



First report of a new pathogenic variant of *Cercospora canescens* on mungbean (*Vigna radiata*) from India

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Atypical symptoms were observed on the recently released mungbean (*Vigna radiata*) cv. Meha that were attributed to the pathogen *Cercospora canescens* during the sampling of *Cercospora* leaf spot disease. The disease severity caused by the putative new strain of *C. canescens* (isolate NFCCI-2370) varied from 60 to 80% at the farm of the Indian Institute of Pulses Research Kanpur, India. Similar atypical symptoms were also observed at neighbouring research stations where seed multiplication of cv. Meha is performed. Yield losses from the new strain varied from 50-70% at these sites that was significantly higher than with the previously identified typical strain. Symptoms of the new strain were dry necrotic, grey irregular sporulating spots without chlorotic margins. The pathogen was isolated from infected leaves using the method of Goode & Brown (1970) and purified by single spore isolation in the laboratory.

Isolates of the pathogen were confirmed as *C. canescens* by production of cercosporin (Daub, 1982) and typical conidia and conidiophores (Ellis & Martin, 1982). Inoculation on to plants of cvs. Meha, Kopergaon and Malvia Joyoti with a monoconidial culture of the new strain produced the atypical symptoms described (Fig. 1a), whereas inoculation with the typical *C. canescens* isolates (MTCC-10835) produced several small, angular, necrotic water-soaked grey sporulating lesions surrounded by chlorotic margins (Fig. 1b). A morphological comparison of the new strain (NFCCI-2370) with the typical strain (MTCC-10835) was done using mycelium from infected leaves. The new strain was distinguished from the typical strain by 1-2 scars on the conidiophores, whereas the number of scars was 2-7 in the typical strain. The conidiophores (90.09 µm x 9.64 µm) and conidia (128.94 µm x 5.49 µm) were also shorter in the new strain (Table 1). The new strain bears a single conidium at the tip of conidiophores with a prominent scar (Fig. 2). The radial growth, colony morphology and pigment production of the new strain (NFCCI-2370) on PDA at 25°C (Ferrater *et al.*, 2004) was faster, i.e.

3.82 mm/day and colony colour was creamy without production of cercosporin or spores (Fig. 3).

The identity of the new strain (NFCCI-2370) together with the other isolate (MTCC-10835) was further confirmed by comparison of ITS (Internal Transcribed Spacer) sequence data with reference isolates. BLASTn analysis of the sequence obtained showed 98-99% homology with reference isolates of *C. canescens*. The ITS region of rDNA was amplified with primers ITS1/ ITS4 and sequences of these isolates have been deposited in GenBank (Accession Nos. JF747032 and JF747033). Isolate NFCCI-2370 has been deposited with the National Facility for Indian Culture Collection, Agharakar Research Institute, Pune, India.

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Table 1. Morphological characters of new atypical strain (NFCCI-2370) of *C. canescens* compared with typical isolate (MTCC-10835) recorded on infected leaves of mungbean cv. Kopergaon.

Isolates of <i>Cercospora canescens</i>	Morphological characters*				Number of scars / conidiophore
	Conidiophores		Conidia		
	Length (µm)	Width (µm)	Length (µm)	Width (µm)	
NFCCI-2370	90.09 ± 2.92 (40.89-204.45)	9.64 ± 0.20 (4.77-13.63)	128.94 ± 5.76 (54.52-299.86)	5.49 ± 0.23 (4.09-12.27)	1.18 ± 0.03 (1-2)
MTCC-10835	127.03 ± 3.58 (54.52-204.45)	6.60 ± 0.19 (4.09-10.90)	158.38 ± 5.16 (68.15-286.23)	5.49 ± 0.12 (4.09-8.18)	4.2 ± 0.12 (2-7)

* Mean ± standard error of 100 conidiophores, conidia and number of scar / conidiophores. Range of conidiophore and conidial dimensions and number of scars/conidiophores in parentheses.

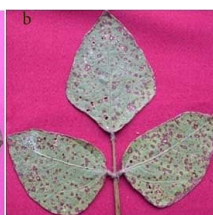
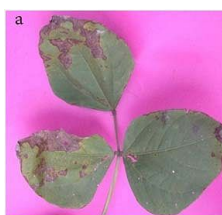


Figure 2



Figure 3

Figure 1



Figure 4

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