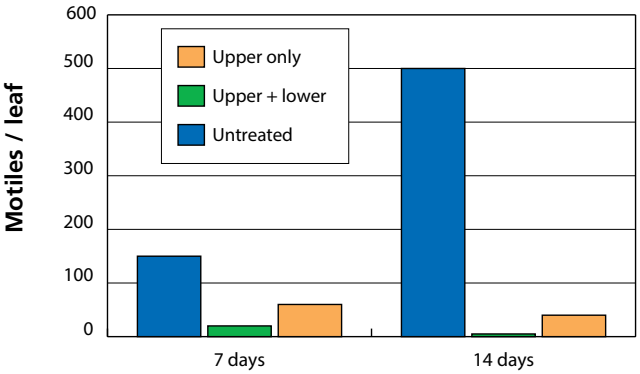
Translaminar movement

ParaMite applied to top of leaf

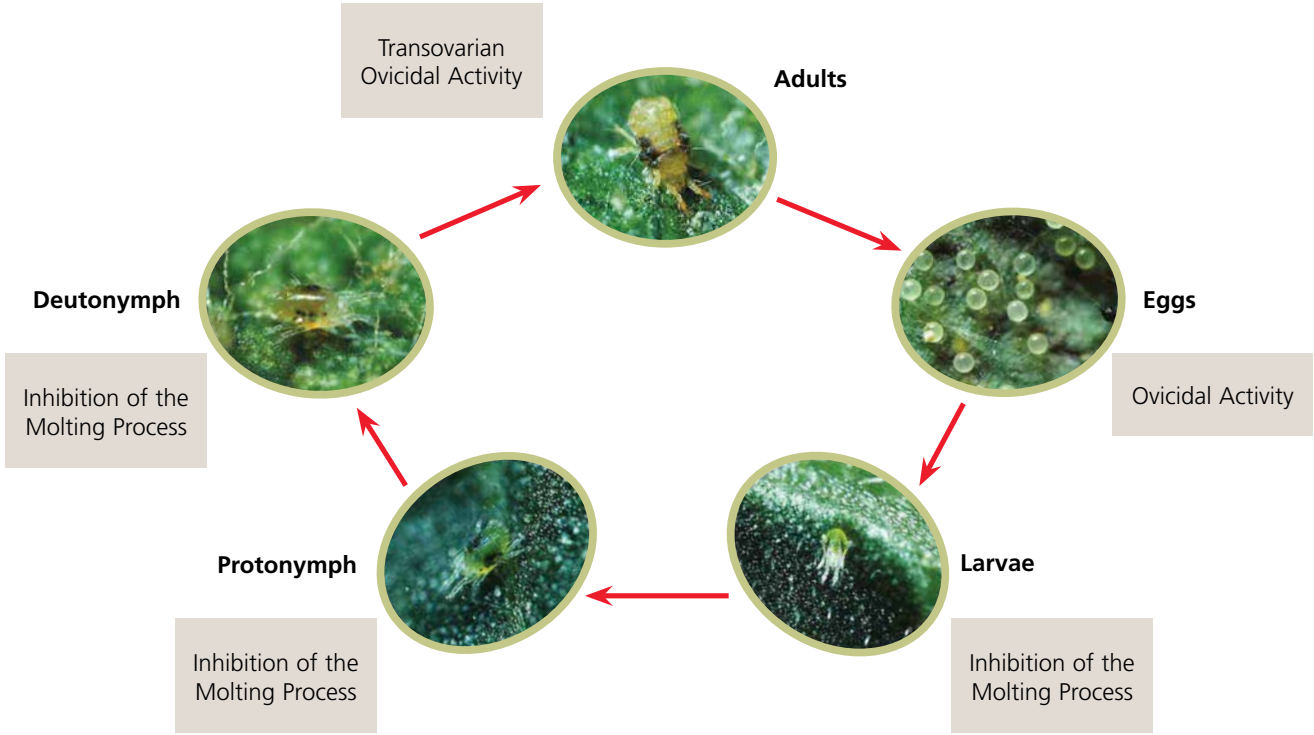


Leaf cross-section: Translaminar movement of ParaMite

Translaminar activity in beans



LIFE CYCLE OF MITES



ParaMite®
THE FEATURES AND BENEFITS

FEATURES	BENEFITS
New chemical class	No known resistance or cross-resistance to other miticides in Australia
Effective at all stages of the mite life cycle	Kills eggs and nymphs, sterilises adult females; Gives excellent long term control
Soft on beneficials	Excellent fit with IPM programs
Low toxicity (unscheduled)	High degree of worker and user safety
Low environmental impact	Suitable for all cropping environments
Translaminar movement through the leaf	Control mites on the underside of the leaf where they feed
Long-lasting control	Cost effective

HOW TO GET THE BEST RESULTS FROM ParaMite®

- ParaMite is best suited to early application before nymphs turn into adults. Other than sterilising female mites, it has limited effect against adults and they will continue to feed and cause damage until they die naturally.
- Correct timing requires careful monitoring. Apply ParaMite while the mite population is still developing and predominantly juvenile.
- If a population of adults is already present; more than 15% of leaves infested or two adults per leaf – it is advisable to mix or precede ParaMite with a knockdown miticide.
- Only one spray of ParaMite should be used per season. It can be used in the same season as knockdown miticides but its use should be rotated with products from different chemical groups.

INTEGRATED PEST MANAGEMENT

Being a mite-specific IGR, ParaMite is considered to have a low impact on beneficial insects. It has no or low toxicity to beetles, predatory mites, lacewings, parasitic wasps, predatory bugs and bees.

