BEFORE USING THIS PRODUCT READ THE LABEL CAREFULLY!

GEBRUIKSAANWYSINGS INGESLUIT
Date formulated: **VERWYS NA BESONDERHEDE**
Formuleringsdatum: **GEDRUK OP HOUER/SAK**

DIRECTIONS FOR USE ENCLOSED
Batch number: **REFER TO DETAILS PRINTED**
Lotnommer: **ON CONTAINER/BAG**

Herbicide

PANGA TURBO 450 SL

Reg. No. L 8506 Act/Wet No. 36 of/van 1947 1:15/02/2010-Aug2018

A soluble concentrate, non-selective systemic post-emergence herbicide with slight or no soil activity for the control of annual weeds in vineyards and arable lands.

'n Oplosbare konsentraat nie-selektiewe, sistemiese na-opkoms onkruiddoder met min of geen grondaktiwiteit vir die beheer van eenjarige onkruide in wingerd en nie-gewas lande.

ACTIVE INGREDIENT / AKTIEWE BESTANDDEEL

glyphosate (glycine) **450 g ae**/ℓ glifosaat (glisien)
(glyphosate potassium salt) 555 g/ℓ (glifosaat kaliumsout)

HRAC HERBICIDE GROUP CODE **G** HRAC ONKRUIDDODER GROEPKODE

ℓ

villa

Registration holder / Registrasiehouder:
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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UN Number: 3082

Willow Set & Print 011 394-4486

CAUTION
VERSIGTIG

PANGA TURBO 450 SL
Reg. No. L 8506 Act/Wet No. 36 of/van 1947
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ACTIVE INGREDIENT / AKTIEWE BESTANDDEEL:
glyphosate (glycine) / glifosaat (glisien) ……..... 450 g ae/ℓ
(glyphosate potassium salt / glifosaat kaliumsout) ……..…..... 555 g/ℓ

Registration holder / Registrasiehouer:
VILLA CROP PROTECTION (PTY) LTD
Co. Reg. No.: 1992/002474/07 Mpy. Reg. Nr.
PO Box / Posbus 10413, KEMPTON PARK, 1620

CAUTION / VERSIGTIG

WARNINGS
- Handle product with caution.
- Irritating to eyes and skin.
- Harmful when swallowed.
- Do not mix, store or apply **PANGA TURBO 450 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.

Aerial application:
Notify all inhabitants in the immediate vicinity of the area to be sprayed and issue the necessary warnings. Do not spray over or allow drift to contaminate water or adjacent areas.

NOTE
PANGA TURBO 450 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 nearest spray path of the aircraft: Cloudy weather with relative humidity above 80 % and low air movement of less than 5 km per hour. When such conditions prevail, aerial application should **NOT** be carried out where crop seedlings, deciduous fruit trees and grape vines in budding or early development stages are present within 5 km of the nearest spray path of the aircraft.

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, before washing hands and face and change of clothing.
- Wash with soap and water immediately after use and after 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.
- Clean application equipment after use and do not dispose of wash water where it may contaminate other crops, grazing, 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.
- Direct or spray drift contact by **PANGA TURBO 450 SL** onto leaves and/or immature bark of desired plants can result in serious localised or translocated damage.

RESISTANCE WARNING

PANGA TURBO 450 SL is a group code G herbicide. Any weed population may contain individuals naturally resistant to **PANGA TURBO 450 SL** and other group code G 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 TURBO 450 SL** or any other group code G 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.

Important

- 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* species (fleabane), *Commelina benghalensis* (Benghal wandering Jew), *Ipomoea* species (natural resistance) occur, due to resistance against **Glyphosate.**
- Some of these populations might be resistant to products containing **Paraquat** and **Diquat.**
- Some populations might be resistant to products containing the aryloxyphenoxy propionates, cyclohexanediones and sulfonylureas, but might also have resistance against the **Glyphosate-**containing products, e.g. **PANGA TURBO 450 SL**.
- Due to the fact that these resistant populations vary in size and locality 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 TURBO 450 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:

- The herbicidal action is only visible from two weeks after application onwards.
- Apply **PANGA TURBO 450 SL** post-emergence to vigorously growing weeds, directed to the foliage and immature bark. Do not spray whilst weeds are wet, dormant or under stress nor when covered in a layer of dust or when damaged by frost.
- Rain or irrigation within 6 hours after application can reduce the efficacy of **PANGA TURBO 450 SL**.
- In mixed weed situations (annuals in amongst problem perennials), mow or spray out annuals, wait for vigorous re-growth of perennials and then spray or spot spray re-growth.
- When applied in a tank mix with other chemicals the label recommendations of all other products must be adhered to.
- Pre-plant weed control on sandy soil (< 10 % clay) should take place at least 7 days before transplanting tomato- or tobacco seedlings.

