EVALUATION OF SUGAR BEET VARIETIES IN CENTRAL OREGON, 1996

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Abstract

Evaluation of sugar beet varieties in central Oregon was abandon in the Prineville area due to freeze damage, but was conducted at the second location in Culver where a strong stand was established. Sub-samples of the 18 varieties were sent to the Beet Sugar Development Foundation to be evaluated for curly top resistance. The 2-row x 20 ft plots were rated for stand establishment and plants hand thinned to 7 inches apart May 31. A single row per plot was harvested September 26, and samples transported to Spreckles Sugar, Woodland, California for determination of weight, percent sugar, and ppm nitrate. Comparison of varietal performance is provided in Table I.

Introduction

The seed evaluation committee of the Central Oregon Beet Growers Association determines what varieties may be grown in central Oregon based on yield, sugar, and resistance to beet curly top virus. The objective of this project was to evaluate sugar beet varieties submitted by seed companies at two locations, in the Prineville and Culver areas. This information, along with local large plot and field data, will assist the seed evaluation committee in their decision concerning variety selection.

Methods and Materials

Eighteen varieties submitted by five sugar beet seed companies were planted in commercial fields near Prineville April 16 and near Culver April 23. An Earthway push planter was used for the 2-row x 25 ft plots, replicated four times in a randomized complete block design. Sub-samples of each variety were sent to the Beet Sugar Development Foundation to be evaluated for curly top resistance at Kimberly, Idaho.

Freeze damage occurred at both locations, with replanting of the commercial production outside of the plots. Plant emergence in the plots was earlier due to a slightly shallower planting depth, and greater due to a higher seeding rate to insure an adequate stand. With less freeze damage than the field, plots were not replanted at either location. An excellent stand emerged at the Culver location, but lack of continued emergence at the Prineville location forced abandonment of the trial.

Plots were evaluated for stand establishment May 31 using a rating scale of 1 (poor) to 5 (excellent), prior to hand-thinning to 7 inches between plants. Remaining skips and doubles were removed June 14. A single row of the double-row plots was harvested September 26, and samples transported to Spreckles Sugar for determination of weight; percent sugar, and ppm nitrate.

Results and Discussion

Results of the Culver location are provided in Table 1. Although percent germination was rated low for some varieties, after hand thinning to 7 inches between plants, all plots had equal, full stands. As a result, germination ratings had no influence on yield, sugar, or total sugar per acre Since plots were harvested early in the season, yield and sugar levels may not be comparable with specific field results. The evaluations should be used to compare differences between varietal performance within the same trial where they were grown under the same conditions, rather than making a comparison with other field harvest data. Variety performance in commercial fields in central Oregon is available, and should be consulted in addition to this evaluation prior to future management decisions.

During the February 27, 1996 meeting of the Central Oregon Beet Growers Association seed evaluation committee a decision was made to not allow varieties that were rated with symptoms greater than 125 percent of the standard curly top resistant variety. This will be based on an average of three years of trials, so ratings could vary from those listed in Table 1.

Table 1. Sugar beet varieties planted April 23 and harvested September 26, 1996 in a commercial field near Culver, Oregon.

Variety	Seed company	Stand'		Yield		Sugar	Total Sugar	Nitrate	Curly Top Virus: Visual rating	Curly Top Virus: Percent of standard
				(tons/a)		(percent)	(lb/a)	(ppm)	(0-9)	(percent)
5CG7004	Betaseed	2	de[1]	37.62	a	17.4	13,092	14.8	5.3	118
5CG7010	Betaseed	3.8	abc	34.65	ab	17.3	11,989	19.2	4.8	107
4CG6245	Betaseed	3.3	cd	33.66	ab	17.6	11,848	14.4	5.7	127
3BG6360	Betaseed	1	e	33.17	ab	17.6	11,676	18.3	5.9	131
Beta 8450	Betaseed	4	abc	33.66	ab	17.3	11,646	18.9	5.4	120
Beta 8256	Betaseed	3.8	abc	32.67	ab	17.8	11,631	15.9	6.4	142
WS 62	Hilleshog	4.3	abc	34.16	ab	17.0	11,614	17.4	4.3	96
Ranger	Seedex	3.8	abc	33.17	ab	17.3	11,477	11.8	5.2	116
ACH 203	American Crystal	4.3	abc	33.17	ab	17.2	11,410	15.8	6.0	133
Chinook	Seedex	4	abc	33.17	ab	17.0	11,278	19.3	5.4	120
Beta 8422	Betaseed	3.7	abc	31.68	ab	17.7	11,215	13.9	4.9	109
Canyon	Hilleshog	4.3	abc	32.67	ab	17.0	11,108	17.0	4.4	98
HH 50	Holly	5	a	32.67	ab	16.9	11,042	17.9	5.7	126
HM 5892	Hilleshog	4.5	abc	32.67	ab	16.9	11,042	17.6	5.3	118
Beta 4885	Betaseed	4.3	abc	31.19	ab	17.7	11,041	15.9	5.5	122
ACH 211	American Crystal	3.8	abc	31.19	ab	17.3	10,792	15.9	5.8	129
WS 91	Hilleshog	4.8	ab	30.69	ab	17.3	10,619	17.3	4.9	109
HH 86	Holly	3.5	be	27.72	b	17.5	9,702	22.8	5.6	124

' Plots were evaluated for stand establishment on May 31, 1996 using a rating scale of 1 (poor) to 5 (excellent). [2] Varieties followed by the same letter(s) are not statistically different from one another.