Read the label before opening the container. For full particulars, see enclosed leaflet.

KEEP OUT OF REACH OF CHILDREN AND ANIMALS

TUMBLEWEED

South Africa Reg. No: L4781 Act No. 36 of 1947

HRAC HERBICIDE GROUP CODE: G

A high surfactant, non-selective soluble liquid herbicide with systemic action for the post-emergence control of annual and perennial weeds in agricultural and non-agricultural areas

ACTIVE INGREDIENT:

Glyphosate isopropylamine salt.....324g/ℓ
(acid equivalent).....240g/ℓ)

Product Information: 072 678 8226
In case of poisoning: 082 446 8946

HAZARD STATEMENTS

- Toxic to aquatic life with long lasting effects.



PRECAUTIONARY STATEMENTS

- Wash hands, forearms, and face thoroughly after handling.
- Avoid release into the environment.

enviro™ bio-chem

Registration holder: Enviro Industries (Pty) Ltd
Reg No. 1999/006136/07
44 Kerk Street, Lichtenburg NW, South-Africa
Tel: +27 12 006 0063 | Fax: +27 86 541 7948
Web: www.envirobiochem.co.za

Expiry Date:
Batch No:
Date of Manufacture:

UN No. 3082

WARNINGS:

- When using TumbleWeed as a land preparation for transplanted tomatoes, or any other transplanted crop with green, soft stems, allow a minimum of 14 days between application and transplanting of seedlings.
- Toxic to aquatic life with long lasting effects.
- Keep out of reach of children and uninformed persons.
- Store away from food, feedstuffs, seed, fertilizers and other agricultural chemicals.
- The product should be mixed, stored and applied only in stainless steel, aluminium, fibreglass, plastic or plastic lined containers.
- Do not mix, store or apply the product or solutions in galvanised steel or unlined steel (except stainless steel) containers or spray tanks. The product can react with such containers and tanks or produce hydrogen gas which may form a highly combustible gas mixture that can flash or explode if ignited by open flame, spark, welder's torch, lighted or other ignition source.
- 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. Glyphosate is a highly active herbicide that in very small quantities can cause serious damage to crop seedlings and deciduous fruit tees and grapevines during budding and early season growth stages. Under the following conditions it can cause serious damage as far as 3 to 5 kilometers from the nearest flight path of the aircraft: cloudy weather with relative humidity above 80% and low air movement of less than 5 km per hour. Where such conditions prevail aerial application should not be carried out where crop seedlings or deciduous fruit and grapevines in budding or early development stages are present within 5 kilometers of the nearest flight 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 climatic and storage conditions; quality of dilution water, compatibility with other substances not indicated on the label and the occurrence of resistance of the weed against the remedy concerned as well as by the method, time and accuracy of application. The registration holder furthermore 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 the event of any uncertainty.

PRECAUTIONS:

- Wash hands, forearms, and face thoroughly after handling
- Wear protective gloves/protective clothing/eye protection/face protection.
- Avoid release to the environment.
- Clean applicator thoroughly after use and dispose of rinsings where it will not contaminate crops, grazing, rivers or dams.
- Triple rinse empty container in the following manner: Invert the empty container over the spray or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter, rinse the empty container three times with a volume of water equal to a minimum of 10% of that of the container. Add the rinsings to the content of the spray tank. Empty containers should be taken for local recycling or waste disposal. Do not re-use empty containers.
- Ensure that the person assigned to apply the product is properly trained in its use.
- Prevent spray drift onto susceptible or edible crops, grazing, green or immature bark and fruit of non-target plants, which can result in serious localised or translocated damage.

RELEVANT SUBSTANCES:

Glyphosate 29%
D-Glucopyranose, Oligomeric, C8-16-Alkyl Glycosides <10%

FIRST AID TREATMENT:

INGESTION: Immediately call a POISON CENTER or doctor/physician.
SKIN CONTACT: (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower..
INHALATION: Remove person to fresh air and keep comfortable for breathing.
EYE CONTACT: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. Immediately call a POISON CENTER or doctor/physician.

