What You’ll Learn...

- Giant and common ragweed are among the earliest emerging weeds in corn and soybean.
- Management strategies for the control of common and giant ragweed should provide effective season-long control, reduce the soil seedbank, and minimize herbicide resistance.
- Multiple overlapping pre- and post-emergence herbicides are an essential component of a weed management plan.

Weed Biology

Giant (Ambrosia trifida) and common ragweed (Ambrosia artemisiifolia) can be difficult to control weeds in corn, soybean, and cotton systems. Giant ragweed can be aggressively competitive with corn and soybeans because it emerges early in the season, has a rapid growth rate, large leaf area, and a prolonged emergence period. Common ragweed emerging with the crop can substantially reduce yield. Giant and common ragweed are among the earliest emerging weeds in corn and soybean. Common ragweed seeds can begin germinating in May, with 90% of the seedlings emerging by early June. Recent research shows that giant ragweed biotypes in production fields can begin emerging as early as March and continue through June into late-July in eastern Corn Belt biotypes. The large seed size of giant ragweed permits seedling emergence from various burial depths and the potential to escape some pre-emergence (PRE) herbicides.

- No-till can help reduce giant ragweed populations by exposing seed on the surface to degradation.
- Rapid growth and the shading ability of giant ragweed can lead to reduced yield potential, even at low densities.
- Stem boring insects can cause vascular damage to both ragweed species and reduce the effectiveness of systemic herbicides.

Herbicide Resistance

Extensive use of Group 2 (ALS Inhibitors) herbicides in Indiana, Ohio, Illinois, and Iowa in the 1990s resulted in resistant giant and common ragweed populations. Common ragweed resistance to Group 14 (PPO Inhibitors) herbicides has been confirmed in Ohio. Glyphosate-resistant common ragweed populations has been identified in Missouri, Ohio, Indiana, and several other states. Multiple herbicide resistance to Group 2 and Group 9 (glyphosate) have been confirmed for giant and common ragweed and to Group 14 and Group 2 herbicides in common ragweed. Although ragweed resistance varies by management history and region; herbicide options may become limited, particularly in soybean, if proper herbicide stewardship and diverse cultural practices are not integrated into weed management plans.

Best Management Practices

Management strategies for common and giant ragweed should provide effective season-long control, reduce the soil seedbank, and minimize selection for herbicide resistance. Herbicide programs should include soil residual herbicides along with post-emergence (POST) herbicides, using multiple modes-of-action, and multiple applications when necessary to maintain control. Ragweed populations can be more competitive and more difficult to manage in soybeans and cotton than in corn. The most effective strategy for managing populations of ragweed with resistance to multiple herbicides may be to rotate to corn, taking advantage of the effectiveness of corn herbicides. Start clean at planting. To eliminate early emerging weeds, use a tank mixture of Roundup PowerMAX® Herbicide or Roundup WeatherMAX® Herbicide with dicamba or 2,4-D, and/or a soil residual herbicide, or tillage. Early-season weed control is critical to maximize crop yield potential.
• Use a pre-emergence (PRE) soil residual herbicide at burndown or planting. A PRE application can remove or prevent the most competitive weed seedlings, keep ragweed size within label recommendations, and provide a different mode of action to help manage potential resistance. In some crops post-emergence (POST) options may be limited, making a PRE application an essential component of the weed management plan.

• Use a POST application when weeds are 4 inches tall. Large weeds will be more difficult to control and potentially reduce yield potential. Tank mix Roundup PowerMAX® Herbicide or Roundup WeatherMAX® Herbicide with other products labeled for giant or common ragweed.

• Plan for a second POST application. Dense ragweed infestations or late emerging weeds may require an additional POST application. Try to use a different mode of action herbicide labeled for giant or common ragweed alone, or in tank mix applications.

• Use diverse crop rotations and cultural practices. Take advantage of alternative herbicide modes of action and crop competitiveness to disrupt ragweed lifecycles and reduce infestations.

For solutions and recommendations, visit www.roundupreadyPLUS.com.

Giant and Common Ragweed Management - North

Herdicide Recommendations for Genuity® Roundup Ready 2 Yield® Soybeans and Roundup Ready® Soybeans.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burndown</td>
<td>Roundup PowerMAX® Herbicide or Roundup WeatherMAX® Herbicide + dicamba. Ragweed less than 4 inches tall</td>
</tr>
<tr>
<td>Preplant/ PRE1</td>
<td>Rowel® Herbicide, Rowel® FX Herbicide, Fierce®, Fierce® XLT, Valor®, Valor® XLT, Authority® First, Authority® MAXX, Authority® MTZ</td>
</tr>
<tr>
<td>Early POST2</td>
<td>Roundup PowerMAX® Herbicide or Roundup WeatherMAX® Herbicide + Warrant® Ultra Herbicide* or Cobra® (Ragweed less than 4 inches tall)</td>
</tr>
</tbody>
</table>

Early POST applications may need a second POST application several weeks later to control late-emerging ragweed plants.

Always refer to product labels for use rates, application guidelines, rotational crop restrictions, and plant-back intervals.

Herdicide Recommendations for Roundup Ready® Corn 2 products with Roundup Ready® 2 Technology.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burndown</td>
<td>Roundup PowerMAX® Herbicide or Roundup WeatherMAX® Herbicide + dicamba. Ragweed less than 4 inches tall</td>
</tr>
<tr>
<td>Preplant/ PRE1</td>
<td>Harness® Xtra, Degree Xtra® or TripleFLEX® II Herbicide. Add additional atrazine to pre-mixtures for heavy infestations of giant ragweed.</td>
</tr>
<tr>
<td>POST</td>
<td>Roundup PowerMAX® Herbicide or Roundup WeatherMAX® Herbicide + IMPACT®, Callisto®, or Status®. Ragweed less than 4 inches tall</td>
</tr>
</tbody>
</table>

Always refer to regional map within the Warrant® Ultra Herbicide label for specific states where this product is anticipated to be registered for the 2016 season. As of July 23, 2015, approval for sales and distribution has not been received for: Connecticut and Massachusetts. All other states represented on the Area maps are approved for sales and distribution as of July 23, 2015.

Sources:
4 Web sources verified 12/15/2014.

Monsanto Company is a member of Excellence Through Stewardship® (ETS). Monsanto products are commercialized in accordance with ETS Product Launch Stewardship Guidance, and in compliance with Monsanto’s Policy for Commercialization of Biotechnology-Derived Plant Products in Commodity Crops. Commercialized products have been approved for import into key export markets with functioning regulatory systems. Any crop or material produced from this product can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying systems. Any crop or material produced from this product can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying systems. Any crop or material produced from this product can only be exported to, or used, processed or sold in countries where all necessary regulatory approvals have been granted. It is a violation of national and international law to move material containing biotech traits across boundaries into nations where import is not permitted. Growers should talk to their grain handler or product purchaser to confirm their buying systems.