

Product Name: Titan Pendimethalin 440 EC Herbicide  
APVMA Approval No: 69172/135674



Label Name:	Titan Pendimethalin 440 EC Herbicide
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Signal Headings:	CAUTION KEEP OUT OF REACH OF CHILDREN READ SAFETY DIRECTIONS BEFORE OPENING OR USING
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Constituent Statements:	440 g/L PENDIMETHALIN 501 g/L LIQUID HYDROCARBON
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Mode of Action:	GROUP 3 HERBICIDE
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Statement of Claims:	For the control of wireweed, annual grasses (including ryegrass) and certain broadleaved weeds in various crops as shown in the DIRECTIONS FOR USE table.
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Net Contents:	1000L 100L 10L 110L 200L 20L 5L
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Restrains:	<p>Restrains:</p> <p>Do NOT sow sensitive summer crops such as sorghum and millets within 12 months of application of Titan Pendimethalin 440 EC Herbicide.</p> <p>Do NOT apply to a poorly prepared seedbed.</p> <p>Do NOT use Titan Pendimethalin 440 EC Herbicide mixed with atrazine on heavy clay soils.</p> <p>Do NOT apply Titan Pendimethalin 440 EC Herbicide where waterlogging is likely to occur.</p> <p>Spray drift restraints</p> <p>Specific definitions for terms used in this section of the label can be found at <a href="http://apvma.gov.au/spraydrift">apvma.gov.au/spraydrift</a>.</p> <p>DO NOT allow bystanders to come into contact with the spray cloud.</p>
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	<p>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. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.</p> <p>DO NOT apply unless the wind speed is between 3 and 20 kilometres per hour at the application site during the time of application.</p> <p>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.</p>
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Directions for Use:	This section contains file attachment.
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Other Limitations:	
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Withholding Periods:	<p>Withholding Periods HEMP Grazing: DO NOT graze livestock on treated area or cut for forage or fodder for 28 DAYS after spray application.</p> <p>HOPS: Harvest: Not required when used as directed. Grazing: DO NOT graze hop fields or cut for stockfeed for 8 WEEKS after application.</p> <p>GARLIC: Field grown: Not required when used as directed. Covered or protected grown/treated garlic: DO NOT allow treated garlic grown in covered or protected situations, such as, glasshouses, greenhouses or plastic tunnels to be made available for human or animal consumption.</p>
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Trade Advice:	
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General Instructions:	This section contains file attachment.
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Resistance Warning:	<p><b>RESISTANT WEEDS WARNING</b> <b>GROUP 3 HERBICIDE</b> Titan Pendimethalin 440 EC Herbicide is a member of the dinitroaniline group of herbicides. Titan Pendimethalin 440 EC Herbicide has the inhibition of tubulin formation mode of action. For weed resistance management, Titan Pendimethalin 440 EC Herbicide is a Group 3 herbicide. Some naturally-occurring weed biotypes resistant to Titan Pendimethalin 440 EC Herbicide and other Group 3 herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate</p>
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	<p>the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by Titan Pendimethalin 440 EC Herbicide or other Group 3 herbicides. Since the occurrence of resistant weeds is difficult to detect prior to use, Titan Ag Pty. Ltd. accepts no liability for any losses that may result from the failure of Titan Pendimethalin 440 EC Herbicide to control resistant weeds.</p>
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Precautions:	<p>Re-entry period: DO NOT allow entry into treated areas for 12 hours. When prior entry is necessary, wear cotton overalls buttoned to the neck and wrist (or equivalent clothing) and chemical resistant gloves. Clothing must be laundered after each day's use.</p>
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Protections:	<p><b>PROTECTION OF CROPS, NATIVE AND OTHER NON-TARGET PLANTS</b> DO NOT apply under meteorological conditions or from spraying equipment which could be expected to cause spray to drift onto nearby susceptible plants, adjacent crops, crop lands or pastures.</p> <p><b>PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT</b> Dangerous to fish and other aquatic life. DO NOT contaminate streams, rivers or watercourses with chemical or used containers. DO NOT apply or allow spray to drift onto adjacent aquatic areas (ponds, streams, lakes, rivers and waterways). Allow sufficient buffer distances between downwind water bodies and the sprayed area.</p>
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Storage and Disposal:	<p><b>STORAGE AND DISPOSAL</b> All pack sizes: Store in the closed, original container in a dry cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. DO NOT store below 5°C. Extended storage below 5°C can result in the formation of crystals on the bottom of the container. If crystallisation does occur, store the container on its side at room temperature and rock occasionally until crystal re-dissolve. 5L, 10L, 20L, 200L ONLY 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 (110L &amp; 1000L only) Empty contents fully into application equipment. Close all valves and return to point of supply for refill or storage.</p>
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Safety Directions:	<p>Harmful if swallowed. Will irritate the eyes, nose, and throat and skin. Avoid contact with eyes and skin. DO NOT inhale vapour. When preparing spray and using the prepared spray wear cotton overalls buttoned to the neck and wrist (or equivalent clothing), elbow-length nitrile gloves and face shield or goggles. If product on skin, immediately wash area with soap and water. If product in eyes, wash it out immediately with water. Wash hands after use. After each day's use, wash gloves and face shield (or goggles) and contaminated clothing.</p>
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First Aid Instructions:	If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 13 11 26, New Zealand 0800 764 766. If swallowed, DO NOT induce vomiting. If in eyes wash out immediately with water.
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First Aid Warnings:	
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**DIRECTIONS FOR USE****RESTRAINTS:**

Do NOT sow sensitive summer crops such as sorghum and millets within 12 months of application of Titan Pendimethalin 440 EC Herbicide.

Do NOT apply to a poorly prepared seedbed.

Do NOT use Titan Pendimethalin 440 EC Herbicide mixed with atrazine on heavy clay soils.

Do NOT apply Titan Pendimethalin 440 EC Herbicide where waterlogging is likely to occur.

**Pre-plant Application (Incorporated by the Sowing Process):**

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Barley and wheat (Including crops with undersown Lucerne)</b>	Annual ryegrass ( <i>Lolium rigidum</i> ), Wireweed ( <i>Polygonum aviculare</i> ),	All States	1.35 L/ha	<b>Barley and wheat (Including crops with undersown Lucerne):</b> Where full (double) incorporation is impractical and where the seedbed tilth is fine and free of large stones and trash, apply Titan Pendimethalin 440 EC Herbicide up to 24 hours prior to sowing. Incorporate with the combine set to sow to a depth of 3-5cm. Use trailing harrows. (Refer to "Incorporation" under the heading General Instructions). In minimum till situations, only light incorporation will occur due to soil displaced by the points. Trailing harrows should be used to provide better incorporation and weed control. Avoid heavy trash situations which may result in uneven application and incorporation,
<b>Canola (Including</b>	Suppression of Wild Oats ( <i>Avena spp.</i> )	Southern NSW,	1.35 to 2.25 L/ha	

<p><b>crops with undersown Lucerne)</b></p>	<p>Suppression only of Silver Grass (<i>Vulpia spp.</i>)</p>	<p>ACT, Vic, SA, WA, Tas only</p>	<p>1.5 to 2.25 L/ha</p>	<p>leading to reduced weed control. Wheat and barley seed must be sown at least 1cm beneath the chemically treated band or reduced emergence may occur. Refer to “Cereal Seed Dressings” and “Weather Conditions at Planting” under GENERAL INSTRUCTIONS, for further information on emergence.  <b>CAUTION:</b> Ensure thorough incorporation to maximise safety to undersown Lucerne.  <b>Canola (Including crops with undersown Lucerne):</b> Apply Titan Pendimethalin 440 EC Herbicide up to 24 hours prior to sowing. Ensure Titan Pendimethalin 440 EC Herbicide is well incorporated. Sow canola with a seeding depth of 1-3 cm, at the appropriate depth for conditions. Canola seed can be placed within the treated band.          Incorporate with the combine set to sow the seed below the chemical band.  <b>DO NOT apply to canola post plant pre-emergence.</b>          Use the higher rates on medium to heavy textured soils and the lower rates on light textured soils. <b>NOTE:</b> Development in waterlogged conditions after the application of Titan Pendimethalin 440 EC Herbicide may retard the emergence of canola.          If wild oats are expected to be a problem use a wild oat herbicide. Application to heavier soil types that have poor structural characteristics or are poorly worked may result in insufficient and uneven incorporation and unsatisfactory weed control. Heavy soils that are cloddy or have a surface crust or surface seal should be avoided. Attempting to incorporate Titan Pendimethalin 440 EC Herbicide when soils are very wet or very dry may also result in insufficient mixing and therefore poor weed control.  <b>CAUTION:</b> Ensure thorough incorporation to maximise safety to undersown Lucerne.          Use the lower rate when canola is undersown with lucerne.</p>
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SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Chickpeas, Faba Beans, Field Peas, Lentils, Lupins and Safflower</b>	Annual ryegrass ( <i>Lolium rigidum</i> ), Wireweed ( <i>Polygonum aviculare</i> ), Suppression only of Silver Grass ( <i>Vulpia spp.</i> ), Suppression of Wild Oats ( <i>Avena spp.</i> )	Southern NSW, ACT, Vic, SA, WA, only	1.5 to 2.25 L/ha	<p>Where full (double) incorporation is impractical and where the seedbed tilth is fine and free of large stones and trash, apply Titan Pendimethalin 440 EC Herbicide or in the case of lupins Titan Pendimethalin 440 EC Herbicide plus Simazine up to 24 hours prior to sowing. Incorporate with the combine set to sow to a depth of 3-5cm. Use trailing harrows. (Refer to "Incorporation" under the heading General Instructions). Application to heavier soil types that have poor structural characteristics or are poorly worked may result in insufficient and uneven incorporation and unsatisfactory weed control. Heavy soils that are cloddy or have a surface crust or surface seal should be avoided. Attempting to incorporate Titan Pendimethalin 440 EC Herbicide when soils are very wet or very dry may also result in insufficient mixing and therefore poor weed control. Refer to "Weather Conditions at Planting" under GENERAL INSTRUCTIONS, for further information on emergence.</p> <p>If wild oats are expected to be a problem use a wild oat herbicide.</p> <p>Use the higher rates on medium to heavy textured soils and the lower rate on light textured soils.</p>
<b>Lupins</b>		WA only	1.5L/ha plus simazine at 500g ai/ha	
		NSW, ACT, Vic, SA only	1.5L/ha plus simazine at 1.5 kg ai/ha	

