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

KEEP OUT OF REACH OF CHILDREN AND ANIMALS

BRUTUS

South Africa Reg. No: L7993 Act No. 36 of 1947

HRAC HERBICIDE GROUP CODE: K3

An emulsifiable concentrate herbicide for pre- emergence control of annual grasses and, under certain conditions, yellow nutsedge and broadleaf weeds in maize, legumes and sunflower.

ACTIVE INGREDIENT:

Metolachlor (chloroacetanilde).....915g/ℓ

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

HAZARD STATEMENTS

- May cause an allergic skin reaction.
- Causes serious eye damage.
- Harmful if inhaled.
- Very toxic to aquatic life with long lasting effects.



PRECAUTIONARY STATEMENTS

- Use only outdoors or in a well-ventilated area.
- Avoid release to the environment.

enviro™ bio-chem

Registration holder: Erintrade CC t/a RT Chemicals
Co. Reg. No: CK2001/036403/23
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Tel: +27 12 006 0063 | Fax: +27 86 541 7948
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Expiry Date:
Batch No:
Date of Manufacture:

UN No. 3082

WARNINGS:

- May cause an allergic skin reaction.
- Causes serious eye damage.
- Harmful if inhaled.
- Very toxic to aquatic life with long lasting effects.
- Keep out of reach of children, uninformed persons and animals.
- Store under lock and key, in a cool place, away from food and feedstuffs.
- Re-entry: Do not enter treated field within 1 day after application 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 the drift to contaminate water or adjacent areas

Although this herbicide 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 effected 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 pest against the remedy concerned as well as by the method, time and accuracy of the 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 herbicide 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:

- Use only outdoors or in a well-ventilated area.
- Wear impervious rubber gloves and boots, protective clothing and chemical safety goggles
- IF ON SKIN: Wash with plenty of water and non-abrasive soap.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
- Immediately call a POISION CENTRE.
- Prevent contamination of food, feedstuff, eating utensils and drinking water.
- Prevent spray mist drift onto other crops, grazing, rivers, dams or areas not under treatment.
- 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.

RELEVANT SUBSTANCES:

Metolachlor 83%
Fenclorim <5%
Calcium dodecylbenzenesulfonate <10%
Solvesso 150 <5%

FIRST AID TREATMENT:

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

USE RESTRICTIONS:

BRUTUS may damage maize and sweet corn under the following conditions:

- Poorly drained soils or soils with a compaction layer and/or cool wet soils.
- Inbred parent plants of maize hybrids. Consult a representative of Erintrade, the distributor or seed supplier.

BRUTUS may damage certain other crops under the following conditions:

- Dry beans on fields with a high incidence of soil borne diseases and/or where monoculture is practiced.
- Dry beans in hot, dry conditions especially in the presence of a compaction layer in the soil. Under these conditions beans might also be susceptible to wind damage.
- Sunflowers and dry beans under cool conditions and/or on waterlogged, shallow, sandy soils of less than 100cm deep with an impermeable clay sub soil.
- **Important:** Where other herbicides are used in combination with **BRUTUS** the use restrictions as given on the labels of the herbicides concerned must be adhered to.

RESISTANCE WARNING:

For resistance management, **BRUTUS** is a **group code K3** herbicide. Any weed population may contain individuals naturally resistant to **BRUTUS** and other **group code K3** herbicides. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. **BRUTUS** or any other **group code K3** herbicide may not control these resistant weeds.

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 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.

Compatibility:

The compatibility of **BRUTUS** with other products will be influenced by the formulation of the products involved as well as the quality of the spray water. Since the formulation of other products may change without the knowledge of Erintrade and the quality of water may vary from farm to farm, a physical compatibility test should always be carried out prior to application. **BRUTUS** is compatible with **AMETRYN 500 SC** (Reg. No: L8219), **Atrazine 500 SC, Atrazine + Terbuthylazine 600 SC, METRIBUZIN 480 SC** (Reg. No: L8252), **MSMA 720 SL** (Reg. No:. L8463) and **Glyphosate 360 SL.**

Mixing Instructions:

Always replace the cap after use.
Half-fill the spray tank with clean water, then pour the required amount of **BRUTUS** into the spray tank while the water is being agitated. Fill with water to the final volume required.
When **BRUTUS** is tank mixed with SC or SL formulations as recommended below, these compounds should be added to the water first. **BRUTUS** should then be added last, just before the required volume is reached. When glyphosate or PARAQUAT 200 (Reg. No: L7650) is included in a tank mixture it should be added last, only after all the other products have been added and properly mixed just prior to the final volume being obtained.