Compatibility:

- **PANGA TURBO 450 SL** can be tank mixed with the following chemicals:
  MCPA (potassium salt), **Simazine SC** and **WP** (with the addition of **VELOCITY®-SUPER** (L 9603) or **AMS-SUPER** (L 9758), **Diuron SC** and **WP** (with the addition of **Velocity®-Super** or **AMS-Super**). Low pH of the spray solution may induce the precipitation of hormone herbicides such as **MCPA**. Ensure that

only **Velocity®-Super** or **AMS-Super** is used in mixtures of **PANGA TURBO 450 SL** and **MCPA**, as these adjuvants will not reduce the pH detrimentally.

NOTE
The addition of **Velocity®-Super** or **AMS-Super** (2 %) to the spray water before adding **Diuron** or **Simazine** in tank mixtures with **PANGA TURBO 450 SL**, improves compatibility.

Surfactants / Additives:
- For optimum results, a minimum of 1.2 % **PANGA TURBO 450 SL** solution in the total spray volume is recommended. If the percentage **PANGA TURBO 450 SL** is less, a surfactant should be added to the spray mixture.
- In areas with alkaline water, a buffer should be added according to the label instructions.
- Add an ammonium sulphate containing adjuvant (such as **Velocity®-Super** or **AMS-Super**) to the application water, for hard and brackish water correction, before the addition of **PANGA TURBO 450 SL.**

Application information:
- Correctly calibrate all sprayers under field conditions and ensure that the spraying equipment is in good working order.
- **PANGA TURBO 450 SL** can be applied in spray volumes ranging from 12 to 600 litres per hectare.
- Ensure that the spray equipment is clean and free of rust, dust and sediment from other chemicals.
- 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.
- In situations where drift may be hazardous, use low pressures of 100 to 200 kPa and/or low drift nozzles 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.

Aerial application:
Aerial application of **PANGA TURBO 450 SL** may only be done by a registered aerial application operator using a correctly calibrated, registered aircraft according to the instructions of SANS Code 10118 (Aerial Application of Agricultural Pesticides). Ensure that the spray mixture is distributed evenly over the target area and that the loss of spray material during application is restricted to a minimum. It is therefore essential that the following criteria be met:
- **Important – notes on drift management:**
  - **The use of a suitable drift retardant adjuvant is recommended.**
  - **Use low drift nozzles (e.g. straight stream nozzles). DO NOT use any type of rotary atomiser. In the case of flat fan nozzles, use nozzles with smallest fan pattern angle (e.g. 4020 instead of 6520).**
  - **In the case of fixed-wing aircraft flying at a speed faster than 130 mph, the maximum deflection angle of the nozzles or spray stream, as measured from a horizontal straight backwards orientation, may not exceed 30 degrees.**
  - **In the case of slower flying fixed wing aircraft the maximum deflection angle, as described above, may not exceed 55 degrees.**
- Volume: A spray mixture volume of 30 to 50 litres per hectare is recommended. As this product has not been evaluated at a reduced volume rate, the registration holder cannot guarantee efficacy, or be held responsible for any adverse effects if this product is applied aerially at a lower volume rate than recommended above.
- Droplet coverage: 30 to 40 droplets per cm² must be recovered at the target area.
- Droplet size: A droplet spectrum with a VMD of 300 to 350 micron is recommended. Limit the production of fine droplets less than 150 micron (high drift and evaporation potential) to a minimum.
- Flying height: Maintain the height of the spray boom at 3 to 4 metres above the target. Do not spray when aircraft dives, is in a climb or when banking.
- Use suitable atomising equipment that will produce the desired droplet size and coverage, but which will ensure the minimum loss of product. The spraying system must produce a droplet spectrum with the lowest possible Relative Span.
- Position all the atomisers within the inner 60 to 75 % of the wingspan to prevent droplets from entering the wingtip vortices.

