Pepper, Bell (*Capsicum annuum*)
Phytophthora blight; *Phytophthora capsici*

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**Evaluation of pepper cultivars for Phytophthora blight resistance, 2015.**

The experiment was conducted at the Sandhills Research Station near Jackson Springs, NC (N35°11.740'; W079°40.997'). Soil type is Sandy. The previous year the field was planted with bell peppers and *Phytophthora capsici* was inoculated in the field. Thirty-two entries (22 cultivars and 10 lines) were sown on 1 May in the greenhouse. Seedlings were left outside in a protected area to harden for 3 days, then transplanted on 11 Jun (1-ft in row spacing) in raised beds (10 plants/plot) by a mechanical transplanter that also applied a starter fertilizer (17-17-17). Irrigation was applied 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. A completely randomized block design with four replications was used. On 30 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 8, 16, 23, 28, and 30 Jul, 4 and 11 Aug. Data were analyzed using the software ARM (Gylling Data Management, Brookings, SD) with analysis of variance (AOV) and the Tukey's HSD test to separate means.

The cultivars Marta-R, Fidel, and Meeting were the most resistance to the isolates of *P. capsici* used in this study. Cultivars Red Knight, Plato, and Bastille were highly susceptible. The cultivars Camelot, Quattro, Aristotle, Keystone, Karisma, EXP. 10, SV3782PP, PS 00941819, Archimedes, Revelation, EXP. 5, EXP. 2, EXP. 6, SV3198HJ, Fabuloso, EXP. 1, EXP. 8, EXP. 7, Declaration, and EXP.4 were not significantly different from Plato, Red Knight, and Bastille, and therefore are not likely to perform well in fields infested with *P. capsici*. The experimental lines 9 and 3 had significantly less plant death than the tolerant cultivar Paladin.

| Entry | Plant Death (%)† | | |
|---|---|---|---|
| | 30 Jul | 4 Aug | 11 Aug |
| Martha-R | 7.5 f‡ | 7.5 h | 7.5 h |
| Fidel | 7.5 f | 10 h | 10 gh |
| Meeting | 7.5 f | 15 gh | 22.5 fgh |
| EXP.9 | 17.5 ef | 25 fgh | 27.5 e-h |
| Ebano-R | 25 c-f | 40 d-h | 42.5 d-h |
| EXP.3 | 20 def | 37.5 e-h | 42.5 d-h |
| Revolution | 40 a-f | 45 b-h | 45 c-h |
| Paladin | 20 def | 42.5 c-h | 47.5 b-h |
| Vanguard | 32.5 b-f | 47.5 a-h | 47.5 b-h |
| EXP.4 | 42.5 a-f | 55 a-h | 55 a-h |
| Declaration | 55 a-f | 55 a-h | 57.5 a-g |
| EXP.7 | 35 b-f | 50 a-h | 57.5 a-g |
| EXP.8 | 42.5 a-f | 52.5 a-h | 57.5 a-g |
| EXP.1 | 45 a-f | 57.5 a-h | 62.5 a-f |
| Fabuloso | 32.5 b-f | 57.5 a-h | 65 a-f |
| SV3198HJ | 47.5 a-f | 60 a-g | 65 a-f |

| Entry | Plant Death (%)† | | |
|---|---|---|---|
| | 30 Jul | 4 Aug | 11 Aug |
| EXP.6 | 60 a-e | 67.5 a-f | 75 a-e |
| EXP.2 | 62.5 a-e | 72.5 a-f | 77.5 a-d |
| EXP.5 | 62.5 a-e | 72.5 a-f | 77.5 a-d |
| Revelation | 47.5 a-f | 75 a-e | 80 a-d |
| Archimedes | 62.5 a-e | 72.5 a-f | 82.5 a-d |
| PS 09941819 | 57.5 a-f | 75 a-e | 82.5 a-d |
| SV3782PP | 70 a-d | 85 a-e | 85 a-d |
| EXP.10 | 72.5 abc | 85 a-e | 87.5 a-d |
| Karisma | 72.5 abc | 82.5 a-e | 87.5 a-d |
| Keystone | 77.5 ab | 87.5 a-d | 87.5 a-d |
| Aristotle | 55 a-f | 87.5 a-d | 90 a-d |
| Quattro | 75 abc | 87.5 a-d | 92.5 abc |
| Camelot | 75 abc | 90 abc | 95 ab |
| Bastille | 90 a | 92.5 ab | 97.5 a |
| Plato | 80 ab | 95 a | 97.5 a |
| Red Knight | 72.5 abc | 95 a | 97.5 a |

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

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