

## Original Research Article

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## First Report of Black Pod in Tamarind due to *Aspergillus niger* from India

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### ABSTRACT

#### Keywords

Black Pod,  
*Aspergillus niger*,  
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#### Article Info

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Among Arid Zone Fruits, tamarind, *Tamarindus indica* L. of the family Leguminosae is a major fruit crop. Survey was conducted to find out major disease of tamarind and found black pod disease was major constraints. Black pod of tamarind incidence was observed range from 8.00 -22 per cent in pod on tree and incidence in storage was observed 5-22.5 per cent at different location in Jhalawar district during 2013 to 2017. Subsequently, the pathogen was isolated and pure culture of fungus established. The pathogenicity of fungus was proved and it was identified as *Aspergillus niger* by Indian Type Culture Collection, Division of Plant Pathology, Indian Agricultural Research Institute, New Delhi.

### Introduction

Tamarind native to tropical Africa, the tree grows wild throughout the Sudan and was so long ago introduced into and adopted in India that it has often been reported as indigenous there also, and it was speciously from this Asiatic country that it reached the Persians and the Arabs who called it "tamar hindi" (Indian date, from the date-like appearance of the dried pulp), giving rise to both its common and generic names. Unfortunately, the specific name, "indica", also perpetuates the illusion of Indian origin. Of all the fruit trees of the arid zone fruit, none is more widely distributed nor more appreciated as an ornamental than the tamarind, *Tamarindus indica* L. of the family

Leguminosae. Tamarind is a slow-growing, long-lived, massive tree reaches, under favorable conditions, a height of 80 or even 100 ft (24-30 m), and may attain a spread of 40 ft (12 m) and a trunk circumference of 25 ft (7.5 m). It is highly wind-resistant, with strong, supple branches, gracefully drooping at the ends, and has dark-gray, rough, fissured bark (Karale, 2006; Dilip Babu and Saroj 2018). Several diseases have been reported to infect tamarind in India, including various tree rot and bacterial leaf spot. The major disease reported are leaf spot (*Bartalinia robillardoides*, Tassi., *Exosporium tamarindi* Syd., *Hendersonia tamarindi* Syd., *Pestalotia poonensis* V. Rao., *Phyllosticta tamarindicola* P. *tamarinedina* Chandra and Tandon,

*Prathigada, tamarindi* Muthappa, *Xanthomonas tamarind* Cook., *Sphaceloma* spp. and *Stigmia tamarindi* (Syd.) Munjal and Kulshrestha, powdery mildew (*Erysiphe polygoni* DC and *Oidium* spp.), sooty mould (*Meliola tamarindi* Syd.), stem disease (*Fracchiאה indica* Talde), whit rot and wood rot (*Ganoderma lucidum* (leyss) Karst Lenziles Pliosti Fr.), stem rot (*Pholiota gollani* P. Henn), trunk or root rot (*Stereum nitidulum* Berk.), collar rot (*Phytophthora nicotianae* var. *nicotianae*); (Siddaramiah *et al.*, 1980), stem canker (*Hypoxylon nectrioides* Speg) (Mukherji and Bhasin, 1986; Siddaramiah and Kulkarni,1982; Morton, 1987; Parrotta, 1990), stony fruit *Pestalotia macrotricha* syd. (Loksha and Shetty, 1991). Rots attacking the tree include sap rot, *Xylaria euglossa*, brownish sap rot, *Polyporus calcuttensis*, and white rot, *Trametes floccose*, powdery mildew *Erysiphe polygoni*. Present survey was conducted to find out the major disease of tamarind in Rajasthan under All India Coordinated Research Project on Arid Zone Fruit at College of Horticulture and Forestry, Jhalawar Rajasthan.

**Materials and Methods**

A survey was conducted during 2013 to 2017 for disease of tamarind at different location (Table 1 and 2) in Jhalawar district and sample of tamarind pod collected from stored tamarind pod by the farmers and pod on tree at

different location in Jhalawar district. The pathogen was isolated from infected pod and purified using standard procedure.

