Weed Control in Soybeans and Resistant Weed Management
Typical Soybean Field 10 Years Ago
Marestail Escapes from Glyphosate
Glyphosate Resistant Waterhemp in Eastern Kansas
Herbicide Resistance

WSSA Definition

- Resistance is the inherited ability of a plant to survive and reproduce following exposure to a dose of herbicide normally lethal to the wild type.
- Tolerance is the inherent ability of a species to survive and reproduce after herbicide treatment. This implies that there was no selection or genetic manipulation to make the plant tolerant; it is naturally tolerant.
Herbicide Resistance Landmarks in Kansas

- 1976: Kochia resistance to atrazine.
- 2005: Marestail resistance to glyphosate.
- 2006: Waterhemp resistance to glyphosate.
Herbicide Resistance in Kansas

- Photosystem II: Kochia and pigweeds
- ALS inhibitors: 11 species
- PPO: Waterhemp
- Glyphosate: Six species
- HPPD: Palmer amaranth
- PGR: Kochia?
Glyphosate Resistance in Kansas

- Marestail (2005): Common throughout KS.
- Giant Ragweed (2006): Scattered through NE KS.
- Waterhemp (2006): Common in eastern third of KS.
- Common Ragweed (2007): Isolated in Eastern KS.
- Kochia (2007): Common in western third of KS.
Pigweed Escapes in Soybean Fields
Waterhemp populations – Eastern Kansas, 2011

Population:

4
3
2

Glyphosate rate, lb ae/a

0 0.75 (1X) 1.5 (2X) 3 (4X)
Palmer amaranth – Cowley county, 2011

Glyphosate rate, lb ae/a

<table>
<thead>
<tr>
<th>R</th>
<th>S</th>
<th>0</th>
<th>0.75 (1X)</th>
<th>1.5 (2X)</th>
<th>3.0 (4X)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Knowledge for Life
Confirmed Glyphosate Resistant Waterhemp and Palmer Amaranth - 2011

= R Palmer amaranth
= R Common waterhemp
Palmer Amaranth – Stafford County, 2012

Radium population

Susceptible

0  0.75 (1X)  1.5 (2X)  3 (4X)

Glyphosate rate lb ae/a
Palmer Amaranth – Pottawatomie County, 2012

Wamego population

Susceptible

0 0.75 (1X) 1.5 (2X) 3 (4X)
Glyphosate rate lb ae/a
Glyphosate Resistant Pigweeds in Kansas

- Glyphosate-resistant common waterhemp is present across much of eastern Kansas.
- Glyphosate-resistant Palmer amaranth is now present in several areas of Kansas and on the increase.
- Alternative weed management strategies need to be implemented to control GR pigweeds in Kansas.
Glyphosate Resistant Palmer Amaranth
Stanley Culpepper, University of Georgia

WeatherMax 88 oz at 1 inch
WeatherMax 88 oz at 4 inch
WeatherMax 88 oz at 12 inch
Glyphosate Resistant Weed Management

- Utilize an integrated weed management approach and avoid continuous, exclusive use of glyphosate for weed control
  - Crop rotation, especially with non RR crops
  - Integrate the use of residual herbicides
  - Rotate and/or tankmix herbicides with different sites of action, within and across years
  - Include other control tactics (cultivation, prevention, crop competition, cultural practices)
  - “Use the proper rate at the proper time”
BMP’s for Herbicide Resistance = BMP’s for Weed Management

- Diversified Weed Management Program:
  - Cultural Practices
  - Knowledge of Weed Biology
  - Crop Rotation
  - Tillage?
  - Multiple Herbicide Sites of Action
  - Residual Herbicides
Glyphosate Resistant Pigweed Control

- Utilize an integrated approach incorporating residual and postemergence herbicides with different MOA

- Timing: Waterhemp and Palmer amaranth generally are warm season weeds that don’t germinate until later in the spring and into the summer
  - Fall and early spring treatments probably will not provide season-long control
Palmer Amaranth & Waterhemp Control

- **Foundation preemergence herbicides**
  (No more than 1 to 2 weeks preplant)
  - Soybeans: Authority, Valor, Fierce, Prefix, OpTill Pro, metribuzin, Zidua, metolachlor, Intrro, Outlook, Warrant, Prowl, Treflan
  - Corn: Lexar/Lumax, Balance Flexx, Corvus, Verdict, Atrazine/acetamide mixes
Broadleaf weed control at Manhattan, KS in 2010 with good activation (Peterson and Thompson).

