

Short Communication

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A New Cause of Fruit Rot of Chillies in Pakistan

NASREEN SULTANA, A. K. KHANZADA AND M. ASLAM
*Crop Diseases Research Institute, PARC,
 Karachi University Campus, Karachi Pakistan*

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Chilli (*Capsicum annum* L.) fruits, collected during 1989-90 from the experimental field of Sindh Horticultural Research Institute, Mirpurkhas, were examined for the pathogens associated with rotted pods. The most predominant fungi isolated from the tissue pieces and seeds of the diseased samples were *Alternaria alternata* (Fr.) Kessler, *Collectotrichum capsici* (Syd.) Butler and Bisby, Followed by *Drechslera rostrata* (Drechsler) Richardson and Fraser and *D.halodes* (Drechsler) Subram and Jain. These fungi were maintained on potato dextrose agar for pathogenicity tests. Despite the widespread occurrence of pod rot in Pakistan, there is no previous reports from Pakistan of *D.rostrata* and *D. halodes* as the causal organisms of pod rot of chilli. The objective of this study was to establish the role of two fungi as the causal organisms of pod rot.

Pathogenicity test of *D.rostrata*, *D.halodes* and *A.alternata* was carried out on wounded and unwounded healthy chilli fruits. The plantation of chillies were carried out in the month of July, 1991 in the experimental field of Crop Diseases Research Institute, Karachi. Twenty plants of each round and long chillies were grown per plot (6x3 feet) with one plot for each fungus tested plus one plot serving as a control. Ten plants were selected from each plot for wound inoculation and the remaining 10 plants were for inoculation of pods without wounding. Conidial suspensions of seven-day-old cultures of the test fungi were prepared in sterilized distilled water. The concentration of conidia was adjusted by means of a haemocytometer to 6×10^3 spores/ml for *A.alternata* and 8×10^4 spores/ml for *D.rostrata* and *D.halodes*. For wound inoculation, five wounds were made in the pericarp of the fruits by a 1 mm diameter sterilized needle. After 10 weeks of planting when pod fully developed, the spore suspension of the aforesaid fungi were sprayed separately on both wounded and unwounded pods by an ordinary sprayer. The inoculated plants were covered with the polythene bags for 36 hr. to maintain high humidity. The fourth plot which served as control plants was treated similarly except that the fruits/pods were sprayed with distilled water. The percent

TABLE 1. PERCENT INCIDENCE OF FRUIT ROT OF CHILLIES.

