

BEFORE USING THIS PRODUCT READ THE LABEL CAREFULLY!

Herbicide



PANGA PLUS 540 SL

Reg. No. L 8818 Act/Wet No. 36 of/van 1947

2/21/8/2013- Aug2019

A soluble concentrate non-selective, systemic post-emergence herbicide with slight or no soil activity for the control of weeds in agriculture and forestry plantations/areas.

'n Oplosbare konsentraat nie-selektiewe, sistemiese na-opkoms onkruidoder met min of geen grondaktiwiteit vir die beheer van onkruide in landbou en bosbouplantasies/areas.

ACTIVE INGREDIENT / AKTIEWE BESTANDDEEL

glyphosate (glycine) **540 g ae/l** glifosaat (glisien)
(glyphosate potassium salt) **665 g/l** (glifosaat kaliumsout)

HRAC HERBICIDE GROUP CODE **G9** HRAC ONKRUIDDODER GROEPKODE



Registration holder / Registrasiehouer:

Villa Crop Protection (Pty) Ltd.
Co. Reg. No. / Mpy. Reg. Nr. 1992/002474/07
PO Box / Posbus 10413, Aston Manor, 1630
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Website / Webblad: www.villacrop.co.za

24 HR EMERGENCY NUMBERS:

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villa

UN Number: 3265

Willow Set & Print 011 394-4486



**CAUTION
VERSIGTIG**



GERUUKSAANWYSYNGS INGESLUIT

VERWYS NA BESONDERHEDE
GEDRUK OP HOUER/SAK

Date formulated:

Formuleringsdatum:

DIRECTIONS FOR USE ENCLOSED

REFER TO DETAILS PRINTED

ON CONTAINER/BAG

Batch number:

Lotnommer:

PANGA PLUS 540 SL

Reg. No. L 8818 Act/Wet No. 36 of/van 1947

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glyphosate (glycine) / glifosaat (glisien) 540 g ae/l
 (glyphosate potassium salt / glifosaat kaliumsout) 665 g/l

Registration holder / Registrasiehouer:

VILLA CROP PROTECTION (PTY) LTD.

Co. Reg. No. 1992/002474/07 Mpy. Reg. Nr.

P.O. Box / Posbus 10413, ASTON MANOR, 1630,

Tel. (011) 396 2233

CAUTION / VERSIGTIG**WARNINGS****Withholding periods:**

Allow the following number of days between the last application and harvest or grazing:	
Maize (Grazing)	28 days
Maize (Green mealies)	42 days

- Handle product with caution.
- **PANGA PLUS 540 SL is a corrosive product.**
- Irritating to eyes and skin.
- Harmful when swallowed.
- Do not mix, store or apply **PANGA PLUS 540 SL** solutions in galvanised steel or unlined steel (except stainless steel) containers or spray tanks, as a reaction will cause hydrogen gas to form, which is highly combustible.
- Store in a cool, dry, well-ventilated place.
- Store away from food, feeds, seed, fertilizers and other agricultural chemicals.
- Keep out of reach of children, uninformed persons and animals.
- Re-entry: Do not enter treated area until spray deposit has dried unless wearing protective clothing.
- **PANGA PLUS 540 SL** is a highly active herbicide, which in small quantities, when used incorrectly can cause serious damage to crop seedlings, deciduous fruit trees and grape vines during the budding and early season growth stages. Under the following conditions it can cause serious damage as far as 3 to 5 km from the area under treatment: Cloudy weather with relative humidity above 80 % and low air movement of less than 5 km per hour. When such conditions prevail, **PANGA PLUS 540 SL** must not be applied where sensitive crop seedlings, deciduous fruit trees and grape vines in budding or early development stages are present within 5 km from the area under treatment.

Although this remedy has been extensively tested under a large variety of conditions, the registration holder does not warrant that it will be efficacious under all conditions, because the action and effect thereof may be affected by factors such as abnormal soil, climatic and storage conditions, quality of dilution water, compatibility with other substances not indicated on the label and the occurrence of resistance of the weeds to the remedy concerned, as well as by the method, time and accuracy of application. The registration holder further does not accept responsibility for damage to crops, vegetation, the environment or harm to man or animal or for lack of performance of the remedy concerned, due to failure of the user to follow the label instructions or to the occurrence of conditions, which could not have been foreseen in terms of the registration. Consult the supplier in event of any uncertainty.

