

Agri
NOVAGENIX

GRAPPLER

Reg. No. / Nr 11922 Act No. 36 of 1947 / Wet Nr 36 van 1947

READ THE LABEL BEFORE USE
KEEP OUT OF REACH OF CHILDREN AND ANIMALS

GROUP

15

HERBICIDE

An emulsifiable concentrate herbicide for the selective control of certain annual grasses and broadleaf weeds in the crops as indicated.

'n Emulgeerbare konsentraat onkruidodder vir die selektiewe beheer van sekere eenjarige grasse en breëblaaronkruid in die gewasse soos aangedui.

DANGER



In case of poisoning, call the following number: Poisons Information Helpline: +27 861 555 777
EMERGENCY NUMBER: +27 82 446 8946

Hazard statements

Causes mild skin irritation. Causes serious eye damage. May cause an allergic skin reaction. May be fatal if swallowed and enters airways. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Precautionary statements

Avoid breathing fume/mist/vapours/spray.
IF SWALLOWED: Get emergency medical help immediately.
IF ON SKIN: Wash with plenty of water and soap.
IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Active Ingredient / Aktiewe Bestanddeel

Prosulfocarb (thiocarbamate).....contains 800 g a.i. per l.....Prosulfocarb (tiocarbamaat)

Net volume l Netto volume

Batch No./Date manufactured/Expiry date: Refer to details printed on container.
UN No. / VN Nr. 3082

REGISTRATION HOLDER / REGISTRASIEHOUER:

Novagen Innovations (Pty) Ltd / (Edms) Bpk t/a Agri Novagenix
Reg. No. 2020/891524/07
6 Antwerp Street, Apex, Benoni, 1540, South Africa / Suid-Afrika



WARNINGS

- GHS Hazard statements

Causes mild skin irritation.
Causes serious eye damage.
May cause an allergic skin reaction.
May be fatal if swallowed and enters airways.
Very toxic to aquatic life.
Toxic to aquatic life with long lasting effects.

Allow the following number of days between the last treatment and harvest or use as food or feed:

Wheat (animal feed).....84 days*
Barley 83 days*
Lupins for grazing and harvest for feed.....127 days
Lupins for harvest.....Not required when used as directed

* When applied in combination with registered diflufenican, a period of at least 120 days between application and harvest or feeding must be allowed.

IMPORTANT: The recommended withholding period between the last application and harvest meets local residue requirements but may not meet export requirements. However, it is important to note that import tolerances of other countries might potentially be exceeded. If the treated crop will be exported, first consult the relevant importer or exporting body regarding the use of this product, MRL's and recommended withholding periods.

- Repeated exposure may cause skin dryness or cracking.
- Irritating to respiratory system.
 - Harmful: may cause lung damage if swallowed.
 - Vapours may cause drowsiness and dizziness.
- Do not contaminate dams, rivers, lakes, or any other water sources.
- Store under lock and key in the original container in a cool, dry, well-ventilated place out of direct sunlight.
- Do not eat, drink or smoke when in use.
- Store away from food, feed, fertilizer, and seed.
- Keep out of reach of children, uninformed persons, and animals.
- **Re-entry:** Do not enter a treated area within 2 days after treatment unless wearing protective clothing.
- **GRAPPLER** has been tested on some of the most important commercial cultivars without any phytotoxic effects. More susceptible cultivars may be released in the future which will need to be tested. For this, apply **GRAPPLER** to a limited test area before any commercial applications are made.
- **In case of poisoning immediately call a physician and make this label available to him/her.**

DISCLAIMER

Although this remedy has been 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 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 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

- GHS Precautionary statements

If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read carefully and follow all instructions.
Wash hands thoroughly after handling. Do not touch eyes.
Avoid breathing fume/mist/vapours/spray.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
Wear protective gloves/ protective clothing/ eye protection/face protection.
IF SWALLOWED: Get emergency medical help immediately.
IF ON SKIN: Wash with plenty of water and soap.
IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get medical help.
Specific treatment (see FIRST AID TREATMENT on this label)
Do NOT induce vomiting.
If skin irritation or rash occurs: Get medical help.
Take off contaminated clothing and wash it before reuse.
Collect spillage.
Store locked up.
Dispose of contents/container in accordance with national regulations.

