

SYNGENTA STEWARDSHIP GUIDE

U.S. CORN AND COTTON-GROWING AREAS

FOR CORN AND SOYBEANS



syngenta





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SYNGENTA OVERVIEW

A strong stewardship program is essential for protecting and preserving the long-term value of insect-protected trait technology. Syngenta provides responsible agriculture programs and information regarding the safe handling and storage of product.



Updated 02/2022





GAME-CHANGING INNOVATION

The Corn traits portfolio from Syngenta offers a range of technologies that help manage production challenges and protect genetic yield potential.

✓ Agrisur∈Duracade[®]

Agrisure Duracade® trait stacks offer the ultimate combination of the latest above and below ground insect control traits in a wide choice of diverse, high-yielding elite genetics with a simple, 5% integrated in-bag E-Z Refuge® seed blend. Agrisure Duracade trait stacks control 16 above- and below ground insects when combined with the power of the Agrisure Viptera® trait, more than any competitive stack. They offer a unique protein and multiple modes of action that make them the foundation of any corn rootworm management program.

AgrisureViptera

Agrisure Viptera trait stacks provide the industry's most comprehensive above-ground corn insect control. Controlling stalk-, ear- and leaf-feeding insects offers every plant the chance to mature and reach its full genetic yield potential. The Agrisure Viptera trait is the only trait available today that effectively controls western bean cutworm. Preventing corn ear insect feeding protects grain quality and minimizes the subsequent development of molds and mycotoxins that result from the insect injury.

Agrisure Artesian

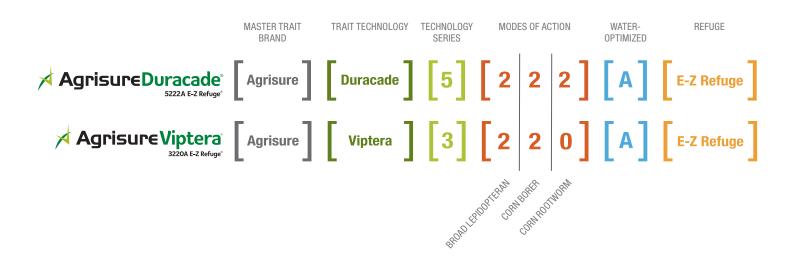
Agrisure Artesian® corn hybrids maximize yield when it rains, and increase yield when it doesn't. These elite hybrids convert water to grain more efficiently than other hybrids and represent a simple, effective way to help manage the unpredictability of weather. Available in combination with best-in-class insect control and herbicide tolerance traits, Artesian™ corn hybrids can help improve yield stability and consistency on virtually any corn acre.

Agrisure | E-Z Refuge products

Products with the E-Z Refuge seed bleed offer an integrated single-bag refuge to help meet grower demand for increased convenience. They provide at least dual modes of action on key pests and are designated by "E-Z Refuge" at the end of the trait stack name.



UNDERSTANDING OUR TRAIT NOMENCLATURE



- The trait technology changes as new technologies are introduced.
- The Technology Series indicates herbicide tolerance.
 - -Series 3 indicates glyphosate and glufosinate tolerance.
 - -Series 5 indicates the Agrisure Duracade series plus glyphosate and glufosinate tolerance.
- The **last three numerical identifiers** represent the number of modes of action in each hybrid for broad lepidopteran, corn borer and corn rootworm control.
- The **letter A** indicates if the hybrid is a water-optimized Agrisure Artesian hybrid.
- The **Refuge** descriptor follows the trait stack numerical identifiers. E-Z Refuge* hybrids are integrated, single-bag refuge products which contain 95 percent seed of a corn hybrid containing the trait stack and 5 percent seed of a hybrid without insect control traits.

Note: The naming system does not apply to Agrisure® 3000GT.

*All E-Z Refuge products meet the 5% refuge requirement for corn-growing regions. Be sure to check requirements for additional required refuge in cotton-growing regions.





