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FIRST REPORT OF POWDERY MILDEW CAUSED BY *ERYSIPHE* SP. ON THE CRAPEMYRTLE (*Lagerstroemia indica* L.) FROM WEST TRIPURA, INDIA

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ABSTRACT
Crapemyrtle (*Lagerstroemia indica* L.) tree planted for its beauty and elegance were found to be infected with typical symptoms of powdery mildew fungi namely, *Erysiphe* sp. showing white to creamy white powdery sticky substances on leaves. The fungus was identified based on the morphological characters of the asexual stage like oidial, hyaline and erect hyaline conidiophores having single celled conidia which are cylindrical or ellipsoid in shape and measure about 28–37 × 13.1–15.4μm. Pathogenicity tests were conducted successfully, showing on an average 84.0 % disease incidence on treated plant samples. About 41.11% of average disease severity was recorded among plants grown in field condition. The finding concludes first report of powdery mildew fungi namely, *Erysiphe* sp. from West Tripura, District of India.

INTRODUCTION

Lagerstroemia indica L. commonly known as 'Crape-Myrtle' grows naturally in East Asia and Indian subcontinent. It is a small deciduous tree or large shrub in habit which grows gracefully either in full sun or under canopy. Leaves are small and oval in shape. Flowers with crimped petals are pink, white or purple in colour. They can be planted along the side of the pathways and lawns for their beauty and elegance.

Among various diseases and insect pest observed on 'Crape-Myrtle' important one are Cercospora leaf spot, powdery mildew, sooty mold, aphids and Japanese beetles. Due to change in climatic conditions new diseases are also being recorded in this plant like Cabrera and Lopez (2004) reported a leaf interveinal chlorosis-necrosis disorder in Crape Myrtle.

Study on various biotic stress of this plant has not been documented from this region of India. Thus, the present work was conducted in the year 2017-18 and 2018-19 with the objective to identify various diseases infecting Crape Myrtle plant from West Tripura District of India.

MATERIALS AND METHODS

During 2017-18 and 2018-19, a routine survey on plants of *Lagerstroemia indica* was conducted in the West Tripura District of India. Field observation on disease symptoms was also being recorded. Plant part affected and development process were recorded in a regular interval. Samples were brought into the laboratory and compared with standard disease atlas and books. Affected plant parts were brought into laboratory for further studies. Leaves sample infected with fungus were collected from plant and mounted in canada balsam, stained with cotton blue and microscopically examined.

Estimation for disease severity was carried out by using the formula:

= {Summation of (all numerical ratings)/ (Numbers of plant parts observed) × (Highest Disease Score)} × 100. The Disease rating scale used for estimation is presented in Table 1.

RESULTS AND DISCUSSION

Leaves of crape myrtle were found to be infected with powdery mildew with white to creamy white powder sticky substances on the leaves. Disease incidence was recorded in the last week of December. Diseased plants had abundant mycelial

Table 1: Disease Rating Scale for Powdery Mildew of *Lagerstroemia indica*

Scoring Scale	Area of plants parts affected
0	No lesion
1	10 % of plant parts infected
2	20 % of plant parts infected
3	30 % of plant parts infected
4	40 % of plant parts infected
5	50 % of plant parts infected

A B C

Figure 1 : a, b and c: Powdery mildew of *Lagerstroemia indica* caused by *Erysiphe* sp.

