What You’ll Learn...
- For many sugarbeet farmers, weeds are considered to be their primary pest problem.
- The introduction of Genuity® Roundup Ready® Sugarbeets has offered growers an opportunity to effectively control weeds with potentially fewer inputs, while research proves it is better for the environment.
- For management of glyphosate-resistant weed populations, herbicides with multiple sites-of-action and additional timely herbicide applications must be made.

Genuity® Roundup Ready® Sugarbeets
In 2008, Genuity® Roundup Ready® Sugarbeets were first available to U.S. and Canadian farmers, allowing over-the-top use of glyphosate to sugarbeet crops. Before the introduction of Roundup Ready® Sugarbeets, farmers used several different herbicides, many application timings, cultivation, and hand labor to manage weeds and protect yield potential.

Roundup Ready® Sugarbeets offer tolerance to glyphosate, an active ingredient found in Roundup® brand agricultural herbicides for unsurpassed broad-spectrum weed control. The benefits of this technology has made for fast adoption of Roundup Ready® Sugarbeets in production areas.

Benefits of Roundup Ready® Sugarbeets

Flexibility of Herbicide Application Timing. Application timing is probably the most critical aspect of obtaining satisfactory weed control. Environmental conditions often interfere with timely herbicide applications resulting in poor weed control. Roundup Ready® Sugarbeets allow for over-the-top application of Roundup PowerMAX® herbicide and Roundup WeatherMAX® herbicide from planting up to 30 days prior to harvest. Roundup PowerMAX® herbicide and Roundup WeatherMAX® herbicide does not carryover to other crops or have any crop rotation restrictions and does not require soil incorporation.

Reduced Management Costs. Prior to the introduction of Roundup Ready® Sugarbeets, weeds were removed by means of many herbicide applications, cultivation or manual labor. Roundup Ready® Sugarbeets have helped to reduce weed management costs while increasing efficiency, flexibility and profit potential.

Herbicide Options. With the development of corn, cotton, and soybean products with glyphosate tolerance, many chemical manufacturers have reduced their herbicide discovery programs.¹ With only the currently available sugarbeet herbicides, and unavailability of hand labor crews, growers continue to rely on some mechanical control as part of their overall weed management program in sugarbeets.

Environmental Benefits. Studies conducted in the United States and Europe have reported several environmental improvements from growing Roundup Ready® Sugarbeets over conventional sugarbeet production. With the introduction of transgenic crops there has been a measurable reduction in pesticide use.²,³ In a case study conducted in four sugarbeet fields in Idaho, results showed that growers made fewer trips across Roundup Ready® sugarbeet fields as less cultivation and herbicide applications were needed.³ Other studies have also shown that reduced tillage has decreased soil erosion from water/wind, less fossil fuel use, less air pollution, less soil compaction and increased soil moisture. The effects of tillage, fuel consumption and subsequent reduction in fuel emissions have been shown to impact the environmental assessment between conventional and transgenic crops.⁴

Treatment Recommendations

Roundup PowerMAX® herbicide and Roundup WeatherMAX® herbicide may be applied over-the-top of Roundup Ready® Sugarbeets for control of annual grasses and broadleaf weeds. Up to 4 applications of either of these products may be applied with a minimum of 10 days between each application. The total combined application of Roundup PowerMAX® herbicide or Roundup WeatherMAX® herbicide from emergence through harvest must not exceed 100 fl oz/acre.

Warrant® Herbicide is labeled for postemergence application from 2- to 8-leaf stage sugarbeets. Warrant® herbicide is an acetochlor-based herbicide that can provide up to 30 days residual control of small-seeded broadleaf and grass weed species. Warrant Herbicide may be applied to Roundup Ready® Sugarbeets at 2.5 to 4 pts/acre with no more than 2 applications and 8 pts applied per acre per year. Refer to the Warrant® herbicide label, as rates are dependent on soil texture. Sugarbeet stands should be well established before a Warrant® Herbicide application is made and sugarbeets should not be replanted into a field.

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following an application of Warrant® Herbicide.