GROWER STEWARDSHIP AGREEMENT

A strong stewardship program is essential for helping to protect and preserve the long-term value of Syngenta's trait technology. Embracing this responsibility provides growers with ongoing choices and helps to ensure they remain good stewards of the land.

Prior to planting corn hybrids with Agrisure traits, you are required to sign a Syngenta Seeds, LLC Stewardship Agreement. This agreement outlines the terms and conditions of growing hybrids with Agrisure traits, including the terms of a limited license under Syngenta's intellectual property, compliance with Environmental Protection Agency (EPA)-mandated IRM programs and grain channeling requirements. Deadline to have all completed agreements to Syngenta is June 30th, annually.

Agreements may be sent using the following four methods:



		GENTA SEEDS, LLC STEWARDSH	IIP AGREEMENT
		GROWER ENFORMATION - PLEASE PR	INT CLEARLY
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	P.O. Box 221679 Charlotte, NO 28020-1678	Places 1-800-791-4000 Fee: 1-704-919-5581	to approximate come, cited Occurre tell to provide
		PAG 1-104-929-2005	on the state of th
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ONLINE

WWW.AGCELERATE.COM

Click on Register or Login

For support using the AgCelerate tool, please call AgCelerate Customer Service at 1-866-784-4630

- Easy to sign and use
- Reduces paperwork
- Simple way for growers to manage their technology agreements across all trait providers

ELECTRONIC STATEMENT

Electronic signatures will only be accepted through agcelerate.com. Any other forms of electronic signatures will be rejected.

EMAIL

AGREEMENTS@AGDATA.COM

FAX

1-704-919-5581

MAIL

AGCELERATE ATTN: STEWARDSHIP
PO BOX 221679, CHARLOTTE, NC 28222-1678

Only use one method; originals are not required. It is important that you keep a copy of the Syngenta Seeds, LLC Stewardship Agreement for your records.

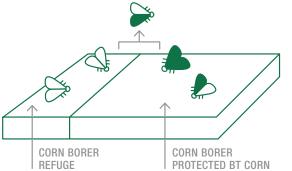
If you have questions regarding the Stewardship Agreement or how to submit the form, please call 877-GRO-CORN (877-476-2676).



WHY PLANT A REFUGE?

Bacillus thuringiensis (Bt) proteins are toxic to specific pests such as the European corn borer (ECB or CB) and the corn rootworm (CRW or RW). As the number of acres exposed to these Bt products increases, so does the potential for target insect pests to develop a resistance to Bt traits. Therefore, in order to preserve this technology now and into the future, an Insect Resistance Management (IRM) plan was developed.

A major component of an IRM plan is to plant a refuge. The EPA requires a refuge on every farm that plants Bt corn hybrids. The EPA requires companies that market Bt corn hybrids to have refuge requirements and conduct a grower compliance program. IRM education and compliance are uniform across the U.S. corn industry to ensure a consistent IRM message.







= RESISTANT

REFUGE STRATEGY – HOW IT WORKS

The refuge maintains a population of insect pests susceptible to the Bt proteins produced in insect-protected Bt corn. These susceptible pests mate with any insect pests that are resistant to the Bt proteins. Susceptibility is then passed on to offspring, helping preserve the long-term effectiveness of insect-protected Bt corn products.



The U.S. Environmental Protection Agency (EPA) requires a refuge on every farm that plants insect-protected corn hybrids. Failure to plant the appropriate refuge jeopardizes your continued access to Agrisure technology.





INSECT RESISTANCE MANAGEMENT (IRM)

IRM COMPLIANCE ASSURANCE PROGRAM

Syngenta and other industry registrants have cooperatively developed the EPAmandated IRM Compliance Assurance Program. This program requires corn seed companies to evaluate the extent to which growers are adhering to the IRM requirements and ensure that those who do not are brought back into compliance. Growers who do not meet IRM requirements for two years within a five-year period will be denied access to hybrids with Agrisure® insect-protected traits in the third year as mandated by the EPA.