PRECAUTIONS

- Do not inhale the spray mist or spray fumes.
- Wear a face shield and rubber gloves when handling and preparing the product, and when applying the spray mixture.
- Avoid skin and eye contact.
- Do not eat, drink or smoke while mixing and applying or before washing hands and face or change of clothing.
- Wash with soap and water immediately after use and accidental skin contact.
- Wash contaminated clothing after use.

- In case of contact with eyes, immediately flush the eyes with clean, gently flowing lukewarm water or saline solution for 20 minutes, holding the eyelid(s) open. If irritation persists, seek medical advice.
- Prevent drift of spray onto other crops, grazing, rivers, dams or areas not under treatment as this may cause serious crop damage.
- Direct or spray drift contact by **PANGA PLUS 540 SL** onto leaves and/or immature bark of desired plants can result in serious localised or translocated damage.
- Clean application equipment after use and do not dispose of wash water where it can contaminate other crops, grazing, boreholes, rivers or dams.
- **TRIPLE RINSE** empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow draining for at least 30 seconds after the flow has slowed down to a drip. Thereafter rinse the container three times with a volume of water equal to a minimum of a third of that of the container. Add the rinsing to the contents of the spray tank before destroying the container in the prescribed manner.
- Destroy the container by perforation and flattening and dispose of it in a safe way.
- **Do not** re-use the empty container for any other purpose.
- Prevent contamination of food, feeds, drinking water and eating utensils.
- Do not add foliar fertilisers to **PANGA PLUS 540 SL**.

RESISTANCE WARNING

PANGA PLUS 540 SL is a group code G9 herbicide. Any weed population may contain individuals naturally resistant to **PANGA PLUS 540 SL** and other group code G9 herbicides. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds may not be controlled by **PANGA PLUS 540 SL** or any other group code G9 herbicide.

To delay herbicide resistance:

- avoid exclusive repeated use of herbicides from the same herbicide group code. Alternate or tank mix with products from different herbicide group codes,
- integrate other control methods (chemical, cultural, biological) into weed control programmes.

WEED RESISTANCE MANAGEMENT

- Inconsistent control of certain grass populations and other weeds such as *Lolium* species, *Phalaris* species, *Avena* species (reported known resistance), *Chenopodium* species (plants with waxy leaves), *Conyza bonariensis* (Flax-leaf fleabane), *Commelina benghalensis* (Benghal wandering Jew), *Ipomoea* species (natural resistance) occur, due to resistance against **Glyphosate**.
- Some populations might be resistant to products containing the aryloxyphenoxy propionates, cyclohexanediones and sulfonyleureas, but might also have resistance against the **Glyphosate**-containing products, e.g. **PANGA PLUS 540 SL**.
- Due to the fact that these resistance populations vary in size and localities and are difficult to ascertain, it is essential that each land must be inspected annually to identify possible resistance early.
- If the above-mentioned preventative measures are not strictly adhered to, the registration holder cannot be held responsible for the failure of **PANGA PLUS 540 SL** to control resistant weeds.

For specific information on resistance management contact the registration holder of this product.

DIRECTIONS FOR USE: Use only as directed.

General information and Use Restrictions:

NOTES

- Use of **PANGA PLUS 540 SL** according to label instructions should result in normal development and growth of Glyphosate tolerant soybean or Glyphosate tolerant maize varieties. Various environmental conditions, agronomic practices and other diverse factors make it impossible to eliminate all risks associated with this product, even when applications are done according to label specifications. In certain cases, these factors can result in unforeseen results including yield loss.
- **PANGA PLUS 540 SL** must only be used for post-emergence, over the top or directed application on to genetically improved soybean maize varieties that have been developed as containing the Pioneer Glyphosate tolerant gene. Severe crop injury or total killing of the maize or soybean crop will result if any variety or hybrid, not properly indicated as containing the Glyphosate tolerant gene, is sprayed with this product.

