

POISON

KEEP OUT OF REACH OF CHILDREN
READ SAFETY DIRECTIONS BEFORE OPENING OR USING

TITAN

ALPHA DUO 100 INSECTICIDE

ACTIVE CONSTITUENT: 100g/L ALPHA-CYPERMETHRIN
SOLVENT: 759g/L HYDROCARBON LIQUID

GROUP **3A** INSECTICIDE

For the control of certain insect pests, including *Heliothis* (*Helicoverpa* spp.) on various crops and Redlegged Earth Mite and Blue Oat Mite on certain field crops and pastures and certain insect pests on fruit and vegetable crops and *Eucalyptus* and *Pinus* plantations as indicated in the Directions For Use table.

APVMA Approval No.: 62483/133663

Pack Size: 5L-1000L



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IN A TRANSPORT EMERGENCY
DIAL 000
POLICE OR FIRE BRIGADE

TRANSPORT AND HANDLING
NOT A DANGEROUS GOOD
ACCORDING TO THE AUSTRALIAN
DANGEROUS GOODS (ADG) CODE
FOR TRANSPORT BY ROAD AND RAIL

DIRECTIONS FOR USE

Restraints: DO NOT apply if rain is expected within 6 hours of application.

Asparagus: DO NOT apply more than 6 times per season.

Note: This product is ineffective against synthetic pyrethroid-resistant *Helicoverpa armigera* larvae longer than 5mm.

All *Helicoverpa armigera* in NSW and QLD should be treated as being resistant to synthetic pyrethroids. Refer to RESISTANCE MANAGEMENT under GENERAL INSTRUCTIONS. This product is ineffective against synthetic pyrethroid-resistant *Plutella xylostella*.

CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS
Asparagus (Not for use on White Asparagus)	Garden Weevil (<i>Phlyctinus callosus</i>)	WA only	100mL/100L	1 day	Apply in spring after weevil emergence, at up to 500L spray solution per hectare. Day time spraying is effective but superior control may be achieved if spray is applied at night. Repeat applications as required, depending on pest pressure. Application to fern, after spear harvest, may reduce carry-over of Garden Weevil for the following season. Caution: Not for use on White Asparagus, there have been reports of some phytotoxicity when using Alpha-Cypermethrin.
Banksias, Ornamentals	Banksia Moth (<i>Danina banksiae</i>)	WA only	20mL/100L	–	Apply on a regular program at 2-week intervals at early flower development. Commence spraying when blooms are immature and continue until flowers are fully developed.
Broccoli, Brussels Sprouts, Cabbages, Cauliflowers, Kale, Kohl Rabi, Chinese Cabbage, Turnips	Cabbage White Butterfly (<i>Pieris rapae</i>), Cabbage Moth (<i>Plutella xylostella</i>), <i>Helicoverpa punctigera</i> , <i>Helicoverpa armigera</i> Cluster Caterpillar (<i>Spodoptera litura</i>)	ALL STATES	Low volume: 400mL/ha High Volume: 50mL/100L Ultra Low Volume: 400mL/ha	1 day (harvest)	Apply when pest populations indicate. When reinfestation is continuous, treatment every 7-10 days may be required. Add a non-ionic surfactant at its label rates. Low Volume: Ground rig application: Apply in 100 to 600L water per hectare as a fine spray with droplet size of 100 to 200 microns. For aerial application, apply in 20 to 60L water/ha with a droplet size of 100 to 150 microns. High Volume: Use a spray with a droplet size of 200 to 400 microns. Apply 600L spray mixture per hectare just after transplanting and increase gradually to 1000L/ha toward maturity. Ultra Low Volume: See ULV application section of this label. <i>Helicoverpa armigera</i> in QLD and NSW: Follow the application directions for the pest above. Apply as required for pest incidence. Thorough and frequent crop checks are essential. Preferably apply to eggs. Apply to larvae only if they are less than 5mm long.
Canola	Native Budworm (<i>Helicoverpa punctigera</i>) Tobacco Lopper (<i>Chrysodexis argentea</i>) Vegetable Weevil (<i>Listroderes difficilis</i>) Cabbage White Butterfly (<i>Pieris rapae</i>), Cabbage Moth (<i>Plutella xylostella</i>) Redlegged Earth Mite (<i>Halotydeus destructor</i>)	NSW, ACT, VIC, TAS, WA only	200mL/ha or 300mL/ha 400mL/ha 100mL/ha	21 days (cutting for harvest or stock feed or grazing)	DO NOT use more than a total of 400mL/ha per season to any one crop. For Ultra Low Volume use, see application section of this label. Inspect the crop regularly and immediately after flowering. Apply when damaging pest numbers first appear on the crop and repeat if necessary. For aerial application, use a total volume of 30-35L/ha and apply in cooler part of the day. Use the higher rate if larvae longer than 10mm are present. Crops should be inspected as they merge. Border sprays are required to control invading adults. Apply when cotyledons and leaves are being eaten or the plant lopped. Repeat as necessary. Apply according to pest incidence. Pre-emergence: Apply by ground rig only. Treat infested paddocks after sowing but prior to crop emergence when soil is moist. Monitor Redlegged Earth Mite numbers and re-treat if necessary. DO NOT apply as a ULV application.

CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS	
Canola – <i>continued</i>	Redlegged Earth Mite (<i>Halotydeus destructor</i>), Blue Oat Mite (<i>Penthaleus major</i>)	NSW, ACT, VIC, TAS, WA only	50mL/ha	21 days (cutting for harvest or stock feed or grazing)	Apply when mite numbers reach damaging levels. DO NOT apply as pre-emergence treatment. DO NOT use as a ULV application.	
Chickpeas	Native Budworm (<i>Helicoverpa punctigera</i>)	WA only	160mL/ha	21 days (harvest)	Apply to open, less dense crops when numbers of newly hatched larvae first appear on the crop and repeat as necessary.	
		QLD, NSW, ACT, VIC, TAS, SA, WA only	200 or 300mL/ha	35 days (grazing)	Apply when pest numbers reach damaging levels and repeat if necessary. Use the higher rate if larvae longer than 10mm are present. Best results will be obtained by spraying at egg hatch.	
	Redlegged Earth Mite (<i>Halotydeus destructor</i>)	NSW, ACT, VIC, TAS, SA, WA only	100mL/ha		Pre-emergence: Apply by ground rig only. Treat infested paddocks after sowing but prior to crop emergence when soil is moist. Monitor Redlegged Earth Mite numbers and re-treat if necessary. DO NOT apply as a ULV application.	
	Redlegged Earth Mite (<i>Halotydeus destructor</i>), Blue Oat Mite (<i>Penthaleus major</i>)		50mL/ha		Apply when mite numbers reach damaging levels. DO NOT apply as a pre-emergence treatment. DO NOT apply as a ULV application.	
	Cutworm (<i>Agrotis</i> spp.)	NSW, VIC, TAS, SA, WA only	75mL/ha		Check emerging and establishing crops in the late afternoon and evening for caterpillars crawling on the soil surface and feeding on the seedlings. Spray in the late afternoon or evening.	
Cotton	Native Budworm (<i>Helicoverpa punctigera</i>)	QLD, NSW, WA, NT only	–	14 days (harvest)	For Ultra Low Volume use, see ULV application section of this label. Apply as indicated by field checks using rates appropriate for the infestation level determined. Application should be timed to coincide with egg hatching and before larvae are in protected feeding sites.	
			300mL/ha		Apply 300mL/ha when there are up to 75 eggs and/or up to 5 larvae less than 5mm long per 100 terminals.	
			400mL/ha		Apply 400mL/ha when there are up to 150 eggs and/or up to 10 larvae less than 5mm long per 100 terminals and/or when larvae between 5 and 10mm are present.	
			500mL/ha		Apply 500mL/ha when there are up to 150 eggs and/or more than 10 larvae less than 5mm long per 100 terminals and/or when larvae longer than 10mm are present.	
	Cotton Bollworm (<i>Helicoverpa armigera</i>)	QLD, NSW, WA, NT only	–		Preferably apply to eggs. Apply to larvae only if they are less than 5mm long.	
			300mL/ha		Apply 300mL/ha when there are up to 75 eggs and/or up to 5 larvae less than 5mm long per 100 terminals.	
			400mL/ha		Apply 400mL/ha when there are up to 150 eggs and/or up to 10 larvae less than 5mm long per 100 terminals.	
			500mL/ha		Apply 500mL/ha when there are more than 150 eggs and/or more than 10 larvae less than 5mm long per 100 terminals.	
	Rough Bollworm (<i>Earias huegeli</i>)	QLD, NSW, WA, NT only	300 or 400mL/ha		Apply when 2 or more larvae are present per 100 bolls. It is essential to detect and treat infestations in the early stages before larvae are established or concealed in bolls deep in the canopy. Use the higher rate if larvae greater than 10mm are present. Best results are obtained by applying at egg hatch.	
					Apply at recommended threshold levels as indicated by field checks. Use higher rate when pest pressure is high and when increased residual protection is required.	
	Green Mirid (<i>Creontiades dilutus</i>), Apple Dimpling Bug (<i>Campylomma liebknechti</i>)					

CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS
Faba Beans	Native Budworm (<i>Helicoverpa punctigera</i>)	WA only	160mL/ha	4 weeks (harvest) 5 weeks (grazing)	Apply to open, less dense crops when numbers of newly hatched larvae first appear on the crop and repeat as necessary.
		NSW, ACT, VIC, TAS, SA, WA only	200mL or 300mL/ha		Apply when pest numbers reach damaging levels and repeat if necessary. Use the higher rate if larvae longer than 10mm are present. Best results will be obtained by spraying at egg hatch.
	Redlegged Earth Mite (<i>Halotydeus destructor</i>)	NSW, ACT, VIC, TAS, SA, WA only	100mL/ha		Pre-emergence: Apply by ground rig only. Treat infested paddocks after sowing but prior to crop emergence when soil is moist. Monitor Redlegged Earth Mite numbers and re-treat if necessary. DO NOT apply as a ULV application.
	Redlegged Earth Mite (<i>Halotydeus destructor</i>), Blue Oat Mite (<i>Penthaleus major</i>)		50mL/ha		Apply when mite numbers reach damaging levels. DO NOT apply as a pre-emergence treatment. DO NOT use as a ULV application.
	Cutworm (<i>Agrotis</i> spp.)		75mL/ha		Check emerging or establishing crops in the late afternoon and evening for caterpillars crawling on the soil surface and feeding on the seedlings. Spray in the late afternoon and evening.
Field Peas	Native Budworm (<i>H. punctigera</i>)	WA only	160mL/ha	4 weeks (harvest)	For Ultra Low Volume use, see ULV application section of this label. Apply to open, less dense crops when damaging numbers of newly hatched larvae first appear on the crop and repeat if necessary.
		NSW, ACT, VIC, TAS, SA, WA only	200 or 300mL/ha		Apply when damaging pest numbers first appear on the crop and repeat if necessary. Use the higher rate if larvae longer than 10mm are present. Best results are obtained by applying at egg hatch.
	Pea Weevil (<i>Bruchus pisorum</i>)	NSW, ACT, VIC, SA, WA only	160 or 200mL/ha		Apply during flowering prior to egg laying when adult weevil population reaches 1 or more per 25 sweeps of a sweep net. Use the higher rate for longer residual protection.
	Cutworm (<i>Agrotis</i> spp.)		75mL/ha		Check emerging and establishing crops in the late afternoon and evening for caterpillars crawling on the soil surface and feeding on the seedlings. Apply product in late afternoon or evening.
	Redlegged Earth Mite (<i>Halotydeus destructor</i>)	NSW, ACT, VIC, TAS, SA, WA only	100mL/ha		Pre-emergence: Apply by ground rig only. Treat infested paddocks after sowing but prior to crop emergence when soil is moist. Monitor Redlegged Earth Mite populations and re-treat as necessary. DO NOT use as a ULV application.
	Redlegged Earth Mite (<i>Halotydeus destructor</i>), Blue Oat Mite (<i>Penthaleus major</i>)		50mL/ha		Apply when mite numbers reach damaging levels. DO NOT apply as pre-emergence treatment. DO NOT use as a UL V application.
Grapevines (non-bearing)	Pink Cutworm (<i>Agrotis munda</i>), Apple Weevil (Curculio Beetle) (<i>Otiorynchus cribricollis</i>), Garden Weevil (<i>Phlyctinus callosus</i>)	NSW, ACT, VIC, TAS, SA, WA only	Dilute Spraying: 100mL/100L Concentrate Spraying: Refer to the Mixing/ Application Section	–	Monitor young vines during spring and early summer and apply at the first signs of leaf damage. Spray the leaves, canes and the soil around each vine to a diameter of 30cm. 70-80mL of dilute spray should be sufficient for each vine. If pest infestation persists, a second application may be required after three weeks. Apply the same total amount of product to the target crop whether applying this product by dilute or concentrate spraying methods (See General Instructions).

CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS
Lettuce	<i>Helicoverpa</i> spp.	ALL STATES	Low volume: 400mL/ha High volume: 50mL/100L	3 days (harvest)	Thoroughly and regularly check the crop. Apply at the first sign of pest activity. Preferably apply to eggs. Apply to <i>H. armigera</i> ONLY if larvae are less than 5mm long. Repeat according to pest incidence.
Linola	Native Budworm (<i>H. punctigera</i>)	NSW, ACT, VIC, TAS, SA, WA only	160 or 200mL/ha	12 weeks (harvest)	DO NOT apply more than a total 400mL/ha per season to any one crop. For Ultra Low Volume use, see ULV application section of this label. Inspect crop regularly during and immediately after flowering. Apply when damaging pest numbers first appear on the crop. For aerial application, apply during the cooler part of the day in a total volume of 30-35L/ha. Use the higher rate if larvae longer than 10mm are present. Refer to application section for water rates.
Linseed	Cutworms (<i>Agrostis</i> spp.)	NSW, ACT, VIC, TAS, SA, WA only	75mL/ha	14 days (harvest)	Check emerging and establishing crops in the late afternoon and evening for caterpillars crawling on the soil surface and feeding on the seedlings. Apply product in late afternoon or evening.
	Native Budworm (<i>H. punctigera</i>)		200 or 300mL/ha		For Ultra Low Volume use, see ULV application section of this label. Inspect the crop regularly and immediately after flowering. Apply when damaging numbers first appear on the crop and repeat if necessary. Use the higher rate if larvae larger than 10mm are present. Best results will be obtained by spraying at egg hatch. Refer to application section for water rates.
Lucerne (seed and forage crops)	Native Budworm (<i>H. punctigera</i>)	NSW, ACT, VIC, TAS, SA, WA only	160mL/ha	14 days (grazing or cutting for stock feed)	For Ultra Low Volume use, see ULV application section of this label. DO NOT apply more than one application per cut or grazing for animal feed. Apply when pest populations reach economically damaging levels. Apply to larvae less than 5mm in length.
	Green mirid (<i>Creontiades dilutis</i>)				DO NOT apply more than one application per cut or grazing for animal feed. Apply when pest populations reach economically damaging levels.
Lupins	Native Budworm (<i>H. punctigera</i>)	NSW, ACT, VIC, SA only	200 or 300mL/ha	4 weeks (harvest)	DO NOT apply more than a total 600mL/ha per season to any one Lupin crop. For Ultra Low Volume use, see ULV application section of this label. Apply when damaging pest numbers first appear on the crop and repeat if necessary. Use the higher rate if larvae larger than 10mm are present. Best results are obtained by spraying at egg hatch.
		WA only	120 or 200mL/ha		Spraying should be timed to precede the first visible damage to the pods. Use the higher rate when the infestation is severe, or when residual activity is required.
	Cutworm (<i>Agrostis</i> spp.)	NSW, ACT, VIC, TAS, SA, WA only	75mL/ha		Check emerging and establishing crops in the late afternoon and evening for caterpillars crawling on the soil surface and feeding on the seedlings. Apply product in late afternoon or evening.
	Common Armyworm (<i>Mythimna convecta</i>), Southern Armyworm (<i>Persectania ewingii</i>)	NSW, ACT, WA only	240mL/ha		Spray in the cool of the day (late afternoon) when larvae are most active.
	Redlegged Earth Mite (<i>Halotydeus destructor</i>)	NSW, ACT, VIC, TAS, SA, WA only	100mL/ha		Pre-emergence: Apply by ground rig only. Treat infested paddocks after sowing but prior to crop emergence when soil is moist. Monitor Redlegged Earth Mite numbers and re-treat if necessary. DO NOT apply as a ULV application.

CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS
Lupins – <i>continued</i>	Redlegged Earth Mite (<i>Halotydeus destructor</i>), Blue Oat Mite (<i>Penthaleus major</i>)	NSW, ACT, VIC, TAS, SA, WA only	50mL/ha	4 weeks (harvest)	Apply when mite numbers reach damaging levels. DO NOT apply as pre-emergence treatment. DO NOT use as a ULV application.
Maize	Corn Earworm (<i>H. armigera</i>)	QLD, NSW, ACT, VIC, WA, NT only	300 or 400mL/ha	7 days (harvest)	For Ultra Low Volume use, see ULV application section of this label. Thoroughly and regularly check the crop. Apply from early silking according to pest incidence. Use the higher rate if larvae longer than 10mm are present. In QLD, NSW & NT, preferably apply to eggs or apply to larvae only if they are less than 5mm long.
	Native Budworm (<i>H. punctigera</i>)	ALL STATES			Thoroughly and regularly check the crop. Apply when the infestation reaches economically damaging levels and repeat as required. Best results will be obtained by applying at egg hatch. Use the higher rate if larvae longer than 10mm are present.
Mung Beans, Navy Beans	Native Budworm (<i>H. punctigera</i>)	QLD, NSW, ACT, WA, NT only	300 or 400mL/ha	7 days (harvest)	For Ultra Low Volume use, see ULV application section of this label. Thoroughly and regularly check the crop. Small larvae are easier to kill than large larvae. Apply when the number of larvae feeding on flowers or pods reaches 1 to 2 per metre of row. Repeat as required. Best results will be obtained by applying at egg hatch. Use the higher rate if larvae longer than 10mm are present or when canopy is dense.
	Corn Earworm (<i>H. armigera</i>)				Thoroughly and regularly check the crop. Apply when the infestations reach economically damaging levels and repeat as required. Preferably apply to eggs. In NSW & QLD, apply to larvae only if they are less than 5mm long. Use the higher rate when pest pressure is high.
Pastures (Legume and grass based pastures)	Wingless Grasshoppers (<i>Phaulacridium vittatum</i>)	ALL STATES	160mL/ha	3 days (grazing) 14 days (cut for stockfeed)	DO NOT apply more than a total of 320mL/ha per season. For Ultra Low Volume use, see ULV application section of this label. Apply to infested areas and repeat as necessary. Spraying is most effective on newly emerged hoppers before they begin dispersing. Spray in the warmer parts of the day when hoppers are exposed. Later sprays should be applied before the start of egg laying. Good coverage is essential.
	Brown Pasture Looper (<i>Ciampa arietaria</i>)	NSW, ACT, VIC, TAS, SA, WA only	50mL/ha		Apply when pest infestation reaches a commercially damaging level.
	Blackheaded Pasture Cockchafer (<i>Aphodius tasmaniae</i>)		100mL/ha		Spraying is most effective when larvae are detected and treated early. Suspect paddocks should be dug after the first substantial rain in April/May and inspected to ensure grubs are present in sufficient numbers to warrant treatment. Spraying after June will give poorer results.
	Redlegged Earth Mite (<i>Halotydeus destructor</i>)				Pre-emergence: Apply by ground rig only. Treat infested paddocks after sowing but prior to crop emergence when soil is moist. Monitor Redlegged Earth Mite numbers and re-treat if necessary. DO NOT apply as a ULV application.

CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS
Pastures (Legume and grass based pastures) – continued	Redlegged Earth Mite (<i>Halotydeus destructor</i>), Blue Oat Mite (<i>Penthaleus major</i>)	NSW, ACT, VIC, TAS, SA, WA only	50mL/ha	3 days (grazing) 14 days (cut for stockfeed)	Apply when mite numbers reach damaging levels. DO NOT use as a ULV application. Autumn/winter: Apply 4 to 7 weeks after the opening rains in late autumn/early winter when RLEM are present (2-3 weeks after egg hatch occurs). This product is rain fast after spray deposits have dried on the leaf surface. This product can be mixed with herbicides used for winter cleaning of sub-clover pastures. See the “compatibility” section of this label. Spring: If RLEM/BOM numbers increase in the spring, spray when damage is observed and again before diapause egg production begins. This product can be mixed with herbicides used for winter cleaning of sub-clover pastures. See the “compatibility” section of this label. DO NOT use as a pre-emergence treatment.
Pome fruit: Apples, Pears	Apple Weevil (<i>Otiorhynchus cribricollis</i>), Garden Weevil (<i>Phlyctinus callosus</i>)	NSW, VIC, SA, WA only	100mL/100L water	14 days (harvest)	Spray approx. 1-2 Litres of solution onto the crotch, trunk and the soil at the base of each tree at peak weevil emergence. This is usually late October-late November for Garden Weevil and late November-mid December for Apple Weevil. Monitor weevil emergence using a single sided cardboard trunk band. Continue monitoring after spraying as a second spray may be needed 3-4 weeks later. Apply the same total amount of product to the target crop whether applying this product by dilute or concentrate spraying methods (See General Instructions).
Rice (Both aerial and drill sown)	Common Armyworm (<i>Mythimna convecta</i>)	NSW, WA only	200mL/ha	7 days	DO NOT apply more than a total of 400mL/ha per season to any one crop. Inspect crops regularly for the presence of grubs from flowering onwards. Apply when rice-damaging pest numbers first appear. Apply by aircraft in 20-30 litres of water per hectare to drained fields only. Spray in the cool of the day (early morning or late afternoon) when larvae are most active. Monitor crops closely and re-treat if necessary. Poor control may occur in crops that have lodged. See application section for correct water rates.
	Bloodworm		100mL/ha		Apply to water immediately after sowing using helicopter or fixed-wing aircraft. A second treatment may be required approximately 10 to 14 days later. Plants are not vulnerable to Bloodworm damage after secondary roots have developed. DO NOT release water from treated areas off-farm until the retention period specified by local irrigation authorities has been met.
Soybeans	Native Budworm (<i>H. punctigera</i>)	QLD, NSW, ACT, WA, NT only	300 or 400mL/ha	7 days (harvest)	For Ultra Low Volume use, see ULV application section of this label. Thoroughly and regularly check the crop. Apply when flower or pod feeding numbers reach 1-2 per metre of row. Repeat as required. Use the higher rate if larvae longer than 10mm are present. Best results are obtained by applying at egg hatch.
	Corn Earworm (<i>H. armigera</i>)				Thoroughly and regularly check the crop. Apply when the numbers are sufficient to cause economic damage. Preferably apply to eggs. In NSW and QLD, apply to larvae only if they are less than 5mm long. Repeat as required. Use the higher rate when pest pressure is high.

CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS
Stone fruit: Apricots, Nectarines, Peaches, Plums	Apple Weevil (<i>Otiorhynchus cribricollis</i>), Garden Weevil (<i>Phlyctinus callosus</i>)	WA only	Dilute Spraying: 100mL/100L water Concentrate Spraying: Refer to the Mixing/ Application Section	14 days (harvest)	Spray approx. 1-2 litres of solution onto the crotch, trunk and soil at the base of each tree at peak weevil emergence. This is usually late October-late November for Garden Weevil, and late November-mid December for Apple Weevil. Monitor weevil emergence using a single sided cardboard trunk band. Continue monitoring after spraying as a second spray 3-4 weeks later may be needed. Apply the same total amount of product to the target crop whether applying this product by dilute or concentrate spraying methods (See General Instructions).
Sorghum	Native Budworm (<i>H. punctigera</i>), Corn Earworm (<i>H. armigera</i>)	QLD, NSW, ACT, WA, NT only	300 or 400mL/ha	7 days (harvest)	For Ultra Low Volume use, see ULV application section of this label. Crop checking should commence when the head emerges from the boot and continue at daily intervals until the end of flowering for midge and at weekly intervals until maturity for <i>H. armigera</i> . DO NOT apply to tight headed varieties. Apply when there are 2 or more actively feeding larvae per head, or when numbers are sufficient to cause economic damage. Use the higher rate if longer residual control is required. Preferably apply to eggs. Apply to <i>H. armigera</i> larvae only if they are less than 5mm long. Repeat as required.
	Sorghum Midge (<i>Contarinia sorghicola</i>)	100 or 200mL/ha			Apply when midge numbers reach 1-2 per head, from head emergence to completion of flowering. Repeat as required. Use the higher rate for longer residual protection.
Sunflowers	Native Budworm (<i>H. punctigera</i>)	QLD, NSW, ACT, VIC, WA, NT only	300 or 400mL/ha	21 days (harvest)	TO PROTECT BEES and ensure adequate pollination, application during flowering should be avoided. If application is necessary at flowering, apply early morning or late afternoon when bees are not actively foraging. For Ultra Low Volume use, see ULV application section of this label. Crop checking should be aimed to detect larvae as they hatch. Small larvae are easier to kill than large larvae. Apply when an average of 2-3 larvae are present per head or when economic damage is occurring. Repeat as required. Apply before the heads turn downwards to ensure adequate coverage. Use the higher rate when larvae larger than 10mm are present. Best results will be obtained by applying at egg hatch.
	Corn Earworm (<i>H. armigera</i>)				Thoroughly and regularly check the crop. Apply when numbers are sufficient to cause economic damage. Preferably apply to eggs. In NSW and QLD, apply to larvae only if they are less than 5mm long, repeat as required. Use the higher rate under heavy pest pressure.
	Grey Cluster Bug (<i>Nysius clevelandensis</i>), Rutherglen Bug (<i>Nysius vinitor</i>)				Apply from budding when adult numbers per plant reach 10-15 in dryland crops and 20-25 in irrigated crops. After flowering apply when adult numbers on the face of heads reaches 20-25. Repeat as required. The higher rate should be used when numbers are very high.
	Rutherglen Bug (<i>Nysius vinitor</i>)	VIC, TAS, WA only	250mL/ha		Apply from budding when adult numbers per plant reach 10-15 in dryland crops and 20-25 in irrigated crops. After flowering apply when adult numbers on the face of heads each 20-25. Repeat as required.

CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS
Sweet Corn	Native Budworm (<i>H. punctigera</i>), Corn Earworm (<i>H. armigera</i>)	ALL STATES	300 or 400mL/ha	7 days (harvest)	For Ultra Low Volume use, see ULV application section in this label. Thoroughly and regularly check the crop. The level of cob damage tolerated varies with market requirements. Fresh Market Corn: Apply at 5-8 day intervals, accordingly to pest incidence, from tassel emergence until the silks wither. Processing Corn: Apply from early silking according to pest incidence. Larvae in protected feeding sites within the cob are not effectively controlled. Apply before this situation occurs. Best results will be obtained by applying at egg hatch. Use the higher rate if larvae longer than 10mm are present. To help contain pyrethroid resistance in <i>Helicoverpa armigera</i> in summer crops, DO NOT apply to Corn Earworm longer than 5mm.
Tobacco	Native Budworm (<i>Helicoverpa punctigera</i>), Tobacco Budworm (<i>H. armigera</i>)	QLD, VIC, WA only	30 or 40mL/100L	7 days (harvest)	Apply from just after transplanting on a 7 to 10 day schedule, according to pest incidence. Apply as a medium to fine spray using hollow and/or solid cone nozzles. The spray volume should be gradually increased as the plants grow, from 200L/ha just after transplanting to 1000L/ha at maturity. Use the higher rate when larvae longer than 10mm are present or when egg laying is intense.
Tomatoes (bush and trellis)	Native Budworm (<i>H. armigera</i>)	ALL STATES	Ultra Low Volume: 300 or 400mL/ha	1 day (harvest)	DO NOT apply to trellis tomatoes by aircraft. Apply on a 7 day schedule while pests are active. Use the middle rate when pest activity is high and/or larvae between 10 and 20mm in length are present. Use the highest rate when larvae longer than 20mm are present and/or when interruption of the schedule enables a very severe infestation to develop. Ultra Low Volume: See ULV application section of this label. Low Volume: By ground rig: Apply in 100 to 400L of water per hectare as a fine spray. By aircraft: apply in a minimum of 10L of water per hectare as a fine spray of 100 to 150 microns VMD. High Volume: Apply as a medium to fine spray. Gradually increase the spray volume as the plants grow, from 200L/ha just after transplanting establishment to 1000L/ha at maturity.
	Tomato Grub (<i>H. armigera</i>)	VIC, TAS, SA, WA only	Low Volume: 200, 300 or 400mL/ha		
	Cluster Caterpillar (<i>Spodoptera litura</i>)	QLD, NSW, ACT, WA, NT only	High Volume: 20, 30 or 50mL/100L		
	Tomato Grub (<i>H. armigera</i>)	QLD, NSW, NT only	Ultra Low Volume: 300mL/ha Low Volume: 300mL/ha High Volume: 30mL/100L		
	Plague Thrips (<i>Thrips imuginis</i>)	ALL STATES	Ultra Low Volume: 130mL/ha Low Volume: 130mL/ha High Volume: 18mL/100L		
Winter Cereals	Cutworms (<i>Agrostis</i> spp.)	NSW, ACT, VIC, SA, WA only	75mL/ha	7 days (harvest) 14 days (stubble grazing)	DO NOT apply more than a total of 540mL/ha per season to anyone crop. For Ultra Low Volume use, see ULV application section of this label. Check emerging and establishing crops in the late afternoon and evening for caterpillars crawling on the soil surface and feeding on the seedlings. Spray in the late afternoon or evening.

CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS
Winter Cereals – <i>continued</i>	Cutworms (<i>Agrostis</i> spp.)	VIC, SA, WA only	75 or 150mL/ha	7 days (harvest) 14 days (stubble grazing)	Use the higher rate when the infestation is severe, or when the larvae are larger than 10mm long, or when longer residual activity is required.
	Webworm (<i>Hednota</i> spp.)	NSW, ACT, VIC, SA, WA only	75mL/ha		DO NOT use as a ULV application. Pre-planting: May be applied pre-planting with knockdown herbicides. Apply from the last week of May when larvae have emerged. DO NOT apply to dense pasture. All pasture should be closely grazed prior to application to ensure adequate spray penetration. Apply in a minimum of 100L of water per hectare. Apply at first sign of pest infestation. Repeat as necessary. Post-crop Emergence: Inspect crop regularly from emergence and apply at the first sign of pest activity. Repeat as required.
	Redlegged Earth Mite (<i>Halotydeus destructor</i>)	NSW, ACT, VIC, TAS, SA,WA only	100mL/ha		Pre-emergence: Apply by ground rig only. Treat infested paddocks after sowing but prior to crop emergence when soil is moist. Monitor Redlegged Earth Mite numbers and re-treat if necessary. DO NOT apply as a ULV application.
	Redlegged Earth Mite (<i>Halotydeus destructor</i>), Blue Oat Mite (<i>Penthaleus major</i>)		50mL/ha		Apply when mite numbers reach damaging levels. Spray seedling crops if silvering or whitening (bleaching) of the leaves is causing a reduction in crop growth. If possible spray on a calm, mild morning when mites are actively feeding on crop leaves. DO NOT apply as pre-emergence treatment. DO NOT use as a ULV application.
	Aphids (<i>Rhopalosiphum</i> spp.) (Barley Yellow Dwarf virus vectors)		125mL/ha		To control aphids, sprays should be applied at 3 and 7 weeks after emergence to reduce aphid colonization and spread of Barley Yellow Dwarf virus. This will also reduce the effect of feeding aphid damage.
	Common Armyworm (<i>Mythimna convecta</i>), Southern Armyworm (<i>Persectania ewingii</i>)	ALL STATES	240mL/ha		Apply before “head lopping” occurs when larval numbers exceed 2 or more per square metre. Spray in the cool of the day (late afternoon) when the larvae are most active. Spray to achieve good crop penetration. This rate is effective against larvae up to 20mm in length. Monitor crops regularly and re-treat if necessary. Poor control may occur in crops that have lodged. See application section for correct water rates.
Trees & Ornamentals					
CROP	PEST	STATE	RATE	WHP	CRITICAL COMMENTS
<i>Eucalyptus</i> spp. plantations	Adults and larvae of Chrysomelid Leaf Beetle or Eucalyptus Leaf Beetle (<i>Chrysophtharta</i> spp.), Eucalyptus Weevil (<i>Gonipterus</i> spp.), Autumn Gum Moth (<i>Mnesampela</i> spp.), Adults of <i>Liparetrus</i> spp., (<i>Cadmus</i> spp.)	ALL STATES	250-300mL/ha	–	Ground or aerial applications depending on size of trees. Apply by fixed wing aircraft or by helicopter, using hydraulic or Micronair equipment, to the crowns of trees. Micronair application in 5 litres of water/ha has proved effective. Apply before insect damage causes severe defoliation. For Ultra Low Volume use, see ULV application section in this label.
<i>Eucalyptus</i> and <i>Pinus</i> spp. plantations	Adults and larvae of Bronzed Field Beetle (<i>Adelium</i> spp.)		160mL/ha		
	Wingless Grasshopper (<i>Phaulacridium vittatum</i>)				

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

WITHHOLDING PERIODS:

ASPARAGUS, BROCCOLI, BRUSSELS SPROUTS, CABBAGES, CAULIFLOWERS, CHINESE CABBAGE, KALE, KOHLRABI, TOMATOES, TURNIPS: DO NOT HARVEST FOR 1 DAY AFTER APPLICATION.

LETTUCE: DO NOT HARVEST FOR 3 DAYS AFTER APPLICATION.

PASTURES: DO NOT GRAZE FOR 3 DAYS AFTER APPLICATION. DO NOT CUT FOR STOCKFEED FOR 14 DAYS AFTER APPLICATION.

MAIZE, MUNG BEANS, NAVY BEANS, RICE, SORGHUM, SOYBEANS, SWEET CORN, TOBACCO: DO NOT HARVEST FOR 7 DAYS AFTER APPLICATION.

WINTER CEREALS: DO NOT HARVEST FOR 7 DAYS AFTER APPLICATION.

