

## National Verticillium Wilt Trial

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This trial is carried out annually at the Hancock Agricultural Experiment Station on a field that has been inoculated with *Verticillium dahliae*. Breeders are asked to submit selections from their breeding programs. Typically, these are advanced lines that may be released as cultivars. Information about Verticillium wilt (VW) resistance is useful when considering the merits of a line as a potential cultivar.

Three plots were planted on May 2, 2016. Each consisted of three replications of five-hill units of 52 cultivars and advanced selections from the U.S. potato breeding programs. Trial A was planted on a fumigated field and was used to score for vine maturity of all clones and evaluate yield of eight cultivars standards. Trial B was planted on a field that was inoculated with *V. dahliae* at planting this year. 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 28 and August 17, plots in Trial B were scored for percent foliage expressing Verticillium wilt symptoms (symp1 and symp2, respectively). On August 9, stems from all clones in Plot 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 (sap). Vines were killed on August 29; on September 6, stems were collected from clones in the Trial B field and allowed to air dry at room temperature. Stems were not collected from clones that had high levels of *V. dahliae* in stem sap. All main stems from a plot were ground in a Wiley mill and 50 mg per plot was plated on selective medium. Colonies were counted two weeks later (dry). Data are presented in Table 1.

Table 1. Performance of clones in the Verticillium wilt trial.

Clone	Year in trial	Rep	Symp1	Symp2	Sap	Dry
Atlantic	12	1	40	95	160	184
Atlantic	12	2	80	100	600	0
Atlantic	12	3	30	95	1000	20
Red Norland	12	1	90	100	dead	6
Red Norland	12	2	80	100	600	14
Red Norland	12	3	70	100	800	0
Ranger Russet	12	1	20	95	900	80
Ranger Russet	12	2	30	75	800	0
Ranger Russet	12	3	20	40	1000	56
Russet Burbank	12	1	50	100	120	400
Russet Burbank	12	2	10	95	800	1
Russet Burbank	12	3	20	95	200	110
Russet Norkotah	12	1	90	100	600	16
Russet Norkotah	12	2	70	100	800	37
Russet Norkotah	12	3	70	100	1000	4
Superior	12	1	80	100	1000	36

Superior	12	2	70	100	700	6
Superior	12	3	40	100	700	44
White Pearl	12	1	30	95	700	172
White Pearl	12	2	30	90	1000	26
White Pearl	12	3	30	90	1000	17
Yukon Gold	3	1	70	100	55	270
Yukon Gold	3	2	70	100	0	1
Yukon Gold	3	3	50	100	400	10
1154 BNC177-5	2	1	15	60	9	26
1154 BNC177-5	2	2	0	60	200	1
1154 BNC177-5	2	3	0	55	87	104
1154 BNC177-5	1	1	20	60	800	
1154 BNC177-5	1	2	20	70	400	
1154 BNC177-5	1	3	10	60	400	
1168 B2904-2	2	1	25	90	400	
1168 B2904-2	2	2	40	100	800	
1168 B2904-2	2	3	50	80	62	
AF4296-3 (4012)	5	1	30	95	1000	
AF4296-3 (4012)	5	2	30	100	1000	
AF4296-3 (4012)	5	3	20	100	300	
AF5179-4 (4024)	2	1	5	70	800	
AF5179-4 (4024)	2	2	10	80	400	
AF5179-4 (4024)	2	3	0	55	300	
AF5225-1 (4042)	2	1	20	30	700	
AF5225-1 (4042)	2	2	10	60	900	
AF5225-1 (4042)	2	3	20	60	400	
AF5406-7 (4077)	1	1	10	75	600	
AF5406-7 (4077)	1	2	10	80	400	
AF5406-7 (4077)	1	3	20	75	50	
AF5407-13 (4112)	1	1	5	80	300	22
AF5407-13 (4112)	1	2	10	80	7	8
AF5407-13 (4112)	1	3	10	75	250	16
W8890-1R	1	1	90	100	900	
W8890-1R	1	2	50	100	800	
W8890-1R	1	3	20	100	1000	
W9576-11Y	2	1	60	100	500	
W9576-11Y	2	2	60	100	1000	
W9576-11Y	2	3	50	100	500	
CW08221-5rus	1	1	50	95	900	
CW08221-5rus	1	2	40	100	400	
CW08221-5rus	1	3	30	100	1000	
CW08071-2rus	1	1	10	90	900	
CW08071-2rus	1	2	20	95	800	
CW08071-2rus	1	3	10	95	800	
MSR127-2	2	1	0	30	900	

