

National Verticillium Wilt Trial
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Three trials were planted on May 4, 2010. Each consisted of three replications of five-hill units of 50 cultivars and advanced selections from the U.S. potato breeding programs. Trial A was planted on a fumigated field and was used to evaluate yield. Trial B was planted on a nearby field that was inoculated with *V. dahliae* in 2006 and has been maintained as a VW screening plot. This field was used to evaluate disease symptom expression, yield in the presence of *V. dahliae*, and colonization of dying stems. Trial C was also planted on the inoculated field and was destructively sampled during the summer to evaluate colonization of green stems.

On July 27 and August 3, 11, and 18, plots in Trial B were scored for percent foliage expressing Verticillium wilt symptoms. Clones with distinct symptoms were not included in samples collected for stem colonization. On August 3, stems from selected clones C were collected in Trial C, surface disinfested, and squeezed in a vice to collect sap for plating. For each plot, 100 ul of sap was plated on selective medium and the plates were incubated in the dark for two weeks. After that, they were microscopically examined to determine the number of colony forming units per 100 ul of sap. On August 20, vines in Trials A and B were killed. On August 30, stems were collected from selected clones in the Trial B field and allowed to air dry at room temperature. Stems were not collected from clones with high symptom and sap scores. All main stems from a plot were ground in a Wiley mill and 50 mg per plot was plated on selective medium. On September 3, Trials A and B were harvested with a single row digger, and tubers from each plot were picked up by hand and weighed.

Data from the trial clones are presented in Table 1. The table is sorted first by symptom expression and then by sap score. Consequently, the most resistant clones are at the top of the table. Yield and yield loss data are also presented. Ranger Russet is the most resistant cultivar check and Russet Norkotah is the most susceptible.

Table 1. Verticillium wilt resistance scores of trial clones. AUDPC = area under the disease progress curve, sap = cfu/100 ul sap, yield = yield on fumigated field (lb./hill), yield loss = [(yield on fumigated field – yield on inoculated field).

<i>Clone</i>	<i>AUDPC</i>	<i>Sap</i>	<i>Yield</i>	<i>Yield Loss</i>
CO99053-3RU	248.3	148.0	4.52	0.11
W8946-1 rus	290.8	6.7	4.81	0.25
A97066-42LB	327.5	618.7	4.13	0.03
AC99375-1RU	450.8	2.7	6.00	1.55
A98345-1	466.3	268.7	5.25	-0.14
BNC182-5	518.3	188.0	6.31	2.08
AF3001-6	553.3	312.0	5.45	0.74
Ranger Russet	601.7	556.0	4.67	0.44
W7449-1 rus	607.5	136.0	4.43	-0.99
A01010-1	631.7	341.3	5.63	1.45

MSR061-1	650.8	506.7	6.69	1.53
MSL292-A	669.2	132.7	4.73	0.25
Atlantic	715.8	960.0	5.26	0.86
AO96305-3	726.7	370.7	4.99	0.45
AC99329-7PW/Y	748.3	642.7	4.93	1.40
A00324-1	760.0	260.0	5.01	1.50
Freedom Russet	784.2	206.7	4.86	0.92
White Pearl	853.3	708.0	5.00	1.36
AF2865-4	876.7	222.7	5.79	0.94
AF0338-17	902.5	456.7	5.35	1.28
MSQ176-5	910.0	268.0	4.27	0.81
ND8229-3	950.8	370.7	4.20	0.21
Megachip	988.3	1000.0	5.72	0.72
B2575-19	1063.3	130.7	5.79	2.00
MSQ070-1	1093.3	485.3	6.17	2.91
NY138	1105.0	162.7	5.02	1.19
CO99053-4RU	1190.0	572.0	4.85	0.22
AC99330-1P/Y	1215.8	158.7	5.91	2.83
W6803-3	1217.5	310.7	4.08	1.35
CO99045-1W/Y	1240.8	490.7	6.87	3.05
B2459-13	1260.0	77.3	4.05	0.64
W2133-1	1260.0	253.3	4.85	1.28
NY141	1271.7	793.3	5.75	1.94
W2310-3	1284.2	576.0	4.74	1.08
Russet Burbank	1315.0	706.7	5.65	1.97
W6234-4 rus	1332.5	860.0	4.01	-1.03
AF3362-1	1394.2	18.7	5.15	2.03
NY144	1413.3	708.0	5.30	1.73
ND8413-7Russ	1455.8	900.0	4.62	2.09
MSH228-6	1496.7	600.0	5.21	1.23
ND7519-1	1512.5	1000.0	5.88	1.77
CO99100-1RU	1520.0	3.0	4.53	1.21
NY145	1529.2	773.3	4.78	1.09
AF2866-3	1591.7	802.7	5.21	0.99
W2717-5	1745.8	140.0	4.82	2.21
Red Norland	1775.8	540.0	5.07	0.63
Superior	1850.0	634.7	5.43	1.59
B2676-2	1912.5	190.7	4.79	1.39
Russet Norkotah	1925.0	720.0	6.04	2.83
ND8068-5Russ	2109.2	84.0	4.11	1.52