- OPERATOR PROTECTION

- Handle with care.
- Do not inhale spray mist or vapours.
- Wash with soap and water after use and accidental skin contact as well as contact with contaminated clothing.
- Should eye contact occur, flush the eyes with plenty of clean water for 15 minutes holding eyelids open. Remove contact lenses after five minutes of irrigation. Seek medical attention if irritation persists.
- Avoid any contact of skin, eyes or clothing with concentrate or spray mixture.
- Wear personal protective equipment (PPE) i.e. impermeable gloves, overalls, and eyes/face protection, hat or cap, and solid footwear during transferring, mixing, application and handling of the product. Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.
- Discard clothing or other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. DO NOT reuse them.
- Only handlers wearing PPE may be in the area being treated during application.
- Spray strictly with the wind to prevent prolonged or repeated exposure to the spray mist.
- Wash contaminated clothing after use.
- Do not eat, drink, or smoke while mixing or applying the product or before washing hands and face.
- DO NOT use in residential areas. Residential areas are defined as any use site where bystanders or the public, including children, could be exposed during or after application. This

includes areas in and around homes, schools, public buildings, or any other areas where they could be exposed.

- Apply only to agricultural crops when the potential for drift to areas of human habitation and human activity, such as houses, cottages, schools and recreational areas, is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment, and sprayer settings.
- ENVIRONMENTAL PROTECTION
 - Do not contaminate dams, rivers, lakes, or any other water sources.
 - Avoid drift of spray onto other crops, grazing, rivers, dams, and areas not under treatment.
 - Clean the applicator with clean water directly after use. Dispose of the rinsate where it will not contaminate crops, grazing, rivers, dams, and boreholes.
- STORAGE AND DISPOSAL
 - Store under lock and key in the original container in a cool, dry, well-ventilated place out of direct sunlight.
 - Store away from food, feed, fertilizer, and seed.
 - **KEEP OUT OF SIGHT AND REACH OF CHILDREN**, uninformed persons, untrained personnel, unauthorised personnel and animals.
 - Do not allow access to this product by children, uninformed persons, untrained personnel, unauthorised personnel, or animals under any circumstances.
 - Prevent contamination of food, feeds, drinking water and eating utensils.
 - Containers and packages must be completely emptied before disposal.
 - **TRIPLE RINSE THE EMPTY CONTAINER AS FOLLOWS:** Invert the empty container over the spray or mixing tank and drain for at least 30 seconds after the flow has slowed down to dripping. Thereafter, rinse the empty container three times in succession with one quarter of the container volume fresh water and decant the rinsate into the spray or mixing tank. Destroy the triple rinsed container by perforation and flattening and do not use for any other purpose. Store appropriately until it can be disposed of via an approved collector or recycler authorised to recycle or destroy waste in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and the relevant waste management regulations. Empty containers and product should not be burnt. Do not bury, burn or donate the container to any other parties that may use it as a container for food or beverages.

RELEVANT SUBSTANCES

Hazardous Ingredients	Concentration (w/v)
Prosulfocarb	80%
Calcium dodecylbenzene sulphonate	>1-<10%
Solvent naphtha (petroleum), heavy aromatic	>1-<15%

FIRST AID TREATMENT

If medical advice is needed, have product container or label at hand. Provide medical personnel with the product container, label or safety data sheet (SDS) when seeking medical attention. This product contains an aromatic solvent.

General Information: Remove patient from exposed area. Never give fluids or induce vomiting if the patient is unconscious or is having convulsions. Aspiration may cause pulmonary oedema and pneumonitis. Irritating to skin. Skin dryness or cracking. Drowsiness and dizziness.