USAGE:

TUMBLEWEED may be used:

- As a **broadcast spray** to control weeds pre-planting in arable agriculture, forestry and sugarcane to reduce tillage.
- As a **directed spray** to control annual and perennial weeds in forests, fruit and ornamental plantings in sugarcane culture.
- For the control of **unwanted trees and semi-woody plants** on farmland, parkland, road reserves, forest plantations and similar areas.
- For the **non-selective control** of weeds in non-cultivated areas such as roadsides, railway lines and electrical yards and the like.
- For the creation of the **fire breaks.**

RESISTANCE WARNING:

For resistance management **TUMBLEWEED** is a **group code G** herbicide. Any weed population may contain individuals naturally resistant to **TUMBLEWEED** 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 **TUMBLEWEED** 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.
- Alternate with, or use tank mixtures of products in different hetbicide group codes.
- Integrate other control methods (chemical, cultural, biological) into weed control programmes.

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

DIRECTIONS FOR USE: Use Only As Directed

GENERAL:

- **TUMBLEWEED** is a non-volitile, water soluble liquid product with non-selective herbicidal activity against a wide range of annual and broadleaf weeds and grasses in crops and non-crop situations.
- It is absorbed by plant foliage, green stems and immature bark and is inactivated immediately in the soil and does not provide residual weed control.
- Visible effects on annual weeds may take up to 7 days, while on perennial weeds effects may take 2 to 3 weeks or longer to become evident. Results are quicker under warm conditions.
- Weeds are best treated when growing vigorously, and prior to seed formation. Do not treat plants which are dormant or which have been frosted, or growing poorly due to drought, water-logging or are covered with dust or silt. Diminished result may occur when spraying is done when weeds are covered with dew.
- Perennial weeds are best treated when peak growth is achieved in midsummer. Weeds having underground rootstocks may require a second application to control growth from buds which survived the initial application. Top growth of perennial bunch grasses may be removed by mowing prior to application and the herbicide applied after a few days. Plant residues should be raked away from the area to be treated so as to expose the green foliage to the spray.
- **TUMBLEWEED** is rainfast within 3 hours after application. Rainfall within this period may cause diminished results on hard to kill weeds. For best results, use a minimum of 2.5ℓ **TUMBLEWEED** in 100 to 200 total spray solution per hectare. Always adhere to the recommended dosage mℓ/ha for the weeds in question. Where higher volumes of spray are required to treat dense weeds, do not use less than 1% concentration by volume.

APPLICATION:

- **TUMBLEWEED** must be diluted with water and applied as a fine spray to the vegetation. Volumes between 12 and 600ℓ/ha may be used, provided the recommended quality of product is applied on a hectare basis, and that a minimum concentration

of 1% product by volume is maintained. Best results are obtained if a minimum volume of 200ℓ/ha is used. Spray apparatus must always be calibrated under field conditions, to determine the quality of product to be added to the spray tank.
- Avoid spray drift. Extreme care must be taken when applying this product to prevent injury to desirable plants and crops.
- Do not spray under conditions when spray drift to desirable vegetation may occur.
- Do not drench weeds or spray beyond the point of run-off. Apply to the product the minimum quantity of water to achieve an even coverage of the leaf surface.

Boom equipment using standard nozzles:
- The optimum volume using standard nozzles is 100 to 200ℓ/ha.
- A nozzle giving "fine" to "medium" droplets is preferred to "coarse" droplets to ensure adequate coverage of the leaf surface.
- Boom height must be set to ensure correct overlap of nozzle pattern at the top of the weed canopy.
- Standard flat fan nozzles may be used at pressures of 200 to 300kPa. Alternatively low drift nozzles may be used at 100 to 200kPa.
- The nozzle size to be used will depend on the speed of travel and pressure. Higher pressures than those specified will result in the production of finer droplets increasing the risk of drift.

Knapsack Equipment:
Standard or low-drift flat fan nozzles, or anvil (TK series) or hollow or solid cone nozzles may be used.

