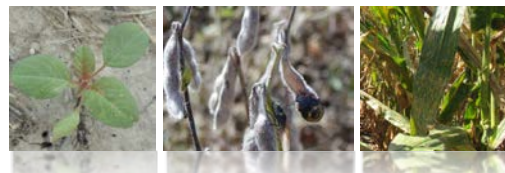


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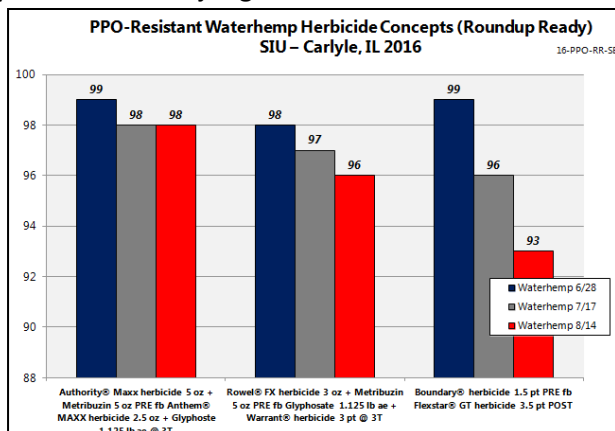
## 6-19-17 In-Season Herbicide Applications

As our weed management plans come to fruition, a critical component that is often overlooked during the planning process is mother nature. Residual herbicide materials must receive a minimum of 0.5" rainfall to allow them to move in soil moisture and be absorbed by germinating weeds. If activating rainfall does not occur, a flush of weeds (waterhemp, morningglories come to mind) could materialize and create an unexpected issue. In addition to lack of activating moisture, we frequently evaluate fields encompassing tillage escapes, these plants will exhibit an S or L shaped root / stem from soil disturbance. Even very small plants may escape tillage, these plants are often buried with just enough light and moisture to keep them viable. If adequate moisture is present to maintain turgor pressure, these plants will once again "rear their ugly head" as heat units accumulate.



Small plants excavated from a soybean field. Note plant on the left taken from field edge is growing normally, plant on the right has sustained soil disturbance as indicated by the "S shaped" root / stem.

As we encounter pigweed escapes, resulting from lack of activating rainfall or tillage, keep in mind that it is extremely important to manage these weeds prior to reaching 4" height. Quick heat unit accumulation and normal soil moisture will facilitate rapid growth, often at or in excess of 1" per day for pigweed species. This could expedite post + residual applications. It will be important to "stay the course" with post applications, even if manifesting earlier than normal. Weed scientists in areas ripe with resistance often advise a residual herbicide treatment every 14 days up to canopy. With rain in the forecast, applying an in season overlapping residual earlier than anticipated could work in our favor. However, mother nature ultimately makes the final judgment for us.



## Inside This Issue

- ✓ In-Season Herbicide Applications
- ✓ Marvel™ Herbicide Decisions
- ✓ Active Ingredient Limitations in Soybeans
- ✓ Insecticide / Fungicide Applications

Technical Service Representative

Nick Hustedde –

618-978-2268

Contact your local FMC Representative for more information:

Joe Kritenbrink – 317-407-6883

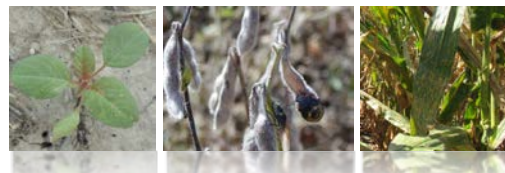
Lonne Fry – 309-221-5000

Jacob Heeren – 815-471-7904

Jen Maruszewski – 812-798-5049

Justin Qear – 513-441-5819

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Marvel™ herbicide is a pre-mixture of two protoporphyrinogen oxidase (PPO) inhibitors that react with light and oxygen to break down cell membranes. An optimized ratio of both PPO's (fomesafen and fluthiacet-methyl) provides complimentary activity on broadleaf weeds offering improved consistency in weed spectrum. Applications of Marvel herbicide (7.25 oz/a) + glyphosate (1 lb ai/A) will implement rapid activity in addition to contributing supplemental activity on weed species that glyphosate is less effective in controlling. Timing is critical for greatest activity when applying PPO herbicides. Applications made before weeds reach 4" in height will result in maximum activity. Marvel herbicide offers application flexibility as it can be applied to soybeans from EPP to full flower. Season long weed control is critical for maximizing yield. Including Marvel herbicide with POST herbicide treatments will improve in season control of tough weeds.



## Marvel Herbicide

**Use Rate** - 6-7.25 oz/A – Tank mixed with labeled rates of glyphosate herbicides in Roundup Ready® soybeans or glufosinate in LibertyLink® soybeans.

- Apply 7.25 oz/a when targeting waterhemp and Palmer amaranth.
- Greatest activity is observed when applications of Marvel herbicide are made when weeds are small (less than 4").

**Application Timing** – Prior to planting through full flowering

**Application Guidelines** – Thorough spray coverage is critical for control with contact herbicides. Use 15 gal/A minimum by ground. Apply with medium droplet size and adequate pressure for good spray pattern. Flat fan nozzles are preferred with contact herbicides. Avoid very coarse droplets and flood type nozzles.

Add Warrant® herbicide 3 pt/a OR Outlook® herbicide 10 oz for additional residual on subsequent waterhemp emergence.

**Adjuvants** – Apply with AMS at 8-17 lb/100 gal + NIS at 1qt/100 gal. If a loaded glyphosate or glufosinate formulation is utilized as a tank-mix partner additional NIS may be used to increase activity but is not critical. Use Crop Oil Concentrate (COC) at 0.5-1% v/v under dry conditions and low humidity when weeds are hardened off and more difficult to control.

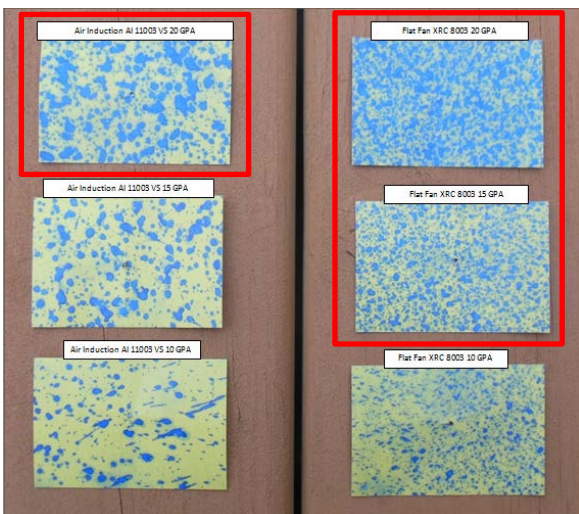
**Weeds Controlled / Suppressed**– Waterhemp, pigweeds, velvetleaf, common lambsquarters, ivyleaf morningglory, tall morningglory, eastern black nightshade, Venice mallow in addition to other broadleaf weeds.

**Restrictions** – Do not apply within 60 days of soybean harvest. Apply when crop foliage is dry. Do not tank-mix with organophosphate insecticides. Do not exceed regional fomesafen limits per cropping year.

Add Warrant Herbicide 3 pt./A OR Outlook herbicide 10 oz for additional residual on subsequent waterhemp emergence.

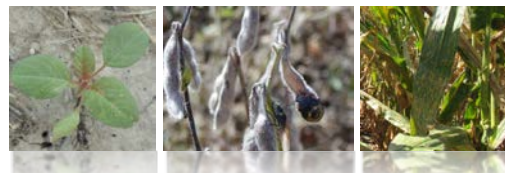
**Rotation interval to corn is 10 months**

As the season progresses and weeds approach maximum labeled heights with thick cuticles, carrier volume and adjuvant selection will be important. Higher carrier volume is important to maximize coverage and coat all growing points with contact herbicides. Thick cuticles require proper adjuvant selection to solubilize them and allow herbicides to penetrate and move to the site of action. Below are a few guidelines to consider when making Marvel herbicide application decisions.