Inhalation: Remove victim to fresh air. Keep patient calm. Monitor for respiratory distress. If breathing

is irregular or stopped, apply artificial respiration. If mouth to mouth resuscitation is given use rescuer protection (pocket mask etc.). Keep the patient warm and at rest. **Seek medical attention.**

Skin contact: Immediately remove contaminated clothing and flush body and clothes with large amounts of water. Wash thoroughly with soap and water (including hair, skin, and fingernails) Wash contaminated clothing before re-use. Persons providing first aid must wear gloves to avoid self-contamination. **Seek medical attention.**

Eye contact: Flush eyes immediately with plenty of clean, room temperature water for at least 15 minutes holding eyelids open. Remove contact lenses if present, after the first 5 minutes, then continue rinsing eyes. **Seek medical attention.**

Ingestion: Wash out the patient's mouth if the patient is alert and able. Do **NOT** induce vomiting. **Seek medical attention.**

No specific antidote known. Treat symptomatically and supportively. For further information on the treatment of poisoning refer to the product Safety Data Sheet provided.

RESISTANCE MANAGEMENT WARNING STATEMENT

For resistance management, **GRAPPLER** is a group code 15 herbicide. Any weed population may contain individuals naturally resistant to **GRAPPLER** and other group code 15 herbicides. These resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds may not be controlled by **GRAPPLER** or any other group code 15 herbicide.

To delay herbicide resistance:

- Avoid the exclusive repeated use of herbicides from the same herbicide group code. Alternate, or tank mix, with registered products from different herbicide group codes. Large numbers of healthy surviving weeds can be an indication that resistance is developing. Efforts should be taken to prevent seed set of these survivors.
- Integrate other control methods (such as chemical, cultural, biological) into weed control programmes.
- Refer to the Herbicide Resistance Action Committee for information regarding any applicable resistance management of group 15 herbicides at <https://hracglobal.com/> for more information.
- Avoid distribution of the resistant species to adjacent fields by implements during the cultivation period.
- Prevent movement of resistant weed seeds and vegetative material to other fields by cleaning harvesting and tillage equipment and planting clean seed.
- Inspect each land annually in order to identify the development of resistance early.
- This crop and resistance management strategy should always include sequences with herbicides of alternative modes of action.
- **GRAPPLER** 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.
- **GRAPPLER** should be used as a tool to manage grass weed populations in order to:
 - Prevent or delay resistance to products of various chemical classes.
 - Control various levels of resistance to different products and chemical classes e.g. mainly class 1 (Fops and Dim's) and class 2 (Sulfonyl ureas).

As the occurrence of resistance cannot be forecast, users are advised to keep all treated crops under

close observation. If the treatment is not effective following the use of **GRAPPLER** as recommended, a resistant strain may be present. If a resistant strain is positively identified, consideration should be given to the prompt use of a herbicide with a different mode of action against which no record of resistance exists.

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

The presence of resistant weeds is difficult to detect prior to use and therefore neither the Registration Holder nor the Distributor can accept responsibility for any losses as a result of **GRAPPLER** not controlling resistant weeds. Do not apply **GRAPPLER** alone in situations where weed resistance has been confirmed. Sub-standard application of **GRAPPLER** or other group code 15 herbicides will lead to inferior weed control and may assist in development of herbicide resistance.

MODE OF ACTION

Prosulfocarb is a S-benzyl thiocarbamate herbicide which is absorbed by the leaves and roots, and acts by inhibiting lipid synthesis in the meristematic region. In particular, prosulfocarb inhibits fatty acid elongase enzymes, causing the alteration of cell membranes and disruption of vital cell functions. Prosulfocarb also affects the development of cutin and suberin, two waxy polymers that help to form plant cuticles. Thereby, meristems are inhibited, root and shoot development is stunted, new leaves fail to emerge from coleoptiles and shoots twist and turn dark green.

