

Original Research Article

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Pathogenic Reaction of Different Isolates of *Colletotrichum capsici* on Chilli Cultivars

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ABSTRACT

The present investigation was aimed to identify the resistant germplasms against *Colletotrichum capsici* *in vitro* by artificial inoculation. Ten isolates of *Colletotrichum capsici* collected from different regions of Vidarbha and Marathwada (Maharashtra), Bidar district (Karnataka) and Guntur district (Andhra Pradesh) showing varied type of pathogenic ability against chilli variety Jayanti and designated as strongly, moderately and weakly pathogenic on the basis of per cent leaf area covered by the disease. The varietal screening studies revealed that, remarkable diversity could not observed among the isolates. Strongly pathogenic Cc₆ (Guntur) and Cc₉ (Akola) recorded the highly susceptible reaction against Jayanti and susceptible reaction against Phule Jyoti, Pusa Jwala, G-4 and NCH-162-14-17 and moderately susceptible reaction against AKC-406-1. Isolate Cc₆ exhibited moderately susceptible reaction to AKC-97-20-06-2 and TEJ-F5-01-2-24-14-RIII-3-1-6 and susceptible reaction against Hybrid-1, whereas isolate Cc₉ exerted susceptible reaction against AKC-97-20-06-2 and TEJ-F5-01-2-24-14-RIII-3-1-6 and highly susceptible reaction against Hybrid-1. Isolate Cc₈ (Washim) was exhibited moderately resistant reaction against Phule Jyoti, while isolate Cc₁₀ (Jalna) exerted highly susceptible reaction against AKC-406-1. All other isolates of *C. capsici* produced varied type of reaction against host varieties, indicating existence of variability among *C. capsici* isolates. Initiation of symptoms, maximum incidence and acervuli production was also comparable among the isolates relates to varied type of aggressiveness.

Keywords

Colletotrichum capsici, Varietal screening, Chilli isolates

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Introduction

Chilli (*Capsicum annum* L.) is one of the most valued spicy vegetable and it has a unique role in human diet. They are nutrient rich with vitamins A, C, E and minerals like potassium. It is an annual herbaceous vegetable of solanaceae which is cultivated in almost all places. The important chilli

growing states are Andhra Pradesh, Karnataka and Tamil Nadu. In spite of chilli is infected by various biotic and abiotic factors. In biotic several pathogens are causing severe diseases and yield loss. The Chilli anthracnose pathogen *C. capsici* infects diverse host with a high degree of pathogenic variability (Akhtar and Singh, 2007). The genus *Colletotrichum* causes anthracnose on wide

range of fruits, vegetables, cereals, grasses and ornamental plants (Dean *et al.*, 2012). The anthracnose is one of serious diseases on chili to cause the yield loss and to reduce the quantity of marketable fruits. In India, in severe cases, pre harvest and post-harvest losses comprise up more than 50%. Significant yield losses were reported from Punjab and Haryana (20-60%) and Assam (12-30%) (Sahitya *et al.*, 2014). Disease incidence is recorded from 20 to 80% on fruits of *Capsicum annum* and 5 to 20% on fruits of *C. frutescens* infected in the field conditions. It has been reported that a part of post harvest losses of fruit quality deterioration of chilli is due to anthracnose ranges from 21-47% (Muthu Kumar and Bhaskaran, 2007). Therefore managing this disease by host plant resistance is a good option. So, the collection of disease samples and to find out the source of resistance among chilli germplasms against fruit rot was carried out. The present investigations were aimed to understand the pathogenic ability and its host plant relationship with each other and differential reaction in chilli.

Materials and Methods

Collection of disease samples

The disease samples of fruit rot of chilli (plant parts) were collected from different geographical areas of Vidarbha and Marathwada region of Maharashtra (M.S.), Bidar district of Karnataka and Guntur district of Andhra Pradesh.

Isolation and maintenance of cultures

The samples showing characteristic symptoms of fruit rot, dieback and anthracnose were collected from different localities and cut along with healthy tissues. The obtained cultures were further purified by single spore isolation technique. The cultures

were abbreviated as Cc. (*Colletotrichum capsici*) and reviewed by periodic transfer and maintained on PDA.

