Weed Control in No-till/Western Oklahoma Cropping Systems

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No-till Discussion (assumption)

- Wheat / row crop / fallow
  - No-till Cropping System
  - In the wheat crop
  - After wheat harvest
  - In row crop
No-till Cropping Systems

- Cropping System / crop selection or rotation affects:
  - Diversity allows for the diverse use of other integrated tools
    - Herbicide selection, timing of herb. applications
  - A monoculture will develop specific weed problems, ie. Wheat – winter annual grasses and lead to diversity in employment
Crop rotations in dryland

• The summer crop will be no-till planted into the wheat stubble.
  – Residue is an essential part of the system and has affect on weed seed germination and weed growth
Figure 3. The effect of wheat straw mulch level and metolachlor rate on weed population at Sidney, NE, in 1981 and 1982. CV = 93. (t/ha = Mg/ha).
Control weeds in your wheat!??!

• Subsequent crop will affect herbicide selection
  – Be careful with sulfonylureas (Maverick and Glean are LONG residual), Finesse, Amber, Rave, and Ally all can have residual. Other grass herbicides like Olympus, Powerflex, and others have crop rotation restrictions. Refer to herbicide label. The actual residual is moisture and pH dependent. Rotation restriction may vary depending on where you live.
<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Corn</th>
<th>Milo</th>
<th>Bean</th>
<th>Cotton</th>
<th>Flower</th>
<th>Alfalfa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glean/Finesse</td>
<td>11/36</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>FB</td>
<td>FB</td>
</tr>
<tr>
<td>Ally</td>
<td>12</td>
<td>10</td>
<td>4-34?</td>
<td>14-22</td>
<td>22</td>
<td>FB</td>
</tr>
<tr>
<td>Amber/Rave</td>
<td>22-36</td>
<td>14</td>
<td>14-36</td>
<td>FB</td>
<td>24/FB</td>
<td>4/FB</td>
</tr>
<tr>
<td>Maverick</td>
<td>22/FB</td>
<td>22/FB</td>
<td>12/FB</td>
<td>12/FB</td>
<td>22/FB</td>
<td>FB</td>
</tr>
<tr>
<td>Peak</td>
<td>1</td>
<td>1</td>
<td>10-18</td>
<td>10-18</td>
<td>22</td>
<td>15-22</td>
</tr>
<tr>
<td>Olympus (Flex)</td>
<td>18(12)/FB</td>
<td>12/FB</td>
<td>12/FB</td>
<td>12/FB</td>
<td>FB</td>
<td>FB</td>
</tr>
<tr>
<td>PowerFlex</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>12</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

*FB=Field Bioassay
Control weeds in your wheat!??!

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- Weeds often not competitive in a wheat crop but sometimes they are!
Control weeds in your wheat!?!?

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  - Be careful with sulfonylureas (Maverick is LONG re.)
- Weeds often not competitive in a wheat crop but sometimes they are!
- Preharvest burndown treatments in wheat are often a disaster, delays harvest, & expensive!
  - DO NOT GO THERE IF IT CAN BE AVOIDED!
Control weeds in your wheat!?!?

• Subsequent crop will affect herbicide selection
  – Be careful with sulfonylureas ...

• Weeds often not competitive in a wheat crop sometimes they are!

• Preharvest burndown treatments in wheat are often a disaster & expensive!

• Can delay the initial weed control operation needed after harvest.
CONTROL YOUR WEEDS IN WHEAT!
Plant row crop no-till into wheat stubble!?
Corn yield as affected by timing of weed control and stubble height, Tribune 2001, Schlegel

- July
- Aug
- None
- Avg

bu/A

Low  High  Avg
Stubble Height
Avoid if raising summer crops!
Weeds utilize Moisture & Nutrients! Fact! Not an assumption!
Control weeds in no-till

• Moisture conservation for crop production
• Reduce weed seed bank - reduce future weed pressure
  – Will be a weed species shift!
• Less residue to plant through if fallow maintained weed free
Factors Affecting In Crop Weed Control with No-till

- Soil active herbicides surface applied without incorporation (Encouraged in crops with limited post herbicides)
- Postemergence herbicide activity same as conventional
- Postemergence herbicide selection can be affected if crop intensity increases (residual could affect subsequent crop)
Weed Species Shifts

• Increase in Roundup Tolerant Weeds
  – prairie cupgrass, showy cloris, windmillgrass, tumblegrass, sanddropseed, yellow nutsedge, others

• Increase risk of Roundup Resistant Weed development
  – Marestail
  – Ragweed
  – Waterhemp/Palmer-not documented
  – Kochia / Russian thistle-not documented
Weed Species Shifts

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• Tankmix herbicides with alternative modes action

• DO NOT USE reduced rates of glyphosate
Weed Species Shifts

• Increase in Roundup Tolerant Weeds
  – prairie cupgrass, showy cloris, windmillgrass, tumblegrass, sanddropseed, yellow nutsedge

• Tend to have increase in small seeded grasses and broadleaf weeds
  – foxtails, crabgrass, stinkgrass, witchgrass, kochia, pigweeds, marestail, Russian thistle
Weed Species Shifts

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  – prairie cupgrass, showy cloris, windmillgrass, tumblegrass, sanddropseed, yellow nutsedge

• Tend to have increase in small seeded grasses and broadleaf weeds
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• Have decrease in large seeded weeds
  – bindweed, velvetleaf, cocklebur, morningglory, devilsclove
Why the Weed Species Shifts?

- Increase in the use of Roundup, glyphosate, thus selection pressure will benefit Roundup tolerant weeds
Why the Weed Species Shifts?

• Increase in the use of Roundup thus selection pressure will benefit Roundup tolerant and resistant weeds

• Small seeded weeds must emerge from shallow depths and often can germinate laying on a damp residue covered soil surface
Why the Weed Species Shifts?

• Increase in the use of Roundup thus selection pressure will benefit Roundup tolerant weeds

• Small seeded weeds must emerge from shallow depths and often can germinate laying on a damp soil surface

• By leaving weed seed on the surface, large seeded weeds are less likely to germinate and grow and are destroyed through weathering or insect depredation
Timely weed control is essential!!!

Remember, small weeds are easier to kill than large weeds!
Do You Own Your Sprayer

Timeliness and flexibility in herbicide application is important and custom application may not cut it
Roundup Activity!!!

- Increased with lower volumes
Roundup Activity!!!

- Increased with lower volumes
- Increased with ammonium sulfate
  - Some AMS replacements have little value
  - Rate should be 8.5 to 17 lbs dry product / 100 gallon of spray solution
  - Rate should be 2.5 to 5 gallon liquid product / 100 gallon of spray solution
Roundup Activity!!!

• Increased with lower volumes
• Increased with ammonium sulfate
• Tends to decreased with increasing weed size of several species
Roundup Activity!!!

- Increased with lower volumes
- Increased with ammonium sulfate
- Decreased with increasing weed size
- Decreased complete coverage with increased weed size
Roundup Activity!!!

- Increased with lower volumes
- Increased with ammonium sulfate
- Decreased with increasing weed size
- Decreased complete coverage with increased weed size
- Decreased with application late in the evenings or real early in the morning – weed species specific
AVOID!
QUESTIONS?

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