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>Paam</th>
<th>Vele</th>
<th>Ilmg (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valor</td>
<td>2 oz</td>
<td>97</td>
<td>100</td>
<td>80</td>
</tr>
<tr>
<td>Valor XLT</td>
<td>3 oz</td>
<td>96</td>
<td>100</td>
<td>90</td>
</tr>
<tr>
<td>Fierce</td>
<td>3 oz</td>
<td>99</td>
<td>99</td>
<td>87</td>
</tr>
<tr>
<td>Authority First/Sonic</td>
<td>3.2 oz</td>
<td>97</td>
<td>100</td>
<td>87</td>
</tr>
<tr>
<td>Authority XL</td>
<td>4 oz</td>
<td>98</td>
<td>93</td>
<td>90</td>
</tr>
<tr>
<td>Prefix</td>
<td>2 pt</td>
<td>100</td>
<td>53</td>
<td>50</td>
</tr>
<tr>
<td>OpTill</td>
<td>2 oz</td>
<td>89</td>
<td>100</td>
<td>83</td>
</tr>
<tr>
<td>Prowl H2O</td>
<td>2.5 pt</td>
<td>50</td>
<td>83</td>
<td>27</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
## Broadleaf weed control at Manhattan, KS in 2010 with delayed activation (Peterson and Thompson)

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate (oz/a)</th>
<th>Paam (%)</th>
<th>Vele (%)</th>
<th>Ilmg (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valor XLT</td>
<td>3.5</td>
<td>99</td>
<td>87</td>
<td>73</td>
</tr>
<tr>
<td>Authority First</td>
<td>3.2</td>
<td>75</td>
<td>70</td>
<td>77</td>
</tr>
<tr>
<td>Authority XL</td>
<td>4</td>
<td>63</td>
<td>63</td>
<td>73</td>
</tr>
<tr>
<td>Authority Assist</td>
<td>5</td>
<td>80</td>
<td>67</td>
<td>80</td>
</tr>
<tr>
<td>Fierce</td>
<td>3</td>
<td>98</td>
<td>100</td>
<td>73</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>8</td>
<td>13</td>
<td>12</td>
<td></td>
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</tbody>
</table>
Residual weed control in soybeans at Manhattan, KS in 2013 (Peterson and Thompson).

