

University of Georgia Programs for Controlling Moderate to Severe Populations of Glyphosate-Resistant Palmer Amaranth in 2011 Cotton

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Glyphosate-resistant Palmer amaranth continues to spread rapidly across Georgia (Figure 1). Control in RR cotton is challenging but can be accomplished if growers are aggressive and have the ability to be timely with all herbicide applications (Figure 2). It is imperative that growers continue to use aggressive herbicide programs (Table 1) but also integrate these programs with other control measures such as hand weeding to remove escapes before seed are produced, deep turning to reduce the number of plants emerging in conventional practices, or using a heavy mulch cover crop to suppress emergence in conservation tillage.

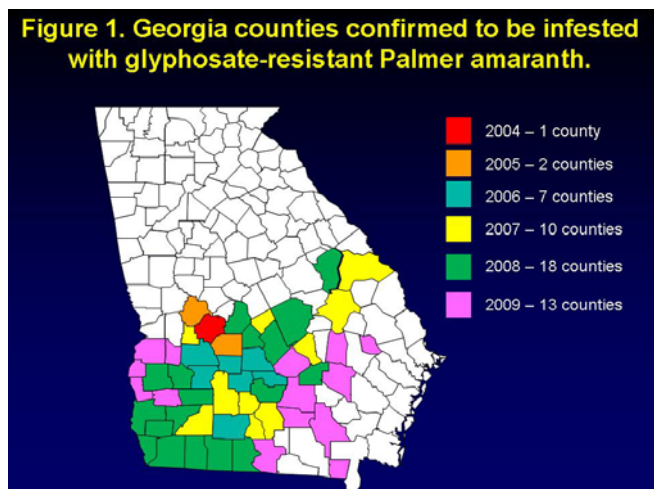


Figure 2. Early topical applications with residual herbicides needed before Palmer emerges in RR cotton!!



Prowl + Reflex PRE, Roundup + Dual Magnum POST 1, Roundup + Warrant POST 2, Direx + MSMA layby

Table 1. Managing glyphosate-resistant Palmer amaranth in Roundup Ready Flex cotton.¹

Preplant, Preplant Incorporated (PPI), or Preemergence (PRE) ²	POST 1 (1-leaf cotton)	POST 2 (5-to 7-leaf cotton)	Layby
Irrigated -Conventional Tillage			
1. Reflex + diuron PRE 2. Reflex + Prowl PRE	glyphosate + Staple <i>(Palmer 1" or less)</i>	glyphosate + Dual Magnum or Warrant <i>(no Palmer emerged)</i>	diuron + MSMA ^{4,5}
3. Reflex + diuron PRE 4. Reflex + Prowl PRE 5. Reflex + Staple PRE 6. Diuron + Staple + Prowl PRE	glyphosate + Dual Magnum or Warrant ³ <i>(no Palmer emerged)</i>	glyphosate + Dual Magnum or Warrant ³ <i>(no Palmer emerged)</i>	diuron + MSMA ^{4,5}
Irrigated - Conservation Tillage			
1. Diuron preplant; Reflex + Prowl PRE	glyphosate + Staple <i>(Palmer 1" or less)</i>	glyphosate + Dual Magnum or Warrant <i>(no Palmer emerged)</i>	diuron + MSMA ^{4,5}
2. Valor preplant; Staple+diuron+Prowl PRE 3. Diuron preplant; Reflex + Prowl PRE	glyphosate + Dual Magnum or Warrant ³ <i>(no Palmer emerged)</i>	glyphosate + Dual Magnum or Warrant ³ <i>(no Palmer emerged)</i>	diuron + MSMA ^{4,5}
Dryland – Conventional Tillage			
1. Treflan or Prowl PPI; Reflex + Staple PRE	glyphosate + Dual Magnum or Warrant ³ <i>(no Palmer emerged)</i>	glyphosate + Dual Magnum or Warrant ³ <i>(no Palmer emerged)</i>	diuron + MSMA ^{4,5}
2. Treflan or Prowl PPI; Reflex + diuron PRE	glyphosate + Staple <i>(Palmer 1" or less)</i>	glyphosate + Dual Magnum or Warrant <i>(no Palmer emerged)</i>	diuron + MSMA ^{4,5}

¹ Follow all labeled herbicide use restrictions including application rates, plant back intervals, and use rates.

