

National Verticillium Wilt Trial

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National Verticillium wilt trial. Three trials were planted on May 8, 2012. Each consisted of three replications of five-hill units of 60 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. It included only the seven cultivar standards. 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 25 and August 1, 15, 21, and 28, plots in Trial B were scored for percent foliage expressing Verticillium wilt symptoms. On August 7, stems from all clones in Trial C were collected, 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 29, vines in Trials A and B were killed. On September 4, stems were collected from all clones in the Trial B field and allowed to air dry at room temperature. All main stems from a plot were ground in a Wiley mill and 50 mg per plot was plated on selective medium. On September 11, the seven cultivar standards in Trials A and B were harvested with a single row digger, and tubers from each plot were picked up by hand and weighed.

Symptom and sap data from the trial clones are presented in Table 1. Ranger Russet is considered a resistant cultivar check and Russet Norkotah is a susceptible check. As is typical, variability among reps was high. Both symptom and sap scores were very high in 2012. An unusually hot summer likely contributed to high disease severity. Clones with low symptom and sap counts include AF0338-17, CO02024-9W(1803), W6360-1rus and W8152-1rus.

Table 1. Verticillium wilt resistance scores. AUDPC=area under the disease progress curve, sap = cfu/100 ul sap. Clones highlighted with bold type are potentially resistant to Verticillium wilt. Clones are grouped based on mean maturity score in the Verticillium screening field and then, within maturity group, sorted by mean sap score. Clones with no sap score had high symptom expression, so stems were not collected.

Clone	Mat Aug 15	AUDPC				Sap			
		Rep 1	Rep 2	Rep 3	Mean	Rep 1	Rep 2	Rep 3	Mean
CO02024-9W(1803)	2.7	1455	1235	1435	1375	8	272	88	123
CO02033-1W(1804)	2.7	2168	1713	1555	1812	312	156	2076	848
AF4320-17	2.3	1948	1218	1715	1627	1632	996	364	997
A02138-2	2.7	2183	1283	725	1397	2104	3536	1348	2329
MN02586	2.7	2550	1163	1403	1705	32	6080	1824	2645
AF4198-2	2.7	1965	1510	1833	1769	5392	2016	892	2767
BTX2332-1R	2.7	1948	1178	1693	1606	5984	448	2944	3125
AOTX02136-1RU	2.3	2595	1985	2320	2300				
AF0338-17	3	2188	440	1140	1256	116	248	10	125
W8152-1rus	3	650	598	765	671	196	812	540	516
Red Norland	3.3	105	25	1455	528	649	1004	56	570
Ranger Russet	3	2875	2340	540	1918	621	604	687	637
W5015-12	3	1548	1230	665	1148	676	936	328	647
CO02321-4W(1805)	3	2373	2035	1898	2102	1292	536	116	648
AC01151-5W(1802)	3	1675	130	745	850	1488	320	520	776
AF3362-1	3	1098	88	1115	767	168	1820	548	845
Atlantic	3	1878	1115	328	1107	288	1290	1055	878
Superior	3.3	2008	613	2910	1843	297	1282	1104	894
Russet Norkotah	3.3	1145	85	1708	979	314	1518	984	939
A03158-2TE	3	1285	1183	158	875	828	892	1208	976
W5955-1	3	933	1168	335	812	2520	316	392	1076
W2324-1(Accumulator)	3	768	1523	745	1012	1508	384	1344	1079
White Pearl	3	3133	1728	685	1848	1953	388	1054	1132
AO2507-2LB	3.3	425	143	55	208	1600	856	996	1151
MN02574	3	2280	1338	1310	1643	1984	824	996	1268
AF3001-6	3	858	175	578	537	152	3776	228	1385
W6703-5Y	3.3	758	798	55	537	2364	44	2040	1483
MN04844-07	3	2855	2683	1795	2444	3952	1384	1132	2156
Mondak Gold	3	1508	1228	838	1191	1080	4384	1068	2177
W6703-1Y	3.3	503	935	188	542	1564	5040	63	2222
AC00395-2RU(1801)	3	1553	58	358	656	5536	1704	268	2503
MN02419Rus	3	1725	623	233	860	3472	3216	2048	2912
AF4296-3	3	2238	353	573	1054	160	3856	8096	4037
AF4320-7	3.3	1460	688	1058	1068	5296	3680	3652	4209
A01010-1	3	765	865	778	803	1104	4208	7360	4224
MN02467Rus/Y	3.3	1335	1438	938	1237	8144	2640	2864	4549
COTX01403-4R/Y	3	2908	1320	1950	2059	1352	5328	10640	5773
ATTX98453-6R	3	2563	1073	1033	1556				
COTX04015-3AW/Y	3	2423	1203	1675	1767				
MN18747	3	3115	1840	2223	2393				
MN99380-1Y	3	2750	1775	840	1788				
W6822-3	3	2133	1795	1045	1658				
MN02588	3.3	2438	1303	878	1539				
W6360-1rus	4	235	200	230	222	792	30	740	521
Russet Burbank	4	58	45	363	155	983	970	654	869
A01143-3C	4	675	373	275	441	6736	128	2432	3099
Average	3	1620	923	871	1138	1914	1742	1660	1772