STRIP PLANTING 1938

FORT MORGAN TEST

Four row strips of Rocky Ford 1937 Seed No. 304 and the parent stock of this strain; Rocky Ford 1935 Seed No. 520 were planted on the Walter Hoechstenback place east of Fort Morgan. A four row strip of commercial Great Western was planted between these strips for comparison. The thinners left a quite uniform stand on all three strips with an average spacing of approximately sixteen inches in the row. All beets in twenty 20 foot sections of the inside two rows of each strip were harvested in mid October and the data analyzed by Student's Method of paired comparisons.

FORT COLLINS TEST

Eight rows were planted on the south center border of the College Farm experimental field to Great Western commercial seed at the rate of approximately 8.5 pounds of seed per acre. The germination stand was only fairly good from this low rate of seeding and was not uniform. There were numerous blanks in the rows from 10 to 30 inches in length. Four of these rows were thinned in the usual way and the other four were chopped out with a long handled hoe. Slightly less than half as much time was required for the hoe thinning as for the usual method. Where seedlings were available the hand thinners left plants spaced at an average distance of about eight inches. Under like conditions of germination stand the hoe thinned rows had hills of beets spaced 10 to 15 inches apart. Many of these hills had two or more plants in them. Sampling was the same as for the Fort Morgan strips.

SAN LUIS VALLEY TEST

Rocky Ford 1937 Seed Nos 302 and 304 were grown in comparison with Synthetic Check on the James Ross farm, near Alamosa. 302 goes back through two sib pollinated generations to 1933 Breeding Strain No. 62. This No. 62 was the progeny of a single root selfed by isolation in 1932; and gave promise of being a high tonnage line with good shaped roots; percent sucrose was not high. Seed of the first sib pollinated increase was poor in quality and due to poor stands no adequate test was secured. The third generation of this selection was produced from a large group of roots in 1937. This seed was of better quality than the second generation, but was still relatively poor and stands secured in 1938 from it were only fair at best.

304 is the same strain used at Fort Morgan.

A summary of the above comparisons follows.

STRIP PLANTINGS 1938
SUMMARY
FORT MORGAN. 20 PAIRED COMPARISONS

	T.Beet Per A.	% Sucr.	Ann.Coef of Par.	Lbs.Sug.per A. Gross	Lbs.Sug.per A. Ind.Av	Beets Harv.	M'k'table Beets
1935 Rocky Ford Seed No 520	18.37	11.97	88.64	4388	3892	14.10	all
Commercial check	17.98	13.46	88.88	4840	4303	14.90	all
t for N equals 19	.910	6.905	.581	3.552	3.351		
P	> .3	< .01	> .5	< .01	< .01		
1937 Rocky Ford Seed No 304	17.99	12.32	88.46	4433	3923	14.85	all
Commercial check	17.98	13.46	88.88	4840	4303	14.90	all
t for N equals 19	.238	7.308	1.028	3.832	3.918		
P	> .8	< .01	> .3	< .01	< .01		
1935 Rocky Ford Seed No 520	18.37	11.97	88.64	4388	3892	14.10	all
1937 Rocky Ford Seed No 304	17.99	12.32	88.46	4433	3923	14.85	all
t for N equals 19	.813	2.107	.448	.339	.260		
P	> .4	< .05	> .6	> .7	> .8		

FORT COLLINS THINNING TEST 20 PAIRED COMPARISONS

Hand Thinned	17.68	13.92	89.52	4918	4404	22.7	20.5
Hoe Thinned	13.84	13.50	89.62	3719	3330	32.40	24.6
t for N equals 19	7.321	2.878	.244	8.668	8.666		
P	< .01	< .01	> .8	< .01	< .01		

STRIP PLANTING 1938
SUMMARY
SAN LUIS VALLEY

	T.Beets Per A.	% Sucr.	Sucar per A. Gross pounds
Rocky Ford 1937 Seed No. 302	10.67	17.3	3683
Synthetic check.	15.08	17.6	5327
t for N equals 4	3.371	1.649	3.610
P	< .05	> .1	< .05
Rocky Ford 1937 Seed No. 304	14.48	16.1	4658
Synthetic Check	13.57	17.5	4763
t for N equals 6	.785	6.670	.305
P	> .4	< .01	> .7

Discussion:

The main point of the Fort Morgan test was the comparison of 304 with the parent stock; No. 520. 304 in this test yielded slightly less in tons of roots and slightly more in pounds of sugar per acre than the parent stock. Neither of these differences are significant. Although still relatively low in percent sucrose 304 exceeds the parent stock by .35%; this difference probably being significant. The indications are that the reselection has not reduced yield of roots in this strain and that the quality has been improved. Neither 520 or 304 significantly exceeded the commercial check in tonnage in this test and due to lower percent sucrose in 520 and 304 the check significantly exceeded them in pounds sugar per acre in this test. Although this strain is distinctly a high tonnage beet the top growth is relatively scanty and it is possible that in this test 520 and 304 were spaced too wide for maximum production.

In the San Luis Valley the performance of 304 in comparison with Synthetic Check is fairly satisfactory; particularly its tendency to produce a high yield of roots in this cool climate.

The performance of 302 in the San Luis Valley is in line with the results of the Strain trial on the College Farm at Fort Collins which have been previously discussed.

The above numbers; 520, 302 and 304 were included in a test of 92 varieties and strains made at Sheridan Wyoming by the Holly Sugar Corporation. Actual yields are shown below.

Variety	Sucrose		Tons Per Acre		Lbs. Sug. Per A	
	%	Rank	Tons	Rank	Gross	Rank
R. & G. Normal	18.05	32	15.39	32	5548	26
520	16.30	91	17.36	2	5687	13
304	16.83	89	17.60	1	5904	4
302	17.34	77	12.36	89	4296	91
Dif. nec. for Sig.	.636		1.406		516	

Summing up the evidence from the above trials and the Strain trial on the College Farm the conclusion is that first reselection of the sugar - red hybrid (Rocky Ford 1935 Seed No. 520) has resulted in an improvement of quality without sacrifice of tonnage. A reselection comparable to the above No. 304; unselected increases of both 520 and 304 and several backcross combinations of this stock produced seed in 1938 and will be planted for yield tests in 1939.

No. 302 has definitely failed to indicate any particular value as a commercial variety.

The data from the thinning test on the College Farm field indicates that the saving in time by the hoe thinning is much more than offset by the loss in yield. This test was inadequate for any very definite conclusions. However it is in line with the results obtained by Mr.Mervine, Bureau of Agricultural Engineering, from his extensive tests of mechanical thinning which were made in a nearby field on the College Farm. It is evident that too many beets were left when only a hoe was used to reduce the germination stand and from this it appears probable that for mechanical thinning to be a success a thin even germination stand is highly desireable and that given such a stand the tendency to leave too many plants must be overcome in some way.