

Short Communication

## A novel host for *Alternaria citri* causing yellow leaf spot on Indian mustard (*Brassica juncea* L) in India

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((Received: 05 Dec 2023; Revised: 15 December 2023; Accepted: 20 December 2023)

### Abstract

Indian mustard (*Brassica juncea* L) constitutes a new host record for *Alternaria citri* Ellis & Pears (NFCCI 2704) fungus in India and worldwide. At the outset during 2011-12, leaves of Indian mustard (*B. juncea*) cultivar Varuna were found infected with yellow leaf spots and these were also observed in succeeding years upto 2022-23 in rapeseed-mustard fields in Bharatpur, India.

**Keywords:** *Alternaria citri*, *Brassica juncea*, leaf spot, new host

### Introduction

Indian mustard (*Brassica juncea* L) is one of the major edible oilseed crops in India, cultivated on 8.06 million ha with a production of to 11.75 million tonnes during 2020-21 (Anonymous 2022). During Rabi (post rainy) season since 2011-12, leaves of Indian mustard (*Brassica juncea*) cultivar Varuna were found infected with yellow leaf spots at experimental farm of ICAR-Directorate of Rapeseed-Mustard Research, Bharatpur, India (27°12'N, 77°27'E) and these were also observed in succeeding years upto 2022-23. Prevalence of 10-15 per cent severity of leaf spot was recorded in the different Indian mustard fields. The symptoms of the disease appear in the form of small (5-12 mm), circular to irregular, light to dark yellow traces on the leaves. On lower side of the spot, discoloration was seen as blue to purple colour irregular blotches (Fig.1). Infected leaf tissues (approximately 5 mm<sup>2</sup>) were surface sterilized for 20 s in 95% ethanol followed by 60 s in 0.525% NaOCl, washed thrice with sterilized distilled water and aseptically transferred onto potato dextrose agar medium in Petri dishes. Inoculated Petri dishes were incubated in the BOD incubator at 25± 2°C for 7 days. The fungus was identified as *Alternaria citri* Ellis & Pears on the basis of culture and morphological characteristics (Simmons 2007). The fully developed colonies were effused, olivaceous brown to black, conidiophores simple or branched, straight or flexuous, septate, pale to mid brown, up to 3-5µm wide, with a terminal scar and sometimes one or two lateral ones. Conidia solitary or branched chains of 2-7, straight or slightly curved, commonly obclavate or oval, up to 8 transverse and numerous longitudinal or oblique septa, Cultures grey. Morphological and molecular identification was confirmed from Agharkar Research

Institute, Pune, India and the culture was deposited (Accession number NFCCI2704).

Koch's postulates were confirmed by inoculating the healthy leaves of Indian mustard (*B. juncea*) cv. Rohini by spraying a conidial suspension (1x10<sup>5</sup> conidia/ml), obtained from 10-day old culture of the fungus. Sterilized water sprayed plants served as control. Inoculated leaves and water-sprayed controls were covered with polythene bags for 48 hours and kept under natural environmental conditions. Disease symptoms started developing on the stem after 8-10 days of inoculation. The fungus was re-isolated from the infected plants and the morphological characters were found identical to the identified culture. Review of the pertinent literature revealed that *Alternaria citri* Ellis & Pears is known as pathogen for citrus, rough lemon and mandarins (Timmer et al 2000; Gardner et al 1986). To our knowledge Indian mustard (*B. juncea* L) constitutes a new host record for this pathogen in India and worldwide.

### References

- Anonymous. 2022. Directorate of Economics and Statistics, Fourth Advance Estimates of Production for 2021-22.
- Simmons EG. 2007. CBS Fungal Biodiversity Center Utrecht, Netherlands.
- Timmer LW, Garnsey SM, Graham JH. 2000. Compendium of Citrus Diseases. *The American Phytopathol Soc* pp. 1-92.
- Gardner JM, Kono Y, Chandler JL. 1986. Bioassay and host-selectivity of *Alternaria citri* toxins affecting rough lemon and mandarins. *Physiol Mol Plant Pathol* 29:293-304.



Fig.1. Symptoms of *Alternaria citri* on *B. juncea* cv. Varuna (a: upper and C: lower side); on *B. juncea* cv. PHR2 (b: upper and d lower side)