Corn Hybrid Response to Planting Date and Rate

Greg Endres and Joel Ransom

The objective of the trial was to evaluate the effect of corn hybrid relative maturity (RM) on performance at differing planting dates and plant populations. The trial design was a randomized complete block with a split-plot arrangement (main plot was planting date and subplots were hybrid RM and planting rate). The trial was conducted under irrigation on a loam soil with alfalfa as the previous crop. Treatments included two planting dates: April 29 and May 18, 2004; three hybrids: Croplan 184 RR (79 day RM), Dekalb 3947 RR (87 day RM), and Peterson Seed 26I92 RR (92 day RM); and three planting rates: 24,000, 30,000, and 36,000 pls/acre in 30-inch rows. April 29-planted corn emerged on May 18 and May 18-planted corn emerged on June 4. Plant populations were taken on June 14. A killing frost occurred on October 1 with accumulated growing degree day units of 1693 from April 19 and 1585 from May 18. Corn was harvested by hand picking ears on October 20. The ears were dried and seed harvested with a single-ear mechanical sheller.

Planting date did not significantly impact trial factors. This likely was due to the extremely cool growing season. Silk date occurred eight days earlier with the 79-day RM hybrid compared to later RMs (Table 1). At harvest, the early-RM hybrid had considerably lower seed moisture and higher grain yield and test weight than the longer maturing varieties. Planting rate had minimal effect on silk date (Table 2). Ear number increased with increased planting rate. Field seed moisture was lower with the low planting rate. Grain yield was less but test weight greater with the low versus high planting rates. Grain yield with the early maturing hybrid improved with higher planting rates (Table 3). Test weight was higher when the hybrids were planted early (Table 4).

Table 1. Hybrid RM response to planting date x rate.

Hybrid	RM	Silk Date	Ears	Field Seed Moisture	Grain Yield	Test Weight
	day	Julian day	no./acre	%	bu/acre	lb/bu
Croplan 184	79	217	27,265	30.9	87.7	51.9
Dekalb 3947	87	225	37,187	50.1	64.2	42.4
Peterson Seed 26I92	92	225	29,524	47.7	74.7	43.5
LSD (0.05)		1	3,020	1.4	12.2	1.1

Table 2. Impact of planting rates (planting rate x hybrid RM).

Planting Rate	Stand	Silk Date	Ears	Field Seed Moisture	Grain Yield	Test Weight
pls/acre	plts/acre	Julian day	no./acre	%	bu/acre	lb/bu
24,000	29549	222	26,459	41.2	68.5	46.6
30,000	35525	222	33,235	43.0	82.1	46.0
36,000	38181	223	34,283	44.7	76.1	45.1
LSD (0.05)	4071	1	3,020	1.4	12.2	1.1

Table 3. Grain yield with hybrid RM and planting rate.

		Planting rate (pls/acre)		
Hybrid	RM	24,000	30,000	36,000
	day		bu/acre	
Croplan 184	79	67.2	93.9	102.2
Dekalb 3947	87	64.7	69.5	58.4
Peterson Seed 26I92	92	73.5	82.8	67.6
LSD (0.05)			16.8	

Table 4. Test weight with planting date and hybrid RM.

		Planting date	
Hybrid	RM	29-Apr	18-May
	day	lb/bu	
Croplan 184	79	52.6	51.1
Dekalb 3947	87	44.7	40.1
Peterson Seed 26I92	92	45.5	41.4
LSD (0.05)		1.5	