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate</th>
<th>Cost</th>
<th>Soybean Injury</th>
<th>Paam</th>
<th>Vele</th>
<th>Ilmg</th>
<th>Soybean Yield (Bu/a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(oz/a)</td>
<td>($/a)</td>
<td>(%)</td>
<td>(% control)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valor</td>
<td>3</td>
<td>19.10</td>
<td>15</td>
<td>99</td>
<td>98</td>
<td>85</td>
<td>49</td>
</tr>
<tr>
<td>Fierce</td>
<td>3</td>
<td>19.95</td>
<td>13</td>
<td>100</td>
<td>99</td>
<td>78</td>
<td>49</td>
</tr>
<tr>
<td>Valor XLT</td>
<td>5</td>
<td>24.05</td>
<td>15</td>
<td>100</td>
<td>100</td>
<td>87</td>
<td>54</td>
</tr>
<tr>
<td>Authority First/Sonic</td>
<td>6.4</td>
<td>34.00</td>
<td>3</td>
<td>97</td>
<td>90</td>
<td>95</td>
<td>51</td>
</tr>
<tr>
<td>Authority XL</td>
<td>6</td>
<td>23.80</td>
<td>0</td>
<td>97</td>
<td>57</td>
<td>87</td>
<td>48</td>
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<tr>
<td>Authority Maxx</td>
<td>8</td>
<td>31.75</td>
<td>3</td>
<td>97</td>
<td>53</td>
<td>92</td>
<td>46</td>
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<tr>
<td>Authority Elite</td>
<td>28</td>
<td>26.70</td>
<td>2</td>
<td>100</td>
<td>43</td>
<td>83</td>
<td>49</td>
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<tr>
<td>Prefix</td>
<td>32</td>
<td>13.20</td>
<td>0</td>
<td>98</td>
<td>7</td>
<td>30</td>
<td>47</td>
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<tr>
<td>Boundary</td>
<td>40</td>
<td>26.85</td>
<td>3</td>
<td>98</td>
<td>98</td>
<td>30</td>
<td>47</td>
</tr>
<tr>
<td>OpTill Pro</td>
<td>2+10</td>
<td>21.70</td>
<td>5</td>
<td>100</td>
<td>53</td>
<td>68</td>
<td>48</td>
</tr>
<tr>
<td>Metribuzin 75DF</td>
<td>8</td>
<td>8.45</td>
<td>2</td>
<td>97</td>
<td>87</td>
<td>40</td>
<td>43</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>16</td>
<td>17</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>
Palmer Amaranth & Waterhemp Control

- Postemergence herbicide options
  - Soybean – Flexstar, Cobra, Ultra Blazer, Marvel, Prefix
  - Overlapping Residuals – Warrant, Outlook, Dual, Zidua
  - Corn – Callisto, Callisto Xtra, Laudis, Capreno, Impact, Armezon, Halex GT, Status, Atrazine, 2,4-D

- Liberty Link programs in soybeans and corn
### Glyphosate resistant waterhemp control at Ottawa, KS in 2011 (Peterson, Adee, Shoup, and Putman).

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>Waterhemp Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(oz/a)</td>
<td>6/28 (%)</td>
</tr>
<tr>
<td>Roundup Power Max</td>
<td>22</td>
<td>-</td>
</tr>
<tr>
<td>Valor XLT/ RUPM</td>
<td>4 /22</td>
<td>91</td>
</tr>
<tr>
<td>Valor XLT/RUPM+Flexstar</td>
<td>6.5/22+20</td>
<td>89</td>
</tr>
<tr>
<td>Auth XL/RUPM+Flexstar</td>
<td>6.5/22+20</td>
<td>98</td>
</tr>
<tr>
<td>Auth First/RUPM+Flexstar</td>
<td>6.5/22+20</td>
<td>90</td>
</tr>
<tr>
<td>Fierce/RUPM+Flexstar</td>
<td>4.5/22+20</td>
<td>100</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

**Note:**
- LSD values are given in percentage.
Fierce/Roundup PM+Flexstar
Valor XLT fb Liberty
Managing Marestail

- Timing, Timing, Timing!
- Utilize dicamba, 2,4-D, Sharpen and/or residual herbicides in fall and early spring burndown in no-till.
- Atrazine + 2,4-D in corn or sorghum
- Liberty for late burndown control.
- Control marestail in the wheat crop.
- Don’t skimp on rate or appropriate spray additives.
- Use appropriate treatments.
Management Effect on Marestail in Soybeans
Glyphosate Resistant Ragweed Management

- **Timing, Timing Timing!**
  - Both species are early spring germinators.
  - Control prior to planting when ragweed less than 4 inches.

- **Alternative/Tank Mix herbicides:**
  - Soybeans: 2,4-D (preplant)
    - Sharpen (preplant to preemergence)
    - Paraquat (burndown)
    - FirstRate (postemergence, unless ALS Res)
Glyphosate (PP)/Glyphosate (P)
Glyphosate + 2,4-D (PP) / Glyphosate (P)
Gramoxone + Dual Magnum (PP) / Glyphosate (P)
Timing and Environment.