Marvel™ Herbicide / Anthem® Herbicide Brands						
	Conventional Soybeans*			Applied With Loaded Glyphosate		
Adjuvant	Small Weeds/Good Conditions	Maximum Label Height Weeds/Good Conditions	Drought Conditions/Low Humidity	Small Weeds/Good Conditions	Maximum Label Height Weeds/Good Conditions	Drought Conditions/Low Humidity
NIS	0.25% v/v			0.25% v/v		
COC	1% v/v	1% v/v	1% v/v		0.5% v/v	0.5-1% v/v
MSO		1% v/v	1% v/v		0.5% v/v	0.5-1% v/v

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## Active Ingredient Limitations in Soybeans

Fomesafen containing herbicide products are often relied upon for pigweed control in soybeans. While providing flexibility in PRE and POST applications, season maximum limits must be followed. If utilized preemergence, awareness of whether or not a sequential postemergence treatment may be applied will be critical. If allowed, specific application rates should be implemented to comply with geographical limitations. Marvel™ herbicide may be applied consecutively as long as it does not exceed the regional fomesafen limitations. If a fomesafen containing material cannot be applied postemergence, other options to control emerged waterhemp in conventional and glyphosate tolerant soybeans exist. Cobra® herbicide and Ultra Blazer® herbicide are often employed to manage emerged pigweeds in crop. However, keep in mind that these materials will provide reduced efficacy on PPO-resistant biotypes, encompass minimal to zero in season residual and require a tank-mix partner such as Anthem® MAXX herbicide to provide in season activity.

Common Fomesafen Containing Herbicides	Sequential Marvel Herbicide Treatment (no PPO Resistance)		Effective Foliar + Residual Option (no POST PPO-Resistance)	Effective Foliar + Residual Option LibertyLink® Soybeans
	South of Interstate 70	North of Interstate 70	No Geographic Limitations	No Geographic Limitations
Intimidator® herbicide 3 pt./A	5.5 oz. – Labeled for waterhemp control up to 2"	Sequential rate allowed too low to apply	Anthem MAXX herbicide 2.5-3.2 oz. + Cobra herbicide 10 oz. OR Ultra Blazer herbicide 16 oz**	Anthem MAXX herbicide 2.5-3.2 oz. + Liberty® herbicide 29 – 32 oz. + AMS 17 lb/100 GAL
Prefix® herbicide 2 pt./A	5.5 oz. – Labeled for waterhemp control up to 2"	Sequential rate allowed too low to apply	Anthem MAXX herbicide 2.5-3.2 oz. + Cobra herbicide 10 oz. OR Ultra Blazer herbicide 16 oz**	Anthem MAXX herbicide 2.5-3.2 oz. + Liberty herbicide 29 – 32 oz. + AMS 17 lb/100 GAL
Torment® herbicide 1 pt./A	5.5 oz. – Labeled for waterhemp control up to 2"	Sequential rate allowed too low to apply	Anthem MAXX herbicide 2.5-3.2 oz. + Cobra herbicide 10 oz. OR Ultra Blazer herbicide 16 oz**	Anthem MAXX herbicide 2.5-3.2 oz. + Liberty herbicide 29 – 32 oz. + AMS 17 lb/100 GAL