**Pre-plant incorporation (Double Incorporation):**

**Note:** For all crops listed in the double incorporation table below:

Incorporate Titan Pendimethalin 440 EC Herbicide into the soil within 24 hours of application. Refer to the notes on incorporation under the heading General Instructions. Where a range of application rates is provided, use the higher rate on heavy textured soils or those high in organic matter and the lower rate on light to medium textured soils. Application to soil types with poor structural type characteristics or that are poorly worked may result in insufficient or uneven incorporation and, subsequently less than satisfactory weed control. Heavy soils, which are cloddy or have a surface crust or surface seal, are to be avoided. Attempting to incorporate Titan Pendimethalin 440 EC Herbicide when soils are very wet or very dry may also result in poor weed control due to insufficient mixing. Refer to the General Instructions, especially “Cereal Seed Dressings” and “Weather Conditions at Planting” for further information on emergence.

<b>SITUATION/ CROP</b>	<b>WEEDS CONTROLLED</b>	<b>STATE</b>	<b>RATE / TREATED ha</b>	<b>CRITICAL COMMENTS</b>
<b>Cotton</b>	See Weed Table A	Qld and NSW only	2.25 L/ha	Use a combine with trailing harrows and chain or offset or tandem discs or Lilliston cultivators, set to work to a depth of 2-5cm. Subsequent planting operations in irrigated cotton may remove the Titan Pendimethalin 440 EC Herbicide from hills leaving an untreated band over the row, requiring a further application of Titan Pendimethalin 440 EC Herbicide or other herbicides in that band. When the seedbed is rough, a second incorporation is necessary. Titan Pendimethalin 440 EC Herbicide may be applied by aerial or ground rig. In the Macquarie Valley area, only apply by air when ground is too wet for ground application.
<b>Soybeans, Peanuts, Navy Beans, Cow Peas, Mung Beans, and Pigeon Peas</b>		Qld, NSW, Tas and NT only	1.9 to 2.5 L/ha	
<b>Sunflowers</b>		Qld, NSW, Vic and SA only		



SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Wheat and Barley</b>	Annual ryegrass ( <i>Lolium rigidum</i> ), Wireweed ( <i>Polygonum aviculare</i> ),	All States	900 ml/ha	Use weighted harrows at 8-13 km/hr followed by a cross working with a combine set to work at a depth of 2-5cm at 8-13 km/hr. Wheat and barley seed must be sown approximately 1cm beneath the chemically treated band or reduced emergence may occur. If wild oats are expected to be a problem use a wild oat herbicide.
<b>Field peas</b>	Suppression of Wild Oats ( <i>Avena spp.</i> )	Southern NSW, Vic, Tas, SA and WA only	1.5 L/ha	Use weighted harrows at 8-13 km/hour followed by a cross-working with a combine set to work at a depth of 2-5cm at 8-13 km/hr. Seed should be sown below the chemical band. Use cover harrows behind the combine. Use a wild oat herbicide if wild oats are expected to be a problem.
<b>Chickpeas, Faba Beans, Lupins and Safflower</b>		Qld, northern NSW and Tas* only	1.9 to 2.5 L/ha	<b>*Lupins:</b> In Tasmania, use only on the species <i>Lupinus angustifolius</i> . <b>DO NOT</b> use on <i>Lalbus</i> . Where full (double) incorporation is impractical and where the seedbed tilth is fine and free of large stones and trash, apply Titan Pendimethalin 440 EC Herbicide or in the case of lupins Titan Pendimethalin 440 EC Herbicide plus Simazine up to 24 hours prior to sowing. Incorporate with the combine set to sow to a depth of 3-5cm. Use trailing harrows. (Refer to "Incorporation" under the heading General Instructions). Application to heavier soil types that have poor structural characteristics or are poorly worked may result in insufficient and uneven incorporation and unsatisfactory weed control. Heavy soils that are cloddy or have a surface crust or surface seal should be avoided. Attempting to incorporate Titan Pendimethalin 440 EC Herbicide when soils are very wet or very dry may also result in insufficient mixing and therefore poor weed control. Refer to "Weather Conditions at Planting" under GENERAL INSTRUCTIONS, for further information on emergence. If wild oats are expected to be a problem use a wild oat herbicide. Use the higher rates on medium to heavy textured soils and the lower rate on light textured soils.

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Wheat and Barley</b>	Annual ryegrass ( <i>Lolium rigidum</i> ), Wireweed ( <i>Polygonum aviculare</i> ),	All States	1.4 L/ha	<p><b>All crops (except Canola):</b> Where full (double) incorporation is impractical and where the seedbed tilth is fine and free of large stones and trash, apply Titan Pendimethalin 440 EC Herbicide, or in the case of lupins Titan Pendimethalin 440 EC Herbicide plus Simazine, up to 24 hours prior to sowing. Incorporate with the combine set to sow to a depth of 3-5cm. Use trailing harrows. (Refer to "Incorporation" under the heading General Instructions). Wheat and barley seed must be sown at least 1cm beneath the chemically treated band or reduced emergence may occur. If wild oats are expected to be a problem use a wild oat herbicide. Refer to Critical Comments on previous page plus:</p> <p><b>Canola:</b> Apply Titan Pendimethalin 440 EC Herbicide up to 24 hours prior to sowing. Ensure Titan Pendimethalin 440 EC Herbicide is well incorporated. Sow canola with a seeding depth of 1-3 cm, at the appropriate depth for conditions. Canola seed can be placed within the treated band. Use the higher rates on medium to heavy textured soils and the lower rates on light textured soils. NOTE: Development in waterlogged conditions after the application of Titan Pendimethalin 440 EC Herbicide may retard the emergence of canola.</p> <p>If wild oats are expected to be a problem use a wild oat herbicide. Application to heavier soil types that have poor structural characteristics or are poorly worked may result in insufficient and uneven incorporation and unsatisfactory weed control. Heavy soils that are cloddy or have a surface crust or surface seal should be avoided. Attempting to incorporate Titan Pendimethalin 440 EC Herbicide when soils are very wet or very dry may also result in insufficient mixing and therefore poor weed control. CAUTION: Ensure thorough incorporation to maximise safety to undersown Lucerne. Use the lower rate when canola is undersown with lucerne. <b>DO NOT apply to canola post plant pre-emergence.</b></p>
<b>Canola (Including crops with undersown Lucerne)</b>	Suppression of Wild Oats ( <i>Avena</i> spp.)	Southern NSW, Vic, Tas, SA and WA only	1.4 to 2.25 L/ha	
	Suppression only of Silver Grass ( <i>Vulpia</i> spp.)		1.5 to 2.25 L/ha	
<b>Chickpeas, Faba Beans, Safflower, Lupins and Field Peas</b>	Annual ryegrass ( <i>Lolium rigidum</i> ), Wireweed ( <i>Polygonum aviculare</i> )	Southern NSW, Vic, SA and WA only	1.5 to 2.25 L/ha	
<b>Lupins</b>	Suppression only of Silver Grass ( <i>Vulpia</i> spp.) and Wild Oats ( <i>Avena</i> spp.)	WA only	1.5 L/ha plus 560 g/ha Simazine 900 WG or 1 L/ha Flowable Simazine	
		NSW, Vic and SA only	1.5 L/ha plus 1.7 kg/ha Simazine 900 WG or 3 L/ha Flowable Simazine	

