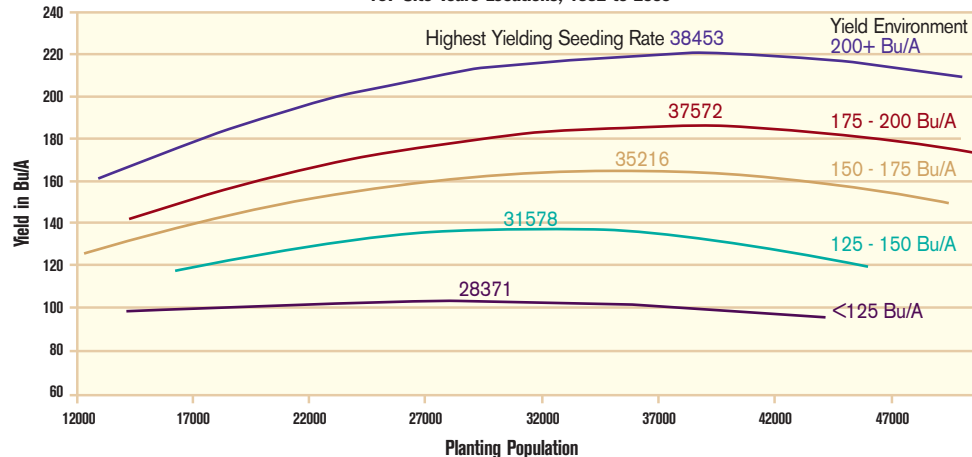


Syngenta Agronomy Research has conducted corn population research since 1992 over a wide range of hybrids, maturities and yield environments. The goal of this study has been to help farmers understand how yield environment, grain prices, seed costs and hybrid population response influence planting rate recommendations. This information can then be used as a tool to determine optimum seeding rates for each Syngenta hybrid and field.

Population Response Factors

- Yield environment** Optimum planting rate increases as the overall field yield potential increases. Yield response from changing seeding rates is more visible in higher yield environments (see adjacent chart).
- Hybrid response** Hybrids differ considerably in ability to increase yield at higher or lower than optimum populations. Syngenta Agronomy Research provides population response scores for most key hybrids (see Hybrid Planting Population Adjustment Chart on reverse).
- Economic factors** Optimum planting rates for maximizing returns (calculated as commodity price times yield less seed cost) are always lower than optimum planting rates for highest yield. Optimum economic planting rate increases as commodity price increases, although seed cost influences seeding rates much less. (The chart below compares several planting rates and commodity prices.)

The Effect of Planting Population on Corn Yield by Yield Environment
137 Site Years Locations, 1992 to 2008



Influence of Yield Environment and Commodity Price on Optimum Seeding Rate						
Yield Environment (bu/A)	Highest Yielding Planting Rate PPA	Optimum Planting Rate by Commodity Price (\$/Bu) (Seed cost = \$200/80K unit)				
		\$3.00	\$3.50	\$4.00	\$4.50	\$5.00
200 +	38,453	33,842	34,501	34,995	35,379	35,687
175 - 200	37,572	32,336	33,084	33,645	34,082	34,431
150 - 175	35,216	29,572	30,379	30,983	31,454	31,830
125 - 150	31,578	26,498	27,223	27,768	28,191	28,530
< 125	28,371	17,112	18,721	19,927	20,865	21,616



Estimating Optimum Planting Rates for Your Farm

- Use the table above to estimate the optimum planting rate for your field's yield potential and for your projected grain pricing.
Example: yield environment of 180 bu/A and grain price \$4.00 per bushel optimum planting rate = 33,645 Seeds per Acre
- 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 losses for all normal years. Utilize tables on the reverse side to fine-tune this optimum planting rate to match performance of individual hybrids.

Determining Optimum Planting Rate for a Hybrid

- 1) Use table on front side of article to estimate optimum planting rate based on yield environment and commodity price.
- 2) Adjust planting rate up or down from optimum for specific hybrid based on ratings in hybrid chart (see hybrid chart below).

Hybrid Example:

If N40T was selected for planting in a field with a proven yield history of 180 bu/A and you anticipate marketing grain for \$4.00 per bushel, based on the rating shown here for that hybrid, seeding rate adjustment would be calculated as follows :

Hybrid	CHU	-30%	-15%	Optimum	+15%	+30%
N40T	99	++	++	++++	++++	+++

- 1) Highest return per acre for 175-200 bu/A environments and \$4.00 per bushel commodity price = 33,645 PPA (table on front page)
- 2) N40T has best response **++++** at optimum and 15% increase over optimum
- 3) 15% X 33,645 = potential to increase by 5,047 seeds per acre 33,645 + 5046 = 38,692
- 4) Ideal seeding rate range would be 33,645 to 38,692 PPA
- 5) **++** symbol at -15% compared to **+++** at +30% indicates steeper penalties for under-planting than over-planting

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. Grower may choose to not replant hybrids with 15% stand loss due to hybrid rating and calendar date.

Hybrid Planting Population Adjustment Chart						
Hybrid Series	CHU	-30%	-15%	Optimum	+15%	+30%
N15A	2575	++	+++	++++	++++	+++
N27B	2800	++	+++	++++	+++	+++
N41C	3000	+++	+++	++++	++++	+++
N40T	3000	++	++	++++	++++	+++
N45A	3100	++	+++	++++	++++	+++
N51T	3175	+	++	+++	++++	+++
N53W	3200	+	+	+++	++++	++++
N63R	3350	+	+++	++++	++++	+++
N64Z	3350	+	+++	+++	++++	+++

- ++++** Best probability for obtaining highest yield potential and economic return.
- +++** Hybrid will perform well under normal conditions.
- ++** Highest yields are rarely achieved. Hybrid is better suited to other populations.
- +** Hybrid is not recommended at that population. Check response at other populations.

Note: Ratings are based exclusively on yield response to plant population. Stalk and root strength can also influence performance at high population. See your local NK Retailer, NK Sales and Agronomy Representative for additional information on hybrid root and stalk strength. Drought tolerance, disease tolerance, and plant and ear height are also important characteristics to consider when choosing a planting population for a hybrid. Ratings apply to all hybrids with similar genetics.



For more information, contact your NK[®] Retailer or call 1-800-756-7333.
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