For a spray swath of 500mm a standard flat fan such as 8002 at 200 to 300kPa, or the low drift 8002LP at 100 to 200kPa, walking at 1m/second (3.6km/h) will apply approximately 200ℓ/ha. A 20ℓ sprayer will the treat 2km, or 0.1ha.

Maintain the band width, walking speed and pressure used in the initial calibration. The use of the "Weedmaster" spray management valve will ensure a constant output from the nozzle.
- For a 1 metre swath width an anvil or TK 2.5 tip at 150kPa will deliver approximately 200ℓ/ha. 20ℓ will then treat 1km.
- For spot spraying or treating shrubs up to 2 metres high, a hollow or solid cone nozzle is recommended. A D3 or D4 disc with a No. 25 core will produce a hollow cone pattern with fine droplets. For a solid cone pattern with coarser droplets, a TG 0,5 or 1 tip may be used. Pressures of 200 to 300kPa are satisfactory. Spray operators should be trained to achieve the correct dosage.

Pressure Sprayers – Hand Gun Equipment:
- This equipment is used to treat tall growth of dense stands of weeds.
- Adjust equipment to achieve a fine spray pattern to give complete foliar coverage but do not spray to the point of run-off. Use the minimum spray volume needed to achieve uniform wetting of all foliage.

LOW VOLUME CONTROLLED DROPLET APPLICATION EQUIPMENT (CDA) (SPINNING DISC)
Spinning disc equipment is ideal for the application of TUMBLEWEED in various situations. The spray droplets produced are sized to produce optimum coverage at volumes of 15 to 30ℓ/ha while at the same time the quantity of driftable particles is significantly reduced. Care must however be taken to ensure that the spray swath is not displaced by wind to reach non-target plants.

The type of equipment available is as follows:
1. Hand held battery operated units applying a 1.2 metres wide swath, or adjustable from 300 to 750mm.
2. ATV, tractor or utility mounted equipment for swaths from 1.8 metres to 7.2 metres wide.

HAND HELD APPLICATORS:

The tables below are a guide to application rates and dilutions when Miron Herbi (1.2 metres swath) or Herbaflex (adjustable swath) applicators are used.

Always check the flow rate before adding **TUMBLEWEED** to the tank.
Walking speed 1m/second (3.6km/h).

MODEL	SWATH WIDTH	TUMBLEWEED DOSAGE ℓ/ha	QUANTITY TUMBLEWEED in 5ℓ SPRAY MIX
Micron Herbi yellow nozzle at 160mℓ/min 22mℓ/ha 5ℓ covers 2km	1.2m	3.0 4.5 6.0 7.5	700mℓ 1.0ℓ 1.36ℓ 1.7ℓ
Herbaflex narrow cone A 90 White nozzle at 50mℓ/min 18ℓ/ha 5ℓ covers 6km	450mm	3.0 4.5 6.0 7.5	830mℓ 1.25ℓ 1.67ℓ 2ℓ
Herbaflex wide cone B 120 Brown nozzle at 68mℓ/min 15ℓ/ha 5ℓ covers 4.5km	750mm	3.0 4.5 6.0 7.5	1ℓ 1.5ℓ 2ℓ 2.5ℓ

Consult your supplier for additional information on hand held and mounted units.

AERIAL APPLICATION:

- Use only correctly calibrated aircrafts suitable for the required application.
- A spray volume of between 20 to 50ℓ/ha is suitable provided the following constraints are observed:
- **TUMBLEWEED** is a non-selective translocated herbicide. Direct spray contact, or even slight drift may cause severe injury or complete destruction of any growing crop or other desirable plants including trees.
- Droplets with an average size (VDM) of 300 to 400 micron diameter are recommended. The Micronair AU7000 is suitable when mounted on an approved microlight aircraft.
- Do not spray when winds exceed 8km/h or when wind direction is toward nearby desirable vegetation.
- Do not spray on a windless day with hot rising air conditions as fine droplets may move with the air current and cause damage elsewhere.
- Do not spray under inverted temperature conditions.
- Do not spray in the heat of the day.
- Do not spray when temperatures exceed 35ºC or when relative humidity is below 40%, or when the difference between wet and dry readings as determined by a whirling hygrometer exceeds 8ºC.
- Obtain an assurance from the aerial spray operator that the above specifications will be met before using the product.