GENERAL INFORMATION

- **GRAPPLER** is specifically aimed at the control of annual ryegrass (*Lolium* spp.) resistant to the post-emergence grass herbicides ("fops" and "dims") and the sulfonyl urea herbicides. Control of between 70% and 90% of annual ryegrass can be expected if this product is used together with registered trifluralin 480 EC as instructed.
- Registered triasulfuron 750 WG can be added as instructed under "**APPLICATION RATES**" below to the tank mixture for improved control of broadleaf weeds.

DIRECTIONS FOR USE - Use only as directed.

NOTICE TO USER: This agricultural remedy is to be used only in accordance with the instructions on the label. It is an offence under Act No. 36 of 1947 to use this agricultural remedy for any purpose in any manner contrary to the directions on the label.

WAITING PERIOD FOR FOLLOW-UP CROPS:

- To avoid injury to subsequent crops the following re-cropping intervals should be observed after applications of **GRAPPLER**.

CROPS	GRAPPLER (months)
Wheat	0
Canola	11
All other crops	24

A test planting is required in all cases.

The above-mentioned waiting periods are valid only if:

- The correct dosage of **GRAPPLER** alone, or in combination with complementary agricultural remedies was applied.

- Normal, or above average rainfall occurred during, and following, the season in which the application was made.
- When using registered sulfosulfuron 750 WG in combination with **GRAPPLER** and registered triasulfuron 750 WG the rotational cropping interval of 18 months for all crops, other than wheat, as described on the registered sulfosulfuron 750 WG label should be adhered to.
- When **GRAPPLER** is used in a tank mixture with another agricultural remedy, the waiting period of that agricultural remedy with respect to follow-up crops, if longer than what is listed above, must be adhered to.

COMPATIBILITY

The compatibility of **GRAPPLER** with other products depends on the formulations of the respective products as well as the quality of the spray water to be used. As formulations change from time to time it is recommended that a physical compatibility test be done prior to the tank mixture being made. **GRAPPLER** is compatible with registered diflufenican 500 SC, registered triasulfuron 750 WG, registered sulfosulfuron 750 WG, registered trifluralin 480 EC. All WARNINGS, PRECAUTIONS, USE RESTRICTIONS and DIRECTIONS FOR USE on the product labels must be fully adhered to. Consult the relevant labels for full details. **GRAPPLER** should not be mixed with products other than those specifically listed in this label.

USE RESTRICTIONS

- Do not apply **GRAPPLER** on fields where the wheat, barley or lupins might grow under stress e.g. fields that are prone to water logging, frost prone areas, very low temperature or drought or when soil is known to have high levels of nematodes.
- Registered trifluralin 480 EC products are decomposed by sunlight. Therefore, the applied product must be covered soil within 10 minutes following application.
- Do not use in seeding/tillage systems that cannot ensure accurate seed placement and adequate spatial separation of seed and herbicide.
- Do not apply the spray mixture directly onto the wheat, barley, or lupin seed. Thus do not allow the wheat seed to germinate on the surface of the soil. It should be covered by 2 - 3 cm of soil before the application of **GRAPPLER**.
- Under certain conditions, crop damage may occur. See "crop damage" below. **GRAPPLER** applied alone or in tank mixture may cause retarded crop emergence, chlorosis (yellowing) or a reduction in crop stand. The crop should, however, recover without any adverse effect on the yield obtained.
- DO NOT apply if heavy rains or storms that are likely to cause runoff are forecast within 2 days of application.
- DO NOT irrigate treated fields to the point of run off within three days of application.
- **Lupins:** Do **NOT** apply more than 2.5 l/ha per single growing season.
- Do not apply **GRAPPLER** to any crop or situation not mentioned in this instruction leaflet.
- Only apply **GRAPPLER** using an accurate and safe application technique.
- If **GRAPPLER** is used in a tank mix with other recommended remedies, consideration should be given to the restrictions of those respective products.
- Do not apply this product in combination or tank mixture with any other product or agricultural remedy which is not specifically listed on this label. Novagen Innovations (Pty) Ltd t/a Agri Novagenix accepts no responsibility for any negative effects experienced if the instructions on this label are not adhered to, unless an Agri Novagenix representative was consulted beforehand.
- By buying this product, the buyer undertakes that the user is fully aware of and suitably trained on the hazards associated with the preparation and use of this product. By selecting this product voluntarily, the user assumes responsibility for his or her own personal protection whilst storing, mixing, and applying the product in the approved manner according to the instructions for use. The user also confirms to have consulted the SDS of this product and he/she is aware of the potential