- The difference in temperature between the wet and dry bulb thermometers, of a whirling hygrometer, should not exceed 8°C.
- Stop spraying if the wind speed exceeds 15 km per hour.
- Stop spraying under turbulent, unstable and dry conditions during the heat of the day.
- Spraying under temperature inversion conditions (spraying in or above the inversion layer) and/or high humidity conditions (relative humidity 80 % and above) may lead to the following:
  a) reduced efficacy due to suspension and evaporation of small droplets in the air (inadequate coverage),
  b) damage to other sensitive crops and/or non-target areas through drifting of the suspended spray cloud away from the target field.
- Ensure that the aerial spray operator knows exactly which fields to spray.

Obtain an assurance from the aerial spray operator that the above requirements will be met and that relevant data will be compiled in a logbook and kept for future reference.

APPLICATION RATES

Table 1: Noxious and problem weeds
Table 2: Control of perennial weeds
Table 3: Control of nutsedges
Tables 4a&b: Control of annual weeds
Table 5: General weed control in crops
Table 6: Crop specific weed control
Table 7: Forestry applications
Table 8: Pasture renovation
Table 9: Wipe-type application

Calculation of percentage solution concentration:

Desired application volume	Volume of PANGA TURBO 450 SL for % solution				
	1.2%	**1.5%**	**2.0%**	**3.0%**	**4.0%**
5 ℓ	60 mℓ	75 mℓ	100 mℓ	150 mℓ	200 mℓ
10 ℓ	120 mℓ	150 mℓ	200 mℓ	300 mℓ	400 mℓ
20 ℓ	240 mℓ	300 mℓ	400 mℓ	600 mℓ	800 mℓ
50 ℓ	600 mℓ	750 mℓ	1000 mℓ	1500 mℓ	2000 mℓ
100 ℓ	1200 mℓ	1500 mℓ	2000 mℓ	3000 mℓ	4000 mℓ

1. CONTROL OF NOXIOUS AND PROBLEM WEEDS:

1.1 Noxious & problem weeds

Table 1

Botanical name	*Common name*	*DOSAGE*		*Remarks*
		ℓ / ha	*% Solution*	
Acacia mearnsii	Black wattle	2.4	1.2	Apply in summer to young trees from 0.1 to 2.0 m high.
Acacia saligna	Port Jackson willow	1.5 - 3.0	1.2	Apply in autumn or spring. **Seedlings only:** Bipinnate leaf stage = 1.5 litres per hectare. Up to 60 cm high = 3.0 litres per hectare.

Botanical name	Common name	DOSAGE		Remarks
		ℓ / ha	% Solution	
Caesalpinia decapetala	Mauritius thorn	2.4	1.2	Apply with a knapsack sprayer during summer. Apply up to 1m height.
Chromolaena odorata	Paraffin weed	2.4	1.2	Slash established plants. Apply in summer to new growth when more than 0.5 – 1.2 m high and ensure complete droplet coverage on the foliage. Previously slashed multi-stem plants may need follow-up application.
Lantana camara	Common Lantana	4.8	2.4	Slash large bushes in winter if necessary. Apply on active growth in summer.
Opuntia ficus-indica	Prickly pear	----	18	**For trees with 20 to 250 cladodes:** Drill 4 to 12 holes in the stem and inject 2 mℓ of a 18 % solution per hole.
Phytolacca heptandra	Ink berry	2.4	1.2	Apply in summer with a knapsack sprayer up to 1 m height. Respray with 1.2 % spot application if necessary.
Prosopis glandulosa	Mosquito tree	-	2.4 - 4	**Foliar applications:** Apply to seedlings or trees 1 to 2 m high. Seedlings should be actively growing and should not show any signs of wilting or any other stress. Seedlings should have enough foliage before spraying. **Coppice applications**: Coppice should not exceed 1 m height. The coppice should be well foliated before spraying. The coppice should be actively growing and should not show any signs of wilting or any other stress. Care should be taken to wet the coppice thoroughly on the outside as well as on the inside of the canopy. **General:** Control will only be for a year (one season). Provision should be made to treat escapes, coppice developments and new seedlings in the following year.
Rubus cuneifolius	American bramble	4.8	2.4 3.0	Knapsack sprayer. Mist blower. Slash rank growth in winter. Apply in autumn or summer when new growth is more than 0.5 m high. If re-growth occurs, spray as above.
Sesbania punicae	Red Sesbania	2.4	1.2	**Seedling plants less than 1 m high:** Use a 1.2 % solution. **Tall shrubs:** Slash, spray re-growth with a 1.2 to 1.5 % solution at 1 m high.
Solanum mauritianum	Bugweed	1.5	1.2	Apply in spring or summer. **Large trees:** Cut to 50 cm, allow new growth of at least 50 cm before application. **Saplings:** Apply directly to foliage.

