University of Wisconsin · Agronomy Department
1575 Linden Drive · Madison, WI · 53706 · (608) 262-1390
Agronomy Advice
http://corn.agronomy.wisc.edu
August 2009 Field Crops 28.424 - 73

Getting a Handle on Corn Seed Costs

Joe Lauer, *Corn Agronomist*

How much yield progress have you made on your farm over the last 10 years? USDA-NASS (2009) reports that average corn yield gains in Wisconsin have been made at the rate of 1.5 to 2.0 bu/A year. So, in order to stay average, you must produce 15 to 20 bushels more per acre today than 10 years ago.

Guidelines for managing corn seed costs using hybrid selection

Recently corn seed costs have dramatically increased due to technology fees. It is not unheard of for seed of high-performing premium hybrids with transgenic traits to cost over $250 per bag, whereas 10 years ago, premium seed would cost about $80-$100 per bag. Table 1 describes the yield increase required by a hybrid when there is a $40 to $160 dollar difference in bag costs. Understanding what the true value of these hybrids mean to farm profitability is challenging. Both expected yield gains and plant density must be examined before selecting and buying hybrid corn seed. A spreadsheet calculator titled, "Crop Seed Price Calculator" is available at http://corn.agronomy.wisc.edu/Season/DSS.aspx. This spreadsheet will adjust for pesticide differences required for transgenic crops.

Realistic yield gains when choosing "premium" hybrids

It is difficult to predict next year's performance of hybrids based upon last year's results. Yet as a manager it is an important decision because the average difference between the top- and bottom-hybrid in a trial is 70 bu/A. If we plant the top- and bottom-hybrids the following year, the yield difference will be 22 bu/A (Table 2) with the top-hybrid at best 13 bu/A better than the average of the trial and the bottom hybrid 9 bushels below average (Lauer and Hudelson, 1997).

Table 1. Yield increase required to pay for corn seed sold at a premium. Cost matrix = $/A.

Yield increase	$40 Bag difference Corn Price ($/bu)					$80 Bag difference Corn Price ($/bu)					$120 Bag difference Corn Price ($/bu)					$160 Bag difference Corn Price ($/bu)				
(bu/A)	2.00	3.00	4.00	5.00	6.00	2.00	3.00	4.00	5.00	6.00	2.00	3.00	4.00	5.00	6.00	2.00	3.00	4.00	5.00	6.00
0	-17	-17	-17	-17	-17	-33	-33	-33	-33	-33	-50	-50	-50	-50	-50	-66	-66	-66	-66	-66
2	-13	-11	-9	-7	-5	-29	-27	-25	-23	-21	-46	-44	-42	-40	-38	-62	-60	-58	-56	-54
4	-9	-5	-1	4	8	-25	-21	-17	-13	-9	-42	-38	-34	-30	-26	-58	-54	-50	-46	-42
6	-5	2	8	14	20	-21	-15	-9	-3	3	-38	-32	-26	-20	-14	-54	-48	-42	-36	-30
8	-1	8	16	24	32	-17	-9	-1	7	15	-34	-26	-18	-10	-2	-50	-42	-34	-26	-18
10	4	14	24	34	44	-13	-3	7	17	27	-30	-20	-10	1	11	-46	-36	-26	-16	-6
12	8	20	32	44	56	-9	3	15	27	39	-26	-14	-2	11	23	-42	-30	-18	-6	6
14	12	26	40	54	68	-5	9	23	37	51	-22	-8	7	21	35	-38	-24	-10	4	18
16	16	32	48	64	80	-1	15	31	47	63	-18	-2	15	31	47	-34	-18	-2	14	30
18	20	38	56	74	92	3	21	39	57	75	-14	5	23	41	59	-30	-12	6	24	42
20	24	44	64	84	104	7	27	47	67	87	-10	11	31	51	71	-26	-6	14	34	54

Assume: 80,000 seeds/bag planted at 33000 seeds/A for final population of 30000 plants/A

Table 2. Yield gains of corn hybrid selection strategies (1973 to 1998)

Selection scheme	Relative yield	Grain yield difference
	percent	bu/A
1 L* (on-farm)	104	6
Z* & ≥ 3L*	107	11
Z* & ≥ 3L* (2 yrs)	108	13
1 L average	100	0
1 L bottom 10%	93	-9

Grower return difference = grower return of selected hybrids - trial mean

Guidelines for managing corn seed costs using plant density

Current UW recommendations for harvest plant densities range between 26,000 and 30,000 plants/A. Recent data indicates that the optimum plant densities are higher than currently recommended densities. The following guidelines help growers adjust their plant densities and maintain or enhance farm profitability. Not only has seed cost been changing, but the yield response of corn to plant density has been increasing over time. **Ultimately, optimum plant density is affected by both seed cost and corn price.**

Table 3. Price ratio of seed:corn (i.e. $/1000 seeds ÷ $/bu corn).