² The addition of paraquat is needed for all at-plant applications if Palmer is emerged at time of application; Roundup may be used instead if resistant Palmer is not emerged. Staple systems should be avoided if ALS-resistant Palmer amaranth is present.

³ Suggest rotating Dual Magnum and Warrant when applying them both in a season.

⁴ Add an adjuvant. Will not control grasses larger than 1 in. If grasses greater than 1 inch are present, a glyphosate + diuron mixture is in order.

⁵ LaybyPro or Suprend plus MSMA are similarly effective for emerged Palmer amaranth. Layby Pro offers less residual control or carryover concern.

The Georgia Cotton Commission, Cotton Incorporated, and Industry are primary funding sources!

Ignite-based programs in Liberty Link cotton offer growers a greater potential to control glyphosate-resistant Palmer amaranth than do Roundup-based programs, especially in dryland production. However, Ignite-based programs are only consistently effective if Ignite applications begin when the largest Palmer amaranth is three inches in height (Figure 3). We strongly encourage that growers make no more than two Ignite applications per season, include at plant residual herbicides, and apply conventional herbicide chemistry at layby (Figure 4; Table 2). Numerous at plant residual herbicide options are available and selection can be based on other weeds present such as goosegrass or tropical spiderwort.

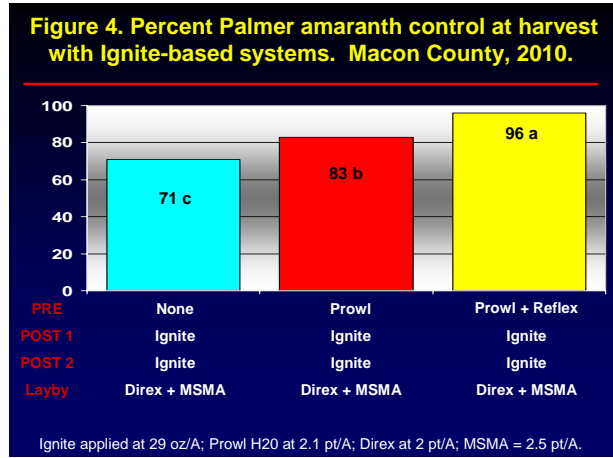


Table 2. Managing Palmer amaranth with Ignite-based programs in Liberty Link cotton.¹

Preplant or Preemergence (PRE) ²	POST 1 (3 inch Palmer; 1-2 lf cotton)	POST 2 (3 inch Palmer; 6-7 lf cotton)	Layby
<p>Conventional Tillage:</p> <ol style="list-style-type: none"> 1. Diuron + Reflex PRE 2. Cotoran + Reflex PRE 3. Prowl + Reflex PRE 4. Diuron + Staple PRE 5. Cotoran + Staple PRE 6. Diuron PRE 7. Cotoran PRE <p>(in order of most to least effective)</p>	Ignite 29 to 32 oz + Dual Magnum	Ignite 29 to 32 oz	diuron + MSMA ^{3,4}
<p>Conservation Tillage:</p> <ol style="list-style-type: none"> 1. Diuron preplant; Reflex + Prowl PRE 2. Valor preplant; Diuron PRE 3. Valor preplant; Cotoran PRE 4. Diuron preplant; Staple + Prowl PRE <p>(in order of most to least effective)</p>	Ignite 29 to 32 oz + Dual Magnum	Ignite 29 to 32 oz	diuron + MSMA ^{3,4}

¹Cotton must be tolerant to Ignite 280 (glufosinate) herbicide at 29 to 32 oz/A. Follow all labeled herbicide use restrictions including application rates, plant back intervals, and use rates.

²The addition of paraquat is needed for all at-plant applications if Palmer is emerged at time of application; Roundup may be used instead if resistant Palmer is not emerged. Staple systems should be avoided if ALS-resistant Palmer amaranth is present.

³Add an adjuvant. Will not control grasses larger than 1 in.

⁴LaybyPro or Suprend plus MSMA are similarly effective for emerged Palmer amaranth. Layby Pro offers less residual control or carryover concern.

NOTE: Programs were specifically developed to include only one PPO herbicide (Reflex, Valor) and only 1 ALS herbicide (Staple) application during the season; this will reduce the potential for the development of PPO herbicide resistance in Palmer amaranth and to minimize further development of ALS-resistant Palmer amaranth. Programs relying more heavily on these herbicides may provide greater control this season but threaten long term production due to increased resistance potential.

