

Bell Pepper Evaluation for Resistance to Phytophthora Blight

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Introduction

Phytophthora blight, caused by *Phytophthora capsici* Leonian, is a serious threat to pepper production in Illinois. Yield losses up to 100% occur in commercial pepper fields. The objective of this study was to evaluate reaction of some bell pepper cultivars to *Phytophthora capsici* in the field.

Materials and Methods

Six bell pepper cultivars, Aristotle, Brigardier, California Wonder, Emerald Isle, King Arthur, and Paladin (Table 1) were tested for resistance to Phytophthora blight. Seedlings were grown in a greenhouse. Eight-week-old seedlings were kept outside the greenhouse for 5 days, and then transplanted in a commercial field near Shawneetown, Illinois, on 11 May. The field was naturally infested with *P. capsici*. The experiment was performed in a complete randomized block design with four replications, each with 10 plants. The seedlings in each plot were planted in two staggered rows with plants spaced 12 inches apart within rows. The plots were spaced 36 inches apart. Weeds were controlled by hand weeding. The liquid nitrogen fertilizer UAN-28 was injected at 18 lb/A into the irrigation system once per week. Plants received 0.25 in. water every other day through the drip. Average monthly high and low temperatures (°F) were 80/62, 84/65, and 86/69, in May, June, and July, respectively. Recorded precipitation in the field was 10 days (2.9 in.) in May, 2 days (0.8 in.) in June, and 7 days (4.1 in.) in July. Disease incidence was determined as percent wilted or dead plants on 17 May, 25 May, 11 June, 25 June, 8 July, and 23 July.

Results and Discussion

Phytophthora lesions were observed on the crown and at the base of stems of inoculated seedlings 10 days after transplanting. Defoliation, wilting, and death of the plants followed lesion development. The final stand of asymptomatic plants in the field ranged from 0% for susceptible cultivars (Brigardier, California Wonder, King Arthur) to 80% to the most resistant cultivar Paladin (Table 1).

Table 1. Reaction of bell pepper cultivars to *Phytophthora capsici* in field in Illinois in 2004.

Cultivar	Seed source ^x	Plant stand (%) ^y					
		11 May	25 May	11 June	25 June	8 July	23 July
Aristotle	SM	100	100	85.00 a	37.50 b	35.00 b	20.00 c
Brigardier	NV, RG	100	95.00	40.00 b	12.50 b	7.50 bc	2.50 c
California Wonder	RU	100	100	30.00 b	5.00 b	0.00 c	0.00 c
Emerald Isle	HR	100	97.50	95.00 a	75.00 a	67.50 a	45.00 b
King Arthur	PS	100	97.50	72.50 a	12.50 b	7.50 bc	2.50 c
Paladin	NV, RG	100	100	100 a	95.00 a	82.50 a	80.00 a
LSD (<i>P</i>=0.05)		<i>NS</i>	<i>NS</i>	28.18	33.45	31.32	23.88

^xHR = Harris Seeds; NV = Novartis; PS = Petoseed Co.; RG = Rogers Seed Co.; RU = Rupp Seeds Inc.; SE = Seminis Inc.