The following table represents a summary of data from Australia, Japan and the USA:

FEATURES	BENEFITS	EFFECT OF PARAMITE ON BENEFICIAL INSECT
Aphids, Mealybug, Two-spotted mite (TSM) and European red mite (ERM)	Beetles (Stethorus and Ladybirds)	None to low toxicity
TSM and ERM	Predatory mites	Moderate toxicity
Aphids, scales and Mealybug	Lacewings	None to low toxicity
Heliothis, LBAM, Mealybug and Woolly apple aphid	Wasps	None to moderate toxicity
Caterpillars and thrips	Bugs (Pirate bugs)	Low toxicity

Overall, ParaMite is considered to have a low impact on beneficial insects.

ParaMite®
IN APPLES AND PEARS

ParaMite controls the two primary mite pests in pome fruit; Two-spotted mite (*Tetranychus urticae*) and European red mite (*Panonychus ulmi*).

As a guide, if there are 2 or more adults per leaf, and 15% or more of leaves are infested, a knockdown of adults with a different miticide may be required. **This is particularly important in pears where even low mite pressure can cause leaf russeting.**

ParaMite can be applied as dilute or concentrated sprays on apples, but good coverage is important so the volume should be no less than 750 L/ha. DO NOT apply in greater than 2000 L/ha.

On **large pear trees** DO NOT use ParaMite as a concentrate spray. For dilute sprays on large pear trees use a water volume of 2500 L/ha.

If re-treatment is required, use an approved miticide from a different chemical group.

Two-spotted mite (*T. urticae*)

Colony of TSM with eggs, nymph and adults

Why use PARAMITE?

Because of its unique ability to disrupt mite populations when applied at the correct timing, commercial experience confirms that it is not unusual for ParaMite to control mites for 4-6 weeks in pome fruit.

