

**Evaluation of strawberry cultivars and advanced breeding selections for resistance to *Phytophthora* crown rot caused by *Phytophthora cactorum*, 2019-2020.**

Fourteen commercial cultivars and thirteen advanced selections from the UF-GCREC strawberry breeding program were evaluated for resistance to *Phytophthora* crown rot caused by *Phytophthora cactorum*. Bare root, green top strawberry plants were transplanted on 11 Oct 2019 into Telone C35 (300 lbs/A) fumigated, raised beds (28-in wide, on 4-ft centers) covered with black totally impermeable film. Transplants were planted in two staggered rows per bed with 15-in spacing between rows and 12-in between plants within each row. Four plots of each cultivar containing 15 plants per plot (subplots of 10 inoculated and 5 non-inoculated plants) were arranged in a randomized complete-block design (2-ft between plots), with each replication in a separate bed. Transplants, with roots trimmed to 2.5 in, were root dip inoculated in a  $10^4$  zoospores/ml suspension for 10 min, 1 hour prior to planting. Inoculum was a mixture of four *P. cactorum* isolates. Transplants were overhead irrigated during the day for approximately 10 days to facilitate establishment and then irrigated and fertilized through single drip tape throughout the season. Plants were monitored for development of typical *Phytophthora* crown rot symptoms, wilt and mortality, weekly for three months. Isolations from symptomatic tissues were performed to confirm the causal agent. An analysis of variance was performed on the AUDPC, final percent disease and final percent mortality using the proc GLM procedure in SAS. Percent data were arcsine transformed for analysis. Multiple means comparisons were made by the Fisher Protected LSD test ( $\alpha = 0.05$ ).

'Strawberry Festival' is known to be resistant (R) to *P. cactorum* causing *Phytophthora* crown rot and was included as a R control. 'Camarosa', 'Florida Elyana', 'Fronteras', 'San Andreas', 'Albion', 'Monterey', 'Petaluma', 'Florida Beauty', and breeding selections 17.14-250, 17.17-127, 17.27-80, 17.17-22, 16.33-8, 16.78-55, 17.15-127, 16.69-1, and 17.40-150 were similar to 'Strawberry Festival' by all three measures analyzed and were considered R. Advanced selection 17.15-86 had higher final percent wilt and mortality than 'Strawberry Festival' but disease was slow to develop (low AUDPC), most symptoms only being observed in the last month of the experiment. It was considered to be moderately resistant. 'Florida Radiance', 'Florida Brilliance', Sensation® 'Florida127', Winterstar™ 'FL 05-107', 16.74-68 were all highly susceptible (HS) with the greatest wilt, mortality, and AUDPC. The remaining cultivars and advanced breeding selections, including Cabrillo, were classified as susceptible (S) having intermediate levels of wilt and mortality. Non-inoculated controls had minimal (5%, i.e. 1 plant/4 replications) to no symptoms.

Cultivar/ Advanced Breeding Selection	% Wilt*		% Mortality*		AUDPC*		Susceptibility**
	(1/7/20)		(1/7/20)		(Wilt)		Category
16.74-68	77.5	a	77.5	a	6171	a	HS
'Florida Radiance'	57.5	ab	55	abc	4388	b	HS
Sensation® 'Florida127'	56.3	abc	53.5	ab	4370	bc	HS
'Florida Brilliance'	40	bcd	37.5	bcd	3121	cd	HS
WinterStar™ 'FL 05-107'	35	cde	32.5	cde	2701	d	HS
16.30-128	27.5	def	27.5	def	2154	de	S
16.78-109	25	defg	22.5	defg	1974	de	S
'Cabrillo'	17.5	efghi	17.5	efghi	1319	ef	S
17.15-86	17.5	defgh	17.5	defgh	440	fg	MR
'Florida Beauty'	15	fghij	15	fghij	1008	efg	R
17.40-150	8.3	hijk	5.5	ijk	569	fg	R
16.69-1	7.5	ghijk	7.5	ghijk	596	fg	R
17.15-127	5	ijk	5	ijk	348	fg	R
16.78-55	5	hijk	5	hijk	385	fg	R
'Monterey'	5	ijk	5	ijk	408	fg	R
'Petaluma'	5	hijk	5	hijk	415	fg	R
16.33-8	2.5	jk	2.5	jk	204	fg	R
17.17-22	2.5	jk	2.5	jk	149	fg	R
17.27-80	2.5	jk	0	k	18	g	R
'Albion'	2.5	jk	0	k	150	fg	R
'Strawberry Festival'	2.5	jk	2.5	jk	226	fg	R
17.17-127	0	k	0	k	0	g	R
17.14-250	0	k	0	k	0	g	R
'Camarosa'	0	k	0	k	0	g	R
'Florida Elyana'	0	k	0	k	0	g	R
'Fronteras'	0	k	0	k	0	g	R
'San Andreas'	0	k	0	k	0	g	R

\* Means in a column followed by the same letter are not significantly different by Fisher's protected LSD test ( $\alpha = 0.05$ ).

\*\* Highly Susceptible (HS), Susceptible (S), Moderately Resistant (MR), Resistant (R)