- Herbicidal action of **PANGA PLUS 540 SL** may become visible from five (5) days after application depending on weed species, growth stage and environmental conditions.
- Apply **PANGA PLUS 540 SL** post-emergence on to vigorously growing weeds, directed to the foliage and immature bark. For difficult to control perennial weeds, application in autumn is recommended when weeds are actively translocating nutrients into their roots, bulbs, rhizomes and stolons. Any re-growth should be spot sprayed.
- Do not spray whilst weeds are wet, dormant or under stress nor when covered in a layer of dust or when damaged by frost.
- Application with low volume sprayers (e.g. self-drive “high boy” sprayers) at high speeds (> 10 km per hour) may produce dust clouds that will affect the activity of the active ingredient adversely due to adsorption onto dust particles on the weeds’ leaf surfaces.
- **PANGA PLUS 540 SL** is rain fast within one (1) hour after application. Rain or irrigation within 1 hour after application can have an adverse effect on efficacy.
- Allow 6 hours after application before planting operation.
- In mixed weed situations (annuals in amongst problem perennials), control annuals by mowing or chemical control. Wait for vigorous re-growth of perennials and then spray or spot spray re-growth.
- When **PANGA PLUS 540 SL** is used in conjunction with any other agricultural remedy, adhere to all **WARNINGS, PRECAUTIONS** and **DIRECTIONS FOR USE** mentioned on that label.
- There are no crop rotation restrictions following application of this product.

Mixing instructions:

- **Always use clean water.** Avoid the use of brackish or muddy water, or water with a high colloid content derived from soils high in organic matter.
- Analysis of the water source is recommended to confirm the levels of sodium, calcium and magnesium salts, as well as carbonate and bicarbonate fractions, as too high levels of these compounds may cause antagonism with the **Glyphosate** active ingredient.
- For hard and brackish water correction, add **Velocity®-Super, Velocity®-DryMax, Ams-Super** or **Ams-Granule** ammonium sulphate to the spray water before adding **PANGA PLUS 540 SL**.
- Add the **Ammonium sulphate** to the water first; then add the **PANGA PLUS 540 SL**, followed by the recommended tank mixture product.
- Ensure agitation during mixing and spraying.

Compatibility:

- **PANGA PLUS 540 SL** can be tank mixed with **Premium 840 EC/Leap 840 EC, ALACHLOR 480 CS** (L 7674), **Astron® 480 SC/Cantron® 480 SC, Metolachlor 960 EC/Platinum 960 EC, Metolachlor 915EC/Platinum Plus 915 EC, Premium 900 EC/Acetoachlor 900 EC, 2,4-D Amine 480 SL, Halo 750 WDG/Crown 750 WDG, MCPA 400 SL, Terbuticide 600 WDG/Terbuweed 600 WDG, ELEGANCE 500 WP** (L 7035), **Flumetsulam 800 WDG/Laurel 800 WDG** and **Villa 51**. Ensure compatibility by preparing a small scale test mixture before a large scale field application. Observe all label recommendations.
- **PANGA PLUS 540 SL** can also be tank mixed with ammonium sulphate adjuvants, e.g. **Velocity®-Super, Velocity®-DryMax, Ams-Super** or **Ams-Granule**.
- **Do not** use in tank mixtures with SC formulations, except **Astron® 480 SC/Cantron® 480 SC**.

Surfactants / Additives:

- For optimum results, a minimum of 1.0 % **PANGA PLUS 540 SL** concentration in the total spray volume is recommended. Where the application is based on a percentage solution rather than a dosage per hectare rate, apply as a full cover application (but not to the point of run-off).
- For improved control of Wandering Jew, Field bind weed, Morning glory and Common purslane, **PANGA PLUS 540 SL** can be mixed with **2,4-D Amine 480 SL** or **MCPA 400 SL** at a maximum of 500 ml per hectare. **Do not** add a buffering agent when preparing tank mixtures with any of these 2 products.
- Always add ammonium sulphate (e.g. **Velocity®-Super / Velocity®-DryMax**) to the spray mixture.

Application information:

- Correctly calibrate all sprayers under field conditions and ensure that the spraying equipment is in good working order.
- Apply **PANGA PLUS 540 SL** at a maximum volume rate of 200 litres spray mixture per hectare. Where the volume rate is less than 120 litres per, the application must be done with purpose designed low volume spray equipment (e.g. self-drive “high boy” sprayers).

