

2010 HERCULEX® RW (HXRW) PRODUCT USE GUIDE

INSECT RESISTANCE MANAGEMENT (IRM) REQUIREMENTS

IMPORTANT: READ PRIOR TO PLANTING!

WHAT IS HERCULEX® RW ROOTWORM PROTECTION TECHNOLOGY? Pioneer® brand hybrids that contain the Herculex RW (HXRW) trait provide protection against larvae of the western corn rootworm, northern corn rootworm, and Mexican corn rootworm.

NOTE: YOU MUST HAVE A SIGNED PIONEER TECHNOLOGY AGREEMENT ON FILE AND AGREE TO ITS TERMS IN ORDER TO USE PIONEER HYBRIDS WITH THE HXRW TRAIT.



IMPORTANCE OF INSECT RESISTANCE MANAGEMENT (IRM)

Properly managing the HXRW trait is important to preserving its effectiveness and value in the future. Preserving this technology, as well as other rootworm protection technology, places individual responsibility on everyone in the seed distribution system, from the seed supplier to the grower planting the seed. This Product Use Guide contains important information on how to implement a proper IRM plan. If you have questions after reviewing this document, please contact your Pioneer sales professional or call toll-free at 1-800-323-6103.

WHAT IS A REFUGE? A refuge for HXRW is a block or strip of corn that does not contain a Bt trait that controls corn rootworm. The primary purpose of a refuge is to maintain a population of corn rootworm larvae that are susceptible to the Bt proteins contained in the HXRW trait. Potentially resistant insects emerging from fields with the HXRW trait can mate with susceptible insects resulting in offspring that are susceptible to hybrids that contain the HXRW trait. **Planting a refuge is an IRM requirement and is mandated by the Environmental Protection Agency (EPA).**

IRM REQUIREMENTS — IRM programs have four main requirements outlined in detail below. These requirements address the (1) the amount of refuge, (2) the required proximity of hybrids with the HXRW trait to the refuge, (3) the use of insecticides in the refuge, and (4) the design and management of the refuge. Growers who plant hybrids with the HXRW trait are contractually obligated to follow these IRM requirements. Failure to do so may result in the grower losing the ability to purchase these hybrids for at least one year. In addition, as a condition of registration, seed companies are required to

conduct IRM compliance assessments with growers during each growing season.

IRM REFUGE REQUIREMENTS

REFUGE PERCENTAGE

On each farm, plant up to 80 percent of corn acres with Bt corn rootworm protected hybrids such as hybrids with the HXRW trait. Plant at least 20 percent of the corn acres to a corn refuge.

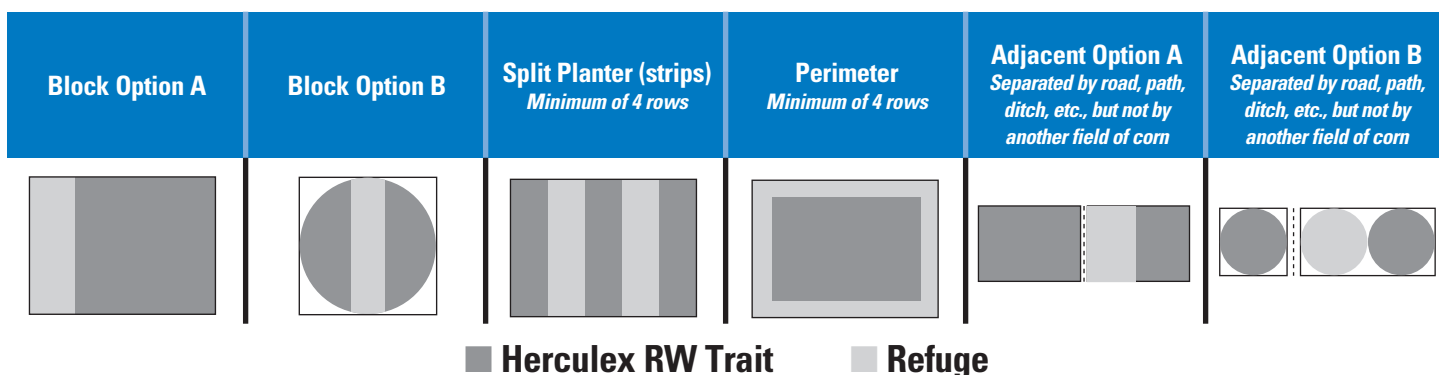
DISTANCE REQUIREMENT

Plant the corn refuge within or adjacent to fields that contain the HXRW trait. The corn refuge can be separated by a ditch or a road but not by another field. Adjacent refuge fields must be owned by or managed by the same grower. A neighbor's field cannot be used as the refuge.

