

Syngenta Agronomy Research conducts corn population research across a wide range of hybrids, maturities and yield environments. The annual study aids farmers' understanding of how yield environment, grain price, seed cost and hybrid population response influence seeding rate recommendations. Information from this study is useful in determining the optimum planting population for each Garst® 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**

155 Site Years, 1992 to 2010

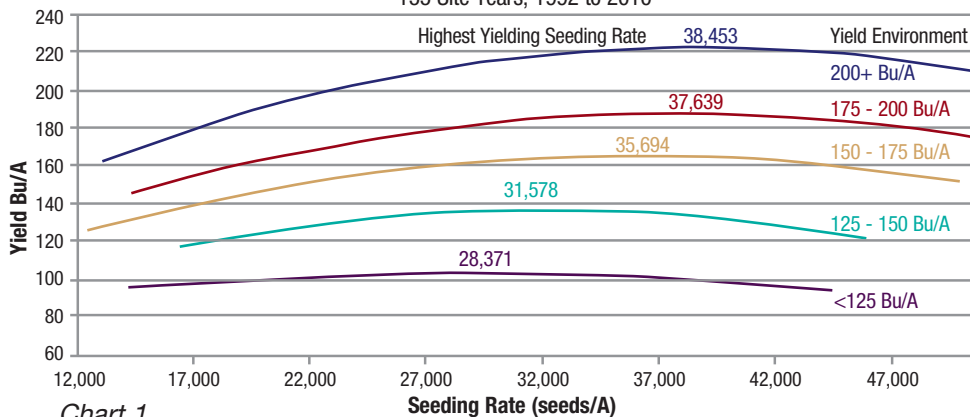


Chart 1

**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)				
		\$3.50	\$4.00	\$4.50	\$5.00	\$5.50
200+	38,453	34,644	35,120	35,490	35,787	36,029
175-200	37,639	32,922	33,512	33,970	34,337	34,637
150-175	35,694	30,685	31,311	31,798	32,188	32,507
125-150	31,578	27,223	27,768	28,191	28,530	28,807
< 125	28,371	18,721	19,927	20,865	21,616	22,230

Table 2

## 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 180 Bu/A yield environment and \$4.50/Bu grain price = 33,970 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.



## Determining the Seeding 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 86T82 was selected for planting in a field with a proven yield history of 180 Bu/A, and \$5 per bushel is the anticipated marketing price, the seeding rate adjustment would be calculated as follows:

Hybrid Series	-15%	Optimum	+15%	Root Strength	Stalk Strength
86T82	▼	★	★	4	2

- 1) The seeding rate yielding the highest return per acre for 175-200 Bu/A environments and \$5/bushel commodity price = 34,337 seeds/A (from Table 2)
- 2) 86T82 performs best at a range from optimum to 15% above the optimum seeding rate for the environment
- 3) 34,337 seeds/A x 15% = potential to increase by up to 5,151 seeds/A; 34,337 seeds/A + 5,151 seeds/A = 39,488 seeds/A
- 4) The ideal seeding rate range for 86T82 in this environment is 34,337 seeds/A to 39,488 seeds/A
- 5) The ▼ symbol at -15% indicates risk of lost yield potential at seeding rates less than 34,337
- 6) 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 15% when considering the hybrid rating and the yield potential at the calendar date.

### Garst Hybrid Seeding Rate Adjustment Chart

Hybrid Series	RM	-15%	Optimum	+15%	Root Strength	Stalk Strength	Hybrid Series	RM	-15%	Optimum	+15%	Root Strength	Stalk Strength
89N10	77	★	★	●	3	3	86T82	105	▼	★	★	4	2
89V30	83	★	★	●	4	2	86M39	105	★	★	★	2	3
89S28	83	★	★	●	4	3	86G35	105	★	★	●	2	2
89S01	85	★	★	★	3	2	85K93	106	★	★	●	3	3
89A33	85	★	★	●	3	4	85V88	107	●	★	●	4	3
89J14	86	★	★	●	4	2	85R08	108	●	★	★	5	3
89M60	88	★	★	●	3	3	85E98	109	●	★	★	4	2
89K65	88	★	★	●	4	4	85Z64	110	★	★	●	3	3
89G13	90	★	★	●	4	5	85K17	110	●	★	★	6	4
89X34	91	★	●	●	3	5	84Y14	111	▼	★	●	4	4
89T43	92	★	★	●	5	3	84U58	111	★	★	●	2	3
88L03	93	★	★	●	5	6	84Z02	112	▼	★	★	2	2
88R16	94	★	★	●	3	4	84Q55	112	●	★	★	3	3
88K05	96	★	★	●	4	4	84J30	112	★	★	●	2	2
88E24	96	★	★	▼	3	2	84G70	112	★	★	●	6	4
88W22	97	●	★	●	3	4	83T94	112	★	★	●	4	5
88R89	97	●	★	▼	4	5	84U96	113	●	★	★	3	3
88F75	97	★	★	●	2	4	84N18	113	★	★	●	5	4
88A27	97	★	★	●	3	4	83S06	113	★	★	●	5	3
88M51	98	★	★	●	3	3	83L67	113	★	★	●	3	3
88B37	99	●	★	★	4	3	83E90	113	●	★	●	4	4
87G94	100	★	●	●	2	4	83X61	114	●	★	●	3	4
87V47	101	★	★	●	4	3	83R38	114	●	★	★	3	3
87Q79	101	★	★	●	3	3	83C55	114	★	★	●	6	2
87F33	101	●	★	●	2	5	83A24	114	★	★	●	3	3
87Y27	102	★	★	★	4	4	83P07	115	★	★	●	4	3
87T18	102	●	★	★	5	4	83M47	115	★	★	●	3	3
87W95	103	●	★	★	4	4	82R05	115	▼	★	★	4	2
87D54	103	★	★	●	2	4	82K01	116	★	★	●	4	3
86J49	103	★	★	●	4	4	82R44	117	★	●	▼	3	3
86X11	104	●	★	●	2	4	82H82	118	★	★	●	4	3

### Chart 3

Note: Seeding rate response ratings 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.

### Seeding Rate Response Ratings

- ★ = Best probability for obtaining highest economic return.
- = Hybrid will perform well under normal conditions.
- ▼ = Economic returns are rarely achieved. Hybrid is better suited to other seeding rates.

For more information, contact your Garst Dealer or Syngenta Field Agronomist or call 1-888-GO-GARST. Visit us at [www.garstseed.com](http://www.garstseed.com)



This bulletin was developed by **Syngenta Agronomy Research**. Syngenta Agronomy Research studies and evaluates environmental and cultural practices that impact yield in both corn and soybean production to provide answers to the critical issues facing growers. In 2010, 27 research trials were conducted at 10 Syngenta Agronomy Research locations.