MSR127-2	2	2	0	40	100	
MSR127-2	2	3	10	35	700	
MSS487-2	4	1	0	25	600	
MSS487-2	4	2	10	60	1000	
MSS487-2	4	3	0	30	500	
MSV093-1	1	1	0	10	300	
MSV093-1	1	2	10	50	600	
MSV093-1	1	3	30	50	500	
MSX540-4	1	1	10	75	400	
MSX540-4	1	2	20	80	400	
MSX540-4	1	3	10	85	700	
MSZ219-14	1	1	10	20	1000	
MSZ219-14	1	2	0	30	600	
MSZ219-14	1	3	0	60	1000	
ATTX98444-16R/Y	1	1	30	95	1000	
ATTX98444-16R/Y	1	2	30	100	600	
ATTX98444-16R/Y	1	3	40	100	1000	
ATTX98514-1R/Y	1	1	20	90	500	0
ATTX98514-1R/Y	1	2	50	100	500	4
ATTX98514-1R/Y	1	3	40	100	500	0
ATX05202-3W/Y	1	1	20	25	27	20
ATX05202-3W/Y	1	2	20	90	130	138
ATX05202-3W/Y	1	3	10	75	80	0
PORTX03PG25-2R/R	1	1	10	100	600	
PORTX03PG25-2R/R	1	2	40	100	700	
PORTX03PG25-2R/R	1	3	70	100	800	
TXWL-1	1	1	10	95	1000	
TXWL-1	1	2	10	95	120	
TXWL-1	1	3	30	95	400	
TX12474-1P/R	1	1	0	80	12	
TX12474-1P/R	1	2	10	100	400	
TX12474-1P/R	1	3	0	95	1000	
AC05039-2RU	1	1	40	100	800	
AC05039-2RU	1	2	70	100	300	
AC05039-2RU	1	3	60	100	1000	
CO05068-1RU	2	1	10	50	600	
CO05068-1RU	2	2	10	25	500	
CO05068-1RU	2	3	20	30	400	
CO05175-1RU	2	1	30	40	500	160
CO05175-1RU	2	2	10	35	5	3
CO05175-1RU	2	3	30	75	225	120
FL Vert9	1	1	10	80	600	
FL Vert9	1	2	20	90	360	
FL Vert9	1	3	30	80	600	
FL Vert10	1	1	0	80	80	

FL Vert10	1	2	10	95	700	
FL Vert10	1	3	20	90	600	
FL Vert11	1	1	10	50	500	
FL Vert11	1	2	0	40	400	
FL Vert11	1	3	10	70	1000	
FL Vert13	1	1	10	75	900	
FL Vert13	1	2	5	45	800	
FL Vert13	1	3	20	95	500	
AO06191-1	1	1	10	95	1000	
AO06191-1	1	2	10	100	1000	
AO06191-1	1	3	30	100	1000	
AO03123-2	2	1	0	80	81	73
AO03123-2	2	2	10	75	102	65
AO03123-2	2	3	30	80	200	48
AO96141-3	2	1	10	75	250	
AO96141-3	2	2	20	60	400	
AO96141-3	2	3	20	80	600	
OR05039-4	2	1	30	65	31	4
OR05039-4	2	2	20	30	80	12
OR05039-4	2	3	10	25	130	13
A08433-4VR	1	1	10	60	900	
A08433-4VR	1	2	20	50	350	
A08433-4VR	1	3	20	50	1000	
A08009-2TE	1	1	10	50	900	
A08009-2TE	1	2	10	50	340	
A08009-2TE	1	3	10	30	500	
A03141-6	1	1	0	80	800	
A03141-6	1	2	0	30	1000	
A03141-6	1	3	0	50	1000	
A03921-2	1	1	30	90	350	2
A03921-2	1	2	20	80	300	30
A03921-2	1	3	40	80	300	18
Dakota Trailblazer	1	1	0	60	300	0
Dakota Trailblazer	1	2	0	70	1000	33
Dakota Trailblazer	1	3	10	50	100	82
Dakota Russet	1	1	10	60	600	
Dakota Russet	1	2	20	75	350	
Dakota Russet	1	3	30	80	1000	
ND060735-4Russ	1	1	20	90	130	
ND060735-4Russ	1	2	10	90	500	
ND060735-4Russ	1	3	20	8	600	
ND4100C-19	1	1	20	100	1000	
ND4100C-19	1	2	10	100	400	
ND4100C-19	1	3	30	100	500	
ND5873-23	1	1	20	100	800	

ND5873-23	1	2	20	100	300	
ND5873-23	1	3	40	100	700	
ATND99331-2PintoY	1	1	0	80	4	7
ATND99331-2PintoY	1	2	0	30	150	27
ATND99331-2PintoY	1	3	0	25	55	176