CAUTION
KEEP OUT OF REACH OF CHILDREN

Shield®
SYSTEMIC INSECTICIDE

ACTIVE CONSTITUENT: 200 G/L CLOTHIANIDIN

GROUP **4A** INSECTICIDE

For the control of aphids, mirids and other sucking insect pests on cotton; rust thrips and weevil borer on bananas; and soil applied treatment for the control of canegrubs in sugarcane, leaf eating insects in Eucalypt seedlings and young trees, and leaf feeding insects in Indian sandalwood and associated host trees.

GENERAL INSTRUCTIONS
INSECTICIDE RESISTANCE WARNING

GROUP **4A** INSECTICIDE

For insecticide resistance management Sumitomo SHIELD Systemic Insecticide is a Group 4A insecticide. Some naturally occurring insect biotypes resistant to SHIELD and other Group 4A insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if SHIELD or other Group 4A insecticides are used repeatedly. The effectiveness of SHIELD on resistant individuals could be significantly reduced. Since the occurrence of resistant individuals is difficult to detect prior to use, Sumitomo Chemical Australia Pty Ltd accepts no liability for any losses that may result from the failure of this product to control resistant insects. SHIELD may be subject to specific resistance management strategies. For further information contact your local supplier, Sumitomo Chemical Australia Pty Ltd representative or local agricultural department agronomist.

CROP MONITORING
Effective pest control depends upon regular monitoring of crops during the season at 3-5 day intervals.

MIXING
Measure the required amount of product to a partially filled spray tank and then add the remainder of the water. Ensure agitation is maintained during tank filling and whilst spraying. **DO NOT** let prepared spray solution sit in spray tank overnight.

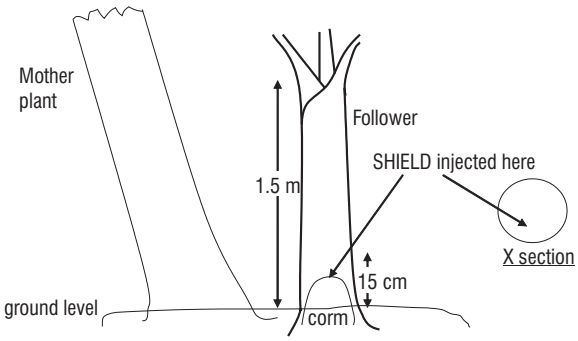
COMPATIBILITY
It is advised to test water quality which may vary considerably with location, as well as all mixtures prior to mixing commercial quantities.

APPLICATION
Cotton: This product may be applied by air or ground equipment.

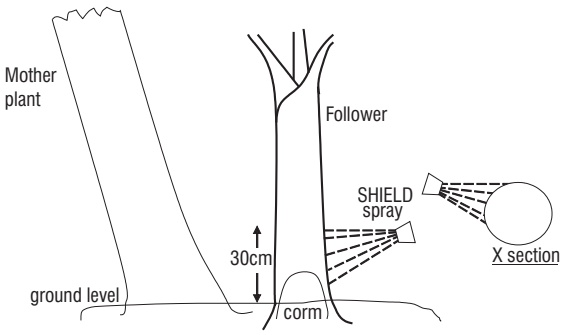
Ground: Apply in a minimum spray volume of 100 L/ha.
Aerial: Apply in a minimum spray volume of 30 L/ha. A strategy to minimize spray drift should be employed at all times when aerially applying sprays to, or near, sensitive areas. Such a strategy is illustrated by the cotton industry's Best Management Practice Manual.

Bananas: This product may be applied by stem injection or stem spray.

Stem Injection: Injection treatments should be applied at 150 mm above ground level angled down towards the base. The needle should go in 100 mm before being drawn back slightly and the liquid injected. The injection should be angled such that it is not in the centre of the plant but rather under the outside leaf base about 40 mm deep. No dilution is required. Chemical should not emerge from the injection site.



