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Corn Population Management Guide

Syngenta is committed to sharing agronomic knowledge with our customers to help them grow more corn. Syngenta Agronomy Research provides ratings on the relative hybrid response to population. This study aids understanding of how yield environment, grain price, seed cost and hybrid population response influence seeding rate recommendations. Information from this study is useful in estimating the optimum planting population for each NK® hybrid and field.

Population Response Factors

- Yield environment**

Optimum seeding rate increases as the overall field yield potential increases. Higher yield environments demonstrate more yield response from adjusting seeding rates (see Chart 1).

- Hybrid response**

Yield response to varying seeding rates above or below the optimum differs considerably among

hybrids. Syngenta Agronomy Research provides seeding rate response scores for most key hybrids (see Chart 3, Hybrid Seeding Rate Adjustment Chart on reverse).

- Economic factors**

The optimum seeding rate for maximizing return is always lower than the optimum seeding rate for highest yield. The optimum economic seeding rate increases as commodity price increases; seed cost influences seeding rate much less. Table 2 compares several seeding rates and commodity prices in various yield environments.

The Effect of Seeding Rate on Corn Yield by Yield Environment
363 Site Years, 1992 to 2018

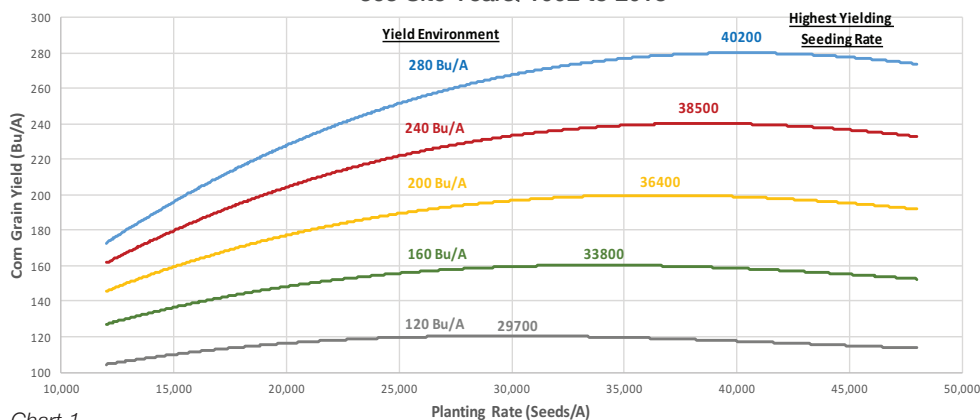


Chart 1

Estimating Optimum Seeding Rates for Your Farm

- Use Table 2 to estimate the optimum seeding rate for your field's yield potential and projected grain pricing.
Example: A 200 Bu/A yield environment and \$4.00/Bu grain price = 32,300 seeds/A optimum seeding rate.

- When estimating yield environment, consider the proven historical yield of the field across multiple years. Seeding rates based on anticipated disasters will

result in revenue loss for all normal years. Utilize the chart on the reverse to fine-tune this optimum seeding rate to match the performance of individual hybrids.

Influence of Yield Environment and Commodity Price on Optimum Seeding Rate

Yield Environment (Bu/A)	Highest Yielding Seeding Rate (seeds/A)	Optimum Seeding Rate (seeds/A) by Commodity Price (\$/Bu)				
		\$3.00	\$3.50	\$4.00	\$4.50	\$5.00
280	40,200	36,600	37,100	37,500	37,700	38,000
240	38,500	34,100	34,700	35,100	35,500	35,800
200	36,400	31,000	31,700	32,300	32,700	33,100
160	33,800	26,900	27,700	28,400	29,000	29,400
120	29,700	20,900	21,900	22,700	23,400	23,900

Table 2

Estimating the Optimum Rate for a Hybrid

- 1) Use Table 2 to estimate the optimum seeding rate based on yield environment and commodity price.
- 2) Adjust seeding rate up or down from optimum for the specific hybrid based on ratings in *Hybrid Seeding Rate Adjustment Chart* below.
- 3) Root and stalk strength scores listed next to seeding rate suggestions can be used to help determine if the hybrid will have suitable agronomic characteristics for increasing seeding rates (lower scores indicate more suitable).