**POST-PLANT PRE-EMERGENCE APPLICATION (OVERALL BAND SPRAYING): NON-MECHANICAL INCORPORATION**

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Cotton</b>	See Weed Table B	Qld and NSW only	3.4 L/ha	Where incorporation prior to sowing is impractical and where the seedbed tilth is fine and free of large stones and trash, Titan Pendimethalin 440 EC Herbicide should be applied within 48 hours after sowing.
<b>Sunflowers</b>		Qld, NSW and SA only		Where incorporation prior to sowing is impractical and where the seedbed tilth is fine and free of large stones and trash, Titan Pendimethalin 440 EC Herbicide should be applied within 48 hours after sowing and before the emergence of the crop and weeds. Where Fat Hen or Blackberry Nightshade is expected to be a major problem, pre-plant incorporation is preferred. Refer to the relevant sections under the heading "Incorporation" in "General Instructions".
<b>Maize</b>		Qld, NSW and NT only	3.4 L/ha	Use Titan Pendimethalin 440 EC Herbicide after planting and before emergence of crop or weeds, especially where grasses are expected to be the major problem. DO NOT incorporate. Avoid application in dry weather; this may cause pruning of aerial roots and lodging. Refer to the relevant sections under the heading "Incorporation" in "General Instructions".
	See Weed Table C		2.25 L/ha plus 1.1 kg/ha Atrazine 900 WG or 2 L/ha Flowable Atrazine	Titan Pendimethalin 440 EC Herbicide should be applied in a tank mix combination with atrazine after planting and before the emergence of crop and weeds, where Thornapple, Noogoora Burr, Bathurst Burr, Caltrop, Paddy Melon or Mintweed are expected to be a major problem. DO NOT incorporate this mixture. Follow directions on atrazine label carefully. This treatment should not lead to soil residue problems with atrazine, as the application rate is low. DO NOT use Titan Pendimethalin 440 EC Herbicide mixed with atrazine on heavy clay soils, as weed control may not be adequate. Refer to the relevant sections under the heading "Incorporation" in "General Instructions".

<b>Broad Beans</b>	Poppies, Wireweed ( <i>Polygonum aviculare</i> )	Tas only	3 L/ha	<p><b>MINIMUM PLANTING DEPTH:</b> Carrots: 15mm. Processing peas and French beans: 30mm. Seed should be sown with press wheels or rollers behind the planter in order to ensure coverage of the seed and compaction of the seedbed. Apply Titan Pendimethalin 440 EC Herbicide to a fine seedbed free of ridges, clods and trash. Apply post sowing and prior to crop emergence. In the event that the crop emerges before application, the application may still be applied to carrots NO LATER than at the cotyledon stage (BBCH10). Use the higher rates on heavier textured soils or those with a higher organic matter content. Incorporate with 12 to 25mm of spray irrigation or rainfall applied within one day of application for optimum performance. DO NOT disturb the soil by rolling or harrowing after Titan Pendimethalin 440 EC Herbicide has been applied. DO NOT apply where heavy rainfall or irrigation is likely to lead to water logging. DO NOT use Titan Pendimethalin 440 EC Herbicide on soils with an organic matter content above 6% as inconsistent weed control will occur.</p>
<b>Carrots</b>	See Weed Table D	Qld, NSW, Vic, SA, Tas and WA only	1.5 to 2.25 L/ha	
	Weed Table D plus Wild Radish ( <i>Raphanus raphanistrum</i> ) and Sowthistle ( <i>Sonchus oleraceus</i> )		1.5 L/ha plus linuron at 1.0kg ai/ha	
	See Weed Table D			
<b>Processing Peas</b>		Qld and Vic only	1.5 to 3 L/ha	Apply as soon as possible after sowing (ideally within 2 days) and before the plumule is less than 13 mm from reaching the soil surface.
		Tas Only	3 L/ha	
<b>French Beans</b>		Qld, Tas only	2.25 to 3 L/ha	<b>FRENCH BEANS:</b> For use in the Lockyer and Fassifern Valleys only. DO NOT apply to French Beans sown during the autumn, winter or early spring or which are likely to be stressed by cold weather.

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
Onions	Hogweed (Wireweed) ( <i>Polygonum aviculare</i> )	Tas only	0.56 to 0.75 L/ha	Apply in conjunction with other herbicides as advised by a qualified crop adviser to ensure that an adequate level of weed control is achieved in adverse conditions. <b>Pre-Emergence:</b> Do NOT use on sandy soils. <b>MINIMUM PLANTING DEPTH:</b> 15mm. Apply from immediately after sowing until just prior to emergence. Apply Titan Pendimethalin 440 EC Herbicide to a fine, firm seedbed free of clods and trash. Use the higher rates on heavy textured soils or those with a high organic matter content. For optimum performance, incorporate with 12 to 25 mm of spray irrigation within one day of application. DO NOT exceed 0.56L/ha if soil conditions are wet and cold.
			0.75 to 1.5 L/ha	<b>Post-Emergence:</b> Apply Titan Pendimethalin 440 EC Herbicide from the first true leaf until the 3 leaf stage. Repeat applications may be made after the 1 leaf up to the 3 leaf stage providing total usage of Titan Pendimethalin 440 EC Herbicide on crop does not exceed 2.25L/ha. Avoid applying Titan Pendimethalin 440 EC Herbicide to areas where water logging is likely to occur.
		NSW, ACT, Vic, SA and WA only		<ul style="list-style-type: none"> <li>• Apply in conjunction with other herbicides as advised by a qualified crop advisor to ensure that an adequate level of weed control is achieved in adverse conditions.</li> <li>• Depth of sowing is critical. Onions must be sown to a depth of at least 15 mm with press wheels or rollers behind the planter to ensure coverage and compaction.</li> <li>• DO NOT disturb the soil by rolling or harrowing after application.</li> <li>• For optimum performance, incorporate with spray irrigation within a day of planting. However, DO NOT water heavily (no more than 12 mm irrigation) for at least 5 days after application.</li> <li>• AVOID application to areas where water logging is likely to occur.</li> <li>• DO NOT apply if heavy rain is likely within a week of application, as crop damage may result.</li> <li>• DO NOT exceed 0.75 L/ha if soil conditions are wet and cold.</li> <li>• DO NOT apply more than 3 times per season.</li> <li>• DO NOT apply more than 3 L/ha per season.</li> </ul>

			0.56 to 0.75 L/ha (See Critical comments)	<p><b>Light/Sandy soils</b> DO NOT apply pre-emergence. <b>Application to moist soil is best</b> Apply 0.56 to 0.75 L/ha post emergence at the 4-5 leaf stage, with 1-2 further applications of 0.56 to 0.75 L/ha as needed throughout the season. (Approx. 3-4 weeks apart).</p>
		NSW, ACT, Vic, SA and WA only	0.75 to 1.5 L/ha (See Critical comments)	<p><b>Heavy/High organic matter soils</b> <b>Application to moist soil is best</b> Apply 0.75 to 1.5 L/ha pre-emergence within 2 days of planting. Apply to a fine, firm seed bed free of ridges, clods and trash. <b>For furrow irrigated crops, application to a dry seed bed, followed by irrigation within 5 days is optimal.</b> An application of 0.75 to 1.5 L/ha post emergence may be made at the 2 leaf stage. (Application at this stage may cause yellowing of onions).</p>
Spring Onions, Shallots (pre-planting application)	Wireweed (Polygonum aviculare)	All states	0.75 – 1.5 L/ha	<ul style="list-style-type: none"> <li>• Apply as a single pre-planting application only;</li> <li>• Soils containing a high percentage of organic matter can result in poor control. It is recommended that applications to soils containing a high percentage of organic matter (greater than 6%) be avoided;</li> <li>• For best results, seedbeds should be free of weeds, trash and clods at the time of application.</li> </ul>
Radish	See Weed Table D		1.5 L – 2.25 L/ha	<ul style="list-style-type: none"> <li>• Apply as a single application within 2 days of sowing;</li> <li>• DO NOT apply where heavy rainfall or irrigation is likely to lead to water logging;</li> <li>• DO NOT use product on soils with organic matter content above 6%, as inconsistent weed control will occur.</li> </ul>