MIXING INSTRUCTIONS:

- Ensure that the spray tank is free of any residue from previous spray materials.
- Fill the spray tank with half the required amount of clean water, add the proper amount of **TUMBLEWEED** and ensure thorough mixing before adding the remaining water.
- Position the outlet of any return hoses at the bottom of the tank to reduce foaming. After mixing agitation is not required with this product.
- Reduced results may occur if water containing soil is used, e.g. from dams or rivers, or if hard water containing calcium is used.

WATER QUALITY – SPRAY WATER MODIFIERS:

- For optimum results a minimum of 1% **TUMBLEWEED** solution in the total spray volume is recommended.
- The addition of ammonium sulphate at 1 to 2kg per 100ℓ water, or **Bladbuff 5** (Reg. L 3351) may improve the action when hard waters are used. The addition of herbicidal sprays oils is not recommended with the combination mixtures.

HERBICIDE INJECTION INTO SPRAY LINES:

In order to avoid the necessity of bulk tank mixes, a calibrated chemical doser such as the Dosatron may be used to introduce **TUMBLEWEED** and additional herbicides listed into a spray line at the appropriate concentration. Consult a representative from Enviro Weed Control Systems for information in this respect.

CROP USE RESTRICTIONS:

SITUATION	CRITICAL COMMENTS
Vineyards	Do not use in vineyards younger than 2 years or near interplants less than 2 years old. Apply only as a directed spray to vines from bud to dormancy. Use only in the dormant pre-bud-burst stage for cover crop destruction in late winter in the Western Cape. In low growing bush or trellised vines or under 60cm high, use only pre-bud burst. Do not permit spray or drift to contact buds, foliage or green stems, suckers or fresh wounds otherwise severe injury or destruction may result. Allow 10 days to elapse between pruning and application to prevent uptake from wounds.
Pome fruit Apples and Pears	Use only as a directed spray in orchards older than 3 years or near inter-plants less than 3 years provided the green bark and foliage is protected from the spray or drift. Do not permit spray or drift to contact leaves, green bark or fruit as severe damage or destruction may result. Allow 10 days to elapse between pruning and application to prevent uptake from wounds.
SITUATION	CRITICAL COMMENTS
Stone fruit Peaches, Plums, Nectarines **Subtropcal fruit** Citrus, Nut crops, Avocado, Paw-paw, Mango, Guava, Litchi, Bananas, Tea plantations	Use only as a directed spray in orchards older than 3 years or near inter-plants less than 3 years provided the green bark and foliage is protected from the spray or drift. Do not permit spray or drift to contact leaves, green bark or fruit as severe damage or destruction may result. Allow 10 days to elapse between pruning and application to prevent uptake from wounds.

TANK MIX COMBINATIONS:

TUMBLEWEED may be used as follows:

1. With simazine for extended weed control in apples, pears and vines. Do not use simazine in stone fruit or other plantings where simazine is not recommended. The correct quantity of simazine for the soil type and frequency of application must be adhered to.
2. With MCPA for improved control of Plantain (Plantago lanceolata), Herons Bill (Erodium moschatum), Burrclover (Medicago polymorpha), Prostrate Knotweed (Polygonum aviculare) and Sheep Sorrel (Rumex angiocarpus).

The directions for use and dosage rates for the additional herbicide must be followed in all cases. Should simazine be used, ammonium sulphate as a 2% solution is recommended to assist in compatibility.

USE IN SUGARCANE CULTURE:

SITUATION	BOOM SPRAYER ℓ/ha	KNAPSACK mℓ/20ℓ at 200ℓ/ha	CRITICAL COMMENTS Sugarcane is susceptible to damage particularly in young growth stage
Annual weed control	1.5 - 3	150 - 300	Apply pre-plant broad cast, or as directed spray to avoid injury in plant or ratoon cane. Avoid drift.
Perennial weed control *Cyperus rontundus* (Nutsedge)	4.5 - 6	450 - 600	Apply as a directed spray to plant or ratoon cane when nutsedge is in early head stage. Apply a second treatment after maximum re-emergence in a nutsedge control programme.