Price of seed		Price of corn ($/bu)								
$/80 K bag	$/1000 seeds	$1.00	$1.75	$2.50	$3.25	$4.00	$4.75	$5.50	$6.25	$7.00
$0	$0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
$40	$0.50	*0.50*	*0.29*	*0.20*	*0.15*	*0.13*	*0.11*	*0.09*	*0.08*	*0.07*
$80	$1.00	1.00	0.57	*0.40*	*0.31*	*0.25*	*0.21*	*0.18*	*0.16*	*0.14*
$120	$1.50	1.50	0.86	0.60	*0.46*	*0.38*	*0.32*	*0.27*	*0.24*	*0.21*
$160	$2.00	2.00	1.14	0.80	0.62	*0.50*	*0.42*	*0.36*	*0.32*	*0.29*
$200	$2.50	2.50	1.43	1.00	0.77	0.63	0.53	*0.45*	*0.40*	*0.36*
$240	$3.00	3.00	1.71	1.20	0.92	0.75	0.63	0.55	*0.48*	*0.43*
$280	$3.50	3.50	2.00	1.40	1.08	0.88	0.74	0.64	0.56	*0.50*
$320	$4.00	4.00	2.29	1.60	1.23	1.00	0.84	0.73	0.64	0.57
$360	$4.50	4.50	2.57	1.80	1.38	1.13	0.95	0.82	0.72	0.64
$400	$5.00	5.00	2.86	2.00	1.54	1.25	1.05	0.91	0.80	0.71

Placing a value on seed is relatively easy since the price of seed is known at the time of purchase and the amount used is known after a field is planted. The realistic corn price will vary depending upon the producer's ability in marketing the grain. Corn grain that will be used on farm as livestock feed should be valued at the price it would cost to purchase if feedstocks run short.

Table 3 describes seed:corn price ratios for seed costs ranging from $0 to $400 per bag and corn prices ranging from $1.00 to $7.00 per bushel. As seed costs increase and/or corn prices decrease the seed:corn price ratio increases. Conversely, as seed cost decreases and/or corn price increases the seed:corn price ratio decreases.

For a seed:corn price ratio of 1.0, the economic optimum plant density (EOPD) is 33,000 plants/A and grower return is at a maximum of $159/A for each $1.00 of corn price (Figure 1). If $1.00 is subtracted from the maximum grower return ($159 - $1 = $158), the range in plant density is 29,500 to 36,600 plants/A (error bars). As corn price increases, grower return increases proportionally, but the EOPD of each ratio does not change.

As seed costs increase and/or corn prices decrease, the optimum harvest plant density decreases, (i.e. EOPD for ratio of 1.50 = 29,800 plants/A). As seed cost decreases and/or corn price increases (ratio = 0.50) the EOPD increases to 36,200 plants per acre. If seed cost is not considered (ratio = 0.0), then the EOPD estimates yield and is 39,400 plants/A.

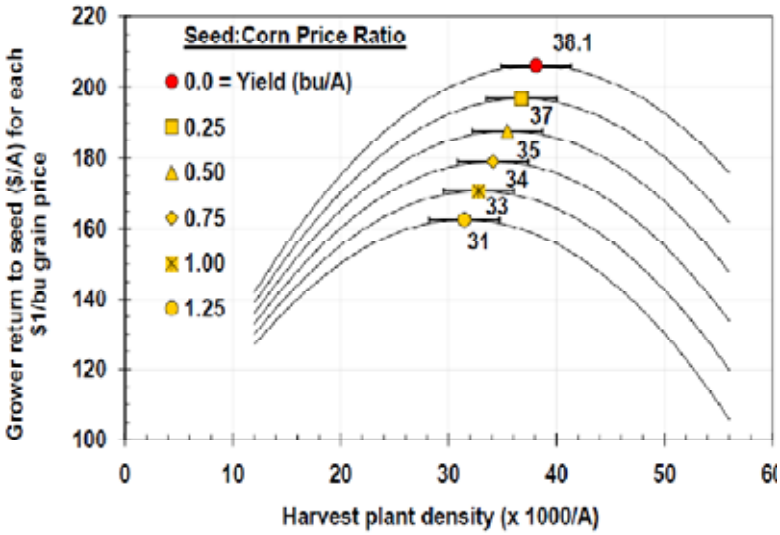

Figure 1. Profitable harvest plant densities for seed:corn price ratios of 0.0 to 1.25 at Arlington, WI. Symbols represent the economic optimum return to plant density (EOPD) and error bars are the low and high ends of the range of profitability (within $1/A of EOPD) at each seed:corn price ratio.

Literature Cited

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