

ZIMBULUS DG

Reg. No. / Nr L11911 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

A residual, pre-emergent water dispersible granule herbicide for the control of weeds in the crops as listed.

'n Residuele, voorkoms waterdispergeerbare korrel onkruidodder vir die beheer van onkruid in die gewasse soos aangedui.

WARNING



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 irritation.

May cause damage to organs through prolonged or repeated exposure.

Suspected of damaging fertility or the unborn child.

Very toxic to aquatic life with long lasting effects.

Precautionary statements

If skin irritation occurs: Get medical help.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical help.

If exposed or concerned, get medical advice. Get medical help if you feel unwell.

Active Ingredient / Aktiewe Bestanddeel

Pyroxasulfone (pyrazole).....contains 850 g a.i. per kg.....Piroksasulfoon (pyrazole)

Net volume kg Netto volume

Batch No./Date manufactured/Expiry date: Refer to details printed on container.

UN No. / VN Nr. 3077

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 irritation.
May cause damage to organs through prolonged or repeated exposure.
Suspected of damaging fertility or the unborn child.
Very 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:

Lupins for grazing and harvest for feed.....127 days
Lupins for harvest.....Not required when used as directed
Wheat for grazing and harvest for feed 63 days
Wheat for harvest.....Not required when used as directed

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.

- Keep out of reach of children, uninformed persons, and animals.
- **Re-entry:** Do not enter treated area within 1 day after treatment unless wearing protective clothing.
- **ZIMBULUS DG** 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 **ZIMBULUS DG** 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.
Obtain, read and follow all safety instructions before use.
Do not breathe dust/fumes/gas/mist/vapours/spray.

Wash hands thoroughly after handling. Do not touch eyes.
 Avoid release to the environment.
 Wear protective gloves / protective clothing/eye protection/face protection.
 If exposed or concerned, get medical advice.
 Get medical help if you feel unwell.
 If skin irritation occurs: Get medical help.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 If eye irritation persists: Get medical help.
 Collect spillage.
 Store locked up.
 Dispose of contents/container in accordance with national regulations.

- OPERATOR PROTECTION
 - Handle with care.
 - Do not inhale spray dust or fumes.
 - 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.
 - Wash contaminated clothing after use.
 - Do not eat, drink, or smoke while mixing or applying the product or before washing hands and face.
- 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 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.
 - **CLEAN THE EMPTY BAG AS FOLLOWS:** Shake all the pesticide formulation out of the bag into the spray or mixing tank. Turn the bag inside out. Hold the bag over the spray or mixing tank and rinse the bag with running water for thirty seconds. Shake the rinsate off into the tank. Repeat the rinsing twice. Cut the bag into pieces and do not use for any other purpose. Store appropriately until it can be taken to a waste treatment facility authorised to destroy waste in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and the relevant waste management regulations for disposal. Empty containers and product should not be burnt. Do not bury, burn or donate the bag to any other parties that may use it as a container for foodstuffs.

RELEVANT SUBSTANCES

Hazardous ingredients	Concentration (w/w)
Pyroxasulfone	85%
Sodium dodecyl sulfate	>1-<10%

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.

General Information: Remove patient from exposed area. Never give fluids or induce vomiting if the patient is unconscious or is having convulsions.

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 non-abrasive 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 immediately.**

Ingestion: Wash out the patient's mouth if the patient is alert and able. Do **NOT** induce vomiting unless instructed to do so by a poison control centre or a medical doctor. **Seek medical attention.**

No specific antidote known. Treat symptomatically and supportively. Gastric lavage may not be necessary due to low toxicity of the compound. However, the administration of activated charcoal and sodium sulphate is advisable with significant ingestions. For further information on the treatment of poisoning refer to the product Safety Data Sheet provided.

RESISTANCE MANAGEMENT WARNING STATEMENT

For resistance management, **ZIMBULUS DG** is a group code 15 herbicide. Any weed population may contain individuals naturally resistant to **ZIMBULUS DG** 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 **ZIMBULUS DG** 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

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 **ZIMBULUS DG** 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 **ZIMBULUS DG** not controlling resistant weeds. Do not apply **ZIMBULUS DG** alone in situations where weed resistance has been confirmed. Sub-standard application of **ZIMBULUS DG** or other group code 15 herbicides will lead to inferior weed control and may assist in the development of herbicide resistance.

