



syngenta®



Corn | Portfolio Guide

A portfolio for all corn farmers

We've developed a diverse, technology-driven corn portfolio to help feed a rapidly growing population while continuing to facilitate stewardship, save farmers time and money, and produce greater, more consistent yield. The Syngenta pipeline has produced the industry's most effective insect traits and water-optimized hybrids, available through the Agrisure® traits family, as well as an exciting corn enzyme technology for ethanol production. Beyond our innovative genetics and traits, we're providing best-in-class seed treatment and market-leading crop protection products that help you maximize your productivity and yield.

We're aware of the challenges farmers face every day, such as insect damage, weather variability and numerous other environmental stresses, and our products reflect our efforts to address those concerns. We're thinking about your future, too, through resistance management programs to help make your farm more adaptable, stable and efficient.

Through integrated solutions and customized recommendations, we offer whole-farm solutions; giving you value and convenience, while helping you grow more corn.

**grow more
corn**

Grow more corn

PRE-PLANT/AT-PLANT

PRE-EMERGENCE

SPIKE STAGE

APPROXIMATELY 5"

APPROXIMATELY 12"

APPROXIMATELY 40"

SILK/TASSEL

Planting - Emergence

Vegetative Stage

Reproductive Stage

**START
STRONG**



**GROW
STRONG**



**YIELD
STRONG**



Choosing the best management practices and products to maximize plant establishment














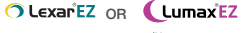
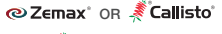











Limiting environmental stress through weed, insect, disease and water management best practices to enable plant growth

Protecting yield potential and grain quality from late-season stress and harvest losses to yield strong

Grow more corn with Syngenta

Season-Long Genetic Performance 
 Additional Revenue Built In 
 Season-Long Pest Control 
 Season-Long Water Optimization 
 Residual Control 
 Primary Application Timing and Contact Control 



	PRE-PLANT/AT-PLANT	PRE-EMERGENCE	SPIKE STAGE	APPROXIMATELY 5"	APPROXIMATELY 12"	APPROXIMATELY 40"	SILK/TASSEL
Seed (Genetics and Traits)	 GoldenHarvest [™] Corn  Enogen [™]  Agrisure Viptera [™]  Agrisure Duracade [™]  Agrisure Artesian [™]						
Seed Treatments	 Avicta Complete [™] Corn  Vibrance [™]  Cruiser Maxx [™] Corn  Vibrance [™]						
Herbicides	 Gramoxone [™] SL 2.0  Acuron [™]  Bicep II Magnum [™] OR Bicep Lite II Magnum [™]  Dual II Magnum [™]  Lexar EZ [™] OR Lumax EZ [™]  Zemax [™] OR Callisto [™]  Callisto Xtra [™]  Callisto GT [™]  Halex GT [™]  Sequence [™]  Touchdown Total [™]						
Insecticides	 Force [™]  Warrior II [™] <small>with Zim Technology</small>						
Fungicide	 Quadrifox [™]  Quilt Xcel [™]  Quilt Xcel [™]						
Biocontrol Agent	 Afla-Guard [™] GR						

A whole-farm approach to growing more corn

Decisions, decisions. You make difficult ones every day to get the most out of your crop, and it starts with choosing the right hybrid. We have developed an unmatched lineup of Enogen®, Golden Harvest® Corn and NK® Corn hybrids powered by breakout genetics and breakthrough traits and technologies to help you grow more corn.

Through accelerated trait conversions, we have increased the speed at which we integrate all of our new traits into our Enogen, Golden Harvest Corn and NK Corn hybrids. We are an industry leader in trait and technology development, launching four new traits and technologies in five years, a rate unparalleled in the industry. These include: Agrisure Artesian® corn hybrids that maximize yield when it rains and increase yield when it doesn't; the Agrisure Duracade® trait that provides a unique mode of action for corn rootworm control; and the Agrisure Viptera® trait that delivers higher grain quality through the control of ear-feeding insects. Plus, Enogen corn enzyme technology increases productivity and efficiency of dry grind ethanol production, offering growers the opportunity to earn a premium for each bushel. This exclusive in-seed innovation is offered only by Syngenta Seed Advisors™ and retailers in select geographies.

The superior genetics, traits and technologies from Syngenta are powered by our Y.E.S. Yield Engineering System™, which uses technologies like state-of-the-art molecular markers to create hybrids with high genetic yield potential. And because Golden Harvest Corn seed is available through our network of Syngenta Seed Advisors™ and NK Corn seed through our trusted retailers, you'll always have support and advice to help determine which hybrids fit best for your farm. When it comes to seed selection, have no regrets—Golden Harvest Corn and NK Corn hybrids have you covered.





GoldenHarvest[®] Corn

Farmers are calling—and we're answering. At Syngenta, we're helping growers meet ever-changing environmental challenges with the latest Golden Harvest Corn hybrids—the most innovative in the marketplace. Golden Harvest Corn hybrids deliver powerful combinations of Syngenta breakout genetics and breakthrough traits and technologies to help you maximize profit potential. Powered by the Y.E.S. Yield Engineering System, Golden Harvest Corn hybrids are developed by thousands of researchers, breeders and technicians and are brought to market faster than ever before to help you grow more corn.

In a five-year period, we launched four new traits and technologies to help you improve your yield and profit potential, including the Agrisure Duracade and Agrisure Viptera traits, Artesian™ hybrids and Enogen corn enzyme technology. Golden Harvest Corn is sold exclusively through Syngenta Seed Advisors—seed experts who combine agronomic expertise with local farming know-how to help you choose the best hybrids for your fields. Take your farm to the next level with the most innovative corn in the marketplace. Strong yields start with seed—make sure it's Golden Harvest.



At Syngenta, we're driving the changes that will push you to the next level of success. Developed through our Y.E.S. Yield Engineering System, our latest NK Corn hybrids deliver better performance and higher yield potential regardless of the environment. With breakout genetics, breakthrough Agrisure traits and integrated technologies, along with local retailer expertise, our NK portfolio helps you grow more corn.

When it comes to trait development, we're an industry leader. In a five-year period, we launched four new traits and technologies, a rate unparalleled in the industry. These include the Agrisure Duracade and Agrisure Viptera traits, Artesian hybrids and Enogen corn enzyme technology. Additionally, we provide a foundation for your retailer's offering of a total-farm solution with best-in-class genetics and traits to complement the seed treatments, crop protection products and fertilizers they integrate into your portfolio. It's time to plant the seeds of change with NK Corn hybrids. If you haven't planted NK Corn lately, then you haven't planted NK Corn.





Enhancing ethanol production

Enogen corn enzyme technology is a revolutionary breakthrough for increasing the productivity and efficiency of dry grind ethanol production and is available only from Syngenta. Working directly with your local ethanol plant via an Enogen corn production agreement, you can bring value to your operation, the ethanol plant and your local community—a true “win-win-win” situation.

Enogen corn grower benefits include:

- Average **40-cent premium** for each bushel of Enogen corn produced
- Hybrids available in elite germplasm with preferred insect and herbicide tolerant trait packages
- No yield drag shown in hybrids featuring Enogen corn enzyme technology¹
- Use your existing cultural farming practices for nutrient, weed, insect and disease management
- Contribute to an industry that brings economic value to your local community

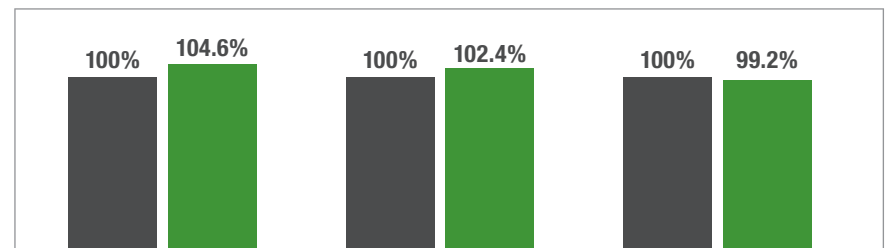
¹Based on a 2008 Syngenta hybrid performance comparison study





www.Enogen.net

Enogen Hybrid Performance Comparison

Trial locations in KS, NE, IA, IL



 Hybrid featuring Enogen corn enzyme technology

 Hybrid of the same isoline without Enogen corn enzyme technology

Syngenta developed Agrisure[®] traits with today's corn growers in mind: meeting the need for better insect control, easier management of fields, increased nutritional value for livestock feed and increased profit potential at the elevator.

Agrisure traits provide best-in-class insect control, water optimization and exceptional herbicide tolerance in corn. Growers can rely on excellent season-long control of major leaf-, stalk- and ear-feeding corn insect pests with Agrisure Viptera trait stacks, and control of below-ground corn rootworm with Agrisure Duracade trait stacks. These traits are also available as elite Agrisure Artesian hybrids, which maximize yield when it rains and increase yield when it doesn't.

In the United States alone, corn rootworm is costing producers more than \$1 billion annually due to yield loss and increased spending on control measures. A strong defense against CRW feeding is needed to provide a corn crop every opportunity to reach its full genetic yield potential—and increases profit potential for growers.

Featuring a unique mode of action, Agrisure Duracade is essential to managing corn rootworm. In the field, Agrisure Duracade controls Western, Northern and Mexican corn rootworm, resulting in healthier plants with stronger root systems, fuller leaves and thicker stalks.

Yet, corn rootworm is an ever-changing and relentless corn pest.

A successful management strategy requires a multi-year, whole-farm approach that integrates various and different control measures. Agrisure Duracade fits this model and comes stacked with Agrisure RW for two different modes of action against CRW in a single trait stack.

Agrisure Duracade is available in two, convenient integrated refuge trait stacks. Both trait stack offerings are available in combination with water-optimizing Artesian hybrids. In addition, Agrisure Duracade is available in combination with other insect control and herbicide tolerant trait technologies to manage a broad spectrum of pests.

Agrisure Duracade is an important tool in the Syngenta CRW management portfolio; complementing and enhancing the multiple technologies farmers use to control corn rootworm and grow more corn.



Princeton, IL 2013

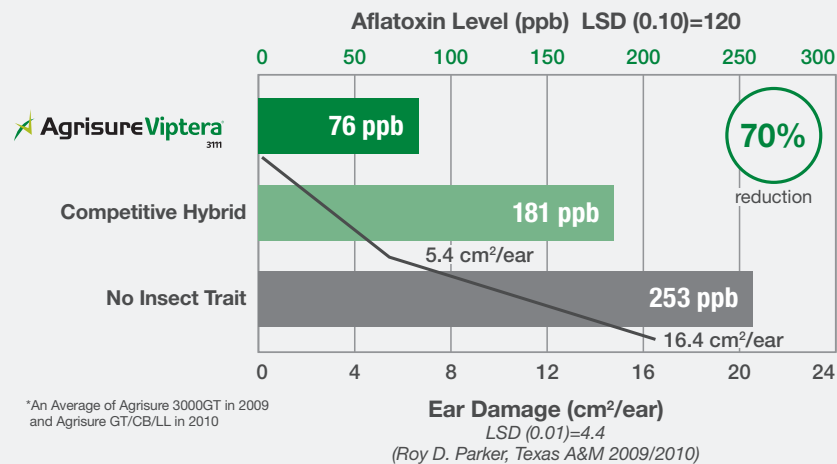
The Agrisure Viptera trait consistently delivers more, higher-quality grain through the most complete insect control. Agrisure Viptera controls ear-feeding insects, such as corn earworm, cutworm, corn borer and armyworm, which leads to better crop stand and lower levels of disease.

Agrisure Viptera has been shown to significantly reduce aflatoxin contamination through control of corn earworm. Aflatoxin levels negatively affect the prices of grain, robbing growers of revenue at the elevator. After harvest, molds and mycotoxins can lead to loss in weight and quality, and degradation of stored grain. Agrisure Viptera supports better profit potential by giving growers higher quality grain and preventing storage loss through grain shrink.

Yield and grain quality are equally critical when growing corn for feed. Studies show that mycotoxin contaminations may reduce grain nutritional value for meat, milk or egg production. Through control of damaging, ear-feeding insects, Agrisure Viptera helps reduce mold and mycotoxin production, providing higher-quality grain and peace of mind for producers.

