

AGRONOMIC ALERT



SOYBEAN REPLANTING DECISIONS

Replanting of soybeans is a challenging decision that typically is faced every year. The soybean plant is very resilient and can adjust to the final stand remaining in the field by adding branches, more pods per plant, seeds per pod, and an increase in seed size. Pod counts on soybean plants can range from 10 to 20 to over 300, depending on the density of the final population. It is this capability of the soybean plant to compensate that makes replanting in many situations not economically viable, even though there may be a yield loss from having a reduced stand of soybeans.

Evaluating the Existing Stand

Many things, including planting into a poor seedbed, planter adjustment problems, poor quality seed, soil crusting, inadequate or excessive soil moisture, seedling diseases and numerous environmental issues can contribute to less than ideal soybean stands. Understanding the cause of an inadequate soybean stand is important to help prevent a reoccurrence of a poor stand if the decision is made to replant. Spotty stand reductions throughout the field can be caused by poorly drained areas in the field, sandy soil patches with inadequate soil moisture, and soil compaction areas. Before deciding to replant, evaluate 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 little effect on yield potential.

To evaluate the plant population for 30 inch rows, count the number of plants in 17' 5" of row and multiply the number of plants by 1000 to get plants per acre. For 15 inch rows, count the number of plants in 34' 10" of row and multiply by 1000. 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 Hula-Hoop® method. Measure the diameter of the Hula-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 get the number of plants per acre. Notice that having a diameter of 28¼" allows you to simply multiply by 10,000 to obtain the number of plants per acre. This size of hoop can be made by cutting anhydrous tubing to 88¾ inches and join 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

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.

stand reduction does not automatically translate into a significant yield loss. 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. Yields from established plant stands of 8, 6 and 4 plants per foot in 30-inch rows equal to 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 the maximum yield for the trial. A 50 percent stand loss resulted in only a 16 percent 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 percent stand reduction with 4 plants per foot of row, resulted in a 22 percent loss of yield. Assuming an original yield potential of 60 bu/A, a field with a 50 percent loss of stand with 4 plants per foot row in the row sections could still yield 47 bu/A.

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
	(% of full-yield potential)		
0 (full stand)	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 plants per foot of row were without gaps or skips.
Source: University of Illinois.

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.

Deciding Whether to Replant

- Determine what caused the stand loss and the population and uniformity of the remaining stand. Determine 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.
- Data suggests that tillage to destroy the existing stand followed by replanting may be the least productive replant option for soybeans.
- 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.

Source:

Soybean Replant Decisions. Iowa State University Extension publication PM1851. June 2000.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

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