- The application speed of low volume sprayers must not exceed 25 km per hour on an even soil bed. Where the soil bed is more uneven (e.g. due to clods) a maximum application speed of 15 km per hour must be used.
- Ensure that the spray equipment is clean and free of rust, dust and sediment from other chemicals.
- In situations where drift may be hazardous, use low pressures of 100 to 200 kPa or low drift nozzles or add a drift retardant adjuvant when spraying.
- Do not spray when wind speed exceeds 10 km per hour.
- Ensure a fine (**NOT** a mist spray), even droplet distribution and thorough coverage of the target weeds.
- Thoroughly clean the entire sprayer after application.

CROP RECOMMENDATIONS

1. GLYPHOSATE TOLERANT CROPS

1.1 Glyphosate tolerant maize:

- Broadcast (over the top) application:

Broadcast application of **PANGA PLUS 540 SL** can only be done after the ground cracking stage up to the V8 stage (V8 stage = when the first plants in the field have 8 leaves with closed collars around the main stem; however, the actual number of leaves may be more). **Do not** apply broadcast applications if the spray equipment will cause mechanical crop damage. **Broadcast application after the V8 stage may cause yield loss or delayed maturity.** Flat fan or twin jet nozzles, suitable for low water volume deliveries, are recommended. If follow-up applications are required to control specific weed species, e.g. *Cyperus esculentus*, the second application should not be made within 10 days of the first application. If the maize has grown beyond the V8 stage at this time, a directed follow-up application will be necessary (refer below).

- Directed application:

Directed **PANGA PLUS 540 SL** applications can be made after the V8 stage, if row spacing permits the movement of the sprayer without causing mechanical damage to the crop. Row spacing of 1.5 and 2.1 metres are recommended for conventional tractor mounted spray rigs.

For the control of certain broadleaf weeds mentioned above, **PANGA PLUS 540 SL** can be mixed with either **2,4-D Amine 480 SL** or **MCPA 400 SL** at 0.5 litre per hectare. Refer to the **2,4-D Amine 480 SL** or **MCPA 400 SL** labels for “**USE RESTRICTIONS**”.

1.2 Glyphosate tolerant soybeans (broadcast application):

PANGA PLUS 540 SL may be applied post-emergent to **Glyphosate tolerant** soybeans from the ground cracking stage through to flowering. Allow a minimum of 2 weeks between application and harvest of the crop. Do not exceed the following **PANGA PLUS 540 SL** application volumes per hectare:

- | | |
|--|------------------------|
| - Cumulative total per season for all applications: | 6.7 litres per hectare |
| - Pre-plant, pre-emergent applications: | 2.0 litres per hectare |
| - Total in-crop applications from cracking to flowering: | 4.7 litres per hectare |
| - Maximum pre harvest application rate: | 1.3 litres per hectare |

Refer recommendations under “**APPLICATION DOSAGES**”.

1.3 Application Dosages:

Weed spectra in crops are variable according to region, soil type and climatic factors that change seasonally. Therefore, varied and uneven emergence of various weed species may occur at any specific site, where one or more species may dominate. The dosages recommended, aim to cover a broad spectrum of weeds if they are sprayed before upright growing weeds reach 10 cm in height (e.g. Khaki weed), or flat growing weeds reach the 6 to 8 leaf stage (e.g. Common purslane).

Table 1.

