

YOUR POCKET SIZED USER GUIDE FOR



MONSANTO
imagine™



YOUR POCKET SIZED USER GUIDE FOR ROUNDUP READY® SOYBEAN

- Roundup Ready® herbicide (L6702) treatments may be applied in soybean varieties which are designated Roundup Ready soybean cultivars.
- Only Roundup Ready soybean varieties contain in-plant tolerance to Roundup Ready herbicide and therefore Monsanto does not make any representations, warranties or recommendations concerning the use of any other glyphosate product, including other Monsanto glyphosate products, or glyphosate products manufactured by other companies, not specifically mentioned on the Roundup Ready label.
- Only soybean cultivars containing the Roundup Ready gene can be sprayed with Roundup Ready herbicide. Severe injury or death of soybean will result if any varieties not properly designated as having the Roundup Ready gene are sprayed with this product. Monsanto's soybean cultivars containing the Roundup Ready gene can be recognised by the Roundup Ready logo on the bag as well as the blue side panel.
- Take note that this user guide is not a substitute for the Roundup Ready herbicide label. Read Roundup Ready herbicide label and the labels of all other herbicides and pesticides to be used and follow the instructions.
- Roundup Ready herbicide is not registered for aerial application.
- It is illegal to own, use, plant or trade the seed in this bag without a signed Technology Agreement with the patent holder Monsanto.

Roundup Ready® -soybean, patent numbers ZA-865921 and ZA-97/2721, and Roundup Ready®- herbicide (L6702) are registered trademarks of MONSANTO SA (PTY) LTD, PO Box 69933, Tel (011) 7908200, Bryanston, 2021 and are protected under South African and American patent rights.

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**Thank you for supporting
this technology. By doing so
you are supporting
continued biotechnology
research and commitment by
innovative companies like
Monsanto, which are
dedicated to creating a
sustainable world.**

1. LEGISLATION

The GMO Act, Act 15 of 1997 (which regulates the use of genetically modified crops), the Plant Improvement Act, Act 53 of 1976, and the Plant Breeders Rights Act, Act 15 of 1976, all regulate the use of Roundup Ready soybean. Consequently it is an infringement of the law to:

- plant Roundup Ready soybean without a valid, signed licence agreement with the patent holder, Monsanto.
- trade or give away seed in any other way than to deliver it at the delivery points approved by Monsanto.
- be unaware of, or disregard the licence conditions. (Please take note of the penalty clauses contained in the licence agreement, which may be applied should the agreement conditions not be met).

2. ROUNDUP READY TECHNOLOGY AND GUIDELINES FOR THE APPLICATION OF ROUNDUP READY HERBICIDE

Roundup Ready soybeans are tolerant to Roundup Ready herbicide. Soybean producers can apply the herbicide post emergence to Roundup Ready soybeans from the soil cracking stage through to flowering, delivering unsurpassed weed control.

NB Carefully read the WARNINGS and PRECAUTIONS in the Roundup Ready herbicide label before handling. This product guide does not replace the label.

2.1 DIRECTIONS FOR USE

USE ONLY AS DIRECTED

Use of Roundup Ready herbicide in accordance with label directions is expected to result in normal growth of Roundup Ready soybean cultivars. However, various environmental conditions, agronomic practices and other factors make it impossible to eliminate all risks associated with this product, even when applications are made which conform with the label specifications. In some cases, these factors (e.g. drought, water logging, hail etc) can result in un-anticipated results including yield loss.

WARNING: MONSANTO RECOMMENDS THIS PRODUCT ONLY FOR POST EMERGENT USE OVER-THE-TOP OF IMPROVED SOYBEAN VARIETIES THAT ARE DESIGNATED AS CONTAINING THE ROUNDUP READY GENE. **SEVERE INJURY OR DEATH OF SOYBEANS WILL RESULT IF ANY VARIETIES NOT PROPERLY DESIGNATED AS HAVING THE ROUNDUP READY GENE ARE SPRAYED WITH THIS PRODUCT.**