DO NOT GRAZE TREATED STUBBLE FOR 14 DAYS AFTER APPLICATION.

LUCERNE: DO NOT GRAZE OR CUT FOR STOCKFEED FOR 14 DAYS AFTER APPLICATION.

COTTON, LINSEED, POME FRUIT, STONE FRUIT: DO NOT HARVEST FOR 14 DAYS AFTER APPLICATION.

CANOLA: DO NOT GRAZE OR CUT FOR STOCKFEED FOR 21 DAYS AFTER APPLICATION.

DO NOT CUT AND WINDROW FOR HARVEST FOR 21 DAYS AFTER APPLICATION.

CHICKPEAS: DO NOT HARVEST FOR 21 DAYS AFTER APPLICATION.

DO NOT GRAZE OR CUT FOR STOCKFEED FOR 5 WEEKS AFTER APPLICATION.

SUNFLOWERS: DO NOT HARVEST FOR 21 DAYS AFTER APPLICATION.

FIELD PEAS, LUPINS: DO NOT HARVEST FOR 4 WEEKS AFTER APPLICATION.

FABA BEANS: DO NOT HARVEST FOR 4 WEEKS AFTER APPLICATION.

DO NOT GRAZE OR CUT FOR STOCKFEED FOR 5 WEEKS AFTER APPLICATION.

LINOLA: DO NOT HARVEST FOR 12 WEEKS AFTER APPLICATION.

GENERAL INSTRUCTIONS

TITAN Alpha Duo 100 Insecticide is a contact and residual insecticide. It can be used as a protective treatment when applied at regular intervals or as a knockdown treatment to control existing infestations.

The product can be applied mixed either with water carrier or oil based bulk-ing agents such as D-C-TRON* Cotton Spray Oil or compatible ULV products.

MIXING/APPLICATION

Low Volume and High Volume applications by ground rig or aircraft when TITAN Alpha Duo 100 Insecticide is applied with water carrier. Add the required quantity of TITAN Alpha Duo 100 Insecticide to water in the spray tank and mix thoroughly. Maintain agitation during mixing and application.

Ultra Low Volume (ULV) application by aircraft when TITAN Alpha Duo 100 Insecticide is applied with oil based bulkling agents. This product can be mixed with D-C-TRON Cotton Spray Oil or other compatible products (See COMPATIBILITY section). First add the mixing partner to the spray tank and then, with the agitator in motion, add the required quantity of TITAN Alpha Duo 100 Insecticide direct to the spray tank.

DO NOT mix with water and ensure that no water is in the spraying system.

Dilute Spraying: Use a sprayer designed to apply high volumes of water up to the point of run-off and matched to the crop being sprayed. Set up and operate the sprayer to achieve even coverage throughout the crop canopy. Apply sufficient water to cover the crop to the point of run-off. Avoid excessive runoff. The required water volume may be determined by applying different test volumes, using different settings on the sprayer, from industry guidelines or expert advice. Add the amount of product specified in the Directions for Use table for each 100L of water. Spray to the point of run-off. The required dilute spray volume will change and the sprayer set up and operation may also need to be changed, as the crop grows.

Concentrate Spraying: Use a sprayer designed and set up for concentrate spraying (that is a sprayer which applies water volumes less than those required to reach the point of run-off) and matched to the crop being sprayed. Set up and operate the sprayer to achieve even coverage throughout the crop canopy using your chosen water volume. Determine an appropriate dilute spray volume (See Dilute Spraying above) for the crop canopy. This is needed to calculate the concentrate mixing rate. The mixing rate for concentrate spraying can then be calculated in the following way:

EXAMPLE ONLY

1. Dilute spray volume as determined above: For example 1500L/ha
2. Your chosen concentrate spray volume: For example 500L/ha
3. The concentration factor in this example is: 3X (ie 1500L÷500L=3)
4. If the dilute label rate is 10mL/100L, then the concentrate rate becomes 3 x 10, that is 30mL/100L of concentrate spray.

The chosen spray volume, amount of product per 100L of water, and the sprayer set up and operation may need to be changed as the crop grows. For further information on concentrate spraying, users are advised to consult relevant industry guidelines, undertake appropriate competency training and follow Industry Best Practices.

Low Volume and High Volume applications by ground rig or aircraft when TITAN Alpha Duo 100 Insecticide is applied with water carrier

TITAN Alpha Duo 100 Insecticide can be applied by ground or aircraft with a water carrier. Thorough coverage is essential to ensure adequate control. Always apply with a non-ionic surfactant unless detailed on the label of a tank mix partner. Apply during the cooler parts of the day or night.

Ground application – water carrier

For low volume spraying of field crops with ground rigs, use a total volume of 50-200L/ha except for Sweet Corn, Tomatoes and Tobacco where higher volumes should be used. Drop arms should be used on ground rigs in row crops taller than 30cm (0.3m). The application should be made as a fine spray, preferably using hollow cone nozzles, unless otherwise directed in the Critical Comments.

Aerial application - water carrier

DO NOT apply to trellis tomatoes by aircraft. Use a minimum spray volume of 20L/ha. For spring/early summer application to cereals, linola, canola, rice and to other dense crops, apply in a total spray volume of 30 to 35L/ha. If possible, spray in a crosswind. Avoid spraying in calm conditions or when wind is light and variable in direction. Apply as a spray of 100-150 microns VMD.

Ultra Low Volume (ULV) application by aircraft

TITAN Alpha Duo 100 Insecticide mixed with D-C-TRON Cotton Spray Oil or other compatible products should be applied in a minimum total spray volume of 1.5L/ha. It should only be applied by aircraft with suitable equipment to provide a droplet size of approximately 80-100 microns VMD. Applications should be made during the cooler parts of the day or at night. Avoid application in calm or very windy conditions. Preferably apply in light to moderate cross winds.