SYNGENTA STEWARDSHIP GUIDE

ON-FARM ASSESSMENTS

As part of the product registration with the EPA, Syngenta and other seed companies are required to conduct IRM assessments to help ensure growers are planting the correct refuge on their farms. Growers are selected using a set of risk-based criteria, and assessed with a series of questions that must be conducted in person with the grower or their representative. Following each on-farm assessment, it will be determined if the grower is in compliance.

All trait providers are required to participate and contract a third-party company to complete all assessments during the growing season (June - September).

Growers found to be out of compliance with the refuge requirements jeopardize their access to Bt corn products. They will receive a letter informing them of their compliance infraction, reminding them of their compliance obligations and the consequences of not adhering to the requirements. Included in each letter will be further information on how to develop and implement a suitable IRM program for their farm. Additionally, any grower found to be out of compliance will receive a follow-up IRM assessment the next growing season.

IRM TIP LINE

If you have any seed stewardship questions or become aware of individuals not following proper IRM practices as noted in this guide, please call the tips and complaints toll-free phone line at 1-877-GRO-CORN (1-877-476-2676).

Growers are encouraged to scout their fields. If unexpected damage is observed, please contact your seed reseller or company representative.



CORN REFUGE REQUIREMENTS

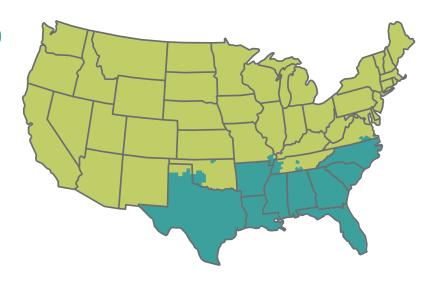
SIZE REQUIREMENTS ARE BASED ON GEOGRAPHY AND PRODUCT



5% OR 20% REFUGE -**CORN GROWING AREAS**



20% OR 50% REFUGE -**COTTON GROWING AREAS**



THE FOLLOWING STATES AND COUNTIES ARE CONSIDERED CORN-GROWING AREAS. REPRESENTED BY LIGHT GREEN SHADING.

Alaska Arizona California Colorado Connecticut Delaware Hawaii Idaho Illinois Indiana lowa

Kentucky Maine Maryland Massachusetts Michigan Minnesota Missouri (all counties except Dunklin, New Madrid, Pemiscot, Scott, & Stoddard)

Kansas

Montana

New York North Dakota Ohio Oklahoma (all counties except Beckham, Caddo, Comanche, Custer, Green Harmon, Jackson, Kav. Kiowa, Tillman, & Washita)

Nebraska

New Hampshire

New Jersey

New Mexico

Nevada

Pennsylvania Rhode Island South Dakota Tennessee (all counties except Carroll, Chester, Crockett. Dyer, Fayette, Franklin, Gibson, Hardeman, Hardin Haywood Lake

Oregon

Lauderdale Lincoln Madison, Obion, Rutherford, Shelby,

Texas (only the counties of Carson Dallam Hanford Hartlev. Hutchinson. Lipscomb, Moore, Ochiltree, Roberts, & Sherman)

Utah Vermont

Virginia (all counties except Dinwiddie, Franklin City Greensville Isle of Wright Northampton Southampton, Suffolk City, Surrey, & Sussex)

Washington West Virginia Wisconsin Wyoming

THE FOLLOWING STATES AND COUNTIES ARE CONSIDERED COTTON-GROWING AREAS. REPRESENTED BY BLUE SHADING.

