



syngenta.

A water dispersible granular herbicide in a water soluble bag for selective pre-emergence control of broadleaf weeds and the suppression of some grasses in barley and wheat in the Western and Eastern Cape as well as post-emergence broadleaf weed control in wheat, barley and oats in the Western and Eastern Cape and wheat in the Eastern Free State.

GROUP 2 HERBICIDE

Active Ingredient:
triasulfuron (sulfonylurea)..... 750 g/kg

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WARNING

Reg. No. **L3600** Act No. 36 of 1947

Hazard statements:

Very toxic to aquatic life with long-lasting effects.

Precautionary statements:

Response: Collect spillage.

Storage: Store locked-up.

Disposal: Dispose of contents/container to an approved waste disposal plant.

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1. WARNINGS:

Hazard statements: Very toxic to aquatic life with long-lasting effects.

- Poisonous if swallowed.
- Store locked-up in a cool place.
- Store away from food and feed.
- Keep out of reach of children, uninformed persons and animals.
- Store away from sun and damp, in original, tightly closed containers, in a well-ventilated area.
- Very toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.
- Avoid storage above 35°C.
- **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 the drift to contaminate water or adjacent areas.

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 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 and the environment, or harm to people or animals 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, that could not have been foreseen in terms of the registration. Consult the supplier in the event of any uncertainty.

2. PRECAUTIONS:

Precautionary statements: **Response:** Collect spillage.
Storage: Store locked-up. **Disposal:** Dispose of contents/container to an approved waste disposal plant.

- Do not inhale the spray mist.
- Avoid skin contact.
- Wash with soap and water after use.
- Wash contaminated clothing after use.
- Do not eat, drink, or smoke while mixing or applying the product or before washing hands and face.
- Avoid spray drift onto other crops, grazing, rivers, dams and areas not under treatment.
- Clean the applicator after use. Ensure that all traces of **LOGRAN** are removed. (Refer to SPRAYER CLEANUP).
- Prevent contamination of food, feed, drinking water and eating utensils.
- Destroy empty container in the prescribed manner and do not use it for any other purpose.

3. RELEVANT SUBSTANCES:

Chemical name	Classification	Concentration (w/w)
Not applicable	Not applicable	Not applicable

4. RESISTANCE MANAGEMENT:

LOGRAN is a group code 2 herbicide. Any weed population may contain individuals naturally resistant to **LOGRAN** and other group code 2 herbicides. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly and exclusively in programs. These resistant weeds may not be controlled by **LOGRAN** or any other group code 2 herbicides.

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 programs.

The occurrence of resistant weeds are difficult to detect prior to use. If the above measures are not strictly adhered to Syngenta cannot accept responsibility for any losses that may result from the failure of **LOGRAN** to control resistant weeds.

- Always use **LOGRAN** as part of an integrated crop and resistance management program (strategy) in order to prevent weed resistance.
- This crop and resistance management strategy should always include sequences with herbicides of alternative modes of action e.g., BOXER.
- **LOGRAN** should only be used once a year per field. If it becomes necessary to spray escapee target plants, use herbicides from another chemical class.
- To control and eliminate resistant grasses e.g., ryegrass, the aim should be a total prevention of seeding by these resistant biotypes.
- **LOGRAN** and BOXER plus **LOGRAN** should be used as a tool to manage grass weed populations in order to prevent or delay resistance to products of various chemical classes and to control various levels of resistance to different products and chemical classes e.g., mainly class A (fops and dim's) and class B (su's).

A local farm strategy for preventing and managing resistance should be adopted. Guidelines have been produced by the Herbicide Resistance Action Group (HRAC) and copies are available from HRAC, your distributor or agents, independent crop adviser or Syngenta.

For specific information on resistance management, contact the registration holder of this product (Syngenta South Africa) or visit the HRAC website at <http://www.hracglobal.com/Home.aspx>.