Brassica leafy vegetables & Rocket	See Weed Table D		0.75 – 1.5 L/ha	<ul style="list-style-type: none"> <li>• Make one application per crop.</li> <li>• Apply 2-7 days before transplanting.</li> <li>• DO NOT apply after transplanting.</li> <li>• Ground application should be by boomspray (50-200 L/ha).</li> <li>• Apply to a firm seed bed free of ridges, clods and trash.</li> <li>• Use the higher rates on heavier textured soils or those with higher organic matter content.</li> <li>• For optimum performance incorporate with 12-25 mm of spray irrigation (or when rainfall is expected within one day).</li> <li>• Ensure minimal technical mechanical disturbance to the seed bed after transplanting.</li> <li>• DO NOT apply if water logging is likely to occur after transplanting or crop stunting will occur.</li> <li>• Use on soils with an organic matter content above 6% may result in inconsistent weed control</li> <li>• DO NOT use on kale grown for fodder</li> </ul>
Brussel sprouts	See Weed Table D		1.5 – 2.25 L/ha	<ul style="list-style-type: none"> <li>• Make one application per crop by boomspray (use a spray volume of 50-200 L/ha).</li> <li>• Apply to a firm seedbed, free from ridges, clods and trash 2-7 days before transplanting.</li> <li>• Use the higher rates on heavier textured soils or those with a higher organic matter content.</li> <li>• For optimum performance, incorporate with 12 to 25 mm of spray irrigation (or when rainfall is expected within one day) and ensure minimal mechanical disturbance to the seedbed at transplanting.</li> <li>• DO NOT apply after transplanting, as damage will occur.</li> <li>• DO NOT apply where water logging is likely to occur after transplanting, as crop stunting will occur.</li> <li>• DO NOT use product on soils with an organic matter content above 6%, as inconsistent weed control will occur.</li> </ul>

Parsnip	See Weed Table D		1.5 - 2.25 L/ha	<ul style="list-style-type: none"> <li>• Minimum planting depth of 15 mm is required.</li> <li>• Apply to a fine firm seed bed free of ridges, clods and trash within 2 days after sowing.</li> <li>• Use the higher rate on heavier textured soils or those with higher organic matter content.</li> <li>• Use on soils with an organic matter content above 6% may result in inconsistent weed control</li> <li>• Incorporate with 12 to 25 mm of spray irrigation within one day of the application for optimum performance.</li> <li>• Irrigation is not required where adequate rainfall occurs immediately post-application.</li> <li>• DO NOT disturb the soil by rolling or harrowing after application.</li> <li>• DO NOT apply where heavy irrigation or rainfall is likely to lead to waterlogging.</li> </ul>
Leeks	Hogweed (Wireweed) ( <i>Polygonum aviculare</i> )		0.56 – 1.13 L/ha	<p><u>Transplanted crops:</u></p> <ul style="list-style-type: none"> <li>• Apply foliar spray at the 1.5 leaf stage of the crop and repeat application (if required) at the 3 leaf stage of the crop, as applicable to cultivar and location.</li> <li>• Apply using 50 to 200 L-water/ha.</li> <li>• DO NOT apply more than two (2) applications per crop.</li> </ul> <p>WARNING: CROP PHYTOTOXICITY HAS BEEN OBSERVED IN SOME CASES, with postemergence-crop application. To reduce this or avoid it altogether, water the sprayed crop within 1 hour of application, to remove the chemical from the crop.</p> <p><u>Direct Seeded Crops</u></p> <ul style="list-style-type: none"> <li>• As per application instructions for onions</li> </ul>



<p>Industrial Hemp (not to be used in hemp intended for human consumption)</p>	<p>See Weed Table D</p>		<p>1.5 - 2.25 L/ha</p>	<ul style="list-style-type: none"> <li>• Apply one pre-emergent (of weeds) application to control annual grasses and broadleaf weeds, or apply one postemergent “over-the top” application to control small annual grasses and broadleaf weeds.</li> <li>• Use suitable ground application equipment. Ensure equipment is correctly calibrated.</li> <li>• Use lower rates when short residual control is required. Increase the application rate when longer residual control is required.</li> <li>• <b>To Avoid Crop Damage:</b> It is advisable to avoid spraying of emerging crops where possible. “Over-the-top” spray application has not been fully evaluated for industrial hemp crops under all growing conditions, and should only be considered a treatment option following trials that show hemp plants will tolerate herbicide application at the proposed rate and at the crop growth stages when treatment will be applied. Initially treat target weeds in a small area within the crop when “over-the-top” spray is to be applied, and closely monitor plant health. Discontinue applications when any adverse symptoms post-treatment are observed.</li> </ul>
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Hops	Dwarf Amaranth (Amaranthus macrocarpus), Green Amaranth (Amaranthus vindis), Annual Ryegrass, (Lolium rigidum), Asthma Plant (Euphorbia hirta), Barnyard Grass, (Echinochloa spp.), Chickweed (Stellaria media), Crowsfoot Grass (Eleusine indica), Deadnettle (Lamium amplexicaule), Fat Hen (Chenopodium album), Pigeon Grass (Setaria spp.), Pigweed (Portulaca oleracea), Prickly Lettuce (Lactuca serriola), Sowthistle (Sonchus oleraceus), Summer Grass,		6.75 – 9.0 L/ha	<ul style="list-style-type: none"> <li>• Apply one application only prior to hop plants emerging from winter dormancy.</li> <li>• To activate treatment, a minimum of 5 mm rainfall is required, or irrigate soon as possible, no later than 10 days after application.</li> <li>• If small weeds are present at the time of application, Titan Pendimethalin 440 EC Herbicide should be tank mixed with a knockdown herbicide at the recommended label rate.</li> </ul>
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	(Digitaria anguinalis), Winter Grass (Poa annua), Wireweed (Polygonum aviculare)			
GARLIC	Hogweed (Wireweed) (Polygonum aviculare)		<p><b>Post-plant, pre-emergent</b></p> <p>0.56 – 0.75 L product / ha</p> <p><b>Post-emergent</b></p> <p>0.75 – 1.5 L product / ha</p>	<p><b>Post-plant, pre-emergent</b></p> <ul style="list-style-type: none"> <li>• DO NOT use on sandy soils.</li> <li>• Apply from immediately after sowing to just prior to emergence.</li> <li>• Use the higher rate on heavy textured or highly organic soils.</li> <li>• DO NOT exceed 0.56 L/ha if soil conditions are wet and cold.</li> </ul> <p><b>Post-emergent</b></p> <ul style="list-style-type: none"> <li>• Apply from the first true leaf to the 3 leaf stage.</li> <li>• Repeat applications may be made up to the 3 leaf stage providing total amount of product applied does not exceed 2.55 L/ha per season. Allow a minimum 14 day interval between spray applications.</li> <li>• DO NOT apply more than 3 times per season.</li> <li>• Apply in sufficient water volume to ensure adequate spray penetration of the crop, to provide complete and thorough coverage of weed foliage and soil.</li> <li>• DO NOT exceed 0.75 L/ha if soil conditions are wet and cold.</li> <li>• DO NOT apply spray if heavy rainfall is expected within a week of application.</li> <li>• DO NOT apply to crops or weeds that are stressed.</li> </ul> <p><b>General Instructions</b></p> <ul style="list-style-type: none"> <li>• DO NOT use on light/sandy soils.</li> <li>• Avoid applying product to areas where waterlogging is likely to occur.</li> </ul>

**POST-PLANT PRE-EMERGENCE TREATMENT (INCORPORATED OR NON-INCORPORATED)**

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
Sugarcane	Summer Grass ( <i>Digitaria ciliaris</i> ), Awnless Barnyard Grass ( <i>Echinochloa colona</i> ), Crowsfoot Grass ( <i>Eleusine indica</i> ), Guinea grass ( <i>Panicum maximum</i> c.v. <i>Hamil</i> and c.v. <i>Guinea</i> ), Green Summer Grass ( <i>Brachiaria subquadriflora</i> ),	Qld, NSW and WA only	2.25 to 3.4 L/ha	<p>Titan Pendimethalin 440 EC Herbicide should be applied as soon as possible after planting and before weed emergence. Consolidation (cutaway operation) of the planting furrow prior to application, to prevent soil movement into the base of the drill, is recommended. Expect poor grass control in soils that contain a high percentage of organic matter. Refer to the relevant sections under the heading "Incorporation" in "General Instructions".</p> <p>Use the higher rate where longer weed control is required or where incorporation by irrigation or rainfall is likely to be delayed more than 5 days.</p> <p><b>NOTE</b></p> <p><b>INCORPORATION:</b> Under dry conditions or where some cultivation is expected after application Titan Pendimethalin 440 EC Herbicide should be thoroughly incorporated by finger rakes to a shallow depth. In subsequent tillage operations, cultivation depth should not exceed the depth of incorporation.</p> <p><b>WATER INCORPORATION:</b></p> <p>Incorporate using 12 to 25mm of spray irrigation or when suitable rainfall is expected within 10 days of application.</p> <p>The area should not be disturbed by cultivation for the expected duration of weed control where this method of application is used. If excessive irrigation or rainfall occurs after the application of Titan Pendimethalin 440 EC Herbicide, resulting in the movement of soil from the top to the bottom of the planting drill, weed control will be reduced.</p>