health hazards which could arise out of use and misuse of this product. Users are encouraged to keep records of all procedures followed and which personal protection equipment was used at all times. All personal protection equipment used must be kept clean and in good working order according to the manufacturer's specifications. Novagen Innovations (Pty) Ltd accepts no responsibility for any adverse effects experienced if the instructions on this label are not adhered to or resulting from improper use of this product or the use of unsuitable personal protection equipment. The user has selected to use this product at his/her own free will and risk.

CROP TOLERANCE

The selectivity of **GRAPPLER** is a combination of positional and physiological selectivity. Positional selectivity must be maintained by sowing at an adequate depth below the herbicide band. The physiological selectivity of **GRAPPLER** is given by the ability of crops to metabolise the herbicide to inactive compounds more rapidly than susceptible weed species. Environmental factors such as rainfall events following application and soil type will influence the product movement into the seed zone. Crop injury may occur when used in sandy soils with high leaching potential or in all soil types when heavy rainfall is received between sowing and emergence. Crop injury may also result from tank mixes with other herbicides. Shallow seeding is not recommended due to the greater potential for movement of herbicide within close proximity of the emerging crop. Conditions resulting in poor root development or the occurrence of crop stresses including waterlogging, drought, frost, nutrient deficiency or disease can result in unacceptable crop damage and yield loss as a result of root uptake of herbicide. Although crop tolerance has been clearly demonstrated in a wide range of registered crop cultivars, differences in relation to the tolerance of recent and future release cultivars may exist. Risk of crop damage may be exacerbated where varieties with short coleoptile length are planted in conjunction with the use of some fungicide seed treatments.

MIXING INSTRUCTIONS

Half-fill the spray tank with suitable water. Add the required quantity of **GRAPPLER** to the tank. Fill the spray tank to the required volume with suitable water while maintaining agitation. Do not use brackish water. Should tank mixtures with other products be made, follow the respective manufacturer's label recommendations. **Ensure thorough agitation of the mixture in the tank during mixing and application.**

Tank mixtures must be sprayed out immediately and not allowed to stand in the spray tank overnight. Spraying equipment must be thoroughly flushed out at the end of the spraying operation as described above.

Ensure that spray premixes and/or final spray mixtures are kept out of reach of children, uninformed persons, untrained personnel, unauthorised personnel and animals.

APPLICATION METHODS

The spray equipment must be accurately calibrated prior to and during the application of **GRAPPLER**. Ensure full and even coverage of the target area and use only clean, suitable water for application.

- Apply **GRAPPLER** at planting or within 2 days after planting but definitely pre-emergence of the crop and weeds.
- **GRAPPLER must be incorporated into the soil within 7 days of application.**
- Moisture is necessary to activate **GRAPPLER** following application. Dry weather following application may reduce efficacy. If adequate moisture is not received following a **GRAPPLER** application, weed control may be improved by irrigation.