5. USE RESTRICTIONS:

- Do not use **LOGRAN** on soils where the pH (H₂O) is 7 or higher and/or on soils containing free lime, as the residual activity of **LOGRAN** may be extended and crop rotation options adversely affected beyond normal intervals. (Refer to RE-CROPPING INSTRUCTIONS).
- Do not apply **LOGRAN** to cereals under-sown with legumes.
- Do not apply **LOGRAN** to wheat, barley or oats that are stressed by severe weather conditions, drought, water logging, disease or insect damage.
- Dry conditions after a pre-emergence application of **LOGRAN**, can result in inferior control and suppression of weeds.
- Inferior weed control can be expected with pre-emergence applications of **LOGRAN** on sandy soils if this is followed by heavy rain.
- Continual or heavy rainfall on light soils particular (< 15% clay) would lead to inconsistent weed control due to the leaching of the product from the germination zone of the weed seeds.
- Transient stunting of wheat may occur after pre-emergence applications of **LOGRAN**. This will have no effect on yield.
- Pre-emergence applications of **LOGRAN** on soil with excessive rocks, clods and stubble will result in inferior weed control. Excess straw should be either baled or burnt and the burnt ash should be incorporated.
- The best results will be obtained if **LOGRAN** is applied after cultivation properties were performed.

5.1 Minimum re-cropping intervals and crop rotation guidelines

- Crops other than barley, oats and wheat may be very sensitive to low concentrations of **LOGRAN** in the soil. Careful consideration should therefore be given to crop rotation prior to using **LOGRAN**.
- The minimum re-cropping interval is the time between the last application of **LOGRAN** and the anticipated date of planting a subsequent crop.
- To avoid injury to subsequent crops the following re-cropping intervals should be observed after applications of **LOGRAN**:

Crops	Pre-emergence application of 37.5 g LOGRAN (months)	Post-emergence application of 13 - 15 g LOGRAN (months)
Barley Oats Barley	0	0
All lupines	11	9
Canola	11	10
Peas	11	9
All clover crops	13	11
All other crops	24	24

- If **LOGRAN** is used in a mixture with BRUSH-OFF consideration should also be given to the re-cropping intervals of BRUSH-OFF.
- If **LOGRAN** is used in a mixture with BOXER, consideration should also be given to the re-cropping intervals of BOXER.

Important

The above-mentioned waiting periods are valid only if the correct dosage rate of **LOGRAN** was applied on soils with a pH (H₂O) of less than 7 and normal or above average rainfall fell during and following the season in which the application was made.

6. WEEDS CONTROLLED:

6.1 Pre-emergence weed control by LOGRAN

The following weed species are controlled by pre-emergence applications of **LOGRAN** at the dosage rates recommended below:

Weeds controlled (Western- and Eastern Cape)		% Control
<i>Anagallis arvensis</i>	pimpernel	90 - 100
<i>Arctotheca calendula</i>	Cape marigold	90 - 100
<i>Fumaria muralis</i>	fumitory	90 - 100
<i>Plantago lanceolata</i>	narrow-leaved ribwort	90 - 100
Variable control		
<i>Raphanus raphanistrum</i>	wild radish	90 - 100
Weeds suppressed		
<i>Emex australis</i>	spiny emex	70 - 85
<i>Lolium multiflora</i>	Italian ryegrass	70 - 90
<i>Oxalis</i> spp.	sorrel	80 - 90
<ul style="list-style-type: none"> • Weeds that escape the initial pre-emergence application of LOGRAN e.g., wild radish should be controlled post-emergence with herbicides from other chemical 		

classes i.e., bromoxynil or MCPA.

- Follow-on applications should not be made with other sulphonylureas.
- Weed suppression is a visual reduction in weed population and/or vigour as compared to an untreated area.