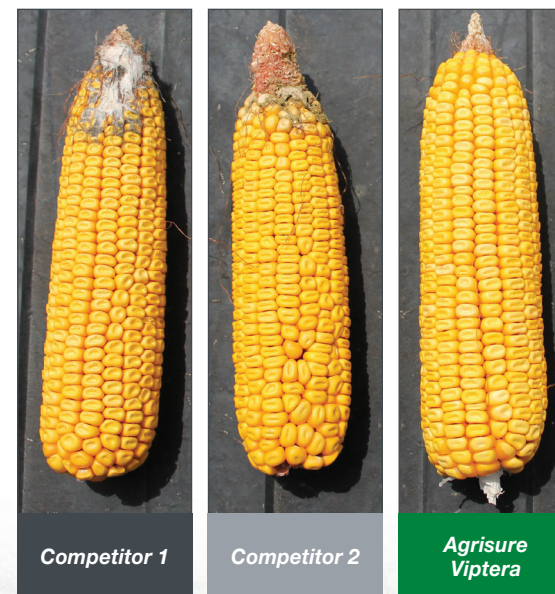
Agrisure Viptera is conveniently available in E-Z Refuge products and in combination with water-optimizing Artesian hybrids. Whether your grain is for sale at an elevator or for feed on farm, Agrisure Viptera provides superior insect and yield protection that's designed to fit your operation.

Influence of the Agrisure Viptera Trait on Corn Earworm Feeding Damage and Aflatoxin Concentration



Agrisure Viptera trait leads to better corn grain quality

Field trials demonstrate the effectiveness of hybrids containing the Agrisure Viptera trait (on right) compared to hybrids without the trait.



Trial observations taken from one trial in Crawford County, Kan. in August 2012.

The trait stacks below contain the Agrisure Viptera trait and control up to 16 above- and below-ground pests.

	Above-ground Pests													Below-ground Pests		
	True Armyworm	European Corn Borer	Southwestern Corn Borer	Southern Corn Stalk Borer	Corn Earworm	Fall Armyworm	Sugarcane Borer	Common Stalk Borer	Western Bean Cutworm	Dingy Cutworm	Beet Armyworm	Black Cutworm	Lesser Cornstalk Borer	Western Corn Rootworm	Northern Corn Rootworm	Mexican Corn Rootworm
Agrisure Viptera 3110	X	X	XX	X	XX	XX	XX	XX	X	X	X	X	XX			
Agrisure Viptera 3111	X	X	XX	X	XX	XX	XX	XX	X	X	X	X	XX	X	X	X
Agrisure Viptera 3220 E-Z Refuge [®]	X	XX	XXX	XX	XXX	XXX	XXX	XX	XX	X	X	XX	XXX			
Agrisure Duracade 5222 E-Z Refuge [®]	X	XX	XXX	XX	XXX	XXX	XXX	XX	XX	X	X	XX	XXX	XX	XX	XX

X = Single-mode of Action; XX = Dual-modes of Action; XXX = Triple-modes of Action



Simplifying refuge and refuge compliance with Agrisure E-Z Refuge® technology

Syngenta offers multiple integrated, single-bag refuge options, featuring a 5 percent blended refuge in the bag. The refuge options offer a convenient way to meet refuge requirements as specified by the Environmental Protection Agency to help manage against the development of resistant insects. Each package contains 95 percent of a corn hybrid containing the trait stack and the remaining 5 percent contains a seed hybrid without the insect control stack; all seed hybrids within the bags are tolerant to glyphosate-based herbicides. Currently, Agrisure E-Z Refuge products are not tolerant to glufosinate-based herbicides such as Liberty®.

Hybrids with the Agrisure Viptera 3220 E-Z Refuge trait stack are designed for use in geographies where corn rootworm control is not a primary concern.

Hybrids with the Agrisure 3122 E-Z Refuge trait stack, Agrisure Duracade 5122 E-Z Refuge trait stack or Agrisure Duracade 5222 E-Z Refuge trait stack provide a solution in areas where corn rootworm pressure and control are crucial, including corn-on-corn acres. The Agrisure Duracade 5222 E-Z Refuge trait stack also features two or more modes of action on most lepidopteran pests.





Maximize yield when it rains and increase yield when it doesn't

Artesian corn hybrids represent a class of high-performing hybrids that use water more effectively than other hybrids. These elite hybrids feature scientifically selected genes, which provide multiple modes of action for season-long drought protection. Growers across the Corn Belt have found that Artesian corn hybrids help manage gaps in rainfall throughout the season—translating to more consistent production and profit potential on virtually any corn acre.

Syngenta trials demonstrate that Artesian corn hybrids have the potential to deliver top-end yields whether the crop receives enough water or not—consistently matching or exceeding the yield of comparable hybrids in optimal growing conditions or under moderate drought stress. Under severe and extreme drought stress, Artesian corn hybrids have out-performed trial averages by nearly 12 percent over the past five years.¹

Available in combination with best-in-class insect control and herbicide tolerance traits, Artesian corn hybrids are designated by an “A” at the end of the hybrid number.

¹Data is based on 7,613 Syngenta on-farm strip trials, 2010-2014. For this research, Syngenta defines a yield environment of 50-99 bu/A as “severe” and fewer than 50 bu/A as “extreme”.



Competitive hybrid (left) vs. Artesian corn hybrid (right) – Slater, Missouri (2014)



Artesian corn hybrid (green strips) vs. competitive hybrids (brown strips) – Lakefield, Minnesota (2013)



Artesian corn hybrid (left) vs. competitive hybrid, drought-enhanced – Niobrara, Neb. (2014)





Avicta® Complete Corn with Vibrance® nematicide/insecticide/fungicide, a combination of separately registered products, is the most comprehensive seed treatment package on the market. It delivers triple protection against nematodes, insects and diseases during the critical early stages of growth when a good deal of yield potential is determined.

The addition of Vibrance to the already robust fungicide package in Avicta Complete Corn brings best-in-class performance against *Rhizoctonia* for enhanced root health and the strongest protection of the root system available.

Avicta Complete Corn with Vibrance is available in three different versions with varying levels of the insecticide component: Avicta Complete Corn 250 (0.25 mg a.i./seed of thiamethoxam), Avicta Complete Corn 500 (0.50 mg a.i./seed of thiamethoxam) and Avicta Complete Corn 1250 (1.25 mg a.i./seed of thiamethoxam).

Active ingredients:

Abamectin, Thiamethoxam, Azoxystrobin, Mefenoxam, Fludioxonil, Thiabendazole, Sedaxane

Benefits

- Offers a combination of a nematicide, insecticide and fungicides for early-season pest protection
- Protects seed purchase investment and the value of traits and genetics
- Provides the best seed treatment fungicide option on the market for protection against diseases such as *Pythium*, *Rhizoctonia* and *Fusarium*
- Increases plant stand, uniformity and vigor, and improves yield potential
- Improved root health brings increased consistency in yield across fields and farms
- Conveniently delivered on the seed; just plant, and the crop is protected

Nematode protection

- Lance
- Root-knot
- Stubby-root
- Needle
- Spiral
- Lesion
- Sting
- Stunt
- Ring
- Dagger

Insect protection

- Wireworm
- Chinch bug
- Seedcorn maggot
- Southern corn leaf beetle
- Corn flea beetle
- White grub*
- Black cutworm
- Thrips
- Grape colaspis
- Southern green stinkbug
- Seedcorn beetle
- Corn leaf aphid
- Sugarcane beetle
- Billbug**
- Corn rootworm**

* Including Japanese beetle larvae, European Chafer larvae, true white grub, annual white grub and May/June beetle larvae.
 **Requires the higher application rate of thiamethoxam (1.25 mg a.i./seed) found in Avicta Complete Corn 1250. Corn rootworm protection includes Mexican, Northern, Southern and Western varieties.

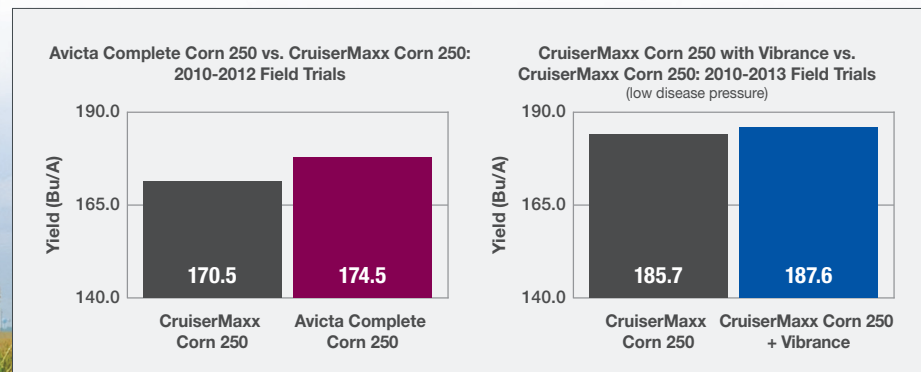
Seedborne disease protection

- *Aspergillus*
- *Cladosporium*
- *Diplodia (Stenocarpella)*
- *Fusarium*
- *Helminthosporium*
- *Mucor*
- *Penicillium*
- *Rhizopus*
- *Sporisorium (Sphacelotheca)*

Soilborne disease protection

- *Pythium*
- *Rhizoctonia*
- *Fusarium*
 - *Fusarium graminearum*
 - *Fusarium verticillioides*
- *Macrophomina*
- *Colletotrichum*
- *Diplodia (Stenocarpella)*
- *Sporisorium (Sphacelotheca)*
- *Penicillium*

Avicta Complete Corn 250 demonstrates a 4.0 bu/A advantage over CruiserMaxx Corn 250. Vibrance adds a 1.9 bu/A advantage with low disease pressure on top of CruiserMaxx Corn 250.





CruiserMaxx® Corn with Vibrance insecticide/fungicide seed treatment, an on-seed application of separately registered products, offers the most comprehensive corn disease protection package available and best-in-class *Rhizoctonia* protection while shielding corn seed and seedlings against early-season insects and other diseases. A combination of Cruiser® 5FS seed treatment insecticide, Maxim® Quattro seed treatment fungicide and Vibrance seed treatment fungicide, CruiserMaxx Corn with Vibrance helps increase plant stand, uniformity and vigor while improving protection of corn hybrids' genetic potential, and protect genetic yield potential.

CruiserMaxx Corn with Vibrance is available in three different levels of the insecticide component: CruiserMaxx Corn 250, CruiserMaxx Corn 500 and CruiserMaxx Corn 1250. CruiserMaxx Corn 500 with Vibrance provides an increased rate of insecticide (0.50 mg a.i./seed of thiamethoxam) for enhanced insect protection. CruiserMaxx Corn 1250 with Vibrance offers the highest available rate of insecticide (1.25 mg a.i./seed of thiamethoxam) for added insect protection against corn rootworm and billbug and is a key component of an effective integrated corn rootworm management program.

Active ingredients:

Thiamethoxam, Azoxystrobin, Mefenoxam, Fludioxonil, Thiabendazole, Sedaxane

Benefits

- Protects corn plants from a broad spectrum of early-season insect pests to help crops off to a healthy, vigorous start
- Offers broad-spectrum protection against seed- and soil-borne diseases
- Best-in-class *Rhizoctonia* protection from Vibrance prevents damping off and reduced emergence
 - Protects against early-season *Rhizoctonia* root damage that often leads to reduced early root mass growth potential that can never be recovered once lost
- Best-in-class systemic protection against *Fusarium* species including *Fusarium graminearum* and *Fusarium verticillioides*
- Rapid translocation of thiamethoxam, the insecticide active ingredient, throughout the plant provides comprehensive protection
- Contains Sedaxane, the first active ingredient from Syngenta developed specifically as a seed treatment, which increases root surface area to improve the plant's ability to absorb water and nutrients, and better manage stress
- Proven to increase yield in both high and low disease pressure environments
 - In 84 comparison trials over a four-year period in lower disease pressure area, CruiserMaxx Corn with Vibrance still shows on average nearly 2 bu/A improvement in yield over CruiserMaxx Corn 250 alone

Insect protection

- Black cutworm
- Chinch bug
- Corn flea beetle
- Corn leaf aphid
- Grape colaspis
- Seedcorn beetle
- Seedcorn maggot
- Southern corn leaf beetle
- Southern green stinkbug
- Sugarcane beetle
- Thrips
- White grub*
- Wireworm
- Northern corn rootworm
- Corn rootworm**
- Bill bug**

* Including Japanese beetle larvae, European Chafer larvae, true white grub, annual white grub and May/June beetle larvae.