Crop & weed type	Dosage rate	Stage of weed growth	
Glyphosate tolerant Maize & Soybeans:			
General post emergence weed control			
Annual grasses and broad leaf weeds:	1.3 l/ha	Apply before 100 mm height or 8-leaf stage.	
	1.7 l/ha	Apply between 100 and 200 mm or up to the 12-leaf stage.	
Difficult to control species requiring a follow-up spray (variable control*): Wandering Jew* <i>Commelina benghalensis</i>	2.0 l/ha	Apply at the 3-leaf stage; follow up with 2.0 litres per hectare 10 to 20 days later.	
		Morning glory* <i>Ipomoea purpurea</i>	Apply at the 4- to 5- leaf stage; follow up with 2.0 litres per hectare 10 to 20 days later.
		Common purslane* <i>Portulaca oleracea</i>	Apply before flowering.
		Devil's thorn <i>Tribulus terrestris</i>	Apply before first flowers appear.
Difficult to control biennial and perennial weed species: Yellow nutsedge (<i>Cyperus esculentus</i>)	2.0 l/ha	Apply at the 3- to 4-leaf stage follow up with 2.0 litres per hectare, 10 to 20 days later.	
		<i>Coryza</i> spp.	Apply before 8-leaf stage
Glyphosate tolerant Maize only:			
Improved residual control of broadleaf weeds. Above-mentioned General post-emergence weed control dosage rates PLUS 0.8 to 1.6 kg per hectare Terbuweed 600 WDG . Consult the Terbuweed 600 WDG label for WARNINGS, PRECAUTIONS, USE RESTRICTIONS and DIRECTIONS FOR USE .			
Improved control of Yellow nutsedge and certain broadleaf weeds. Above-mentioned General post-emergence weed control dosage rates PLUS 50 grams per hectare Halo 750 WDG . Consult the Halo 750 WDG label for WARNINGS, PRECAUTIONS, USE RESTRICTIONS and DIRECTIONS FOR USE .			
Glyphosate tolerant Soybeans only:			
Improved control of Yellow nutsedge and certain broadleaf weeds. Above-mentioned General post-emergence weed control dosage rates PLUS 18 g per hectare Elegance 500 WP . Consult the Elegance 500 WP label for WARNINGS, PRECAUTIONS, USE RESTRICTIONS and DIRECTIONS FOR USE .			
Improved residual control of various broadleaf weeds. Above-mentioned General post-emergence weed control dosage rates PLUS 18 to 36 grams per hectare Laurel 800 WDG , as per recommended soil type. Consult the Laurel 800 WDG label for WARNINGS, PRECAUTIONS, USE RESTRICTIONS and DIRECTIONS FOR USE .			

NOTE

Carefully read “**Broadcast**” and “**Directed application**” above for application spray instructions in maize.

The following weed species will NOT be controlled at these recommended rates:

Cynodon dactylon - Common quick grass
Convolvulus arvensis - Field bind weed
Oenothera stricta - Evening primrose
Panicum maximum - Common buffalo grass
Paspalum spp. – Paspalum species

1.4 Pre- and post-emergence tank mixture combinations with PANGA PLUS 540 SL at planting in minimum / no-tillage practices in Maize:

- PANGA PLUS 540 SL may be tank mixed with Acetochlor 840 EC, Metolachlor 800 EC or Platinum Plus 915 EC or Alachlor 480 CS and with Astron® 480 SC/Cantron® 480 SC at planting for pre-emergence weed control.
- 2,4-D Amine 480 SL or MCPA 400 SL can be added to above-mentioned mixtures for improved control of certain difficult to control broadleaf weed species.
- Refer to Table 1 above for PANGA PLUS 540 SL dosage rates. Use the higher dosage rate for more difficult weeds or higher weed pressure situations. Apply to young actively growing weeds.
- Follow the registration holder's recommendations on these labels, except 2,4-D Amine 480 SL and MCPA 400 SL, where a maximum of 0.5 litres per hectare should be applied.
- Refer to the Acetochlor 840 EC, Metolachlor 800 EC, Platinum Plus 915 EC or Alachlor 480 CS and Astron® 480 SC/Cantron® 480 SC labels for USE RESTRICTIONS and DIRECTIONS FOR USE and weed species controlled.

1.5 Post-plant, post-emergence tank mixture combinations in GLYPHOSATE TOLERANT Maize:

- PANGA PLUS 540 SL may be tank mixed with Astron® 480 SC/Cantron® 480 SC plus Platinum 960 EC or Acetochlor 900 EC or Alachlor 480 CS or 2,4-D Amine 480 SL or MCPA 400 SL for post-emergence weed control applications (before the V8-stage).
- This treatment can be applied as a stand-alone post-emergence application or as a follow up to a pre-emergence application of Astron® 480 SC/Cantron® 480 SC in tank mixture with Metolachlor 800 EC or Platinum Plus 915 EC or Acetochlor 840 EC, as indicated on the registered labels.
- Refer to Table 1 above for PANGA PLUS 540 SL dosage rates. Use the higher dosage rate for more difficult weeds or higher weed pressure situations. Apply to young actively growing weeds.
- Follow the registration holder's recommendations on these labels, except 2,4-D Amine 480 SL and MCPA 400 SL, where a maximum of 0.5 litres per hectare should be applied.
- Refer to the Astron® 480 SC/Cantron® 480 SC and Platinum Plus 915 EC or Acetochlor 900 EC or Alachlor 480 CS or 2,4-D Amine 480 SL or MCPA 400 SL labels for USE RESTRICTIONS and DIRECTIONS FOR USE and weed species controlled.
- **IMPORTANT NOTES**
 - This tank mixture of PANGA PLUS 540 SL plus Astron® 480 SC/Cantron® 480 SC plus Platinum 960 EC or Acetochlor 900 EC or Alachlor 480 CS or 2,4-D Amine 480 SL or MCPA 400 SL may only be applied on certified maize cultivars containing Glyphosate tolerant genetic material.
 - PANGA PLUS 540 SL must NOT be tank mixed with products containing Atrazine.