Alabama Arkansas Florida Georgia Louisiana Mississippi Missouri (only the counties of

Dunklin, New Madrid, Pemiscot, Scott, & Stoddard)

North Carolina Oklahoma (only the counties of Beckham, Caddo, Comanche, Custer Greer Harmon Jackson, Kav. Kiowa, Tillman, & Washita)

South Carolina

the counties of Carroll, Chester, Crockett, Dyer, Favette, Franklin Gibson, Hardeman, Hardin, Haywood, Lake, Lauderdale, Lincoln, Madison, Obion, Rutherford,

Shelby, & Tipton)

Tennessee (only

Texas (all counties except Carson, Dallam, Hanford, Hartley, Hutchinson, Lipscomb, Moore, Ochiltree, Roberts, & Sherman)

Virginia (only the counties of Dinwiddie, Franklin City, Greensville, Isle of Wright, Northampton, Southampton, Suffolk City, Surrey, & Sussex)





CORN REFUGE REQUIREMENTS

*Only required for non E-Z Refuge products

KEY

INSECT-PROTECTED BT CORN

BELOW-GROUND PEST REFUGE (RW)

ABOVE-GROUND PEST REFUGE (CB)

BELOW-GROUND AND ABOVE-GROUND PEST REFUGE (RW/CB)

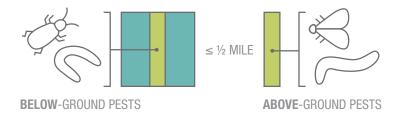
SINGLE PEST REFUGE

A single pest refuge is a field that serves solely as a refuge for above-ground pests (e.g., European corn borer) or below-ground pests (e.g., corn rootworm), but not both. The single pest refuge approach can be used for both single Bt corn products and stacked Bt corn products (also known as the Separate Refuge option).

SINGLE BT CORN PRODUCTS (E.G., AGRISURE VIPTERA® 3110)



STACKED BT CORN PRODUCTS (E.G., AGRISURE VIPTERA 3111)



COMMON REFUGE

A common refuge is a field or area of corn that serves as a refuge for both aboveground pests (e.g., European corn borer) and below-ground pests (e.g., corn rootworm) at the same time. The refuge can be within the Bt field or immediately adjacent to it.

STACKED BT CORN PRODUCTS (E.G., AGRISURE® 3000GT)





CORN REFUGE REQUIREMENTS

	PRODUCT	SIZE REQUIREMENT (CORN-GROWING REGION)	SIZE REQUIREMENT (COTTON-GROWING REGION)	DISTANCE REQUIREMENTS
ABOVE-AND-BELOW GROUND TRAIT STACKS	AgrisureDuracade® 5332 E-Z Refuge*	No additional refuge required	20% supplemental refuge ²	Within or adjacent ¹
	AgrisureDuracade® 5222 E-Z Refuge®	No additional refuge required	20% supplemental refuge ²	Within or adjacent ¹
	AgrisureDuracade® 5122 E-Z Refuge®	No additional refuge required	20% supplemental refuge ²	Within or adjacent ¹
	Agrisure 3122 E-Z Refuge*	No additional refuge required	20% supplemental refuge ²	Within or adjacent ¹
	Agrisure Viptera	20%	20%	Within or adjacent ²
	Agrisure Artesian 3011A	20%	50%	Within or adjacent ²
	Agrisure3000GT	20%	50%	Within or adjacent ²
ABOVE-GROUND TRAIT STACKS	Agrisure Viptera® 3330 E-Z Refuge®	No additional refuge required	20% supplemental refuge	Within, adjacent, or up to 1/2 mile away ¹
	Agrisure Viptera 3220 E-Z Refuge ¹	No additional refuge required	20% supplemental refuge	Within, adjacent, or up to 1/2 mile away ¹
	Agrisure 3120 E-Z Refuge*	No additional refuge required	20% supplemental refuge	Within, adjacent, or up to 1/2 mile away ¹
	Agrisure Viptera	20%	20%	Within, adjacent, or up to 1/2 mile away
	Agrisure Artesian 3010A	20%	50%	Within, adjacent, or up to 1/2 mile away
	Agrisure 3010	20%	50%	Within, adjacent, or up to 1/2 mile away

Refuge size is calculated by applying the appropriate percentage (e.g., 20%, 50%) to the TOTAL CORN ACRES.

