OVERWINTER PLANTING
GUY C. CLARK, EATON, COLO.

Planting plan and Treatment No's.				Plot Nos.
2	3	1	4	4, 8, 12, 16
4	1	3	2	3, 7, 11, 15
3	4	2	1	2, 6, 10, 14
1	2	4	3	1, 5, 9, 13

Treatment:

1. 20" rows; seed planted in furrows. Furrows made by irrigation shovels on beet cultivator. Fall irrigation in the row.

2. 20" rows; standard beet planting. Irrigated in furrow between the rows.

3. 10" rows. Twice over plot with standard beet planter. Flood irrigated.

4. 7" rows. 7 inch spacing planted with Planet Jr. hand drill. Flood irrigated.

Cabbage ground plowed and irrigated. Worked down when dry enough and planted August 24th. Rate of seeding was approximately 14 lbs. per acre. Germination stands fair to good, but irregular. Stand on 7" and 10" spacings averaged very good. Stand on both 20" spacings were only fair. 20" in furrow not quite as good as standard planting. Irrigated in September and December. Beets made satisfactory growth and most were 1/4 to 1 inch in diameter just below crown when growth ceased.

Winter of 1937 - 38 was milder than normal with light snow cover at most of the colder periods. Ground remained frozen from mid December to late February. Alternate freezing and thawing of the ground surface was probably rather less than usual. For all practical purposes survival was excellent and where initial stands were adequate the April 1 stand was still adequate for good seed production.

In view of the generally adequate survival on all the treatments the possible information from actual yields of seed did not appear to warrant the additional cost of growing and harvesting the crop. Therefore this test was abandoned as of March 31, 1938.

OVERWINTER PLANTING, GUY CLARK FARM
RATON, COLORADO 1937-38
STANDS AND SURVIVAL 3-29-38

Plot Summaries

Treatment	Plot No.	Fall Stand*	Spring Stand*	Per cent Survival	Plants/sq. ft. 3-29-38
20" in furrow	1	46	36	78.3	1.44
	7	59	44	74.6	1.76
	12	42	36	85.7	1.44
	14	81	76	93.8	3.04
Average		57	48	83.1	1.92
20" Standard	4	94	63	75.9	2.52
	5	83	49	79.0	1.96
	10	59	40	67.8	1.60
	15	83	65	78.3	2.60
Average		80	54	75.2	2.17
10" Drilled	2	88	71	80.7	5.68
	8	78	68	87.2	5.44
	11	103	94	91.3	7.52
	13	88	81	92.0	6.48
Average		89	78	87.8	6.28
7" Drilled	3	94	86	91.5	10.32
	6	90	71	78.9	8.52
	9	80	67	83.8	6.04
	16	72	65	90.3	7.80
Average		84	72	86.1	8.67

* Plants on five 3 foot sections of row (15 feet) per plot.

OVERWINTER PLANTING, GUY CLARK FARM
EATON, COLORADO 1937-38
STANDS AND SURVIVAL 3-29-38

GENERAL SUMMARY

Treatment	Fall* Stand	Spring Stand*	Percent Survival	Plants/sq. ft. Spring
20" in furrow	57	48	83.1	1.92
20" Standard	80	54	75.2	2.17
10" Drill	89	78	87.8	6.28
7" Drill	84	72	86.1	8.67
Mean	77.50	63.25	83.07	4.76
Z			.5227	2.0402
5% Point			.7796	.7796
1% Point			1.1401	1.1401
Standard Error			6.597	.854
Standard Error of Mean			3.3	.427
Standard Error of Mean in % of the Mean			3.97%	8.97%
Difference required for significance			14.85%	1.92 plants

* Plants on five 3 foot sections of the row (15 feet) per plot.

Discussion:

While differences in percent survival were not significant in this test many of the plants in the twenty inch standard planting, while alive, did not appear to be starting new growth as vigorously as most of the plants in the other three methods.