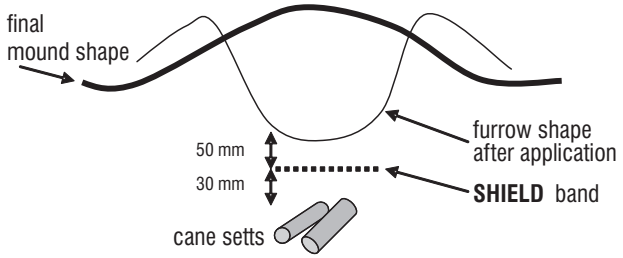
Stem Spray: The trunk spray should be applied with a full cone nozzle directed at the base of the stem and up to a height of 300 mm, so that it covers around 40% of that area of the stem. The spray should be calibrated so it delivers 10 mL of mixture per stem. **DO NOT** spray on to old leaf bases. Ensure the stem is still green where the spray is applied.



Sugarcane
Plant cane: Application can can only be done at late planting (Oct. – Dec.) or during fill in stages. SHIELD should be applied in a minimum of 100 L water /ha.

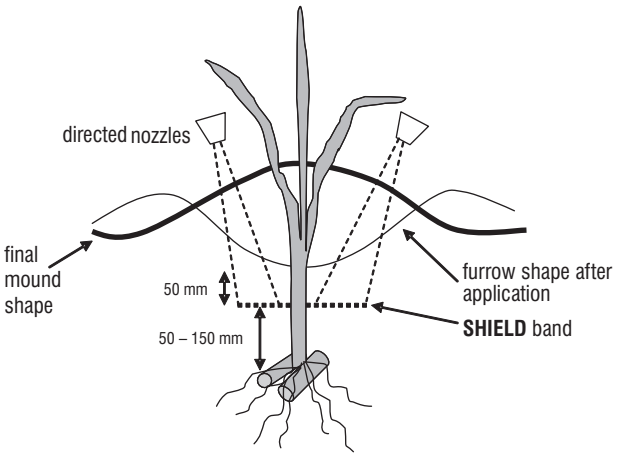
At late planting: (October – December):

The planter should be set so that 30 – 50 mm of soil covers the sets as they enter the ground. Direct the spray nozzles on the planter so that they spray a band approximately 10 cm wide on soil that has just covered the sets. The planter boards need to be adjusted so that a further 50 mm of soil covers this spray band immediately. Later cultivation should not be to a depth that disturbs the treated band. There should be at least 100 mm of soil cover over the treated layer after the final hilling up operation.



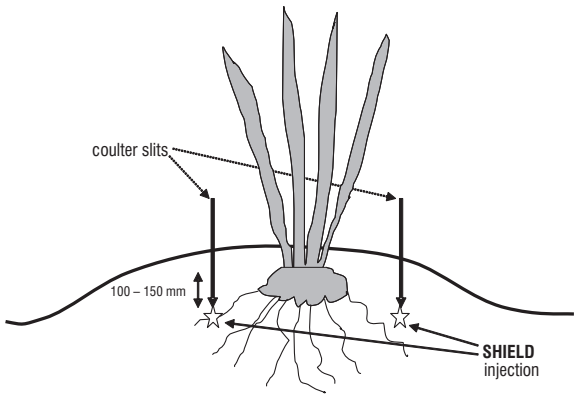
At fill in stages: Once the cane has germinated and there are a number of leaves above the ground it is generally necessary to apply two directed spray bands about 50 mm wide from the sides of the cane plants onto the soil at the base of the cane shoots. This is to ensure that the chemical spray does not hit the leaves. The treated bands should then immediately be covered with at least 50 mm of soil.

Later cultivation should not be to a depth that disturbs the treated band. There should be at least 100 mm of soil cover over the treated layer after the final hilling up operation.



Ratoon cane: Apply in at least 100 L water/ha by injecting behind coulters that cut into the soil. Soil should have moisture at coulter depth at the time of application or receive at least 15 mm of irrigation within a week. Ensure that the coulter slits fill in after treatment and the chemical is at least 100 mm below the surface of the stool mound.

