A – Start Clean - The value of a two pass weed control system with a residual herbicide as part of the system has been demonstrated for years and repeated by numerous university weed scientists, as well as farmers. Weed control strategies evolve and new technology is changing but the old adage of “start clean and stay clean” will never change. Everyone is talking about weed resistance, it is a growing problem; but if we utilize an effective PRE residual herbicide and start clean through tillage or a burndown program in no-till systems we are started on the right foot. Not only is the residual important to fight weed resistance but it’s value is also for reducing weed competition, protecting your yields.

B – Stay Clean – Timely postemergence applications are now more important than before. With the increasing number of weeds becoming glyphosate resistant, like waterhemp, we now must add tank mix partners that are most effective on small weed, less than 4 inches tall. When weeds such as waterhemp (~1.2” growth per day Fig. 3) and Palmer amaranth (~1.7” growth per day Fig. 3) are allowed to reach 4” in height or greater, effective options to control resistant biotypes are limited. Many growers have added a residual herbicide to their post herbicides to extend or overlap their residual control. These applications are necessary under heavy populations and for areas needing extended residual control. These timely POST residual applications are great follow-ups, but do not displace optimal pre-emergence herbicide programs. Weed management challenges can get away from you fast so don’t plan to skip the PRE application and try to catch up POST. Utilizing Authority® herbicides will provide a great foundation for sound pigweed management and a consistent first step in the start clean stay clean strategy.

C – Scout – Proper follow up and evaluation of herbicide performance is critical. You need to determine if any escaped weeds are the result of incorrect herbicide timing, environmental conditions, weed resistance, weeds emerging after herbicide application, etc...

Palmer Amaranth and Waterhemp Growth Rate Through the Growing Season

A – Start Clean

B – Stay Clean

C – Scout

Inside This Issue

• ABC’s of Weed Control
• Herbicide Resistance
• Soybean Weed Control Recommendations
• Corn Early Post Herbicide Options

Brent Neuberger
Technical Support Specialist
Mobile: 515-250-2566
brent.neuberger@fmc.com

Contact your local FMC Representative for more information:
Benjamin Fuhrman (563) 880-1329
Jennifer Horning (319) 540-9123
Ellen Devick (515) 291-4914
Beth Stoll (507) 460-2108
Al Klug (608) 695-7620
**Soybean Weed Management**
Pre-emergence residual herbicides are the foundation for sound weed management in soybeans. Start your 2016 season by putting together an effective burndown + residual + post program for the weed control needed to maximize yields. Authority® Elite herbicide is the newest product in the line-up and provides a strong waterhemp/pigweed option with dependable grass control. It combines sulfentrazone + s-metolachlor for 2 modes-of-action. It can be used alone or it can be combined with another Authority® herbicide premix to provide a strong 3-way combination for grass and broadleaf weeds.

**Authority® Brand Herbicide Treatment Options**

### Base Residual

1. **Authority® Elite herbicide: 25 - 32 oz/acre**
   - Strength of small seeded broadleaves (kochia, lambsquarters, nightshade, waterhemp) & excellent grass performance.
   - No pH or geographical restrictions. Good conventional till product and/or as tankmix partner.

2. **Authority® Assist herbicide: 8.0 - 12 oz/acre**
   - Strength of small seeded broadleaves (kochia, lambsquarters, nightshade, velvetleaf, waterhemp) & added grass performance.
   - No pH or geographical restrictions. Good for both conventional & no-till.

3. **Authority® First DF herbicide: 4.0 - 6.4 oz/acre**
   - Strength of small seeded broadleaves plus marestail, giant ragweed, sunflower, and cocklebur.
   - No pH or geographical restrictions. Good no-till / reduce-till product.

4. **Authority® XL herbicide: 4.0 - 6.5 oz/acre**
   - Strength of small seeded broadleaves plus marestail, sunflower, and cocklebur w/good cost position.
   - For soils below pH 7.6. Geographical restrictions: refer to the label.

5. **Authority® MAXX herbicide: 5.5 - 7.5 oz/acre**
   - Same components as Authority® XL herbicide but with half the amount of chlorimuron ethyl per rate for better rotational safety. Authority® MAXX herbicide= higher rate of Authority® herbicide for longer residual control of waterhemp, with less chlorimuron.
   - For soils below pH 7.6. Geographical restrictions: refer to the label.

6. **Authority® MTZ DF herbicide: 14 - 18 oz/acre**
   - Strength of small seeded broadleaves. Non-ALS option to help combat herbicide resistance.
   - For soils with pH 7.5 and lower due to injury risk of metribuzin.