MODE OF ACTION

ZIMBULUS DG is a residual, soil applied, pre-emergent herbicide. It is absorbed by the roots and, to a lesser extent, by the shoots of germinating weeds and inhibits growth in the meristematic region (roots and shoots). **ZIMBULUS DG** is a pyrazole herbicide classified as a group 15 (legacy K3) herbicide according to the Herbicide Resistance Action committee. It acts via inhibition of the biosynthesis of very-long-chain fatty acids in plants. These fatty acids play a crucial role in the maintenance of the physiological and structural integrity in plants.

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:

The following waiting periods must be observed with respect to follow-up crops:

Crops	Months
Wheat and triticale	0
Maize	3
Cotton, Sunflower	3
Potatoes, Soybeans, Groundnuts	3
Barley, Lupins**, Lucerne, Medics, Peas**, Carrots	8
Canola*	8

A test planting is required in all cases.

- For *Canola sown the year following application of **ZIMBULUS DG** there may occasionally be some crop stunting. However, no yield reductions should occur.
- **May be sown immediately after application of **ZIMBULUS DG** where **ZIMBULUS DG** has not already been incorporated. However, where **ZIMBULUS DG** has been incorporated into the soil, for example by a previous sowing operation for a subsequently failed crop, these crops should not be sown for at least 8 months after application of **ZIMBULUS DG**.

- **ZIMBULUS DG** breaks down by microbial degradation, which is favoured by warm, moist, aerobic soil.
- The above-mentioned waiting periods are valid only if the correct dosage of **ZIMBULUS DG** was applied and an average or above average rainfall between application and planting of the following crop has been recorded. Regard the label recommended rate as strictly the maximum usage rate of **ZIMBULUS DG** per season.
- The above-listed minimum re-cropping intervals have been established during seasons with normal rainfall. Adhering to these intervals as listed will minimize the risk of damage to these crops still exists. If below average rainfall is recorded during the season of **ZIMBULUS DG** use, the planting of **ZIMBULUS DG** sensitive crops the next season will result in crop damage and should thus be avoided. **ZIMBULUS DG** sensitive crops (including barley) can thus not be planted the following season should below average rainfall have been recorded during the season of **ZIMBULUS DG** use.
- When **ZIMBULUS DG** is used in a tank mixture with another herbicide, the waiting period of that product with respect to follow-up crops, if longer than what is listed above, must be adhered to.

COMPATIBILITY

The compatibility of **ZIMBULUS DG** 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. 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.

ZIMBULUS DG should not be mixed with products other than those specifically listed in this label.

Pre-emergence applications of **ZIMBULUS DG** may be followed up by post-emergence applications of registered herbicides as needed.

USE RESTRICTIONS

- **ZIMBULUS DG** generally shows good crop selectivity when used as directed. The following factors will help mitigate the risk of crop damage:
 - Avoid the throwing of treated soil into the adjacent crop rows.
 - Do not use a combination of both press wheels and any covering device when planting.
- Do not apply **ZIMBULUS DG** under the following conditions which may result in possible crop injury and/or reduced or inadequate weed control efficacy:
 - Poorly drained soils or soils with a compaction layer. Water logging in the presence of herbicides will cause stand reduction and/or stunted growth which may lead to yield reduction.
 - Prolonged or abnormally cold and/or prolonged or abnormally wet conditions.
 - Plants under stress due to factors such as low pH, poor crop nutrition, nematode infestations, diseases, other pest damage, inadequate or excessive soil moisture or rainfall, cool and hot temperatures, improper planting depth, injury from other pesticides, mechanical injury or other conditions known to cause plant stress.
- Circumstances which lead to the concentration of herbicide in the planting row or movement of the herbicide to the depth of the crop seed, may increase the potential for crop damage. This includes:
 - Where deep furrows are formed during planting.
 - Soil movement in the crop row due to wind or heavy rainfall soon after planting.
 - Where heavy rainfall between application and crop emergence on soils with a high leaching potential, results in movement of the herbicide into the crop seed zone.