1.6 Improved consistency of Yellow nutsedge (Cyperus esculentus) control in Glyphosate tolerant maize with a tank mixture with Halo 750 WDG:

- Apply 1.7 to 2 litres per hectare PLUS 50 g per hectare Halo 750 WDG.
- Add 2 % Velocity®-Super and 0.05 % Villa 51 to the tank mixture.
- To obtain best results, apply Halo 750 WDG on actively growing Nutsedge under moist conditions 3 to 5 weeks after planting, after the majority of the Nutsedges have germinated but before flowering. New germination of Nutsedge may occur if application was performed too early. Later applications when the Nutsedge is in flower, will also give suboptimal results.
- The optimal time of application is determined by the development stage of the Nutsedges. Broadleaf weeds, however, should not exceed the 4-leaf stage or 100 mm in height.
- Refer to the Halo 750 WDG label for USE RESTRICTIONS and DIRECTIONS FOR USE.

2. PRE-PLANT APPLICATION OF PANGA PLUS 540 SL IN CEREALS IN WINTER RAINFALL AREA

Table 2.

PANGA PLUS 540 SL	
0.7 to 1.3 l/ha OR 1.0 % solution	1.5 l/ha OR 1.5 % solution
1 to 8-leaf	8-leaf to pre-flower
<i>Arctotheca calendula</i>	Cape marigold
<i>Avena</i> spp.	Wild oats
<i>Bromus diandrus</i>	Ripgut brome
<i>Chenopodium album</i>	White goosefoot
<i>Conyza floribunda</i> *	Tall fleabane
<i>Erodium moschatum</i>	Musk heron's bill
<i>Hypochoeris radicata</i>	Hairy wild lettuce
<i>Lolium</i> spp.*	Ryegrass
<i>Medicago polymorpha</i>	Clover
<i>Raphanus raphanistrum</i>	Wild radish
<i>Sonchus oleraceus</i>	Sow thistle

Difficult to control / variably controlled annual weeds:

- Inconsistent control of certain difficult to control species (refer also “**WEED RESISTANCE MANAGEMENT**”) may be experienced. Avoid resistance by alternating the use of **PANGA PLUS 540 SL** with products from different chemical classes (refer to “**RESISTANCE WARNING**”).
- * - **Inconsistent control** and resistance may occur with *Conyza* & *Lolium* species.
- Use the higher dosage rate on difficult to control species or on established weeds.
- Add 0.5 litre per hectare maximum **MCPA 400 SL** or **2,4-D Amine 480 SL** to control broadleaf weeds that are normally difficult to control.

3. FORESTRY AND INDUSTRIAL WEED CONTROL

Table 3.1. Dosage rates for weed control in forestry.

Situation	Weed species	Dosage rate			Remarks
		ℓ / ha	% Solution* (ℓ in 100 ℓ water)*	Spot spraying (ℓ in 100 ℓ water)**	
Maintenance weed control in established forests	<i>Acacia mearnsii</i> (Black wattle)	2.0	0.8	1.0 to 1.3	Apply to young trees from 0.1 to 1.5 m high. Apply the lower dosage rate on trees up to 1.0 m height.
	<i>Solanum mauritianum</i> (Bugweed)	1.3	0.5	1.0	Large trees: Cut to 50 cm, allow new growth of at least 50 cm before application. Saplings: Apply directly to foliage.
	<i>Rubus</i> spp. (Bramble)	4.0	1.6	1.0	Cut and remove lush growth in winter. Apply when new growth is more than 0.5 m high. If re-growth occurs, spray with a 1.0 % solution.
Firebreaks Firebreaks preparation, either tracer belts or total area. Band preparation for tree seedlings Situations suitable for such treatments include: a) Virgin veld b) Clear felled forests	In both situations the weed population would include perennials and annuals. For some of the weeds controlled refer to the list under Industrial weed control.	2.8	1.2	1.5	A minimum of 250 litres spray mixture per hectare must be applied when using the 1.2 % solution. A follow-up treatment may be necessary to control some hardy perennials using a 1.5 % solution on a spot spray basis.
<i>Eucalyptus grandis</i> (Blue gum)	Single stem stumps	3.3 % solution			Apply a 50 mℓ solution to a clean cambium area immediately after felling.
	Multi-stem stumps	4.6 % solution			Apply a 100 mℓ solution to a clean, fully exposed cambium layer immediately after felling. If re-growth occurs, spray with a 1.3 % solution.