Pathogenicity test

Monosporous cultures of isolates were obtained from the fungal cultures. The epidermal layer of fruit, leaves of the susceptible variety (Jayanti) of chilli was injured by carborandom powder before inoculation. The spore suspension of each isolate of *Colletotrichum capsici* was used for inoculating the plants in pots by using sterilized cotton swab. The seedlings were kept for predisposition for 24 hour prior to inoculation by irrigating and covered the moist hessian cloth. Inoculation by cotton swab was made in the evening hour and covered with hessian cloth to provide 100 per cent humidity for spore germination and infection up to 48 hour. Similarly the fruits were also inoculated by smearing the inoculums on the upper surface and incubated in the humid chamber. After inoculating the plants with *Colletotrichum capsici*, the host plants were examined periodically for development of symptoms. Re-isolations were made and the fungus obtained was compared with the original one.

Screening of chilli germplasms against *Colletotrichum capsici*

Four chilli varieties i.e. Jayanti, Phule Jyoti, Pusa Jwala and G-4 procured from Chilli and Vegetable Research Unit, Dr.P.D.K.V. Akola were grown in earthen pot in autoclaved soil. The plants were put to predisposition at age of 60 day for 24 hr prior to inoculation by irrigating and covering with moist hessian cloth. The leaves were washed with distilled water, dried for five minutes. The leaves were again washed with sterile distilled water. Spore suspension of fungal culture grown on petriplates was obtained with standard

conidial suspension having 10^6 spores per ml. Suspension was smeared on the healthy leaves by slightly injured with carborandum powder rubbing by cotton swab on each leaf. Similarly control was maintained by smearing with sterile distilled water. These plants were covered with moist hesian cloth to provide 100 per cent humidity required for spore germination and development of symptoms. The pots were then kept on net house benches and observed daily for development of symptoms and the disease intensity was recorded after full development of symptoms. The complete experiment was installed in replicated form.

Pathogenic variability by Pinprick method

Healthy chilli fruits of five germplasms i.e. NCH-162-14-17, AKC-406-1, AKC-97-20-06-2, TEJ-F5-01-2-24-14-RIII-3-1-6 and Hybrid-1 were surface sterilized with 0.1 per cent mercuric chloride for 2 minutes and again rinsed with sterile distilled water and incubated at $27 \pm 2^\circ\text{C}$ for 48 hr to see the presence of incipient infection. A standard conidial suspension having 10^6 spores per ml were inoculated by making five pricks per fruits with help of sterilized needle by smearing on each fruit. The inoculated fruits were kept in moist chamber prepared in plastic petriplates by placing double layer of moist blotting sheet at the bottom and incubated at $25 \pm 1^\circ\text{C}$ in BOD incubator.

Chilli fruits were placed on glass rod to avoid contamination on fruit with the blotting sheet. The stalk of the fruit covered with cotton swab dipped in 2 per cent sucrose solution. Observations on the degree of fruit rot were taken on the extent of development of lesions on the fruit up to 15 days after inoculation. The disease intensity on fruits was scored on the basis of scale (Mandal and Beura, 2003) and per cent disease intensity (PDI) and per cent disease incidence was calculated

adopting the formula given by Mc Kinney (1923).

Results and Discussion

Collection, isolation, purification and identification of pathogen

Fruit rot infected plant parts were collected from different geographical areas of Vidarbha and Marathwada region of Maharashtra, Bidar (Karnataka) and Guntur (Andhra Pradesh). The culture thus obtained was identified as *Colletotrichum capsici* on the basis of pathogenic ability and morphological characters as per the CMI publications. Purified cultures of the fungus were maintained on PDA slants for further studies and abbreviated as Cc.

Pathogenicity and symptoms

The characteristic symptoms on leaves are in the form of irregular to circular areas with brown margins. On fruits grayish black colour elongated spots forming acervuli in advanced stage arranged in elliptical manner was examined. The *Colletotrichum capsici* causing chilli fruit rot was isolated and pathogenicity was proved.

Pathogenic ability of ten isolates of *Colletotrichum capsici* was tested on a susceptible chilli variety (Jayanti). Observations were recorded on per cent disease intensity after 12 DAI and the results are presented in Table 1. Two isolates Cc₆ and Cc₉ were categorized as strongly pathogenic, four Cc₁, Cc₅, Cc₈ and Cc₁₀ as moderately pathogenic and rest of the four Cc₂, Cc₃, Cc₄ and Cc₇ as weakly pathogenic. The basis for categorization of different isolates was adopted by considering the published data of Palarpawar and Ghurde (1994) categorized the isolates as aggressive and less aggressive. Similar observations were also mentioned by

Sangdee *et al.*, (2011) and Lubna Massodi *et al.*, (2013).

