PERFORMANCE OF TONNAGE, INTERMEDIATE AND SUGAR TYPES IN SOME INTERMOUNTAIN DISTRICTS

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No one variety or type of corn, wheat, oats or potatoes is entirely suitable or adapted to all climatic conditions. Results of tests from many sources show that the same may be true for sugar beets and it appears that there is no such thing as a universal variety.

The desire that each factory district have a high yielding, sweet beet of good quality for maximum production of sugar, has been the goal of all sugar companies for years. Tests for adaptability have been made from time to time at various places in the United States for the last thirty years or so. The most extensive type study on record is that conducted by the Division of Sugar Plants. 1/ This circular reports results with nine brands of imported sugar beet seed in 44 tests in a four year series at thirteen locations. One of the conclusions of this circular is that "the best agricultural practice cannot overcome the use of a type of beet unsuited to that area."

Imported sugar beet seed has been divided into three general types according to the producers as: (1) Tonnage, or yield type, where total yield of roots per acre is stressed; (2) Sugar type, where a high sugar content per root is obtained; and, (3) Intermediate type, which combines as far as possible, both yield and sugar type characteristics to a certain degree.

In order to determine the type or types of sugar beets best suited to each of our northern factory districts the three types were placed in our tests, seed being chosen from the most reliable European sources.

The study reported in this paper is based on data obtained in detailed variety tests during 1937, 1938 and 1939 in Holly Sugar Corporation factory districts in Montana and Wyoming. The area covered ranges geographically over 7° in latitude, or about 500 miles, extending from Sidney, Montana, which is very close to the Canadian border, to Torrington, Wyoming, near the Colorado State line. The elevations vary from about 1900 feet above sea level at Sidney to 3800 feet at Sheridan and 4000 feet at Worland and Torrington. The soils on which the tests were conducted were of average productivity for the respective districts. The average season between planting the seed and harvesting the crop was as follows: Sidney, Montana, 146 days; Hardin, Montana, 145 days; Sheridan, Wyoming, 146 days; Worland, Wyoming, 162 days; and Torrington, Wyoming, 171 days. Although the season in days is longer at Torrington, the actual sunlight at Sidney makes up for a portion of this difference, because the days are much longer in the northern area and actual growth and development of the plant is correspondingly greater per day.

Summary data covering these tests for three years is presented herewith:

1/ Skuderna, A. W. et. al. 1938. EVALUATION OF SUGAR BEET TYPES IN CERTAIN SUGAR BEET GROWING DISTRICTS IN THE UNITED STATES. U. S. D. A. Cir.476, 28 pp. illus.

TYPE PERFORMANCE IN CERTAIN MONTANA AND WYOMING LOCATIONS

Type	Sidney	Rank	Hardin	Rank	Sheridan	Rank	Worland	Rank	Torrington	Rank
PERCENT SUCROSE										
Sugar	16.31	3	16.95	1	16.66	1*	16.95	1	14.33	2
Intermediate	16.57	1	16.75	2	16.63	2*	16.85	2	14.43	1
Tonnage	16.34	2	16.55	3	16.29	3	16.50	3	13.67	3
Diff. for Sig. Odds 19:1	.43		.70		.25		.77		1.08	
TONS PER ACRE										
Sugar	18.808	2	16.189	3	13.075	2	15.722	3	15.746	3
Intermediate	17.802	3	18.618	1*	12.844	3	16.575	1	16.411	1
Tonnage	19.804	1*	17.401	2	14.096	1*	16.514	2	16.127	2
Diff. for Sig. Odds 19:1	1.298		2.134		.764		1.021		1.680	
GROSS SUGAR PER ACRE (Pounds)										
Sugar	6140	2	5612	3	4372	2	5334	3	4518	2
Intermediate	5930	3	6379	1	4299	3	5552	2	4740	1
Tonnage	6504	1*	5910	2	4617	1*	5611	1	4403	3
Diff. for Sig. Odds 19:1	435		779		250		503		606	

*Significantly superior.

A study of these data shows that the seed types performed as advertised for sucrose content, the sugar and intermediate types being sweetest.

The best average returns in tons per acre were obtained from the tonnage and the intermediate types. In production of roots variation for locality became manifest, the heavy yielding types forging ahead at Sidney and Sheridan and the intermediate types being leaders at the other places.

In gross sugar per acre, which is a criterion for selection, the tonnage type averaged highest, the intermediate next and sugar type third, with types indicated for locations as follows: Sidney, tonnage; Hardin, intermediate; Sheridan, tonnage; Worland, tonnage and intermediate; and, Torrington, intermediate.

In general tonnage types were indicated for the more northern areas and intermediate types for the southern portion of the locations studied.