Hybrid Example

If NK0624 was selected for planting in a field with a proven yield history of 200 Bu/A, and \$4 per bushel is the anticipated marketing price, the seeding rate adjustment would be calculated as follows:

Hybrid Series	Percent Adjustment	Root Strength	Stalk Strength
NK0624	-10% 0 +10%	3	3

- 1) The seeding rate yielding the highest return per acre for 200 Bu/A environments and \$4/bushel commodity price = 32,300 seeds/A (from Table 2)
- 2) NK0624 performs best at a range from optimum to 10% above the optimum seeding rate for the environment (Chart 3)
- 3) 32,300 seeds/A x 10% = potential to increase by up to 3,230 seeds/A; 32,300 seeds/A + 3,230 seeds/A = 35,530 seeds/A
- 4) The ideal seeding rate range for NK0624 in this environment is 32,300 seeds/A to 35,530 seeds/A
- 5) An average root strength score should be taken into consideration prior to increasing seeding rates, although a good stalk strength score lessens concerns with late season stalk lodging due to high seeding rates

Other ways to utilize ratings:

- Create variable rate planting maps based on historical yield maps and hybrid ratings.
- Evaluate yield potential of certain hybrids with reduced stands when considering replanting a field. For example, it may be more profitable to retain a stand that is reduced by 20% when considering the hybrid rating and the yield potential at the calendar date.

NK Hybrid Seeding Rate Adaptability Chart

NK Hybrid Series	Relative Maturity (RM)	% Adjustment					Root Strength	Stalk Strength	NK Hybrid Series	Relative Maturity (RM)	% Adjustment					Root Strength	Stalk Strength
		-20%	-10%	0	+10%	+20%					-20%	-10%	0	+10%	+20%		
NK7837	78			●	●	●	4	2	NK0730	107			●	●		5	3
NK8005	80			●	●	●	2	4	NK0760	107			●	●		3	2
NK8204	82			●	●	●	2	4	NK0763	107			●	●	●	3	3
NK8455	84			●	●	●	2	2	NK0821	108			●	●	●	3	2
NK8519	85			●	●	●	4	3	NK0886	108			●	●	●	3	3
NK8618	86			●	●	●	3	3	NK0944	109			●	●	●	5	4
NK8881	88			●	●	●	3	4	NK0962	109			●	●	●	4	4
NK9227	92			●	●	●	4	2	NK0968	109			●	●	●	3	2
NK9535	95			●	●	●	3	2	NK1066	110			●	●	●	4	4
NK9659	96			●	●	●	2	4	NK1094	110			●	●	●	4	3
NK9738	97			●	●	●	4	2	NK1103	111			●	●	●	2	2
NK9813	98			●	●	●	4	4	NK1191	111			●	●	●	2	2
NK9852	98			●	●	●	2	4	NK1263	112			●	●	●	4	4
NK0142	101			●	●	●	2	4	NK1284	112			●	●	●	3	2
NK0199	101			●	●	●	4	2	NK1354	113			●	●	●	2	4
NK0281	102			●	●	●	2	2	NK1364	113			●	●	●	5	4
NK0327	103			●	●	●	3	3	NK1389	113			●	●	●	4	4
NK0330	103			●	●	●	3	3	NK1433	114			●	●	●	4	3
NK0358	103			●	●	●	2	3	NK1444	114			●	●	●	5	2
NK0440	104			●	●	●	5	3	NK1452	114			●	●	●	2	3
NK0519	105			●	●	●	5	2	NK1573	115			●	●	●	3	4
NK0576	105			●	●	●	3	4	NK1584	115			●	●	●	3	5
NK0602	106			●	●	●	2	2	NK1694	116			●	●	●	5	3
NK0624	106			●	●	●	3	3	NK1808	118			●	●	●	4	4
NK0650	106			●	●	●	2	3	NK1822	118			●	●	●	4	3
NK0659	106			●	●	●	4	3	NK1860	118			●	●	●	3	3

Chart 3

Note: Seeding rate responses are based on yield response to seeding rate. Stalk and root strength also influence performance at high seeding rates. Root and stalk strength ratings based on 1-9 scale with 1 being best. Drought and disease tolerance and plant and ear height are also important characteristics to consider when choosing a seeding rate for a hybrid. Ratings apply to all hybrids with similar genetics.

For more information about NK Corn hybrids, contact your retailer or visit www.nkseeds.com

