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Corn Planting Dates

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Abstract
Corn planting date studies have been included at this site since 1976. The exact dates changed periodically as the objectives of the test changed and due to adverse environmental conditions at planting time in some years. More detailed accounts of earlier tests and long-term summaries can be found in prior reports. This report compares 1997 through 2003 results with long-term averages.

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Introduction

Corn planting date studies have been included at this site since 1976. The exact dates changed periodically as the objectives of the test changed and due to adverse environmental conditions at planting time in some years. More detailed accounts of earlier tests and long-term summaries can be found in prior reports. This report compares 1997 through 2003 results with long-term averages.

Materials and Methods

All tests were set up in a randomized complete block design with three replications. Each block includes a late April, early May, mid-May and early June planting date. From 1981 to 1986 and starting again in 1995, comparisons included starter fertilizer (with and without) at each date. In 1997, another comparison was added, with and without a Bt-isoline hybrid. In addition to yield, data collected include stand, emergence date, silk date, and harvest moisture. In 2003, we also conducted an early planting date comparison to study the effect of a polymer-coated seed. The coating is the Intellicoat® Early Plant™ Seed Coating by Landec Ag, Inc., which is derived from natural biodegradable fatty acids that are supposed to break down once soil temperatures reach 55°F and allow water to permeate the seed for germination to proceed.

Results and Discussion

Tables 1 and 2 give results for the last seven years (1997–2003). The 2002 yields were the highest of the seven years because optimal temperature and rainfall occurred from July through September during pollination and grain fill. Yields for the first three planting dates are nearly identical in four out of the past seven years, although on the average, a 4 bushel yield loss was noted by waiting until May to plant. The June 2 planting date yielded about 35 bushels less then late April/early May plantings. The small variation in the first three planting date yields may be explained by silking dates with all occurring in July when there is more light and heat during the important grain filling period. The early June planting date yield reduction was more severe for the 1999–2003 (except 2001) crop years, possibly due to a longer maturity hybrid used in those years delaying silking and time for grain fill. In 2001, September rainfall exceeded the 30-year average by 2.7 inches, which may partially explain why the early June planting date yielded similarly to all earlier dates. On the average, corn emergence took 18 to 7 days to occur from late April to early June planting dates, respectively. Plant stands were reduced by close to 1,000 plants/acre for late April/early May plantings compared with planting dates after mid-May due to cooler soil temperatures, which may justify higher planting populations for very early plantings. European corn borer infestation levels have varied throughout the 7-year study, but on the average, a protected hybrid has given an 8 bushel/acre increase in yield. A 3 bushel/acre yield trend for starter fertilizer was observed during the 1997–2003 period whereas a 1.5 bushel/acre positive trend was noted in the 1981–1986 studies. The soil tests for P and K were optimum to high at each year's plot location. Yield advantage trends favoring starter fertilizer occurred in the earliest and latest planting dates in the 1997–2003 tests.

Table 3 presents a summary of long-term results from 1981–2003. This provides a solid basis for what would be considered "normal" at this location. Yields for the April 21 plantings were somewhat reduced due to reduced stands in some of the earlier years due to planting in "borderline wet" soils. A $13 to $51/acre reduction in income/acre (approximate prices shown) can be observed, if plantings are delayed from late April/early May compared with late May and early June, respectively. Delayed plantings are usually due to management decisions or environmental conditions. Table 4 shows the effects of the polymer seed coating. Stands improved with later plantings and were generally higher for the seed coating, but emergence and yield trends were not evident in 2003 due to the seed coating.

Table 1. Influence of planting date on growth parameters and final yield (1997–2003).

Planting date*	Emergence date	Silk date	Harvest moisture	Avg yield	Final stand	Bt	Starter Fertilizer (advantage)	
	(month-day)		(%)	(bu/ac)	(plants/acre)		(bu/ac)	
April 21	May 7	July 19	19.2	181	26841		+4	+4
May 5	May 17	July 24	20.3	181	26487		+10	+4
May 18	May 27	July 28	21.6	177	28092		+12	0
June 1	June 9	August 5	25.9	146	27227		+6	+3

*=Average planting date

Table 2. Influence of planting date on corn yield (1997–2003).

Planting date*	Year							Average
	1997	1998	1999	2000	2001	2002	2003	
	(Bushels/acre)							
April 21	171	170	187	169	184	198	189	181
May 5	169	165	185	163	188	210	186	181
May 18	171	178	176	158	192	206	161	177
June 1	158	158	117	108	184	164	135	146

*=Average planting date

Table 3. Influence of planting date on emergence, silk date, harvest moisture, and yield (81–03).

Planting Date*	Emergence date	Silk date	81-03 (% H20)	81-96 (bu/a)	81-03 (bu/a)	Income/ acre*, **
April 22	May 10	July 20	19.4	136	150	$97.91
May 5	May 18	July 23	20.5	141	152	$102.33
May 17	May 25	July 29	22.2	131	145	$ 86.76
June 1	June 10	August 6	25.7	120	128	$ 48.95

*=Average planting date (1981–2003).
**=$2.30 corn, 140 lbs N/ac at $25/ac, $100/ac land rent, $30/ac seed cost, $30/ac weed control, $50/ac field operations, and $0.02/pt, $0.08/bu drying cost.

Table 4. Influence of polymer seed coating and planting date on emergence, stand, and yield (2003).

	No polymer seed coating				Polymer seed coating		
Planting date	Emergence date	Stand (plants/ac)	Yield (bu/ac)	Silk date	Emergence date	Stand (plants/ac)	Yield (bu/a)
April 3	May 1	27201	183.6	July 18	May 1	27685	187.3
April 15	May 3	29330	194.5	July 19	May 3	30492	185.9
April 28	May 15	29475	186.8	July 20	May 16	29088	185.3
May 13	May 22	30637	188.0	July 24	May 23	31654	180.1
May 19	May 29	30734	172.5	July 27	May 30	31944	173.2
Average		29475	185.1			30173	182.4