Screening of chilli germplasms against *Colletotrichum capsici*

Ten isolates of *C. capsici* were tested against four chilli varieties viz., Jayanti, Phule jyoti, Pusa jwala and G-4 procured from Chilli and

Vegetable Research Unit, Dr.P.D.K.V. Akola. Same isolates were also tested on fruits of five chilli germplasms viz., NCH-162-14-17, AKC-406-1, AKC-97-20-06-2, TEJ-F5-01-2-24-14-RIII-3-1-6 and Hybrid-1, to assess their pathogenic reaction on the basis of 0 – 5 disease grading scale (Mandal and Beura, 2003).

Disease rating scale (0 - 5)		
Rating grade	Disease intensity (%)	Pathogenic Reaction
0	0	Highly resistance (HR)
1	1 – 5	Resistance (R)
2	6 – 10	Moderately resistance (MR)
3	11 – 25	Moderately susceptible (MS)
4	26 - 50	Susceptible (S)
5	> 50	Highly susceptible (HS)

Jayanti was observed as moderately susceptible against five isolates viz., Cc₂, Cc₃, Cc₄, Cc₇ and Cc₁₀, while Cc₁, Cc₅ and Cc₈ exhibited susceptible reaction, whereas Cc₆ (Guntur) and Cc₉ (Akola) exhibiting more virulence against Jayanti exhibiting highly susceptible reaction. Phule jyoti was moderately resistant to isolate Cc₈ (Washim) indicating minimum virulence, while Cc₃, Cc₅, Cc₇ and Cc₁₀ exerted moderately susceptible reaction and isolate Cc₁, Cc₂, Cc₄, Cc₆ and Cc₉ exhibited the high virulence i.e.

susceptible reaction against Phule jyoti indicating variability among the isolates. Variety Pusa jwala exerted moderately susceptible reaction to Cc₁, Cc₂, Cc₃, Cc₄ and Cc₇, whereas susceptible reaction was observed against Cc₅, Cc₆, Cc₈, Cc₉ and Cc₁₀ indicating maximum virulence. Differential reaction were also existed against G-4, wherein Cc₇ (Karla) showed moderately susceptible reaction, whereas all other isolates exhibited susceptible reaction showing maximum virulence against G-4 (Table 2).

Table.1 Pathogenic ability of *C. capsici* isolates showing disease reaction against susceptible variety (Jayanti)

Isolate	Location	PDI (%)	Reaction
Cc ₁	Chinchola	43.33	MP
Cc ₂	Parbhani	19.50	WP
Cc ₃	Bidar	17.67	WP
Cc ₄	Divatana	24.33	WP
Cc ₅	Neemkhed	37.17	MP
Cc ₆	Guntur	51.50	SP
Cc ₇	Karla	18.67	WP
Cc ₈	Washim	33.83	MP
Cc ₉	Akola	51.83	SP
Cc ₁₀	Jalna	38.83	MP

Table.2 Pathogenic reaction of *C. capsici* isolates on leaves of chilli cultivars

Sr. No.	Isolate	Per cent disease intensity			
		Jayanti	Phule Jyoti	Pusa Jwala	G - 4
1	Cc ₁	43.33 (41.15)	36.83 (37.35)	24.27 (30.20)	40.83 (40.28)
2	Cc ₂	19.50 (26.21)	33.00 (35.06)	18.83 (25.70)	45.66 (42.53)
3	Cc ₃	17.67 (24.88)	23.33 (28.86)	16.33 (23.81)	28.66 (32.39)
4	Cc ₄	24.33 (29.53)	35.33 (36.45)	21.07 (27.35)	26.00 (28.66)
5	Cc ₅	37.17 (37.58)	12.16 (20.44)	30.00 (33.21)	33.83 (35.55)
6	Cc ₆	51.50 (45.86)	26.56 (30.98)	31.57 (34.20)	31.00 (33.83)
7	Cc ₇	18.67 (25.62)	18.56 (25.55)	23.83 (29.20)	23.33 (28.86)
8	Cc ₈	33.83 (35.55)	8.30 (16.74)	31.33 (34.02)	33.50 (35.37)
9	Cc ₉	51.83 (46.03)	30.66 (33.65)	34.16 (35.79)	30.50 (33.52)
10	Cc ₁₀	38.83 (38.53)	25.67 (30.40)	33.16 (35.18)	29.50 (32.90)
F test		Sig.	Sig.	Sig.	Sig.
SE (m)±		0.27	0.48	0.49	0.52
CD (P=0.01)		1.11	1.96	1.98	2.10