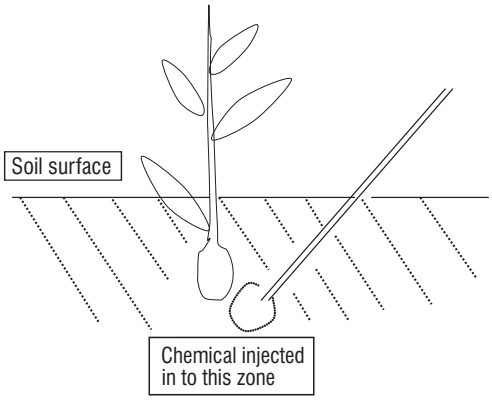
Twin coulter method: Apply subsurface behind twin coulters at a depth of 100 – 150 mm. Coulters should be spaced 310 – 500 mm apart on either side of the stool. They should be as close as possible within this range but wide enough to avoid excessive stool damage particularly in advanced cane.



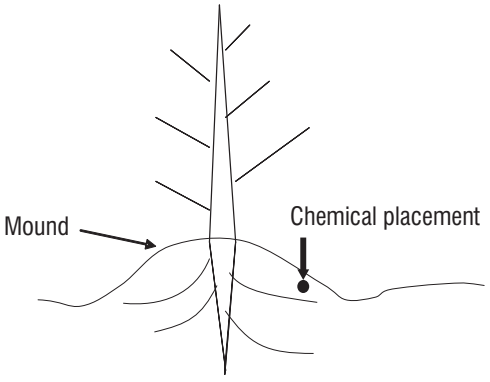
Single coulter method (stool split): Apply subsurface behind a single coulter in the centre of the stool at a depth of 100 – 125 mm. **DO NOT** use this method if ratoon growth is advanced or the stool is of a variety such that excessive crop damage may result.

Eucalypts:

Seedlings



Large trees



PROTECTION OF HONEY BEES AND OTHER INSECT POLLINATORS

Clothianidin has systemic action and is highly toxic to bees. This product may kill bees foraging in the crop to be treated or in hives which are over-sprayed or reached by spray drift, and residues may remain toxic to bees several days after application.

Risks to non-target insects – Clothianidin may have adverse effects on some nontarget beneficials, in particular where IPM is practiced, to foliage dwelling predators.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

Highly toxic to aquatic invertebrates. **DO NOT** contaminate streams, rivers or watercourses with the chemical or used containers.

STORAGE AND DISPOSAL

Store in the closed, original container in a dry, cool, well-ventilated area, away from direct sunlight.

Triple rinse containers before disposal. Add rinsings to spray tank. **DO NOT** dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush or puncture and deliver empty packaging to an approved waste management facility. If an approved waste management facility is not available bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots, in compliance with relevant Local, State or Territory government regulations. **DO NOT** burn empty containers or product.

For refillable containers: Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

FIRST AID

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia Tel. 131126; New Zealand 0800 764 766.

SAFETY DATA SHEET

Additional information is listed in the Safety Data Sheet (SDS) available from Sumitomo Chemical Pty Ltd.

IMPORTANT NOTICE

These goods are to be used only for the purpose and as specified on the label, and are not suitable for any other purpose. To the fullest extent permitted by law, we do not accept or bear any liability on any basis for any loss, damage, cost or expense, arising in any way, directly or indirectly, in connection with the goods.

MAXX Organosilicone Surfactant™ is a tradename of Sumitomo Chemical Australia Pty Ltd.

APVMA Approval No.: 60689/131225

THIS PRODUCT IS NOT CONSIDERED TO BE A DANGEROUS GOOD UNDER THE AUSTRALIAN CODE FOR THE TRANSPORT OF DANGEROUS GOODS BY ROAD OR RAIL	
In a Transport Emergency **Dial 000** **Police or Fire Brigade**	**SPECIALIST ADVICE IN EMERGENCY ONLY** **1800 033 111** **ALL HOURS - AUSTRALIA WIDE**

ADDITIONAL GHS HAZARD AND PRECAUTIONARY STATEMENTS:

May cause damage to organs (Nervous system).