COMPATIBILITY

Low Volume and High Volume application by ground rig or aircraft when TITAN Alpha Duo 100 Insecticide is applied with water carrier

This product is compatible with D-C-TRATE*, D-C-TRON* Cotton Spray Oil, TITAN Dicamba products, TITAN Cupric Hydroxide 400WG Fungicide, TITAN Methomyl 225 Insecticide, TITAN products containing Chlorpyrifos, TITAN products containing Metalaxyl, TITAN products containing Clethodim, TITAN Dimethoate 400 Insecticide, TITAN Paraquat 250 Herbicide, TITAN Diquat 200 Non-Residual Herbicide, TITAN Glyphosate products, TITAN Diflufenican + MCPA Selective Herbicide, TITAN Diflufenican 25 + Bromoxynil 250, TITAN Simazine 900 WG Herbicide, TITAN Imazethapyr 700WG Insecticide, TITAN 2,4-D Amine and Ester products, TITAN 2,4-DB 500 SC Herbicide and TITAN MCPA products.

DO NOT mix TITAN Alpha Duo 100 Insecticide with wettable powders and water dispersible granules BEFORE addition to the spray tank.

TITAN Alpha Duo 100 Insecticide can be mixed with TITAN Mancozeb 750WG Fungicide providing the mixture is agitated efficiently and used immediately.

Ultra Low Volume (ULV) application by aircraft

This product should be mixed only with specific ULV formulations of other insecticides, eg. TITAN Methomyl 225 Insecticide, TITAN products containing Chlorpyrifos and PBO synergists, when mixed according to the directions on the PBO synergist labels.

INSECTICIDE RESISTANCE WARNING

For insecticide resistance management

TITAN Alpha Duo 100 Insecticide is a Group 3A insecticide. Some naturally occurring insect biotypes resistant to TITAN Alpha Duo 100 Insecticide and other Group 3A insecticides may exist through normal genetic variability in any insect population. The resistant individuals can eventually dominate the insect population if TITAN Alpha Duo 100 Insecticide or other Group 3A insecticides are used repeatedly. The effectiveness of TITAN Alpha Duo 100 Insecticide on resistant individuals could be significantly reduced. Since occurrence of resistant individuals is difficult to detect prior to use, TITAN AG Pty Ltd accepts no liability for any losses

GROUP 3A INSECTICIDE



that may result from the failure of TITAN Alpha Duo 100 Insecticide to control resistant insects.

TITAN Alpha Duo 100 Insecticide may be subject to specific resistance management strategies. For further information, contact your local supplier, TITAN AG representative or local agricultural department agronomist.

In NSW and QLD, application of this product to *Helicoverpa armigera* larvae longer than 5mm may not only be ineffective but it may increase the level of synthetic pyrethroid resistance. This product should NOT be used to treat infestations that were not controlled by an earlier application of it or another synthetic pyrethroid. Infestations not controlled by this product should be treated with an insecticide from another chemical group.

Application of this product with an insecticide from another chemical group such as Nudrin* will assist with the management of synthetic pyrethroid resistant *Helicoverpa armigera*.

PROTECTION OF LIVESTOCK

Dangerous to bees. DO NOT spray on any plants in flower while bees are foraging. TITAN Alpha Duo 100 insecticide is known to have a deterrent effect on foraging bees for a short period of time after spraying. Risk to bees is reduced by spraying in early morning and late evening while bees are not foraging.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

Dangerous to fish and aquatic invertebrates such as yabbies. DO NOT contaminate fish ponds, dams, drains, rivers or streams with product or used containers. Drift and run-off from treated areas may be hazardous to fish or crustaceans in adjacent sites.

STORAGE AND DISPOSAL

Store in the closed, original container in a cool, well-ventilated area. DO NOT store for prolonged periods in 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 500mm 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.

Refillable containers: Store in the closed, original container in a cool, well-ventilated area. DO NOT store for prolonged periods in direct sunlight. Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.

SAFETY DIRECTIONS

Harmful if swallowed. Will irritate the eyes and skin. Facial skin contact may cause temporary facial numbness. Avoid contact with eyes and skin. Avoid inhaling vapour or spray mist. When preparing spray wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length PVC gloves and a face shield or goggles. If product in eyes, wash it out immediately with water. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash gloves, face shield or goggles and contaminated clothing.

FIRST AID

If poisoning occurs, contact a Doctor or Poisons Information Centre. Phone Australia 131126; New Zealand 0800 764 766. If swallowed, do NOT induce vomiting.

SAFETY DATA SHEET

Additional information is listed in the safety data sheet (SDS). A safety data sheet for TITAN Alpha Duo 100 Insecticide is available from TITAN AG Pty Ltd on request. Call Customer Service on (02) 9999 6655 or visit www.titanag.com.au

CONDITIONS OF SALE: TITAN AG Pty Ltd shall not be liable for any loss injury damage or death whether consequential or otherwise whatsoever or howsoever arising whether through negligence or otherwise in connection with the sale supply use or application of this product. The supply of this product is on the express condition that the purchaser does not rely on TITAN AG's skill or judgment in purchasing or using the same and every person dealing with this product does so at his own risk absolutely. No representative of TITAN AG Pty Ltd has any authority to add to or alter these conditions.

Additional statements required by Globally Harmonised System of Classification and Labelling of Chemicals (GHS) and Safe Work Australia: Combustible liquid. Harmful if swallowed. May cause damage to organs through prolonged or repeated exposure. May be fatal if swallowed and enters airways. Very toxic to aquatic life with long lasting effects. Precautionary Statements: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not breathe dust/fume/gas/mist/vapours/spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth. Do NOT induce vomiting. Get medical advice/attention if you feel unwell. In case of fire: Use CO₂, powder or water spray to extinguish. Collect spillage. Store in a well-ventilated place. Store locked up. Dispose of contents/container in accordance with local/regional/national regulations.