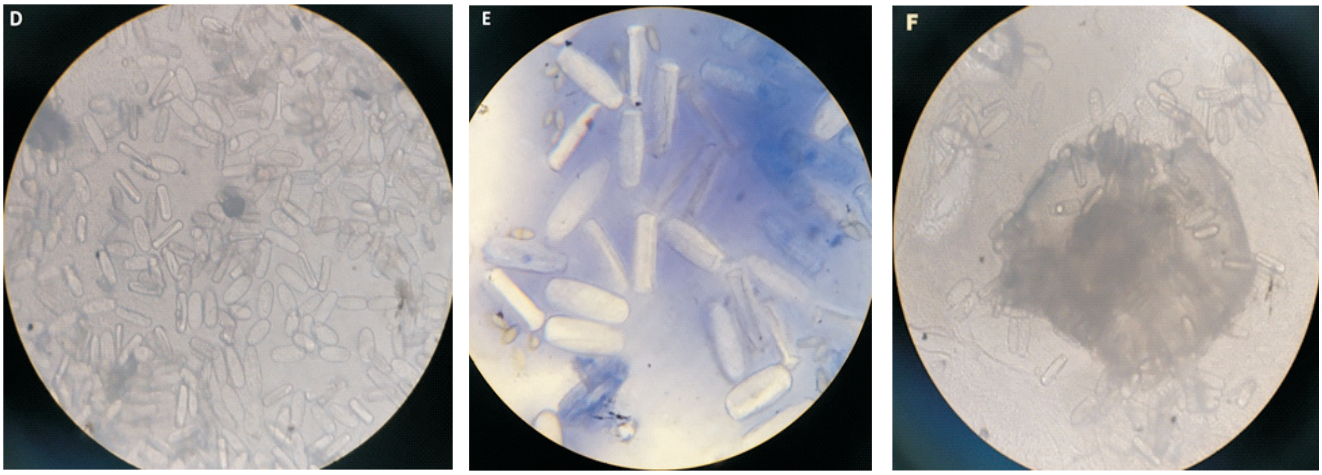

Figure 2: d conidia (40 X), e Conidia (100 X), F

growth and whitish sporulation mainly on the upper surface of the leave (Figure. a, Fig. band Fig. c).

The sexual morph of this powdery mildew was not found. The asexual morph is characterized as mycelium epiphytic in white patches on leaves and twigs. Conidiophores were erect, hyaline. Conidia or oval shaped oidia were formed singly, cylindrical to ellipsoid, hyaline under microscope (Fig.d, Fig. e and Fig. f).

Based on the combination of these features this pathogen is readily identified as an asexual morph of the genus *Erysiphe* which are according to the findings of Marquez-Licona *et al*. (2018). Erect hyaline conidiophores were observed having single celled conidia which are cylindrical or ellipsoid in shape and measure about 28–37 × 13.1–15.4 μm. Identifications of isolated powdery mildew anamorphs are difficult and mostly impossible. Molecular sequence analyses are necessary and helpful for identification purposes.

In the pathogenicity test, inoculated leaves developed powdery mildew symptoms 10 days after inoculation, where the control leaves remained healthy. The fungus present on the inoculated leaves shows on an average 84.0 % disease incidence which was morphologically identical to that originally observed on disease plants. The estimation of average disease severity was found to be 41.11% among plants grown in field condition.

Powdery mildew is the most widely recognized and possibly the most commonly reported disease on crape myrtles (Marquez-Licona *et al*., 2018). Powdery mildew fungi, *Erysiphe australiana* (Braun and Cook, 2012) and *Phyllactinia lagerstroemiae* (Meeboon and Takamatsu, 2017) have been reported on *Lagerstroemia* spp. worldwide. However, the specific identity of the pathogen on *Lagerstroemia* spp. has not been determined. A survey of Indian powdery mildew literature (Meeboon and Takamatsu, 2017; Bilgrami, *et al*., 1991; Jamaluddin *et al*., 2004; Paul and Thakur, 2006; Pande, 2008; Hosagoudar *et al*., 2009) shows that no powdery mildew has been so far reported on *Lagerstroemia indica* from Tripura. To our knowledge, this is the first report of Erysiphe sp. causing powdery mildew on *L.indica* in Tripura.

CONCLUSIONS

Microscopic examination revealed first report of incidence of the genus *Erysiphe* sp. as causal organism of powdery mildew

of *Lagerstroemia indica* from West Tripura, District of India. The estimation of disease severity in field condition was found to be 41.11%.

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