CONTROL OF WEEDS ON INDUSTRIAL AREAS:

TUMBLEWEED may be used to control weeds by a post-emergence application to vegetation on roadsides, electrical sub-stations, railway lines, storage areas or where ever unwanted vegetation exists. Consult the weed list for specific weeds where required.

No residual action is obtained and repeat applications will be required to control new germination.

SPECIES CONTROLLED	BOOM SPRAYER ℓ/ha	HANDGUN ℓ/ha	KNAPSACK mℓ/20ℓ calibrated at 200ℓ/ha	CRITICAL COMMENTS
Annual weeds	2.25 - 4.5	1.125 - 2.25	250 - 450	Use the lower rate on younger actively growing plants under optimum conditions. Increase the rate as plants mature or when environmental conditions are less favourable.
Perennial weeds	4.5 - 7.5	2.25 - 3.75	450 - 750	

COMBINATIONS WITH OTHER HERBICIDES:

Where residual weed control is required **TUMBLEWEED** may be used as a tank mix with **OUTPACE FLOWABLE** (Reg. L4760), **OUTPACE SUPER** (Reg. 4769), **ARSENAL** (Reg. L3013), **HYVAR X 80W** (Reg. L1885), **VELPAR L** (L 3996), **VELPAR DF** (Reg. L 5432), **R-P DIURON FLO** (Reg. L4558). **TUMBLEWEED** will assist the action of the co-herbicide by providing additional foliar knockdown, and idening the range of weed species controlled. In all cases follow the directions for use on the product label of the additional herbicide.

A compatibility test with the proposed combination should be made using the spray water intended for use, to determine if flocculation (rapid setting-out of chemicals) occurs, in which case special precautions should be taken to ensure adequate agitation in the spray tank.

UNWANTED TREES AND WOODY PLANTS, ALIEN INVADERS AND DECLARED INVADING SPECIES:

200ℓ Volume per hectare

SPECIES CONTROLLED	ℓ/ha	HANDGUN ℓ/100ℓ WATER	KNAPSACK mℓ/20ℓ calibrated at 200ℓ/ha	CRITICAL COMMENTS Use the lower rate on younger actively growing plants under optimum conditions. Increase the rate as plants mature or when environmental conditions are less favourable.
Bugweed (*Solanum Mauritianum*) A) Seedlings	0.75	375mℓ	75	Summer-autumn application. Spray up to 1m high saplings. Apply to 1m high coppice growth after cutting stems to ± 100mm.
B) Large Trees	1.5 - 2.0	0.75 - 1	150 - 200	
Black Wattle (*Acacia Mearnsii*)	2.25 - 3	1.125 - 1.5	225 - 300	Summer-autumn application. Spray up to 2m high plants
Lantana (*Lantana Camara*)	4.5 - 6	2.25 - 3	450 - 600	Summer-Autumn application. Use penetrating spray to wet plants.
Bramble (*Rubus Spesies*)	4.5 - 6	2.25 - 3	450 - 600	Apply in Summer-autumn. The volumes of 200ℓ/ha with conventional equipment. Alternatively CDA application at 20 to 30ℓ/ha where feasible.
Port Jackson Willow (*Acacia Saligna*) Coppice regrowth after slashing or single stemmed trees up to 2m	4.5	2.25	225 - 450	Treat coppice growth at a height of 0.5 to 1m high; single stemmed trees up to 2m high. Low volume CDA application suitable for low growing coppice or seedlings.

AQUATIC WEEDS:

SPECIES CONTROLLED	ℓ/ha	HANDGUN ℓ/100ℓ using 600ℓ/ha	MIST BLOWER ℓ/100ℓ using 600ℓ/ha	CRITICAL COMMENTS
Water hyacinth (*Eichhornia crassipes*)	7.5	1.25	1.25	Apply when new leaves are fully developed and follow up with repeat treatments regularly. Avoid run-off into water.
Common reed (*Phragmites australis*)	7.5	1.25	1.25	Treat in late summer when 20 to 30% flowering. Slash dead material and treat regrowth in same or following season. Visible effects may take several months to become evident.

