



## THE LEARNING CENTER

at Monmouth, Illinois

### Effect of Planting Date and Corn Rootworm Protection on Corn Yield

Advancements in corn hybrid genetics, weed control practices and corn trait technology are allowing producers additional flexibility in their planting date while still maintaining optimal yields. As production practices evolve, it is important to understand how insect protection technologies can effect the optimal planting date. Seed treatments or soil applied insecticides can help protect corn plants from insect pests for several weeks, but will lose efficacy with time. As the efficacy of an insecticide decreases over time, early planted corn may have less protection from soil insect pests, such as rootworms. These insects may cause more damage to early planted corn roots in May or early June when soils warm up. Corn rootworm feeding pressure typically decreases on late planted or replanted corn; however, late planting can also reduce yield potential. Comparing early versus late corn planting scenarios using hybrids with and without rootworm protection can help producers with their planting and insect management decisions.

#### Study Guidelines

Testing was conducted at the Monsanto Learning Center near Monmouth, IL in 2010 to evaluate the impact of different rootworm protection technologies in combination with planting dates on corn yield potential. Germplasm families of two different relative maturity (RM) groups (107 and 111RM) were selected for this trial. Each germplasm family consisted of 3 different products that individually contained Genuity® SmartStax® (GENSS) which provides two modes action for rootworm protection, Yieldgard VT Triple® (VT3) offering one mode of action for rootworm protection, and one product Roundup Ready® Corn 2 with a soil applied insecticide (RR2+SI). Force® 3G insecticide was applied to the Roundup Ready® Corn 2 product at planting. Corn was planted on April 12 and May 25. The trial was conducted in a field that has been in continuous corn for five years using a conventional tillage system.

#### Results and Discussion

Cool early-season temperatures coupled with above average rainfall (24"+ from May 1-June 23) may have lead to lower yields and greater variability for the early planted (April) corn compared to the later planted (May) corn (Figure 1). Rootworm pressure was below average at the Monsanto Learning Center near Monmouth this year. Wet conditions early in the season may have decreased rootworm pressure as well as the value of the soil applied insecticide.

The data shows increased yields for products with

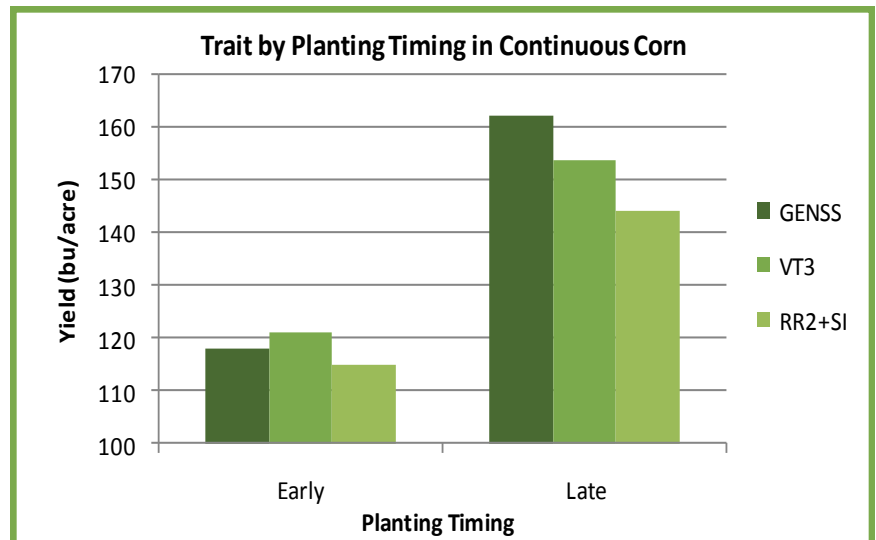


Figure 1. Effect of corn insect protection technologies and planting date on yield.

advanced corn rootworm protection (Genuity® SmartStax® and Yieldgard VT Triple®) in the late planted corn, as well as, the average of the two planting dates (Figure 2). In the late planted scenario, when averaging the 107 and 111 RM corn products, the Genuity® SmartStax® corn products increased corn yield by 8.5 bu/acre when compared to the Yieldgard VT Triple®, and 18 bu/acre when compared to the Roundup Ready® Corn 2 with soil applied insecticide, respectively (Figure 1). Averaging both the early and late corn plantings, Genuity® SmartStax® corn products increased corn yield by 2.7 bu/acre compared to Yieldgard VT Triple®, and 10.5 bu/acre when compared to the Roundup Ready® Corn 2 with soil applied insecticide. The trial data shows that increased corn yields were obtained with increased insect protection when averaging planting dates and taking into account sporadic early season environmental conditions

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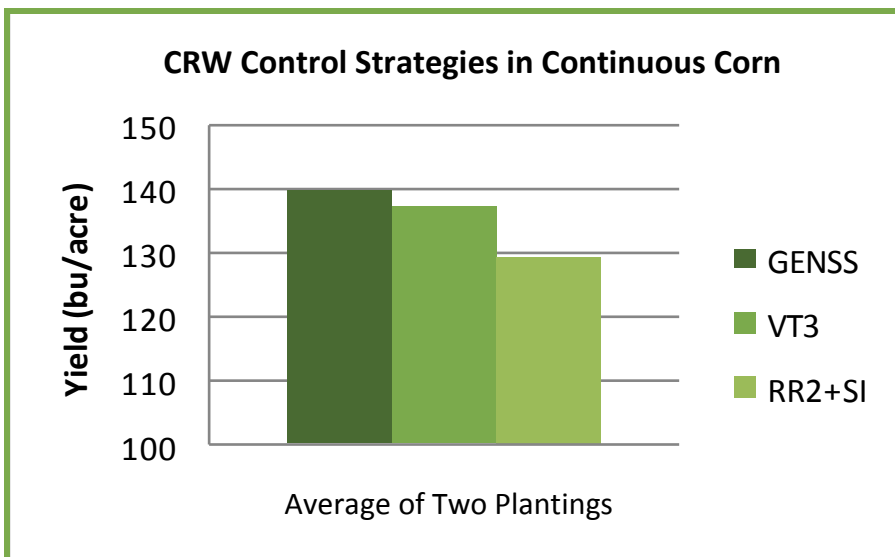
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The 2010 growing season did not represent normal environmental conditions for Illinois as early planted corn will typically yield greater than late planted corn. The results from the 2010 data suggests that corn containing traits with rootworm protection can provide enhanced protection from rootworms and other insect damage in continuous corn and high rootworm pressure situations. While the objective of this trial was to focus on rootworm technologies it is also important to note that Genuity® SmartStax® also provides protection from corn earworm, and some of the yield increase observed in these data may be due to additional protection from this important corn pest.

**Source:**

Bledsoe, L. W. and J. L. Obermeyer. 2010. *Managing corn rootworms. Purdue Extension. E-49-W* <http://www.purdue.edu> (verified 10/20/10).  
 Cummins, G. and D. Rueber. 2007. *Influence of date of planting on corn hybrids with/without Bt corn rootworm protection. Iowa State University. ISRF08-22.* [www.iastate.edu](http://www.iastate.edu) (verified 10/19/10).



**Figure 2.** Effect of corn insect protection technologies on yield when averaged across early and late planting dates in 2010.

*The information discussed in this report is from a single site, non-replicated, one-year demonstration. This informational piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.*

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