6.2 Post-emergence weed control by LOGRAN

The following weed species are controlled with post-emergence applications of **LOGRAN** at the dosage rates recommended below:

Weeds controlled (Western- and Eastern Cape)		% Control
<i>Chenopodium murale</i>	nettle leaved goosefoot	90 - 100
<i>Malva parviflora</i>	small mallow	90 - 100
<i>Pentzia</i> spp.	stinkweed	90 - 100
<i>Raphanus raphanistrum</i>	wild radish	90 - 100
<i>Sisymbrium capense</i>	Cape wild mustard	90 - 100
<i>Stellaria media</i>	chickweed	90 - 100
<i>Silene gallica</i>	gunpowder weed	90 - 100
Weeds suppressed		
<i>Fumaria muralis</i>	Fumitory	70 - 90
<i>Oxalis pes-caprae</i>	yellow sorrel	60 - 80
<i>Spergula arvensis</i>	corn spurry	70 - 90
<i>Vicia</i> spp.	vetch	70 - 90
<ul style="list-style-type: none"> • Weed suppression is a visual reduction in weed population and/or vigour as compared to an untreated area. 		

- If spiny emex (*Emex australis*) and/or Cape marigold (*Arctotheca calendula*) is present in the Western- and Eastern Cape or climbing knotweed (*Bilderdykia convolvulus*) in the Eastern Free State, a tank-mix of **LOGRAN** and CAMPATOP 225 EC (L5320) may be used with post-emergence applications.
- A tank mixture of **LOGRAN** and BRUSH-OFF may also be used for the control of post-emergence *E. australis* in the Western- and Eastern Cape.
- If *Chenopodium album* is present in the Eastern Free State, a tank-mix of **LOGRAN** and MCPA can be used post-emergence.

7. DIRECTIONS FOR USE: Use only as indicated.

7.1 General Information

LOGRAN is a water dispersible granular herbicide for selective pre-emergence control and suppression of several weeds in wheat and post-emergence broadleaf weed control in barley, oats and wheat in the Western- and Eastern Cape regions and wheat in the Eastern Free State.

PRE-EMERGENCE APPLICATION

- **LOGRAN** should be applied at planting or soon afterwards on a moist, fine, even, firm and freshly prepared seedbed free from excessive rocks, clods and stubble. For best results rain should occur soon after application.
- **LOGRAN** will deliver the best control in soils when application is done after any cultivation and/or planting or seeding exercise.

- The incorporation of **LOGRAN** will result in sub-optimal control of weeds. However, if **LOGRAN** has to be incorporated the following considerations should be attended to:
 - Incorporation should only be done on dry soils;
 - incorporation should only be done on sandy soils;
 - incorporation should be done very shallow (< 2,5 cm deep);
 - the soil should be free of loose stones, clods and free organic matter i.e., cereal straw.
- If **LOGRAN** is to be applied pre-emergence with a wind assisted sprayer the wind action should be turned down completely.

POST-EMERGENCE APPLICATION

- For best post-emergence results apply **LOGRAN** when weeds are young (seedling stage to 5 cm tall) and actively growing under moist conditions. Weeds under drought stress may be less susceptible. **LOGRAN** provides residual control of weeds germinating after spray application provided that it is carried into the root zone of germinating seedlings by adequate rainfall.
- The use of surfactants as recommended in paragraph 7.5 APPLICATION RATES must be used to improve the post-emergence wetting and contact activity of **LOGRAN**.
- **LOGRAN** rapidly inhibits growth of susceptible weeds. However, visible symptoms of dying weeds may not be noticeable for 1 - 3 weeks after application, depending on growing conditions and weed susceptibility.
- The breakdown of **LOGRAN** in the soil slows down as the pH increases (alkaline) and soil moisture decreases.
- **LOGRAN** should not be used on soils where the pH (H₂O) is 7 or higher in order to meet the minimum recropping intervals specified.

7.2 Compatibility

The compatibility of **LOGRAN** with other products may be influenced by the formulation of the products involved as well as the quality of the water. Since the formulation of other products may change without the knowledge of Syngenta and the quality of water may vary from farm to farm, a physical compatibility test should always be carried out prior to application.

