Slowing the Spread of Glyphosate-Resistant Johnsongrass

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Johnsongrass
Johnsongrass

• Native to Mediterranean region

• Original introduction to U.S. not certain
  – Documented in South Carolina early 1800’s
  – Named for a farmer from Alabama

• Believed to have been moved throughout southern U.S. during the Civil War

• Texas is 1st state to pass law banning johnsongrass planting in 1895

• U.S. government labeled it “worst weed of the South” in 1904
Johnsongrass

• Seed
  – Moved by animals and equipment
  – Sowed by producers

• Rhizomes
  – Some suggest planted to reclaim “worn out” fields following Civil War
  – Moved by equipment
Johnsongrass

• Prior to glyphosate-resistant crops, johnsongrass was considered the be an extremely troublesome weed, if not the most troublesome.

• After glyphosate-resistant crops?
  – “I don’t have a problem with johnsongrass anymore.”
Johnsongrass Fights Back!

- **Louisiana**
  - Found in 2008 near Alexandria and Baton Rouge
  - Fusilade and Select resistance confirmed in 1990’s in different population in NE Louisiana
  - Spreading slowing in Central Louisiana

- **Arkansas**
  - Found in 2008 near West Memphis
    - Also resistant to Fusilade, but not Select
  - Found in 2009 near Marion
  - Populations doesn’t appear to be spreading

- **Mississippi**
  - Found in 2008 in Coahoma County
  - Slowing spreading
What we’re dealing with!
How can we get out of this mess?
**Fight it in all crops!**

- Corn
  - Don’t use only glyphosate + atrazine!

<table>
<thead>
<tr>
<th>PRE</th>
<th>POST (V3 or V4)</th>
<th>% Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corvus</td>
<td>Liberty</td>
<td>95</td>
</tr>
<tr>
<td>Corvus + atrazine</td>
<td>Liberty</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Capreno</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>Liberty</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>Capreno + atrazine</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>Liberty + atrazine</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>Resolve Q</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Steadfast Q</td>
<td>83</td>
</tr>
</tbody>
</table>
Fight it in all crops!

• Cotton
  – CI funded research in Louisiana and Arkansas
  – Liberty +/- Select Max
    • Initial application timing
      – 6-inch johnsongrass
      – 18-inch johnsongrass
    • Sequential application timing
      – 6-inch regrowth
• Treatments
  – Liberty @ 36 oz/A
  – Liberty @ 36 oz/A + Select Max @ 1 pt/A
  – Liberty fb Liberty @ 29 oz
  – Liberty + Select Max fb Liberty Select Max
Cotton

- Liberty +/- Select Max

Johnsongrass control at 6-inch regrowth application

Johnsongrass control 2-3 wk after normal layby timing
Fight it in all crops!

• Cotton
  – CI funded research in Louisiana and Arkansas
  – Staple LX/Envoke/Select Max
  
  – Treatments
    • Initial application @ 6-inch johnsongrass
      – Staple LX @ 2.6 oz/A
      – Select Max @ 1 pt/A
      – Staple LX + Select Max

    • Sequential application @ 6-inch regrowth
      – Envoke @ 0.15 oz/A
      – Select Max
      – Envoke + Select Max
Cotton

- Staple LX/Envoke/Select Max

**Johnsongrass control at 6-inch regrowth application**

- Staple LX: 40%
- Select Max: 90% (a)
- Staple LX + Select Max: 90% (a)

**Johnsongrass control 28 days after 6-inch regrowth application**

- Staple LX: 40% (b)
- Select Max: 90% (a)
- Staple LX + Select Max: 90% (a)
- Envoke: 40% (b)
- Envoke + Select Max: 90% (a)
Fight it in all crops!

• Soybean
  – Classic/Flexstar/Select Max

– Herbicides
  • Classic @ 0.5 oz
  • Flexstar @ 1 pt/A
  • Select Max @ 1 pt/A

– Application timings
  • V2
  • V5
  • V8
GR johnsongrass control in soybean

Flexstar fb Classic fb Select Max
Soybean

• Liberty rates and application timing in LL soybean
  – Liberty rates
    • 22, 29, and 36 oz/A

  – Sequential applications
    • 22 fb 22 or 29 oz/A
    • 29 fb 22 or 29 oz/A
    • 36 fb 22 or 29 oz/A

  – Application timings
    • 18-inch johnsongrass
    • 3 weeks after 1st application
    • 4 weeks after 1st application
Soybean

• Liberty rates and application timing in LL soybean

**Effect of initial applic. rate on control at soybean harvest**

<table>
<thead>
<tr>
<th>Rate</th>
<th>% Control</th>
</tr>
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<tbody>
<tr>
<td>22 oz/A</td>
<td>b</td>
</tr>
<tr>
<td>29 oz/A</td>
<td>ab</td>
</tr>
<tr>
<td>36 oz/A</td>
<td>a</td>
</tr>
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</table>

**Effect of sequential applic. timing on control at soybean harvest**

<table>
<thead>
<tr>
<th>Timing</th>
<th>% Control</th>
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</thead>
<tbody>
<tr>
<td>3 wk</td>
<td>b</td>
</tr>
<tr>
<td>4 wk</td>
<td>a</td>
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</table>
GR johnsongrass management

• Corn:
  – Products such as Capreno, Accent Q, Resolve Q
  – Plant a RR/LL hybrid.....don’t apply OP insecticide.....utilize ALS herbicides tank-mixed with Liberty

• Cotton and Soybean
  – Graminicides
  – Glyphosate + graminicide
    • Utilized by Louisiana producers because of continued efficacy of glyphosate on numerous grass and broadleaf weeds

  – Liberty +/- graminicides
    • LL or GlyTol/LL cotton and LL soybean

  – RELYING UPON GRAMINICIDES MAY LEAD TO RESISTANCE
    • HAS BEEN DOCUMENTED IN NUMEROUS STATES!
QUESTIONS?