

2001

# Planting Date Effects on Yield and Grain Composition of High Oil Corn

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## Recommended Citation

McClure, Joseph; Farnham, Dale E.; and Havlovic, Bernard J., "Planting Date Effects on Yield and Grain Composition of High Oil Corn" (2001). *Iowa State Research Farm Progress Reports*. 1715.  
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# Planting Date Effects on Yield and Grain Composition of High Oil Corn

## **Abstract**

TopCross Blend® high oil corn hybrids have added a new dimension to the specialty grain market. Producers have been able to utilize the higher oil content of the grain for their own livestock operations or contract their grain for a premium price. Little is known about the effects of cultural agronomic practices on the grain composition of high oil corn. Particularly of interest is how the percentage of oil is affected. As a result, research is needed to evaluate the effects of planting date and determine if there is a limited window of opportunity in which high oil corn can be planted without detrimental effects. During the 2000 growing season, the effects of date of planting were evaluated. In addition to this location, this study was conducted on two other university research farms and will be continued during the 2001 growing season.

## **Keywords**

Agronomy

## **Disciplines**

Agricultural Science | Agriculture | Agronomy and Crop Sciences

# Planting Date Effects on Yield and Grain Composition of High Oil Corn

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## Introduction

TopCross Blend<sup>®</sup> high oil corn hybrids have added a new dimension to the specialty grain market. Producers have been able to utilize the higher oil content of the grain for their own livestock operations or contract their grain for a premium price. Little is known about the effects of cultural agronomic practices on the grain composition of high oil corn. Particularly of interest is how the percentage of oil is affected. As a result, research is needed to evaluate the effects of planting date and determine if there is a limited window of opportunity in which high oil corn can be planted without detrimental effects. During the 2000 growing season, the effects of date of planting were evaluated. In addition to this location, this study was conducted on two other university research farms and will be continued during the 2001 growing season.

## Materials and Methods

The experiment was designed as a randomized complete block design with four replicates. Two 108-day relative maturity TC Blend<sup>®</sup> hybrids were evaluated (Pioneer 34B25 and Wyffels W5545) at three planting dates (13 April, 10 May, and 9 June). A John Deere 7000 series four-row planter was used on all plots. Individual plots were 12 rows wide by 60 ft long with 30-in. row spacings. The study was surrounded by a minimum of 30 ft of sterile corn and was a minimum of 100 ft from neighboring non-high-oil corn. The individual

plots were temporally isolated by means of separating the like dates from one another within reps. The experiment was planted into no-till ground at 38,000 plants per acre and was hand-thinned to a target plant density of 29,900 ppa shortly after emergence. Yields were taken by hand-harvesting 100 square ft (approximately 68 plants) from the center of each plot on 16 October. Grain composition was analyzed by the Iowa State Grain Quality Lab with a Foss Infratec 1229 NIR. Plot yields (corrected to 15.5% moisture) and grain composition are shown in Tables 1-4.

## Results and Discussion

Tables 1-4 summarize the effects on yield, oil, protein, and starch for each date of planting. For the 2000 growing season, there was a significant difference between each of the planting dates with the 13 April date providing the highest yield. Oil content was highest at the earliest date, but was only significantly different from the 9 June planting date. There were significant differences among all three planting dates with respect to the percentage of protein comprised in the grain. There were no significant differences in regard to starch concentration over all three dates. Data from the 2000 growing season showed that earlier planting had a positive effect on yield and protein content with a small positive effect on oil concentration. Analysis of multiple years worth of data and multiple sites will help to solidify any effects of planting date on the production of high oil corn.

## Acknowledgments

We would like to thank Pioneer Hi-Bred International, Inc., and Wyffels Hybrids, Inc., for providing the seed used in this study.

**Table 1. Effect of planting date on corn yield (bushels/acre) in 2000 at Lewis, IA.**

Planting Date	Hybrid		Overall Average
	Pioneer 34B25	Wyffels W5545	
13 April	144.7	136.4	140.6
10 May	115.1	127.5	121.3
9 June	80.1	79.4	79.8
Average	116.3	117.6	117.0
LSD <sub>(P=0.05)</sub>	14.9	35.9	15.9

**Table 2. Effect of planting date on oil content (%) in 2000 at Lewis, IA.**

Planting Date	Hybrid		Overall Average
	Pioneer 34B25	Wyffels W5545	
13 April	6.6	6.2	6.4
10 May	6.4	6.1	6.2
9 June	6.1	6.0	6.0
Average	6.4	6.1	6.2
LSD <sub>(P=0.05)</sub>	0.4	NS	0.3

**Table 3. Effect of planting date on protein content (%) in 2000 at Lewis, IA.**

Planting Date	Hybrid		Overall Average
	Pioneer 34B25	Wyffels W5545	
13 April	9.3	9.6	9.5
10 May	9.0	9.0	9.0
9 June	8.2	8.6	8.4
Average	8.8	9.0	8.9
LSD <sub>(P=0.05)</sub>	0.7	0.9	0.4

**Table 4. Effect of planting date on starch content (%) in 2000 at Lewis, IA.**

Planting Date	Hybrid		Overall Average
	Pioneer 34B25	Wyffels W5545	
13 April	57.4	57.0	57.2
10 May	57.2	56.9	56.9
9 June	56.9	56.4	56.8
Average	57.1	56.8	57.0
LSD <sub>(P=0.05)</sub>	NS	NS	NS