



# Crop Connection



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## In the News...

**Evaluation of Yield as a Result  
Of Planting Date in Field Corn in 2010**

## Comments, Questions, Additions...

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*Good morning, Everyone!*

*Happy Spring!*

*Today's newsletter contains information regarding a field corn planting date trial from 2010. This report shows the result of planting date versus yield when combined with frost.*

*Limited field work again this week. Reports of some corn in the ground.*

*Oats were planted April 6 but have not yet emerged. They might take awhile with the colder weather forecast for this weekend.*

*Jerome Lensing with Pioneer is reporting damage to alfalfa in some fields. Late cutting and ice sheeting appear to be the two common factors.*

*If you have questions or comments,  
please contact Fritz, Lisa, or Ryan.*

*Have a great day!*

## **Evaluation of Yield as a Result of Planting Date in Field Corn in SE Minnesota in 2010.**

Behnken, Lisa M., Fritz R. Breitenbach, Ryan P. Miller

The objectives of this trial were to evaluate grain yield at six different planting dates and the impact of a May 9 frost in corn in southeastern Minnesota. This trial also compares the yield impacts of replanting frost damaged corn to the initial planting dates. The research site was a Lawler loam series with a pH of 6.9, O.M. of 2.6%, and soil test P and K levels of 32 ppm and 136 ppm, respectively. Spring fertilizer was broadcast ahead of planting on April 5, 2010 at a rate of 126-35-120-24 (N-P-K-S). The area was side dressed with an additional 26 lb/A of N on June 10. The field was spring chisel plowed, disked and field cultivated once prior to planting. The corn hybrid, Pioneer 36V53, 102 Day RM, was planted on 6 different planting dates at a depth of 1.5 inches in 30 inch rows at 35,000 seeds per acre. A randomized complete block design was used with four replications. Environmental conditions, planting, emergence and tasseling dates are listed below. Crop injury due to frost sustained on May 9, 2010 is also listed. The center two rows of each plot were machine harvested on October 11, 2010.

<b>Date</b>	<b>4/9</b>	<b>4/14</b>	<b>4/21</b>	<b>4/27</b>	<b>5/4</b>	<b>5/19</b>
<b>Planting</b>	1	2	3	4	5	Replant
<b>Temperature (F)</b>						
Air	64	77	59	57	80	76
Soil	54.3	NA	57	55	59.9	72.5
<b>Relative Humidity (%)</b>	25	39	49	24	16	24
<b>Wind (mph)</b>	10	24	10	7	28	9
<b>Soil Moisture</b>	Adequate	Adequate	Inadequate	Inadequate	Adequate	Adequate
<b>Rainfall after each planting (inch)</b>						
Week 1	0.20	0.02	0.38	0.60	1.07	0.04
Week 2	0.09	0.38	0.60	1.07	0.66	0.54
Week 3	0.79	0.60	1.70	0.66	0.04	1.08

Three of the initial five planting dates had emerged corn subjected to a May 9<sup>th</sup> frost. The growth stage of the emerged corn ranged from V1 to V4. Corn in the later stages of development was impacted more severely than corn in the V1 stage. Damage ranged from 42 percent for the V1 corn to 56 percent for the V3 corn. The majority of the injury resulted in complete die back of the emerged tissue to ground level. The fourth planting date emerged one day after the frost, and the fifth planting date emerged 9 days after the frost. Cold wet weather followed the frost which retarded corn growth and development. At ten days post frost the plots were split and corn was replanted in half the plots. Emerged corn in the replant plots was removed with Select herbicide prior to planting. Final stand counts were not taken; however, stand counts in the frost damaged corn sections averaged 31,000 plants per acre.

The highest corn grain yield was attained with the fourth planting date (April 27<sup>th</sup>). It was statistically the highest yielding treatment when analysis with a LSD of (P= 0.20). All other planting dates including the replant provided statistically similar yields. Grain moisture for the replant corn was significantly higher than the remainder of the treatments. In this trial, corn that was planted between April 9 and April 21 and impacted by frost resulted in a reduction of 10 bushels per acre. Frost injury studies from other researchers indicates that most of the reduction in yield results from increased plant to plant competition with larger undamaged plants outcompeting smaller frost damaged plants. Minnesota, Iowa, and Wisconsin studies from recent years, have found that corn planted between April 20<sup>th</sup>-May 5<sup>th</sup> provides the best stands and highest yields. Farmer adhering to these planting dates would benefit by 1) avoiding most frost dates, and 2) capturing early season growing degree days.

**Table 1. Crop injury in field corn as a result of frost on May 9, 2010 at Rochester, MN in 2010.**

Planting Date	Frost damage		Crop Stage At Frost	Yield  (bu/A)
	5/14	5/17		
	(% Crop Damaged)			
April 9	58	49	V4	183 b
April 14	69	56	V3	183 b
April 21	52	42	V1	185 b
April 27	0	0	NA	194 a
May 4	0	0	NA	187 ab
May 19 (Replant)	0	0	NA	179 b
<b>LSD (P=0.20)</b>	<b>8</b>	<b>8</b>		<b>8</b>

**Table 2. Crop history of frost damaged field corn at Rochester, MN in 2010.**

Planting	Planting Date	Emergence Date	Tassels	GDD (from planting)	Moisture	Yield
					(%)	(bu/A)
1	April 9	April 20	July 5	1166	17.1	183 b
2	April 14	April 23	July 9	1221	18.2	183 b
3	April 21	May 1	July 12	1224	17.6	185 b
4	April 27	May 10	July 13	1206	18.1	194 a
5	May 4	May 18	July 15	1194	18.7	187 ab
Replant	May 19	May 25	July 19	1203	21.4	179 b
<b>LSD (P=0.20)</b>					<b>0.6</b>	<b>8</b>