1.2 Perennial weeds

Table 2 Recommendations for control of perennial weed species.

Botanical name	Common name	DOSAGE		Remarks
		ℓ / ha	% Solution	
Convolvulus arvensis	Field bindweed	4.8	2.4	Apply in summer at onset of flowering. If re-growth occurs spray with 1.2 % solution.
Cynodon dactylon	Common couch grass	4.8	2.4	**Summer rainfall region:** Apply to active growth in autumn or summer. Follow up application in summer or autumn at 2.4 litres per hectare. If re-growth occurs, spray with a 1.2 % solution.
		7.2	3.6	**Winter rainfall region:** Apply as above in autumn.
Eragrostis curvula	Weeping love grass	1.5 3.0	1.2 1.5	Only grass that germinated from seeds, i.e. not grass tufts. Apply onto actively growing plants in summer or autumn. Seedlings. Up to 60 cm height.
Paspalum dilatatum	Common Paspalum	4.8	2.4	Apply in summer at flowering, but before seed drop. If re-growth occurs, spray with a 1.2 % solution.
Paspalum paspalodes	Couch Paspalum	6.5 - 7.2	3.0 - 3.6	Apply in summer at flowering, but before seed drop. If re-growth occurs, spray with a 1.5 % solution or 3 litres per hectare. Apply the higher rates in the winter rainfall region.
Panicum maximum	Common buffalo grass	4.8	2.4	Apply in summer to actively growing plants in the early growth stage. If re-growth occurs, spray with a 1.2 % solution.
Pennisetum clandestinum	Kikuyu	3.0	1.2	Apply in summer to actively growing plants. If re-growth occurs, spray with a 1.2 % solution.
Plantago lanceolata	Narrow-leaved ribworth	2.4	1.2	Apply in spring before flowering.
Setaria megaphylla	Bush buffalo grass	4.8	2.4	Apply to actively growing plants in autumn or summer. If re-growth occurs, spray with a 1.2 % solution.
Sorghum halepense	Johnson grass	2.4	1.2	Apply in summer or autumn. If re-growth occurs, spray with a 1.2 % solution.
Sorghum verticilliflorum	Common wildsorghum	1.5	1.2	Apply to actively growing plants in summer or autumn.
Stipa trichotoma	Nassela tussock	4.8	1.2	Apply in winter using high water volumes. If re-growth occurs, spray with a 1.5 % solution.

Table 3 Control of nutsedges

Botanical name	Common name	DOSAGE		Remarks
		ℓ / ha	% Solution	
Cyperus esculentus	Yellow nutsedge	4.8	2.4	Apply in summer at pre-flowering stage. If re-growth occurs, spray with a 1.2 % solution or 2.4 litres per hectare (best results obtained in Feb/March).
Cyperus rotundus	Purple nutsedge			

2. CONTROL OF ANNUAL BROADLEAF OR GRASS WEEDS

2.1 General annual weed control:

Table 4a

PANGA TURBO 450 SL			
Weed growth stage	***1 to 12-leaf***	***12-leaf to pre-flower***	***Flower***
Broadcast application	0.8 – 1.25 ℓ / ha	1.25 – 2.5 ℓ / ha	2.5 – 4.0 ℓ / ha
Spot spraying	1.0 – 1.5 %	1.5 %	1.5 – 2.5 %

2.2 Difficult to control / variably controlled annual weeds:

- Even at the higher rates above, the control of large established *Ipomoea* species (common morning glory) and *Portulaca* spesies (purslane) may be variable, necessitating a follow-up application.
- Inconsistant control of certain populations of *Chenopodium* species may be experienced. Avoid resistance by alternating the use of **PANGA TURBO 450 SL** with products from different chemical classes (refer to **"RESISTANCE WARNING"**).
- Inconsistent control and resistance may occur with *Conyza* species.

