

Effects of Midrib Breakage on Corn Performance

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Objective

To evaluate effects of leaf midrib breakage at different stages of corn development on crop performance.

Background

Cooperator:	OARDC Western Branch	Seeding Rate: 32,000 plants/acre
Nearest Town:	South Charleston	Row Width: 30 inches
Major Soil Type:	Kokomo Silt Loam	Plot Length: 6 feet
Previous Crop:	Soybean	Planting Date: 4/19/04
Hybrid:	Pioneer Brand 33D31	Harvest Date: 9/27/04

Methods

Hail storms and thunderstorms accompanied by strong winds may cause extensive damage to corn leaves, resulting in defoliation and breakage of leaf midribs. Late postemergent application of fertilizers, herbicides, and insecticides can also result in leaf mid rib breakage. While effects of defoliation on corn performance are well documented, little information is available on effects of leaf midrib breakage on subsequent corn growth and performance.

The plots were established in a randomized complete block design with three replications. Midribs were broken at the 11-leaf collar stage (V11), 17-leaf collar stage (V17), silking (R1), milk stage (R3) and dough stage (R4). Leaf midribs were broken either at the leaf collar or the midpoint of the leaf.

Results

Effect of midrib breakage and timing on the agronomic performance of a yellow dent corn hybrid (Pioneer Brand 33D31), S. Charleston, OH, 2004.

Treatment		Yield -Bu/A-	Grain Moist	Stalk Lodge	Stalk Rot %	Nubbins
Stage	Location [†]					
UTC [‡]		258	17.5	0	0	0
V11	Mid-Leaf	225	18.4	0	0	0
	Collar	211	18.7	0	0	0
V17	Mid-Leaf	189	16.3	0	0	3
	Collar	183	18.1	0	3	0
R1	Mid-Leaf	209	18.8	0	0	0
	Collar	185	18.4	0	13	0
R3	Mid-Leaf	214	18.9	0	0	3
	Collar	188	18.3	0	17	0
R4	Mid-Leaf	243	18.2	0	3	0
	Collar	184	15.5	0	3	3
LSD (0.05)		48	NS	NS	10	NS

[†] Location on the leaf where the mid-rib was broken

[‡] UTC=Untreated check

Summary

Midrib breakage affected grain yields each year. Breaking the leaves at the leaf collar reduced yields more than breakage at mid-leaf. Midrib breakage at silking and milk kernel development stage resulted in greater stalk rot. However there were no significant differences among the midrib treatments for stalk lodging.

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