<p>Blue Top (Blue Billygoat Weed) (<i>Ageratum houstonianum</i>)</p>	<p>2.25 L/ha plus 1.7 kg/ha Atrazine 900 WG or 3 L/ha Flowable Atrazine or 1.7 kg/ha Diuron 900 WG or 3 L/ha Flowable Diuron</p>	<p>For other broadleaved weeds higher rates of atrazine or diuron can be tank mixed with Titan Pendimethalin 440 EC Herbicide - see the relevant atrazine or diuron labels for details.</p> <p><b>TANK MIXTURES: Read and follow all label directions including restraints, spray drift restraints, mandatory no-spray zones, critical comments, withholding periods, regional use restrictions and safety directions for the tank mix products.</b></p>
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SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Sugarcane</b>	Barnyard Grass ( <i>Echinochloa spp.</i> ), Blackberry Nightshade ( <i>Solanum nigrum</i> ), Blue Top (Blue Billygoat Weed) ( <i>Ageratum houstonianum</i> ), common sida ( <i>Sida rhombifolia</i> ), giant/black pigweed ( <i>Trianthema poertulacastrum</i> ), glossy nightshade ( <i>Solanum americanum</i> ), green amaranth ( <i>Amaranthus viridis</i> ), Ipomoea spp., liverseed grass ( <i>Urochloa panicoides</i> ), milkweed (Mexican fire paint) ( <i>Euphorbia heterophylla</i> ), pigweed ( <i>Portulaca oleracao</i> )	Qld, NSW and WA only	2.25 L/ha plus 400 mL/ha Imazapic	Incorporate into the soil either by overhead irrigation, rainfall or mechanical incorporation, to a depth of 5 cm. Incorporate as soon as possible and within 3-5 days after application. Read all directions for use in sugarcane on the Imazapic label.

<p><b>Combine sown rice</b></p>	<p>Barnyard Grass (<i>Echinochloa spp.</i>), Silvertop Grass (brown beetle grass) (<i>Diplachne reptatrix</i>), Starfruit (<i>Damasonium minus</i>)</p>	<p>Qld, NSW and NT only</p>	<p>2.25L/ha plus propanil at 1.8kg ai/ha</p>	<p>Apply this tank mixture up to the 2 leaf stage of Barnyard Grass and 1 leaf stage of Silvertop, either by ground rig in 70 - 100 L/ha or by aircraft in 25-30 L/ha total spray volume.</p> <p><b>WATER MANAGEMENT:</b> Flush immediately after sowing to enable a good even germination of rice and to ensure the soil surface is sealed. Apply a second flush or permanent flood after 2 days but not later than 5 days after the application. To assist in the control of Barnyard Grass, permanent water should be applied as soon as the rice can tolerate it and levels maintained for optimum growth of rice.</p> <p><b>RICE STAGE:</b> After the first flushing irrigation, the stage of rice at application of this tank mixture is not critical. Timing should be based on the stage of weed growth and water management. However, DO NOT apply to rice in a weakened condition as a result of soil salts, moisture stress, over-watering, or any other cause. Some transient leaf burn of the rice may result after the application but no long term effects will result. Rice seed should be covered with at least 1cm of water after the first flushing irrigation before Titan Pendimethalin 440 EC Herbicide plus propanil is applied to germinating rice seed.</p>
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**POST-PLANT AND FLUSHING:**

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<p><b>Combine sown rice and pasture sod sown rice</b></p>	<p>As above plus suppression of Annual Sedges (<i>Cyperus spp.</i>)</p>	<p>Qld, NSW and NT only</p>	<p>2.25 or 3.4L/ha plus 800 ml/ha paraquat 250</p>	<p>Use the higher rate when sowing into pasture sod sown rice for Annual Sedge control or when more than 10 days is expected between treatment and permanent water. Apply up to the 3 leaf stage of Barnyard Grass, Silvertop and Sedges, before rice emergence. Apply by ground rig in 70-100 L/ha of water total spray volume.</p> <p><b>WATER MANAGEMENT:</b> Flush immediately after sowing to enable a good even germination of rice. The soil surface must be sealed by a flushing irrigation or rainfall before the application of Titan Pendimethalin 440 EC Herbicide plus paraquat. Apply a second flush or permanent flood after 1 day but not later than 5 days after the application of Titan Pendimethalin 440 EC Herbicide plus paraquat. To assist in the control of barnyard grass, permanent water should be applied as soon as the rice can tolerate it and levels maintained for optimum growth of rice.</p> <p><b>RICE STAGE:</b> After the first flushing irrigation, Titan Pendimethalin 440 EC Herbicide plus paraquat must be applied before rice emergence. Do NOT apply to rice in a weakened condition from causes such as soil salts, moisture stress, over-watering, or any other cause.</p>



**PRE-TRANSPLANT TREATMENT**

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Transplanted broccoli, cabbage and cauliflower</b>	See Weed Table D	All states	1.5 to 2.25 L/ha	<p>Apply Titan Pendimethalin 440 EC Herbicide to a firm seedbed free of ridges, clods and trash between 2 - 7 days before transplanting. Use the higher rates on heavier textured soils or those with higher organic matter content.</p> <p>For optimum performance incorporate with 12 to 25mm of spray irrigation (or rainfall expected within one day) and ensure minimal mechanical disturbance to the seedbed at transplanting. DO NOT apply after transplanting, as damage will occur. DO NOT apply where water logging is likely to occur after transplanting or crop stunting will result. DO NOT use Titan Pendimethalin 440 EC Herbicide on soils with an organic matter content above 6% as inconsistent weed control will occur.</p> <p>Ramrod® may be tank mixed with Titan Pendimethalin 440 EC Herbicide prior to transplanting <b>or</b> applied separately after transplanting.</p>
	See Weed Table D plus Wild Radish ( <i>Raphanus raphanistrum</i> ), Indian Hedge Mustard ( <i>Sisymbrium orientale</i> ), Turnip Weed ( <i>Rapistrum rugosum</i> ), Wild Turnip ( <i>Brassica tournefortii</i> ), Potato Weed ( <i>Galinsoga paviflora</i> ), Sowthistle, ( <i>Sonchus oleraceus</i> ), Dwarf Amaranth ( <i>Amaranthus macrocarpus</i> ), Green Amaranth ( <i>Amaranthus vindis</i> ), Winter Grass ( <i>Poa annua</i> ), Annual Nettles ( <i>Urtica</i> spp.)		1.5 to 1.9L/ha plus 9L/ha Ramrod® SC	
<b>Transplanted lettuce</b>	See Weed Table D	Qld, NSW, Vic, SA and WA only	1.5 to 3 L/ha	

**PERENNIAL CROPS**

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<p><b>Avocadoes, bananas, citrus, deciduous fruits, grapevines, lychees macadamia nut, mangoes, nuts</b></p>	<p>Dwarf Amaranth (<i>Amaranthus macrocarpus</i>), Green Amaranth (<i>Amaranthus vindis</i>), Annual Ryegrass, (<i>Lolium rigidum</i>), Asthma Plant (<i>Euphorbia hirta</i>), Barnyard Grass, (<i>Echinochloa spp.</i>), Chickweed (<i>Stellaria media</i>), Crowsfoot Grass (<i>Eleusine indica</i>), Deadnettle (<i>Lamium amplexicaule</i>), Fat Hen (<i>Chenopodium album</i>), Pigeon Grass (<i>Setaria spp.</i>), Pigweed (<i>Portulaca oleracea</i>), Prickly Lettuce (<i>Lactuca serriola</i>), Sowthistle (<i>Sonchus oleraceus</i>), Summer Grass, (<i>Digitaria anguinalis</i>), Winter Grass (<i>Poa annua</i>), Wireweed (<i>Polygonum aviculare</i>)</p>	<p>All States</p>	<p>6.75 to 9 L/ha</p>	<p>DO NOT apply Titan Pendimethalin 440 EC Herbicide to grapevines after bud swell.  <b>PRECAUTION:</b> Titan Pendimethalin 440 EC Herbicide or Titan Pendimethalin 440 EC Herbicide plus simazine is likely to affect the emergence and growth of green manure crops such as oats or beans between rows of trees or vines, if they are sown into the treated band within 12 months of application. Use the higher rate on medium to heavy textured soils and the lower rate on light textured soils. Use a directed spray avoiding spray contact with green bark, fruit and foliage. If applied to freshly transplanted trees or vines, soils should be compacted prior to application of Titan Pendimethalin 440 EC Herbicide to avoid contact with roots. Titan Pendimethalin 440 EC Herbicide must be incorporated by a minimum of 5mm of rainfall or spray irrigation as soon as possible but no later than 10 days after application or weed control may be reduced. For best results, soil surface should be free of weeds, surface litter and clods at the time of application. If small weeds are present at the time of application, Titan Pendimethalin 440 EC Herbicide should be tank mixed with a knockdown herbicide at the recommended rate.                      Crop damage and/or reduced weed control may occur if Titan Pendimethalin 440 EC Herbicide is not incorporated successfully.                      If insufficient rainfall follows within 10 days of application the product must be incorporated over the whole surface area treated through the use of overhead sprinklers or by mechanical means, using appropriate equipment to avoid root damage. Drip irrigation is inadequate for this purpose.</p>
	<p>As above plus Prairie Grass (<i>Bromus unioloides</i>), Spotted Medic (<i>Medicago arabica</i>)</p>		<p>9 L/ha</p>	

