SOYBEAN REPLANT DECISIONS

Decisions to replant reduced soybean stands can be difficult to make. It is important to understand the cause of an inadequate stand to help prevent a reoccurrence of the problem. A stand count and assessment of plant loss should be made. Consider crop insurance, time in the growing season, and the costs associated with replanting such as seed, fuel, labor, and other inputs.

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 estimate the 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 can recover from moderate 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.

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 Extension Corn & Soybean Field Guide.

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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 substantial soybean stand reduction does not automatically translate into a substantial loss of yield potential. Soybean plants can compensate well 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 yield potential by only 5%. Final soybean plant stands of 73,000 plants per acre or more consistently yielded 90% or more of maximum yield potential. A 50% stand loss resulted in only a 16% loss in yield in areas of the field in which there were 8 plants per foot of row in row sections with no skips or gaps. A 50% stand reduction with 4 plants per foot of row, resulted in a 22% loss of yield. Assuming an original yield potential of 60 bu/acre, a field with a 50% loss of stand with 4 plants per foot of row could still yield 47 bu/acre.[1]

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: University of Illinois.*

Reduced soybean stands can increase light penetration to the soil surface. This can increase the potential for weed seed germination and weed competition, as well as soil water evaporation and increased soil temperature. 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.

Deciding Whether to Replant

- Determine what caused the stand loss and evaluate the population and uniformity of the remaining stand. Wait several days after soybean emergence or after damage (hail, chemicals, etc.) to determine stand levels and only count live plants.
- Estimate the yield potential of the existing stand. A soybean stand of 73,000 or more healthy, uniformly-spaced plants per acre can provide 90% or more of maximum yield potential and is probably worth keeping.
- Determine the full cost of replanting and the yield potential of the replanted crop.
- Evaluate the current and forecasted weather conditions and consider how the date of replanting can affect yield potential.

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- Determine if recent applications of residual herbicides could prevent replanting. Make sure that you follow replant instructions on the herbicide label.
- Replanting into the existing stand is not recommended because this can result in nonuniform plant sizes causing uneven competition for resources. If young stands contain large areas of damaged plants, replanting only into those areas could be an option. Research suggests that tillage to destroy the existing stand followed by replanting may be the least productive replant option for soybeans, compared to leaving a stand with adequate population and distribution.
- If a decision is made to replant, use the same soybean variety with the same traits you originally planted. Changing to an earlier maturing variety may not be necessary depending upon the replant date.
- If a decision is made to replant, consider using slightly higher seeding rates. This may help increase the soybean plant growth efficiency, reduce weed competition, and potentially result in more pods per acre.
- 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 Bayer® seed representative to learn more about issues and options related to soybean replants.

Sources

[1] Whigham, K., Farnham, D., Lundvall, J., and Tranel, D. 2000. Soybean replant decisions. Iowa State University Extension PM1851. www.extension.iastate.edu.

[2] Robinson, A. and Conley, S. 2007. Thin soybean stands: should I replant, fill in, or leave them alone? Purdue University Extension SPS-104-W. https://www.extension.purdue.edu.

[3] Rees, J., Specht, J., Elmore, R., Nygren, A., and Mueller, N. 2020. Soybean replanting considerations. University of Nebraska – Lincoln CropWatch. https://cropwatch.unl.edu.

Web sources verified 09/10/20.

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