LOGRAN is compatible with BRUSH-OFF (L4535), BOXER (L8222), CAMPATOP® 225 EC (L3850) and MCPA (L1404) as recommended on this label. **LOGRAN** may only be mixed with one (1) of the above-mentioned products at a time.

LOGRAN is also compatible with BREAK-THRU (L5895) and COMPLEMENT SUPER (L8169). DO NOT mix with herbicides, insecticides, fungicides, fertilisers or any other chemicals not recommended on this label.

7.3 Mixing Instructions

LOGRAN is a water dispersible granular formulation, which mixes easily with water, provided the following mixing procedures are implemented:

- Quarter to half-fill the spray tank with water. Commence agitation. Add the appropriate amount of surfactant. Add

the required quantity of **LOGRAN** water soluble bags directly to the tank without prior creaming. Continue agitation while topping up the tank with water and while spraying.

- Use **LOGRAN** spray preparations within 24 hours as the effectiveness may be reduced due to product degradation.
- Thoroughly agitate before re-using.
- If **LOGRAN** is tank mixed with other herbicides, insecticides and fungicides, **LOGRAN** must be well-mixed and in suspension before the other compounds are added.

7.4 Application Techniques

7.4.1 Ground application

LOGRAN, **LOGRAN** plus BRUSH-OFF, **LOGRAN** plus CAMPATOP 225 EC and **LOGRAN** plus MCPA may be applied with any medium or high volume sprayer equipped with an efficient agitation mechanism which is capable of adequate coverage and even distribution.

Best results are obtained using flat fan-type spray nozzles and applying a minimum spray volume of 200 ℓ water/ha. Consult the mobile application Cropwise Spray Assist.

To calibrate a knapsack sprayer:

- Mark a representative area of 10 m x 10 m (100 m²) on the soil to be sprayed.
- Fill the sprayer with water up to a calibration mark e.g., 20 litres. Spray the marked area evenly. Calculate the water volume sprayed.
- Add the spray rate e.g., 0.375 g/100 m² to the volume of water applied in the 100 m².

7.4.2 Aerial application (Western- and Eastern Cape)

Aerial application of **LOGRAN** and **LOGRAN** plus BRUSH-OFF may only be done by a registered aerial application operator using a correctly calibrated, registered aircraft according to the instructions of SANS 10118 (Aerial Application of Agricultural Remedies). It is important to 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:

a) Application parameters

- **Volume:** A volume of 30 ℓ/ha (pre-emergence) and 35 ℓ/ha (post-emergence) 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:** A droplet coverage of 20 - 30 droplets per cm² (pre-emergence) and 30 - 45 droplets per cm² (post-emergence) must be recovered at the target.
- **Droplet size:** A droplet spectrum with a VMD of 350 - 400 microns (pre-emergence and 300 - 350 microns (post-emergence) is recommended. Ensure that the

production of fine droplets (less than 150 microns - high drift and evaporation potential) is restricted to a minimum.

- **Flying height:** The height of the spray boom should be maintained at 3 - 4 metres above the target. Do not spray when aircraft is in a climb, at the top, during a dive, or when banking.

b) Equipment:

- Use suitable atomising equipment (hydraulic nozzles or rotary atomisers) that will produce the desired droplet size and coverage, but which will ensure the minimum loss of product either through endo-drift (within target field) or exodrift (outside target field).
- The operator must use a set up that will produce a droplet spectrum with the lowest possible relative span.
- All nozzles/atomisers should be positioned within the inner 60 - 75% of the wingspan to prevent droplets from entering the wingtip vortices.

c) Meteorological conditions:

- The difference in temperature between the wet and dry bulb thermometers, of a whirling hygrometer, should not exceed 8°C. The addition of a suitable anti-evaporant is recommended if the VMD of the droplets is less than 200 - 250 microns.
- Stop spraying if the wind speed exceeds 15 km/h.
- Aerial application of this product must not be done under turbulent, unstable conditions during the heat of the day when rising thermals and downdraughts occur.
- Also note that the application of this product under temperature inversion conditions (spraying in or above the inversion layer) 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 the movement of the suspended spray cloud away from the target field.

