Pak. J. Agri. Sci., Vol. 30, No. 4, 1993

VARIETAL BEHAVIOUR OF THE PATHOGEN (*COLLETOTRICHUM CAPSICI* (SYD) BUTLER & BAISBY, CAUSING SEED ROT, FRUIT ROT AND DIE BACK IN CHILLIES

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Colletotrichum capsici significantly affected the seed rot, fruit rot and die back in test varieties of chillies *in vitro* conditions. Chilli variety Faisalabad A (Bengali Merch) was found resistant in respect of fruit rot and die back even in heavy inoculation conditions. Whereas Faisalabad B (Mamu Kanjan) and Peshawari varieties were found susceptible to the pathogen. Treatments and their interactions between varieties gave significant results. Variety Faisalabad A showed 3.3 and 7.0% fruit rot and 5.0 and 8.3% die back in unsprayed and sprayed with inoculum, respectively.

INTRODUCTION

Anthracnose of chillies is closely dependent on heavy and prolonged dew deposits after rainy season. The disease first appears when the plants are mature and have commenced to flowers and the disease is more active after the fruit begins to mature. The most serious damage is spotting and decaying of the pods. In severe cases of attack the plants are either completely killed or so badly diseased that the yield of healthy fruits is negligible. Seeds of diseased fruits may become infected which give poor germination and hence poor in stand (Ali, 1947; Chaudhary, 1957).

Chillies is an important vegetable cash crop and is damaged by diseases in general and anthracnose (*Colletotrichum capsici*) in particular. So, it was considered essential to investigate varietal resistance against the pathogen.

MATERIALS AND METHODS

Seeds and seedlings of promising varieties of chillies viz. Faisalabad A (Bengali Merch), Faisalabad B (Mamu Kanjan) and Peshawari were obtained from the Ayub Agricultural Research Institute, Faisalabad. The seeds of test varieties were first disinfested by dipping in 0.1% mercuric chloride solution for half a minute and after washing thrice in sterilized water, were smeared with spores of *C. capsici*, 12 hours before sowing. Ten seeds pot^{-1} were sown in already autoclaved pots along with soil during March, 1978. Check pots were planted with uninfested seeds. Pots were placed in a glass house at 20-25 °C.

Plants of the test varieties raised in sterilized soil were sprayed weekly with spores suspension of the pathogen by hand atomizer starting with the onset of flowers till the maturity of the pods. Check plants were sprayed with sterile tap water.

Observations on the germination, fruit rot and die back were made.

There were six replications for both the experiments and the statistical analysis was done following Randomised Complete Block Factorial Design (Le Clarg *et al.*, 1962).

48% seed rot, 5% fruit rot and 7% die back (Table 2). It was also observed that Faisalabad B and Peshawari were statistically similar in all respects. Both the treatments differed significantly in respect of seed rot, fruit rot and die back effects (Table 3).

Table 1. Analysis of variance (RCBD factorial)

Source of variance	df	Mean squares			LSD		
		Seed rot	Fruit rot	Die back	Seed rot	Fruit rot	Die back
Replications	5	17.8	84.2	869.4	-	-	-
Varieties (A)	2	744.5	4689	4719.5	9.5**	25.4**	17.7**
Error (a)	10	54.4	388.6	942.8	-	-	-
Treatments (B)	1	57600	16079	10330	9.7**	19.5**	33.8**
Interactions	2	133	3684	2453	6.9**	20.9**	23.9**
Error (b)	15	62.2	575.8	753.8	-	-	-
Total	35	1740.63	1415.9	1421.8			

Table 2. Varietal response (%) to pathogen causing seed rot, fruit rot and die back (average of 12 observations)

	Seed rot	Fruit rod	Die back
Faisalabad A	48 b	5.0 b	7.0 b
Faisalabad B	60 a	31.0 a	46.0 a
Peshawari	62 a	44.0 a	32.0 a

*Means followed by same letter(s) in each column do not differ significantly at 5% level of probability.

Table 3. Treatment effect (%) of pathogen causing seed rot, fruit rot and die back (mean of 18 observations)

Treatment	Seed rot	Fruit rod	Die back
Untreated with inoculum	17.0 b	5.6 b	11.0 b
Treated with inoculum	97.0 a	48.0 a	45.0 a

*Means followed by same letter(s) in each column do not differ significantly at 5% level of probability.

RESULTS AND DISCUSSION

The statistical analysis of the data showed that the pathogen (*C. capsici*) gave highly significant reaction in respect of varieties, treatments and their interactions (Table 1). Chilli variety Faisalabad A (Bengali Merch) proved to be a better giving

There was significant difference in uninfested and infested seed of all the test varieties. Variety Faisalabad A gave similar effects in both the treatments in respect of fruit rot and die back. These were statistically similar with Faisalabad B (unsprayed) and Peshawari (unsprayed) in respect of fruit rot and die back (Table 4).

Table 4. Interactions (between treatments and varieties) effect (%) of pathogen causing seed rot, fruit rot and die back (means of 6 observations)

Treatment	Seed rot	Fruit rot	Die back
Untreated Faisalabad A	5.0 c	3.3 c	5.0 d
Treated Faisalabad A	91.7 a	7.0 c	8.3 d
Untreated Faisalabad B	20.0 b	5.5 c	20.0 c
Treated Faisalabad B	100.0 a	58.0 b	71.7 a
Untreated Peshawari	26.7 b	8.0 c	8.3 d
Treated Peshawari	100.0 a	80.0 a	55.0 b

Means with different letter(s) in the same column differ significantly at 5% level of probability.

The chilli variety Faisalabad A gave 95% germination when healthy seed was used. This variety also showed the least effects of the pathogen in respect of fruit rot as well as die back diseases of the chillies. Dastur (1921) reported that the germination of infested seeds was poor (60 to 70%) whereas that of healthy seeds was 90%. Grewal and Grower (1973) reported that of the 60 varieties tested, 31 were highly susceptible, 27 were moderately and two were resistant to fruit rot. Higgins (1926) reported that the disease was more severe on injured fruits.

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