

Managing Palmer Amaranth (Pigweed) in Cotton and Soybean Fields

Palmer amaranth (*Amaranthus palmeri*), commonly known as Palmer pigweed, is found throughout the southern United States, from southern California to Virginia. Left uncontrolled, Palmer pigweed can significantly reduce crop yields by competing with the crop for sunlight, water and nutrients, and by causing problems at harvest. To help control this weed cotton and soybean growers should implement an integrated management approach.

Why is it hard to control?

Palmer amaranth is an erect summer annual that can exceed six feet in height. The plant has dense, compact terminal flowers and relatively tall stems with petioles longer than the leaves (figure 1). Palmer pigweed has male and female plants, allowing for greater genetic variability and adaptability, therefore increasing potential to develop resistance to herbicides. Palmer pigweeds are annual weeds which can quickly take over a field. It is more competitive than any other pigweed species, tends to emerge more continuously during the growing season and can produce up to 1,000,000 seeds per plant. Glyphosate-resistant Palmer amaranth has been confirmed in the southern regions of the United States.



Figure 1. Palmer Amaranth (pigweed)

General Weed Resistance Management Practices:

- Scout fields before and after herbicide application.
- Start with a clean field, using either a burndown herbicide application or tillage.
- Control weeds early when they are relatively small.
- Incorporate other herbicides and cultural practices as part of Roundup Ready® cropping systems where appropriate.
- Implement a herbicide program with multiple modes-of-action
 - As part of the Roundup Ready cropping system, incorporate use of residual herbicides at least three times during the growing season.
 - Preemergence, postemergence and layby applications are recommended.
- Use the right herbicide product at the full label rate and the right time.
- Control weed escapes and prevent weeds from setting seeds.
- Clean equipment before moving from field to field to minimize spread of weed seed.
- Use new commercial seed as free from weed seed as possible.

For more information on Palmer pigweed management programs visit the following websites: www.weedresistancemanagement.com and www.weedtool.com

Integrated Management Approach

Combining cultural, mechanical and chemical programs can provide consistent, long-term control of Palmer pigweed. Crop rotation and tillage can improve consistency of control. Timely scouting, proper herbicide timing, and implementing a herbicide program with multiple modes-of-action are key components for successfully managing pigweed.

Management

Palmer pigweed has become more prevalent in cotton and soybeans in the southern United States and requires the use of many tools, including residual and postemergence herbicides. To manage pigweed species in Genuity™ Roundup Ready® Flex Cotton, Roundup Ready® Cotton or Genuity™ Roundup Ready 2 Yield® Soybeans and Roundup Ready® Soybeans, it is recommended to start clean and use a residual herbicide pre-plant or preemergence. A postemergence application of another residual herbicide should also be applied early in the season to control new emerging

Palmer pigweed. Finally, layby applications that control emerged weeds in-crop, that also provide residual control are recommended. Specific recommendations can be found on the next page.

Sources: Paul E. Keely, Charles H. Carter, and Robert J. Thullen. Influence of Planting Date on Growth of Palmer Amaranth. *Weed Science*, Vol 35: 199 - 204. Culpepper, S. Spread of Palmer Amaranth in Georgia Requires Fine-Tuning Control Programs. <http://www.weedresistancemanagement.com/docs/tipBox/WeedResistance-Culpepper3.pdf>

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Recommendations for Managing Glyphosate-Resistant Amaranthus Species

Genuity™ Roundup Ready® Flex Cotton and Genuity™ Bollgard II® with Roundup Ready® Flex Cotton



Instructions and Use Rates*

Glyphosate-Resistant Amaranthus Species - Palmer Amaranth

- Start clean with a burndown herbicide program or tillage.
- Apply a preemergence residual herbicide such as pendimethalin (Prowl®) plus fluometuron or fomesafen (Reflex®) or flumioxazin (Valor®) for control of Amaranthus species.
- In-crop, tank-mix Roundup WeatherMAX® herbicide at 22 oz/A with metolachlor or other labeled chloracetamide herbicide before Amaranthus species emerges.
- Use Roundup WeatherMAX herbicide in-crop, as needed, at a minimum of 22 oz/A to control other weeds.
- A post-directed application of Roundup WeatherMAX herbicide tank-mixed with MSMA and a residual such as diuron (Direx®) or flumioxazin (Valor) should be made to control Amaranthus species 3" or smaller in height and prevent additional flushes.

* Follow all pesticide label instructions

Genuity™ Roundup Ready 2 Yield® and Roundup Ready® Soybeans



Instructions and Use Rates*

Glyphosate-Resistant Amaranthus Species - Palmer Amaranth

Preplant:

- Apply a tank-mix of 22 oz/A Roundup WeatherMAX® herbicide with a preemergence residual herbicide such as alachlor (INTRRO®), flumioxazin (Valor®) or another residual herbicide for preemergence control of Amaranthus species. 2,4-D may be added to the tank-mix to help control emerged Amaranthus species and other broadleaf weeds preplant only. Follow label instructions regarding application timing relative to soybean planting.

In-crop:

- It is strongly encouraged that a preemergence residual product be used to control Amaranthus species prior to emergence. If there is emerged Amaranthus in-crop, apply a tank-mixture of 22 oz/A Roundup WeatherMAX herbicide with a postemergence product with activity on Amaranthus such as lactofen (Cobra®), fomesafen (Flexstar®) or cloransulam (FirstRate®). Applications should be made on emerged Amaranthus that does not exceed 3" in height. Read and follow all product label instructions. It is likely that visual soybean injury will occur with these tank-mixtures.

* Follow all pesticide label instructions.

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