2.2 GENERAL INFORMATION

- Roundup Ready herbicide has the same characteristics as water, and will not drift in a vapour from target plants to other plants if it is applied correctly. Correct nozzles, spray pressure and spray height will ensure that the herbicide will not drift from target to non-target plants.
- The herbicidal action may only become visible from 5 days onwards for annual weeds and 7 days for perennials (depending on growing conditions, weed stage and cultivation practices).
- Apply Roundup Ready post-emergence to actively growing weeds, directed on the foliage and young stems.
- DO NOT spray whilst weeds are wet, dormant or under stress nor when covered in a layer of dust or damaged by frost.
- Heavy rainfall or irrigation within 2 hours of application may reduce efficacy and a repeat application may be necessary.
- There are no rotational crop restrictions due to herbicide activity following applications of this product.

2.3 MIXING INSTRUCTIONS

(Consult the label for more details concerning the mixing instructions and spray concentrations).

A minimum dose of at least 2 litre/ha must be applied. Certain weeds require a higher rate or follow-up application. The spray volume must be adjusted so that a concentration of at least 1.5% or higher dosage of Roundup Ready herbicide is maintained.

2.4. APPLICATION INFORMATION

(Consult the label for more details concerning application)

2.4.1 GENERAL

- Roundup Ready herbicide must be applied in a water volume of between 100 to 125 litre / ha.
- Ensure that spray equipment is clean and free of rust, dust and sediment from other pesticides.
- Always use clean water. Avoid the use of brack or muddy water, or water with a high colloid content derived from soils high in organic matter.
- Correctly calibrate all sprayers under field conditions.
- It is recommended that low pressures with the appropriate nozzles (e.g. XR Teejet 11002 VK) which deliver the required water volume and dosage rate per ha be used.
- Do not spray when wind speed exceeds 10km/h.
- Do not spray when relative humidity is less than 40%
- Ensure a fine, even droplet distribution and thorough coverage without runoff from the target weeds.

NOTE: Roundup Ready herbicide is not registered for aerial application

2.4.2 BROADCAST APPLICATION

This product may be applied post emergent to Roundup Ready soybeans from the soil cracking stage until after flowering. Allow a minimum of 14 days between application and the harvest of soybeans. Total in-crop applications from the soil cracking stage until after flowering is 7.0 liter /ha.

2.4.3 APPLICATION

Weed spectrums in soybean are variable and differ by region, soil type and climate, and from season to season. This results in a varied and uneven emergence of weed species at any one site where one or more species may dominate. In order to compensate for this fact the dosages recommended are aimed at controlling a broad spectrum of weeds provided they are sprayed **before** any one of the **major** weeds reach **100mm in height or have more than 3 leaves**.

2.5 DOSAGES

Please consult the Roundup Ready label for the correct dosages for the control of specific annual and perennial grass and broad leaf weeds.

NOTE: The above recommended Roundup Ready herbicide treatments may be applied in soybean varieties which are designated Roundup Ready soybean cultivars. Lasso® MicroTech™, as a pre-emergent application, in combination with Roundup Ready herbicide, may be used in Roundup Ready soybeans, without any negative effects. **Follow the recommendations on the manufacturer's label.**

2.6 RESISTANCE MANAGEMENT

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

To delay herbicide resistance:

- Avoid exclusive repeated use of herbicides from the same herbicide code group. Alternate or tank mix with registered products from different herbicide code groups.
- Integrate other control methods (chemical, cultural, biological) into weed control programmes.
- For specific information on resistance management contact the registration holder of this product.

3. MANAGEMENT PRACTICES

Successful production of soybean is dependant on good management practices. Success begins with the preparation of a fine even seedbed to ensure good germination. A pre-plant treatment with Roundup Turbo® (L7166) when the weeds are still smaller than 10cm ensures that all the available moisture is conserved for the soybean crop during the important crop establishment phase. Weeds use up available nutrients and moisture and should therefore not be allowed in the seedbed. The high potential long growing soybean cultivars benefit the most

from stored moisture because of their early planting date. After the pre-plant spray, the seedbed should be kept weed free until the soybean crop has canopied, and weeds can no longer germinate. With the benefit of over-the-top spraying this is easily accomplished.