**Requires the higher application rate of thiamethoxam (1.25 mg a.i./seed) found in CruiserMaxx Corn 1250. Corn rootworm protection includes Mexican, Northern, Southern and Western varieties.

Seedborne disease protection

- *Aspergillus*
- *Cladosporium*
- *Diplodia (Stenocarpella)*
- *Fusarium*
- *Helminthosporium*
- *Penicillium*
- *Sporisorium (Sphacelotheca)*
- *Mucor*
- *Rhizopus*

Soilborne disease protection

- *Pythium*
- *Rhizoctonia*
- *Fusarium*
 - *Fusarium graminearum*
 - *Fusarium verticillioides*
- *Macrophomina*
- *Colletotrichum*
- *Diplodia (Stenocarpella)*
- *Sporisorium (Sphacelotheca)*
- *Penicillium*



Herbicide resistance management

With the increasing threat of herbicide resistance in weeds, the use of herbicides with multiple modes of action and overlapping residual activity has become critical to the success of any weed management program. Consider the following weed management recommendations as you build your program to maximize control of problem weeds and minimize the risk of resistant weeds in your fields.

- Rely on more than just glyphosate for weed control—incorporate complementary herbicides into all weed management programs
- Use pre-emergence residual herbicides for extended weed control on every acre
- Use full labeled herbicides rates
- Apply broad-spectrum, pre-emergence residual herbicides with multiple modes of action with an emphasis on applying two or more active ingredients that control the same weed (overlapping residual products) at or prior to planting on every acre
- Spray on time, rather than waiting too long and spraying “trophy weeds”
- Adopt cultural practices, such as crop rotation, cover crops or tillage, as appropriate, to help control resistant weeds
- Rotate to crops with effective weed control options
- Manage weeds on the field perimeter
- Encourage your neighbors to use best management practices to delay herbicide resistance
- Scout fields after herbicide application to ensure control has been achieved—do not allow weeds to reproduce by seed or to proliferate vegetatively



The use of residual herbicides with multiple modes of action can significantly improve weed control and help manage the threat of herbicide resistance. In the photos above, notice the dramatic difference in weed control where Halex® GT herbicide was applied early post at 3.6 pt/A compared to the untreated check.







Research shows infestations of tough broadleaf weeds in corn have gone up by 50 percent in the last four years¹. As weeds have evolved and become harder to manage, current weed control programs have lost effectiveness, so it's no surprise that four out of five farmers are actively seeking new products with the main reason to achieve better weed control². That's why we've developed Acuron™ corn herbicide. With four active ingredients and three modes of action, Acuron delivers multi-targeted control of the most problematic weeds in corn.

Active ingredients: Bicyclopyrone, Mesotrione, S-metolachlor, Atrazine

Benefits

- Registered for use in field corn, seed corn, silage corn, sweet corn (pre-emergence only) and yellow popcorn (pre-emergence only) to control more than 70 broadleaf weeds and annual grasses
- Four active ingredients and three modes of action, plus a safener, offer built-in corn weed resistance management and product stewardship
- Bicyclopyrone helps Acuron deliver improved and more consistent weed control than industry standards, including Corvus® and Verdict® herbicides
- Formulated as a liquid, capsule-suspension technology
- Trials show excellent pre-emergence and post-emergence crop safety when used according to the label
- Performs well under multiple tillage situations including conventional, reduced and no-till systems
- Offers tank-mix and rotational flexibility
- Season-long residual control helps reduce the weed seed bank for future generations

Targeted weeds

- Common cocklebur
- Common ragweed
- Giant ragweed
- Kochia
- Marestail
- Morningglory
- Palmer amaranth
- Russian thistle
- Waterhemp

**Refer to product label for full list of weeds controlled*

Use recommendations

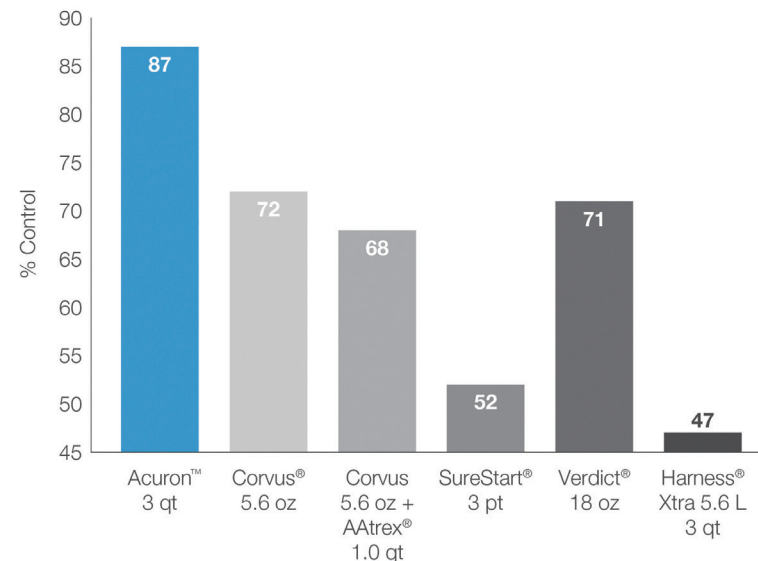
The full application rate of Acuron ranges from 2.5 – 3.0 qts/A depending on soil organic matter.

¹2013 Syngenta Market Research. Cocklebur, kochia, marestail, morningglory, ragweed (common, giant), waterhemp (common, tall).
²2014 Syngenta market research.



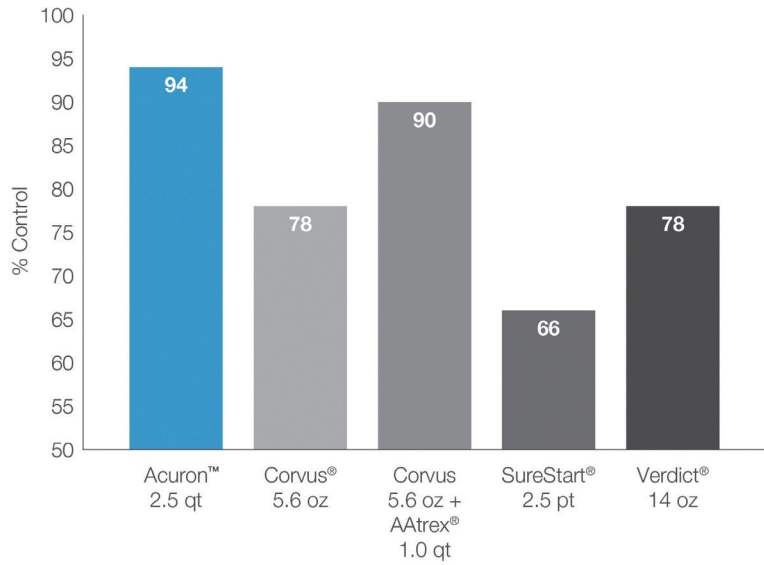
Irwin, OH. Photos taken July 11, 2014.

**Pre-emergence control of Giant ragweed
49-58 days after emergence (DAE)**



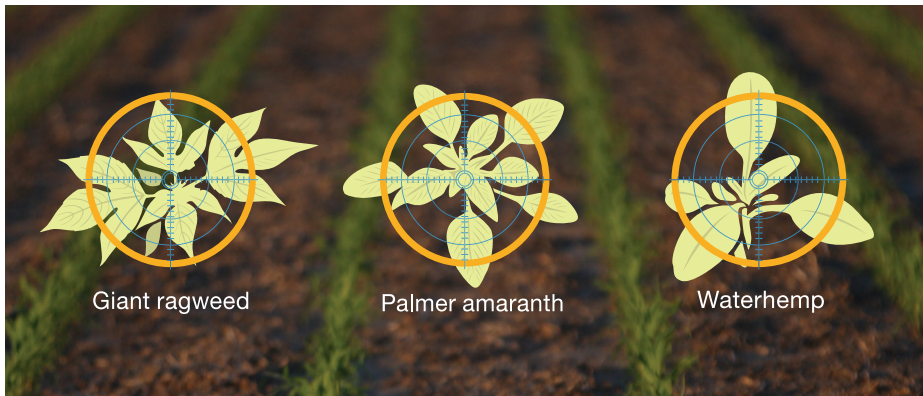
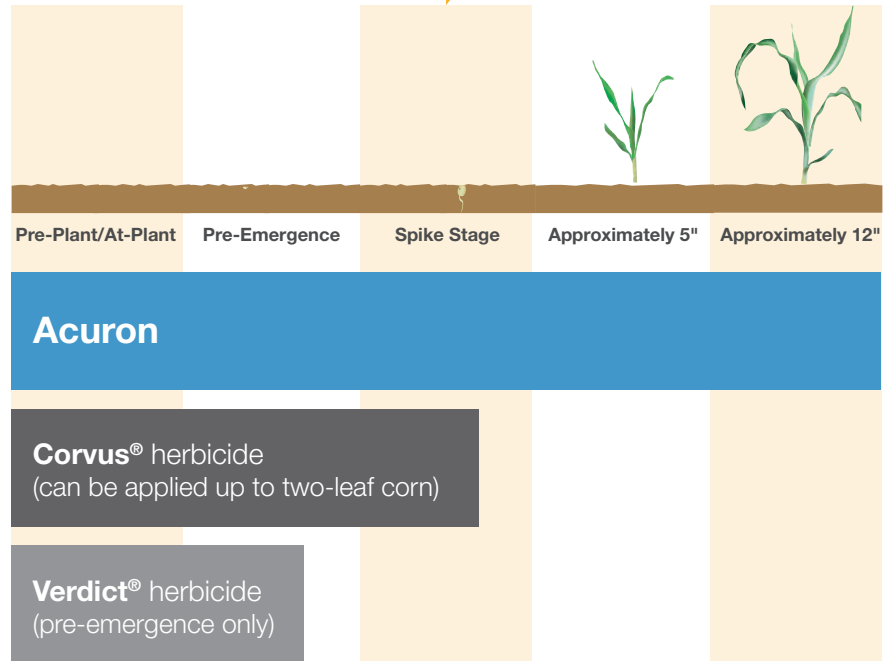
Data source: HBI004A3-2014US, 2 trials (IL, MN)

Acuron™ herbicide vs. Competitors
Pre-emergence control of Palmer amaranth
 49-57 days after emergence (DAE)



Data source: HBI004B3-2014US, 5 trials (GA, LA, NC, TN, TX)

▶▶ Acuron™ corn herbicide can be applied from 28 days pre-plant up to 12-inch corn





A long-time favorite of corn growers, atrazine is effective in controlling a broad range of yield-robbing weeds, is safe to the crop and fits a wide variety of farming systems. Syngenta offers AAtrrex® brand herbicides so you can take advantage of the proven performance of atrazine.

- AAtrrex 4L is a liquid formulation
- AAtrrex Nine-O® is the granular formulation

Active ingredient: Atrazine

Benefits

- Outstanding application flexibility—can be applied pre-plant surface, pre-plant incorporated, pre-emergence or post-emergence up to 12-inch corn
- Residual control of many broadleaf weeds and some grasses
- Excellent tank mix partner
- Popular option in conservation tillage programs that reduce or eliminate plowing and tillage—methods traditionally used to control weeds
- Use of atrazine prevents up to 85 million metric tons of soil erosion per year—enough to fill more than 3 million dump trucks*
- Use in combination or rotation with other modes of action can help delay or manage weed resistance to those products
- Farming without atrazine would cost growers as much as \$28/A in herbicides and reduced yields, per EPA estimates
- Atrazine increases crop yield by up to 7 bu/A **

* Mitchell, Paul D., "Estimating soil erosion and fuel use changes and their monetary values with AGSIM: a case study for triazine herbicides," 2011.

** Bridges, David, "A biological analysis of the use and benefits of chloro-s-triazine herbicides in U.S. corn and sorghum production," 2011.