INSECTICIDE USE

- The corn refuge can be treated for corn rootworm larvae and other soil pests with soil-applied, seed-applied or foliar-applied insecticides.
- If aerial insecticides are applied to the refuge for control of corn rootworm (CRW) adults, the same treatment also must be applied in the same timeframe to corn with the HXRW trait.
- Pests other than adult CRW can only be treated with CRW-labeled insecticides on the refuge acres without treating corn with the HXRW trait if treatment occurs when adult CRW are not present.
- Pests on corn with the HXRW trait can be treated as needed without having to treat the refuge.

REFUGE CONFIGURATION OPTIONS



REFUGE DESIGN

The corn refuge for each field may be arranged in a number of configurations that allow the grower to easily incorporate an effective refuge into a farming operation. Options include:

- Plant the refuge within or adjacent to each field containing hybrids with Bt corn rootworm protection.
- Plant the refuge as strips or blocks within the field containing hybrids with Bt corn rootworm protection.
- Split the planter to alternate at least four consecutive rows of refuge hybrids with hybrids containing Bt corn rootworm protection.
- Plant field perimeters or end rows, at least four rows wide, to a refuge.

REFUGE MANAGEMENT

- Plant a refuge within or adjacent to every field where corn hybrids containing Bt corn rootworm protection are planted.
- Plant the refuge hybrid(s) at the same time as the hybrids containing Bt corn rootworm protection.
- Manage refuge hybrid(s) and hybrid(s) containing Bt corn rootworm protection in a similar fashion.
- If the refuge is planted on rotated ground, then the corn with the HXRW trait must also be planted on rotated ground. If the refuge is planted on continuous corn ground, the corn with the HXRW trait may be planted on either continuous corn ground or rotated ground. It is also recommended that growers planting continuous corn plant the refuge in the same location each year.
- Mixing non-rootworm resistant seed with seed containing Bt corn rootworm protection for use as the refuge is not permitted.
- Practice Integrated Pest Management (IPM) to preserve the natural enemies of corn rootworm and other insect pests. Natural predators such as ground beetles and ants can help reduce corn rootworm larval populations. Bt corn rootworm insect protection aids IPM because it affects only target insects and allows beneficial insects to thrive.

- Growers should monitor their fields planted to hybrids with Bt corn rootworm protection and contact their Pioneer sales professional if performance problems are observed.

SALES AND PLANTING RESTRICTIONS

CALIFORNIA RESTRICTION: The planting of hybrids with the HXRW trait is prohibited in certain California counties. Contact your Pioneer Sales Professional for additional details.

If you wish to register a tip or complaint about a grower who may not be following the IRM refuge requirements, or if you have any questions or concerns about complying with IRM requirements on your farm, please call 1-800-323-6103 or contact your Pioneer Sales Professional.

READ THE HERCULEX ROOTWORM PRODUCT USE GUIDE PRIOR TO PLANTING.

EPA Registration Number: 29964-4

Active ingredients: The binary *Bacillus thuringiensis* Cry34Ab1 and Cry35Ab1 endotoxins and the genetic material necessary for its production in corn.

Herculex Rootworm technology allows farmers to plant corn hybrids with built-in protection from the most serious below-ground insect pests. Hybrids with Herculex Rootworm technology provides protection against larvae of the western corn rootworm (*Diabrotica virgifera virgifera*), northern corn rootworm (*Diabrotica barberi*), and Mexican corn rootworm (*Diabrotica virgifera zea*).

Herculex® insect protection technology by Dow AgroSciences and Pioneer Hi-Bred.® Herculex and the HX logo are registered trademarks of Dow AgroSciences LLC.



To protect the usefulness and availability of these technologies for the future, growers must implement an Insect Resistance Management (IRM) program as specified in product use guides for the following traits available in Pioneer corn hybrids: Herculex® I, Herculex RW, Herculex XTRA and YieldGard® Corn Borer. For detailed IRM requirements for hybrids with in-plant insect resistance, refer to the appropriate product use guide, available from your Pioneer sales professional or on the web at: www.pioneer.com/IRM.

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