Ensure thorough agitation of the mixture in the tank during mixing and spraying.
Tank mixtures must be sprayed out immediately and not allowed to stand in the spray tank.

Application Techniques:

Post plant pre-emergence:

BRUTUS must be applied at planting or within three days of planting on a fine, even, firm and freshly prepared weed-free seedbed. To obtain good results it is necessary that 10 to 12mm rain or irrigation follows application before the weeds emerge. If rainfall does not occur in time and weeds begin to emerge and develop, a shallow cultivation must be carried out to destroy these weeds and to mix the herbicide with the top 10 to 20mm of soil.

When planting into dry soil (insufficient moisture for germination), **BRUTUS** must be applied as close to, but definitely before the first rain. Emerged weeds at the time of application will not be controlled.

Post-emergence (maize, sweet corn):
BRUTUS has no post-emergence effect. To extend weed control, it may be applied post-emergence to the crop immediately after a cultivation, i.e. when no weeds are present. Weeds that are present after the cultivation will not be controlled.

Dosage Rates:
All dosage rates are given as broadcast treatments. The dosage rate for band treatments should be adjusted accordingly.

Fertilisation:
Ensure that the crop is properly fertilised to ensure vigorous seedling growth.

Minimum or Reduced Tillage:
Under minimum or reduced tillage systems, weeds may be present at planting. It is recommended to add either glyphosate or **PARAQUAT** at recommended rates to **BRUTUS** as a post plant pre-crop emergence treatment.
Crop residues and mulch may affect the distribution of **BRUTUS** on the soil and some weeds normally controlled may emerge.

Ground Application:
BRUTUS may be applied with any medium to high volume sprayer, correctly calibrated, and which is equipped with an effective agitation mechanism. Choice and arrangement of fan-type spray nozzles should be such as to ensure even distribution and optimal recovery of the herbicide on the target area. The recommended amount of BRUTUS should be applied in 100 - 300ℓwater/ha.

Aerial application:
Aerial application of **BRUTUS** may only be done by a registered Aerial Application Operator using a correctly calibrated, registered aircraft according to the instructions of SABS 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:

- Volume: A spray mixture volume of 30ℓ/ha 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: 20 to 30 droplets per cm² must be recovered at the target area.
- Droplet size: A droplet spectrum with a VMD of 350 to 400 microns is recommended. Limit the production of fine droplets less than 150 microns (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 15km/h.
- 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:
  - reduced efficacy due to suspension and evaporation of small droplets in the air (inadequate coverage).
  - 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.

Centre Pivot Irrigation Application:
BRUTUS may be applied in irrigation water after planting but before weeds or crop emerge at rates recommended on this label. Use only centre pivot systems that apply water uniformly. Prepare a mixture with a minimum of one part of water to one part herbicide and inject this mixture into the centre pivot system using a positive displacement pump. Injecting a larger volume of a more dilute mixture per hour will usually provide more accurate calibration of metering equipment. Maintain sufficient agitation to keep the herbicide in suspension. Apply in 12.5 - 25mm of water. Use the lower water volume (12.5mm) on sandy soils and the higher volume (25mm) on clay soils. More than 25mm of water at application may reduce weed control by moving the herbicide below the effective zone in the soil.
Precautions for centre pivot applications: Apply only through irrigation systems containing anti-siphon and check valves to prevent contamination of the well during shutdown and overflow of solution tank.
Inject ahead of any right angle turn in the main line to ensure adequate mixing.

Chemical injection pumps and water pumps must have interlocking controls to ensure simultaneous shut-off. Application when drift may occur, such as from windy conditions, or when system joints and connections are leaking, or when nozzles are not providing uniform distribution, may cause crop injury. Where sprinkler distribution patterns do not overlap sufficiently this may result in poor weed control. Where sprinkler distribution patterns overlap excessively, crop injury or unacceptable residues may result.

RECOMMENDATIONS AND APPLICATION RATES:

MAIZE AND SWEETCORN
Apply **BRUTUS** as recommended above at planting or within 3 days of planting or post emergence of the crop.
For yellow nutsedge (*C. esculentus*) control see the recommendations under weed control below.
Broadleaf weeds are not adequately controlled by **BRUTUS**. Therefore the use of a broadleaf herbicide in a tankmix combination with **BRUTUS** or as a sequential post emerge treatment after **BRUTUS** is recommended.

