

COMMERCIAL VARIETY TRIALS, 1937, BRUSH, COLORADO

H. L. Bush, National Seed Company, Inc.

This complete test included all of the important European varieties as well as the American productions. For the purpose of this report the results of the various European varieties are not included since the committee in charge of the program has decided not to have them reported.

It may be stated that R & G "Normal" which was used as a check in this test was purchased from the Sugar Company out of their regular commercial stock so that a true picture of the varietal performances could be obtained.

The results which are presented were taken from a field which had been artificially infected for leaf spot so that a very severe infection resulted.

Results are as follows:

Variety	Actual Yields			Compared to check 100%			
	Beets Tons per Acre	Sucrose Lbs. in percent	Sugar Lbs. Per Acre	Beets Tons Per Acre	Sucrose Lbs. in Percent	Sugar Lbs. per Acre	Leaf spot Reading
R&G"N"check	16.56	13.94	4617	100.0	100.0	100.0	4
R&G"C"2152	15.75	15.31	4823	95.1	109.8	104.5	2-1
R&G"C"2153	13.95	16.07	4484	84.2	115.3	97.1	1-2
U. S. #217	15.80	15.06	4759	95.4	108.0	103.1	2-1
Great Western	17.87	14.33	5122	107.9	102.8	110.9	3-4
U. S. #33	15.44	13.59	4197	93.2	97.5	90.8	4
U. S. #34	14.90	13.27	3954	90.0	95.2	85.5	4
Amalgamated 600	15.26	13.69	4178	92.1	98.2	90.4	4
Diff for Sig	1.31	.11	578				

These results show that Great Western yields good in sugar per acre under these conditions of severe leaf spot infection, while not exhibiting much apparent resistance, but since this sugar yield comes from a comparatively high tonnage; whereas, the good yields of U.S. 217 and R & G 2152 are made up from a lower tonnage and high sucrose content. The problem of handling the beets economically might be a deciding factor to determine the more desirable variety.

R & "C" 2152 and 2153 are varieties developed as a result of our trial field in Spain.

Tests of the Curly Top Resistant varieties were also conducted at Delta, Colorado, under quite severe curly top infected conditions.

The results of these tests follow:

Variety	Actual Yields		Compared to Check 100%				Curly Top Reading
	Beets Tons per Acre	Sucrose in Percent	Sugar Lbs. per Acre	Beets Tons per Acre	Sucrose in Percent	Sugar Lbs. per Acre	
R&G "N" Check	9.05	17.27	3126	100.0	100.0	100.0	4
R&G Old Type	9.86	17.12	3376	109.0	99.1	108.1	4
Amalgamated "600"	14.49	16.38	4747	160.2	94.8	151.9	2-1
U.S. #33	13.77	17.07	4701	152.2	98.8	150.4	2-1
U.S. #34	15.30	16.73	5119	169.2	96.9	164.0	2-1
Resistant Mix	14.13	16.95	4790	156.2	98.1	153.3	2-1
Diff. for Sig.	1.28	.37	420				

It may be seen from the foregoing results that the Curly Top Resistant Varieties are only adaptable to the growing conditions for which they are bred.

Apparently a universal beet will be hard to obtain.

REPEATED TESTS OF BREEDING STRAINS, BRUSH, COLORADO

In the fall of 1934 we made individual mother beet selections on the basis of leaf spot resistance from the various strains grown in our trial field that year. Seed was produced by means of space isolation from these mothers in 1935 and this seed given a preliminary test in 1936. The good performers in 1936 were retested in 1937. Results for both years being obtained under artificially infected leaf spot conditions.

A large part of this material was taken from families developed by our company for resistance to leaf spot in Spain so we are assured that there must be a reasonable amount of purity for the resistant character in these particular selections. Accordingly the more desirable strains will be increased.

The results of this test follow:

Variety	Actual Yield			Compared to Check 100%			Leaf Spot Reading
	Beets Tons per Acre	Sucrose in percent	Sugar Lbs. per Acre	Beets Tons per Acre	Sucrose in Percent	Sugar Lbs. per acre	
R&G "N" check	15.39	13.27	4085	100.0	100.0	100.0	4
5063	14.27	15.71	4484	92.7	118.4	109.8	1
5067	13.91	16.01	4454	90.4	120.6	109.0	1
5079	13.37	15.57	4163	86.8	117.3	101.9	2-1
5081	14.94	15.45	4616	97.1	116.4	113.0	1-2
5082	15.71	15.13	4754	102.0	114.0	116.4	1-2
5083	13.86	15.40	4269	90.1	116.1	104.5	2-1
5086	13.59	16.16	4392	88.3	121.8	107.5	1-2
50594	13.23	16.61	4395	86.0	125.2	107.6	1
50595	14.99	16.48	4941	97.4	124.2	121.0	1-2
50596	16.20	15.48	5016	105.3	116.7	122.8	2-1
50598	15.84	13.61	4312	102.9	102.6	105.6	1-2
50601	14.54	15.67	4557	94.4	118.1	111.6	1-2
50603	14.00	15.41	4315	90.9	116.1	105.6	2-1

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50605	15.26	15.64	4763	99.1	117.9	116.6	1
50606	14.58	15.27	4453	94.7	115.1	109.0	1-2
50607	12.51	15.87	3971	81.3	119.6	97.2	1-2
50608	13.73	15.32	4207	89.2	115.4	103.0	2-1
50609	14.40	14.92	4297	93.6	112.4	105.2	1-2
50610	17.78	16.94	6024	115.4	127.7	147.5	1
50611	16.79	18.24	6125	109.1	137.5	149.9	2-1
50612	18.86	17.14	6465	122.5	129.2	158.3	2-1
50616	16.52	14.37	4748	107.3	108.3	116.2	2-1
50644	15.03	16.81	5053	97.7	126.7	123.7	2-1
50681	15.12	16.68	5044	98.2	125.7	123.5	1-2
Diff. for Sig.	1.34	.32	433				

It will be noticed that nearly all of these strains have a high sugar content with relation to the yield. This is because of selections being made from our Spanish material as the type of beet grown in Spain is the extreme sugar type.

The sugar yield is, in some cases, very satisfactory even with the rather low yield in tonnage. However, it may be stated that the tonnage for most of these strains is considerably better than that of the material from which the selections were made showing that adaptability to this country is already asserting itself in tonnage without lowering the sugar content after one year of inbreeding in this country.

We are of the opinion that this work is valuable because it can be compared with work of a similar nature in European countries where leaf spot is prevalent.

CURLY TOP RESISTANT VARIETIES

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Curly-top areas will probably depend upon sugar beet seed from U.S. 33 and U.S. 12 for a considerable portion of acreage for the next two or more years. U.S. 33 is higher in sugar and is probably acknowledged as the better variety where curly top is not a serious factor. U.S. 12 is more resistant to curly top, however, and usually gives a reasonably good performance in yield of sugar per acre. Five new strains are now to be considered as competitors with U.S. 33 and U.S. 12. These strains are known at present only by temporary numbers assigned by the Division of Sugar Plant Investigation at Salt Lake City. If any number is decided upon for commercial distribution a U. S. number will be assigned later.

The tables give comparisons of U. S. 33 and U. S. 12 and numbers 610, 611, 612, 622, and 623. At Buhl, Idaho, all of the new numbers were highly resistant to curly top, and in this respect roughly comparable with U. S. 12. Number 610 is more of a sugar type, while 622 and 623 are more on the order of yield types, and 611 and 612 are probably intermediate.

With regard to bolting tendency, number 610 and 612 may bolt nearly as