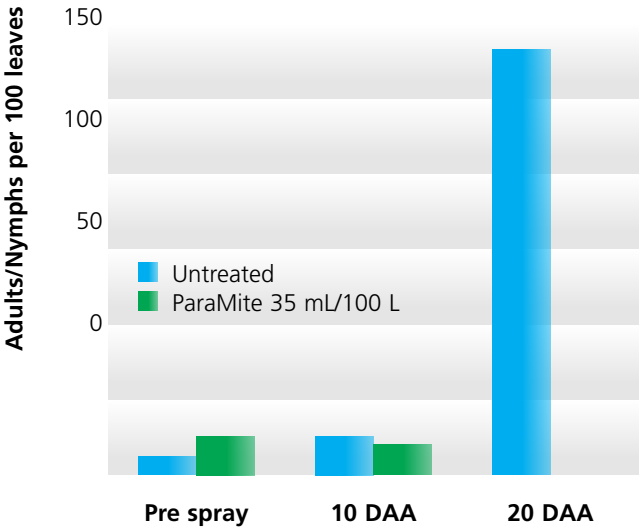
ParaMite®
IN STONE FRUIT AND ALMONDS

Paramite also controls Two-spotted mite, European red mite, and Bryobia mite in stone fruit (except cherries) and almonds.

Trial demonstrating the benefits of applying ParaMite early before mite number explode.

Bryobia Control In Almonds

109-023 Merbein Vic, Application 23rd October



The full effect of ParaMite on the mite population takes a few days to become apparent and it takes 10-14 days to pull adult numbers down. Once the population cycle had been disrupted though, the ovicidal action of ParaMite results in long-lasting control.

Why use PARAMITE?

ParaMite's ocividal action means that even those eggs laid by mites which have migrated into the treated area won't hatch.

ParaMite Selective Miticide – An Insect Growth Regulator for control of mites

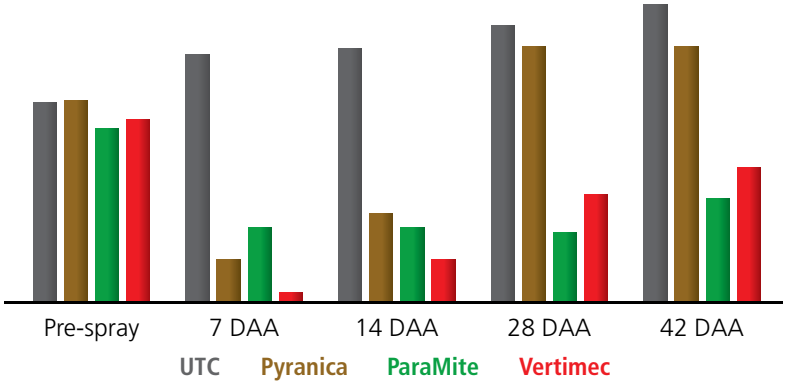
ParaMite®
IN TABLE AND WINE GRAPES

Two–spotted mites in grapes generally live and feed on the underside of the leaf, and their presence is easily detected by the thin web they spin over the surface where they feed. They cause damage by sucking the sap from the leaf, resulting in a yellow speckled appearance. Consequently, affected leaves become less productive and eventually dry out. In cases of severe infection, entire vines may be defoliated by mites.

Given their short life cycle (egg to adult in 7-11 days in hot weather) crop monitoring for mites is very important. Use ParaMite early before the majority of the population has gone through the final molt to become adult.

Table grapes *var* Thompson Seedless

The number of adult TSM per 25 leaves. Robinvale, VIC



Why use PARAMITE?

The translaminar action of ParaMite is particularly suited for controlling mites that spend most of their life on the underside of the leaf. In a dense crop canopy, miticide coverage on the underside of the leaf may not always be possible, but because of ParaMite's translaminar action mites on both leaf surfaces are controlled.

ParaMite®
IN TOMATOES AND CAPSICUMS

A field tomato crop showing patches of bronzing and associated leaf decline because of TSM infection.

Tomatoes and capsicums are both very susceptible to Two-spotted mites.

The mites lay their eggs and feed on the underside of the leaves, producing a reddish mottled look. In heavy infestations, one can see fine silk webbing on the plants, and the leaves lose most of their green colour, become desiccated or fall off. Heavily infested plants are severely weakened and may die.