- The majority of kochia germinates early but will continue into the growing season.
- Apply herbicides before kochia gets too large and with optimal environmental conditions.
- Do not plant into uncontrolled kochia stands.

Foundation preemergence herbicides

- Soybeans: **Authority**, Valor, Sharpen, OpTill (Pro), Boundary, metribuzin (Beware of soil limitations)

Postemergence herbicide options

- Soybean – Extreme*, Raptor*, Synchrony*
  * Unless also ALS resistant
Best defense against herbicide resistant weeds

- Avoid continuous selection for R-biotypes
  - Rotate and/or tankmix herbicides with different sites of action, within and across years
  - Crop rotation
  - Include other control tactics (cultivation, prevention, crop competition, cultural practices)
  - “Use the proper rate at the proper time”
WSSA Site of Action Classification

- Number system assigned to different Herbicide Sites of Action

1. ACCase inhibitors: Assure, Select, Poast, Fusion, etc
2. ALS inhibitors: Sulfonylureas, Imidazoliones, etc
4. Auxin receptors: 2,4-D, dicamba, Tordon, etc
5. Photosystem II inhibitors: atrazine, metribuzin, etc
9. EPSP inhibitor: glyphosate
10. Glutamine Synthetase inhibitor: Liberty
14. PPO inhibitors: Valor, Spartan, Sharpen, Cobra, Cadet, etc
15. Long Chain Fatty Acid Inhibitors: Dual, Harness, Outlook, Zidua, etc
22. Photosystem I Inhibitor: Paraquat, Gramoxone, Parazone
27. HPPD inhibitors: Balance, Callisto, Laudis, Armezon, Huskie, etc
FIERCE® HERBICIDE

GROUP 14 + 15 HERBICIDE

FOR RESIDUAL CONTROL AND/OR SUPPRESSION OF CERTAIN WEEDS IN FIELD CORN, FALLOW LAND, NON-CROP AREAS AROUND FARMS, ORCHARDS AND VINEYARDS AND TO MAINTAIN BARE GROUND ON NON-CROP AREAS

Active Ingredients

- Flumioxazin* ........................................... 33.5%
- Pyroxasulone** ......................................... 42.5%
- Other Ingredients ..................................... 24.0%
Total ...................................................... 100.0%

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CROP ROTATIONAL INTERVAL
APPLICATION INFORMATION
Crop Rotational Information

VALENT®
Optill® PRO
Powered by Kixor® Herbicide

Premium Residual Option herbicide for use in soybean

Active Ingredients (Dry Component):
salufenacil: N’-[2-chloro-4-fluoro-5-[(3-methyl-2,6-dioxo-4-(trifluoromethyl)-3, 6-dihydro-1H-pyrimidinyl)benzoyl]N-isopropylN-methylsulfamide] 17.8%
Imazethapyr: (±)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic acid 50.2%
Other Ingredients: 32.0%
Total: 100.0%

Contains 0.178 pound active ingredient salufenacil and 0.502 pound acid equivalent imazethapyr per pound formulated as a water-dispersable granule (WG)

Active Ingredient* (Liquid Component):
dimethenamid-P: (S)-2-chloro-N-[(1-methyl-2-methoxy)ethyl]-N-(2,4-dimethyl-thien-3-yl)acetamide 63.9%
Other Ingredients**: 36.1%
Total: 100.0%

*Contains 6.0 pounds of active ingredient per gallon formulated as an emulsifiable concentrate
**Contains petroleum distillates

Herbicide
For Control of Certain Weeds in Cotton and Soybeans

Active Ingredient:
Sodium Salt of Fomesafen: 5.88%
Glyphosate: 22.40%
Other Ingredients: 71.72%
Total: 100.00%
MARVEL HERBICIDE

EPA Reg. No. 279-3455  EPA Est. 279-IL-1

Active Ingredient:  By Wt.(1)
Fluthiacet methyl ........................................... 1.20%
Fomesafen ........................................... 30.08%
Other Ingredients:  ........................................... 68.72%
TOTAL:  ........................................... 100.0%

Contains a total of 3.0 lb/gal which include 0.117 lb ai Fluthiacet methyl and 2.883 lb ai Fomesafen per gallon.