These products may be offered as Agrisure Artesian® corn hybrids, which help convert water to grain more efficiently. Artesian™ corn hybrids are designated by an 'A' at the end of the trait stack name.

The Agrisure® 3010 trait stack was previously sold as Agrisure® GT/CB/LL.







Important: Always read and follow label and bag tag instructions; only those labeled as tolerant to glufosinate may be sprayed with glufosinate ammonium-based herbicides. Under federal and local laws, only dicamba-containing herbicides registered for use on dicamba-tolerant varieties may be applied. See product labels for details and tank mix partners. LibertyLink®, Liberty® and the Water Droplet logo are registered trademarks of BASF Corporation HERCULEX® and the HERCULEX Shield are trademarks of Corteva Agriscience LLC. HERCULEX Insect Protection technology by Corteva Agriscience LLC. YieldGard VT Pro® is a registered trademark used under license from the Bayer Group. The Liberty Link® trait may be protected under numerous United States patents. More information about Agrisure Duracade is available at http://www.biotradestatus.com



¹ Only applicable in the cotton-growing region where a supplemental 20% refuge is required for this product.

² Assumes a common corn borer and rootworm refuge. Alternatively, a separate rootworm refuge within or adjacent to the Bt field and a corn borer refuge up to 1/2 mile away could be planted.



CORN REFUGE REQUIREMENTS

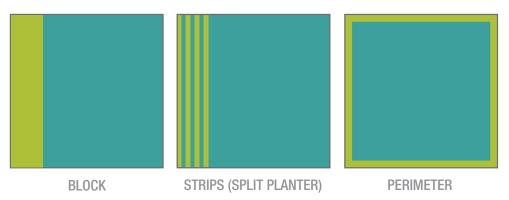
*Only required for non E-Z Refuge products

REFUGE PLANTING OPTIONS

Refuge can be planted as a block, strips within the field, perimeter around the field, adjacent or a separate block within 1/2 mile of the field.

- ▶ 1/2 mile option may only be used for corn borer refuge
- ▶ A neighbor's field does NOT meet the refuge requirements

WITHIN



ADJACENT



CAN BE SEPARATED BY A ROAD, PATH, DITCH, ETC., **BUT NOT BY ANOTHER FIELD**

1/2 MILE OPTION



CORN BORER REFUGE OPTION ONLY

Reminder: When calculating a refuge, the calculation must be based on total corn acres.



CORN REFUGE REQUIREMENTS

STRIP REFUGE

Four Row Minimum - Strips, blocks, or perimeter refuges must be a minimum of four contiguous rows wide to provide ample space for bug mating.

TREATMENT

Corn Borer Treatment – Non-Bt foliar insecticide treatments for corn borer control may be applied only if economic thresholds are reached for one or more pests. Economic thresholds will be determined using methods recommended by local or regional professionals (e.g., Extension Service agents, crop consultants).

Corn Rootworm Treatment – Insecticide treatments for control of corn rootworm larvae may be applied. If rootworm adults are present at time of foliar applications, then corn fields with the Agrisure® trait must be treated in a similar manner as the refuge.

REFUGE MANAGEMENT

Refuge should be planted with a hybrid that is agronomically similar to and managed similar to your corn with Agrisure traits.

If a rootworm refuge is planted in a field that is in a crop rotation system, the corn hybrids with Agrisure traits must also be planted in a field that is in a crop rotation system.

If the rootworm refuge is planted on continuous corn, the corn hybrids with Agrisure traits may be planted on either continuous or in a crop rotation system.