<b>Deciduous fruits, nuts, grapevines and citrus,</b>	Asthma Plant ( <i>Euphorbia hirta</i> ), Summer Grass, ( <i>Digitaria anguinalis</i> ), Barnyard Grass ( <i>Echinochloa spp.</i> ), Crowsfoot Grass ( <i>Eleusine indica</i> ), Pigeon Grass ( <i>Setaria spp.</i> ), Winter Grass ( <i>Poa annua</i> ), Annual Ryegrass ( <i>Lolium rigidum</i> ), Chickweed ( <i>Stellaria media</i> ), Sowthistle ( <i>Sonchus oleraceus</i> ), Pigweed ( <i>Portulaca oleracea</i> ), Dwarf Amaranth ( <i>Amaranthus macrocarpus</i> ), Green Amaranth ( <i>Amaranthus vindis</i> ), Fat Hen ( <i>Chenopodium album</i> ), Wireweed ( <i>Polygonum aviculare</i> ), Prickly Lettuce ( <i>Lactuca serriola</i> ), Deadnettle ( <i>Lamium amplexicaule</i> )	6.75 to 9 L/ha	A minimum of 5-10mm of rain or sprinkler irrigation is normally required to incorporate Titan Pendimethalin 440 EC Herbicide into the soil. For best results, soil surface should be free of weeds, surface litter and clods at the time of application. If small weeds are present at the time of application, Titan Pendimethalin 440 EC Herbicide should be tank mixed with a knockdown herbicide at the recommended rate.  <i>Continued</i>
	As above plus Stinking Roger ( <i>Tagetes minuta</i> ), Cobbler's Pegs ( <i>Bidens pilosa</i> ), Curious Weed ( <i>Schkuhria pinnata</i> ),	6.75L/ha plus 900 g/ha Simazine 900 WG or 1.6L/ha Flowable Simazine	

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Deciduous fruits, nuts, grapevines and citrus</b>	As above plus Caltrop ( <i>Tribulus terrestris</i> )	All States	9L/ha plus 1.1 kg/ha Simazine 900 WG or 2L/ha Flowable Simazine	<p>A minimum of 5-10mm of rain or sprinkler irrigation is normally required to incorporate Titan Pendimethalin 440 EC Herbicide into the soil. For best results, soil surface should be free of weeds, surface litter and clods at the time of application. If small weeds are present at the time of application, Titan Pendimethalin 440 EC Herbicide should be tank mixed with a knockdown herbicide at the recommended rate.</p> <p>Use of simazine could lead to crop damage on vines younger than 3 years of age. Refer to the simazine label.</p> <p>DO NOT apply tank mixtures of Titan Pendimethalin 440 EC Herbicide plus simazine to alkaline soils.</p>
<b>Established lucerne seed crops only</b>	Summer Grass ( <i>Digitaria anguinalis</i> ), Fat Hen ( <i>Chenopodium album</i> ),	NSW and SA only	2.25 L/ha	During the spring months prior to irrigation, the lucerne stand should be grazed down hard to produce a low trash soil surface. Apply Titan Pendimethalin 440 EC Herbicide and incorporate treatment by 12 - 25mm of spray irrigation or when rainfall is expected within one day of application.
	As above plus Pigeon Grass ( <i>Setaria</i> spp.)		3.4 L/ha	

<p><b>Eucalypt forestry plantations</b></p>	<p>Amaranth (<i>Amaranthus spp.</i>), Annual Ryegrass, (<i>Lolium rigidum</i>), Asthma Plant (<i>Euphorbia hirta</i>), Barnyard Grass, (<i>Echinochloa spp.</i>), Chickweed (<i>Stellaria media</i>), Crowsfoot Grass (<i>Eleusine indica</i>), Deadnettle (<i>Lamium amplexicaule</i>), Fat Hen (<i>Chenopodium album</i>), Pigeon Grass (<i>Setaria spp.</i>), Pigweed (<i>Portulaca oleracea</i>), Prickly Lettuce (<i>Lactuca serriola</i>), Stagger weed (<i>Stachysarvensis</i>), Sowthistle (<i>Sonchus oleraceus</i>), Summer Grass, (<i>Digitaria anguinalis</i>), Winter Grass (<i>Poa annua</i>), Wireweed (<i>Polygonum aviculare</i>)</p>	<p>All states</p>	<p>6.75 to 9 L/ha</p>	<p><b>PRE-PLANTING:</b> Apply 7 -2 days prior to transplanting. Use the higher rate on heavier textured soils or soils with high organic matter. Mechanical disturbance should be minimised during planting to optimise performance.</p> <p><b>POST-PLANTING</b> Apply immediately following planting before emergence of weeds. Repeat applications may be made as directed sprays to provide pre-emergence control of weeds. Emerged weeds should be controlled with carefully directed applications of a non-selective herbicide or over- the-top application of a selective herbicide. If applied to freshly transplanted trees, soil should be compacted prior to application to avoid contact with roots. Weed control may be reduced if rainfall or irrigation does not occur within 10 days of application. Flood irrigation may reduce control.</p>
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SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Pyrethrum Pre- emergence crops</b>	See Weed Table D	Tas only	1.5 to 2.25 L/ha	Apply Titan Pendimethalin 440 EC Herbicide to seedbed within 10 days of sowing, prior to pyrethrum emergence. Apply at the lower rates on sandy soils. Incorporate with 12-25 mm of rainfall or irrigation within 1 day of application for optimum performance
<b>Pyrethrum Post- emergence crops</b>			1.5 to 3.75 L/ha	Apply Titan Pendimethalin 440 EC Herbicide prior to weed germination at any stage or pyrethrum growth from 2 true leaf stage to preflowering, as advised by qualified crop advisor. Seek advice from qualified crop advisor before applying follow-up applications in any one year. Incorporate with 12-25 mm of rainfall or irrigation within 1 day of application for optimum performance
<b>Pyrethrum - newly transplanted "splits"</b>	Seedling docks ( <i>Rumex</i> spp.) Suppression of the following weeds is also obtained: Capeweed ( <i>Arctotheca calendula</i> ), Erodium spp. (Storks bill), Spear Thistle ( <i>Cirsium vulgare</i> )	Tas only	3.75 L/ha	Apply immediately following transplanting before emergence of weeds. Repeat applications in any one year should only be made according to advice from crop advisers. Use lower rates on light soils. This product should be used in combination with other registered herbicides as recommended by crop advisers.
<b>Established pyrethrum (one year old or greater)</b>				Apply in autumn or spring prior to weed germination. Note existing weeds must be controlled with a knockdown herbicide, as Titan Pendimethalin 440 EC Herbicide will not control these weeds. Repeat applications in any one year should only be made according to advice from crop advisers. This product should be used in combination with other registered herbicides as recommended by crop advisers.

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>Teatree</b> <b>(<i>Melaleuca alternifolia</i>)</b>	Weed Table B plus Dwarf Amaranth ( <i>Amaranthus macrocarpus</i> ), Green Amaranth ( <i>Amaranthus vindis</i> ), Annual Ryegrass ( <i>Lolium rigidum</i> ), Barnyard Grass ( <i>Echinochloa spp.</i> ), Chickweed ( <i>Stellaria media</i> ), Crowsfoot Grass ( <i>Eleusine indica</i> ), Deadnettle ( <i>Lamium amplexicaule</i> ), Fat Hen ( <i>Chenopodium album</i> ), Pigeon Grass ( <i>Setaria spp.</i> ), Pigweed ( <i>Portulaca oleracea</i> ), Prickly Lettuce ( <i>Lactuca serriola</i> ), Sowthistle ( <i>Sonchus oleraceus</i> ), Summer Grass, ( <i>Digitaria anguinalis</i> ), Winter Grass ( <i>Poa annua</i> ), Wireweed ( <i>Polygonum aviculare</i> )	NSW, Qld, SA and NT only	3.4 to 6.75 L/ha	DO NOT tank mix with simazine as crop damage may result. For best results the soil surface should be free of weeds, surface litter and clods at the time of application. <b>PRE-TRANSPLANTING:</b> Apply 7 to 2 days prior to transplanting seedlings. Use the higher rates on heavier textured soils or soils with higher organic matter. Mechanical disturbance should be minimised during planting to optimise performance. Avoid contact of treated soil with seedling roots. <b>POST-PLANTING:</b> Apply immediately following planting and pre-emergence of weeds. If applied to freshly transplanted trees, soils should be compacted prior to application of Titan Pendimethalin 440 EC Herbicide to avoid contact with roots. Weed control may be reduced if rainfall or irrigation does not occur within 10 days of application. Flood irrigation may reduce control.