May cause damage to organs (Blood) through prolonged or repeated exposure.

DO NOT breathe vapour/ spray.

Wash contaminated skin thoroughly after handling.

DO NOT eat, drink or smoke when using this product.

Store locked up.

DIRECTIONS FOR USE:

RESTRAINTS:

DO NOT apply if heavy rains are expected within 48 hours.

SPRAY DRIFT RESTRAINTS

Specific definitions for terms used in this section of the label can be found at www.apvma.gov.au/spraydrift

DO NOT allow bystanders to come into contact with the spray cloud.

DO NOT apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from spray drift. The buffer zones in the relevant buffer zone table/s below provide guidance but may not be sufficient in all situations. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.

DO NOT apply unless the wind speed is between 3 and 20 kilometres per hour at the application site during the time of application.

DO NOT apply if there are hazardous surface temperature inversion conditions present at the application site during the time of application. Surface temperature inversion conditions exist most evenings one to two hours before sunset and persist until one to two hours after sunrise.

DO NOT apply by a boom sprayer unless the following requirements are met:

- Spray droplets not smaller than a **MEDIUM** spray droplet size category.
- Minimum distances between the application site and downwind sensitive areas (see 'Mandatory buffer zones' section of the following table titled 'Buffer zones for boom sprayers') are observed.

Buffer zones for boom sprayers	
Application rate	**Mandatory downwind buffer zones**
	Natural aquatic areas
Up to maximum label rate	40 metres

DO NOT apply by aircraft unless the following requirements are met:

- Spray droplets not smaller than a **MEDIUM** spray droplet size category.
- For release heights 25% of wingspan or 25% of rotor diameter or lower above the target canopy, minimum distances between the application site and downwind sensitive areas (see 'Mandatory buffer zones' section of the following table titled 'Buffer zones for aircraft') are observed.

Buffer zones for aircraft	
Application rate	**Mandatory downwind buffer zones**
	Natural aquatic areas
Up to maximum label rate	300 metres

CROP	PEST	RATE	CRITICAL COMMENTS
Cotton	Cotton aphid Green mirid Jassids Green vegetable bug	125 - 250 mL/ha plus MAXX Organosilicone Surfactant™ at 2 mL/L of water.	**DO NOT** apply more than 2 sprays per season and these should alternate with a pesticide from a different group. **Aphids** Apply when aphid numbers are low but starting to build. For example, before there are more than 2 leaves per plant with honeydew. **Mirids, Jassids, Green Vegetable Bug** Regular pest monitoring is necessary to determine pest numbers. Apply when numbers reach threshold levels requiring treatment. **For all Insect Pests** Use the higher rate when heavy infestation is expected and longer control is required. Treated insects may still be on the plant 2 or 3 days after application but will have stopped feeding.
Banana	Weevil borer Rust thrips	**Stem Injection** 3 mL per pseudostem injected at the base. **Stem Spray** 4.5 mL per pseudostem sprayed onto the base, in a total water volume of 10 mL.	It is recommended that SHIELD is not applied in consecutive crop cycles but rather alternated with a product from a different group to reduce the possibility of rust thrips developing resistance. **DO NOT** apply the stem spray application to bananas if rain is expected within 24 hours. **Timing** Apply to pseudostem of the main daughter plant when it is a height of 1.5 m to the base of the central cigar leaf, preferably within one month of the bunch on the mother plant being harvested. **Stem Injection** Injection should be angled such that it is not in the centre of the plant but rather under the outside leaf base about 40 mm deep. See Application section for further information. **Stem Spray** Ensure the stem spray is applied to green growing stem. See Application section for further information.
Sugarcane (plant cane)	Greyback canegrub *(Dermolepida albohirtum)*	2.5 L/ha. This applies to dual row planting as well. (equivalent to 38 mLs per 100 m of single row cane with a 1.52 m spacing)	**DO NOT** apply as a foliar application. **DO NOT** apply more than one soil application of SHIELD per crop per season. Apply as a band spray on late plant or during fill-in stage between the months of October to December. In dual rows the amount required per hectare should be split and applied to both rows. Refer to **APPLICATION** directions under **GENERAL INSTRUCTIONS**.
Sugarcane (ratoon cane)	Greyback canegrub *(Dermolepida albohirtum)*	1.75 – 2.5 L/ha (equivalent to 27 – 38 mL per 100 m of cane row with a 1.52 m spacing).	**DO NOT** apply as a foliar application. **DO NOT** apply more than one soil application of SHIELD per crop per season. Use the high rate where higher pressure is expected (more than 2 grubs/stool) to fields at high risk of greyback damage. Apply while the stools are small enough to avoid excessive damage. This is generally from October to December. In areas where early beetle flights occur application should be made early in this period. Apply as a subsurface soil application with coulters. Refer to **APPLICATION** directions under **GENERAL INSTRUCTIONS**.
	Childers canegrub *(Antitrogus parvulus)*	1.25 – 1.75 L/ha (equivalent to 19 – 27 mL per 100 m of cane row with a 1.52 m spacing).	Monitor for the presence of grubs starting in September and apply immediately grub numbers reach an economic threshold (about 3 grubs/stool). Early application will be more effective than late. Use the high rate when grub populations are high (e.g. an average of more than 5 grubs/stool) or if application is after damage has become visible. Refer to **APPLICATION** directions under **GENERAL INSTRUCTIONS**.