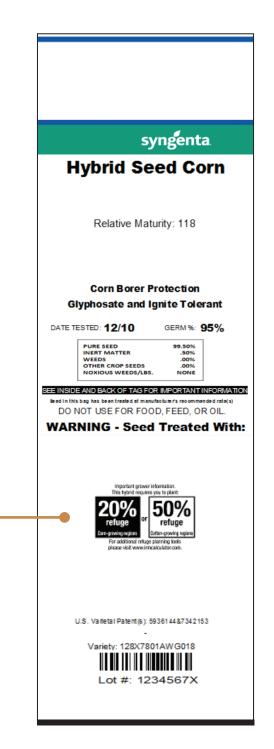


BAG TAG LABELING

Before filling your planter, always check the bag tag to ensure you know the refuge size requirement.

> Important grower information. This hybrid requires you to plant:

Corn-growing regions Cotton-growing regions For additional refuge planning tools please visit www.irmcalculator.com.

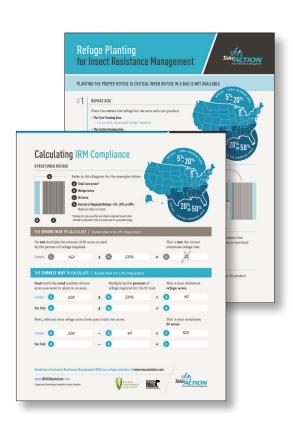




TAKE ACTION PROGRAM AND REFUGE LOOKUP

Take Action Insect-Resistance Management is a farmer-focused educational platform designed to help farmers implement Bt stewardship practices. Take Action is an industry-wide partnership between university scientists, seed biotech companies, including Syngenta, commodity organizations and National Corn Growers Association (NCGA) to create resources and tools to help our growers plan how to meet the minimum refuge requirements and how to implement best management practices on their farm.

To find out more about how you can take action, visit www.iwilltakeaction.com/insects







The Agricultural Biotechnology Stewardship Technical Committee, National Corn Growers Association and all other Take Action partners neither recommend nor discourage the implementation of any advice contained herein, and are not liable for the use or misuse of the information provided.





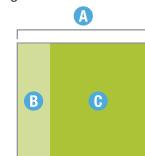
CALCULATING YOUR CORN REFUGE

Reminder: when calculating a refuge, the calculation must be based on total corn acres. This section outlines the right and wrong way to calculate a refuge.

Refer to this diagram for the examples provided on below.

- A Total Corn Acres*
- Refuge Acres
- Bt Acres
- Percent of Required Refuge (Based on total corn acres)

*Includes all corn acres that are infield or adjacent to each other and will be allocated to the Bt product and its associated refuge



THE WRONG WAY TO CALCULATE

(Example shown is for a 20% refuge product where the grower plans to plant 160 acres of Bt corn)

This is **NOT** the correct

minimum refuge size.

Do NOT multiply the amount of Bt acres or seed

by the percent of refuge required.

Example











THE CORRECT WAY TO CALCULATE

(Example shown is for a 20% refuge product where the grower plans to plant 200 acres of total corn)

This is your maximum

Bt ACRES.

START with the **TOTAL** number of corn acres you want to plant in an area.

Multiply by the **PERCENT** of refuge required for the Bt trait. This is your minimum **REFUGE ACRES.**

Example

Example

Your Field



20%

Your Field

NEXT subtract your refuge acres

from your total corn acres.





CORN ROOTWORM BEST MANAGEMENT PRACTICES

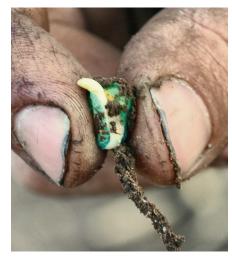
To effectively manage corn rootworm (CRW), implement a multiyear plan that includes a variety of tactics.







PRODUCTS WITH **MULTIPLE CRW BT TRAITS**



SEED. SOIL OR FOLIAR-APPLIED INSECTICIDES

ASSESS RISK

- ▶ Did you plant the same CRW traits for consecutive years in the same fields?
- ▶ Did you notice large populations of CRW beetles?
- ▶ Did you observe root injury from CRW larvae?
- ► Are your fields planted to continuous corn?