Targeted weeds

- | | | | |
|-------------------------------|-----------------------------|----------------------------|-------------------|
| • Annual morningglory | • Green foxtail* | • Nightshade | • Wild oats |
| • Barnyardgrass (watergrass)* | • Jimsonweed | • Pigweed | • Witchgrass* |
| • Cocklebur** | • Kochia | • Purslane | • Yellow foxtail* |
| • Giant foxtail* | • Common lambsquarters | • Ragweed | |
| • Groundcherry | • Large (hairy) crabgrass** | • Sicklepod** | |
| | • Mustards | • Velvetleaf (buttonweed)* | |

* Partial control only on medium- and fine-textured soils

** Partial control only

Refer to product labels for full list of weeds controlled.

Use recommendations

- AAtrrex brands can be applied pre-plant surface, pre-plant incorporated, pre-emergence or post-emergence up to 12-inch corn
- Ideal for conservation- and no-till systems, which can reduce soil erosion up to 90 percent
- The total maximum application (pre and post treatments combined) that can be applied each calendar year is 2.5 lb a.i. per acre (5.0 pts/A with AAtrrex 4L)
- Do not exceed a single application rate of 2.0 lb/A

Refer to the product labels for complete instructions on use rates and application procedures.





Strong on broadleaf weeds and grasses, gentle to the crop and proven to keep fields cleaner for longer than the competition, Bicep II Magnum® and Bicep Lite II Magnum® herbicides are excellent choices for foundation weed control in corn. In glyphosate-tolerant corn, setting up your post-emergence herbicide (Halex® GT or a Touchdown® brand herbicide tank-mixed with Callisto® Xtra herbicide) with an early application of a Bicep® brand herbicide will help you start early and finish clean. Bicep Lite II Magnum contains a lower rate of atrazine than Bicep II Magnum, so you can choose the product that best fits your farming operation.

Active ingredients: S-metolachlor, Atrazine

Benefits

- Combines the power of S-metolachlor and atrazine—two active ingredients that offer longer residual control and better performance than competitor brands
- Longer residual control and better performance than acetochlor-based brands like Harness®, SureStart® and TripleFLEX® herbicides
- Contains a safener, benoxacor, that stays in the same soil layer as S-metolachlor, providing unsurpassed crop safety even in cool, wet conditions
- Fits all tillage systems
- Built-in burndown

Targeted weeds

- Common purslane
- Common ragweed
- Crabgrass
- Fall panicum
- Florida pusley
- Giant foxtail
- Giant ragweed
- Common lambsquarters
- Morningglory
- Pigweed
- Prairie cupgrass
- Smartweed
- Velvetleaf
- Waterhemp

Refer to product labels for full list of weeds controlled.

Use recommendations

- Bicep II Magnum and Bicep Lite II Magnum can be applied pre-plant surface, pre-plant incorporated, pre-emergence or post-emergence
- Bicep II Magnum may be applied at 1.3 – 2.58 qts/A, depending on soil texture and amount of organic matter in soil
- Bicep Lite II Magnum may be applied at 0.9 – 2.2 qts/A, depending on soil texture and amount of organic matter in soil
- Apply up to 45 days prior to planting to 12-inch corn

Refer to the product labels for complete instructions on use rates and application procedures.

Data

For growers who want the dual benefits of early-season weed control and extended residual control, a two-pass program with a foundation rate of Bicep II Magnum herbicide followed by Halex GT herbicide in glyphosate-tolerant corn, is a good solution.



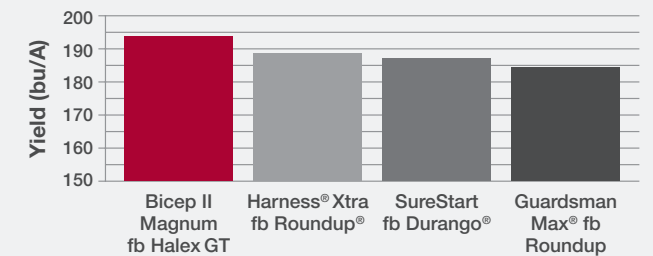
**Bicep II Magnum
fb Halex GT**



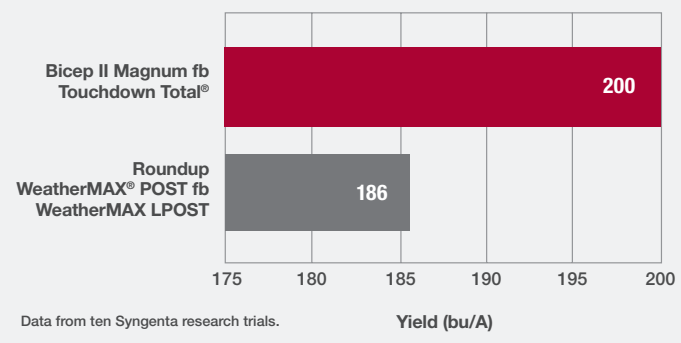
Untreated Check

DeKalb, IL

Bicep II Magnum followed by Halex GT - Yield



- Bicep II Magnum applied at 1.3 qts/A; Halex GT applied at 3.6 pts/A
- Harness Xtra, SureStart and Guardsman Max were applied at foundation rates per soil type
- AMS was applied with all post-emergence treatments
- NIS (0.25% v/v) was added to Halex GT treatments
- Post treatments applied when weeds were 2-4" in height
- 7 trial locations: IN, MO, IL, MS, TX, TN, IA



Bicep II Magnum followed by Touchdown Total herbicide protects yield potential better than two applications of Roundup herbicide in glyphosate-tolerant corn. In field trials, the average yield for Bicep II Magnum followed by Touchdown Total out yielded two applications of Roundup by 14 bu/A.





For growers who need to control broadleaf weeds in corn that glyphosate is missing, Callisto provides exceptional control, is safe to the crop and is the standard for broadleaf weed control in corn.

For growers who use Callisto tank mixed with atrazine, Callisto Xtra is a convenient premix herbicide that delivers two effective modes of action against tough weeds in corn. Callisto Xtra is the tank mix partner of choice for residual broadleaf weed control in corn.

Active ingredients: Callisto: Mesotrione; Callisto Xtra: Mesotrione, Atrazine

Benefits

- **Simple**
 - Effective burndown control of emerged weeds (faster than glyphosate alone)
 - Longer-lasting residual broadleaf weed control than Impact®, Armezon®, Laudis®, Status® or Capreno® herbicides
- **Smart**
 - Callisto and Callisto Xtra are excellent tools for glyphosate-resistant weed management
 - > Callisto adds one mode of action to glyphosate and Callisto Xtra adds two through its synergistic combination of Callisto and AAtrex herbicides
 - > Delivers improved activity on broadleaf weeds not currently controlled by glyphosate alone
 - > Excellent control of the toughest broadleaf weeds including waterhemp, lambsquarters, ragweed and pigweeds with the added benefit of large crabgrass control
- **Safe to the Crop**
 - Callisto and Callisto Xtra deliver broad-spectrum weed control while providing excellent crop safety
 - Registered for use in field corn, seed corn, silage corn, sweet corn and yellow popcorn

Targeted weeds

- | | | | |
|-------------------------|-------------------------|--------------------------|-----------------|
| • Broadleaf signalgrass | • Crabgrass | • Morningglories | • Ragweeds |
| • Burcucumber | • Horseweed (marestail) | • Nightshades | • Velvetleaf |
| • Common cocklebur | • Kochia | • Palmer amaranth | • Venice mallow |
| • Common lambsquarters | • Lambsquarters | • Pennsylvania smartweed | • Waterhemp* |
| • Common sunflower | • Large crabgrass | • Pigweeds | |

*Callisto and Callisto Xtra applied post will not control waterhemp resistant to post applied HPPD herbicides.

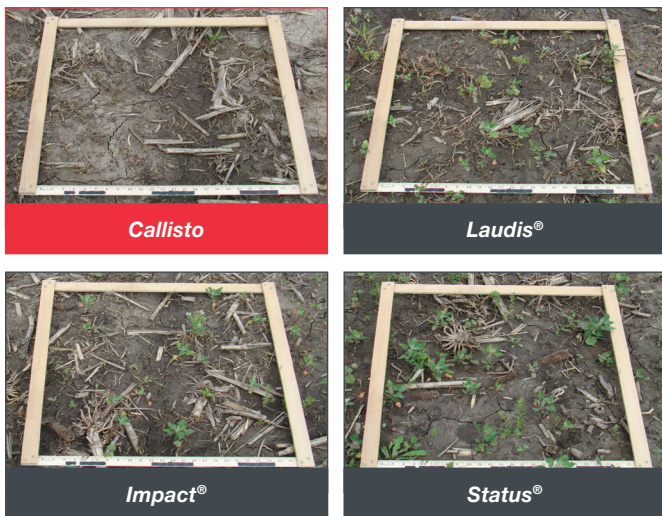
Refer to label for full list of weeds controlled.

Use recommendations

- Callisto should be applied at a rate of 2.5 – 3.0 oz/A from post-emergence up to 30-inch corn
- Callisto Xtra should be applied at a rate of 20.0 – 24.0 oz/A from post-emergence up to 12-inch corn
- Add AAtrex 4L herbicide as a tank mix partner for resistance management. This combination can be applied up to 12-inch corn.
- If atrazine cannot be used, add a dicamba product

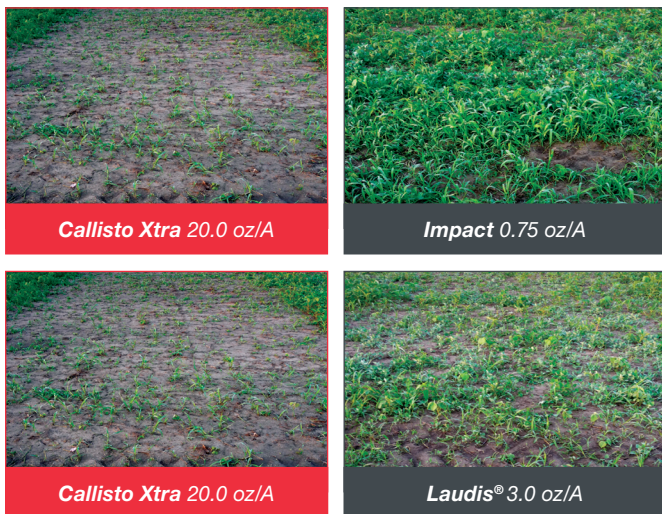
Refer to the product labels for complete instructions on use rates and application procedures.

Callisto vs. the Competition

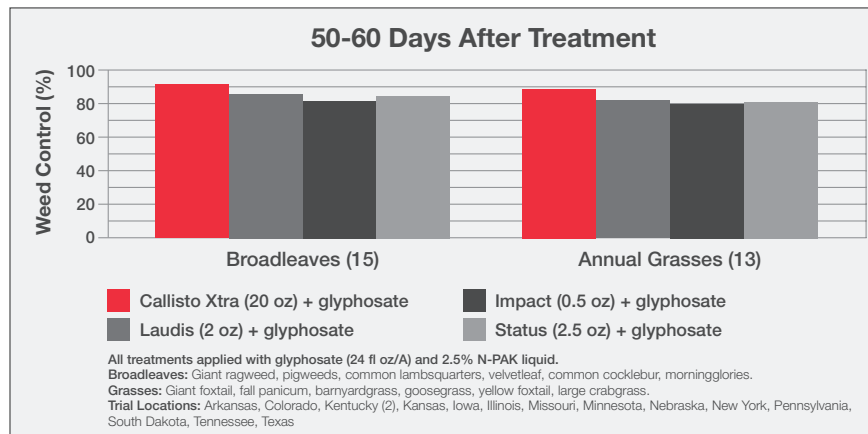


28 days after treatment. Callisto applied at 3.0 oz/A. Laudis applied at 3.0 oz/A. Impact applied at 0.75 oz/A. Status applied at 5.0 oz/A.

Callisto Xtra vs. the Competition



Applied April 24, 2009. Photos taken 40 days after treatment. Marshall, Missouri. Weed species present were waterhemp, ivyleaf morningglory, fall panicum, giant foxtail, velvetleaf and lambsquarters.



For growers of glyphosate-tolerant corn who use Callisto tank mixed with glyphosate, Callisto GT offers a convenient premix to deliver convenience and performance.

