

Planting Date and Hybrid Maturity Effects on Corn Yield in Iowa

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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.

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.

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 6 rows (15 feet) wide by 50 feet long. Plots were

planted with a Kinze planter, at a seeding rate of approximately 31,100 seeds per acre. Planting dates in 1998 were 24 April, 29 April, 11 May, 27 May, 8 June, and 23 June. Planting dates in 1999 were 19 April, 30 April, 10 May, 25 May, 7 June, and 21 June. In 2000, planting dates were 14 April, 26 April, 15 May, 25 May, 8 June, and 22 June. Plots were mechanically harvested each year. In 1998, plots planted on dates 1-3 were harvested on 9 October; date 4 plots were harvested on 20 October, and date 5 and 6 plots were harvested on 3 November. In 1999, all dates were harvested on 15 October. In 2000, dates 1-4 were harvested on 7 October with dates 5 and 6 being harvested on 19 and 25 October, respectively. 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. In addition, the results indicate after 25 May switching to a 5-day RM earlier hybrid for each 10-day delay may be beneficial. Finally, as planting dates were delayed, grain moistures were also significantly drier among the early maturing hybrids.

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

Relative Maturity	-----Average Planting Date-----					
	19 April	28 April	12 May	25 May	7 June	22 June
	-----bushels/acre-----					
95 RM	148	155	148	154	131	88
100 RM	160	165	162	159	120	85
105 RM	154	166	162	161	119	82
110 RM	156	165	177	161	124	80
115 RM	179	186	173	164	104	73
Average	159	167	164	159	119	81
LSD _(P ≤ 0.05)	17	18	21	21	31	32

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

Relative Maturity	-----Average Planting Date-----					
	19 April	28 April	12 May	25 May	7 June	22 June
	-----%-----					
95 RM	16.6	17.4	18.3	18.9	21.0	32.5
100 RM	17.8	17.1	19.2	20.7	26.4	35.9
105 RM	18.6	17.5	21.3	21.9	28.8	35.8
110 RM	20.0	19.6	23.0	24.9	31.3	39.9
115 RM	19.8	20.2	22.6	25.6	33.5	39.9
Average	18.5	18.3	20.8	22.4	28.2	36.8
LSD _(P ≤ 0.05)	1.8	1.8	2.8	2.8	2.8	4.8