### Post Sequential with Glyphosate

1. **Anthem® MAXX herbicide (through V3): 2.5 – 4.0 oz/acre**
   - Enhance post broadleaf (Cadet® herbicide) plus extended grass / small seeded broadleaf residual control well into season.
   - Cadillac program, preferred over straight Anthem as Base. Great residual addition to grass/waterhemp/nightshade programs.

2. **Marvel™ herbicide (prior to R3): 6.0 - 7.25 oz/acre**
   - Broad post broadleaf control w/residual. Focus weeds of waterhemp, velvetleaf, lambsquarters, morningglory, nightshade.
   - Geographical restrictions and rotational restrictions: See label for specific restrictions.

3. **Cadet® herbicide (through full flower): 0.60 - 0.90 oz/acre**
   - Enhance post broadleaf w/crop flexibility of soybeans or corn. Lambsquarters, velvetleaf, nightshade, waterhemp.
   - No pH or geographical restrictions w/application time flexibility.
**Herbicide Resistance**

How many of you have seen the herbicide mode of action chart? If you haven’t, please visit; www.TakeActionOnWeeds.com to see an excellent reference guide. Some key points are:

- There are basically 16 sites of action in use for corn and soybean weed control and the last new site of action discovered was the HPPD inhibitors, with mesotrione the last one introduced. There no new sites of action coming in the near future so we must utilize the tools we have to the best of our abilities.

- A lot of our weed control has switched to post-emergence only programs and consequently this is where most of the weed resistance issues are appearing.

- We currently have resistant weed species to ALS Inhibitors (site 2), to EPSP Synthase Inhibitors (site 9) glyphosate, (site 4) – (dicamba, 2,4-D), we have Photosystem II Inhibitors (site 5) triazines that show resistance along with PPO Inhibitors (site 14), and Pigment Inhibitors – HPPD (site 27) that are all documented.

- As a weed scientist I can’t stress enough the value of using preemergence herbicides to control resistant weeds, the preemergence herbicide while not expected to provide 100% control do have great value because they will reduce the number of weeds subjected to the postemergence herbicides, and the selection pressure of those post herbicides where the greatest incidence of resistance has developed.

- Another way to look at it is a weed that never emerges; will never have a chance to develop resistance to the post-emergence herbicide.

- In the example below the untreated on the left has 60 waterhemp /sq.ft. or roughly **2.6 million plants** that will be exposed to a post herbicide for resistance to develop or increase. Now if we take that to an 80 acre field then there would be about **209 million chances** that some of those plants have a mutation or something that will lead to resistance developing.

<table>
<thead>
<tr>
<th>Plants/Ft²</th>
<th>Plants/Acre Exposed to POST Herbicide Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 Plants/Ft²</td>
<td>2,613,600 Plants/A</td>
</tr>
<tr>
<td>0.1 Plants/Ft²</td>
<td>4,356 Plants/A</td>
</tr>
</tbody>
</table>
Early POST Corn Herbicide Options

With all the windy days we have seen this growing season plus the rapid corn planting there are a number of fields with no pre-emergence herbicides. In 2016 FMC is promoting a tank mix of Anthem® herbicide + Solstice® herbicide + atrazine along with your favorite glyphosate in Roundup Ready corn. This would provide excellent control of any emerged weeds and great residual as evidenced in the 2015 photos and data below. In addition to the great weed control, FMC is offering the “Freedom Pass Herbicide Assurance” program for your satisfaction. Talk to your local FMC representative for more details.

Comparisons of POST Weed Control for Control of Giant Ragweed in Field Corn. University of Minnesota - Rochester
August 13, 2015

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Giant Ragweed</th>
<th>Lambsquarter</th>
<th>Waterhemp</th>
<th>Grasses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halex® GT herbicide 3.6 pt</td>
<td>88.7%</td>
<td>97.8%</td>
<td>97.2%</td>
<td>96.8%</td>
</tr>
<tr>
<td>Anthem® herbicide 4.25 oz + Solstice® herbicide 2.5 oz + Aatrex® herbicide 16 oz fb Roundup PowerMAX® herbicide 32 oz (Early Post)</td>
<td>60.1%</td>
<td>79%</td>
<td>58.8%</td>
<td>52.5%</td>
</tr>
<tr>
<td>Roundup PowerMAX® herbicide 32 oz (Mid Post)</td>
<td>81%</td>
<td>86.3%</td>
<td>73.4%</td>
<td>75%</td>
</tr>
</tbody>
</table>
Atrexx and Atrazine are restricted use pesticides.
Roundup PowerMAXX is a registered trademark of Monsanto Company;
Halex GT and Aatrex are registered trademarks of Syngenta.