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Refuge in a Bag is Here: Explaining the Simplified Refuge

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Abstract

Pioneer HiBred has introduced two new products into the U.S. corn market, Optimum AcreMax RW (OAM RW) and Optimum AcreMax 1 (OAM 1). Both products have been approved by the EPA and are commercially available as a new option to consider for the 2011 growing season. Pioneer is the first company to offer "in the bag" refuge for Bt corn. The OAM RW and OAM 1 blends each contain 90 percent Bt corn that targets corn rootworm and a 10 percent rootworm refuge. While a potentially convenient benefit, some growers may find that this complicates refuge planting. Let's run through the basics.

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Refuge in a Bag is Here: Explaining the Simplified Refuge

By Aaron Gassmann and Erin Hodgson, Department of Entomology

Pioneer HiBred has introduced two new products into the U.S. corn market, Optimum AcreMax RW (OAM RW) and Optimum AcreMax 1 (OAM 1). Both products have been approved by the EPA and are commercially available as a new option to consider for the 2011 growing season. Pioneer is the first company to offer "in the bag" refuge for Bt corn. The OAM RW and OAM 1 blends each contain 90 percent Bt corn that targets corn rootworm and a 10 percent rootworm refuge. While a potentially convenient benefit, some growers may find that this complicates refuge planting. Let's run through the basics.

What is in OAM 1?

This blended seed contains 90 percent Herculex XTRA (CRW/CB/LL/RR2) with a Cruiser Extreme 250 seed treatment and 10 percent Herculex I (CB/LL/RR2) with a Poncho 1250 seed treatment. To meet all EPA refuge requirements, OAM 1 will need to be planted with a European corn borer refuge of 20 percent. For the 20 percent European corn borer refuge, growers can choose to plant a conventional seed, herbicide tolerant hybrid or OAM RW. The refuge can be planted up to one half mile away from the OAM 1 field.

What is OAM RW?

This blended seed contains 90 percent Herculex RW (CRW/RR2) with a Cruiser Extreme 250 seed treatment and 10 percent Roundup Ready Corn 2 with a Poncho 1250 seed treatment. Because OAM RW does not contain Bt that targets European corn borer, it can be used to fulfill the corn borer refuge requirement with OAM 1.

What are the advantages to OAM technology?

Growers that use OAM technologies will be compliant of all EPA refuge requirements for corn rootworm. This should simplify some of the overall planting activities. However, growers will still need to select a separate seed for the 20 percent European corn borer refuge.

With increased refuge compliance and a blended refuge, OAM1 should act to delay the development of corn rootworm resistance to Bt corn. Computer modeling conducted by Pioneer Hi-Bred predicts that AcreMax technologies should delay the development of resistance by rootworm to the Bt corn rootworm trait for 12 years compared with nine years for a traditional block refuge. The company predicts this delay in resistance because any resistant adults that emerge from Bt corn are more likely to encounter and mate with susceptible adults from the blended refuge plants.

As another planting option, growers could plant 100 percent OAM RW if European corn borer pressure was very low. Only one type of seed could be used for the entire farm, because a separate refuge is not required for corn rootworm.

Are there disadvantages to OAM?

As with any pest management program, growers should assess corn rootworm pressure and determine if OAM 1 or OAM RW is a necessary additional cost. For example, crop rotation and soil-applied insecticides may sufficiently control corn rootworm. Although all the seed will have an insecticidal seed treatment and herbicide tolerance, approximately 10 percent of the seed will not be protected against corn rootworm. Those individual refuge plants in the blend may experience injury and yield loss. Additionally, in the case of OAM 1, a 20 percent European corn borer refuge will still need to be planted.

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