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Dale E. Farnham
Iowa State University

Jason Myli
Iowa State University

Bernard J. Havlovic
Iowa State University, bhavlovi@iastate.edu

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Planting Date and Hybrid Maturity Effects on Corn Yield in Iowa

Abstract

Research evaluating the effects of planting date and hybrid maturity on corn yield is of vital importance to Iowa corn producers. The objectives of the study were:

1. To identify an optimum date of planting, and
2. To determine the most beneficial hybrid maturity at different planting dates.

This study was initiated in 1998 and repeated in 1999 and 2000. In addition to this site, this study has been conducted at two other university research farms.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Planting Date and Hybrid Maturity Effects on Corn Yield in Iowa

Dale E. Farnham, assistant professor and
extension agronomist
Jason Myli, research associate, agronomy
Bernie Havlovic, superintendent

Introduction

Research evaluating the effects of planting date and hybrid maturity on corn yield is of vital importance to Iowa corn producers. The objectives of the study were:

1. To identify an optimum date of planting, and
2. To determine the most beneficial hybrid maturity at different planting dates.

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Materials and Methods

The experimental design was a randomized complete block design with split plots. Treatments were replicated three times in 1998 and 1999 and four times in 2000. Whole plot treatments were planting date with target planting dates of 15 April, 29 April, 13 May, 27 May, 10 June, and 24 June. High-yield hybrids with a wide range of relative maturities (RM) represented split plot treatments. Hybrids included in the 1998 and 1999 tests were Syngenta 'N3030Bt' (95 RM), Syngenta 'MAX88' (100 RM), DEKALB 'DK545BtY' (105 RM), Pioneer Brand 34R07 (110 RM), and Syngenta 'N7333Bt' (115 RM). In 2000, Syngenta 'MAX88', DEKALB 'DK545BtY', and Syngenta 'N7333Bt' were replaced by Syngenta 'N4640Bt' (100 RM), Pioneer Brand 34G82 (105 RM), and Syngenta 'N7070Bt' (115 RM), respectively. All plots were 4 rows (10 ft) wide by 40 ft long. Plots were planted

with a John Deere 7000 series planter, at a seeding rate of approximately 31,000 seeds per acre. Planting dates in 1998 were 22 April, 2 May, 13 May, 27 May, 14 June, and 24 June. Planting dates in 1999 were 20 April, 1 May, 13 May, 26 May, 12 June, and 26 June. In 2000, planting dates were 13 April, 28 April, 13 May, 27 May, 10 June, and 24 June. Plots were mechanically harvested each year. In 1998, plots planted on dates 1-4 were harvested on 20 October and dates 5 and 6 were harvested on 30 October. In 1999, all dates were harvested on 18 October. In 2000, all dates were harvested on 12 October. Reported plot yields (corrected to 15.5% moisture) are shown in Tables 1 and 2.

Results and Discussion

In analyzing the data, keep in mind this study is not as much a comparison of hybrids as it is a comparison of relative maturities to different planting dates. Table 1 illustrates the impact planting dates had on the yield response of hybrids with varying relative maturities. Yield benefits to planting prior to 1 May were not observed for any of the hybrids tested. A planting of 1 May produced the greatest yields for 4 of the 5 hybrids tested. A comparison among hybrids shows the fuller season hybrids produced a yield advantage at each planting date. However, after 25 May switching to a 5-day RM earlier hybrid for each 10-day delay may be beneficial. In addition, grain moistures among hybrids planted later were similar illustrating drying costs among these hybrids would be comparable.

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Table 1. Effect of planting date and hybrid relative maturity on corn yield at Lewis, IA, during 1998, 1999, and 2000.

Relative Maturity	Average Planting Date					
	21 April	1 May	3 May	26 May	13 June	25 June
	-----bushels/acre-----					
95 RM	105	119	125	103	66	86
100 RM	126	131	127	110	88	84
105 RM	136	140	134	109	98	93
110 RM	139	150	137	136	113	82
115 RM	150	158	147	127	92	93
Average	131	139	134	117	91	87
LSD _(P ≤ 0.05)	0	9	8	9	12	12

Table 2. Effect of planting date and hybrid relative maturity on grain moisture at Lewis, IA, during 1998, 1999, and 2000.

Relative Maturity	Average Planting Date					
	21 April	1 May	3 May	26 May	13 June	25 June
	-----bushels/acre-----					
95 RM	14.3	14.1	15.5	17.1	16.3	19.3
100 RM	14.3	14.4	14.6	15.0	16.5	19.8
105 RM	14.6	14.8	14.9	15.4	17.2	19.3
110 RM	14.7	14.6	15.1	16.2	18.3	21.1
115 RM	14.6	14.8	14.9	17.5	19.1	22.3
Average	14.5	14.5	15	16.2	17.4	20.3
LSD _(P ≤ 0.05)	0.2	0.5	1.2	3.4	1.5	3.1