SPECIES CONTROLLED	ℓ/ha	HANDGUN ℓ/100ℓ using 600ℓ/ha	MIST BLOWER ℓ/100ℓ using 600ℓ/ha	CRITICAL COMMENTS
Bulrush (*Typha capensis*) or mixed communities with common reed (*Phragmites australis*)	7.5 + 2 - 3ℓ **Arsenal**	1.25 + 335 - 500mℓ **Arsenal**	1.25 + 335 - 500mℓ **Arsenal**	Use a combination treatment with **Arsenal** (Reg. L3013) at 2 to 3ℓ/ha together with **TUMBLEWEED** at the recommended rate. Apply from early summer when in active growth, and repeat when necessary in same or following season.

NOTE: Aerial application
These herbicides may be applied by aerial application to the infestation where conditions permit, using from 20 to 50ℓ total solution per ha. Follow the directions given under "Aerial Application".

PERENNIAL GRASSES AND BROAD-LEAVED WEEDS:

200ℓ Volume per hectare

SPECIES CONTROLLED	BOOM SPRAYER ℓ/ha	HANDGUN ℓ/100ℓ	KNAPSACK ℓ/100ℓ calibrated 200ℓ/ha	CRITICAL COMMENTS Use the lower rate on younger actively growing plants under optimum conditions. Increase the rate as plants mature or when environmental conditions are less favourable.
Buffalo Or Ubabe Grass (*Panicum Maximum*)	3 - 4.5	1.5 - 2.25	300 - 450	Use the higher rate on old stools and repeat at 3ℓ/ha or 1.5ℓ/100ℓ as required.
Bush Buffalo Grass (*Setaria Megaphylla*)	4.5 - 6	2.25 - 3	450 - 600	Ensure thorough coverage.
Common Grass (*Cynodon Dactylon*) A) Initial Treatment	6 - 7.5	3 - 4	600 - 750	Apply in summer and follow up in autumn; or apply in autumn and follow up in summer.
B) Follow Up Treatment	6	3	600	
Common Paspalum (*Paspalum Dilatatum*)	4.5 - 6	2.25 - 3	450 - 600	Apply at flowering and spot treat regrowth in autumn using 4ℓ/ha
Couch Paspalum (*Paspalum Paspalodes*)	8	4	800	Apply in summer but before onset of dormancy.
Johnson Grass (*Sorghum Halepense*)	3 - 4	1.5 - 2	300 - 400	Apply at flowering and treat regrowth at 3ℓ/ha or 1.5ℓ/100ℓ.
Wild Grain Sorghum (*Sorghum Bicolor*)	2.25 - 3	1.125 - 1.5	225 - 300	Apply when in vigorous growth. Treat any regrowth to prevent re-infestation from dormant buds.

