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Soybean Replant Study

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Abstract

Every spring, farmers are faced with the decision of whether to replant soybeans because of stand losses due to hail storms, soil crusting, and damping off. A common practice when faced with this decision is to “thicken up” the stand by planting additional seed into the existing stand. Although this practice is usually discouraged by agronomists, there has been little research done to compare this practice with keeping the existing stand or destroying the stand and replanting.

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Soybean Replant Study

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Introduction

Every spring, farmers are faced with the decision of whether to replant soybeans because of stand losses due to hail storms, soil crusting, and damping off. A common practice when faced with this decision is to “thicken-up” the stand by planting additional seed into the existing stand. Although this practice is usually discouraged by agronomists, there has been little research done to compare this practice with keeping the existing stand or destroying the stand and replanting.

Materials and Methods

Soybeans were planted at four plant populations of 40,000, 70,000, 110,000, and 140,000 seeds/acre on May 12, 2011. In addition, soybeans were planted at 40,000 seeds/acre on May 12 and an additional 70,000 seeds/acre on June 1 (when the original seeding was at VC) and on June 7 (when the original seeding was at V2). Soybeans were also planted at 70,000 seeds/acre on May 12 and an additional 40,000 seeds/acre on June 1 and on June 7. These treatments simulated “thickening up” reduced stands of soybeans. These treatments were compared with soybeans planted at 140,000 seeds/acre on June 1 and June 7, to simulate re-planting on those dates. The 40,000 seeds/acre rate was achieved on each planting date by planting 60,000 and removing by hand every third plant because of the limitations of the planter to plant low seeding rates.

All treatments were planted no-till in 30-in. rows in plots 20 ft (8 rows) wide by 60 ft long that were arranged in a randomized complete

block design with four replications. The “thickened-up” seedings were planted 3-4 in. to the side of the existing rows. The soybean variety for all planting dates and rates was Pioneer 93Y40, a group 3.4 soybean variety. All plots were sprayed with glyphosate plus metolachor prior to planting followed by glyphosate and clethodim as needed for weed control. Final stand counts were taken and the plots were machine harvested for yield on October 6.

Results and Discussion

Soybeans showed their remarkable ability to compensate for reduced stand. The treatments with a harvest population of 35,000 plants/acre yielded the same as treatments with harvest populations of over 100,000 plants/acre (Table 1). The very wet spring and dry summer likely reduced the soybean yields, with most treatments yielding about 50 bushels/acre. If yield potentials had been greater, it is possible we would have seen some advantage to populations greater than 35,000 plants/acre. Plants had very thick stems and extensive branching in the low population plots. Soybeans interseeded into the existing stand on June 1 contributed more to the yield than soybeans interseeded on June 7. Although populations with the second planting were similar on both dates, there were many more pods with the June 1 planting. Planting conditions were marginal on June 7, resulting in some stand losses.

Based on this one trial, the best decision when faced with a reduced soybean stand is to not touch existing stands of 35,000 plants/acre or more. Although the “re-planted” soybeans (soybeans planted at 140,000 seeds/acre on June 1 or June 7) yielded as much as the existing stand, it would involve the extra expense of destroying the existing stand (probably by tilling) and planting the new

seeding. There did not appear to be a disadvantage to “thickening up” the stand, although there was no significant increase in yield to pay for the increased expense of interseeding more seed. One place where thickening the existing stand may be beneficial is in fields where there are numerous areas with no stand. Even though

thickening the reduced stand may not be needed, some stand would certainly be better than none in the blank areas. Also the increased stand would help in reducing weed problems later in the season.

The trial will be repeated in 2012, including seeding rates down to 20,000 seeds/acre.

Table1. Harvest populations and yield of soybeans at various seeding rates and dates.

Treatment number	Seeding rate (seeds/A) and date	Harvest population (1,000 plants/A)	Yield (bu/A)
1	140,000 on 5/12	117.7	53
2	110,000 on 5/12	95.9	51
3	70,000 on 5/12	60.7	53
4	40,000 on 5/12	35.6	50
5	140,000 on 6/1	91.5	47
6	140,000 on 6/7	70.5	49
7	70,000 on 5/12 + 40,000 on 6/1	81.8 (54.6 + 27.2) ^a	53
8	70,000 on 5/12 + 40,000 on 6/7	83.5 (53.7 + 29.8)	56
9	40,000 on 5/12 + 70,000 on 6/1	82.6 (34.2 + 48.4)	54
10	40,000 on 5/12 + 70,000 on 6/7	75.0 (37.2 + 37.8)	52
		LSD (0.05) = 15.4	NS

^aTotal population (first planting population+ second planting population).