



Agronomic Spotlight

Replanting Decisions for Soybeans

- Understanding the cause of an inadequate soybean stand is important to help prevent a reoccurrence of the problem if the decision is made to replant.
- Final soybean plant stands of at least 73,000 plants per acre provide 90 percent or more of maximum yield potential.
- Make weed control a high priority in fields with reduced stands.

Evaluating the Existing Stand

Factors that can contribute to less than ideal soybean stands include: planting into a poor seedbed, planter adjustment problems, poor quality seed, soil crusting, inadequate or excessive soil moisture, seedling diseases, and numerous environmental issues. Understanding the cause of an inadequate soybean stand is important to help prevent a reoccurrence of the problem if the decision is made to replant. Spotty stand reductions throughout a field can be caused by poorly drained areas, sandy soil patches with inadequate soil moisture, or even soil compaction in certain areas. Before deciding to replant, estimate the stand for population and uniformity, and examine yield potential of the existing stand. When evaluating soybean stands, only count plants that have a good chance of survival. Soybean plants cut off below the cotyledon by hail, or other means, have no potential for regrowth. However, soybeans are able to grow out of some leaf tissue damage with minimal effect on yield potential.

To evaluate the plant population for 30-inch rows, count the number of plants in 17 feet 5 inches of row and multiply the number of plants by 1,000 to determine plants per acre. For 15-inch rows, count the number of plants in 34 feet 10 inches of row and multiply by 1,000. Repeat these counts in several locations in the field.

Another method for evaluating soybean stands in any row spacing, especially drilled, is to use the hoop method. Measure the diameter of the hoop, toss it in the field and count the number of plants inside the hoop. Do this in at least 5 to 10 locations in the field. Multiply the average number of plants by the appropriate factor listed in Table 1 to determine the number of plants per acre. Notice that having a diameter of 28 ¼ inches allows you to simply multiply by 10,000 to obtain the number of plants per acre. This hoop size can be made by cutting anhydrous tubing to 88 ¾ inches and joining it to form a circle.

Evaluating and Managing the Yield Potential of the Existing Stand

Numerous studies have examined the yield potential of various soybean stands. What appears to be a significant soybean stand reduction does not automatically translate into a significant loss of yield potential. Soybean plants are well adapted to compensate for gaps in the field. Gaps of less than 2 feet in diameter can be filled in by branches of adjacent soybean plants. A summary of yield potential from reduced stands is presented in Table 2. Established plant stands of 8, 6, and 4 plants per foot of row

in 30-inch rows (equals approximately 140,000, 105,000 and 70,000 plants per acre, respectively) differed in full yield potential by only 5 percent. Final soybean plant stands of 73,000 plants per acre or more consistently yielded 90 percent or more of maximum yield potential. With an initial planting population of 140,000 plants/acre, a 50 percent stand loss resulted in a 16 percent yield loss in areas of the field with no skips or gaps. With an initial planting population of 70,000 plants per acre, a 50 percent stand reduction resulted in a 22 percent loss of yield. Assuming an original yield potential of 60 bu/acre, a field planted at 70,000 plants per acre with a 50 percent loss of stand could still yield 47 bu/acre.

Reduced soybean stands allow more light to penetrate to the soil surface. This increases the potential for more weed seed germination and weed competition, as well as soil water evaporation and increased soil temperature. All of these factors can affect nodulation, biological nitrogen fixation, and nutrient and water availability. Make weed control a high priority, especially in fields with reduced stands, in order to help maximize the yield potential of the existing crop.

Table 1. Stand count evaluation factors, by hoop diameter, to determine soybean plant populations using the hoop method.

Diameter of Hoop (inches)	Factor
18	24,662
21	18,119
24	13,872
27	10,961
28 ¼	10,000
30	8,878
33	7,337
36	6,165

Source: Purdue Corn & Soybean Field Guide, 2008.

Deciding Whether to Replant

- Determine what caused the stand loss and evaluate the population and uniformity of the remaining stand.

Replanting Decisions for Soybeans

- Estimate the yield potential of the existing stand.
- Determine the full cost of replanting and the yield potential of the replanted crop.
- Evaluate the current and forecasted weather conditions.
- If a decision is made to replant, consider using slightly higher seeding rates. This may help to increase the soybean plant growth efficiency, reduce weed competition, and potentially result in more pods per acre.
- Research suggests that tillage to destroy the existing stand followed by replanting may be the least productive replant option for soybeans, versus leaving a stand with adequate population and distribution.
- If a decision is made to replant, evaluate the varieties that are available. Changing to an earlier maturing variety may not be necessary depending upon the replant date.
- Scout areas of different planting dates in the same field for late-season pest problems. The difference in planting date may cause a pest to be in one part of the field but not in another.

Please consult with your local retailer or seed representative to learn more about issues and options related to soybean replants.

Table 2. Percent of full-yield potential for timely-planted soybeans, as influenced by plant density established and stand reduction 2 to 4 weeks after planting.

% Stand Reduction	Plants per foot of row		
	8	6	4
0 (full stand)	(% of full-yield potential)		
	100	97	95
10	98	96	93
20	96	93	91
30	93	90	88
40	89	86	83
50	84	81	78
60	78	75	73

The reduction in stand was achieved by random placement of 12-inch gaps within 30-inch rows and the remaining plants per foot of row were without gaps or skips. Source: Whigham, K., Farnham, D., Lundvall, J., and Tranel, D. 2000.

Sources

Whigham, K., Farnham, D., Lundvall, J., and Tranel, D. 2000. Soybean replanting decisions. PM 1851. Iowa State University. <https://store.extension.iastate.edu/Product/Soybean-Replant-Decisions>. Davis, V. M. 2010. Soybean seeding rates for 2010. The Bulletin, no. 4. University of Illinois. <http://bulletin.ipm.illinois.edu> Davis, V. M. 2010. More on soybean stands and the decision to replant. The Bulletin, no.8. University of Illinois. <http://bulletin.ipm.illinois.edu> Web sources verified 4/20/2016. 04262016CRB 130516023043

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