SPECIES CONTROLLED	BOOM SPRAYER ℓ/ha	HANDGUN ℓ/100ℓ	KNAPSACK ℓ/100ℓ calibrated 200ℓ/ha	CRITICAL COMMENTS Use the lower rate on younger actively growing plants under optimum conditions. Increase the rate as plants mature or when environmental conditions are less favourable.
Kikuyu (*Pennisetum Clandestinum*) A) Initial Application	2.25 - 3	1.125 - 1.5	225 - 300	Apply when in vigorous growth. Treat any regrowth to prevent re-infestation from dormant buds.
B) Follow Up Application	2.25	1.125	225	
Natals Red Top (*Rhychelytrum Repens*) A) Seedlings	2	1	200	In mature stage mow to remove seed stalks; 4 - 6 weeks may be required for full affect.
B) Tufts	2 - 3	1 - 1.5	200 - 300	
Common Thatch Grass (*Hypamhenia Hirta*)	4.5 - 6	2.25 - 3	450 - 600	In mature stage mow to remove seed stalks; 4 to 6 weeks may be required for full affect.
Red Grass (*Themeda Triandra*)	4.5 - 6	2.25 - 3	450 - 600	
European Verbena (*Verbena Officinalis*)	3.5 - 4	1.5 - 2.25	350 - 400	
Lovegrass (E*ragrostis Curvula*) (E. *Chloromelas*) (*E. Gummiflua*)	2.25 - 3	1.125 - 1.5	225 - 300	Apply to full growth but before onset of dormancy.
Fan Lovegrass (*Eragrostis Plana*)	3 - 4	1.5 - 2	300 - 400	In mature stage mow to remove seed stalks; 4 to 6 weeks may be required for full affect.
Purple Nutsedge (*Cyperus Esculentus*) Yellow Nutsedge (*Cyperus Rotundus*)	4.5 - 6	2.25 - 3	450 - 600	Apply at flowering and follow up with a repeat treatment to regrowth in a programme to reduce infestation.
Field Bindweed (*Convolvulus Arvensis*)	4.5 - 6	2.25 - 3	450 - 600	Apply at early flowering and follow up with 1.5ℓ/100ℓ.
Plantain (*Plantago Lanceolata*) A) Pre-Flowering	2.25 - 3	1.125 - 1.5	225 - 300	Apply before flowering. Resistant after flowering.
B) Flowering	4.5 - 6	2.25 - 3	450 - 600	

SPECIES CONTROLLED	BOOM SPRAYER ℓ/ha	HANDGUN ℓ/100ℓ	KNAPSACK ℓ/100ℓ calibrated 200ℓ/ ha	CRITICAL COMMENTS Use the lower rate on younger actively growing plants under optimum conditions. Increase the rate as plants mature or when environmental conditions are less favourable.
Small Mallow (*Malva Paviflora*) A) Pre-Flowering	3 - 4.5	1.5 - 2.25	300 - 450	Apply before flowering and treat any regrowth to prevent re-establishment.
B) Flowering	4.5 - 6	2.25 - 3	450 - 600	
Smuts Finger Grass (*Digitaria Eriantha*)	3 - 4.5	1.5 - 2.25	300 - 450	
Tassel Three-Awn (*Aristida Congesta*)	3 - 4.5	1.5 - 2.25	300 - 450	

WEEDS IN ARABLE AGRICULTURE PRE-PLANTING (REDUCED TILLAGE) AND IN FORESTRY, FRUIT AND PLANTATION CROPS, SUGARCANE AND NON-CROP AREAS:

CRITICAL COMMENTS:
Refer to general instructions for use for the crop concerned.
Use the lower rate on younger actively growing plants under optimum conditions. Increase the rate as plants mature or when environmental conditions are less favourable. Rates apply from seedling to flowering stage of growth.

BOTANICAL NAME	COMMON NAME ENGLISH	BOOM SPRAYER ℓ/ha	KNAPSACK mℓ/20ℓ per 200ℓ/ha
Susceptible Weeds:			
Altamanthera Pungens	Khaki Bur Weed		
Amaranthus Hybridus	Cape Pigweed		
Amaranthus Spinosus	Thorny Pigweed		
Amaranthus Thunbergii	Red Pigweed		
Argemone Subfusiformis	Mexican Poppy		
Bidens Pilosa	Common Blackjack	1.5 - 2.5	150 - 225
Chenopodium Album	White Goosefoot		
Chenopodium Carinatum	Green Goosefoot		
Chenopodium Murale	Nettle-Leaved Goosefoot		
Cirsium Arvense	Canada Thistle		
Cotula Tenella	Wild Cucumber		
Cucumis Spp.			