Table 4b Difficult to control annual broadleaf or grass weeds.

Difficult to control annual broadleaf or grass weeds	
*Argemone subfusiformis***	White flowered Mexican poppy
*Chenopodium species***	Goosefoot
*Commelina benghalensis***	Wandering Jew
*Conyza canadensis***	Horseweed fleabane
*Conyza floribunda***	Tall fleabane
*Gisekia pharnaceiodes***	Gisekia
Ipomoea species **	Common morning glory
*Lolium multiflorum**	Italian ryegrass
*Lolium temulentum**	Darnel
*Portulaca oleracea***	Purslane
*Sida cordifolia***	Heartleaf sida
*Senecio burchellii***	Molteno-disease-plant
*Senecio consanguineus***	Starvation senecio
*Solanum nigrum***	Deadly nightshade

* Add 0.5 ℓ **MCPA or 2,4-D amine** for improved control.

** These weeds are controlled variably.

3. CROP RECOMMENDATIONS

3.1 General crop recommendations:

Table 5

Crop	***Dosage rate / weed table***	***Remarks***
Almonds, Aloes, Apples, Apricots, Avocados, Bananas, Blackberry, Cherries, Citrus, Coffee, Granadilla, Guava, Hops, Kiwi fruit, Litchi's, Macadamia nuts, Mangoes, Nectarines, Olives, Pawpaw, Peaches, Pears, Pecan nuts, Pineapples, Plums, Prickly pears, Prunes, Quince, Tea	Refer to Tables above for dosage rates	Prevent droplet contact with leaves, green or young bark, and fruits. Shield stems of plants with green bark (mostly younger than 2 years) against contact with spray droplets.

3.2 Crop specific recommendations:

Table 6

Crop	*Dosage rate / weed table*	*Remarks*
Arable land Annual weeds	Tables 4a & b	• Use **PANGA TURBO 450 SL** after harvesting of the previous crop. • Use the higher dosage rate on annual weeds beyond 12-leaf stage or on established weeds. • Add 0.5 ℓ / ha MCPA or 2,4-D amine to control weeds that are normally difficult to control, as well as genetically modified **Glyphosate** tolerant soya bean and cotton volunteer plants. • To control winter hardened weeds such as *Conyza* spp. (fleabane) or *Senecio* spp., apply 2.3 – 3.6 ℓ **PANGA TURBO 450 SL** per hectare. The addition of 1.0 ℓ / ha 2,4-D amine will improve pre-plant weed control. • Do not disturb target plants before 6 hours after application (before planting of crops) and prior to emergence of the new crop.
Arable land Perennial weeds	Refer to Tables 2 & 3	
Grapevines	1 year old vineyards ("1st leaf"): • Dormant stage – directed interrow application. Prune within 24 hours after application. • Post budding – shield vines, apply as directed inter-row application with covered applicator. 2 year old vineyards ("2nd leaf"): • Dormant stage – can be applied over vines, prune within 24 hours after application. • Post budding – shield vines, apply as directed inter-row application with covered applicator. • If new vines were blanked in, treat as for 1st leaf vines. From 3 year old vines: • Dormant stage – can be applied over vines, prune within 24 hours after application. • Post budding – shield vines, apply as directed inter-row application with covered applicator.	
Sisal	• Applications can be performed on nursery and mature plants. • Apply as a directed inter-row spray.	

Crop	*Dosage rate / weed table*	*Remarks*
Sugarcane Last ratoon eradication (Minimum tillage)	6.5 - 8.0 ℓ / ha	**PANGA TURBO 450 SL** will effectively kill the last ratoon sugarcane after it has been harvested and allowed to re-grow to a height of ± 45 cm, when tillering is complete. Spray actively growing sugarcane when tillers have emerged, using 100 to 400 litres per hectare. Re-growth can be removed by hand. Ensure complete coverage of cane stools.
Last ratoon eradication (Combination tillage)	3.3 – 6.5 ℓ / ha	Apply onto re-growth of last ratoon. Allow 1 to 10 days to elapse, shear cane stools at depth of 10 to 15 cm below soil surface with a blade shear or similar implement. Use the higher rate on productive soils where re-growth may occur.
Spot eradication of diseased plants	8 % solution	For spot eradication of diseased (eg. smut) and off-type cane stools. Apply as a directed spray on the target plant foliage.
Pre-plant	0.8 – 2.5 ℓ / ha	Apply onto actively growing **annual** weeds.
	Tables 2 & 3	Apply onto actively growing **perennial** weeds.
	1.5 % solution	Spot-spraying onto actively growing weeds around fields, telephone poles, etc., where running grasses may encroach cane fields.

