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First report of Drechslera leaf spot on *Bixa orellana* in India

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ABSTRACT

Leaves showing brown lesions with light gray centre, largely circular in shape, distributed on entire leaf area baring mid- rib region were frequently encountered during field survey. On isolations, the diseased tissues yielded a pure fungal culture, which was identified as *Drechslera holmii.* The fungus produced the original symptoms in pathogenicity tests. This forms the first report on *D. holmii* infecting *B. orellana*.

Key Words: *Bixa orellan, Drechslera holmi,* leaf spot.

INTRODUCTION

Bixa orellan Linn.*,* also called as lipstick tree, arnato tree, annatto tree (English) and Sinduri, Markataharidra, Kampillaka (Sanskrit) is an important medicinal plant. It is evergreen shrub or small tree, 2-8 m high. Leaves spirally arranged simple, stipulate, ovate, green or dark green above, grey or brownish-green beneath. The plant is alexipharmic, useful in headaches, blood disorders, as an anti-emetic and to allay thirst. The seeds are cordial, astringent, febrifuge and a good remedy for gonorrhoea. The root bark is also useful in gonorrhoea and as an antiperiodic and antipyretic (Kirtikar & Basu 1999). An infusion of the leaves and roots is useful in epilepsy, dysentery, fever and jaundice (Joshi 2000). Previous phytochemical investigations have revealed the presence of several carotenoid derivatives including bixin and norbixin some terpenoids, tocotrienols, arenes and flavonoids (including luteolin and apigenin) in *Bixa orellana* seeds (Satyanarayan *et al.* 2003). Extracts of leaves and branches have shown to be effective at neutralising the effects of snake venoms (Nunez *et al.* 2004).

MATERIALS AND METHODS

During surveys of medicinal plants in Jaipur district of Rajasthan, leaves of *Bixa orellan* were found to be covered by reddish brown lesions with light gray in centre, mostly circular and few were irregular in size, spots were distributed on entire leaf lamina except mid rib portion. Due to merging of spots, leaf margin given dark reddish colour (Fig.1). Disease incidence ranged from 10 to 60%, and severity (>80 lesions per leaf). Tissue fragments, excised from the diseased tissue, were surface sterilized with 0.1% $HgCl_2$, plated on 2% potato dextrose agar (PDA) adjusted to pH 7.0, and incubated at 25 ± 2°C for 7 days. The pathogenicity of the fungus was tested by inoculating healthy plants with 10-ml spore suspensions (2×10^5 conidia/ml of sterile distilled water) derived from 7-day-old cultures of the fungus. Control plants were treated with sterile distilled water. *Drechslera holmii* was re-isolated from inoculated wilted plants, thus fulfilling Koch's postulates.

RESULTS AND DISCUSSION

Single-spore culturing of the fungus yielded *Drechslera holmii* on the basis of morphological characteristics. National Fungal Culture Collection of India (NFCCI), Agharkar Research Institute, Pune, India (accession No. OP 93) confirmed the identity. Search of literature revealed that *D. holmii* found pathogenic to maize crop (Vashney *et al.* 1998). However Cercospora leaf spot caused by *Cercospora bixae* Allesch.& F. Noack was reported from *B. orellana* (Anon 2002). In El Salvador, Venezuela and Brazil*, B. orellana* suffers from the leaf fungus *Oidium bixae*, which attacks mainly young fruits and pods; pods densely covered by bristles are more susceptible to attack because they retain moisture. In El Salvador, leaf damage is

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caused by *Cercospora* spp., and in Indonesia, the fungus *Corticium salmonicolor* has been observed (Orwa *et al.* 2009). To our knowledge, on the basis of the literature, this is the first report from India and worldwide showing that *D. holmii* infects *B. orellana.*

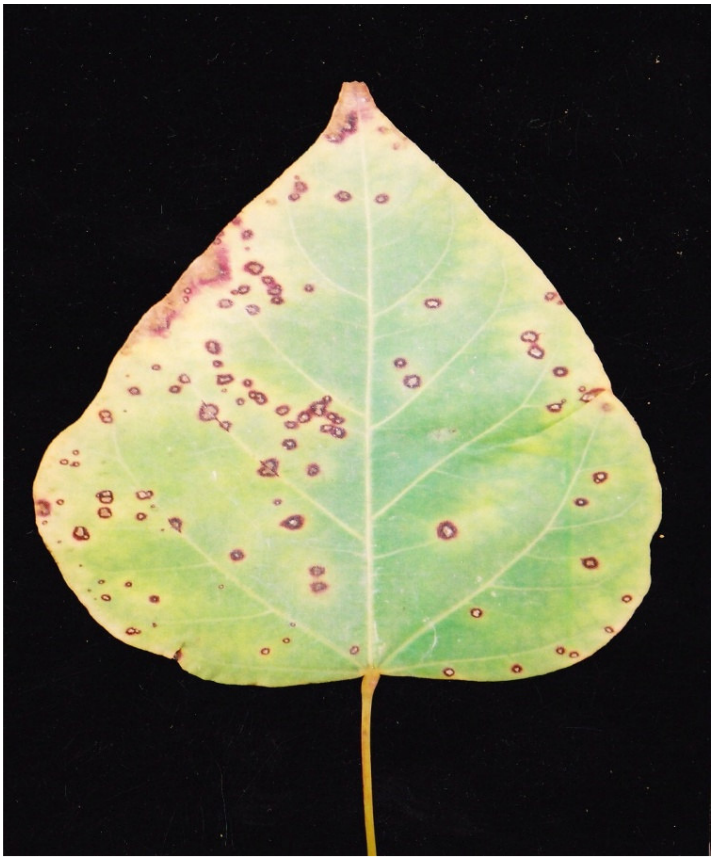

Figure 1. Drechslera leaf spot *s*ymptoms on *Bixa orellana*

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