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Factors to Consider When Lowering Soybean Seeding Rates in 2009

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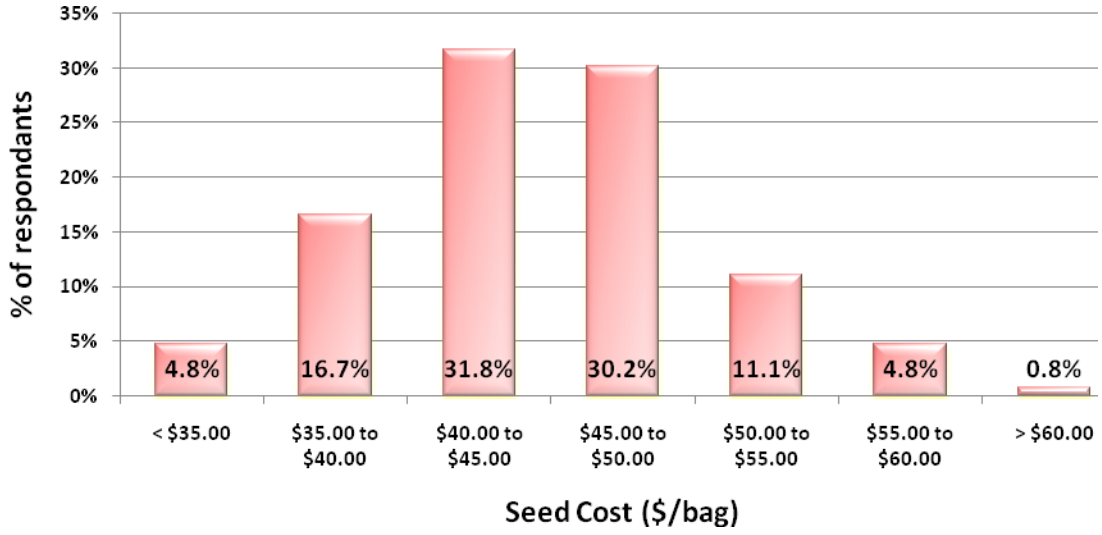
Soybean seed prices have risen dramatically in 2009. In Wisconsin alone, seed prices have increased anywhere from 25 to 109%. Given the number of rebates, seed treatments, and programs available through seed and chemical companies, it is often difficult to get at the true cost that growers pay for seed. To try and capture this "***true***" cost, we sampled grower and dealer clientele that participated in the 2009 Agronomy Update Meetings (N=126). Results from this survey indicated that seed prices for the 2009 crop ranged from under $35.00 to over $60.00 per bag for seed (Figure 1). A majority (62%) of those surveyed indicated that they paid between $40.00 and $50.00 per bag.

Figure 1. Average price paid for soybean seed in Wisconsin for the 2009 crop. Data collected from clientele survey during 2009 Agronomy Update Meetings (N=126).



Given this dramatic increase in soybean seed prices, growers will likely consider decreasing their seeding rates in 2009. The extent of this reduction may be dramatic in some cases compared to the current seeding rates used in Wisconsin. In a grower survey conducted with cooperation and support from the Wisconsin Soybean Marketing Board (WSMB) we found that a majority (38%) of Wisconsin growers' plant between 200,000 and 224, 000 seeds per acre in rows spaced ≤ 10 inches. Those growers that plant in rows spaced 11 to 19 inches or ≥ 20 inches primarily plant at 175,000 to 199,000 seeds per

acre (Table 1). A key facet to remember as growers contemplate dropping their seeding rate is they need to plant enough seed to achieve a minimum stand of 100,000 to 120,000 plants per acre.

To successfully achieve our target density we must first make sure our equipment is well maintained and calibrated. At $15.00 to $20.00 per bag, many of us didn't take the time to properly calibrate, however at $40.00 to $50.00 per bag, it is well worth the time and money to make sure our equipment is in proper working order. For information on drill calibration please see Grain Drill Metering Systems and the Need for Calibration.

Table 1. Soybean seeding rates and rows spacings in Wisconsin in 2007.

	Seeding rate (1,000)						
Row	< 125	≥ 125 - 149	≥ 150 - 174	≥ 175 - 199	≥ 200 - 224	≥ 225	
	% Respondents						% Total
≤ 10	7	4	4	29	38	17	46
11 - 19	4	5	20	50	20	2	37
≥ 20	0	12	39	46	4	0	17
% Total	5	6	16	40	25	9	N = 153

Once we have determined that our equipment is working properly we must next consider seed quality. Unlike the problems we ran into in 2008, soybean seed quality in 2009 should not cause growers any concern, though it is still important to take the time to read the tag and check the germ to ensure a proper seeding rate. In a normal year, we assume 90% of the live soybean seed we plant will emerge.

