What You’ll Learn...

- Cotton plants are extremely sensitive to early-season weed competition during the first 40 days of development.
- Improperly timed or ineffective weed management applications may cause a significant reduction in yield opportunity.
- For optimal weed management, any preemergence (PRE) or postemergence (POST) herbicide application should be made when weeds are less than 4 inches tall.

Successful, season-long weed management begins with a burndown application, that includes a residual herbicide, to kill emerged weeds and prevent additional weeds from emerging in cotton. Growers should then follow with a PRE application of residual herbicides plus an additional burndown herbicide at planting. After cotton emergence, most growers should make one or two POST herbicide applications. At layby, late-emerging weeds may be controlled using a hooded sprayer or directed sprayer. Large weeds may need to be removed by hand.

Cotton is sensitive to weed competition during the early growth stages. Effective pre-plant weed control conserves soil moisture, facilitates planting by providing a clean seedbed, and helps provide critical weed control through planting and after crop emergence.

Importance of Timing Weed Management

Timely weed management can help maximize cotton yield potential. Studies conducted at the Learning Center in Leland, Mississippi in 2007 and Scott, Mississippi in 2008 to evaluated the yield response of cotton to delayed weed control. Results from the trials showed cotton yields were reduced when cotton did not receive timely early-season weed control. Cotton yields were reduced by 21%, 37%, and 46% when weed control was delayed by 14, 21, and 28 days, respectively. Additional results indicated that weeds were controlled best when small and cotton plants became stunted relative to delayed weed control (Figures 1 and 2).

For best management, weeds should be controlled as early as possible. Applications of herbicides to weeds that are bigger than the label requirements will experience reduced control and enable increased weed survival. In Genuity® Roundup Ready® Flex or Bollgard II® XtendFlex® cotton, the use of Roundup® brand glyphosate-only agricultural herbicides can be an effective and economical tool for weed control when properly applied. Along with Roundup brand glyphosate-only agricultural herbicides, the use of residual herbicides in a weed control program can be an integral practice for combating tough-to-control weeds. Certain residual herbicides can be tank-mixed with Roundup brand glyphosate-only agricultural herbicides. Refer to product label for tank-mixing partners and instructions for use. As weed populations become more difficult to control, it is recommended that a season-long weed management program be established that includes herbicide applications at pre-plant, early POST, and layby. To successfully control weeds, at least two herbicide applications should include residual over-lapping herbicides with different sites of action.

Figure 1. Vigorous, well developed cotton with optimal herbicide application timing (1 to 2 leaf cotton).

Figure 2. Weed competition visibly stunted cotton growth and yield potential when herbicide application was delayed 28 days after optimal timing.
**Southeast Early-Season Weed Management in Cotton**

**Weed Management Recommendations**

It is important to start the season with a clean field by using either a burndown herbicide program or tillage. In areas with glyphosate-resistant weeds, use a burndown tank mixture that includes Roundup PowerMAX® or Roundup PowerMAX® II herbicide plus Rowel® Herbicide or Valor® plus 2,4-D or dicamba. A burndown application should be made far enough in advance to control existing weeds prior to planting.

A preemergence (PRE) herbicide application of Roundup PowerMAX or Roundup PowerMAX II can be tankmixed with a residual herbicide, such as Reflex®, Warrant® Herbicide, or diuron, at full labeled rate 14 to 21 days preplant.

For early in-season management, Roundup PowerMAX or Roundup PowerMAX II tank mixed with Warrant Herbicide or Dual Magnum® can be applied at 1-leaf cotton, no more than 14 days after a PRE application.

If glyphosate-resistant Palmer amaranth is not present at layby, a directed spray application of Roundup PowerMAX or Roundup PowerMAX II or MSMA plus Rowel Herbicide, Valor, or diuron can be applied. If glyphosate-resistant Palmer amaranth is present it is recommended to apply a hooded sprayer application of Gramoxone SL plus Rowel Herbicide, Valor, or diuron.

Always read and follow product labels and application directions. Be sure to scout fields before and after any burndown, PRE, or in-crop herbicide application to monitor herbicide efficacy or potential resistant weed populations.

Addressing weed issues early is essential for reducing weed populations. As a way to help Southeast farmers manage tough weeds, Roundup Ready PLUS® Crop Management Solutions is again offering incentives for the 2016 growing season. These incentives help farmers who plant Genuity® Roundup Ready® Flex or Bollgard II® XtendFlex® cotton varieties to proactively manage glyphosate-resistant Palmer amaranth by encouraging the use of residual herbicides with multiple sites of action.

Specifically for early-season weed management, the 2016 Roundup Ready PLUS® Crop Management Solutions will incentivize the use of Warrant Herbicide, Warrant® Ultra Herbicide, Rowel Herbicide, Valor, Reflex, Caparol, Dual Magnum, and Gramoxone SL herbicides for proactive weed management. For more information on Roundup Ready PLUS® Crop Management Solutions go to your local Monsanto authorized retailer or visit www.roundupreadyPLUS.com

**Source:** Yield response of cotton to delayed weed control research summary. 2008. Monsanto Learning Center Scott, MS.

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**Table 2. Southeast best management practices for early-season herbicide applications in Genuity® Roundup Ready® Flex or Bollgard II® XtendFlex® cotton.**

<table>
<thead>
<tr>
<th>Practice</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burndown</td>
<td>Roundup PowerMAX® or Roundup PowerMAX® II + Rowel® Herbicide or Valor® + 2,4-D or dicamba</td>
</tr>
<tr>
<td>PRE</td>
<td>Roundup PowerMAX or Roundup PowerMAX II + Reflex® or Warrant Herbicide, or diuron</td>
</tr>
<tr>
<td>POST 1</td>
<td>Roundup PowerMAX or Roundup PowerMAX II or MSMA + Rowel Herbicide, Valor, or diuron</td>
</tr>
<tr>
<td>LAYBY</td>
<td>Roundup PowerMAX or Roundup PowerMAX II or MSMA + Rowel Herbicide, Valor, or diuron</td>
</tr>
<tr>
<td>POST 2 - HOODED SPRAYER (for emerged glyphosate-resistant Palmer)</td>
<td>Gramoxone SL + Rowel Herbicide, Valor, or diuron</td>
</tr>
</tbody>
</table>

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1. When using Warrant Herbicide and Warrant Ultra Herbicide, see label for restrictions regarding geography and use rate. No more than two applications of Warrant Herbicide may be applied in a single growing season. PRE Prep Emergence, POST - Post-emergence; Always refer to labels for use rates, application guidelines, and rotational restrictions.

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 retailer or visit www.roundupreadyPLUS.com.