While this test is not conclusive it, and observation of other tests, indicates the probability that any planting method which leaves the general surface of the ground fairly level with the crowns of the plants slightly below the general level of the ground will give the best survival. It will probably be difficult to obtain uniformly good stands by planting in furrows twenty inches apart; particularly if a germination irrigation is applied, running the water in this furrow. Where weeds are not a factor and cultivation will not be necessary seeding with a grain drill seems to be a logical method. Such seeding leaves the general surface level and the beet plants are in the slight depression of the drill row. Dates of planting tests and observation of frost injured and killed beet plants indicate that two general classes of beet plants are particularly liable to frost injury: first very young plants and second older plants which have grown vigorously and attained relatively greater size. Seeding with a grain drill in close spaced rows at an appropriate date results in plants old enough to be well established when growth ceases in the fall and which are relatively smaller because of the competition in the close spaced rows as compared to plants in wide spaced rows where competition has been less and growth has usually been further stimulated by cultivation. Grain drill seeding appears to place the plants in the most advantageous position to resist frost injury and to promote a type of growth resulting in a plant physiologically best adapted for resistance to frost injury.

It should be noted that the drill treatments in the Eaton test were not planted with a grain drill and while the desired row spacings were attained the slight furrows made by a drill shoe were not attained in these plantings, particularly in the case of the plots seeded with the Planet Jr. hand drill. Also the above discussion of grain drill seeding is essentially theoretical, but is supported by limited, qualitative observations and the 1937 seed yields from the Windsor test.

OVERWINTER VARIETY SEED TEST
WINDSOR, COLORADO
1937-38

(Cooperative with Great Western Sugar Company)

Varieties Used:

No. 1. U. S. No. 12. Seed received spring of 1936.
No. 2. Schreiber SS. Seed of German Origin. Received spring of 1935.
No. 3. Great Western. 1935 crop seed.
No. 4. Great Western. 1937 crop seed. 100 plants surviving severe winter killing. 1936-37.
No. 5. Great Western. 1937 crop seed. (Maddox: group 3716).

Object of Test:

The principal object was to test winter hardiness; particularly of the previously overwintered seed lots in comparison with those which had not overwintered in northern Colorado.

Culture:

Planted August 17 on heavily fertilized land prepared for overwinter seed crop. Irrigated after planting. Excellent stands were secured which made good growth and went into the winter at a desireable stage of growth and in good condition. A late winter irrigation was applied and such irrigations applied as were needed after growth started. The seed was cut about August 1st. two center rows, 60 feet in length of each plot being cut by hand.

Discussion:

Soil variability appeared to be very great in this part of the field as indicated by the 1938 growth of these plots.

Winter killing was negligible so far as it affected the seed crop, since excellent stands survived on all plots with the exception of a short part of a few rows which were on an exposed ridge. However the previously overwintered varieties appeared to have slightly better survival, particularly as evidenced by the vigor of early growth. The early growth of Nos 1 and 2 in particular was slower and less vigorous in comparison with Nos. 4 and 5.

Differences in seed yield were not significant.

Plot and general summaries follow.

OVERWINTER VARIETY SEED TEST
WINDSOR, COLORADO.
1937-38.

Plot Summaries

Variety Number	Plot Number	Lbs. Seed (Clean)	Variety Number	Plot Number	Lbs. Seed (Clean)
1.	3	4.6	2.	4	2.4
	6	6.6		8	4.3
	15	7.1		11	8.7
	17	8.3		20	6.4
	24	5.5		22	6.1
Mean		6.42	Mean		5.58
3.	1	4.6	4.	2	1.0
	9	6.4		10	8.3
	12	7.2		13	5.8
	18	7.7		19	10.2
	25	6.0		21	7.0
Mean		6.38	Mean		6.46
5.	5	7.0			
	7	7.8			
	14	8.4			
	16	10.6			
	23	6.6			
Mean		8.08			

General Summary

Variety	Pounds Clean Seed
No. 1, U. S. No. 12	6.42
No. 2, Schreiber 88.	5.58
No. 3, Great Western. Stock seed.	6.38
No. 4, Great Western. 100 plants surviving severe winter 1936-37.	6.46
No. 5, Great Western. (Maddox: Group 3716)	8.08
General Mean	6.584
z	.3666
5 percent point	.5907

Difference not significant.