Active ingredients: Mesotrione, Glyphosate

Benefits

- Premix combination of Callisto and Touchdown®
- Controls emerged broadleaf weeds and grasses plus delivers residual broadleaf weed control
- Convenient formulation for glyphosate-tolerant corn

Targeted weeds

- Palmer amaranth
- Burcucumber
- Cocklebur
- Lambsquarters
- Morningglory
- Waterhemp
- Ragweeds
- Velvetleaf
- Woolly cupgrass
- Barnyardgrass
- Foxtails

Refer to label for full list of weeds controlled.

Use recommendations

- Full rate: 2.0 pts/A
- Apply post-emergence up to 30-inch corn or V8
- Requires the use of an adjuvant for optimum control
- Add AAtrex 4L herbicide as a tank mix partner for resistance management. This combination can be applied up to 12-inch corn.
- If atrazine cannot be used, add a dicamba product (e.g. NorthStar® herbicide)

Refer to label for complete instructions on use rates and application procedures.



Dual II Magnum® herbicide controls glyphosate-resistant pigweeds and waterhemp, plus it eliminates early-season weed competition that can reduce yields. It fits all cropping systems and provides exceptional crop safety and unbeatable application flexibility.

Not only can Dual II Magnum be applied in the spring, it is also extremely effective as a fall-applied* herbicide in corn. Spread out your spring workload and help protect your farm from weather challenges with a two-pass program of fall-applied Dual II Magnum herbicide followed by a post-emergence application of Halex GT herbicide in glyphosate-tolerant corn (Agrisure GT or Roundup Ready® hybrids).

Dual II Magnum is also available in a formulation called Dual II Magnum SI, which is specially formulated for impregnation on dry fertilizer.

*Only in Iowa, Minnesota, North Dakota, South Dakota, Wisconsin and portions of Nebraska and Illinois – see label for specific instructions.

Active ingredient: S-metolachlor

Benefits

- Helps protect the corn crop from early-season weed competition that can steal yield when the corn plant is most vulnerable
- Flexible application timing with early pre-plant, pre-emergence and post-emergence options
- Lasts two to four weeks longer than other competitive grass herbicides
- Contains benoxacor, a proven safener that works with S-metolachlor to protect against injury in cool and wet conditions

Benefits of fall-applied Dual II Magnum followed by Halex GT

- Managing weed populations in the fall provides more time and flexibility for a spring-applied post-emergence application of Halex GT
- A fall application of Dual II Magnum will reduce weed pressures of grasses and small-seeded broadleaf weeds in the spring. Unlike glyphosate, using Halex GT means no more waiting for more weeds to emerge before application.
- Dual II Magnum followed by Halex GT provides season-long weed control, including outstanding control of early- and late-season grasses
- Controlling weeds early and using herbicides with multiple modes of action will help prevent the potential for development of weed resistance

Targeted weeds

- | | | | |
|----------------------------|------------------|--------------------|-------------------|
| • Common waterhemp | • Fall panicum | • Green foxtail | • Signalgrass |
| • Crabgrass | • Florida pusley | • Pigweeds | • Tall waterhemp |
| • Eastern black nightshade | • Giant foxtail | • Prairie cupgrass | • Yellow foxtail |
| | • Goosegrass | • Red rice | • Yellow nutsedge |

Refer to label for full list of weeds controlled.

Use recommendations

- Dual II Magnum is labeled for pre-plant surface-applied, pre-plant incorporated or pre-emergence application
- Dual II Magnum and Dual II Magnum SI are labeled for fall application in Northern Illinois, Northern Nebraska and all of Minnesota, Iowa, South Dakota, North Dakota and Wisconsin
- Dual II Magnum can also be applied in the spring for pre-emergence control of grasses and small-seeded broadleaf weeds
- Dual II Magnum can be tank mixed with a wide variety of other herbicides

Refer to the product labels for complete instructions on use rates and application procedures.



Hutchinson, Minnesota

For growers who are looking for post-emergence contact plus residual control in glyphosate-tolerant corn, Halex[®] GT herbicide controls emerged weeds and, unlike Roundup, delivers residual control of grass and broadleaf weeds until crop canopy. Halex GT offers the convenience and proven performance of Glyphosate with Residual[™]. That's why nine out of ten growers who try Halex GT use it again making it the number one glyphosate premix in corn*.

Active ingredients: Mesotrione, S-metolachlor, glyphosate

Benefits

- Contains three modes of action to decrease dependence on glyphosate
- Flexible post-emergence application means no more waiting for more weeds to emerge before application
- One application often provides residual control to keep fields weed-free from spike to crop canopy, saving growers time and money
- Years of product development shows Halex GT out-yields both one and two applications of glyphosate
- Excellent crop safety when used according to the label
- Can be used in a planned two-pass program following an application of a Bicep II Magnum brand, Dual[®] brand, Princep[®] brand, Acuron[™], Lumax[®] EZ, Lexar[®] EZ or Zemax[®] herbicides
- Halex GT provides the excellent residual weed control with a single product in glyphosate-tolerant corn

Weeds controlled

- Controls more than 90 broadleaf and grass weeds, including ragweeds, waterhemp, lambsquarters, pigweeds and foxtails

Refer to label for full list of weeds controlled.

Use recommendations

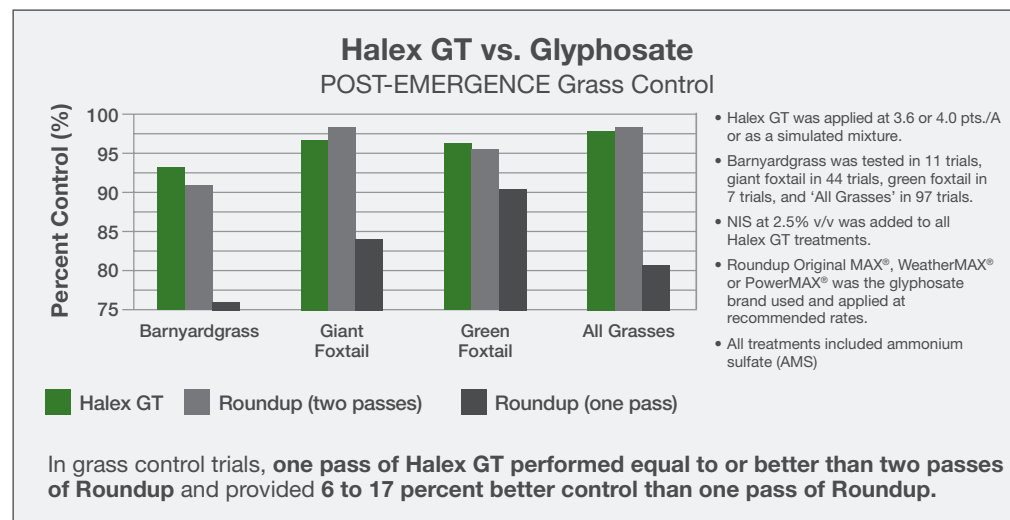
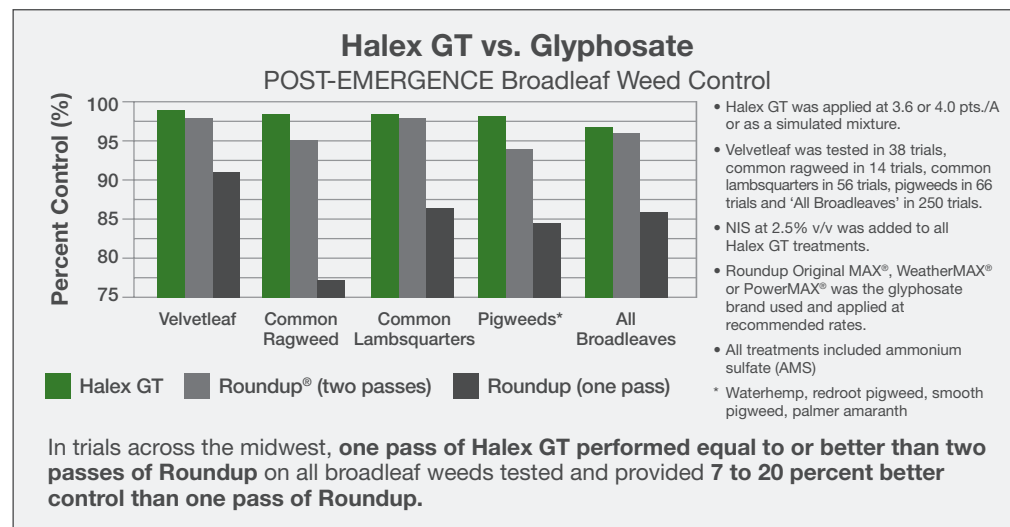
- Apply Halex GT at a rate of 3.6 to 4.0 pts/A
- Add NIS at 1.0 to 2.0 qts/100 gallons of water
- Add AMS at 8.5 to 17.0 lb/100 gallons of water
- Halex GT should be tank mixed with atrazine to provide an additional mode of action for resistance management. If atrazine cannot be used, add a dicamba product (e.g. NorthStar herbicide)
- Optimum post-emergence application timing is before weeds reach four inches in height
- Halex GT may be applied to corn up to 30 inches in height or the 8-leaf stage of growth

Refer to the label for complete instructions on use rates and application procedures.

* Syngenta market research.

Data

Results from Trials Conducted Between 2003 and 2008





For growers who need residual control of grasses and broadleaf weeds, Lexar EZ and Lumax EZ herbicides provide season-long control. Unlike Corvus, Lexar EZ and Lumax EZ enable one-pass weed control in corn with a single product. Lexar EZ and Lumax EZ offer longer lasting residual and greater application flexibility than competitive corn herbicides. Talk to your retailer about which solution is best for your farm.

Active ingredients: S-metolachlor, Atrazine, Mesotrione

Benefits

- Enhanced formulations
 - Based on the same capsule-suspension formulation technology as Halex GT
 - Reduced separation and improved handling in bulk and mini-bulk tanks
 - Minimizes effects of overwintering and maximizes compatibility with many nitrogen fertilizers and other critical tank-mix partners
- While the optimum application timing is pre-emergence to prevent early-season weed competition, Lexar EZ and Lumax EZ offer application flexibility from 14 days pre-plant up to 12-inch corn
- Provide burndown and residual control of difficult broadleaf weeds and grasses
- Deliver longer-lasting residual control of more broadleaf weeds and grasses than competitive herbicides
- Lexar EZ and Lumax EZ contain three active ingredients with different modes of action to decrease dependence on glyphosate and help manage weed biotypes that are tolerant or resistant to glyphosate, ALS-inhibiting, PPO-inhibiting and triazine herbicides
- Contain a proven safener, benoxacor, for excellent crop safety at all labeled application timings and in adverse weather conditions
- Do not require a tank mix partner to achieve optimum weed control
- No restrictions for pre or at-planting applications with any insecticides

Lexar EZ and Lumax EZ are labeled to manage over 100 weeds including:

- Barnyardgrass
- Common lambsquarters
- Waterhemp
- Foxtails
- Pigweeds
- Horseweed (Marestail)
- Ragweeds

Refer to label for full list of weeds controlled.

Lexar EZ use recommendations

- Labeled rate: 3.0-3.5 qts/A conventional, 2.25 qts/A foundation*
- Lexar EZ can be used at a foundation rate (1.5-1.75 qts/A) in a planned two-pass program followed by Halex GT herbicide in glyphosate-tolerant corn
- Apply 14 days prior to planting up to 12-inch corn*

*Foundation rate followed by glyphosate (Touchdown or Roundup brands), Halex GT or Liberty post application

Refer to the label for complete instructions on use rates and application procedures.

Lumax EZ use recommendations

- Labeled rate: 2.7-3.25 qts/A conventional, 2 qts/A foundation*
- Lumax EZ can be used at a foundation rate (1.25-1.75 qts/A) in a planned two-pass program followed by Halex GT herbicide in glyphosate-tolerant corn
- Apply 14 days prior to planting up to 12-inch corn*

*Foundation rate followed by glyphosate (Touchdown or Roundup brands), Halex GT or Liberty post application

Refer to the label for complete instructions on use rates and application procedures.



Like Lexar, Lexar EZ provides more effective broadleaf weed control than Corvus herbicide. Lexar provides 20 percent better control of waterhemp than Corvus.