Table.3 Varietal reaction of chilli cultivars against *C. capsici* isolates

Sr. No.	Isolate	Reaction									
		Cc ₁	Cc ₂	Cc ₃	Cc ₄	Cc ₅	Cc ₆	Cc ₇	Cc ₈	Cc ₉	Cc ₁₀
1	Jayanti	S	MS	MS	MS	S	HS	MS	S	HS	S
2	Phule Jyoti	S	S	MS	S	MS	S	MS	MR	S	MS
3	Pusa Jwala	MS	MS	MS	MS	S	S	MS	S	S	S
4	G -4	S	S	S	S	S	S	MS	S	S	S

Table.4 Aggressiveness / virulence of *Colletotrichum capsici* isolates against chilli germplasm (fruits)

Isolates	Varieties	Hrs to initiate symptoms	Days for max symptoms	Number of pricks infected	% infection	Days to form acervuli
Cc₁	NCH-162-14-17	72	8	16	80	5
	AKC-406-1	52	6	18	90	3
	AKC-97-20-06-2	85	8	15	75	6
	TEJ-F5-01-2-24-14-RIII-3-1-6	85	9	13	65	6
	Hybrid-1	52	9	18	90	4
Cc₂	NCH-162-14-17	75	8	16	80	5
	AKC-406-1	90	9	13	65	6
	AKC-97-20-06-2	90	9	16	80	6
	TEJ-F5-01-2-24-14-RIII-3-1-6	75	8	15	75	5
	Hybrid-1	52	6	20	100	3
Cc₃	NCH-162-14-17	52	6	20	100	3
	AKC-406-1	95	9	13	65	6
	AKC-97-20-06-2	96	9	13	65	6
	TEJ-F5-01-2-24-14-RIII-3-1-6	90	9	15	75	6
	Hybrid-1	52	6	20	100	3
Cc₄	NCH-162-14-17	74	8	17	85	5
	AKC-406-1	90	8	15	75	6
	AKC-97-20-06-2	72	8	16	80	5
	TEJ-F5-01-2-24-14-RIII-3-1-6	52	6	18	90	4
	Hybrid-1	52	6	20	100	3
Cc₅	NCH-162-14-17	85	8	14	70	6
	AKC-406-1	96	9	9	45	6
	AKC-97-20-06-2	85	8	15	75	6
	TEJ-F5-01-2-24-14-RIII-3-1-6	52	6	20	100	3
	Hybrid-1	90	9	12	60	6

Note: Four fruits per variety, 5 pricks per fruit

Aggressiveness / virulence of *Colletotrichum capsici* isolates against chilli germplasm (fruits) (cont....)

Isolates	Varieties	Hrs to initiate symptoms	Days for max symptoms	Number of pricks infected	% infection	Days to form acervuli
Cc₆	NCH-162-14-17	72	8	16	80	5
	AKC-406-1	96	9	11	55	6
	AKC-97-20-06-2	85	9	12	60	6
	TEJ-F5-01-2-24-14-RIII-3-1-6	90	9	11	55	6
	Hybrid-1	72	8	17	85	5
Cc₇	NCH-162-14-17	72	8	17	85	5
	AKC-406-1	52	6	18	90	4
	AKC-97-20-06-2	96	9	12	60	6
	TEJ-F5-01-2-24-14-RIII-3-1-6	52	6	18	90	4
	Hybrid-1	52	6	20	100	3
Cc₈	NCH-162-14-17	52	6	20	100	3
	AKC-406-1	90	9	13	65	6
	AKC-97-20-06-2	52	6	20	100	3
	TEJ-F5-01-2-24-14-RIII-3-1-6	96	9	12	60	6
	Hybrid-1	52	6	20	100	3
Cc₉	NCH-162-14-17	72	6	20	100	3
	AKC-406-1	90	8	16	80	6
	AKC-97-20-06-2	96	8	15	75	6
	TEJ-F5-01-2-24-14-RIII-3-1-6	72	8	17	85	5
	Hybrid-1	52	6	20	100	3
Cc₁₀	NCH-162-14-17	52	6	20	100	3
	AKC-406-1	60	6	20	100	3
	AKC-97-20-06-2	72	6	19	95	5
	TEJ-F5-01-2-24-14-RIII-3-1-6	72	8	16	80	5
	Hybrid-1	52	6	18	90	4