4. SPECIALISED PRACTICES

4.1 Forestry applications

Table 7.

Situation	*Weed species*	*Weeds & dosage rate table*	*Remarks*
Firebreaks Firebreak 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	Tables 1 & 2	A minimum of 200 litres spray mixture per hectare must be applied when using a 2 % solution. A follow-up treatment may be necessary to control some hardy perennials, using a 2 % solution on a spot spray basis.
Eucalyptus grandis (Blue gum)	Single stem stumps	10 % solution	Apply 50 mℓ solution to a clean cambium area immediately after felling.
• Apply on the same day after felling and removal of sawdust on stump surface. • Use a low pressure knapsack sprayer with a solid cone nozzle to ensure complete wetting of the stump, especially on the cambium area (where wood and bark join). • Stumps that coppice after treatment must be undercut or ringbarked to expose the entire cambium area that must be treated again. • A callus-like coppice regrowth may occur which should normally die back. If not, remove or spray with a 1.5% solution, preventing drift onto newly established plants. • Species other than *Eucalyptus grandis* may be controlled variably, necessitating follow-up treatments.			

5. PASTURE RENOVATION

Table 8.

Situation	*Remarks*
Conventional **Perennial running grass infestation**	**Mechanical and chemical renovation:**
Light pressure	Prepare seedbed. Allow perennial running grass and annual weeds to emerge. Apply **PANGA TURBO 450 SL** at recommended dosage rates for the weeds (Table 2). Sow new pasture 3 to 4 days after spraying.
Heavy pressure	Cultivate weeds and allow for re-growth. Apply the recommended rate of **PANGA TURBO 450 SL**. Allow one week after spraying before a second cultivation, seedbed preparation and planting/sowing.
Pre-sowing weed control	New germinating weeds can be controlled with 0.8 to 2.3 litres per hectare. *Cyperus* spp. (nutsedge) will require 4.8 litres per hectare. Sow new pasture 3 to 4 days after application.
Pasture replacement and field improvement	Reduce trash by mowing or heavy grazing 3 to 4 weeks prior to application of **PANGA TURBO 450 SL** on re-growth. Plant new pasture 3 to 4 days after application.
Pasture maintenance	Control perennial and annual weeds in pastures by spot spraying with a 1.2 % solution or using wipe type equipment where weeds project above the pasture (Table 2).

NOTES

- Refer to the recommended dosage from the **Tables** above, to control annual and perennial weeds during renovation of established pastures.
- Use conventional or direct drill planting methods.
- Ensure that rank weed growth does not prevent spray coverage on the target area.
- Do not spray onto heavy growth of Kikuyu or Common quick grass with a reduced green leaf area. Burn at the end of winter to reduce dry mass. Allow re-growth during summer and spray re-growth late summer or spring. Establish new pasture in the autumn thereafter.

6. WIPE TYPE APPLICATION

Table 9.

Type of applicator	*Dosage rate ℓ / ha*	*Remarks*
Hand held roller applicators	Annuals: 3 % Perennials: 6 %	100 to 150 litres per hectare solution recommended where conventional spraying is not practical, i.e. low trellised or bush vines, etc.
Handheld or tractor mounted rope wick applicators	Delivery of up to 3 ℓ / ha **OR** a 25 % solution	Apply up to 3 litres per hectare solution in orchards and where weed/crop height differentiation exist, e.g. control of a volunteer crop or resistant late germinating weeds in beans and groundnuts.
NOTES • Use an approved wipe type applicator. These applicators make use of an absorbent material to transfer the **PANGA TURBO 450 SL** solution onto plants with which the applicator comes into contact. • Ensure that the wiper surface is kept clean. The wiper must **not** come into contact with the crop.		