- Crop damage may occur when **ZIMBULUS DG** is applied in tank mixtures with herbicides not listed in this label, or where plant vigour is reduced due to factors such as waterlogging, frost, insect and nematode attacks, poor quality seed and crop diseases. Where seed treatments are used, especially on varieties with a shorter coleoptile length, crop damage may occur.
- **ZIMBULUS DG** may occasionally delay emergence or flowering of winter legume crops.
- Apply prior to planting and incorporate mechanically into the soil by the planting process.
- Incorporation must occur within 3 days of application.
- Cultivation must not occur prior to the application of **ZIMBULUS DG** from the previous crop until the sowing of the current crop.
- **ZIMBULUS DG** requires adequate separation between the chemical and the crop or germinating crop seed. Application to soils prone to waterlogging, sodic soils or soils affected by physical compaction may result in crop injury. Shallow planting (use a planting depth according to good agricultural practices) or other seeding factors that result in inadequate seed herbicide separation may cause crop injury. Sandy soil types are more prone to causing crop injury due to furrow collapse and elevated herbicide movement into the soil profile. Application prior to significant rainfall events or irrigation may result in crop injury and reduced weed control.
- The degree as well as the duration of weed control may be adversely affected in soils with a high clay and/or a high organic matter content.
- Avoid throwing treated soil into the planting furrow as this may cause crop damage.
- Do not apply **ZIMBULUS DG** through any type of irrigation system.
- Do not use flood irrigation to apply or incorporate this product. Aside from possible crop injury, weed control efficacy may also be reduced.

For cereals:

- Sowing systems that throw and maintain soil throw out of the seeding furrow in cereals are required to be utilised in order to ensure the best chance of crop safety. It is important that the seeding system does not drag treated soil back into the seeding furrow. Many disc sowing systems do not provide adequate chemical and crop separation, and therefore do not provide adequate crop safety.
- **ZIMBULUS DG** may only be used in knife point and press wheel seeding systems. Wide, conventional or sweep points will substantially reduce the efficacy achieved due to dilution of the herbicide through the surface soil layer. Likewise, the use of harrows of any type following the seeding operation will also dramatically reduce weed control.
- Tillage at any point between the harvest of the prior crop and the planting of the cereal crop treated with **ZIMBULUS DG** is likely to result in reduced efficacy.
- Wide points and harrows of any kind must not be used at or following the planting operation that incorporates **ZIMBULUS DG**.
- Weed control may be adversely affected by insufficient rainfall (minimum 10 mm within 7 – 10 days) following application. Adequate rainfall is required to facilitate the uptake of the product by the germinating weed seeds, however the quantity of rainfall required will depend on many factors including stubble load, soil type, the existing soil moisture at sowing, the pattern of rainfall and other considerations.
- In soils prone to leaching, rainfall which is sufficiently heavy to cause movement of the herbicide out of the weed seed zone may lead to reduced weed control.
- Durum wheat may be more sensitive to damage under certain conditions and consideration should be given to the use of a lower dosage and/or alternative chemistries. In such circumstances, consult your chemical sales representative.
- Do not apply **ZIMBULUS DG** tank mixtures to inbred parent plants of crop cultivars as well as on experimental or newly released cultivars/varieties without first consulting your supplier or the seed company concerned.
- Optimum weed control is obtained on a fine, even seedbed, free of clods, trash and weeds.
- Do not apply **ZIMBULUS DG** to any crop or situation not mentioned in this instruction leaflet.
- Only apply **ZIMBULUS DG** using an accurate and safe application technique.

- If **ZIMBULUS DG** 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.

Protection of wildlife, fish, crustaceans and the Environment:

- Very toxic to aquatic life
- **DO NOT** contaminate any water sources with the chemical or used containers.
- **DO NOT** apply if heavy rain has been forecast within 48 hours.
- **DO NOT** apply, unless incorporation by planter can be performed within 3 days following application.
- **DO NOT** apply to waterlogged soil.

Protection of crops, native and other non-target plants:

- **DO NOT** apply under weather conditions or with spraying equipment that may cause spray to drift onto non-target plants, cropping lands or pastures.
- **DO NOT** under-sow with pasture species (legumes or grasses) following the application of **ZIMBULUS DG**.
- **DO NOT** apply by aircraft.
- **DO NOT** apply as a small droplet application.
- **DO NOT** apply when wind speed is more than 20 kilometres per hour.
- **DO NOT** apply during surface temperature inversion conditions.

MIXING INSTRUCTIONS

Ensure that the sprayer and nozzle filters are clean before preparing the spray mixture.

