BEET (*Beta vulgaris*)
Verticillium wilt; *Verticillium dahliae*

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Verticillium wilt in commercial sugar beet cultivars in Cassia County, ID, 2006.

Commercial sugar beet cultivars were evaluated in a commercial sprinkler-irrigated sugar beet field near Heyburn, ID where winter wheat was grown in 2005. The field trial relied on natural infection of *Verticillium dahliae*. The plots were planted on 28 Apr to a density of 142,560 seeds/A, and thinned to 47,520 plants/A on 15-20 Jun. Plots were four rows wide (22-in. row spacing) and 34.5 ft long. The experimental design was a randomized complete block design with eight replications per cultivar. The field was cultivated on 8 and 20 Jun. The crop was managed by the grower according to standard cultural practices. The percentage of plants with leaves that had dead vein delimited sectors was recorded for the center two rows on 6 Sep. The center two rows were harvested on 25-26 Sep with the aid of a mechanical topper and small plot harvester. The sugar content of the beets was determined by the Amalgamated Sugar Co. laboratory, and recoverable sugar was estimated. Data were analyzed using the general linear models procedure (Proc GLM-SAS), and Fisher's protected least significant difference was used for mean comparisons.

Yields from this trial were below normal for the growing region. Cultivars varied significantly in their symptoms of Verticillium wilt but no differences were recorded for any yield parameter. Root shape and root hair proliferation indicated *Beet necrotic yellow vein virus* (BNYVV) was also present in the field although the foliar symptoms of this disease were not particularly evident. An interaction between BNYVV and *V. dahliae* may have been present and interfered with establishing differences in yield parameters. Based on Spearman's rank correlation coefficient, the means values for leaf symptoms did not correlate with those for root yield, sugar, or estimated recoverable sugar ($P = 0.9443$, 0.7497, and 0.9548, respectively). Good resistance to *V. dahliae* exists in some commercial cultivars based on the reduction in foliar symptoms.

Commercial sugar beet cultivars	Symptomatic plants (%)[z]	Root yield (t/A)	Sugar content (%)	Est. recoverable sugar (lb/A)
Beta 4199R	17.9 a	25.0	15.68	6751.6
Beta 4773R	13.5 ab	24.0	14.82	6146.5
Crystal 316R	12.6 bc	29.0	15.35	7759.1
Eagle R	12.0 bcd	21.6	14.71	5392.1
SX Raptor RZ	10.7 bcde	18.5	14.57	4577.1
HM Owyhee	9.6 bcdef	21.9	14.79	5783.7
Beta 4023R	9.0 bcdefg	23.4	15.40	6237.8
ACH Mustang	8.9 cdefg	20.0	14.48	4991.3
Phoenix R	8.7 cdefgh	25.0	14.16	6016.0
Beta 4720R	8.7 cdefgh	26.1	14.79	6627.8
Beta 4910R	8.6 cdefgh	26.0	15.21	6771.9
Beta 4490R	8.4 cdefghi	26.4	15.64	7147.3
Acclaim R	7.9 defghij	23.8	14.41	5822.0
Crystal 333R	7.8 defghij	26.5	14.24	6393.0
Crystal 217R	6.6 efghijk	25.9	14.91	6619.0
HM 2999 RZ	6.5 efghijkl	21.8	14.14	5289.6
HM 2996 RZ	6.4 efghijkl	24.1	15.30	6450.8
HM 2984 RZ	5.7 fghijkl	24.5	14.77	6325.2
SX 1522 RZ	5.1 ghijklm	20.5	14.88	5241.2
Meridian R	4.9 ghijklmn	24.0	14.09	5735.1
SX Mammoth RZ	4.9 ghijklmn	17.5	14.52	4383.3
Beta 4216R	4.3 hijklmn	26.9	14.90	6836.5
HM 2993 RZ	4.1 ijklmn	20.2	14.65	5247.9
HH 142 R	3.5 jklmn	25.6	14.35	6234.8
Condor R	2.4 klmn	25.5	15.78	7090.2
HM 2988 RZ	2.1 lmn	23.0	15.14	6096.9
HM 2992 RZ	1.1 mn	26.4	15.73	7166.4
HM 2991 RZ	0.4 n	21.2	15.41	5702.5
$P > F$	<0.0001	0.0781	0.0828	0.1854
LSD ($P \leq 0.05$)	4.5	NS	NS	NS

[z] Symptomatic = Verticillium wilt symptoms. Means followed by the same letter did not differ significantly based on Fisher's protected least significant difference value with $P \leq 0.05$. $P > F$ was the probability associated with the F value. LSD = Fisher's protected least significant difference value. NS = not significantly different.