**ESTABLISHED TURF**

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
<b>TURF WARM SEASON SPECIES.</b> Bahia Grass, Buffalo Grass, Couch, Kikuyu, salt Water Couch and Zoysia Grass Turf	Summer Grass, ( <i>Digitaria anguinalis</i> ), Crowsfoot (Crab grass), Winter Grass ( <i>Poa annua</i> )	All States	3.4 L/ha or 34 mL/100m <sup>2</sup>	Incorporate by 10 - 15mm of spray irrigation or when rainfall is expected within one day of application.  Apply once every 10 weeks from early September to the end of February.
Queensland Blue Couch, Hybrid Couch c.v. Tifdwarf			2.25 L/ha or 22.5mL/100m <sup>2</sup>	
<b>TURF COOL SEASON SPECIES.</b> Kentucky Blue Grass			3.4 L/ha or 34 mL/100m <sup>2</sup>	The product should be incorporated by 10 - 15mm of spray irrigation or rainfall as soon as possible within one day of application.
Bent Grass, Perennial Ryegrass			2.25 L/ha or 22.5mL/100m <sup>2</sup>	Apply Titan Pendimethalin 440 EC Herbicide only once per year to control weeds in Perennial Ryegrass and Bent Grass.



## IRRIGATION CHANNELS

SITUATION/ CROP	WEEDS CONTROLLED	STATE	RATE / TREATED ha	CRITICAL COMMENTS
Cotton Irrigation Banks, Channels and Drains	Barnyard Grass ( <i>Echinochloa spp.</i> ), Silvertop Grass (Brown Beetle Grass) ( <i>Diplachne reptatrix</i> )	Qld and NSW only	3.4 to 6.75L/ha	Use the lower rate when short term control is required. Apply in late winter or early spring after regrading or clearing channels. The soil should be loose and free of large clods. If 25 - 50mm of rainfall has not fallen within 14 days of application the channel should be filled with water and allowed to stand for 1 day. The water in the channel should then be drained off and used to pre-irrigate cotton fields. DO NOT use water in channel to irrigate or pre-irrigate susceptible crops.
			4.5L/ha plus 9kg/ha Diuron 900 WG or 16.2 L/ha Flowable Diuron	Use this mixture where long term control is required or a broader weed spectrum is present. See diuron label for details. Water in the channel should NOT be used to irrigate or pre-irrigate susceptible crops. <b>TANK MIXTURES: Read and follow all label directions including restraints, spray drift restraints, mandatory no-spray zones, critical comments, withholding periods, regional use restrictions and safety directions for the tank mix products.</b>

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

**WITHHOLDING PERIOD:**

**HEMP Grazing: DO NOT graze livestock on treated area or cut for forage or fodder for 28 DAYS after spray application.**

**HOPS: Harvest: Not required when used as directed. Grazing: DO NOT graze hop fields or cut for stockfeed for 8 WEEKS after application.**

**GARLIC: Field grown: Not required when used as directed. Covered or protected grown/treated garlic: DO NOT allow treated garlic grown in covered or protected situations, such as, glasshouses, greenhouses or plastic tunnels to be made available for human or animal consumption.**

**WEED TABLE A**

**IN COTTON, COW PEAS, MUNG BEANS, NAVY BEANS, PEANUTS, PIGEON PEAS, SOYBEANS, SUNFLOWERS - with pre-plant incorporated treatment (double incorporation)**

The following weeds are controlled:

<b>Barnyard Grass</b>	<i>Echinochloa spp</i>	<b>Native Millet</b>	<i>Panicum decompositum</i>
<b>Button Grass</b>	<i>Dactyloctenium radulans</i>	<b>Pale Pigeon Grass</b>	<i>Setaria glauca</i>
<b>Common Heliotrope</b>	<i>Heliotropium europeum</i>	<b>Paspalidium</b>	<i>Paspalidium spp</i>
<b>Crested Goosefoot</b>	<i>Chenopodium cristatum</i>	<b>Pepper Grass</b>	<i>Panicum whitei</i>
<b>Crowsfoot Grass</b>	<i>Eleusine indica</i>	<b>Pigweed</b>	<i>Portulaca oleracea</i>
<b>Dwarf Amaranth</b>	<i>Amaranthus macrocarpus</i>	<b>Queensland Blue Grass</b>	<i>Dichanthium sericeum</i>
<b>Early Spring Grass</b>	<i>Eriochloa spp.</i>	<b>Red Flinders Grass</b>	<i>Iseilema vaginiflorum</i>
<b>Fat Hen</b>	<i>Chenopodium album</i>	<b>Scarlet Pimpernel</b>	<i>Anagallis arvensis</i>
<b>Green Amaranth</b>	<i>Amaranthus viridis</i>	<b>Small Burr Grass</b>	<i>Tragus australianus</i>
<b>Liverseed Grass</b>	<i>Urochloa panicoides</i>	<b>Stink Grass</b>	<i>Eragrostis cilianensis</i>
<b>Mexican Clover</b>	<i>Richardia brasiliensis</i>	<b>Weeping Love Grass</b>	<i>Eragrostis parviflora</i>
<b>Mossman River Grass</b>	<i>Cenchrus echinatus</i>	<b>Wireweed</b>	<i>Polygonum aviculare</i>

Useful suppression of the following weeds is also obtained:

<b>Blackberry Nightshade</b>	<i>Solanum nigrum</i>	<b>Mintweed</b>	<i>Salvia reflexa</i>
<b>Caltrop</b>	<i>Tribulus terrestris</i>	<b>Peppercress</b>	<i>Lepidium spp.</i>
<b>Common Verbena</b>	<i>Verbena officinalis</i>	<b>Stagger Weed</b>	<i>Stachys arvensis</i>

**WEED TABLE B**

**IN COTTON, SUNFLOWERS, MAIZE and TEA TREE - with post-plant pre-emergence surface treatment (Titan Pendimethalin 440 EC Herbicide alone)**

The following weeds are controlled:

<b>Barnyard Grass</b>	<i>Echinochloa spp.</i>	<b>Pale Pigeon Grass</b>	<i>Setaria glauca</i>
<b>Button Grass</b>	<i>Dactyloctenium radulans</i>	<b>Paspalidium</b>	<i>Paspalidium spp.</i>
<b>Common Heliotrope</b>	<i>Heliotropium europeum</i>	<b>Pepper Grass</b>	<i>Panicum whitei</i>
<b>Crested Goosefoot</b>	<i>Chenopodium cristatum</i>	<b>Pigweed</b>	<i>Portulaca oleracea</i>

<b>Crowsfoot Grass</b>	<i>Eleusine indica</i>	<b>Queensland Blue Grass</b>	<i>Dichanthium sericeum</i>
<b>Dwarf Amaranth</b>	<i>Amaranthus macrocarpus</i>	<b>Red Flinders Grass</b>	<i>Iseilema vaginiflorum</i>
<b>Early Spring Grass</b>	<i>Eriochloa</i> spp.	<b>Scarlet Pimpernel</b>	<i>Anagallis arvensis</i>
<b>Green Amaranth</b>	<i>Amaranthus viridis</i>	<b>Small Burr Grass</b>	<i>Tragus australianus</i>
<b>Liverseed Grass</b>	<i>Urochloa panicoides</i>	<b>Stink Grass</b>	<i>Eragrostis cilianensis</i>
<b>Mexican Clover</b>	<i>Richardia brasiliensis</i>	<b>Weeping Love Grass</b>	<i>Eragrostis parviflora</i>
<b>Mossman River Grass</b>	<i>Cenchrus echinatus</i>	<b>Wireweed</b>	<i>Polygonum aviculare</i>
<b>Native Millet</b>	<i>Panicum decompositum</i>		
Useful suppression of the following weeds is also obtained:			
<b>Caltrop</b>	<i>Tribulus terrestris</i>	<b>Mintweed</b>	<i>Salvia reflexa</i>
<b>Common Sowthistle</b>	<i>Sonchus oleraceus</i>	<b>Peppercress</b>	<i>Lepidium</i> spp.
<b>Common verbena</b>	<i>Verbena officinalis</i>	<b>Stagger Weed</b>	<i>Stachys arvensis</i>

**WEED TABLE C**

**IN MAIZE - with post-plant pre-emergence surface treatment of Titan Pendimethalin 440 EC Herbicide plus tank mix with atrazine.**