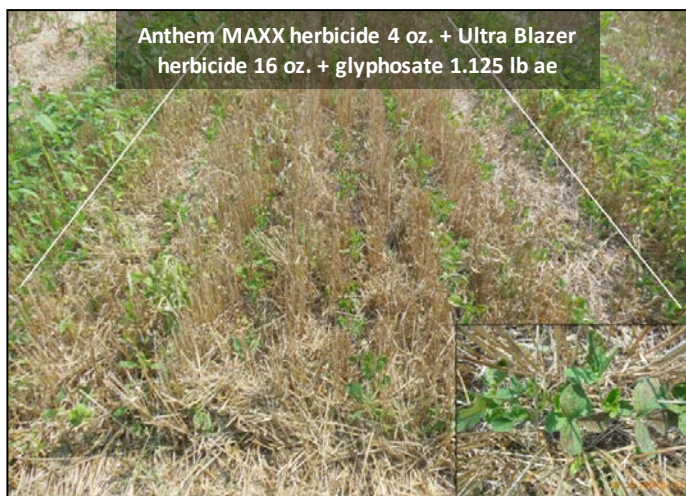
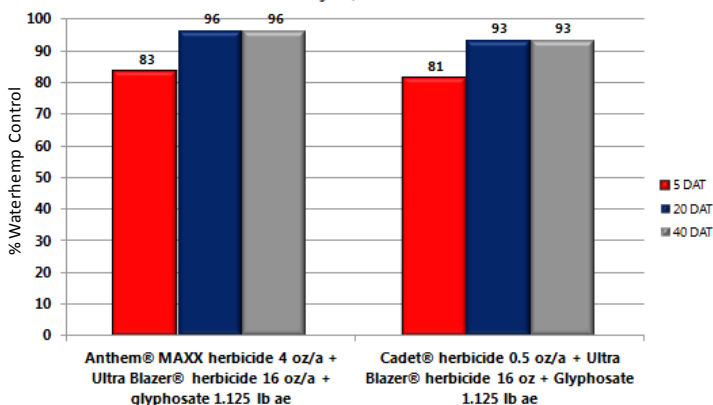
Anthem MAXX is labeled early pre plant through V3



**\*\*Add loaded glyphosate 0.95-1.125 lb ae + AMS 8.5-17 lb/100 gal in glyphosate tolerant soybeans. No additional adjuvant needed with loaded glyphosate. Do not exceed 5.7 oz of Anthem MAXX herbicide per soybean crop year.**

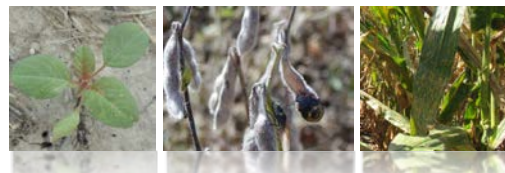
**No additional adjuvants needed. Do not exceed 5.7 oz of Anthem MAXX herbicide per soybean crop year.**

Combinations for GR - Waterhemp Control in Double Crop Soybeans – V2 Application  
Carlyle, IL 2014





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## Insecticide / Fungicide Application Benefits - Soybeans

University and industry trials have exhibited decisive results when employing fungicide and insecticide treatments. Increased yields are likely due to positive physiological effects facilitated by the use of strobilurin fungicides including: increased CO<sub>2</sub> assimilation, water use efficiency and stress tolerance during flowering and pod fill. Implementing a combination fungicide including strobilurin and triazole chemistries also provides resistance management and increased efficacy on driver pathogens such as frogeye leaf spot. Addressing defoliators as well as piercing / sucking insects that emit digestive enzymes breaking down foliage and developing seeds may have also led to an incremental increase in yield. Multiple studies have indicated that increasing plant efficiency and reducing stress during critical yield determination stages including flowering and pod fill will likely translate to a positive ROI.

As the season progresses, insect feeding is a common occurrence and if we encounter wet conditions accompanied by high relative humidity, disease infection will be likely especially on later plantings. Soybeans will quickly be approaching the optimal timing for plant health applications. Talk to your local Star Retailer regarding the **2017 FMC Soybean Yield Assurance program** to protect plants and optimize yield.