Fungi	Treatment		Incidence (%)										Average(%)	Sd
			Number of the fruit infected/Total number of fruit inoculated per plant											
			1	2	3	4	5	6	7	8	9	10		
<i>Alternaria alternata</i>	Round chillies	Wounded	100/102 (98.04)	100/105 (95.24)	98/98 (100.0)	45/49 (91.84)	50/52 (96.15)	150/156 (96.15)	92/95 (96.84)	86/88 (97.73)	36/39 (92.31)	102/105 (97.14)	96.14	2.51
		Unwounded	0/98	/15	0/45	0/59	0/92	0/135	0/150	0/338	0/72	0/85	0.0	—
	Long chillies	Wounded	59/82 (71.95)	102/140 (72.86)	28/43 (65.12)	45/4792/123 (78.95)	84/121 (74.79)	48/67 (69.42)	125/18081/150 (71.64)	55/94 (69.44)	55/94 (54.0)	55/94 (58.51)	69.33	6.13
		Unwounded	0/102	0/58	0/38	0/92	0/186	0/99	0/74	0/103	0/114	0/71	0.0	—
<i>Drechslera rostrata</i>	Round chillies	Wounded	91/96 (94.79)	80/102 (78.43)	38/41 (92.68)	115/130 (88.46)	79/98 (80.61)	50/56 (89.29)	126/14066/72 (90.0)	105/120 (91.67)	55/58 (87.50)	55/58 (94.82)	88.82	5.51
		Unwounded	54/72 (75.0)	100/137 (72.99)	51/89 (57.3)	105/152 (69.08)	62/98 (63.27)	41/72 (56.94)	92/112 (82.14)	46/81 (56.79)	94/150 (62.67)	32/40 (80.0)	67.62	9.61
	Round chillies	Wounded	19/51 (37.25)	41/98 (41.84)	34/88 (38.64)	48/102 (47.06)	32/77 (41.56)	21/50 (42.0)	18/46 (39.13)	35/91 (38.46)	21/62 (33.87)	57/150 (38.0)	39.78	3.55
		Unwounded	42/88 (47.73)	34/106 (32.08)	29/92 (31.52)	19/51 (37.25)	41/102 (40.19)	15/41 (36.59)	37/98 (37.76)	60/150 (40.0)	67/169 (39.64)	27/84 (32.14)	37.53	4.86
<i>D. halodes</i>	Long chillies	Wounded	68/96 (70.83)	48/92 (52.17)	77/115 (66.96)	29/47 (61.70)	52/91 (57.14)	98/162 (60.49)	61/99 (61.62)	67/106 (63.21)	99/157 (63.06)	28/54 (51.85)	60.90	5.95
		Unwounded	19/72 (26.39)	28/117 (23.93)	17/92 (18.49)	16/54 (29.63)	20/97 (20.62)	36/104 (34.62)	18/99 (18.18)	31/109 (28.44)	11/66 (16.67)	24/122 (19.67)	23.66	5.93
	Round chillies	Wounded	33/102 (32.35)	30/91 (32.97)	27/88 (30.68)	42/110 (38.18)	29/47 (35.29)	30/102 (29.4)	23/76 (30.26)	55/139 (39.56)	21/91 (23.08)	18/36 (20.93)	31.27	5.92
		Unwounded	8/51 (15.69)	19/98 (19.38)	17/89 (19.10)	30/116 (25.86)	14/82 (17.07)	10/66 (15.15)	21/104 (20.19)	11/99 (11.11)	15/72 (20.83)	12/103 (11.65)	17.60	4.45
Control	Round chillies	Wounded	0/55	0/105	0/98	0/78	0/136	0/112	0/76	0/45	0/105	0/91	0.0	—
		Unwounded	0/99	0/109	0/112	0/71	0/94	0/55	0/106	0/135	0/150	0/61	0.0	—
	Long chillies	Wounded	0/99	0/72	0/117	0/122	0/79	0/92	0/151	0/88	0/101	0/81	0.0	—
		Unwounded	0/45	0/52	0/97	0/81	0/122	0/161	0/122	0/87	0/91	0/102	0.0	—

Figure in parenthesis indicate the percentage of infected fruit.

incidence of fruit rot in both wounded and unwounded inoculation was calculated (Table 1). The initial symptoms of fruit/pod rot appeared 5 days after inoculation and continued to develop for five weeks. The temperature noted during the period of disease establishment was from 20-28°.

The pathogenesis test revealed that *D. rostrata* and *D. halodes* were effective in causing fruit rot in both wounded and unwounded pod inoculations. The high percent of infection obtained in round chillies in comparison to long chillies. *A. alternata*, *D. rostrata* and *D. halodes* showed an average infection 96.94, 88.82 and 60.9% fruit rot on wounded and 0.0, 67.62 and 23.66% in unwounded round chillies. In long chilli the disease incidence was 69.33, 39.78 and 31.27% in wounded and 0, 37.53 and 17.60% in unwounded inoculations with the three pathogens, respectively. Unwounded fruit did not suffer as much rotting as the wounded ones as has been observed by earlier workers [1-3]. *D. rostrata* has also produced fruit rot in wounded and unwounded long chillies. *A. alternata* proved non-pathogenic in unwounded fruit and attacked only wounded and weakened plant tissues as reported previously [1-2].

Symptoms on fruit due to *D. rostrata*, *D. halodes* and *A. alternata* appeared 5 days after inoculation. The small sized or premature fruit became soft, shrivelled and dark-brown. The mature fruits developed light to dark-brown lesions of 2-14 mm diameter. Lesions increased and coalesced in later stages to cover large areas of the fruits. Affected portions of the fruits become dark-brown and show rotting. Whitish mycelial coatings were present on the surface of the lesion. The seeds which were also coated with the mycelium were shrivelled and of small size. The pods infected with *D. rostrata* has similar symptoms plus a pink to purple colour discoloration on necrotic areas of the fruit pericarp.

These studies indicate that *D. rostrata* and *D. halodes* are pathogenic to chillies fruit in Pakistan.

Key words: Chillies, Pod rot, Fungi.

References

1. M. Ilyas, M. Sultana Khan and Inamullah Khan, Pakistan Agri. Sci., **23** (3), 188 (1985).
2. N. Sultana, S. A. J. Khan and A. K. Khanzada, Pakistan j. sci. ind. res., **31**, 365 (1988).
3. N. U. Uma, Plant Diseases, **65**, 915 (1981).