KEEP OUT OF REACH OF CHILDREN
WARNING/AVISO

Si usted no entiende esta etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail.)

FIRST AID (2)
If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

ATTENTION
-Although this label may appear similar to the label on a product you may have used, there may be important label differences. Users must read, understand and strictly follow all label directions, precautions and restrictions.
-It is the user’s responsibility to be sure the product is approved for sale or use on the intended crop and for use in the specific geographic area.
-It is the user’s responsibility to be aware of and to follow all State or local precautions or restrictions not appearing on this product label.
-Prior to purchase or use of this product, read the Terms of Sale or Use and Limitation of Warranty and Liability. If the terms and conditions are unacceptable, return the product immediately in the original and unopened container.

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HERBICIDE CLASSIFICATION

REPEATED USE OF HERBICIDES WITH THE SAME SITE OF ACTION CAN RESULT IN THE DEVELOPMENT OF HERBICIDE-RESISTANT WEED POPULATIONS.

**MODE OF ACTION**

This chart groups herbicides by their modes of action to assist you in selecting herbicides 1) to maintain greater diversity in herbicide use and 2) to rotate among effective herbicides with different sites of action to delay the development of herbicide resistance.

**SITE OF ACTION**

- **LIPID SYNTHESIS INHIBITORS**
  - Aryloxyphenylpropionate (AOPP)
  - Sulfonilimide

- **ACCASE INHIBITORS**
  - (acetyl-CoA carboxylase)

- **AMINO ACID SYNTHESIS INHIBITORS**
  - Imidazolinone
  - Pyridimylthiazolene
  - Pyridimylthiazolene-2-thione

**SITE OF ACTION GROUP**

- **NUMBER OF RESISTANT WEED SPECIES IN U.S.**
  - 1
  - 15

**CHEMICAL FAMILY**

- Imidazolinone
- Sulfonilimide

**ACTIVE INGREDIENT**

- Imazamox
- Imazapic
- Imazethapyr
- Bispyribac
- Fluroxypyr
- Thiobencarb

**PRODUCT EXAMPLES**

- Dicyard
- Clevevar

**SITE OF ACTION GROUP**

- Herbicides with the same site of action are grouped together.

**PREMIX**

This chart lists premix herbicides alphabetically by their trade names so you can identify the premix’s component herbicides and their respective site of action groups. Refer to the Site of Action chart on the left for more information.

<table>
<thead>
<tr>
<th>PREMIX</th>
<th>ACTIVE INGREDIENT</th>
<th>TRADE NAME*</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUSKIE COMPLETE</td>
<td>pyrasulfobenzamide</td>
<td>-</td>
</tr>
<tr>
<td>INSTANTE</td>
<td>rimsulfuron</td>
<td>Reslone, Matrix</td>
</tr>
<tr>
<td>LEXAR EZ</td>
<td>mesotrione</td>
<td>Atrazine</td>
</tr>
<tr>
<td>LINAK EZ</td>
<td>mesotrione</td>
<td>Atrazine</td>
</tr>
<tr>
<td>MARKSMAN</td>
<td>dicamba</td>
<td>Clarity</td>
</tr>
<tr>
<td>MARVEL</td>
<td>flumetsulam</td>
<td>Cadet</td>
</tr>
<tr>
<td>NORTHSTAR</td>
<td>primisulfuron</td>
<td>Bonsan</td>
</tr>
</tbody>
</table>

* Trade name information is subject to change and may not be exhaustive.
Future Technologies in Soybeans

- No new novel herbicide modes of action or active ingredients on the horizon
- Crops stacked with multiple traits
- Dicamba resistant soybeans (Xtend) from Monsanto
- 2,4-D resistant soybeans (Enlist) from Dow
- HPPD resistant soybeans from Bayer and Syngenta
Roundup Ready 2 Xtend Soybeans