### University of IL Soybean Omission Plot

An omission trial was conducted at the University of Illinois in 2012. Five factors were evaluated to quantify the yield increase provided by each. Fertility and foliar protection provided greatest yield benefits with fertility contributing a 4.3 bu/A increase and fungicide and insecticide applications producing 3.6 more bu/a. When splitting out fungicide and insecticide applications in a standard management system (soybean variety, fertility, row spacing), insecticide provided a 3.7 bu/a and fungicide provided a 2.1 bushel increase (data not shown). Table 4 provides an average across both standard and high tech management systems. This trial demonstrates consistent yield increases when fungicide and insecticide applications are included in management strategies.

Table 4. Summarized yield responses from individual practices that increased yield in 2012. Responses are averaged across standard and high tech management systems from the six responsive trials in 2012.

Soybean Yield Secret	Δ Yield bu acre <sup>-1</sup>
<b>Fertility</b> (Extra N, P, S, and Zn)	<b>4.3</b>
<b>Variety</b> (Later maturity for region)	<b>3.2</b>
<b>Foliar protection</b> (Fungicide & insecticide)	<b>3.6</b>
<b>Seed treatment</b> (Fungicide, insecticide, nematicide)	<b>2.6</b>
<b>Row spacing</b> (Increase from 20-inch rows)	<b>2.1</b>

Data courtesy of Dr. Jason Haegerle – University of IL



### Use Recommendations – Soybeans V stages-R5, R3 for best Results:

**Preemptor<sup>TM</sup> SC fungicide 5 oz./A + Hero<sup>®</sup> Insecticide 5 oz**

**Diseases:** Frogeye Leaf Spot, Pod & Stem Blight, Powdery Mildew, Cercospora blight, Anthracnose, Alternaria leaf spot, Rhizoctonia aerial blight, Rust, White Mold - suppression.

Also labeled for suppression of Sudden Death Syndrome.

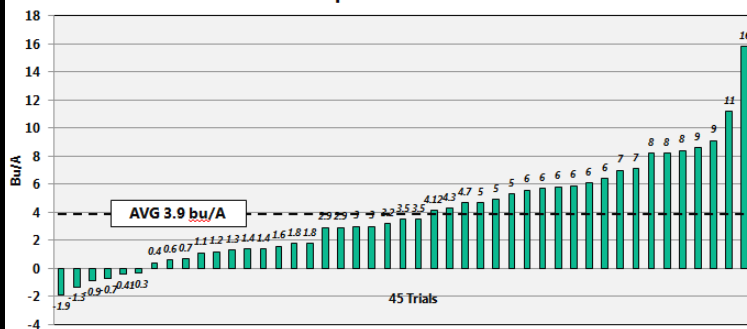
- Must be applied at or prior to R1 stage for SDS suppression

**Insects:** bean leaf beetle, grasshoppers, cloverworms, decs stem borer, Japanese beetle, loopers, aphids, thrips, stink bugs.

**Adjuvants:** An adjuvant may be used to increase spray coverage and canopy penetration. Add NIS 0.25% v/v, COC 0.5-1% v/v, or a spreader / sticker. If tank-mixed follow adjuvant requirement for tank-mix partner.

**PHI 30 days, Rainfast 2 hrs, Do not graze or harvest treated soybean forage, straw, or hay for livestock feed**

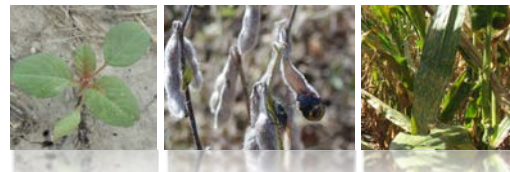
### Preemptor<sup>TM</sup> SC Fungicide + Hero<sup>®</sup> Insecticide Soybean Yield Results 2016 Data Submitted From Commercial Fields - IL/IN Yield Comparison vs. Nontreated



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## PREEMPTOR<sup>TM</sup> SC

FUNGICIDE



- As corn nears tasselling, the decision to apply a fungicide for disease control, improved standability at harvest, and higher yields is upon us. Preemptor<sup>TM</sup> SC fungicide from FMC provides outstanding disease control in corn with excellent residual.