LOGRAN and **LOGRAN** plus BRUSH-OFF may be applied aerially provided that the spray mixture is distributed evenly over the target area and the loss of spray material during application is restricted to a minimum.

It is essential to obtain assurance from the aerial spray operator that the above requirements are met.

7.5 Application Rates

7.5.1 General weeds and pre-plant situations

When weeds have emerged at planting, **LOGRAN** and **BOXER** plus **LOGRAN** can be applied in tank mixtures with either **TOUCHDOWN FORTE HITECH**, **GRAMOXONE** or **PREEGLONE** to control the emerged weeds.

For the application rates of **TOUCHDOWN FORTE HITECH**, **GRAMOXONE** or **PREEGLONE** refer to the relevant registered labels.

7.5.2 Pre-emergence applications: General weed control

TABLE 1: APPLICATION RATES OF LOGRAN FOR PRE-EMERGENCE APPLICATIONS:

LOGRAN can cause serious damage to barley. Care should be taken not to over apply **LOGRAN** due to calculation errors or double applications e.g., overlapping.

Crop	LOGRAN
	Ground application
Barley Wheat	37.5 g/ha
Knapsack sprayer: Barley/wheat: 0.375 g LOGRAN/100m ²	

7.5.3 Pre-emergence applications: General weed control and *Lolium multiflorum* control

LOGRAN can cause serious damage to barley. Care should be taken not to over apply **LOGRAN** plus BOXER due to calculation errors or double applications e.g., overlapping.

TABLE 2: PRE-EMERGENCE APPLICATION RATES OF BOXER PLUS LOGRAN IN WHEAT AND BARLEY:

Crop	BOXER	LOGRAN
Barley Wheat	3 ℓ/ha	30 - 37.5 g/ha
<i>Anagallis arvensis</i> <i>Arctotheca</i> spp <i>Chenopodium muralis</i> <i>Coronopus didymus</i> <i>Cotula australis</i> <i>Emex australis</i> (65-90%) <i>Erodium moschatum</i> <i>Fumaria muralis</i> <i>Galium</i> spp. <i>Lolium multiflorum</i> <i>Medicago polymorpha</i> <i>Phalaris canariensis</i> <i>Polygonum aviculare</i> <i>Raphanis raphanistrum</i> <i>Silene</i> spp. <i>Vulpia myuros</i>	scarlet pimpernel Cape marigold nettled leave goosefoot twin cress brass buttons spinney Emex Musk heron's bill fumitory Gallium Italian ryegrass bur clover canaryseed grass prostrate knotweed wild radish gunpowder weed rat's tail Fescue	
Development farmers and backpack sprayers: Barley/wheat: 30 ml BOXER + 0.30 - 0.375 g LOGRAN/100 m ²		
<ul style="list-style-type: none"> Care should be taken to cover seed completely with 2 - 3 cm of soil after planting before the application of LOGRAN plus BOXER. Follow the RECOMMENDATIONS on the BOXER label carefully. 		

7.5.4 Post-emergence applications: General weed control

TABLE 3: POST-EMERGENCE APPLICATION RATES OF LOGRAN PLUS BRUSH-OFF OR CAMPATOP 225 EC OR MCPA:

Crop	LOGRAN/ha	
	Ground application	Aerial application
Barley Oats Wheat (Western- and Eastern Cape)	13 g	13 - 15 g

TABLE 3 cont.