Soybean production facts

- Inoculate seeds with the correct type of Rhizobium bacteria.
- Plant within three hours of inoculation.
- Do not expose to sunlight.
- Optimum population: 300-400 000 plants/ha (for irrigation a minimum of 350 000 plants/ha)
- Treat seeds with 1g sodium molybdate/kg seed.
- Molybdenum promotes nitrogen binding and thus protein synthesis.
- Soybeans are more aluminium tolerant than maize.
- Soybeans withdraw high quantities of potassium (1 ton of soybean grain contains the same potassium as 5 tons of maize)
- Fertilise with sufficient amounts of nitrogen, phosphorus and potassium as indicated by soil analyses. If nodulation is successful, there is no need for N fertilization. Soybean seedlings are easily damaged by fertilizer and therefore fertilizer should not be given in the plant row. For every ton of soybean harvested, 85-105 kg N, \pm 38 kg K and 9 kg P is removed.

Uniform high quality certified seed for which the germination data is available always delivers better results than farm saved seed. High risk is associated with the use of farm saved seed, which may contain seed that is damaged or infertile. Various stress factors during the production or storage of the seed can influence its viability. These risks are only realised after germination, where poor stands and growth is observed. Although plants may appear normal throughout the season, the low yield potential is only observed at harvest, when it is too late. With current high input costs, replanting is often not possible. Good germination of high quality seed ensures a good potential and the actively growing seedlings will soon canopy and reduce the further germination of competing weeds.

If the seedbed stays weed free after the pre-plant spray, only one treatment with Roundup Ready herbicide may be necessary. The soybean plants should be sprayed over the top post-emergent before weeds can compete with the crop (weeds < 10cm) and followed up with a second treatment to ensure that the crop stays weed free if necessary.

Spraying should take place before the soybeans are of such a height that the spray nozzles are too close to the crop (approx. 30cm between nozzle and top of soybean plant). Not only does it ensure that the weeds are properly covered with the herbicide but it prevents the slight yellowing of the plants due to a high concentration of the herbicide. Although the soybeans recover from the discolouration, it is unnecessary to place stress on the crop.

To obtain the best result with Roundup Ready herbicide, implement the following:

- Consult the label before application and ensure that the correct dosage for the weed in the spectrum that is most difficult to control, is used.
- Use clean, high quality water buffered to the correct pH (4.5 - 6.5).
- Add 2% ammonium sulphate (e.g. 2kg or 2 litres of a 500 g/litre formulation) per 100-litre spray mix if uncertain about the quality of the water. This will improve the application efficacy.
- If a buffer or ammonium sulphate is used to adjust the water quality it must be done before adding the Roundup Ready herbicide. In cases where both are required, add ammonium sulphate before buffering, as it will also reduce pH.
- Low volume, low pressure nozzles should be used to enable a spray volume of 100-125 litres /ha and to ensure an even droplet distribution on the weeds.
- Prevent drift to non-target crop plants.
- Roundup Ready herbicide contains TranSorb™ technology - this ensures rain fastness after two hours and excellent crop safety because there is no leaf damage to the crop during uptake.
- Apply Roundup Ready herbicide to actively growing weeds smaller than 10 cm.
- Do not spray if the weeds or the crop is under stress (too wet or too dry, wilted or covered with dust).

It is important not to deviate from normal production practices when planting Roundup Ready soybeans. If conventional soybeans require soil aeration, apply the same practice to Roundup Ready soybeans. The utilization of nitrogen is greater if the soil is aerated, as nitrogen-fixing bacteria function optimally under high oxygen levels. However, be aware of the fact that any cultivation stimulates new weeds to germinate and that a follow up spray may be needed after soil aeration. The ideal would be not to cultivate after seedbed preparation.

Only soybean cultivars containing the Roundup Ready gene are tolerant to Roundup Ready herbicide. Soybeans not containing the Roundup Ready gene will die or be seriously injured when sprayed with Roundup Ready herbicide

Roundup Ready herbicide is the only registered glyphosate formulation for use with Roundup Ready soybeans. No guarantees or warranties are offered for any other herbicides, except Roundup Ready herbicide.

