

# Herbicide Programs for Managing Glyphosate- and ALS-Resistant Palmer Amaranth in Mississippi Cotton

Jason A. Bond, Darrin M. Dodds, Thomas W. Eubank, and Dan B. Reynolds

| Herbicide Programs to Manage Resistant Palmer Amaranth in Cotton. <sup>1</sup> |                              |                           |  |  |   |
|--|------------------------------|---------------------------|--|--|---|
| Cotton system <sup>2</sup>   | Preplant <sup>3,4</sup>      | Preemergence <sup>3</sup> | Postemergence over-the-top <sup>5</sup>                        | Postdirected <sup>8</sup>                  | Layby <sup>9</sup>                        |
| Roundup ReadyFlex  | Valor SX, Reflex, or Treflan | Cotoran or Prowl H2O      | Glyphosate + Dual Magnum <sup>6</sup> or Sequence <sup>6</sup> | Glyphosate + Caparol or Cotton Pro + MSMA  | Direx, Fierce, Reflex, or Valor SX + MSMA |
| LibertyLink  | Valor SX, Reflex, or Treflan | Cotoran or Prowl H2O      | Liberty 280 <sup>7</sup> + Dual Magnum followed by Liberty 280 | Liberty 280 + Caparol or Cotton Pro + MSMA | Direx, Fierce, Reflex, or Valor SX + MSMA |

- (1) Glyphosate- and ALS-resistant Palmer amaranth weeds are prevalent across much of Mississippi. This guide is to help aid producers in the management and/or prevention of resistant Palmer amaranth. Intensive scouting is necessary to determine if previously employed control options have failed. **Timely applications are critical in controlling escaped Palmer amaranth populations.**
- (2) Rotation of herbicide systems, such as Roundup Ready Flex and LibertyLink, is recommended to help delay the onset of resistance if it is not currently present, or to manage current resistant populations.
- (3) Soil applications of residual herbicides require incorporation from rainfall or irrigation. The level of glyphosate-resistant Palmer amaranth control and the length of residual will vary with rainfall totals. Residuals, when properly activated by timely rainfall or irrigation, can provide Palmer amaranth control for 2 to 3 weeks, depending on time of year, soil moisture, and weed pressure. Paraquat at 0.75 pound of active ingredient per acre plus a surfactant should be added to residual herbicides if glyphosate-resistant Palmer amaranth is emerged before application.
- (4) **Control from Valor SX or Reflex will be compromised if beds are disturbed before planting.** An additional residual herbicide should be applied immediately after planting if a do-all is used for final bed preparation. Preplant applications of Valor SX at 2 ounces per acre to conventional-tillage cotton should be made at least 30 days before planting. Preplant applications of Reflex to cotton require at least 14 to 21 days plus 0.5 inch of rainfall before planting. Treflan should be mechanically incorporated within 24 hours of application.

Bond is an associate research/extension professor and Eubank is an assistant extension/research professor at the Delta Research and Extension Center in Stoneville. Dodds is an assistant extension professor and Reynolds is a professor in the Mississippi State University Department of Plant and Soil Sciences. This document was approved for publication as MAFES Information Sheet 1362 of the Mississippi Agricultural and Forestry Experiment Station. It was published by the MSU Office of Agricultural Communications, a unit of the Division of Agriculture, Forestry, and Veterinary Medicine. Copyright 2014 by Mississippi State University. All rights reserved. This publication may be copied and distributed without alteration for nonprofit educational purposes provided that credit is given to the Mississippi Agricultural and Forestry Experiment Station.



- (5) The first postemergence over-the-top application should be made when cotton is in the one- to two-leaf stage.
- (6) Glyphosate plus Dual Magnum or Sequence will not control emerged glyphosate-resistant Palmer amaranth, but it could offer in-season residual control.
- (7) Liberty 280 should be applied when Palmer amaranth plants are 2 to 3 inches in height. **Spray coverage is critical when using contact herbicides such as Liberty 280. Use a spray nozzle (flat fan, twin jet, etc.) that will ensure thorough weed coverage. Avoid use of AI (air induction) nozzles with contact herbicides.**
- (8) Postdirected applications should be made after cotton plants are at least 6 inches in height.
- (9) Direx should be applied after cotton is 15 inches in height. Fierce and Valor SX should be applied after cotton is 16 inches in height. Reflex should be applied after cotton has 4 inches of bark.



**MISSISSIPPI STATE**  
UNIVERSITY™

**Mention of a trademark or proprietary product does not constitute a guarantee or warranty of the product by the Mississippi Agricultural and Forestry Experiment Station and does not imply its approval to the exclusion of other products that also may be suitable.**

Discrimination based upon race, color, religion, sex, national origin, age, disability, or veteran's status is a violation of federal and state law and MSU policy and will not be tolerated. Discrimination based upon sexual orientation or group affiliation is a violation of MSU policy and will not be tolerated.