- The product must be applied to a moist, smooth seedbed free of soil clods and emerged weeds.
- Product efficacy may be reduced by improper incorporation, high levels of crop or trash residues, stones or foreign matter and in areas of extremely high weed seed density such as header rows.
- For optimal efficacy and crop safety in barley, wheat, and lupins avoid shallow seeding and ensure accurate seed placement that avoids placement of seed in the herbicide band.
- Avoid water repellent soils, soils subject to water logging or where furrow walls are likely to collapse. Duration and effectiveness of weed control will depend on use rate, soil type and rainfall or irrigation after application. Adequate rainfall or irrigation should occur within 10 days of application, as this herbicide requires sufficient available soil moisture to ensure soil movement and uptake by emerging weed seeds.

Tractor application:

GRAPPLER may be applied with any medium to high volume boom sprayer equipped with an efficient agitation mechanism. Choice and arrangement of flat fan-type spray nozzles should be such as to ensure even distribution and optimal recovery of the herbicide. For optimal control a water volume of at least 200 l/ha should be used.

Incorporation and tillage:

IBS with knife or blade points: Working speed should ensure adequate incorporation of product but avoid soil throw into the adjacent seeding row. Use of press wheels will minimise potential for herbicide to be dragged back into seeding rows. Weed control may be reduced in seeding rows as a result of concentration of herbicide in crop inter-rows. A knife or blade point is defined as being <12 mm in width, having no wings, inverted T or blade and is generally on a minimum 200 mm row spacing.

Full disturbance or conventional cultivation, including trailing harrows/prickle chain. Care should be taken to ensure seed placement below the herbicide band as crop damage may result where seed is sown too shallow. **PRODUCT MUST BE INCORPORATED INTO THE SOIL WITHIN 7 DAYS OF APPLICATION, OR WITHIN 10 MINUTES OF APPLICATION IF APPLIED IN TANK MIXTURE REGISTERED TRIFLURALIN 480 EC.**

APPLICATION RATES

General weeds and pre-plant situations

When weeds have emerged at planting, **GRAPPLER** alone or in the tank mixtures as mentioned below can be applied in tank mixtures with products to control already emerged weeds.

PRE-EMERGENCE APPLICATION RATES OF GRAPPLER + REGISTERED TRIASULFURON 750 WG

CROP	DOSAGE RATES	REMARKS
Wheat and Barley	3 l/ha GRAPPLER + 30 g/ha registered triasulfuron 750 WG	All treatments to be applied pre-plant, pre-emergence.

PRE-EMERGENCE APPLICATION RATES OF GRAPPLER + REGISTERED DIFLUFENICAN 500SC

CROP	DOSAGE RATES	REMARKS
Wheat and Barley	3.0 l / ha GRAPPLER + 200 ml /ha registered diflufenican 500 SC	All treatments to be applied pre-plant, pre-emergence.

PRE-EMERGENCE APPLICATION RATES OF GRAPPLER + REGISTERED TRIFLURALIN 480 EC

CROP	DOSAGE RATES	REMARKS
Wheat and Barley	Pre-plant application: 2.0 l / ha GRAPPLER + 1.5 l/ha registered trifluralin 480 EC OR 2.0 l / ha GRAPPLER + 1.5 l/ha registered trifluralin 480 EC + 30 g/ha registered triasulfuron 750 WG	All treatments to be applied pre-plant, pre-emergence.
	Split pre- and post-plant application 1.5 l/ha registered trifluralin 480 EC pre-plant followed post plant* by 2.0 l / ha GRAPPLER OR 2.0 l / ha GRAPPLER + 30 g/ha registered triasulfuron 750 WG	Recommended under high ryegrass infestation pressure and for improved control of weeds within the row. Apply registered trifluralin 480 EC pre-plant and follow-up within 3 days after planting with GRAPPLER , pre-emergence of the weeds. Registered triasulfuron 750 WG can be added to the post-plant application for improved broadleaf weed control.

* Post-plant application (within 2 to 3 days after planting), but still pre-emergence of weeds and crop.