	<ul style="list-style-type: none"> Use 13 g/ha for aerial application if <i>R. raphanistrum</i> does not exceed the 4-leaf stage. Apply LOGRAN when barley, oats and wheat are in the 2 - 6-leaf stage. 	
Crop	LOGRAN/ha	
	Ground application	Aerial application
Barley Oats Wheat (Western- and Eastern Cape) Wheat (Eastern Free State)	13 g plus 0.6 - 0.75 ℓ/ha CAMPATOP 225 EC	NOT RECOMMENDED
	<ul style="list-style-type: none"> A tank mixture of 13 g LOGRAN and 0.6 ℓ/ha CAMPATOP 225 EC can be used in the Western- and Eastern Cape if <i>E. australis</i> is in the cotyledon (3-leaf stage). Use the higher application rate of CAMPATOP 225 EC (0.75 ℓ/ha) in the Western- and Eastern Cape and in the Eastern Free State if <i>E. australis</i> is more advanced than the 3-leaf stage. 	
Crop	LOGRAN/ha	
	Ground application	Aerial application
Barley Wheat (Western- and Eastern Cape)	13 g plus 3 g BRUSH-OFF	15 g plus 3 g BRUSH-OFF
	<ul style="list-style-type: none"> If <i>E. australis</i> is present use LOGRAN in a tank mixture with BRUSH-OFF. To reduce the resistance risk to the sulfonylurea group of herbicides, substitute LOGRAN every third year with LOGRAN plus MCPA mixture for the control of <i>R. raphanistrum</i>. 	
Crop	LOGRAN/ha	
	Ground application	Aerial application
Wheat (Eastern Free State)	15 g plus 2 - 4 ℓ/ha MCPA	NOT RECOMMENDED
	<ul style="list-style-type: none"> Use LOGRAN plus MCPA for the control of <i>C. album</i> in the Eastern Free State. Apply between growth stage 7 (centre double ridges enlarged) and 13 (awn of the top spikelets elongated) according to the list of growth stages of the ARC-Small Grain Institute, Bethlehem. 	

General Remarks

- The post-emergence application of **LOGRAN** should always be sprayed in a tank mix with one (1) of the following adjuvants:
 - COMPLEMENT SUPER: 100 ml/ha
 - BREAKTHRU: 50 ml/100 ℓ spray mixture
- Add COMPLEMENT SUPER to the post-emergence applications of **LOGRAN** plus CAMPATOP 225 EC as well as **LOGRAN** plus BRUSH-OFF treatments.

- For maximum weed control or suppression apply **LOGRAN**, **LOGRAN** plus BRUSH-OFF or **LOGRAN** plus CAMPATOP 225 EC to young weeds, preferably within four (4) weeks after emergence of the crop.
- Degree of control and duration of effect depends on weed species, weed size, growing conditions at and following the period of application, soil pH, rainfall and soil organic matter content.
- Apply **LOGRAN** plus CAMPATOP 225 EC and **LOGRAN** plus MCPA in the Eastern Free State from early September after good spring rains provided that the temperature exceeds 10°C for three (3) consecutive days.

8. SPRAYER CLEANUP:

Special care must be taken to clean spray equipment immediately after spraying **LOGRAN**. To avoid injury to subsequent crops other than barley, oats or wheat, ensure that all traces of **LOGRAN** are removed as follows:

- Drain spray system completely. With agitation running, thoroughly rinse tank with clean water and spray out rinsate through the nozzles. Drain system again.
- Refill tank with clean water to approximately 15 - 20% of the tank capacity, thoroughly rinsing all inside tank surfaces.
- With agitation running add 1 ℓ sodium hypo-chloride (5.2%) per 200 ℓ of water. Spray out the rinsate through the nozzles for approximately one (1) minute. Let remaining rinsate circulate within the spray system for a minimum of 5 - 10 minutes.
- To remove traces of the tank cleaner, flush the tank thoroughly with clean water, rinsing all inside tank surfaces.
- Spray out the remaining rinsate through the nozzles and drain system.

9. PRODUCT AND CONTAINER DISPOSAL:

- Dispose of surplus product in an incinerator or a landfill site approved for pesticides.
- Do not bury in, or spray onto any area under agricultural use.
- Dispose of containers made of plastic, cardboard or paper to a landfill site approved for pesticides.

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