<table>
<tr><th>CROP</th><th>PEST</th><th>RATE</th><th colspan="2">CRITICAL COMMENTS</th></tr>
<tr><td rowspan="2">Eucalypt seedlings from planting to 1 year old</td><td>Leaf feeding beetles:
Including:
Paropsisterna agricola
Cadmus australis
Liparetrus jenkinsi
Heteronyx dimidiata and other Heteronyx species.</td><td>Subsoil seedling injection adjacent to root ball.
1.25 mL per seedling at or soon after planting - mixed with water to a total volume of 5 mL.
Where severe pest pressure is expected:
2.5 mL per seedling at or soon after planting - mixed with water to a total volume of 5 mL.</td><td colspan="2" rowspan="2">Apply by injection about 2 cm below or to the side the seedling root ball at or soon after planting. DO NOT apply SHIELD directly to the root ball area as this may affect plant growth.
The speed of control from this application depends on how fast the product is taken up by the seedling, which needs to be actively growing. This will be assisted by post-planting rainfall or watering of at least 10mm. It is recommended that application is before or during the main annual rainfall period.
If severe attack takes place prior to the chemical becoming effective in the plant, a knockdown insecticide may be required to give short term protection.</td></tr>
<tr><td>Eucalyptus leafroller
Strepsicrates macropetana</td><td>Subsoil seedling injection adjacent to root ball.
2.5 mL per seedling at or soon after planting - mixed with water to a total volume of 5 mL.</td></tr>
<tr><td>Eucalypt trees from 1 to 5 years old in the height range 0.5 to 8 m</td><td>Psyllids:
Including:
Creiis lituratus
Leaf feeding beetles
Including:
Paropsisterna species
Leaf feeding weevils
Including:
Gonipterus scutellatus</td><td>Subsoil side dress application:
2.5 - 10 mL per tree mixed with water for a total volume of at least 40 mL/tree.
Suggested rates based on tree height.
In general the larger the tree and the higher the insect pressure the higher the rate required.
Tree height (m) | mL/tree
0.5 – 4 | 2.5 – 5
4 – 8 | 5 – 10</td><td colspan="2">Apply when monitoring of adult flights and field populations of eggs, larvae or nymphs indicate that an economically damaging population is expected.
Because it may take several weeks for the chemical to be taken up and become effective it is recommended that application is done by looking at the pest pressure on an area wide basis and treating high risk sites prior to infestation.
Application should be by subsoil injection 10 – 15 cm deep and in a continuous line 20 - 40 cm from the tree trunks parallel to the row. This is normally on the outer edge of the mounded area. All weeds out to 65 cm from the tree trunk should be controlled by knockdown and residual herbicide application to avoid them taking up the chemical.
The speed at which treatment becomes effective depends on how fast the product is taken up by the tree, which needs to be actively growing. Uptake will be assisted by post-treatment rainfall which soaks down into the root zone. Generally this requires least 25 mm of rain in a single event. It is recommended that application is before or at the start of the main annual rainfall period. Long term water logging may also inhibit chemical uptake and tree growth. If severe attack takes place prior to the chemical becoming effective in the plant, a knock down insecticide may be required to give short term protection.
Treatment of trees at one to two years of age is recommended since this reduces the rate required and gives the trees protection at the time when they are most vulnerable.</td></tr>
</table>