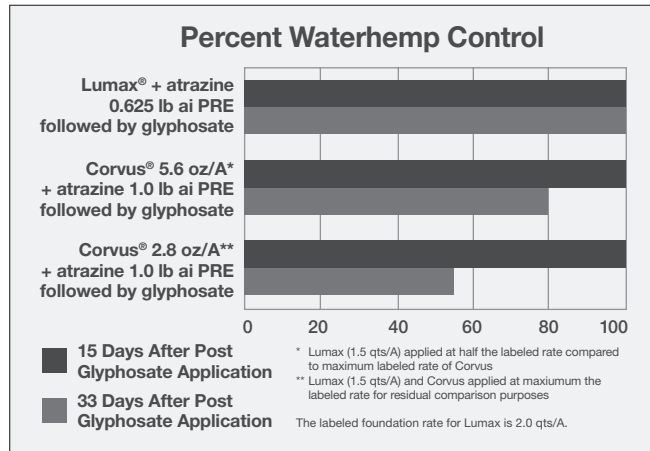
Lexar vs. Corvus: 36 days after treatment



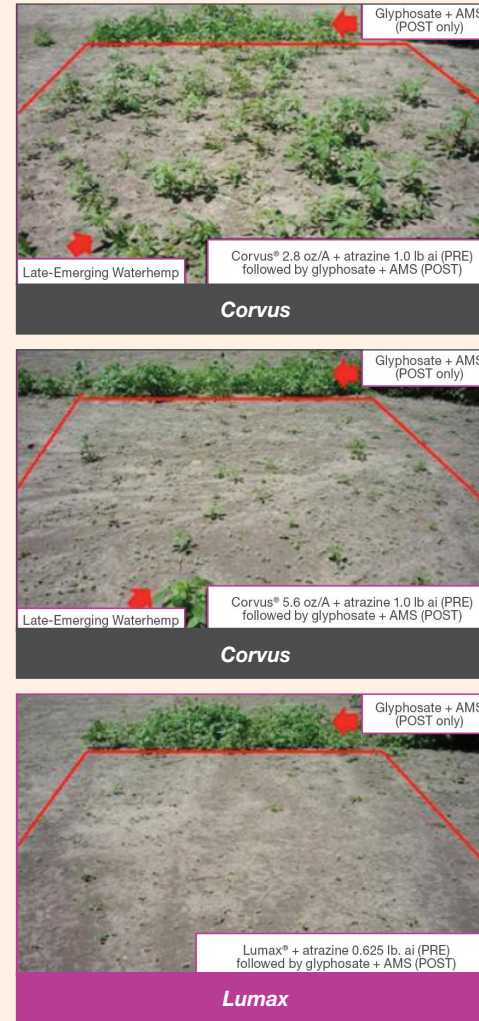
Superior giant ragweed control from a foundation rate of Lexar.

Lexar was applied at a 1.75 qts/A. Corvus was applied at 3.0 oz/A. Photo taken at the University of Illinois Northern Illinois Agronomy Research Center, Shabbona, IL.

Like Lumax, Lumax EZ provides more effective broadleaf weed control than Corvus.



Bare Ground Residual Study - Audobon, Iowa
Lumax Herbicide vs. Corvus® Herbicide



Corvus 2.8 oz/A + atrazine 1.0 lb ai (PRE) followed by glyphosate + AMS (POST)

Corvus 5.6 oz/A + atrazine 1.0 lb ai (PRE) followed by glyphosate + AMS (POST)

Lumax + atrazine 0.625 lb ai (PRE) followed by glyphosate + AMS (POST)

Photos taken 33 days after the POST glyphosate application. PREs applied April 21, 2009. POSTs applied May 28, 2009. Glyphosate = Touchdown Total herbicide applied at 30.0 oz/A.

Lumax (1.5 qts/A) applied at half of labeled rate compared to half of maximum labeled rate of Corvus for residual comparative purposes. The labeled foundation rate of Lumax is 2.0 qts/A.



Touchdown Total® and Touchdown HiTech® glyphosate herbicides from Syngenta deliver excellent weed control and crop safety in glyphosate-tolerant corn.

When you use Touchdown brands, you enjoy the flexibility of choosing the best seed, trait and herbicide programs for your acres and the confidence that Syngenta is by your side with service, support and commitment to your success.

Touchdown brands are proven safe over the top of glyphosate-tolerant crops. The highly concentrated formulations also make handling, storage and application convenient and efficient. Effective tank-mix partners include Lexar EZ, Lumax EZ, Zemax, Callisto, Callisto Xtra, Bicep II Magnum, and Dual II Magnum herbicides.

Active ingredient: Glyphosate

Benefits

- **Touchdown Total herbicide:**
 - Adjuvant system that increases glyphosate penetration of leaf surfaces
 - Highly concentrated formulation containing 4.17 lb of glyphosate acid equivalent per gallon
 - Assurances, such as respray and rainfastness regardless of seed or seed company selection
 - Proven crop safety over the top of glyphosate-tolerant crops
- **Touchdown HiTech herbicide:**
 - Effective burndown and weed control where growers prefer surfactants and other additives customized for their farming operations
 - The most concentrated glyphosate product available—packed with 5.0 lb of glyphosate acid equivalent per gallon
 - Demonstrated effectiveness with more than 20 tank-mix partners

Targeted weeds

- Effectively knocks down more than 170 annual and perennial, broadleaf and grass weeds

Refer to labels for full list of weeds controlled.

Use recommendations

- The popular use rate for Touchdown Total herbicide is 1.5 pts/A (24 fl oz/A)
- The popular use rate for Touchdown HiTech herbicide is 1.25 pts/A (20 fl oz/A)
 - Touchdown HiTech requires the addition of a non-ionic surfactant
- Rates will vary based on weed species and height at the time of application

Refer to the labels for complete instructions on use rates and application procedures.



Zemax herbicide is specially formulated to deliver long-lasting residual weed control and application flexibility in areas where atrazine use is limited. Through its combination of two active ingredients, Zemax provides residual control of the toughest grasses and small-seeded broadleaf weeds. Additionally, Zemax offers application flexibility up to 30-inch corn and a unique capsule-suspension formulation for optimized handling.

Active ingredients: S-metolachlor, Mesotrione

Benefits

- Application flexibility from 14 days pre-plant up to 30-inch corn
- Longer-lasting residual control and greater application flexibility than competitive corn herbicides
- Designed to minimize effects of overwintering
- Can be applied in areas where atrazine use is limited or prohibited
- Contains a proven safener, benoxacor, to ensure crop safety for pre applications even in adverse weather conditions
- Compatible with many nitrogen (28 to 32 percent) fertilizers and other critical tank-mix partners

Targeted weeds

- Crabgrass
- Barnyardgrass
- Nightshades
- Foxtails
- Common lambsquarters
- Palmer amaranth
- Pigweeds
- Ragweeds
- Velvetleaf
- Waterhemp

Use recommendations

- Full rate 2.0-2.4 qts/A
- Foundation rate 1.0-1.2 qts/A followed by Halex GT herbicide
- Foundation rate 1.6-2.0 qts/A followed by glyphosate (Touchdown or Roundup brand herbicides)
- When possible, add an AAtrex brand herbicide for application up to 12-inch corn
- Can also be tank-mixed with a Princep brand herbicide for pre-emergence application

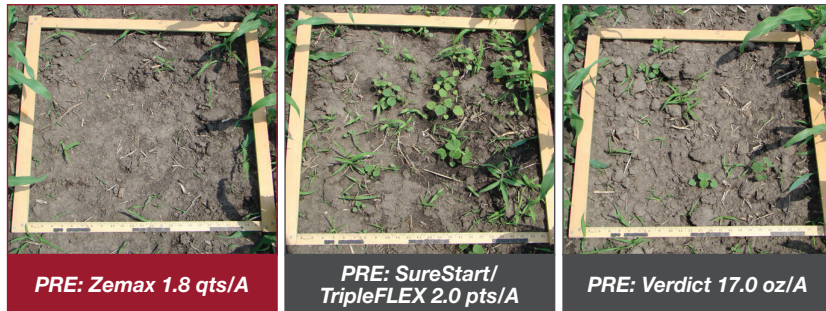
Refer to the label for complete instructions on use rates and application procedures.

Bare ground demo plots, Bryon, MN



All treatments sprayed pre-emergence on May 11, 2011. Weed species present: giant foxtail, common lambsquarters, redroot pigweed and velvetleaf. Photos taken seven weeks after application.

Bare ground demo plots, Lamartine, WI



Foundation rates used. Photos taken 29-30 days after treatment. 2011.

Pre-harvest photos, Lamartine, WI



Refer to the labels for complete instructions on use rates and application procedures.

Additional corn herbicides in the Syngenta portfolio

Herbicide	Active ingredient	Benefits	Targeted weeds
Expert®	Atrazine, S-metolachlor, Glyphosate	<ul style="list-style-type: none"> Season-long, early post-emergence option for over-the-top applications in glyphosate-tolerant corn Excellent choice for all-in-one burndown with residual control in conventional corn Residual control of many key weeds Can be combined with liquid fertilizer for one-pass weed-and-feed applications Offers three modes of action in an easy-to-use premix Ideal for no-till, conservation tillage or eco-fallow weed control programs Excellent crop safety in all weather conditions 	Down-to-the roots burndown of more than 170 weeds, plus extended residual control
Gramoxone® SL 2.0	Paraquat dichloride	<ul style="list-style-type: none"> Broad-spectrum control and proven efficacy on difficult-to-control weeds Fast-acting results in as little as 48 hours Excellent rotational partner to help preserve glyphosate efficacy and reduce the likelihood of resistance Provides effective control even in adverse weather conditions Rainfast upon drying for reliable control Protects crop integrity by not causing damage through root uptake Tank-mix flexibility adds versatility to weed management programs At harvest, Gramoxone SL 2.0 can be used alone or with a tank-mix partner for rapid desiccation and greater harvest efficiency 	Most annual grasses and broadleaf weeds, including the ones glyphosate leaves behind
Princep® 4L (liquid formulation)	Simazine	<ul style="list-style-type: none"> Long-lasting grass and broadleaf weed control Excellent crop tolerance Tank-mix flexibility 	Controls more than 40 broadleaf weeds and grasses including fall panicum, crabgrass and pigweed
Princep® Caliber 90® (granular formulation)		<ul style="list-style-type: none"> May be fall-applied for control of winter annuals and followed by a post-emergence application of Halex GT 	
Sequence®*	Glyphosate, S-metolachlor	<ul style="list-style-type: none"> Dual-action herbicide labeled for use in glyphosate-tolerant corn Convenient premix formulation offers growers effective contact plus residual weed control 	Controls more than 170 weeds, including barnyardgrass, bristly starbur, carpetweed, crabgrass, Johnsongrass (seedling), lambsquarters (common), pigweed, nutsedge (purple), and nutsedge (yellow)

*Sequence is not labeled for corn in all states, please check label for specific states.

Refer to labels for full list of weeds controlled as well as complete instructions on use rates and application procedures.



Afla-Guard®, a naturally occurring biocontrol agent, gives corn growers the upper hand in the battle against aflatoxin. Afla-Guard is delivered on a hulled barley carrier that is coated with a non-toxic strain of *Aspergillus flavus*. Once activated by moisture, Afla-Guard produces a multitude of spores on the barley surface that spread throughout the field by wind and insects, allowing the beneficial fungus to outcompete and displace dangerous aflatoxin-producing strains. Afla-Guard significantly reduces aflatoxin contamination levels to protect the marketability and value of your corn crop.

