BEET (*Beta vulgaris*)
    Beet curly top; *Beet curly top virus*

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Evaluation of experimental sugarbeet hybrids for resistance to beet curly top in Canyon County, ID, 2004.

Experimental sugarbeet hybrids were evaluated for resistance to *Beet curly top virus* in a commercial sprinkler-irrigated sugarbeet field near Nampa, ID where beet curly top had been a problem in previous years. The field trial relied on natural infection and was planted on 19 Mar. The plots were planted to a density of 190,000 seeds/A, and thinned to 35,640 plants/A. Plots were four rows wide (22 in-row spacing) and 36 ft long. The experimental design was a randomized complete block design with seven replications. The crop was managed by the grower according to standard cultural practices. The weather during the growing season was cooler than normal and disease pressure was uniform and moderately severe. Disease data were recorded on 14 Sept by three raters using a disease index of 0 to 9 (no symptoms to dead). The three ratings per plot were averaged prior to analysis. The center two rows were harvested on 20 Oct using a small plot harvester. The sugar content of the beets was determined by the Amalgamated Sugar Co. laboratory, and recoverable sugar (lb/A) was estimated. Data were analyzed using the general linear models procedure (Proc GLM-SAS), and Fisher's Protected LSD was used for mean comparisons.

Yields were above average and disease pressure was moderately severe. The experimental hybrids response to *Beet curly top virus* ranged from acceptable (slight leaf curl to most leaves with moderate curling) to moderately affected (severe leaf curling). Analysis of variance indicated there were significant differences among hybrids in disease index, root yield, sugar content, and estimated recoverable sugar. Disease index for hybrids in this test were positively correlated ($r_s = 0.632$, $P < 0.0001$) with ratings from the 04 Curly Top Nursery in Kimberly, ID. Based on Spearman's Coefficient of Rank Correlation ($r_s = -0.15$, $P = 0.4651$), there was no correlation between estimated recoverable sugar and disease index. This lack of correlation between estimated recoverable sugar and disease index was likely not related to variation associated with the disease rating but rather due to other factors such as field and genetic variation that influenced yield.

Experimental hybrids	Disease index*	Root yield (T/A)	Sugar content (%)	Estimated recoverable sugar (lb/A)
HM PM90..	3.04	46.47	16.90	13897
Crystal 316 R....................................	3.67	48.00	16.33	13832
Beta 2YK0016	3.43	46.26	16.81	13718
04HX438	4.86	44.90	16.26	12976
HM 2995 RZ......................................	4.28	44.57	16.29	12894
Beta 3YK0020	4.38	45.24	15.92	12607
HM 2993 RZ......................................	3.10	43.21	16.39	12416
04HX434	3.28	41.60	16.77	12414
Beta 4YK0023	4.67	42.03	16.55	12310
Beta 3YK0019	4.57	41.23	16.75	12298
04hx422 R	3.86	42.51	16.26	12287
Beta 4YK0025	4.09	40.86	16.75	12149
SX 1522..	4.48	40.16	16.84	12097
04HX437	3.94	40.71	16.72	12073
HM 2992 RZ......................................	4.28	41.64	16.28	12021
Beta 4YK0024	4.38	41.63	16.29	11951
HM 2991 RZ......................................	4.62	39.38	16.75	11850
HM 2994 RZ......................................	3.38	40.10	16.38	11567
Crystal 318 R....................................	4.91	39.83	16.21	11562
04HX431 R..	3.24	38.66	16.67	11509
SX 1521..	4.71	38.10	16.83	11375
Crystal 412 R....................................	3.00	40.20	16.21	11370
04HX436 R..	3.76	39.87	15.92	11180
Crystal 411 R....................................	3.43	37.08	16.14	10494
03HX353 R..	4.86	35.47	16.41	10332
$P > F$**	<0.0001	<0.0001	<0.0001	<0.0001
LSD ($P \leq 0.05$)	0.30	3.74	0.43	993

* Disease index scores were analyzed after the means score for each plot (three ratings per plot) were determined. The disease index scale ranged from 0 = no symptoms to 9 = dead plant.

** $P > F$ was the probability associated with the F value. LSD = Fisher's protected least significant difference value.