APPLICATION RATES OF GRAPPLER + REGISTERED TRIASULFURON + 750 WG + REGISTERED SULFOSULFURON 750 WG APPLIED PRE-EMERGENCE

CROP	Treatments				
	GRAPPLER	PLUS	Registered triasulfuron 750 WG	PLUS	Registered sulfosulfuron 750 WG
Wheat	3 l/ha		30 g/ha		40 g/ha

APPLICATION RATES OF GRAPPLER + REGISTERED TRIASULFURON + 750 WG + REGISTERED SULFOSULFURON 750 WG APPLIED PRE-EMERGENCE FOLLOWED POST EMERGENCE BY REGISTERED SULFOSULFURON 750 WG

Pre-emergence application:

CROP	Treatments				
	GRAPPLER	PLUS	Registered triasulfuron 750 WG	PLUS	Registered sulfosulfuron 750 WG

Wheat	3 l/ha		30 g/ha		20 g/ha
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FOLLOWED BY

Post-emergence application:

CROP	Treatment
	Registered sulfosulfuron 750 WG
Wheat	20 g/ha

NOTES:

- The weed spectrum for registered sulfosulfuron 750 WG would apply as described in the registered sulfosulfuron 750 WG label.
- Weed growth stage – the second application of registered sulfosulfuron 750 WG should be done at the 2 leaf stage of the *Bromus diandrus* seedlings- see the registered sulfosulfuron 750 WG label for detailed instructions.
- When **GRAPPLER** plus registered triasulfuron 750 WG is included in a tank mix with registered sulfosulfuron 750 WG, all warnings, restrictions and directions on all labels do apply.

PRE-EMERGENCE APPLICATION OF GRAPPLER IN LUPINS

CROP	DOSAGE RATE / HA	REMARKS
Lupins	2.5 l	Apply as a pre-emergence application to the soil surface up to 7 days prior to sowing and incorporate mechanically by the sowing operation (IBS). Application should be made to a moist seedbed up to 7 days prior to sowing and sufficient rain to thoroughly wet the top 3 to 4 cm of soil should occur within 10 days after spraying. Accuracy of seed placement is critical in ensuring crop selectivity. Unacceptable crop injury, including a reduction in crop vigour and yield loss, may occur where adequate positional selectivity of the herbicide is not maintained or where heavy rainfall occurs during the early stages of crop establishment. Avoid soil throw into adjacent seeding rows or sites where furrow walls may collapse. Shallow sowing is not recommended due to the greater potential for movement of herbicide within close proximity of the emerging crop, especially in sandy soils. Application of GRAPPLER to crops sown in soils of high leaching potential and those low in clay or organic matter may results in crop damage, especially in the event of heavy rainfall during the early stages of establishment. Conditions resulting in poor root development and the occurrence of crop stresses including waterlogging, drought, nutrient deficiency or disease may result in unacceptable crop damage where adequate positional selectivity of the herbicide has not been maintained. Avoid double spraying (over-lapping) of the crop with herbicide, including on headlands. Late germinating weeds may not be adequately controlled

		and a post-emergent graminicide or registered spray-topping herbicide treatment may be required to control later germinating weed cohorts or to reduce weed seed set.
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Remarks:

Care should be taken to cover the crop seed completely with 2-3 cm of soil after planting before the application of **GRAPPLER** alone and in tank mixture. Follow the recommendations on the registered tank mixture partner labels carefully.

Follow the recommendations of the all tank mixture partners labels carefully.