Note: Four fruits per variety, 5 pricks per fruit

Table.5 Pathogenic reaction of *Colletotrichum capsici* isolates against chilli germplasm (fruits)

Sr. No.	Isolate	Per cent disease intensity					Per cent disease incidence				
		NCH-162-14-17	AKC-406-1	AKC-97-20-06--2	TEJ-F5-01-2-24-14-RIII-3-1-6	Hybrid-1	NCH-162-14-17	AKC-406-1	AKC-97-20-06--2	TEJ-F5-01-2-24-14-RIII-3-1-6	Hybrid-1
1	Cc ₁	26.70 (31.11)	43.53 (41.27)	33.60 (35.43)	20.50 (26.92)	50.33 (45.17)	86.67 (68.61)	86.67 (68.61)	86.61 (68.61)	66.67 (54.76)	100.00 (90.00)
2	Cc ₂	30.37 (33.46)	19.30 (26.06)	38.77 (38.47)	34.33 (35.85)	43.33 (41.15)	86.67 (68.61)	66.67 (54.76)	86.67 (68.61)	80.00 (63.44)	100.00 (90.00)
3	Cc ₃	34.37 (35.91)	18.20 (25.25)	33.50 (35.37)	49.33 (44.60)	51.33 (45.75)	100.00 (90.00)	53.33 (46.89)	73.33 (58.89)	80.00 (63.44)	100.00 (90.00)
4	Cc ₄	18.73 (25.62)	42.70 (40.80)	27.77 (31.76)	35.33 (36.45)	48.33 (44.03)	86.67 (68.61)	86.67 (68.61)	73.33 (58.89)	100.00 (90.00)	100.00 (90.00)
5	Cc ₅	31.03 (33.83)	19.67 (26.35)	33.33 (35.24)	43.67 (41.38)	34.33 (35.85)	73.33 (58.89)	46.67 (43.05)	80.00 (63.44)	100.00 (90.00)	60.00 (50.77)
6	Cc ₆	43.57 (41.32)	23.60 (29.06)	19.33 (26.06)	23.67 (29.13)	30.00 (33.21)	80.00 (63.44)	46.67 (43.05)	60.00 (50.77)	60.00 (50.77)	86.66 (68.53)
7	Cc ₇	16.93 (24.35)	33.93 (35.67)	18.27 (25.33)	38.67 (38.47)	49.00 (44.43)	80.00 (63.44)	93.33 (75.00)	46.67 (43.11)	86.67 (68.61)	100.00 (90.00)
8	Cc ₈	38.37 (38.29)	28.80 (32.46)	37.63 (37.82)	18.77 (25.62)	48.50 (44.14)	100.00 (90.00)	60.00 (50.77)	100.00 (90.00)	46.67 (43.11)	100.00 (90.00)
9	Cc ₉	28.63 (32.33)	18.47 (25.48)	33.53 (35.37)	39.10 (38.70)	54.50 (47.38)	100.00 (90.00)	80.00 (63.44)	66.67 (54.76)	93.33 (75.00)	100.00 (90.00)
10	Cc ₁₀	43.20 (41.09)	58.57 (49.95)	40.10 (39.29)	28.83 (32.46)	45.50 (42.42)	100.00 (90.00)	100.00 (90.00)	93.33 (75.00)	93.33 (75.00)	86.66 (68.53)
F test		Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
SE (m) ±		0.39	0.30	0.32	0.28	0.31	9.97	8.15	12.13	9.95	7.92
CD (P=0.01)		1.58	1.22	1.30	1.13	1.25	40.13	40.13	48.83	38.05	31.88

Table.6 Disease reaction of *Colletotrichum capsici* isolates against chilli germplasm (fruits)