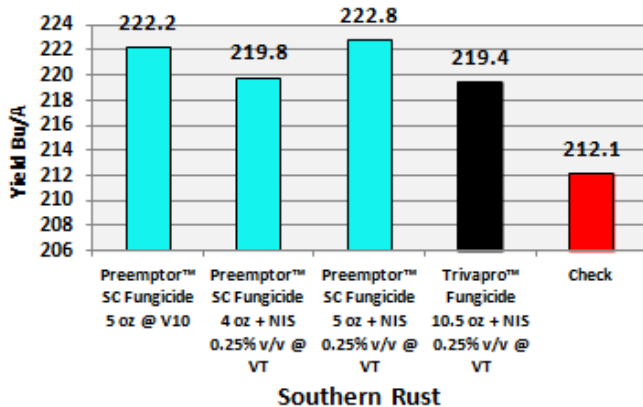
### Preemptor SC fungicide: flutriafol (triazole) + fluoxastrobin (strobilurin)

- Preemptor SC fungicide has excellent curative as well as some of the longest residual control and preventive control available for row crops. It is a highly systemic fungicide and provides long-lasting disease protection
- Rainfast in 2 hours
- Outstanding translaminar movement. Both actives are very mobile in plant xylem for leaf protection
- Excellent Plant Health Benefits: Reduced ethylene, Higher Yields, Greater Standability

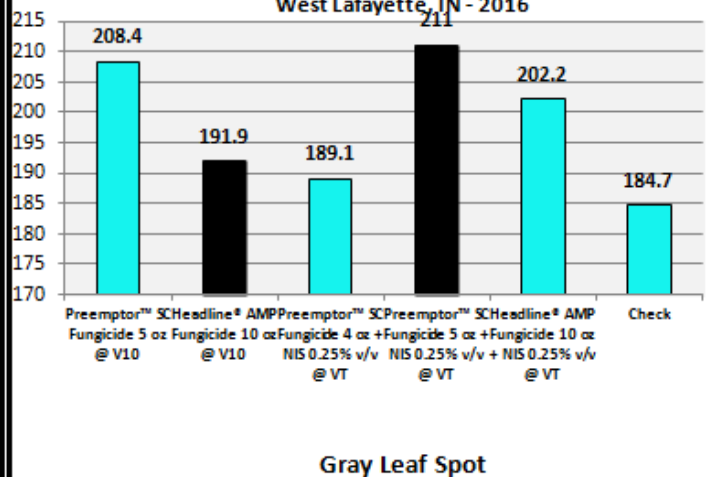
### Diseases Controlled:

**Corn:** Common & Southern Rust, Gray Leaf Spot, N. Corn Leaf Blight, N. Corn Leaf Spot, S. Corn Leaf Blight, Anthracnose Leaf Blight, Eye Spot.

Evaluation of Foliar Fungicides for Disease Control and Yield  
S. Illinois Univ.  
Carmi, IL - 2016



Evaluation of Foliar Fungicides for Disease Control and Yield  
Purdue Univ.  
West Lafayette, IN - 2016



**Preemptor SC Fungicide Use Recommendations -- V5 to V8 – 5 oz, V9 – Prior to VT – 5 oz, No Adjuvants, VT to R2 – 4 – 5 oz**

PHI: 30 days grain, forage, stover. Minimum of 2 gpa – aerial or 10 gpa ground application volume.

