



# Result Demonstration Report

Year: 2003

**Efficacy of Cry 3Bb Corn Rootworm Event, Cry 3Bb Plus MON 47835 Seed Treatment, MON 47835 Seed Treatment and Standard Soil Insecticides; Counter CR and Force 3G on Mexican Corn Rootworm, Ellis County, Texas**

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**Ellis County**

**Summary:** A trial was conducted during 2003 in Southwest Ellis County to evaluate the efficacy of Cry3Bb Event (Corn Rootworm Protected) alone and in combination with MON 47835, MON 47835 seed treatment, Counter CR (20G) and Force 3G on Mexican Corn Rootworm, *Diabrotica virgiferaeae*.

The Cry3Bb Event was evaluated as MON 863. All treatments were compared to an untreated check. Although the trial was conducted in a field of third year corn, Mexican Corn Rootworm pressure was relatively light across all replications except number four. There was no significant difference in plant population between any of the treatments and the untreated check. Numerically, the least root injury was observed in the Cry 3Bb treatment with a rating of 0 followed by Cry 3Bb plus MON 47835 and Force 3G with ratings of .030 and .035 respectively. Significantly less injury from Mexican Corn Rootworm feeding was observed in all treatments relative to the untreated check.

**Objective:** The trial was conducted to evaluate the efficacy of Monsanto's Cry3Bb (Corn Rootworm Protected Event) as a stand alone treatment and in combination with MON 47835 seed treatment on Mexican Corn Rootworm. Additionally, these treatments were compared to MON 47835 seed treatment, Counter CR, Force 3G and an untreated check.

**Material & Methods:** On March 13, 2003, a corn trial evaluating leading treatments against Mexican Corn Rootworm was planted in Southwest Ellis County on the Van Perry Farm.

Extension programs serve people of all ages regardless of socioeconomic level, race, color, sex, religion, disability or national origin. The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.

Treatments included: MON 863 (Cry 3Bb Corn Rootworm Protected), MON 863 plus MON 47835 seed treatments, MON 47835 seed treatment, Counter 20 CR @ 6 ozs./1000 ft. of row (t-band) and Force 3G @ 5 ozs./1000 ft. of row (t-band). The trial was planted to 40 inch rows using an International planter (Reference Digital Photo). The trial was planted in a randomized complete block design with each treatment replicated 4 times. Plots measured 4 rows wide and 25 ft. in length. Since the Cry 3Bb (Corn Rootworm Protected) event had received EPA registration approval, border rows were not required. The fertility program consisted of 400 lbs./acre of 32-0-0 and 120 lbs./acre of 32-0-0. Winter seeds were controlled with Atrazine @ the rate of 1.0 lb./acre, applied in January. In season weed control was provided with Duel at 1 qt./acre and an “over the top” post-emergence application of Peak at 0.8 oz./acre. Roundup @ 1.5 pts./acre was applied with a hooded sprayer to control grasses.

Root injury ratings were taken on June 5, 2003. Plant growth stages ranged from V 15 (upper ear shoot development) to VT (last branch of tassel is completely visible). Roots from 5 randomly selected plants were excavated from each replication. Attached soil was dislodged by vigorously shaking roots. Remaining soil was removed from roots with a high pressure water hose. Once plants were free of soil and debris they were carefully scrutinized for feeding by Mexican Corn Rootworm larvae and a root injury rating was assigned based on the 0 to 3 Iowa State Node Injury Scale (Oleson 1998). The Iowa State Node Injury Scale is a linear scale used to describe corn rootworm feeding and provides a rating for the total number of roots eaten within 2 inches of the corn plant. The Iowa State Node Injury Scale is referenced (Table 1). Data were analyzed using the ANOVA Statistical Procedure. Means were separated using Least Significant Difference (LSD),  $\alpha = 0.05$ .

Table 1. Iowa State Node Injury Scale numerical ratings assigned for injury to corn roots by feeding from corn rootworm.

**Roots Eaten within 2 inches of Plant Base**

Full Node	Partial Node	Root Ratings
0	0	0.01 (no damage)
0	5-10%	0.05, 0.10
0	11-99%	0.25, 0.50, 0.75, 0.90
1	1-99%	1.0, 1.1, 1.25, 1.5, 1.75, 1.9
2	1-99%	2.0, 2.1, 2.25, 2.5, 2.75, 2.9
3	-----	3.0

**Results & Discussions:** Pressure from Mexican Corn Rootworm was light across all

replications of treatments, except replication number four. The field had been planted to continuous corn for 3 seasons and considerable rootworm injury was observed during 2002. There was no significant difference in plant population between any of the treatments and the untreated check. Numerically, the least root injury was observed in the Cry 3Bb treatment with a rating of 0 followed by Cry 3Bb plus MON 47835 seed treatment, and Force 3G with ratings of .030 and .035 respectively. Significant less injury from Mexican Corn Rootworm feeding was observed in all treatments relative to the untreated check.

**Acknowledgments:** Much gratitude is expressed to Mr. Van Perry for serving as cooperating demonstrator. Also, special thanks is due Drs. Doug Jost and Todd DeGooyer, Monsanto for providing technical information, assistance with root excavation and ratings and for project funding. Much appreciation is also extended to Dr. Allen Knutson, Professor and Extension Entomologist Texas Cooperative Extension for assistance with Data Analysis.

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**Fig. 1 Efficacy of Lead transgenic Corn Rootworm Event Against Mexican Corn Rootworm, Perry Farm - Ellis Co. TX. 2003**

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