Sr. No.	Variety	Reaction									
		Cc ₁	Cc ₂	Cc ₃	Cc ₄	Cc ₅	Cc ₆	Cc ₇	Cc ₈	Cc ₉	Cc ₁₀
1	NCH-162-14-17	S	S	S	MS	S	S	MS	S	S	S
2	AKC-406-1	S	MS	MS	S	MS	MS	S	S	MS	HS
3	AKC-97-20-06-2	S	S	S	S	S	MS	MS	S	S	S
4	TEJ-F5-01-2-24-14-RIII-3-1-6	MS	S	S	S	S	MS	S	MS	S	S
5	Hybrid - 1	HS	S	HS	S	S	S	S	S	HS	S

MS = Moderately susceptible

S = Susceptible

HS = Highly susceptible

The pathogenic variability of ten *C. capsici* isolates on fruits of five differentials (germplasms) of chilli by pin pricked method, on the basis of period for initiation of symptoms, days for maximum symptoms, per cent infection and days for development of acervuli. In general chilli Hybrid-1 exhibited initial symptoms after 52 hr by all isolates, except Cc₅ (90 hr) and Cc₆ (72 hr) might be minimum virulence, while duration required for the complete development of symptoms was ranged between 6 to 9 days, depends on the germplasm and pathogenic ability. Maximum incidence i.e. 100 per cent was achieved by Cc₂, Cc₃, Cc₄, Cc₇, Cc₈ and Cc₉ against Hybrid-1, whereas 45 per cent incidence against Cc₅ was recorded in AKC-406-1 followed by 55 per cent in TEJ-F5-01-2-24-14-RIII-3-1-6 against Cc₆. All isolates had an ability to develop acervuli structure within 3 to 6 days, on different germplasm lines. Differences in production of acervuli might be due to isolates and host interaction during the process of pathogenesis also revealed the variation (Table 3 and 4).

Chilli germplasm NCH-162-14-17 was moderately susceptible to isolate Cc₄ (Divatana) and Cc₇ (Karla), while susceptible to rest of the isolates of *C. capsici* indicating maximum virulence. AKC-406-1 exhibited moderately susceptible reaction to Cc₂, Cc₃, Cc₅, Cc₆ and Cc₉, whereas Cc₁, Cc₄, Cc₇ and Cc₈ exerted susceptible reaction and only Cc₁₀ (Jalna) showed highly susceptible reaction indicating high degree of virulence. Isolate Cc₆ (Guntur) and Cc₇ exerted moderately susceptible, while rest of the isolates of *C. capsici* showed susceptible reaction against AKC-97-20-06-2. TEJ-F5-01-2-24-14-RIII-3-1-6 possesses moderately susceptible reaction against Cc₁, Cc₆ and Cc₈ (Washim), whereas susceptible reaction was observed in rest of the isolates. Differences in pathogenic ability was also found against Hybrid-1, wherein isolate Cc₂, Cc₄, Cc₅, Cc₆, Cc₇, Cc₈ and Cc₁₀

were exerted susceptible reaction, while Cc₁ (Chinchola), Cc₃ (Bidar) and Cc₉ (Akola) were highly aggressive and recorded susceptible reaction indicating high degree of virulence (Table 5 and 6).

Host differential reactions revealed the pathogenic variation among all the isolates of *C. capsici* on a set of 9 differentials germplasms of chilli. Naik *et al.*, (2003) thirty seven chilli genotypes were screened against *C. gloeosporioides* and *C. capsici* in pinprick method of inoculation. The present results corroborates with the findings of Mandeep Kaur *et al.*, (2005) who evaluated severity on seventy one chilli germplasm lines against thirty seven isolates of *C. capsici* and most of the germplasm lines were susceptible to almost all the isolates and only few exhibited resistant or moderately resistant reaction to certain isolates. The results also confirm the findings of Ruchi Garg *et al.*, (2007) who evaluated 13 varieties of chilli against *C. capsici* by using pin pricked method. Gupta *et al.*, (2018) observed that injury to the fruits favoured the *C. capsici* development on detached fruit surface. Varieties Arka Harita, Classica-152 and Madhurima-148 were showing resistance reaction under two drops of conidial suspension after injury the fruits while EC-341075, Pusa Jwala, Pant C-1, Arka Meghna, LAC-434 and Sonakshi-44 were show moderately resistance reaction as compared to rest of varieties after five, seven and ten days of inoculation. Katediya *et al.*, (2019) evaluated thirty chilli germplasms under field conditions against anthracnose disease of chilli. Among them, three germplasms showed resistant reaction (JDNYC 07-73, JCS 10-98 and JDNYC09-70).

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