- In ground tomatoes and capsicums it is important to increase the volume of water in the spray mixture as the plant grows bigger – to 500 L/ha for mature crops. Mature trellis tomatoes may require up to 2000 L spray volume per ha.
- To achieve the required degree of coverage, concentrate spraying is not recommended.

ParaMite® *IN CITRUS*

ParaMite is registered for control of Oriental spider mite (*Eutetranychus orientalis*). Trial results indicate control for at least four weeks after application.

Resistance management

Mites are notorious for developing resistance to miticides. Since it is a new and unrelated mode of action, ParaMite represents a welcome addition to the limited number of options available to growers. To delay the development of resistance, and to prolong the life of this product, do not apply more than one ParaMite spray per season and always rotate between different mode of action groups.

- Make no more than one application from each registered miticide group per season. Rotate miticides that have a different mode of action.
- For miticides that have the same mode of action – do not use consecutive applications within and between seasons.
- Miticides should be used in a Integrated Mite Control program.
- Mite levels should be monitored and thresholds utilised before deciding to make miticide applications.
- The decision to apply should be based on monitoring of mite levels and thresholds.

Why use PARAMITE?

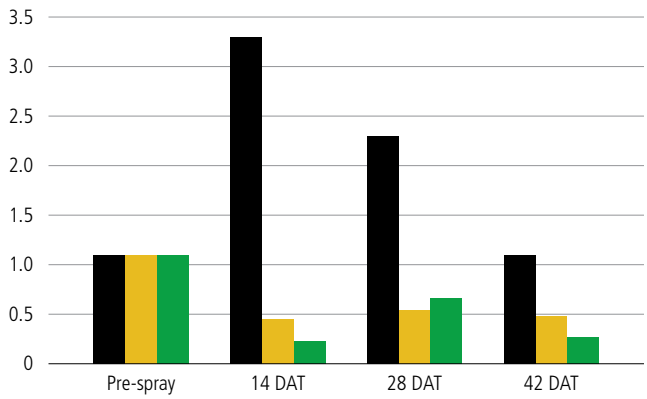
Its specific mode of action makes ParaMite the ideal IPM product for citrus with its delicate beneficial complex. With the exception of products applied to protect fruit from sun burn, ParaMite is generally compatible with most insecticides used in citrus.

ParaMite® *IN BANANAS*

Aerial application trial results

Tully, QLD. Cavandish bananas. Aerial application by fixed wing aircraft in 30 L water/ha. Coarse droplets (250 to 300 micron VMD).

Relative reduction in banana spider mite numbers over time, compared to pre-spray population (mean number of adults and nymphs per 25 cm^2).



Paramite controls Strawberry mite, a major pest of bananas. Spraying of bananas with ground spraying equipment in the wet tropics is frequently interrupted by wet conditions, often for long periods, during which mite populations can increase to damaging levels before spraying can resume. For this reason, Sumitomo Chemical Australia has registered the use of Paramite by air as well as by ground spraying equipment.

While ground application is effective at 200 mL/ha, aerial application requires a higher rate because sufficient product needs to reach the underside of the leaves and the lower canopy. ParaMite translocates from the top of the leaf to the underside where mites tend to congregate.

ParaMite® *DIRECTIONS FOR USE*

DO NOT apply if rainfall is expected before spray has dried.
DO NOT apply more than one spray per season as over-use may lead to development of mite resistance.
Except for banana applications, DO NOT apply by air.