**Genuity® Roundup Ready® Sugarbeets**

**Weed Management Recommendations**

1. Start clean with burndown and/or tillage.
2. Apply a full-labeled rate of a residual preemergence herbicide (i.e. Nortron® SC, Dual Magnum®, Ro-Neet®)²
3. Use Roundup WeatherMAX® or Roundup PowerMAX® tank mixed with Warrant® Herbicide postemergence, applied to 2- to 8 -leaf sugarbeets.
4. Use labeled tank mix partners where needed for expanded weed control spectrum.

**Recommended 3-Year Rotation**

In sugarbeets, a 3-year crop rotation is recommended to help fields remain clean. Table 1 provides herbicide recommendations for a 3-year rotation of sugarbeet, corn and soybean. These recommendations include the use of Warrant® herbicide postemergence to both soybeans and sugarbeets.

**Sources:**

5. Stachler, J. 2011. Weed management in conventional and round-up ready sugar beets North Dakota State University and University of Minnesota. 100126134501

**Table 1. Recommended 3-Year Rotation for Corn, Soybeans, and Sugarbeets.**

<table>
<thead>
<tr>
<th>Crop</th>
<th>Year 1 - Corn (Corn with Roundup Ready® 2 Technology or Roundup Ready® Corn 2)</th>
<th>PRE/At-Planting</th>
<th>POST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Harness® Herbicide (2.25 pts)</td>
<td>Roundup PowerMAX® or Roundup WeatherMAX® (32 fl oz) + Stinger® (8 oz), or Clarity® (8 oz), or Status® (5 oz)</td>
<td></td>
</tr>
</tbody>
</table>

| Year 2 - Sugarbeets (Genuity® Roundup Ready® Sugarbeets) | Nortron® or Ro-Neet® or another residual preemergence herbicide | Roundup PowerMAX® or Roundup WeatherMAX® (32 fl oz) + Warrant® Herbicide (3 to 4 pts)* |

| Year 3 - Soybeans (Roundup Ready® Soybeans and Genuity® Roundup Ready 2 Yield® Soybeans) | Rowel® Herbicide (2 to 3 oz) or Valor EZ® (2 to 3 oz) | Roundup PowerMAX® or Roundup WeatherMAX® (32 fl oz) + Warrant® Herbicide (3 to 4 pts)* |

*Applied between 2-8 leaf sugarbeets, 4-6 leaf is optimal timing.

This document is intended to provide information about this weed and guidelines for control. As a tough-to-control weed, knowledge about the biology and weed control programs will help in their management. For additional information, contact your local seed representative. Developed in partnership with technology, Development & Agronomy by Monsanto.

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**Roundup Technology® includes Monsanto’s glyphosate-based herbicide technologies. Individual results may vary,** and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

**ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** Roundup Ready technology contains genes that confer tolerance to glyphosate, an active ingredient in Roundup® brand agricultural herbicides. Agricultural herbicides containing glyphosate will kill crops that are not tolerant to glyphosate. Harness® Brand Products, Rowel® Herbicide and Warrant® Herbicide are not registered in all states. Harness® Brand Products, Rowel® Herbicide and Warrant® Herbicide may be subject to use restrictions in some states. The distribution, sale, or use of an unregistered pesticide is a violation of federal and/or state law and is strictly prohibited. Check with your local Monsanto dealer or representative for the product registration status in your state. **Tank mixtures:** The applicable labeling for each product must be in the possession of the user at the time of application. Follow applicable use instructions, including application rates, precautions and restrictions of each product used in the tank mixture. Bayer has not tested all tank mix product formulations for compatibility or performance other than specifically listed by brand name. Always predetermine the compatibility of tank mixtures by mixing small proportional quantities in advance. Genuity Design®, Genuity Icons, Genuity®, Harness®, Roundup PowerMAX®, Roundup Ready 2 Technology and Design®, Roundup Ready 2 Yield®, Roundup Ready®, Roundup Technology®, Roundup WeatherMAX® and Design®, Roundup WeatherMAX®, Roundup®, Rowel®, Transorb and Design® and Warrant® are trademarks of Monsanto Technology LLC. Dual Magnum® is a registered trademark of a Syngenta group company. Valor® is a registered trademark of Valent U.S.A. Corporation. All other trademarks are the property of their respective owners. ©2017 Monsanto Company. 100126134501 031517TAM