The following weeds are controlled in addition to those controlled by Titan Pendimethalin 440 EC Herbicide alone:

<b>Bathurst Burr</b>	<i>Xanthium spinosum</i>	<b>Noogoora burr</b>	<i>Xanthium pungens</i>
<b>Caltrop</b>	<i>Tribulus terrestris</i>	<b>Paddy Melon</b>	<i>Cucumis spp.</i>
<b>Mintweed</b>	<i>Salvia reflexa</i>	<b>Thornapple</b>	<i>Datura spp.</i>

The following weeds are not controlled by Titan Pendimethalin 440 EC Herbicide or the mixture with atrazine:

<b>Bindweed</b>	<i>Convolvulus spp.</i>	<b>Nut Grass</b>	<i>Cyperus rotundus</i>
<b>Wandering Jew</b>	<i>Commelina spp.</i>		

**WEED TABLE D**

**IN CARROTS, PROCESSING PEAS, FRENCH BEANS, TRANSPLANTED CABBAGE, CAULIFLOWER, BROCCOLI, LETTUCE, RADISH, BRASSICA LEAFY VEGETABLES & ROCKET, BRUSSEL, SPROUTS, PARSNIP & INDUSTRIAL HEMP (not to be used in hemp intended for human consumption)- with pre-emergence surface treatment after planting or before transplanting as directed and incorporated by spray irrigation.**

The following weeds are controlled :

<b>Awnless Barnyard Grass</b>	<i>Echinochloa colona</i>	<b>Green Fat Hen</b>	<i>Chenopodium murale</i>
<b>Bittercress</b>	<i>Coronopus didymus</i>	<b>Pigweed</b>	<i>Portulaca oleracea</i>
<b>Bladder Ketmia</b>	<i>Hibiscus trionum</i>	<b>Prickly Lettuce</b>	<i>Lactuca serriola</i>
<b>Chickweed</b>	<i>Stellaria media</i>	<b>Shepherd's Purse</b>	<i>Capsella bursa-pastoris</i>
<b>Deadnettle</b>	<i>Lamium amplexicaule</i>	<b>Wireweed</b>	<i>Polygonum aviculare</i>
<b>Fat Hen</b>	<i>Chenopodium album</i>		

Suppression only of the following weeds at the lower rates. Higher rates or tank mixtures are required for complete control (see Directions for Use table).

<b>Annual Nettles</b>	<i>Urtica</i> spp.	<b>Indian Hedge Mustard</b>	<i>Sisymbrium orientale</i>
<b>Blackberry Nightshade</b>	<i>Solanum nigrum</i>	<b>Turnip Weed</b>	<i>Rapistrum rugosum</i>
<b>Common Sowthistle</b>	<i>Sonchus oleraceus</i>	<b>Wild Radish</b>	<i>Raphanus raphanistrum</i>
<b>Fumitory</b>	<i>Fumaria</i> spp.	<b>Winter Grass</b>	<i>Poa annua</i>

## **GENERAL INSTRUCTIONS**

Titan Pendimethalin 440 EC Herbicide is a selective herbicide for the control of most annual grasses and certain broadleaved weeds. Titan Pendimethalin 440 EC Herbicide controls weeds by inhibiting seedling development; it will not control established weeds. For best results, seedbeds should be free of weeds, trash and clods at the time of application. Soils containing a high percentage of organic matter can result in poor control. It is recommended that application to soils containing a high percentage of organic matter (greater than 6%) be avoided.

Crop injury may result if cold, wet weather follows planting or if Titan Pendimethalin 440 EC Herbicide is applied to a poorly prepared seedbed. With the return of favourable growing conditions (warm weather), the crop will usually recover and resume normal growth.

NOTE: Titan Pendimethalin 440 EC Herbicide will stain (yellow) any objects it contacts. Keep all objects, etc. that are not to be stained well clear of the product and spray.

## **Mixing**

Put half the required volume of water in spray tank and start agitation. When using Titan Pendimethalin 440 EC Herbicide alone, add Titan Pendimethalin 440 EC Herbicide to partially filled tank and then add the remainder of the water. Mix thoroughly.

When using Titan Pendimethalin 440 EC Herbicide in tank mixes with products such as atrazine or diuron, mix these products as indicated on the relevant label and add the Titan Pendimethalin 440 EC Herbicide last, then complete filling of the tank. Maintain good agitation at all times until spraying is completed. If the spray mixture is allowed to settle, thorough agitation is essential to re-suspend the mixture before spraying is resumed. Note that when tank mixing Titan Pendimethalin 440 EC Herbicide with paraquat and glyphosate herbicides, the Titan Pendimethalin 440 EC Herbicide should be thoroughly mixed in the spray tank first, before adding a paraquat or glyphosate product.

## **Application Method**

### **Ground Application:**

Use conventional sprayers with either mechanical or by-pass agitation. Flat fan nozzles should be used. Spray equipment should be correctly calibrated to ensure proper application. If applying Titan Pendimethalin 440 EC Herbicide in tank mix combination with atrazine or diuron, nozzle screens must be no finer than 50 mesh. Apply the recommended quantity of Titan Pendimethalin 440 EC Herbicide in 50-200 litres of water per hectare. Where pre-emergence surface treatment is used, the higher rates of water are recommended.

### **Aerial Application:**

Pre-plant soybeans, cotton, sunflowers, peanuts, navy beans, cow peas, mung beans, pigeon peas and post-plant, post flushed combine sown rice only.

Apply the recommended quantity of Titan Pendimethalin 440 EC Herbicide in 25-60 litres of water per hectare. It is essential that the equipment is correctly calibrated and an even spray pattern is obtained. It is essential that markers be used and an accurate swath width is maintained. Always spray with a cross wind in accordance with recommended flying practice.

DO NOT apply Titan Pendimethalin 440 EC Herbicide by aerial spraying in eucalypt forestry situations.

### **Incorporation:**

- (a) Titan Pendimethalin 440 EC Herbicide works best if thoroughly mixed with soil either mechanically or by irrigation or rainfall. The aim of incorporation is to produce an even band of herbicide to intercept germinating weed seeds.
- (b) Post-plant pre-emergence surface applications of Titan Pendimethalin 440 EC Herbicide alone, or as a tank mixture, are most effective in controlling weeds when adequate rainfall occurs or irrigation is applied within 7 - 10 days after treatment to achieve incorporation. If no rain or irrigation is received within 7-10 days, light mechanical incorporation is required for optimum weed control, except when used on maize, carrots and rice.
- (c) Maize is tolerant to Titan Pendimethalin 440 EC Herbicide either alone or in mixtures with atrazine if the seed germinates below the chemically treated band. Maize, carrots and rice are NOT tolerant to Titan Pendimethalin 440 EC Herbicide if it is in direct contact with the seed.



### **Cereal Seed Dressings**

Some fungicidal seed dressings can shorten coleoptile length and this can affect emergence particularly if seed is sown too deep. When these cereal seed dressings are used in Titan Pendimethalin 440 EC Herbicide treated areas it is very important to ensure there is good seed depth control and to sow just below (1cm) the chemically treated band. Consult your local Department of Agriculture Agronomist for further advice.

### **Weather Conditions at Planting**

Crop injury may result if cold weather follows planting. With the return of favourable growing conditions (warm weather), crops usually recover and resume normal growth. In cereals, prolonged cold wet conditions during germination and emergence can result in wheat or barley coleoptiles remaining in the treated band for an extended period. This can reduce emergence.

### **COMPATIBILITY**

Titan Pendimethalin 440 EC Herbicide is compatible with the following herbicides: atrazine, diuron, simazine, prometryn, fluometuron, fluometuron plus prometryn, ametryn, paraquat, propanil, linuron, glyphosate and Ramrod SC. If tank mixing, observe the directions under mixing.

### **Following Crops**

In the event of crop failure the soil should be cultivated to a minimum depth of 15cm to ensure any residues are evenly dispersed throughout the soil.

If a maize crop fails due to weather conditions or some other reason, maize can be replanted the same year without adverse effects but seeding depth must be below the retilled area.

### **The following crops may be sown after a minimum interval of 2 months after application of Titan Pendimethalin 440 EC Herbicide:**

Carrots, parsnips, parsley, celery, potatoes, peas, French beans, transplanted Brassica's, transplanted lettuce, transplanted tomatoes, transplanted capsicums.

### **The following crops may be sown after a minimum interval of 5 months after application of Titan Pendimethalin 440 EC Herbicide:**

Turnips, lettuce, radish, Brussels sprouts, cabbage, cauliflower, broccoli, onions, leeks, Sweetcorn, pumpkins, squash, melons, cucumbers.

### **The following crops may be sown after a minimum interval of 12 months after application of Titan Pendimethalin 440 EC Herbicide:**

Redbeet (beetroot), spinach, silverbeet, poppy.