

# Evaluation of Yield Loss Caused By Simulated Green-Snap Injury

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## Introduction

Throughout the 1998-growing season, severe winds plagued much of Iowa, resulting in severe green-snap injury across many Iowa cornfields. The resulting damage left many producers concerned about the amount of yield lost from their fields. Presently, no current Iowa research exists that assesses the effects of green-snap injury to com. This study was designed in order to provide valid data, which could be used to answer producer questions associated with green-snap injury. The objective of this study was to evaluate corn yield loss resulting from three levels of simulated green-snap injury during three different stages of com growth. This study was initiated in 1999 and will be repeated again in 2000.

## Materials and Methods

The experimental design is a randomized complete block design, in which plant breakage treatments and breakage timings were combined, with three replicates. Plant breakage treatments (percent plant breakage) were 25, 50, or 75% and were compared against a check plot. Breakage timings occurred during the 8<sup>th</sup>-leaf and tasseling stages of vegetative growth and the 2<sup>nd</sup> (blistering) stage of reproductive growth (ISU Extension Publication No. 48). A single 112-day relative maturity European com borer-resistant hybrid 8481Bt (Garst Seeds) was evaluated. Individual plots were 4 rows (30- inch) by 40 feet. The study was planted on 9 May 1999. A harvest stand of 28,000 plants per acre was established prior to treatments. Plant breakage at the 8<sup>th</sup>-leaf and tasseling stages of vegetative growth were 24 June and 15 July, respectively. Plant breakage at the 2<sup>nd</sup> stage of reproductive growth was 27 July. Snapping the stalk at an internode position below the ear simulated green-snap injury. Special care was given to insure the stalk was not completely severed, but was left attached at the point of the break in order to simulate actual green-snap injury. All plots were mechanically harvested on 30 September 1999. Plot yields (adjusted to 15.5% moisture) are summarized in Table 1.

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## Results and Discussion

When analyzing the data, it is important to keep in mind that only one year's worth of data are represented, so conclusions should not yet be drawn. Summarized in Table I are the results from the 1999 study. A statistical analysis of the data showed surprising results. There was not a statistically significant difference in yield loss among the different breakage timings. However, as percentage plant breakage increased, yield loss increased significantly. Yield losses, averaged over timing of breakage, were 53, 32, and 15% for 75, 50, and 25% breakage, respectively, when compared to the check treatment.

**Table 1. Effect of breakage timing and percent plant breakage on yield loss caused by simulated green-snap injury at Crawfordsville, IA during 1999.**

Breakage timing	-----Percentage plant breakage-----				LSD(P=0.05)	Average
	75%	50%	25%	Check		
V8	80.3	128.1	168.1	--	19.5	41.3
Tasseling	83.4	126.6	147.1	188.6	52.0	136.4
R2	101.5	129.2	163.9	--	42.0	145.8
LSD(P=0.05)	NS*	NS*	NS*			
Average	88.4	128.0	159.7	188.6		
Yield Loss**	53%	32%	15%			

\* Differences in yield means are not statistically significant.

\*\*Percentage yield loss compared to untreated check

## Acknowledgements

We would like to thank John Harker and Novartis Seeds for providing the seed used in this study and Matt Hunt for his time and labor during planting, growing, and harvesting.

## Notices

This article appeared in the 1999 Annual Progress Report for the Southeast Research and Demonstration Farm, pages 14 – 15.

Contrary to the plans indicated in the last sentence of the Introduction, no useable data was collected in 2000 because of conditions beyond control.

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