SITUATION	PEST	RATE	CRITICAL COMMENTS
Pome fruit Stone fruit (except cherries) Almonds	Two-spotted mite (*Tetranychus urticae*), European red mite (*Panonychus ulmi*) Bryobia mite (*Bryobia rubrioculus*)	35 mL/100 L	ParaMite is a mite growth regulator that causes adults to lay sterile eggs and stops existing eggs and nymphs developing. Control of these stages is generally achieved within 7 days. ParaMite also has translaminar and residual activity which means control of the population may last for four to five weeks. However, it does not control adult mites, which normally live for up to two weeks. To give effective long term population control ParaMite should therefore be applied at the first signs of mite crawlers. Once large numbers of adults are present it may be necessary to also apply a miticide from a different group to control the adults immediately and reduce potential damage. As a guide, if there are 2 or more adults per leaf, and 15% or more of leaves are infested, a knockdown of adults with a different miticide may be required. This is particularly important in pears where even low mite pressure can cause leaf russeting. ParaMite can be applied as dilute or concentrated sprays on apples, pears, stone fruit, almonds and table grapes but good coverage is important so the volume should be no less than 750 L/ha. DO NOT apply in water volumes greater than 2000 L/ha. On large pear trees DO NOT use ParaMite as a concentrate spray. For dilute sprays on large pear trees use a water volume of 2500 L/ha. On Citrus, water rates of 2000-3000 L/ha are generally used and concentrate spraying is not recommended. DO NOT use a water volume of more than 3000 L/ha. If re-treatment is required, use an approved miticide from a different chemical group.
Table grapes Wine grapes	Two-spotted mite	35 mL/100 L	
Citrus	Oriental spider mite (*Eutetranychus orientalis*)	35 mL/100 L	
Trellis tomatoes	Two-spotted mite (*Tetranychus urticae*)	35 mL/100 L	On tomato and capsicum water rates should be increased as crop size increases. For mature capsicum and bush/ground tomato this should be 500 L/ha. Mature trellis tomatoes may require 1000-2000 L/ha and the rate per 100 L should be used. Concentrate spraying is not recommended. If re-treatment is required, use an approved miticide from a different chemical group.
Ground tomatoes capsicum		350 mL/ha	
Bananas ground application	Strawberry mite (*Tetranychus lambi*)	200 mL/ha	For application with the standard tractor drawn air blast sprayer a water rate of 400 L per hectare should be used. For aerial application use a minimum of 30 L spray volume per hectare and a registered crop oil such as SacoaBioPest Oil. It is important to carefully monitor mite populations as when the right weather conditions prevail, there is a tendency for them to increase rapidly in Bananas. To give effective long term population control ParaMite should be applied at the first signs of an increase in the population of mite crawlers. Once large numbers of adults are present it may be necessary to also apply a miticide from a different group to control the adults immediately and reduce potential damage.
Bananas aerial application		500 mL/ha + 3.5 L of a registered Crop Oil	

NOT TO BE USED FOR ANY PURPOSE OR IN ANY MANNER CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

WITHHOLDING PERIODS:
GRAPES: DO NOT HARVEST FOR 21 DAYS AFTER APPLICATION
POME AND STONE FRUIT: DO NOT HARVEST FOR 7 DAYS AFTER APPLICATION
BANANAS: DO NOT HARVEST FOR 1 DAY AFTER APPLICATION
CITRUS: DO NOT HARVEST FOR 7 DAYS AFTER APPLICATION
CAPSICUM, TOMATOES: DO NOT HARVEST FOR 7 DAYS AFTER APPLICATION;
DO NOT GRAZE TREATED AREA OR CUT TREATED AREA FOR STOCK FEED
ALMONDS: DO NOT HARVEST FOR 14 DAYS AFTER APPLICATION

TREATED FRUIT FOR EXPORT TO PARTICULAR DESTINATIONS OUTSIDE AUSTRALIA MAY REQUIRE A LONGER INTERVAL BEFORE HARVEST TO COMPLY WITH RESIDUES STANDARDS OF IMPORTING COUNTRIES. PLEASE CONTACT SUMITOMO CHEMICAL AUSTRALIA PTY LTD OR YOUR INDUSTRY BODY OR EXPORTER BEFORE USING PARAMITE SELECTIVE MITICIDE.

ParaMite®

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SUMITOMO CHEMICAL
AgroSolutions Division

Scan here to see more information about ParaMite Selective Miticide

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