BRUTUS plus **Atrazine 500 SC** as a tank mix applied post plant and pre-emerge:

Soil type	% Clay	BRUTUS (ℓ/ha)	Atrazine 500 SC (ℓ/ha)
Sand	0 - 10	0.75	2.5
Loamy sand/ sandy loam	11 - 20	1.1	3.25 - 4
Sandy clay loam	21 - 35	1.4	4 - 4.75
Sandy clay loam/ Sandy clay/ Turf	>35	1.5 - 2	4.75 - 5

BRUTUS plus **Atrazine + Terbuthylazine 600 SC** as a tank mix applied post plant and pre-emerge:

Soil type	% Clay	BRUTUS (ℓ/ha)	Atrazine + Terbuthylazine 600 SC (ℓ/ha)
Sand	0 - 10	0.75	1.3 - 1.7
Loamy sand/ sandy loam	11 - 20	1.1	1.7 - 2.1
Sandy clay loam	21 - 35	1.4	2.1 - 2.5
Sandy clay loam/ Sandy clay/ Turf	>35	1.5 - 2	2.5 - 3.3

Important:
- Consult the **Atrazine 500 SC** and **Atrazine + Terbuthylazine 600 SC** labels for crop rotation recommendations.
- Where longer residual herbicide action is required use the higher rates of **Atrazine 500 SC** or **Atrazine + Terbuthylazine 600 SC**, especially for weeds that germinate late in the season such as khaki weed (Tagetes minuta) and thorn apple (Datura stramonium).

BRUTUS applied pre-emergence or pre-plant incorporated followed by an early post emergence application of **Atrazine + Terbuthylazine 600 SC** plus **2.4-D amine 480 SL**:

Soil type	% Clay	BRUTUS (ℓ/ha)	Atrazine + Terbuthylazine 600 SC* ℓ/ha Plus 2.4-D amine 480 SL ℓ/ha
Sand/ Loamy sand	0 - 10	0.75	**All soil types** 1.25ℓ atrazine + terbuthylazine 600 SC **PLUS** 0.75ℓ 2.4-D amine 480 SL **OR** 1.7ℓ atrazine + terbuthylazine 600 SC **PLUS** 0.5ℓ 2.4-D amine 480 SL
Sandy loam	11 - 20	1.1	
Sandy clay loam	21 - 30	1.4	
Sandy clay loam/ Sandy clay/ Turf	31 - 50	1.5 - 2	

NOTE: Do not add a sticker to **Atrazine + Terbuthylazine 600 SC**.
Where EPTC 720 EC is applied as recommended on the label as a pre-plant incorporated treatment for the control of yellow nutsedge *(Cyperus esculentus)* and grasses, improved control of these weeds can be obtained if EPTC 720 EC is followed by a post-plant pre-emerge application of **BRUTUS.**

BRUTUS applied early post-plant pre-emergence after a pre-plant application of EPTC 720 EC:

Soil type	% Clay	BRUTUS (ℓ/ha)
Sand	0 - 10	0.5
Loamy sand/ sandy loam	11 - 20	0.5
Sandy clay loam	21 - 30	0.6

LEGUMES (Groundnuts, Green Beans, Dry Beans, Kidney Beans, Soy Beans and Lupins):
BRUTUS applied as a post plant pre-emerge treatment:

Soil type	% Clay	BRUTUS (ℓ/ha)
Sand/ Loamy sand	0 - 10	0.75 - 1
Sandy loam	11 - 20	1 - 1.25
Sandy clay loam	21 - 30	1.25 - 1.5
Sandy clay loam	>31	1.5 - 2

Groundnuts Only:
To obtain good broadleaf control, **Terbutryn** may be added to **BRUTUS** at the rates indicated on the terburtyn label as per soil type. Terbutryn **is only recommended where overhead sprinkler irrigation is practised.**

Soy Beans Only:
For improved weed control in soy beans **BRUTUS** can be applied in a tankmix with **Metribuzin 480 SC** as a post plant pre-emerge treatment.

