

COMPARISON OF VARIETY TRIAL RESULTS WHEN SPACE PLANTING TEST PLOTS AT 4.5" VERSUS 1.3" AND HAND THINNING

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Our variety tests have traditionally been planted thick and hand thinned. Growers for Monitor Sugar all plant to a stand, using a seed spacing of 4.8 inches in 1994. This study was initiated by growers who questioned whether variety tests should be space planted to reflect their normal growing conditions.

From 1989 to 1993 the commercial varieties were planted in duplicated trials, one at a 1.3 inch seed spacing and hand thinned, the other study was space planted with no thinning. The space planted trials were planted at 5.1, 5.1, 5.1, 4.0 and 4.75 inches, respectively, for the five years.

Table 1 compares the stands produced. The growers' stand count was recorded in late August, whereas the stands from each trial were counted at the time of harvest. The commercial test had a seed spacing of 1.3 inches and was hand thinned with relative uniformity. When planting to a stand, there was more variability between locations, and it appeared on both the high end (1992) and the low end (1989 and 1990). This variability has the tendency to produce questionable results.

Table 2 lists the results from one location-one year that was obviously extremely thin. The stands and the recoverable white sugar per acre (RWSA) are the lowest for ACH-185 and Beta 4534 because of their poor emergence. From observing the test in the field, it was apparent that the stand extremes were not caused exclusively by the variety.

Even when planting variety tests at a 1.3 inch seed spacing, a usable stand is not always achieved. In 20 out of 68 locations (29%), plots with a 1.3 inch seed spacing have been lost, usually because of poor stand establishment. The potential loss would be much higher if considerably less seed was used as in space planting.

Table 3 contains HMI E-4 that has a significantly better stand (5% level) than all other varieties. The stands were recorded as the beets entered the weigh hopper on the harvester, and although this variety has the best stand, it also has the lowest RWSA.

COMPARISON OF VARIETY TRULITE WHEN SPACE PLANTING
TEST PLOTS AT 4.5" VERSUS 7.5" AND HAND THINNING
STANDS

Beets Per 100 Feet

	<u>Commercial Test Space Planted</u>	<u>Commercial Test Hand Thinned</u>	<u>Growers' Stand Field Location</u>
1989			
Location 1	52	116	124
Location 2	95	116	
1990			
Location 1	63	116	134
Location 2	105	119	
1991			
Location 1	81	131	100
Location 2	136	101	
1992			
Location 1	109	104	117
Location 2	147	132	
1993			
Location 1	143	--	137
Location 2	138	123	
Location 3	128	123	

TABLE 2

SPACE PLANT

<u>VARIETY</u>	<u>RWSA</u>	<u>% SUGAR</u>	<u>RWST</u>	<u>TON/ACRE</u>	<u>BEET/100'</u>
USH-23	3438	16.17	229.3	14.99	68
HMI E-4	3344	17.20	244.8	13.66	60
HMI E-7	3006	17.14	243.3	12.36	46
HMI E-9	2974	16.42	229.2	12.98	50
ACH 176	2868	16.40	223.2	12.85	51
ACH 185	2394	16.56	231.3	10.35	39
ACH 197	2814	16.76	239.2	11.77	50
ACH 84-232	3154	17.27	244.1	12.92	58
Beta 4534	2194	15.74	216.1	10.15	37
Beta 5315	3137	17.58	253.8	12.36	57
GM	2932	16.72	235.4	12.44	52

TABLE 3

**SPACE PLANTING
AVERAGE OF 3 YEARS**

VARIETY	RWSA	% SUGAR	RWST	TONS/ACRE	BEETS/100'
ACH-197	5316	18.94	277.9	19.15	126
ACH-185	5267	19.22	281.1	18.75	124
HMI E-4	5125	18.08	260.0	19.73	141
HMI E-9	5461	18.70	273.2	20.02	124
HMI E-10	5233	19.09	279.6	18.79	119
BETA 5315	5343	19.69	290.2	18.44	129
BETA 5603	5546	19.38	285.4	19.47	126
GM	5327	19.01	278.2	19.19	127

Results and Observations

In comparing consistency within each test, planting thick and hand thinning produced more reliable results. When comparing a variety from one year to the next, the plant thick and hand thin test had only one change of more than 4 percent. Conversely, in the space planted test, a variety changed more than 6 percent on 9 different occasions. The space planted test is less consistent, which could explain some of the differences noticed in this comparison test.

Would the variety approval results differ with either test? Over this testing period, four varieties were disapproved and three gained approval. These varieties would have been the same--whether the seed was space planted or planted thick and hand thinned.

Conclusions:

- 1) With space planting, it is more difficult to establish a usable stand.
- 2) There are more extremes between tests, and within tests, when space planting.
- 3) If a variety has a higher population in a space planted test, it does not always result in more recoverable sugar per acre.
- 4) Results are less consistent from one year to the next in space planted tests.
- 5) The same varieties were approved and/or disapproved in both space planted and planted thick and hand thinned.

We plan to continue planting at 1.3 inches and hand thinning in our future variety trials.