Active ingredient: Non-toxic strain of *Aspergillus flavus*

Benefits

- Early, preventive application (as early as 10-leaf stage or V10) minimizes contamination in the field for maximum results
- Significantly reduces aflatoxin levels, which protects the marketability of your corn crop
- Reduces the worry of dockage or load rejection at the elevator
- Protects the value of your corn crop
- Extensively tested and validated independently

Corn pests controlled

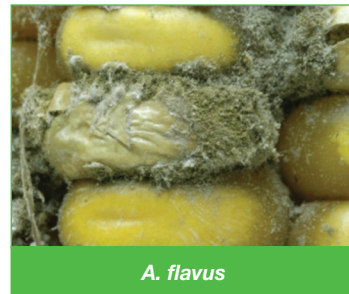
- Aflatoxin

Use recommendations

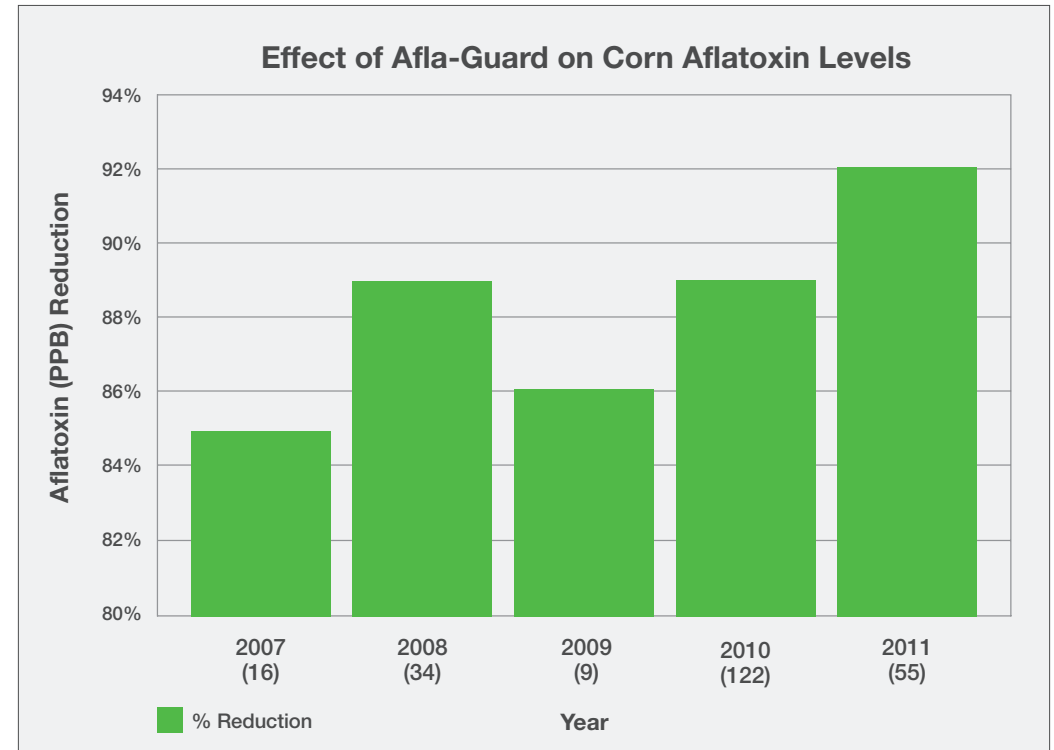
- Ground and aerial application
- Application window: V10 - Silking
- Labeled Rate: 10-20 lb/A*

*Under environmental conditions that promote severe aflatoxin levels, or when historically high levels of aflatoxin have occurred in the past, use the 20 lb/A rate

Refer to the product labels for complete instructions on use rates and application procedures.



Data



Across a five-year span, Afla-Guard has consistently reduced the amounts of aflatoxin (PPB) each year, as seen on the chart above. The number in parentheses represents the number of Syngenta commercial test locations.



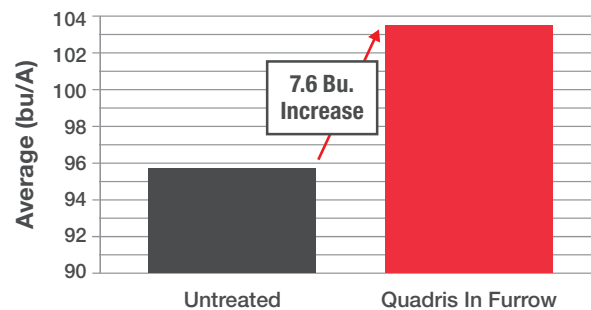


In-furrow applications of Quadris® fungicide have proven to give corn a stronger start. Syngenta has been testing Quadris in furrow since 2010 and seen faster, more uniform emergence as well as a heightened ability to respond to early-season inclement weather. In a number of commercial size on-farm trials taken from 2010 to 2012, in-furrow Quadris applications yielded 7.6 bu/A over untreated corn.

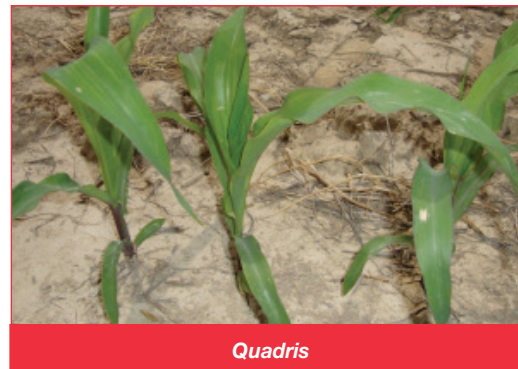
Use recommendations

- Apply Quadris as an in-furrow spray in 3-15 gallons of water at planting.
- Mount the spray nozzle so the spray is directed into the furrow just before the seeds are covered.
- Use the higher rate when the weather conditions are expected to be conducive for disease development, if the field has a history of Pythium problems, or if minimum or no-till programs are in place

See label for full disease list, detailed rates and application timings.



Large Scale On Farm Trials from 2010-2012, Trial Locations: MO, IL, MS, MN



Corn treated with Quadris in furrow (left) looks healthier than untreated corn (right) after frost in a central Illinois field. Untreated corn had to be replanted due to freezing damage and corn treated with Quadris in furrow did not require replanting.

In-furrow application rates

Rate Per 1000 Row Feet		Product Per Acre (fl oz)						
fl oz product	oz a.i.	22" rows	30" rows	32" rows	34" rows	36" rows	38" rows	40" rows
0.40	0.10	9.5	7.0	6.5	6.1	5.8	5.5	5.2
0.60	0.15	14.3	10.5	9.8	9.2	8.7	8.3	7.8
0.80	0.20	–	14.0	13.0	12.2	11.6	11.0	10.4

22" = 23,760 row ft., 30" = 17,424 row ft., 32" = 16,315 row ft., 34" = 15,374 row ft., 36" = 14,520 row ft., 38" = 13,754 row ft., and 40" = 13,068 row ft./Acre







Quilt Xcel® fungicide elevates corn to its full yield potential by shielding plants from stress, providing broad-spectrum disease control and offering physiological benefits from roots to ears. Quilt Xcel provides a 6-15 bu/A yield increase over untreated corn, depending on application timing.

Benefits

- Enables corn to counteract conditions of too much or too little water
- Helps plants stay green longer, allowing longer periods of photosynthesis for more plant growth
- Helps corn maximize the sun's energy for extended grain fill
- Provides stronger stalks that result in less lodging for a more efficient harvest and less potential for volunteer corn the following season
 - Trials have demonstrated that fields treated with Quilt Xcel experience an average 1.7 mph increase in harvest speed, which leads to about \$10/A savings in harvest costs, before factoring in labor cost savings
- Broad-spectrum curative and preventive disease control
- Deeper root systems allow for improved nutrient uptake and better stand
- Uniform protection of the plant, even new growth, as active ingredients move systemically through the plant's xylem

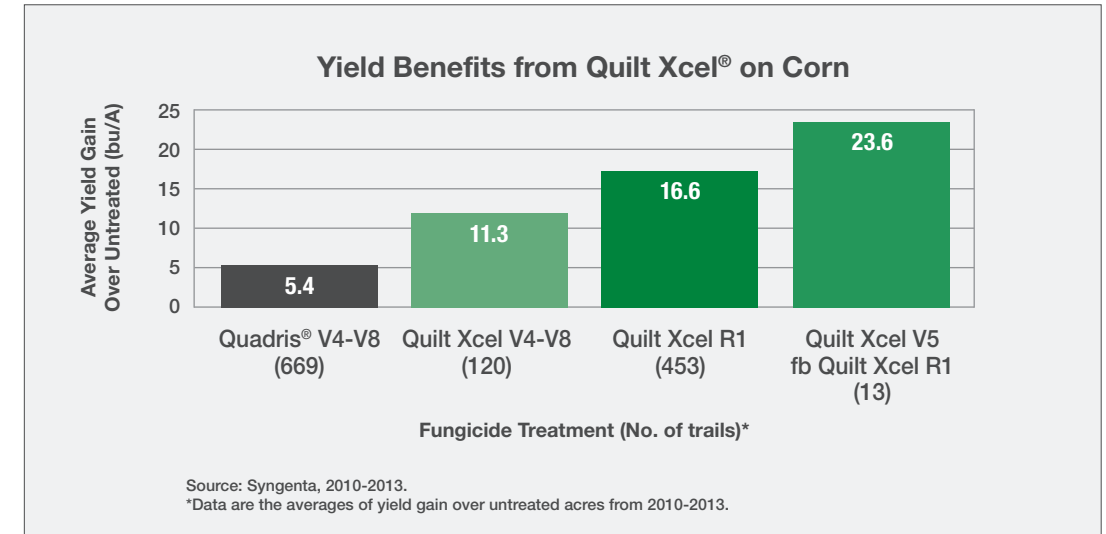
Corn diseases controlled

- Anthracnose leaf blight
- Gray leaf spot
- Eye spot
- Northern corn leaf blight
- Northern corn leaf spot
- Southern corn leaf blight
- Rusts
- Helminthosporium leaf blights

Use recommendations

- Early (V4-V8) applications provide early-season disease control and stress management benefits with convenient tank-mixing options
- Quilt Xcel can also be applied around R1 for additional disease control and stress management benefits

See label for full disease list, detailed rates and application timings.



Quilt Xcel-treated corn (right) is visibly greener and experiencing more plant growth compared to untreated corn (left) across a variety of hybrid trials. Field located in Battle Creek, MI.



Quilt Xcel fungicide

Untreated

Corn treated with Quilt Xcel (left) has larger ears and extended grain fill compared to untreated corn (right). Field located in Rice County, KS.



Untreated

Quilt Xcel fungicide

Untreated corn (left) vs. Quilt Xcel-treated corn (right) at early (V4-V8) application timing demonstrates a visible improvement in stalk quality with Quilt Xcel treatments. Field located in Trenton, KY.





Warrior II with Zeon Technology® insecticide delivers the combination of consistently reliable performance, modern formulation technology, and long residual insect protection for corn. Zeon® Technology, a quick-release, microencapsulated formulation, with a powerful UV blocker, ensures fast knockdown and residual control of the most damaging insects.

Active ingredient: Lambda-cyhalothrin

Benefits

- Higher load formulation offers convenient packaging and excellent control of troublesome insects, such as corn earworm, Japanese beetle, corn rootworm beetles and Western bean cutworm
- Proven broad-spectrum control
- Utilizes Zeon Technology, a unique encapsulation process, for improved insecticidal activity
- Rainfast in one hour or less with UV protection for long-lasting residual control
- Quick-release capsule provides fast knockdown

Insects controlled

- | | | |
|--|---------------------------|--------------------------|
| • Corn rootworm adult beetle (Mexican, Northern, Southern and Western varieties) | • Cutworm species | • Seedcorn beetle |
| | • Japanese beetle (adult) | • Lesser cornstalk borer |
| | • Corn earworm | • Grasshopper species |

Use recommendations

- Labeled rate: 0.96-1.92 fl oz/A

See label for full insect list, detailed rates and application timings.



Force® CS insecticide is a soil-applied corn insecticide that offers excellent control of corn rootworm and other early-season insects, in a convenient liquid form. It can be applied on CRW-treated acres, on refuge acres or on full-field conventional acres. Force CS is applied through the John Deere Central Insecticide System™ or the Raven Force CS application system. Available from authorized equipment dealers, these closed-package systems reduce product handling and exposure.