3. CULTIVARS

This unique technology is available in Monsanto's top cultivars. It is important to establish which Roundup Ready cultivars are suited for your region and specific climatic conditions. This technology is available in the following cultivars:

AG 5601

- Well-adapted to a narrow-row situation.
- Light brown hilum colour.
- Good germination in minimum tillage and no-till cultivation systems.
- Can be used in cooler areas if planted early.
- Very good under irrigation.
- Medium to long growing season.
- Determinate growth habit.
- Well-adapted to northern parts of the country and in KwaZulu-Natal.

A 5409 RG

- Medium growing season
- Excellent adaptation to all production areas
- No green stem.
- High average yield
- Good germination in minimum tillage as well as no-till cultivation systems
- Light grey colourless hilum
- Indeterminate growth habit.

AG 6101

- Very well-adapted to a narrow-row situation
- Light hilum colour.
- Very good under irrigation.
- Determinate growth habit.
- Medium to long growing season

5. DELIVERY OF SOYA GRAIN

Roundup Ready soybeans may only be planted if the producer has signed a Licence Agreement with the patent holder Monsanto. This agreement stipulates that the harvest may only be delivered at silos approved by Monsanto. Producers should therefore contact silo managers timeously to establish where the approved silos are situated.

5.1 PROCEDURE FOR GRAIN DELIVERY

Roundup Ready soybean may only be delivered at approved silos and should **always be separated from conventional soybeans** to ensure that it may be marketed separately if necessary. The following procedure has been established to streamline the delivery process:

- 5.1.1. Seed representatives will visit the producer to determine the quantity of soybeans to be delivered and at which silo.

- 5.1.2. The producer will be issued with a card for every load of Roundup Ready soybeans to be delivered and the representative will give guidance how to fill out the card.
- 5.1.3. On this card the producer must declare that the specific load contains Roundup Ready soybeans as well as the delivery date and the name of the silo where it will be delivered.
- 5.1.4. Conventional and Roundup Ready soybeans may not be mixed under any circumstances. If any load of conventional soybeans contains soybeans with the RR gene, the technology fee may be payable on the whole load!
- 5.1.5. **EVERY LOAD OF SOYBEANS DELIVERED WILL BE TESTED TO ESTABLISH IF IT CONTAINS THE RR GENE!** It is therefore to the producer's own benefit to declare every load of Roundup Ready soybeans to be delivered to streamline the delivery process.
- 5.1.6. Soybean producers should take note that the technology fee will firstly be deducted on behalf of Monsanto as per agreement and the producer will receive the balance for the delivered grain. Monsanto will invoice the producer where this fee is not deducted.
- 5.1.7. The abovementioned procedure also applies to producers who deliver Roundup Ready soybeans produced from farm saved seed.
- 5.1.8. Monsanto acknowledges that conventional and RR soybeans may be mixed by accident and therefore a procedure is in place to handle such cases. The silo manager should take a sample and inform Monsanto immediately.

Although Monsanto has negotiated a market for RR soybeans, these soybeans may not be accepted at silos which are not on the approved list. The names of the approved silos are available from your Monsanto seed representative and are also announced annually in prominent agricultural publications. The producer should contact these delivery points timeously to establish where the Roundup Ready soybeans may be delivered. Remember, as a producer, you agreed to pay a technology fee when signing the technology agreement (licence).

6. TECHNOLOGY AGREEMENT

By signing the Monsanto Technology Agreement the producer ensures his/her right to buy Roundup Ready soybean seed resistant to Roundup Ready herbicide.

Producers are only allowed to buy the quantity of transgenic seed specified in the Monsanto Technology Agreement. If any more seed is needed a separate Monsanto Technology Agreement must be signed at any Monsanto distributor.

This agreement also contains clauses referring to the delivery of seed to approved silos only and the payment of a technology fee to Monsanto.

IT IS A CONTRAVENTION OF THE LEGISLATION MENTIONED IN THE INTRODUCTION TO THIS GUIDE TO TRADE OR DEAL Roundup Ready SOYA SEED BY ANY MEANS OTHER THAN AS STIPULATED IN THE SIGNED AGREEMENT. THE PRODUCER MAY THEREFORE BE PROSECUTED IF THE STIPULATIONS IN THE CONTRACT ARE BREACHED.

