A CONSULTANT’S PERSPECTIVE ON HERBICIDE RESISTANT WEEDS IN THE SOUTH

NAICC Annual Meeting

Billy McLawhorn
McLawhorn Crop Services
Cove City, NC
Special thanks to:

- Stanley Culpepper,
- Larry Steckel,
- Alan York, and
- Consultant friends
RESISTANCE

The ultimate fate of any pesticide/pharmaceutical with extensive use = resistance
FACTORS

- Exposure, Extent of use;
- Mode of Action;
- Biology of Pest;
- Reproduction
  - Rhizomes or stolons
  - Seed dispersal
  - Seed dispersal levels
EARLY 80’S

- DNA Goose grass resistance had developed on NC/SC border where crop mix was cotton and soybeans, and the only available herbicides for grasses were DNA’s; and
- There was MSMA-resistant Cocklebur also.
ETC.

- Some materials widely used for years with few documented problems;
- Others may be very short-lived.
Alan York expected ALS resistance in Ryegrass to develop in as soon as 5 years where Osprey, and later Axial got labeled for small grains....
But it actually happened in 3 years.
CURRENT PROBLEMS

With Glyphosate resistance problems are becoming well documented:

- Scope
- Species
- Severity - Expanding Rapidly
ADOPTION OF HERBICIDE-RESISTANT COTTON

CONFIRMED NUMBER OF HERBICIDE-RESISTANT
WEED SPECIES IN THE COTTON BELT

Source: International Survey of Herbicide Resistant Weeds (12/28/09)
2009 COTTON ACREAGE AND PERCENT ACREAGE INFESTED WITH HERBICE-RESISTANT WEEDS

Acres in survey: 8.1 mil (96% of US)

US acres infested with resistance: 27%

SE and MS acres infested with resistance: 68%

Source: National Cotton Council and beltwide weed survey (12/28/09)
Herbicide-Resistant Weeds Challenging Cotton Growers

- Palmer amaranth
- Common water hemp
- Horseweed
- Johnson grass
- Ryegrass
- Ragweed - common and giant

Resistance to glyphosate in all of the listed weeds is the primary issue as well as ALS resistance in several of the species.
MARESTAIL
JOHNSON GRASS
COMMON RYEGRASS
RAGWEED

Common

Giant
MARESTAIL

- Primarily started with NC-TILL, TN 2000
- More Widespread by 2003
- Exploded in 2008, 2009
MARESTAIL

- Now documented in 19 states.
- Has required changes in materials on pre’s and burndown programs.
MARESTAIL

- Selection not just from growers using Roundup excessively,
  - DOT rights of way
  - Railroad beds

Select for resistance
RESISTANT BIOTYPES ADAPT

- Marestail germinates 10 months of the year.
- Giant Ragweed in TN, used to germinate in Feb. and March, now into May.
Palmer amaranth is a game changer!
Weathermax 88 oz

Staple LX 10 oz
NUMBER OF SEED PRODUCED PER PLANT. GLYPHOSATE-RESISTANT WEEDS IN US.

PALMER AMARANTH SEEDBANK – IT IS THE KEY!

**YEAR 1:** 5 Palmer females escape
Produce 2,000,000 seeds in cotton (50% germ)

**YEAR 2:**
Weed program = 99.9% control
1,000 plants per acre left at harvest
400 female plants/A
160,000,000 seeds produced in cotton (50% germ)

**YEAR 3:**
Weed program 99.9% control
80,000 plants per acre left at harvest
32,000 female plants/A = $1.28 \times 10^{10}$ seed/A
Is this weed resistant?
Wanna risk it?
A focus on profitability and long-term success requires a pro-active approach.
Sometimes we have to shock people to get their attention.
“How about it, Baby?”
Some materials widely used for years with few documented problems; others may be very short-lived.

"When I say 'NOW,' bite the leather!"

"How about it yourself, Big Boy?"

PowerMax 22 oz 2 leaf
PowerMax 22 oz 5 leaf
Ignite 29 oz 2 leaf
Ignite 29 oz 5 leaf
Future Technology: 2,4-D or Dicamba Resistant Cotton

2,4-D resistant cotton

2,4-D sensitive cotton
Conservation Tillage is Very Important To the Southeast
Controlling GR Palmer amaranth by Developing Integrated Programs
Herbicide Resistance Management

1. Reduce herbicide reliance (as practical)
   Competitive crop, good agronomics, cover crop, cultivation

2. Crop rotation, with appropriate herbicide selection

3. Diversity of chemistry
   Multiple modes of action within a crop
   At least 2 MOA’s in corn and soybeans, 3 in cotton
   Residuals
   Full use rates
VALUE OF TRANSGENICS ARE CHANGING WHERE GR PALMER IS PRESENT.

University of Georgia Ponder Farm
CONSULTANTS RESPONSIBILITY

- Consultants make a living out of telling people what they don’t want to hear.
- Our responsibility is to find a palatable way to do this.
SUMMARY

- Act as if problem exists before it develops
  - Multiple modes of action, early treatment, etc.;
- Do a thorough job of weed surveys, recordkeeping;
- Help grower plan;
- Talk it up, get others involved – constantly;
- Try to keep growers with problems out of your neighborhood.
Keep hammering – keep message out there;
Take growers to Extension demo sites;
Show pictures in grower meetings; and
Whatever methods work with your problems.
As consultants, our job is more about preventing disasters than managing them.
Can you afford not to do your best on resistance management?

Soybean planted here, glyphosate applied 3 times.