

### Evaluation of pepper cultivars for *Phytophthora* blight resistance, 2016.

In the summer of 2016, an experiment was conducted to evaluate pepper resistance to *Phytophthora capsici* at the Sandhills Research Station near Jackson Springs, NC (N35°11.740'; W079°40.997'). The field site has a history of *Phytophthora* blight and soil type is Sandy. Twenty-two cultivars and 10 experimental lines were selected for this experiment. Pepper seedlings were grown in the greenhouse under natural light. Seedlings were left outside in a protected area to harden for 3 days, then transplanted on 26 May (1-ft in row spacing) in raised beds (10 plants/plot) by a mechanical transplanter that also applied a starter fertilizer (17-17-17). Plants were irrigated using overhead sprinklers to promote disease. Plots were 10-ft long and spaced 2-ft apart. During the season, weeds in the plots were controlled by hand weeding while weeds between rows were cultivated. Plants were arranged in a completely randomized block design with four replications. On 9 Jun, inoculation of the plots was achieved by carefully inserting 1 g of *P. capsici* infested millet seed directly into the soil adjacent to each plant crown, avoiding root or crown injury. Disease incidence was assessed on 13, 16, 20, 23, 27, and 30 Jun, 4 and 7 Jul. Data were analyzed using the software ARM (Gylling Data Management, Brookings, SD) with analysis of variance (AOV) and Tukey's HSD test to separate means.

The cultivars Martha-R, Fidel, and Meeting were the most resistance to the isolates of *P. capsici* used in this study. Cultivars SV3198HJ, Revelation, Revolution, Red Knight, Quattro, EXP.2, EXP.10, Ebano-R, and Bastille were considered highly susceptible. The cultivars Vanguard, SV3782PP, PS 09941819, Plato, EXP.1, Declaration, Keystone, EXP.3 – 9, Karisma, Camelot, Aristotle, and Fabuloso were not significantly different from Ebano-R, Red Knight, and Bastille, and therefore are not likely to perform well in fields infested with *P. capsici*. Cultivars Paladin and Archimedes registered less than 60% plant death. These cultivars are considered tolerant and could be included along with integrated plant management strategies.

Entry	Plant Death (%) <sup>†</sup>		
	30 Jun	4 Jul	7 Jul
Martha-R	2.5 e <sup>‡</sup>	2.5 c	2.5 e
Fidel	7.5 de	7.5 c	7.5 de
Meeting	12.5 cde	12.5 c	12.5 de
Paladin	17.5 b-e	20 bc	25 cde
Archimedes	47.5 a-e	50 abc	50 bcd
Fabuloso	57.5 a-d	65 ab	65 abc
Aristotle	65 abc	67.5 ab	67.5 abc
Camelot	75 a	75 a	75 ab
EXP.8	70 ab	72.5 a	82.5 ab
EXP.3	57.5 a-d	70 ab	85 ab
EXP.9	75 a	82.5 a	87.5 ab
EXP.4	80 a	90 a	90 ab
Karisma	82.5 a	87.5 a	90 ab
EXP.5	87.5 a	92.5 a	92.5 ab
EXP.6	87.5 a	90 a	92.5 ab
Keystone	90 a	92.5 a	92.5 ab

Entry	Plant Death (%) <sup>†</sup>		
	30 Jun	4 Jul	7 Jul
EXP.7	95 a	92.5 a	95 ab
Declaration	87.5 a	90 a	97.5 a
EXP.1	87.5 a	95 a	97.5 a
Plato	95 a	97.5 a	97.5 a
PS 09941819	85 a	87.5 a	97.5 a
SV3782PP	92.5 a	95 a	97.5 a
Vanguard	82.5 a	95 a	97.5 a
Bastille	100 a	100 a	100 a
Ebano-R	97.5 a	100 a	100 a
EXP.10	100 a	100 a	100 a
EXP.2	92.5 a	100 a	100 a
Quattro	95 a	97.5 a	100 a
Red Knight	95 a	100 a	100 a
Revelation	95 a	100 a	100 a
Revolution	95 a	100 a	100 a
SV3198HJ	92.5 a	97.5 a	100 a

<sup>†</sup> Disease rating scale based on the percentage of dead plants caused by *P. capsici*.

<sup>‡</sup> Means followed by the same letter(s) within a column do not differ statically at  $\alpha=0.05$ .