BOTANICAL NAME	COMMON NAME ENGLISH	BOOM SPRAYER ℓ/ha	KNAPSACK mℓ/20ℓ per 200ℓ/ha
Datura Ferox *Datura Stramonium* *Galinsoga Parviflora* *Gisekia Pharnaceoides* *Gnaphalium Subfalcatum* *Pentzia Grandiflora* *Pseudognaphalium Luteo-Album* *Pseudognahalium Undulatum* *Spergula Arvensis* *Avena Spp* *Avena Fatua* *Briza Maxima* *Bromus Diandrus* *Chloris Pycnothrix* *Ehrharta Longifolia* *Hordeum Murinum* *Lolium Multiflorum* *Lolium Termulentum* *Poa Annua* *Secale Cereale* *Tragus Racemosus*	Large Thorn Apple Common Thorn Apple Gallant Soldier Gisekia Cudweed Karoo Bush Jersey Cudweed Undulate Cudweed Corn Curry Wild Oats Common Wild Oats Quaking Grass Ripgut Brome Spiderweb Chloris Oat Seed Grass Wild Barley Italian Rye Grass Darnel Winter Grass Rye Large Carrot Seed Grass	1.5 - 2.5	150 - 225
Moderately Susceptible Weeds: *Arctotheca Calendula* *Chloris Virgata* *Conyza Canadensis* *Conyza Floribunda* *Emex Australis* *Fumaria Muralis*	 Cape Margold Featherop Chloris Fleabane Tall Fleabane Spiny Emex Fumitory	2.25 - 3	225 - 300
Moderately Susceptible Weeds: *Hibiscus Cannabinus* *Oxalis Pes-Caprae* *Phalaris Canariensis* *Portulaca Oleracea* *Schkuharia Pinnata* *Senecio Consanguineus* *Sesamum Triphyllum* *Sonchus Oleraceus* *Tagetes Minuta* *Tribulus Terrestris*	 Kenaf Yellow Sorreel Canary Grass Common Purslane Dwarf Marigold Starvation Senecio Wild Sesame Sowthistle Khaki Weed Common Dubbeltjie		

BOTANICAL NAME	COMMON NAME ENGLISH	BOOM SPRAYER ℓ/ha	KNAPSACK mℓ/20ℓ per 200ℓ/ha
Veronica Spp.	Speedwell	2.25 - 3	225 - 300
Phalaris Minor	Little Seed Canary Grass		
Setaria Pallide Fusca	Red Bristle Grass		
Setaria Verticilata	Sticky Bristle Grass		
Conyza Bonariensis	Flax-Leaf Fleabane		
Eragrostis Cillaris	Woolly Love Grass		
Chamaesyce Hirta	Red Milkweed		
Chamaesyce Inaequilatera	Smooth Creeping Milkweed		
Flaveria Bidentis	Smelters Bush		
Lepidium Bonariense	Pepper Cress		
Raphanus Raphanistrum	Wild Radish		
Setaria Sphacelata	Common Bristle Grass		
Solanum Nigrum	Deadly Nightshade		
Tragus Berteronianus	Small Carrot-Seed Grass		
Urochloa Panicoides	Herringbone Grass		
Anchusa Azurea	Oxtongue		
Senecio Pterophorus	Perdegifbos		
Digitaria Sanguinalis	Crab Finger Grass		
Eleusine Indica	African Goose Grass		
Panicum Schinzii	Sweet Buffalo Grass		
Taraxacum Officinale	Dandelion		
Medicago Polymorpha	Burclover		
Moderately Resistant Weeds:		3 - 4.5	300 - 450
Lactuca Serriola	Wild Lettuce		
Erodium Moschatum	Musk Heron's Bill		
Rumex Angiocarpus	Sheep Sorrel		
Malva Parviflora	Small Mallow		
Commelina Benghalensis	Wandering Jew		
Flaveria Bidentis	Smelter's Bush		
Hypochoeris Radicata	Hairy Wild Lettuce		
Echium Lycopis	Purple Echium		

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ARSENAL: American Cyanamid Company Wayne, New Jersey, USA
HYVAR X 80W: El Du PONT DE Nemours & Co, Wilmington, Delaware 19898, USA
BLADBUFF 5: Plaaskem (Pty)Ltd, PO Box 87005 HOUGHTON 2041
VELPAR: El Du PONT DE Nemours & Co, Wilmington, Delaware 19898, USA
R-P Diuron Flo: Rhône-Poulenc Agrichem, PO Box 12447 ONDERSTEPOORT 0110