- It is of utmost importance that **GRAPPLER** is applied to a well prepared, firm seedbed that is free of weeds, clods and stones. The presence of clods and stones will lead to irregular control.
- Weeds that have germinated will not be adequately controlled.
- During the application of **GRAPPLER** alone and in tank mixture take care that no multiple applications or overlapping of the spray boom takes place as this would increase the possibility of crop damage.
- **GRAPPLER** alone and in tank mixture should be used as part of an appropriate management strategy, including sequences with herbicides of alternative modes of action e.g. fops and dims.
- Application of **GRAPPLER** alone and in tank mixture is recommended pre-emergence of both the crop and the weeds.
- The use of **GRAPPLER** alone and in tank mixture can also be recommended for pre-emergence control of ALS/ACCase resistant grasses e.g. *Lolium* spp. and general broadleaf weeds.
- **GRAPPLER** alone and in tank mixture should preferably be applied at planting or within 2 days after planting.
- Crop seed should be adequately covered by 2 – 3 cm of soil after planting or sowing.
- **Crop damage:**
 - **GRAPPLER** applied alone and in tank mixture pre-emergence may slow crop emergence or even reduce the crop stand or cause yellowing. These effects are transient, the crop recovers quickly and should not affect the yield adversely.
 - This recovery can be attributed to the ability of the crop to compensate by increased tillering and ear numbers.
- **GRAPPLER applied alone and in tank mixture may result in reductions in plant emergence:**
 - Under wet and cold conditions especially after excessive rain showers (>40 mm)
 - Or when seed germinate on the surface of the soil (inadequate coverage or incorporation when seeding).
- The possibility of crop damage is greatly reduced when wheat seed is planted with a wheat planter. Crop damage may be more frequent when seed is sown by means of broadcasting especially when seed is inadequately covered by soil after sowing.
- Various external stress e.g. high rainfall or cold weather snaps would cause increased herbicidal damage and cannot be attributed to only **GRAPPLER** alone and in tank mixture.

WEEDS CONTROLLED:

2.5 L/ha GRAPPLER

Scientific name	Common name
<i>Chenopodium album</i>	White goosefoot

GRAPPLER + registered triasulfuron 750 WG

Scientific name	Common name
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Arctotheca</i> spp.	Cape marigold
<i>Chenopodium album</i>	White goosefoot
<i>Coronopus didymus</i>	Twin cress
<i>Cotula australis</i>	Brass buttons
<i>Emex australis</i> (65 – 90%)	Spiny Emex
<i>Erodium moschatum</i>	Musk heron's bill
<i>Fumaria</i> sp.	Fumitory
<i>Galium</i> spp.	Gallium
<i>Lolium</i> spp.	Ryegrass
<i>Medicago polymorpha</i>	Bur clover
<i>Phalaris canariensis</i>	Canary seed grass
<i>Polygonum aviculare</i>	Prostrate knotweed
<i>Raphanus raphanistrum</i>	Wild radish
<i>Silene</i> spp.	Gunpowder weed
<i>Vulpia myuros</i>	Rat's tail Fescue

Refer to the relevant registered triasulfuron 750 WG label for a list of additional weeds which will be controlled.

GRAPPLER + registered triasulfuron 750 WG + registered sulfosulfuron 750 WG

Scientific name	Common name
<i>Bromus diandrus</i>	Ripgut brome
<i>Chenopodium album</i>	White goosefoot
<i>Emex australis</i>	Spiny Emex
<i>Lolium</i> spp.	Ryegrass

Refer to the relevant registered sulfosulfuron 750 WG label for a list of additional weeds which will be controlled.

GRAPPLER + registered diflufenican 500 SC

Scientific name	Common name
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Bromus diandrus</i>	Ripgut brome
<i>Chenopodium album</i>	White goosefoot
<i>Polygonum aviculare</i>	Prostrate knotweed
<i>Lolium</i> spp.	Ryegrass
<i>Raphanus raphanistrum</i>	Wild radish

Refer to the relevant registered diflufenican 500 SC label for a list of additional weeds which will be controlled

GRAPPLER + registered trifluralin 480 EC

Scientific name	Common name
<i>Lolium</i> spp.	Ryegrass
<i>Bromus diandrus</i> *	Ripgut brome
<i>Avena fatua</i> *	Wild oats

*Suppression

Refer to the relevant registered trifluralin label for a list of additional weeds which will be controlled.

Weed species that were not present during the development trials of this product could possibly also

be controlled to a greater or lesser degree. The registration holder does not accept any responsibility for unlisted weeds.