**Results and Discussion**

Survey results revealed that diseases like leaf spot, powdery mildew and black pod observed in tamarind at different location in Jhalawar Rajasthan. Among the disease observed black pod was major constraints and its incidence was range from 8.00 -22 per cent at different location on tree (Table 1 and Figure 1) and in storage the incidence was observed 5-22.5 per cent at different location (Table 2 and Figure 2). Subsequently, the pathogen was isolated and pure culture of fungus established (Figure 3) and pathogenicity of fungus was proved. The Sporulating sections of black pod were removed and single-spore isolations were made on potato dextrose agar (PDA) medium. The single spore isolates developed into a compact white basal mycelium covered with a dense layer of conidiophores (Figure 4) covered with dark brown to black spores (Figure 5). The vesicles of the conidiophores were large and globose. The conidiophores were smooth-walled, hyaline with vesicle. Black pod of tamarind pathogen was identified as *Aspergillus niger* (Figure 4 and 5) by Indian Type Culture Collection (ITCC), Division of Plant Pathology, Indian Agricultural Research Institute, New Delhi.

**Table.1** Incidence of black pod in tamarind on tree

Year	Per cent Incidence	Location
2016	18.00	Dityakheri, Jhalrapatan
	22.00	Motipura Jhalrapatan
	13.00	Urmal Jhalrapatan
	8.00	Garnavda Bhavani mandi
2017	17.00	Motipura Jhalrapatan
	15.00	Amali Kala Bhuwani mandi
	14.00	Mishroli, Bhuwani mandi
	10.00	Gharnavada Bhuwani mandi

**Table.2** Incidence of black pod of tamarind in stored pod

Year	Per cent Incidence	location
2013	22.5	Ananda Jhalrapatan
2014	5.00	Kuntara, Khanpur
	15.00	Sarola Kala, Khanpur
2015	6.00	Borda, Aklera
	14.00	Tharol, Aklera
2016	19.00	Amlikala Bhavani Mandi
2017	18.00	Mishroli Bhawanimandi
	12.00	Garnavada Bhawanimandi



Figure 2 Incidence Black Pod of tamarind on tree



Figure 1 Black pod in stored tamarind pod



Figure 3 Pure Culture of *Aspergillus niger* isolated from tamarind pod



Figure 3 Microscopic picture of conidiophore of *A. niger*

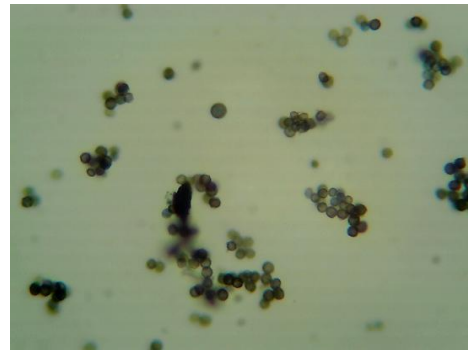


Figure 5 Microscopic picture Conidia of *A. niger*

Similarly, fruit rot caused by *Aspergillus niger* in lemon was also reported by Liaquat *et al.*, (2016).

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### References

Dilip Babu, J. and Saroj, P.L. 2018. Tamarind: A Promising Arid Fruit Crop. pp58

- Karale A.R. 2006. Tamarind: *Advance in Arid Horticulture*. 2: 405-433
- Liaquat, F., S. Arif, M. Ashraf, H. J. Chaudhary, and Munis M.F.H. 2016. *Aspergillus niger* causes Fruit Rot of Lemon and Grapefruit in Pakistan. *Plant Disease* 100(9):1951 <https://doi.org/10.1094/PDIS-02-16-0199-PDN>
- Lokesh, S. and Shetty, H.S. 1991. A *Pestalotia* species causing stony fruit disease in tamarind. *International Journal of Tropical Plant Disease*. 9(2): 179-181.
- Morton, J., 1987. Fruit of warm climate Miami FL 115-121
- Mukherji, K.G. and Bhasin, J., 1986. Plant Disease of India: A Source Book, New Delhi Tata McGraw Hill 468
- Parrotta, J.A. 1989. *Tamarindus indica* L. Tamarind SO-ITF-SM-30, June, USDA, Forestry Service, Rio Piedras, Puerto Rico, 1-5
- Siddaramiah, A. I. and Kulkarni, S. 1982. Control of powdery mildew disease of tamarind seedling. *Indian Forester*, 108(5):361-364
- Siddaramiah, A.L., S.A. Desai, and Bhat, R.P. 1980. A new collar rot of *Tamarindus indicus* from India (*Phytophthora nicotianae* var. *nicotianae*). *Science and Culture* 44(10): 358-359.
- Siddig, K. El. 2006. Tamarind: *Tamarindus indica* L. [https://books.google.co.in/books? isbn= 0854328599](https://books.google.co.in/books?isbn=0854328599).

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