Tank mix of **BRUTUS** with **Metribuzin 480 SC** on soy beans:

Soil type	% Clay	BRUTUS (ℓ/ha)	Metribuzin 480 SC ℓ/ha
Sand	0 - 10	NOT RECOMMENDED	
Loamy sand/ Sandy loam	11 - 20	0.6 - 0.8+	0.54
Sandy clay loam	21 - 35	0.8 - 1+	0.7
Sandy clay loam/ Sandy clay/ Turf	>35	NOT RECOMMENDED	

Remarks:

- Use the **BRUTUS** plus **Metribuzin 480 SC** mixture only on soils with more than 1% organic matter.
- Consult the **Metribuzin 480 SC** label for use recommendations and cultivar restrictions.
- Do not apply **BRUTUS** plus **Metribuzin 480 SC** on soy beans which are planted on soils with a pH (H20) of less than 4.5 or more than 7; or on soils with mineral deficiencies or on waterlogged soils as damage might occur.
- The application of **BRUTUS** plus **Metribuzin 480 SC** on light soils early in the season under conditions of low night temperatures may cause damage.
- Over-application, application at the incorrect growth stage, or any other use not in accordance with the directions on the **BRUTUS** and **Metribuzin 480 SC** labels, may cause stunting of the crop and other adverse effects.

SUNFLOWER:

BRUTUS applied as a post plant pre-emerge treatment:

Soil type	% Clay	BRUTUS (ℓ/ha)
Sandy/ Loam sand/ Sandy loam	0 - 20	0.9 - 1.3
Sandy clay loam	21 - 30	1.3 - 1.6
Sandy clay loam	>30	1.6 - 2.1

WEED CONTROL:

Grasses controlled		Control of the following weeds are variable	
Sweet Signal Grass	*Brachiaria Eruciformis*	Cape Pigweed	*Amaranthus Hybridus*
Feathertop Chloris	*Chloris Virgata*	Thorny Pigweed	*Amaranthus Spinosus*
Crowfoot	*Dactyloctenium Aegyptium*	Red Pigweed	*Amaranthus Thunbergii*
Crab Finger-Grass	*Digitaria Sanguinalis*	Green Goosefoot	*Chenopodium Carinatum*
Barnyard Grass	*Echinochloa Crusgalli*	Spindlepod	*Cleome Monophylla*
Goose Grass	*Eleusine Indica*	Bengal Wandering Jew	*Commelina Benghalensis*
Common Buffalo Grass	*Panicum Maximum*	Yellow Nutsedge	*Cyperus Esculentus*
Sweet Buffalo Grass	*Panicum Schinzii*	Large Thorn Apple	*Datura Ferox*
False Signal Grass	*Pseudobrachiaria Deflexa*	Thorn Apple	*Datura Stramonium*
Red Bristle Grass	*Setaria Pallide-Fusca*	Gallant Soldier	*Galinsoga Parviflora*
Sticky Bristle Grass	*Setaria Verticillata*	Apple Of Peru	*Nicandra Physaloides*

Grasses controlled		Control of the following weeds are variable	
Small Carrotseed Grass	*Tragus Berteronianus*	Purslane	*Portulaca Oleracea*
Large Carrotseed Grass	*Tragus Racemosus*		
Bushveld Heringbone Grass	*Urochloa Mosambicensis*		
Herringbone Grass	*Urochloa Panicoides*		

Use the higher recommended rate of **BRUTUS** in the following situations and for improved control of the following weeds:

- On soils of over 1% organic matter.
- Pre-plant incorporated applications.
- High infestations of crab finger grass, Digitaria sanguinalis.
- Sweet signal grass, Brachiaria Eruciformis.
- Yellow nutsedge, *Cyperus Esculentus*.

Rain: Heavy or persistant rain after **BRUTUS** application to sandy soils under 15% clay and with less than 1% organic matter may result in reduced weed control. Under these conditions, a half dosage rate application of **BRUTUS** can be considered at own risk.

Yellow nutsedge (*Cyperus Esculentus*) **Control**

Use the following methods to improve the control of yellow nutsedge:

- Thorough ploughing with a mouldboard plough immediately before planting.
- A relatively fine, even and firm seedbed is prepared.
- Application of **BRUTUS** should be made at or immediately after planting into moist soil.
- The herbicide application must be followed by at least 10 - 20mm of soft penetrating rain (or irrigation) to leach the herbicide into the soil prior to the emergence of yellow nutsedge (normally 7 to 10 days after ploughing). These conditions are more likely to occur during the latter half of the planting season (November). More rain is required on heavier soils, especially turf soils, to obtain good control.
- When planting into dry soil (insufficient moisture for yellow nutsedge germination and emergence) application of **BRUTUS** should be timed as close as possible to, but definitely before the first rains.