

Stands Resulting From Low-Seeding Rates Of Decorticated Seed With a Precision Planter

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A PRACTICAL TEST PLANTING on a field basis, using four different low-seeding rates to determine the field emergence and resulting stands, was made in Fresno County, California, in October 1947. A John Deere No. 66 precision planter was used to plant at rates of approximately 4, 6, 8 and 10 seeds per foot of row.

Because of the location and date of planting, a bolting-resistant variety, U.S. 56, was used. The actual laboratory germination of the only lot of this seed available was rather low for this kind of trial, but generally satisfactory stands were obtained in all treatments. The seed was decorticated and sized through 9/64-inch and over 7/64-inch round-hole screens. The complete germination and planting data are shown in table 1.

Table 1. Germination—U.S. 56 seed.

Percent		S	D	T	Seedlings per 100 seeds	Seedlings V. U.	Seeds per pound
Normal	Abnormal						
73.0	4.5	41.5	29.0	2.5	107	1.46	54,650
Results of Field Planting							
Treatment	Pounds seed per acre	Seeds per foot		Seeds per 100 inches	Potential seedlings per 100 inches		
A	1.375	4.31		35.92	38.45		
B	1.938	6.08		50.62	54.20		
C	2.500	7.84		65.35	69.90		
D	3.125	9.81		81.72	87.40		

The plots consisted of 4 rows 1,750 feet in length. The plantings were on single-row beds, spaced 30 inches apart. Each rate of seeding was replicated five times, randomized in one block of a 100-acre field. The four rates of seeding were designated as follows: Treatment A, 4 seeds per foot; Treatment B, 6 seeds per foot; Treatment C, 8 seeds per foot; and Treatment D, 10 seeds per foot. These desired spacings, and the actual corresponding pounds of seed used per acre, were secured by using the following gear ratios:

Treatment A	7 to 8	1.375 pounds per acre;
Treatment B	12 to 9	1.938 pounds per acre;
Treatment C	12 to 7	2.500 pounds per acre;
Treatment D	18 to 8	3.125 pounds per acre.

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The planting was made at an average of 2.84 miles per hour and a planter efficiency performance of 98.4 percent. The seed was planted approximately $\frac{3}{4}$ -inch deep in dry ground. The plots were all irrigated within 4 or 5 days after planting, and as is generally practiced on the farm, some anhydrous ammonia fertilizer was added to the first irrigation water. Ground and air temperatures were low throughout the germination and emergence period and the development was slow, but the overall field emergence was relatively high.

The actual planting results as shown in table 1 indicate spacing of seed very close to that originally planned.

A total of five standard 100-inch counts were made in each replicate of all treatments and the average results for each treatment are shown in table 2.

Table 2. Germination Stand.

Treatment	Plant inches	Inches With			Total plants	Percent singles	Percent emergence
		S	D	T			
A	15.9	12.4	2.9	0.6	19.9	78.0	52.0
B	21.0	14.2	5.6	1.2	29.7	67.6	55.2
C	26.7	16.8	7.9	2.0	39.4	62.9	57.1
D	33.1	19.3	10.1	3.7	52.2	58.3	59.6

General Statistical Analyses

As is generally the case, the percentage of singles decreased with the increase in the seeding rate. The increase in the percentage of emergence with higher rates of seeding is difficult to explain since in no case were there enough plants coming through the ground to affect, or help, emergence of adjacent plants. Since the ground speed of the drill was controlled to 2.84 miles per hour for all seeding rates the only variable was the rate of plate travel which increased with each progressive gear change. It is possible that excessive cell fill and attendant seed damage decreased with higher seeding rates, accounting for some increased emergence.

It was planned that thinning would have been completed before the time of this meeting and that a report on time studies to determine the man-hours per acre required to thin all plots to the desired stand of 150 beets per 100 feet of row would be made. Frequent frosts and low mean temperatures have delayed the crop development and thinning has been delayed so that such studies cannot now be made until about the end of January.

This field trial indicates that it is entirely possible to secure good stands of beets from very light rates of seeding, as low as 4 seeds per foot, where improved, processed seed is planted with a precision drill in a well-prepared seedbed.

High field emergence of uniform stands may be expected from very light-seeding rates of decorticated seed, by planting in dry beds with a good precision drill and following with irrigation.