

STUDIES ON BACTERIAL SPOT OF SWEET PEPPER

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1. Distribution of races of *Xanthomonas campestris* pv. *vesicatoria*

In 1993 growing season, strains of *X. campestris* pv. *vesicatoria*(Xcv), the causal organism of bacterial spot, were isolated from seedlings of cvs. Marengo and Lady Bell peppers from 3 greenhouses in the Leamington area in June, and from fruit spots on the cvs. Bell King, Camelot, Golden Bell, and Lady Bell sampled from 5 farms in Norfolk county in September. All the strains were determined to belong to Pepper Race 1 by hypersensitive reaction on pepper differentials carrying Bs-1, Bs-2 and Bs-3 genes. Earlier, strains of Tomato-Pepper Race 3 had been isolated from greenhouse transplants of cv. Super Set in 1992.

2. Reaction of pepper cultivars in field trials

Six-week old transplants of 9 pepper cultivars were planted in 24-foot rows in a randomized block design with 4 replications at the Harrow Research Station on June 11. Each set of two rows was interplanted with a row of the cv. Early Calwonder inoculated in the greenhouse prior to transplanting with a mixture of Xcv races 1 and 3 to ensure natural spread of bacterial spot within the plots. The plots were maintained according to OMAF vegetable production recommendations publication 363.

Bacterial spot was observed to spread in the plots in 3 to 4 weeks after planting. In the first assessment made 10 weeks after planting, moderate to severe foliar and fruit infection had occurred in all the cultivars except Peto seed PSR296091 and PSR 296491 which are reported to be resistant for races 1,2 and 3. Considerable foliar and fruit abscission had taken place in Jupiter, King Arthur, Lady Bell and North Star and light to moderate abscission in Super Set, XPH 5964 and Rebell, the latter two reported to be resistant to races 1 and 2 (Table 1).

In three sets of evaluations for fruit infection made from August 20 until September 22 (Table 2), the cvs. PSR296091 and PSR 296491 had the lowest incidence of fruit blemishes whereas 58 - 79 % of fruits of all the other cultivars had spots on fruit wall and pedicel.

Table 1. Field reaction of pepper cultivars to bacterial spot at Harrow Research Station, August 20, 1993

Cultivar	Foliar infection	Mean % fruit infection	Fruit abscission
Super Set	2.25	2.25	1.75
North Star	3.75	3.75	3.25
Lady Bell	3.75	3.00	3.5
Jupiter	4.00	3.75	4.0
Rebell	2.75	2.50	2.50
PSR 296091	1.25	1.0	1.0
PSR 296491	1.0	1.0	1.0
XPH 5964	2.87	1.75	1.5
King Arthur	4.0	3.75	3.5
Early Calwonder (Check)	3.75	2.25	3.75

Reaction Scale: 1 = No infection, 4 = Severe infection and abscission

Table 2. Incidence of pepper fruit bacterial spot infection in field plots at the Harrow Research Station (cumulative readings August 21, September 8, September 22, 1993).

Cultivar	Mean % fruit infection
Early Calwonder	79.06 a
Lady Bell	78.76 a
North Star	76.48 ab
King Arthur	76.28 ab
Jupiter	69.98 abc
XPH 5964	66.52 abc
Super Set	60.94 bc
Rebell	58.48 c
PSR 296091	15.99 d
PSR 296491	15.17 d

Values not followed by the same letter are significantly different at $P = 0.05$ by the Duncan's Multiple Range test.