

## **How about Planting Rates for Grain Corn When Prices are High?**

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Corn prices are over \$5/bu for May delivery on the Chicago Board of Trade and locally in some regions of NY. On the other hand, seed costs increase annually, especially for hybrids with stacked traits. Consequently, planting at the correct rate to obtain the optimum harvest population has increased in importance. Planting at too high a rate without a yield benefit reduces profit because of the high seed costs. On the other hand, planting at too low a rate can incur a yield loss, thereby reducing profit, especially in times of high prices. Now more than ever corn producers must plant at the correct rate to maximize profit from expensive seed costs.

We conducted a 3-year plant population study on grain corn at the Aurora Research Farm in Cayuga Co., NY on a well-drained silt loam soil from 2003-2005 to evaluate the response of a Pioneer and a DeKalb hybrid. The hybrids were planted on 7 May 2003, 6 May 2004, and 29 April 2005. Plots measured 50 by 10 feet and each final population for each hybrid was replicated four times for each hybrid. We harvested the center two rows of each plot with an Almaco small plot combine when grain moistures averaged about 25%.

Although we did not achieve our targeted harvest populations in all years of the study, the results were very clear. Harvest populations of about 26,000 – 27,000 plants/acre at harvest were optimum for both hybrids when averaged across all years of the study (Table 1). The 2003 growing season was conducive for lodging, which limited the yield of DKC53-34, once harvest populations exceeded 24,700 plants/acre. The 2004 growing season was stress-free with lodging problems, but yields topped out at harvest populations of 25,125 plants/acre for DKC53-34 and 27,700 plants/acre for 37F16. The 2005 growing season had significant heat and drought stress but once again DKC53-34 and 37F16 had optimum yields at harvest populations of 26,631 and 25,870 plants/acre, respectively. When averaged across the very different growing seasons, DKC53-34 had optimum yields at harvest populations of 26,785 plants/acre and 37F16 had optimum yields at 26,858 plants/acre. This clearly indicates that a harvest population of about 27,000 plants/acre was optimum on well-drained silt loam soils across very different climatic conditions for these hybrids.

We initiated a 3-year field scale study on a moderately well drained silt loam soil where we evaluated the response of one hybrid at four seeding rates in plots, replicated four to six times, that measured about 0.20 acres in size. The planting date was in early May in 2006 and mid-May in 2007 and plots were harvested with a 6-row combine at moistures close to 20%. In both years and averaged across years, the 29,600

plant/acre seeding rate resulted in optimum yields. Final stands averaged close to 26,000 plants/acre in this study. Consequently, the results from our field scale studies corroborate our small plot findings.

Moderately well-drained to well-drained silt loam soils represent more than half the grain corn acreage in NY so we believe that our recommendation of harvest populations of 26,000-28,000 plants/acre are accurate, at least for May-planted corn. When planting corn from April 25<sup>th</sup> to May 7<sup>th</sup>, we assume only an 85% emergence rate and recommend a planting rate for grain corn of about 32,000 plants/acre. When planting corn from May 8<sup>th</sup> to May 22<sup>nd</sup>, we assume a 90% emergence rate and recommend a planting rate of about 30,000 plants/acre. When planting corn after May 22<sup>nd</sup>, we assume a 95% emergence rate and recommend a planting rate of about 28,500 plants/acre. Seed costs are expensive so growers should strive to plant at the correct rate, depending upon planting conditions and hybrid selection. Grain prices are high but “pushing the hybrid” with high seeding rates does not necessarily translate into higher yields.

**Table 1.** Harvest populations and grain yield of a DeKalb and a Pioneer hybrid in 2003, 2004, and 2005 and pooled across years at the Aurora Research Farm in Cayuga Co., NY.

HYBRID	HARVEST POPULATION				GRAIN YIELD			
	2003	2004	2005	Avg.	2003	2004	2005	Avg.
	-----plants/acre-----				-----bu/acre-----			
DKC53-34	24700	20310	20870	21960	<b>187</b>	178	148	171
	28600	25125	26631	<b>26785</b>	188	<b>197</b>	<b>152</b>	<b>179</b>
	33160	28000	31305	30822	187	189	142	173
	37020	30440	34457	33972	175	188	142	168
37F16	18420	27700	20000	22040	165	186	143	165
	21580	33125	25870	<b>26858</b>	171	<b>189</b>	<b>150</b>	<b>170</b>
	25090	34875	29565	29260	180	180	134	165
	27370	39000	37066	34479	<b>186</b>	180	138	168

**Table 2.** Harvest populations and grain yield of corn at four seeding rates in 2006 and 2007 and pooled across years at the Aurora Research Farm in Cayuga Co., NY.

RATE	HARVEST POPULATION			GRAIN YIELD		
	2006	2007	Avg.	2006	2007	Avg.
	-----plants/acre-----			-----bu/acre-----		
27,500	23,874	23,700	23,787	144	130	137
29,600	25,888	25,825	<b>25,867</b>	<b>156</b>	<b>134</b>	<b>145</b>
32,100	28,904	28,480	28,692	150	132	141
34,200	31,691	29,830	30,760	157	133	145
LSD0.05				10	3	5