* Based on knapsack application delivering 250 litres spray mixture per hectare. Application of a % solution with a knapsack sprayer must be calibrated such that it will equal the delivery of the corresponding litres per hectare dosage rate.

** Where spot spraying is done using a percentage solution, apply as a full cover application (but not to the point of run-off).

Table 3.2. Dosage rates for Industrial weed control.

Botanical name	Common name	Dosage rate		Remarks
		l / ha	% Solution**	
Perennial grasses:				
<i>Cynodon dactylon</i>	Common couch grass	4	1.6	Apply to vigorously growing plants in summer or autumn when nutrients are actively translocated to roots, rhizomes and stolons. Follow-up with 2.8 litres per hectare (a 1.7 % solution) if any re-growth occurs.
<i>Cynodon nlemfuensis</i>	East African grass	4	1.6	
<i>Pennisetum clandestinum</i>	Kikuyu	2.8	1.2	Spray on active growth in summer. Spray re-growth with 2.0 litres per hectare or a 1.0 % solution.
<i>Paspalum paspalodes</i>	Couch Paspalum	4	1.6	Apply on active growing plants. Follow-up with half the recommended dosage rate if re-growth occurs.
<i>Paspalum dilatatum</i>	Common Paspalum	4	1.6	
Nutsedges:				
<i>Cyperus esculentus</i>	Yellow nutsedge	4	4	Apply during flowering stage. Spray re-growth with 2.0 litres per hectare or a 1.0 % solution.
<i>Cyperus rotundus</i>	Purple nutsedge	4	4	
Annual broadleaf weeds:				
<i>Amaranthus hybridus</i>	Cape pigweed	2.8 to 4	1.0 to 1.6	Use 2.8 litres per hectare (a 1.0 % solution) when weeds are in the early growth stages. Use 3.5 litres per hectare (a 1.4 % solution) when weeds are in the early flowering stage. Use 4.0 litres per hectare (a 1.6 % solution) when weeds are in the seeding stage, but still actively growing. Do not apply on to matured weeds that are in a stage of desiccation.
<i>Amaranthus spinosus</i>	Thorny pigweed			
<i>Argemone subfusiformis</i>	White flowered mexican poppy			
<i>Bidens bipinnata</i>	Spanish black jack			
<i>Bidens pilosa</i>	Black jack			
<i>Chenopodium album</i>	White goosefoot			
<i>Conyza floribunda*</i>	Tall fleabane			
<i>Datura ferox</i>	Large thorn apple			
<i>Datura stramonium</i>	Thorn apple			
<i>Oxalis pes-caprae</i>	Yellow sorrel			
<i>Polygonum aviculare</i>	Prostrate knotweed			
<i>Richardia brasiliensis</i>	Tropical richardia			
<i>Senecio ilicifolius</i>	Ragwort			
<i>Schkuhria pinnata</i>	Dwarf marigold			
<i>Tagetes minuta</i>	Khaki weed			

* Even at higher rates, the control of *Conyza* species may be variable, necessitating a follow-up application.

** Based on knapsack application delivering 250 litres spray mixture per hectare. Application of a % solution with a knapsack sprayer must be calibrated such that it will be equal to the corresponding litres per hectare dosage rate (**NOTE** - where spot spraying is done, using a percentage solution, apply as a full cover application (but not to the point of run-off)).

4. WEED CONTROL IN GRAPE VINES

Table 4. Dosage rates for weed control in grape vines.