Active ingredient: Tefluthrin

Benefits

- Top-rated control of corn rootworm and other early-season pests, even in heavy pressure areas
- Improves yield potential when applied on CRW-treated acres
- Protects root systems that improve standability and the uptake of water and nutrients
- Low use rate results in more treated acres per refill, less product used and time saved
- No adverse herbicide interactions
- Bag-in-a-box packaging design simplifies product handling and reduces exposure
- Application equipment offers simple, closed-system calibration

Insects controlled

- | | | |
|---|--------------------------|-------------------|
| • Corn rootworm (Mexican, Northern, Southern and Western species) | • Cutworm | • Seedcorn maggot |
| | • Lesser cornstalk borer | • White grub |
| | • Seedcorn beetle | • Wireworm |

Use recommendations

- Labeled rate: 0.46-0.57 fl oz/1000 ft of row or 8.0-10 fl oz/A (in 30-inch rows) applied through direct injection
- Follow John Deere and Raven recommendations for spray preparation and calibration to deliver the recommended Force CS insecticide rates

See label for full insect list, detailed rates and directions for different soil types and application timings.



Force 3G insecticide is one of the most effective and consistent granular soil-applied corn insecticides available. Force 3G provides proven control of corn rootworms, wireworms, cutworms, white grubs and other troublesome pests, leading to fully-developed roots, stronger stands and improved yields. In hundreds of trials, Force applied to CRW-traited corn hybrids has improved yields by an average of 10 bu/A over untreated CRW hybrids. It can be applied on CRW-traited corn acres, to full-field conventional acres or refuge acres.

Active ingredient: Tefluthrin

Benefits

- Top-rated control of corn rootworm and other early-season pests, even in heavy pressure areas
- Average yield increase of 10+ bu/A* on CRW-traited acres
- Helps create stronger root systems that maximize the uptake of water and nutrients
- Lower use rate helps treat more acres with less product
- No adverse herbicide interactions provides flexibility to use the herbicide program best suited for your operation

*Average yield increase of 10.42 bu/A based on 326 Syngenta trials

Insects controlled

- Corn rootworm (Mexican, Northern, Southern and Western species)
- Seedcorn beetle
- Cutworm
- Seedcorn maggot
- Lesser cornstalk borer
- White grub
- Wireworm

Use recommendations

- Labeled rate: 3.0-5.0 oz/1000 ft of row or 3.3-5.5 lb/A (in 30-inch rows) applied banded, t-banded or in-furrow

See label for full insect list, detailed rates and directions for different soil types and application timings.

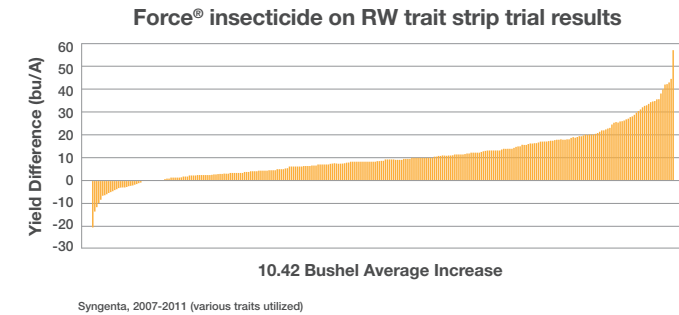
Applying Force over CRW-traited hybrids has shown in hundreds of trials to improve yields by an average of 10 bu/A over untreated CRW-traited hybrids. Force also provides an additional mode of action for corn rootworm control and helps fight pressures from early-season pests such as white grub, wireworms, and cutworms that the rootworm trait alone will not control. These applications help maximize yield potential and improve harvestability by providing protection, enabling stronger root systems that enhance standability and the uptake of water and nutrients.



Compare the lodged stalk and root damage of the corn treated with Capture® LFR® (center) and untreated check (left) versus the straight stalk and healthy roots of corn treated with Force (right).

Results show:

- Force helped create an average yield increase of 10.42 bu/A on rootworm-traited corn acres
- Force on trait applications demonstrated consistent yield increases across all rootworm traits utilized, including Yieldgard® Rootworm, Herculex® RW and Agrisure RW



Would I benefit from applying Force to my rootworm-traited corn?

Answering “yes” to one or more of the following questions may indicate a treatment of Force insecticide in addition to a rootworm trait will be beneficial.

- Do you plant early?
- Do you plant corn on corn?
- Is there heavy corn rootworm pressure?
- Are other early-season pests a concern?
 - Cutworm
 - Grape colaspis
 - Wireworms
 - White grubs
- Is there potential for early-season weed competition?
 - Pest population growth accelerates in early weed cover
- Are you in an area where corn rootworm resistance to Bt is suspected?
- Do you need to manage insects with multiple modes of action?

CRW – It's all about management

- Long-term CRW management will require a multi-year, whole-farm approach.
- There's an important balance between CRW control, yield protection and resistance management.
- It's not one-size-fits all. Effective CRW management will require the integration of multiple control measures, not a singular technology.

Align with the industry leader in corn insect control.

- Our portfolio of traits, seed treatments and insecticides combined successfully controls more insects than any other company.
- We know how to develop tailored solutions that manage CRW, preserve technology and help farmers grow more corn.
- Our breakthrough Agrisure traits, available in high-performing genetics, offer best-in-class insect control to protect quality and yield.

Corn Rootworm Management Recommendations

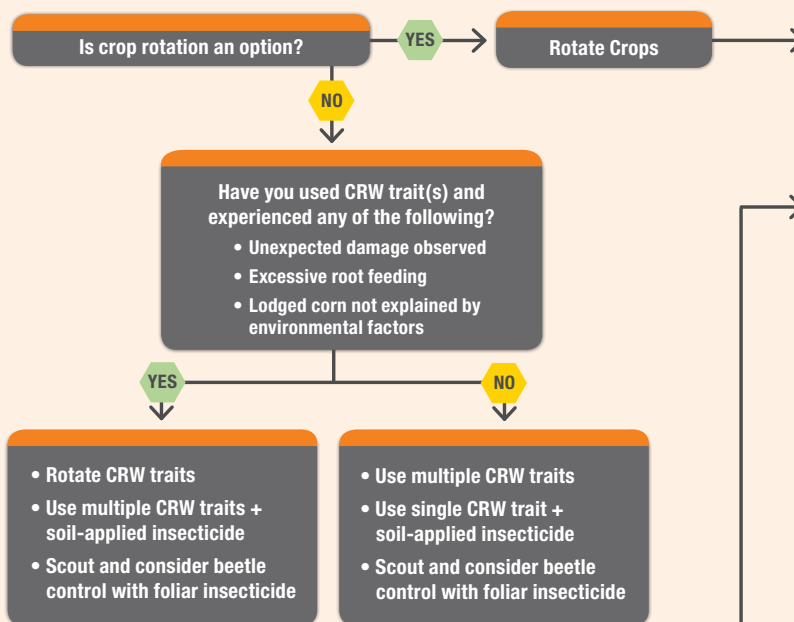
Monitoring corn fields for CRW beetles can help determine CRW pressure in the subsequent year. Gauge next year's CRW larval threat based on this year's beetle numbers: low/moderate/high.

I HAVE LOW CRW PRESSURE

If you experienced low larval feeding damage, low adult beetle population and no rootworm-caused corn lodging issues in the prior year, consider one of the following options: a single CRW trait, multiple CRW traits, or Force® soil insecticide.



I HAVE HIGH CRW PRESSURE



Rotate to a non-host crop such as NK® soybeans, which provides the best opportunity to break the reproductive cycle of CRW.

If you are concerned with the potential for CRW variant biotypes that can survive on soybeans, make sure to monitor soybeans for beetles and take action in next year's corn crop based upon beetle observations in previous year's soybeans. Alternatively, consider treating adult beetles in the soybean crop itself.



Trait stacks with multiple CRW traits



- Agrisure Duracade® trait stacks combine the Agrisure® RW trait with the Agrisure Duracade trait, the newest mode of action against CRW that offers excellent control.
- The Agrisure 3122 E-Z Refuge® trait stack offers reduced, single-bag refuge for added convenience and productivity.

Trait stacks with a single CRW trait



- Feature the Agrisure RW trait stack for an alternative mode of action.
- The Agrisure Viptera® 3111 trait stack controls more above- and below-ground pests, including CRW, than any other non-Agrisure trait stack on the market.

Soil-applied insecticide



- Force® soil insecticide used in combination with hybrids that contain single or multiple CRW trait combinations increases yields by an average of 10+ bushels per acre as demonstrated by hundreds of field trials. The same research shows Force also protects yield of hybrids without CRW traits.
- Secondary insects or other agronomic reasons may influence decision to use soil insecticide.

Foliar Insecticide



- Minimize egg laying from adult CRW females.
- Facilitate proper pollination by preventing silk clipping.

Grow more corn with less irrigation

We are committed to helping corn growers optimize available water. For irrigated corn growers, this commitment was realized through the commercial introduction of Water+[™] Intelligent Irrigation Platform. Water+ Intelligent Irrigation Platform represents the basic integration of agronomics and technology, bringing together water-optimized Syngenta genetics, traits and crop protection inputs with wireless irrigation management technology and expertise from Lindsay Corporation.

Growers enrolled in the platform benefit from the expertise and support of a local service team, which advises on strategic hybrid selection, crop protection programs and irrigation management and scheduling. In addition to receiving customized recommendations regarding inputs and management practices, enrolled growers also gain access to FieldNET[®] wireless irrigation management from Lindsay Corporation, which allows growers to remotely control and monitor their pivots.

Water+ Intelligent Irrigation Platform enables growers to maximize their productivity, yield potential and return on investment, while bringing improved control, convenience and flexibility to their operations. During multiple years of testing in growers' fields, this integrated crop solution has helped irrigated producers grow more corn with up to 25 percent less irrigation than other grower programs.¹

¹2011 data analyzed from 19 sites in eastern Colorado, Nebraska and western Kansas.
2013 data analyzed from 5 sites in eastern Colorado, Nebraska and western Kansas.



Syngenta trial – Yuma, Colorado (2013)



For more information about Syngenta and the latest corn news, visit syngenta.com/corn. Join the conversation online – connect with us at social.SyngentaUS.com.



All photos are the property of Syngenta unless otherwise noted.

Product performance assumes disease presence.

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AAtrex 4L, AAtrex Nine-O, Acuron, Avicta Complete Corn 250, Avicta Complete Corn 500, Bicep II Magnum, Bicep Lite II Magnum, Callisto Xtra, Expert, Force 3G, Force CS, Gramoxone SL 2.0, Lexar, Lexar EZ, Lumax, Lumax EZ and Warrior II with Zeon Technology are Restricted Use Pesticides.

Warrior II with Zeon Technology is highly toxic to bees exposed to direct treatment on blooming crops and weeds. Do not apply this product or allow it to drift onto blooming plants while bees are foraging adjacent to the treatment area.

Avicta Complete Corn is for use by certified applicators only. Growers planting Avicta treated seed are not required to be certified applicators. Avicta technology is protected by U.S. Patent No. 6,875,727. Avicta Complete Corn 1250 is an on-seed application of Avicta Complete Corn 250 or Avicta Complete Corn 500 in combination with sufficient Cruiser 5FS to deliver 1.25 mg a.i./seed of insecticide. Avicta Complete Corn with Vibrance is an on-seed application of Avicta Complete Corn 250 or Avicta Complete Corn 500 plus Vibrance fungicide.

CruiserMaxx Corn 250, CruiserMaxx Corn 500 and CruiserMaxx Corn 1250 are an on-seed application of Cruiser 5FS insecticide delivered at the 0.25, 0.50 or 1.25 mg a.i./seed rates and Maxim Quattro fungicide.

AAtrex®, Acuron™, Afla-Guard®, Agrisure®, Agrisure Artesian®, Agrisure Duracade®, Agrisure Viptera®, Artesian™, Avicta®, Bicep II Magnum®, Bicep Lite II Magnum®, Caliber 90®, Callisto®, Cruiser®, CruiserMaxx®, Dual®, Dual II Magnum®, Enogen®, Expert®, E-Z Refuge®, FarmAssist®, Force®, Golden Harvest®, Glyphosate with Residual™, Gramoxone®, Halex®, Lexar®, Lumax®, Maxim®, Nine-O®, NK®, NorthStar®, Princep®, Quadris®, Quilt Xcel®, Sequence®, Syngenta Seed Advisor™, Touchdown®, Touchdown HiTech®, Touchdown Total®, Warrior II with Zeon Technology®, Vibrance®, Water™, Y.E.S. Yield Engineering System™, Zemax®, Zeon®, the Alliance frame, the Purpose Icon and the Syngenta logo are trademarks of a Syngenta Group Company.

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