CORN ROOTWORM BEST MANAGEMENT PRACTICES

1. PLANT THE REQUIRED REFUGE

2. ROTATE CROPS

Rotate at least every third year if any of the following apply:

- ► In long-term continuous corn system
- ► CRW populations are high
- ► Experiencing problems with CRW trait performance

Corn rootworm management options may be needed the year following corn in areas where northern CRW extended diapause or western CRW variant are present.

3. ROTATE TRAITS

Use Bt hybrids with multiple modes of action for CRW control whenever possible.

If using a hybrid with multiple modes of action for CRW control is not an option, rotate to a different Bt-traited hybrid that controls CRW.

Use a non-Bt-traited hybrid with insecticide.

MANAGE CRW WITH INSECTICIDES

Adult CRW Management Considerations

Scout fields for CRW adults during silking stage (typically July and August) as adult CRW beetles feed on corn silks and may reduce yield.

Foliar sprays may be an option if CRW beetle populations reach an economic threshold for damage (~1 beetle per plant).1

Follow university extension service or local crop consultant recommendations for products, rates and proper timing of adult spray applications for reducing CRW beetle populations.

Multiple sprays may be necessary.

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Larval CRW Management Considerations

The application of an insecticide to the soil surface, in furrows, and/or incorporated into the soil (referred to as "soil-applied insecticide," "soil insecticide" or "SAI") is not recommended for control of CRW in Bt-traited corn hybrids except under limited circumstances.

Consult with extension, consultants or other local experts for recommendations when considering a combination of CRW traits and soil-applied insecticides.

SAIs should not be necessary for CRW control with pyramided CRW-traited Bt corn hybrids.

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ENLIST E3 SOYBEANS, ENLIST TRAITS, ROUNDUP READY 2 YIELD, ROUNDUP READY 2 XTEND AND LIBERTYLINK

Prior to planting Syngenta soybean varieties with the Roundup Ready 2 Yield, Roundup Ready 2 Xtend, LibertyLink, Enlist E38 soybeans and Enlist traits, growers are required to sign a Syngenta Seeds, LLC Stewardship Agreement. This agreement outlines the terms and conditions of growing Syngenta brand soybean varieties with Roundup Ready 2 Yield, Roundup Ready 2 Xtend, LibertyLink, Enlist E3 and Enlist traits, including the terms of a limited license under Syngenta's intellectual property.

Growers must sign and have on file the US03 version of the Syngenta Seeds, LLC Stewardship Agreement by June 30, annually.

Agreement may be sent in using one of the four methods:

ONLINE

WWW.AGCELERATE.COM

EMAIL

AGREEMENTS@AGDATA.COM

FAX

1-704-919-5581

MAIL

AGCELERATE ATTN: STEWARDSHIP PO BOX 221679, CHARLOTTE, NC 28222-1678

Use only one method, original is not needed. It is important that you keep a copy of the Syngenta Seeds, LLC Stewardship Agreement for your records.

Always read and follow pesticide label directions. IT IS A VIOLATION OF FEDERAL AND STATE LAW to use any pesticide product other than in accordance with its labeling. See product labels for details and tank-mix partners. Not all formulations of dicamba or glyphosate are approved for in-crop use with Roundup Ready 2 Xtend® soybeans, ONLY USE FORMULATIONS THAT ARE SPECIFICALLY LABELED FOR SUCH USES AND APPROVED FOR SUCH USE IN THE STATE OF APPLICATION. May not be approved in all states. Contact the U.S. EPA and your state pesticide regulatory agency with any questions about the approval status of dicamba herbicide products for in-crop use with Roundup Ready 2

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NOTES

Stewardship Information www.syngentastewardship.com

Stewardship Support and IRM Tips Line 1-877-GRO-CORN (1-877-476-2676)

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