<i>Crop</i>	<i>Dosage rates</i>	<i>Remarks</i>
Grape vines	1.0 l/ha PLUS 3.0 l/ha MCPA 400 SL	<u>Early winter: (Weeds under 15 cm height).</u> Not for Small mallow (<i>Malva parviflora</i>), Cape marigold (<i>Arctotheca calendula</i>), Oat seed grass (<i>Erharta</i> spp.), Blue echium (<i>Echium vulgare</i>), Ryegrass (<i>Lolium</i> spp.), Sow thistle (<i>Sonchus oleraceus</i>) and Brome spp. (<i>Bromus</i> spp)
	1.3 l/ha PLUS 4.0 l/ha MCPA 400 SL	<u>Late winter: (Weeds under 30 cm height).</u> Use the higher rates for Bur clover (<i>Medicago polymorpha</i>), Prostrate knotweed (<i>Polygonum aviculare</i>) and Sheep sorrel, (<i>Rumex angiocarpus</i>).
<p><u>IMPORTANT</u></p> <ul style="list-style-type: none"> Prevent contact of spray droplets/mist with leaves, green and young bark of stems as well as fruit. Allow 10 days after pruning, or the removal of low branches and/or suckers before spraying weeds. 		

The following products mentioned in this label may be replaced with the following equivalent products:

- LEAP 840 EC** (L 8064 / N-AR 1103) = **PREMIUM 840 EC** (L 8066) = **ARMANN SUPER 840 EC** (L 8373),
- ASTRON® 480 SC** (L 8366) = **CANTRON® 480 SC** (L 8365 / N-AR 1323 / W 130651) = **CANONNE 480 SC** (L 8735) (**Mesotrione**),
- PLATINUM 960 EC** (L 7434) = **METOLACHLOR 960 EC** (L 7136 / W 130057 / N-AR 1362) = **MAESTRO 960 EC** (L 8129),
- PLATINUM PLUS 915 EC** (L 7844 / N-AR 1105) = **METOLACHLOR 915EC** (L 7841 / N-AR 1361) = **MAESTRO GOLD 915 EC** (L 8249),
- METOLACHLOR 800 EC** (L 7433) = **METOLACHLOR 800 EC** (L 7137) = **MAESTRO PLUS 800 EC** (L 8090),
- ACETOCHLOR 900 EC** (L 7633 / N-AR 1101) = **PREMIUM 900 EC** (L 7637) = **ARMANN 900 EC** (L 8626),
- MCPA 400 SL** (L 5793 / N-AR 1092) = **MCPA 400 SL** (L 5795 / W 130452),
- 2,4-D AMINE 480 SL** (L 4505 / W 130459 / N-AR 1096) = **AMINO 480 SL** (L 8034) = **2,4-D-AMINE SL** (L 8145),
- HALO 750 WDG** (L 8283 / N-AR 1337) = **CROWN 750 WDG** (L 8282) = **STRIGO 750 WDG** (L 8671),
- VELOCITY®-SUPER** (L 9603 / W 130996) = **AMS-SUPER** (L 9758),
- VELOCITY®-DRYMAX** (L 9454 / W 130995 / N-AR 1528) = **AMS-GRANULE** (L 9610),
- VILLA 51** (L 8050 / W130454 / N-AR 1090) = **WEN 51** (L 8315),
- TERBUWEED 600 WDG** (L 8800) = **TERBUCIDE 600 WDG** (L 8799 / W 1301046) = **TERBUMAIS 600 WDG** (L 8798) and
- LAUREL 800 WDG** (L 8061 / N-AR 1339) = **FLUMETSULAM 800 WDG** (L 8062) = **RAPIER 800 WDG** (L 8494).

LEAP 840 EC, CANTRON® 480 SC, PLATINUM 960 EC, METOLACHLOR 800 EC, ACETOCHLOR 900 EC, MCPA 400 SL, AMINO 480 SL, VELOCITY®-SUPER, VELOCITY®-DRYMAX, ELEGANCE 500 WP, TERBUWEED 600 WDG, HALO 750 WDG, VILLA 51, PLATINUM PLUS 915 EC, LAUREL 800 WDG, AMS-SUPER, AMS-GRANULE and/en **WEN 51** are registered products of / is geregistreerde produkte van **Villa Crop Protection (Pty) Ltd.**

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