Cotton Incorporated
Crop Management Seminar

Introduction to the Session

Weed Management

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Predominant Issues

Glyphosate Resistance

• Management of Glyphosate-Resistant Palmer Amaranth
• Management of Glyphosate-Resistant Ryegrass
• Containing Glyphosate-Resistant Johnsongrass
• Future Cotton and Soybean Weed Management
Definition: Weed Resistance

“Inherited ability of a weed population to survive and reproduce after exposure to an herbicide dose (rate) that would control an unselected population”

--- Weed Science Society of America
Acetolactate Synthase Resistant *Palmer Amaranth*

* Year of 1st report
Glyphosate-Resistant Crop Acres (millions)

- Cotton
- Corn
- Soybean
Percent of Glyphosate-Resistant Cotton Cultivars

USDA, AMS. 2006.
Total Acres Exposed to Herbicide Modes of Action for Corn, Soybean, Cotton

![Graph showing the total acres exposed to herbicide modes of action for corn, soybean, and cotton over the years 1990 to 2006. The graph compares the use of DNA, Acetanilides, Glyphosate, and Triazines.]
Number of Glyphosate-Resistant Species

The graph shows the number of glyphosate-resistant species over the years from 1996 to 2009. The count has increased significantly over time, with the highest number of species resistant to glyphosate in 2009.
Palmer Amaranth (Amaranthus palmeri)

A dioecious annual weed, growing 4-8 feet tall, producing up to 500,000 seed per year.
Impacts of Glyphosate-Resistant Palmer Amaranth

- Increased complexity and costs of weed management in cotton and soybean
- Compromising conservation tillage
- May precipitate a cascade of resistance in post emergence broad-leaf herbicides
Glyphosate-Resistant *Palmer Amaranth*

**Economic Threat to Soybeans**
If ALS and glyphosate are compromised, PPO herbicides are the **only post emergence option except glufosinate**.

**Economic Threat to Cotton**
If ALS herbicides and glyphosate are compromised; PPO herbicides are not an over-the-top option, there are **no selective post emergence options for cotton except glufosinate**.