Therefore to estimate our final stand density, we conduct the following calculation:

(Seeding rate) x (% germ) x (% expected emergence) = estimated final stand

Example 1: (180,000) x (0.94) x (0.90) = 152,280

Example 2: (180,000) x (0.80) x (0.90) = 129,600

In Example 1, a grower drills 180,000 seeds per acre of 94% germ seed, and assumes 90% emergence. The estimated soybean stand will be = 152,280 plants/acre. If a grower planted 80% germ seed, the estimated soybean stand would be = 129,600 plants/acre (Example 2) Under most environmental conditions 129,000 plants/acre would produce 100% yield potential, however if we do not achieve our assumed 90% emergence rate due to poor early season growing conditions, we rapidly approach lower stands where yield loss may occur.

A significant change we have seen over the last five years is the dramatic increase in seed treatments available to growers. Given the high value of establishing a soybean crop today, seed treatments are being marketed as "insurance" to growers. If you choose to use a seed treatment, it is important to remember to select products that have efficacy on the pest complex that is present on your farm. Selecting a product that insures you against a pest that you do not have is like buying flood insurance for a house that sits on the top of a mountain. It may be cheap, but unnecessary.

To evaluate the need for seed treatments in Wisconsin, we initiated a 9 location study (432 plots) in 2008. The results presented below are just from one year so no specific recommendations can be given, however we can begin to build a database for the cost/benefit justification of using seed treatments in Wisconsin. Averaged across all locations and varieties, we did not see a benefit from using either ApronMaxx® or CruiserMaxx® (Table 2). Analysis of the data however indicated a significant variety by seed treatment interaction suggesting that in some varieties, use of seed treatments significantly increased yield. We will continue to collect data in order to develop a decision matrix from which seed treatments decisions can be made.

Table 2. Evaluation of seed treatments across nine locations in Wisconsin in 2008.

Variety	Seed Treatment	Yield	Statistical Significance	Plant Population	Protein	Oil	Protein plus Oil
		bu/a		x1000	%	%	lb/A
Asgrow AG 1403		55.4	B	132	33.2	18.9	1732
FS HiSOY HS 2025		58.1	A	122	32.7	19.5	1819
Kaltenberg KB 177RR		55.5	B	111	32.4	19.8	1740
Kaltenberg KB 194RR		54.4	B	117	33.0	19.7	1724
	ApronMaxx	55.9	A	123	32.8	19.5	1754
	CruiserMaxx	56.1	A	121	32.8	19.5	1762
	UTC	55.6	A	117	32.9	19.4	1746
Asgrow AG 1403	ApronMaxx	54.4	CDE	131	33.3	18.9	1705
Asgrow AG 1403	CruiserMaxx	55.4	BCDE	130	33.1	18.9	1730
Asgrow AG 1403	UTC	56.3	ABCD	134	33.2	18.9	1761
FS HiSOY HS 2025	ApronMaxx	58.4	A	126	32.7	19.4	1828
FS HiSOY HS 2025	CruiserMaxx	57.6	A	119	32.5	19.5	1801
FS HiSOY HS 2025	UTC	58.4	AB	121	32.7	19.4	1830
Kaltenberg KB 177RR	ApronMaxx	55.5	BCDE	115	32.4	19.9	1740
Kaltenberg KB 177RR	CruiserMaxx	56.4	ABC	113	32.4	19.8	1771
Kaltenberg KB 177RR	UTC	54.5	DE	106	32.5	19.8	1709
Kaltenberg KB 194RR	ApronMaxx	55.1	BCD	121	32.8	19.8	1741
Kaltenberg KB 194RR	CruiserMaxx	55.1	BCD	121	32.9	19.8	1746
Kaltenberg KB 194RR	UTC	53.1	E	108	33.2	19.6	1684
Probability %							
Variety (V)		1.6		<0.1	<0.1	<0.1	3.4
Seed Treatment (S)		77.0		14.7	17.6	30.3	81.4
V * S		0.3		25.8	10.8	46.4	0.4
LSD 5%							
Variety (V)		2.3		8	0.3	0.2	70
Seed Treatment (S)		ns		ns	ns	ns	ns
V * S		2.6		ns	ns	ns	82

* Mixed Model analysis with random factors: location block(location) location*variety location*seed treatment. Different letters following yields indicate statistically different yields

Lastly, as we begin the planting process, we must remember to re-evaluate our soybean seeding depth. The University of Wisconsin, Madison recommends a seeding depth range or 0.75 to 1.25 inches for soybean. Based on our WSMB survey data, only 30% of Wisconsin growers planted in this optimal

range (Table 3). Fifty-nine percent of growers seeded between 1.25 and 2.0 inches and 9% seeded at ≥ 2.0 inches. Deeper planting depths were likely relevant 10 years ago given later planting (i.e. warmer soil temperatures and dry soil conditions) and cheaper seed; however in today's economic environment, planting at the proper seeding depth can reduce some of the risk.

Table 3. Percentage of growers planting their soybean at various depth ranges in Wisconsin.

< 0.75 inches	0.75 ≥ x < 1.25 inches	1.25 ≥ x < 2.0 inches	≥ 2.0 inches
2%	30%	59%	9%