Half-fill the spray tank with suitable water. First add the required volume of **ZIMBULUS DG** directly into the spray tank and ensure that it is fully dispersed before any other product is added. Then add the required amount of complementary herbicide. Fill the spray tank to the required volume with suitable water while maintaining agitation. Do not use brackish water. Do not leave the spray mixture for longer than two (2) hours non-agitated in the spray tank. Should tank mixtures with other products be made, follow the respective manufacturer's label recommendations. **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. 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 **ZIMBULUS DG**.

GROUND APPLICATION

Application by means of a sprayer fitted with a conventional spray boom with flat fan nozzles, is recommended. Use a low spray pressure (100 – 300 kPa) such that **ZIMBULUS DG** is applied as a coarse droplet spray. **DO NOT APPLY AT HIGH PRESSURE**. Ensure thorough coverage of the soil by applying at least 75 – 200 litres of the spray mixture per hectare. In some situations (such as high stubble loads) higher water volumes may result in higher leaves of weed control.

Planting speed should be 5 to 6 km/hr to avoid throwing of treated soil into adjacent crop rows.

APPLICATION RATES

CROP	DOSAGE	REMARKS
Lupins	125 g/ha ZIMBULUS DG	Apply ZIMBULUS DG as a broadcast application prior to planting and incorporate by planter with press wheels. Incorporation of ZIMBULUS DG must be done within 3 days of application.
Wheat	125 g/ha ZIMBULUS DG	

WEEDS CONTROLLED:

Weeds normally controlled by pre-emergence application of **ZIMBULUS DG**

Scientific name	Common name
<i>Amaranthus hybridus</i>	Common pigweed
<i>Bromus pectinatus</i> (= <i>B. japonicus</i>)	Japanese Brome
<i>Datura ferox</i>	Large Thorn apple
<i>Digitaria sanguinalis</i>	Large crabgrass
<i>Lolium</i> spp.	Ryegrass
<i>Phalaris minor</i>	Little seeded canary grass
<i>Poa annua</i>	Winter grass
<i>Tagetes minuta</i>	Khaki weed
<i>Vulpia myuros</i>	Ratstail fescue
Suppression only	
<i>Avena fatua</i>	Wild oats (see note 2)
<i>Bromus diandrus</i>	Ripgut Brome (see note 2)
<i>Chenopodium album</i>	White goosefoot

NOTES

- ZIMBULUS DG** will not reliably control already germinated weeds. In these cases a knockdown herbicide should be used at planting.
- Inconsistent control of *Avena fatua*, *Bromus diandrus* and *Chenopodium album* may occur under certain circumstances. Factors that may play a role in reduced efficacy are:
 - Depth of weed seed germination.
 - Soil type, especially sandy soils where high rainfall or irrigation may wash the herbicide out of the weed seed zone and soil types prone to faster dry out.
 - High stubble loads (above 50% coverage).

- d. Insufficient active ingredient at the site of germination.
- e. Extended periods of no follow up rains following the application of **ZIMBULUS DG**.
- f. Weed seeds being buried by cultivation or livestock prior to the application of **ZIMBULUS DG**.

In the above instances, a follow up application with a suitable post-emergent herbicide may be required to control the remaining plants.

3. Weed control may be significantly reduced where the weed seeds have been buried by cultivation prior to planting, or when **ZIMBULUS DG** is applied on soils prone to leaching (sandy soils) where rainfall / irrigation is sufficient to cause movement of the herbicide out of the weed seed zone (See points 2 a – e above).
4. In order to optimise the weed control achieved, apply **ZIMBULUS DG** directly to uncultivated moist soil prior to planting. Sufficient rainfall soon after application (minimum 10 mm within 7 – 10 days) is required to ensure optimum uptake of the herbicide by germinating weeds.
5. Weed control may be adversely affected by:
 - Uneven application,
 - Incomplete spray coverage,
 - Application to ridged or cloddy soil,
 - Dense stubble, plant material or other ground cover particularly where this exceeds 50%,
 - A “cold” or incomplete burn of stubble resulting in a mass of material which can act as a physical barrier between the herbicide and the germinating weeds. This can be further exacerbated where there are greater weed seed numbers and higher levels of plant material.

Weed species that were not present during the development trials of the product could possibly also be controlled to a greater or lesser degree. The registration holder does not accept any responsibility for unlisted weeds.