- Soybeans that contains a gene that confers resistance to dicamba stacked with the Genuity Roundup Ready 2 trait technology.
- Resistant gene isolated from a soil bacteria.
- Resistance is based on metabolism of dicamba by soybeans.
- Regulatory approval delayed by additional requirement of Environmental Impact Statement.
- Commercialization by 2015?
Roundup Ready 2 Xtend Soybeans

Dicamba Products

- New low volatile formulations of dicamba being developed by Monsanto and BASF, for use on Xtend soybeans
- Monsanto dicamba products for Xtend soybeans
  - Roundup Xtend – Glyphosate + dicamba premix
  - XtendiMax – new dicamba product by itself
- BASF dicamba product for Xtend soybeans
  - Engenia – new dicamba salt by itself, similar to XtendiMax
  - Standard rate of dicamba will be 0.5 lb ae/a, which = 16 fl oz Clarity
Enlist Soybeans

- Soybeans that contain a 2,4-D resistant gene that is also stacked with both glufosinate and glyphosate resistant traits.
- 2,4-D resistance is based on metabolism of 2,4-D by soybeans
- Resistant gene isolated from a soil bacteria
- Regulatory approval delayed by additional requirement of Environmental Impact Statement.
- Commercialization by 2015?
Enlist Soybeans

2,4-D Product

- New choline 2,4-D formulation that has less volatility losses than 2,4-D amine.
- 2,4-D choline will be the only 2,4-D formulation labeled for use on Enlist soybeans.
- Enlist Duo will be a premix of glyphosate and 2,4-D choline and will be the only 2,4-D choline product available initially.
- Standard rate will be 3.5 pt/A., which is equal to 0.75 lb ae glyphosate + 0.75 lb ae 2,4-D (~ 1.5 pt of 4lb 2,4-D).
- Maximum of 3 applications per season, including burndown.
2,4-D and Dicamba Tolerant Soybeans
Potential Benefits

- Improved control of hard to control weeds
  - Morningglory, velvetleaf, kochia, buckwheat, smartweeds, etc
- Improved control of herbicide resistant weeds
  - Marestail, pigweeds, ragweeds, kochia
- Excellent crop tolerance on resistant varieties
- Expanded rate options
- Improved flexibility of burndown options without preplant interval restrictions
2,4-D and Dicamba Tolerant Soybeans

Potential Risks

- Perception that herbicide resistant crops will solve all weed problems
  - Discourage use of residual herbicides
- Over reliance on new technology and development of 2,4-D and/or dicamba resistant weeds
- Further development of weeds with multiple resistance to different herbicide MOA’s
2,4-D and Dicamba Tolerant Soybeans
Potential Risks

- Spray drift to non-resistant varieties and crops
- Spray tank contamination on subsequent applications to non-resistant varieties and crops
- Misapplication to non-resistant fields
  - Poor record keeping
  - Miscommunication with applicator
2,4-D and Dicamba Tolerant Soybeans

Summary

- New herbicide resistant crop technologies will provide new options to help with weed control, but need to be part of an integrated weed management program that utilizes residual herbicides and different herbicide modes of action to optimize weed control and crop production, while sustaining the technology.

- Stewardship will be critical to long-term success.
HPPD Soybeans

- Soybeans that contain a gene that conveys resistance to certain HPPD herbicides. Varieties will be phased in over time with different stacked traits.
  - Balance GT Beans from Bayer – Resistance to isoxaflutole (Balance) and glyphosate.
  - MGI soybeans from Syngenta – Resistance to mesotrione (Callisto), isoxaflutole (Balance), and glufosinate (Liberty).

- Metabolism based resistance.

- Commercialization possibly by 2016?
HPPD Resistant Soybeans
Potential Benefits and Risks

- Improved control of herbicide resistant and other hard to control weed species in soybeans.
- New herbicide mode of action for soybeans.
- Multiple herbicide resistant traits and herbicide options.
- Increased selection pressure for HPPD resistant weeds.
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