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Corn Planting Dates

Garren O. Benson
Iowa State University

Kenneth T. Pecinovsky
Iowa State University, kennethp@iastate.edu

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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, 1998, 1999 and 2000 results, with long-term averages.

Keywords

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Disciplines

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Corn Planting Dates

Garren O. Benson, professor emeritus,
agronomy
Ken Pecinovsky, superintendent

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, 1998, 1999 and 2000 results, with long-term averages.

Materials and Methods

The test is 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 “with and without starter fertilizer” 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.

Results and Discussion

Tables 1 and 2 give results for the last four years (1997-2000). 1999 yields were the highest of the four years, despite excessive rainfall, because plots were located on a well drained area. Yields for the first three planting dates are nearly identical, with the June 3 planting date yields being about 37 bushels lower. The small variation in the first three planting date yields may be explained by silking dates all occurring in July. This provided more light and heat during the important grain filling period. The late May-early June planting date yield reduction was more severe for the 1999-2000 crop years, possibly due to a longer maturity

hybrid used in those years delaying silking and time for grain fill. Grain moisture was slightly lower for the 1997-2000 studies compared with the long-term average (Table 3), due to excellent fall drying weather. Corn emergence for the first planting date in 2000 was almost 10 days earlier than for the 1997 through 1999 studies. This was due to warm soils and optimum soil moisture during the last part of April and early May. European corn borer infestation levels have varied throughout the four-year study, but on the average, a protected hybrid has given a 10 bu/ac increase in yield. A 3 bu/ac yield trend for starter fertilizer was observed during the 1997-2000 period and a 1.5 bu/ac positive trend was noted in the 1981-1986 studies. The soil tests for P and K were optimum to high at the plot locations. Trends favoring starter fertilizer occurred in the earliest and latest planting dates in the 1997-2000 tests.

Table 3 presents a summary of results from 1981 through 2000. This provides a solid basis for what would be considered “normal” at this location. Yields for the first three planting dates for the 1997-2000 study were nearly identical. This can be partially explained by an optimum grain filling period with no early frost during the recent four-year study. In the long term study (Table 3) yields for the April 23 plantings were somewhat reduced due to reduced stands in some of the earlier years due to planting in “borderline wet” soils. Table 3 shows the reduction in the income per acre (approximate prices shown, actual prices may vary) that may be observed when plantings are delayed due to management decisions or environmental conditions. A \$13 to \$47 per acre reduction in income can be observed, if plantings are delayed from late April-early May compared with late May and early June, respectively.

Table 1. Influence of planting date on growth parameters and final yield (1997-2000).

Planting Date*	Emergence date	Silk date	Harvest moisture	Avg Yield (bu/ac)	Final stand (plants/acre)	Bt ---(Advantage)---	Starter Fert
	------(month-day)-----		(%)			------(bu/ac)-----	
April 23	May 8	July 18	18.6	174	25917	+7	+4
May 5	May 17	July 23	19.6	171	25489	+11	+1
May 19	May 28	July 29	21.1	171	27067	+9	+1
June 3	June 10	August 6	25.7	135	25892	+11	+5

*=Average planting date

Table 2. Influence of planting date on corn yield.

Planting Date*	Year				Average
	1997	1998	1999	2000	
	------(Bushels/acre)-----				
April 23	171	170	187	169	174
May 5	169	165	185	163	171
May 19	171	178	176	158	171
June 3	158	158	117	108	135

*=Average planting date

Table 3. Influence of planting date on emergence, silk date, grain moisture, and yield (81-00).

Planting Date*	Emergence date	Silk date	Harvest moisture (%)	Yield (bu/a)	Income/acre**
April 23	May 11	July 20	19.3	144	\$60.19
May 5	May 18	July 23	20.4	146	\$64.41
May 17	May 25	July 29	22.2	139	\$49.54
June 1	June 9	August 6	25.6	123	\$15.55

*=Average planting date

**=\$2.20 corn, 140 lbs N/ac @ \$20/ac, P/K fertilizer/ac @ \$20/ac, \$100/ac land rent, \$25/ac seed cost, \$30/ac weed control, \$50/ac field operations, drying cost (\$0.02/pt, \$0.08/bu)