<table>
<tr><th>CROP</th><th>PEST</th><th>RATE</th><th>CRITICAL COMMENTS</th></tr>
<tr>
<td>Sandalwood and associated host trees such as:
Cathormion sp.
Casuarina sp.
Acacia sp.</td>
<td>Leaf feeding insects
such as
Fig leaf beetle</td>
<td>Subsoil injection by injector gun, coulter injection
or
Application by trickle irrigation
Suggested rates based on tree size
<table>
<tr><th>Tree size</th><th>mL/ tree</th></tr>
<tr><td>0.5 – 3 m height 2 – 8 cm diameter at 20 cm above ground</td><td>2.5 – 5</td></tr>
<tr><td>3 – 8 m height 8 to 16 cm diameter at 20 cm above ground</td><td>5 – 10</td></tr>
</table>
Use the higher rates on larger trees, to a maximum of 10 L/ha of plantation including host trees. If host trees are bigger than sandalwood trees then base the rate on the mean height.
For hand injection mix with an equal volume of water. For coulter injection application mix with sufficient water to apply at least 40 mL/tree.</td>
<td>For application by injecting gun to small trees dilute with an equal amount of water and inject at the edge of the root zone to about 10 cm depth.
For application by injecting with a coulter, apply in at least 40mL of water per tree.
Apply at 10 – 15cm depth in a continuous line 20 – 40 cm from the tree trunks parallel to the row.
For application by trickle irrigation. Calculate the required amount of product per hectare of plantation based on the number of trees per hectare. Ensure the irrigation system is intact and functioning correctly before applying through a standard fertigation tank process. Ensure that the product is evenly distributed through the whole block.
Ensure weeds are controlled out to 65cm from the trunks to avoid them taking up the chemical.
The speed at which treatment becomes effective depends on how fast the product is taken up by the tree, which needs to be actively growing. Uptake will be assisted by rainfall or irrigation, but waterlogging will inhibit chemical uptake and tree growth.
Treatment of trees early in the crop cycle is recommended as this is when leaf feeding has the greatest effect on cumulative tree growth.</td>
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NOT TO BE USED FOR ANY PURPOSE OR IN ANY MANNER CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

WITHHOLDING PERIODS:

COTTON

HARVEST: DO NOT HARVEST FOR 5 DAYS AFTER APPLICATION.

GRAZING/COTTON TRASH: DO NOT GRAZE TREATED COTTON CROPS OR CUT FOR STOCKFEED. DO NOT FEED COTTON TRASH TO LIVESTOCK.

BANANAS

NOT REQUIRED WHEN USED AS DIRECTED.

SUGARCANE

HARVEST: DO NOT HARVEST FOR 21 WEEKS AFTER APPLICATION.

GRAZING: DO NOT GRAZE OR CUT FOR STOCKFEED FOR 21 WEEKS AFTER APPLICATION.

EUCALYPTS & SANDALWOOD

GRAZING: DO NOT ALLOW ANIMALS TO GRAZE IN TREATED AREAS FOR 8 WEEKS AFTER APPLICATION.

Publication date: 04/02/2022