### Southern Rust



#### Description

Appears as numerous small, orange pustules that are densely clustered predominately on upper leaf surface  
Disease is first seen on leaves in the mid-upper canopy

#### Scouting Tips

Favored by very warm temperatures and is more aggressive than common rust  
Favored by high humidity and temps in the 80s, 90s  
Epidemics occur over large areas

### Gray Leaf Spot



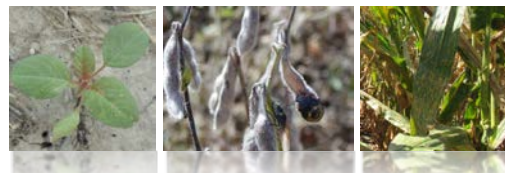
#### Description

Lesions are narrow, rectangular and usually are restricted by leaf veins  
Lesions initially are tan and later turn gray.  
Lesions coalesce to kill entire leaves

#### Scouting tip

Disease may be more prevalent in fields where previously infected corn residue is present.  
High RH (above 90%) during silking and early kernel-fill stages can lead to increased disease.  
Extended periods of leaf wetness >13hrs allow infection  
Fog each morning for a week will increase severity

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888-59-FMC-AG FMCCROP.COM

Always read and follow label directions. NOTE REGARDING RESTRICTED USE PESTICIDES: Anthem ATZ herbicide; Athena insecticide, Brigade 2EC Insecticide/Miticide, Brigade WSB Insecticide/Miticide, Brigadier Insecticide Capture 3RIVE 3D insecticide, Capture LFR Insecticide, Declare insecticide, Hero Insecticide, Mustang Insecticide, Mustang Maxx Insecticide, Pounce 25WP Insecticide, Stallion Brand Insecticide, Temitry LFR Insecticide/Fungicide, Triple Crown Insecticide, Ethos XB Insecticide/Fungicide and Gladiator Insecticide/Miticide are **Restricted Use Pesticides**. NOTE FOR CALIFORNIA: Accurate Extra herbicide, Aim herbicide, Aim EC herbicide, Aim EW herbicide, Anthem herbicide, Anthem ATZ herbicide, Anthem Flex herbicide, Anthem MAXX herbicide, Authority Assist herbicide, Authority Elite herbicide, Authority First DF herbicide, Authority MAXX herbicide, Authority MTZ DF herbicide, Authority XL herbicide, Cadet herbicide, Chisum Herbicide, Command 3ME microencapsulated herbicide, Crusher Herbicide, Edition Broadspec herbicide, Edition Tankmix Herbicide, Marvel herbicide, Nimble Herbicide, Nuance Herbicide, Preemptor SC fungicide, Report Extra Herbicide, Solstice herbicide, Spartan 4F herbicide, Spartan Charge herbicide, Spartan Elite herbicide, Temitry LFR Insecticide/Fungicide, Topguard EQ fungicide, Zeus Prime XC herbicide, Zeus XC herbicide, Capture 3RIVE 3D insecticide, Ethos XB Insecticide/Fungicide, Hero Insecticide, Mustang Maxx Insecticide, Display cotton harvest aid, Zoro Miticide and VGR Soil Amendment **are not registered for sale or use in California**. VGR Soil Amendment is not a pesticide. Beleaf and Carbine are trademarks of Ishihara Sangyo Kaisha, Ltd. Cercobin is a trademark of Nippon Soda Co., LTD. Sovran is a registered trademark of BASF. FMC, 3RIVE 3D, Accurate, Aim, Anthem, Athena, Authority, Brigade, Brigadier, Cadet, Capture, Chisum, Command, Crusher, Declare, Display, Edition, Ethos, Preemptor, Fracture, Fyfanon, Gladiator, Hero, Koverall, LFR, Marvel, Mustang, Nimble, Obey, Pounce, Report, Rhyme, Rovral, Shark, Solida, Solstice, Spartan, Stallion, Temitry, Topguard, Topguard Terra, VGR and Zeus are trademarks and HatchTrak and Investing in farming's future are service marks of FMC Corporation or an affiliate. ©2016 FMC Corporation. All rights reserved. 11/16

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