

Studies on *Elsinoë* and *Sphaeceloma* Diseases of Plants in Maharashtra State (India) . . . VII

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Previous studies by the authors on species of *Elsinoë* and *Sphaeceloma* in India revealed that these fungi are well represented in Maharashtra. Several new species and new records were described, some of them being on important economic hosts. In the present studies *Sphaeceloma* species on members of the Sapotaceae in Maharashtra are recorded, which include two new species, and one new record for India. *Elsinoë lepagei* which parasitizes leaves and young fruits of *Achras sapota* was previously known only from South America. Types of the new species have been deposited in the mycological collections of the Bureau of Plant Industry, Beltsville, Maryland (B. P. I.), and in Instituto Biologico Sao Paulo, Brazil (S. P. B. I.). The authors wish to record their deep gratitude to Dr. Anna E. Jenkins, and Dr. A. A. Bitancourt for help in writing the paper and valuable suggestions.

1. Anthracnose disease of *Achras sapota*

Achras sapota L., is extensively cultivated for its fruits all over the State of Maharashtra and Gujarat. Plants are generally propagated by seedlings, raised from seeds or cuttings in nurseries. Most of the varieties in the State are imported ones. Plants, as well as the seedlings from several localities were observed to be severely infected by spotted anthracnose disease. In the type symptoms produced and other morphological characters the pathogen appears to be identical with *Elsinoë lepagei* Bitanc. & Jenkins, described from South America on the same host. However, during investigations only the conidial stage of the pathogen was observed and is recorded for the first time for India, the description of the same follows:

Elsinoë lepagei Bitanc. & Jenkins

Infection spots follicolous, numerous, small, isolated, scattered all over the lamina, very often form larger patches by coalescing with one another in the areas of aggregation, 0.5—3 mm in diameter. Individual spots raised, epiphyllous, leaving a dark contour on the back surface

of the leaf, circular to irregular with dark brown margin and yellowish-white depressed centre. Acervuli numerous, scattered all over the areas of aggregation as also in the individual spots, microscopically intraepidermal to subcuticular, erumpent, ovate to pyriform, $24\ \mu$ to $37\ \mu$ high and $32\ \mu$ to $69\ \mu$ broad, basally lined, with pale yellow pseudoparenchyma, producing large numbers of conidiophores. Conidiophores compactly grouped in heaped-up form, light brown, septate, $4.5\ \mu$ to $12\ \mu$ long and $3\ \mu$ to $4.5\ \mu$ broad. Conidia not seen in the specimen.

Habit: On leaves of *Achras sapota* L.

Manmad 15th September, 1963, Leg. D. D. Wani.

2. Spotted anthracnose disease of *Madhuca indica*

Madhuca indica Gmel. is widely distributed all over South India. It is of great economic importance, since it yields many useful products. Anthracnose spotting of the host was discovered in many different localities. The pathogen in association with the leaf rust *Scopella echinulata* (Niessl) Mains. incite a severe damage to the host. This spotted anthracnose, the first to have been recorded on *Madhuca* has not been reported heretofore. The description of the pathogen as a new species of *Sphaceloma* follows:

Sphaceloma madhucae Wani and Thirum. sp. nov.

Maculae in foliis numerosae, minutae, late dispersae, saepe coalescentes, tunc plus minusve majores, in epiphyllis obscure marginatae, $0.5-3\ \text{mm}$ diam.; maculae singulae orbiculares vel angulosae, in centro albae, obscure brunneo-marginatae, $0.5-2\ \text{mm}$ diam.; in surculis junioribus maculae prominulae, dense gregariae, crustas formantes; acervuli prominuli, obscure brunnei, intraepidermales, erumpentes, ellipsoidei vel majores, $33-70\ \mu$ lati, $17-42\ \mu$ crassi; conidiophori cylindracei, dense aggregati, $2-3$ -septati, $6-12\ \mu$ longi, $3-6\ \mu$ lati; conidia ovoidea vel ellipsoidea, continua, hyalina, $1.5-3\ \mu \times 3-4.5\ \mu$.

In foliis et surculis *Madhucae indicae* Gmel.

Law College hill 10 January, 1958 (Typus) Leg. D. D. Wani

Katraj ghat 24 February, 1959; Jalgaon 17 March, 1959 Khandala 24 October, 1962. Leg. D. D. Wani.

B. P. I. No. 91572, S. P. I. B. No. 10129

Anthracnose spots on leaves and tender shoots. On leaves the spots are numerous, small, scattered all over the lamina, very often coalescing with one another in the areas of grouping forming larger spots, epiphyllous, leaving a dark mark on the back surface of the leaf, $0.5-3\ \text{mm}$ in diameter. Individual spots circular to polygonal, wax white in centre and surrounded by a deep brown margin, $0.5-2\ \text{mm}$ in diameter. On young shoots the spots are prominent, raised, closely grouped forming hard crusts. Acervuli prominently seen in the areas of aggregation, deep brown, intraepidermal, erumpent, elliptic to

spreading, 33—70 μ broad and 17—42 μ high. Conidiophores erect, cylindrical, compactly grouped in palisades, septate with 2—3 transverse septa, 6—12 μ long and 3—6 μ broad. Conidia unicellular, oval to elliptic, 1.5—3 $\mu \times$ 3—4.5 μ .

3. Scab disease of *Sideroxylon tomentosum*

Sideroxylon tomentosum Roxb. is commonly found in moist deciduous and evergreen forests of South India. Species of *Sphaceloma* causing leaf spotting of host was first discovered from Koyana Valley. From subsequent dates of collection of the pathogen it was apparent that the infection is abundant in months of November—December and remains until April. This disease on a new substrate for *Elsinoë* or *Sphaceloma* has not been reported previously. Under circumstances just mentioned, it seems correct to recognize the pathogen, *Sphaceloma*, of the disease under discussion, as a new species, the description of which follows:

Sphaceloma sideroxylonicola Wani and Thirum sp. nov.

Maculae paucae, saepe nervum medium sequentes, vel dispersae, superne fuscae, inferne paulum prominulae, fusco-brunneae, in centro cinereae, 1—4 mm diam.; acervuli numerosi, punctiformes, in centro macularum elevati, intraepidermales, erumpentes, pallide brunnei, 10—21 μ crassi, 27—39 μ lati; conidiophori e basi pallide lutea evoluti, dense aggregati, in apice obtusi, 4.5—6 μ longi, 3—4.5 μ lati; conidia non visa.

In foliis *Sideroxyli tomentosi* Roxb. Koyana Valley, 12 April, 1958 (Typus) Leg. D. D. Wani, 18 March, 1959; 24. November, 1960; 29 January 1962. Leg. D. D. Wani.

B. P. I. No. 91551, S. P. I. B. No. 10108

Infection spots few, foliiculous, blackish-brown, mostly restricted along veins and veinlets, epiphyllous, leaving dark area on the back surface of the leaf. Individual spots slightly raised, circular to oblong with thick blackish-brown margin and small "wood ash" centre measuring 1 to 4 mm in diameter. Acervuli numerous, appearing microscopically as dark raised blunt heads in the centre of the individual spots, mostly intraepidermal but appear subcuticular after erumpence, dark brown, 10—21 μ long and 27—39 μ broad. Conidiophores produced from basal stroma, crowded in heaped-up form with blunt apex 4.5 to 6 μ and 3 to 4.5 μ broad. Conidia not detected in the material.

Explanation of figures

Plate I.

1. Anthracnose spotting of *Achras Sapota* leaf \times nat. size.
2. Leaf of *Madhuca indica* showing anthracnose \times nat. size.

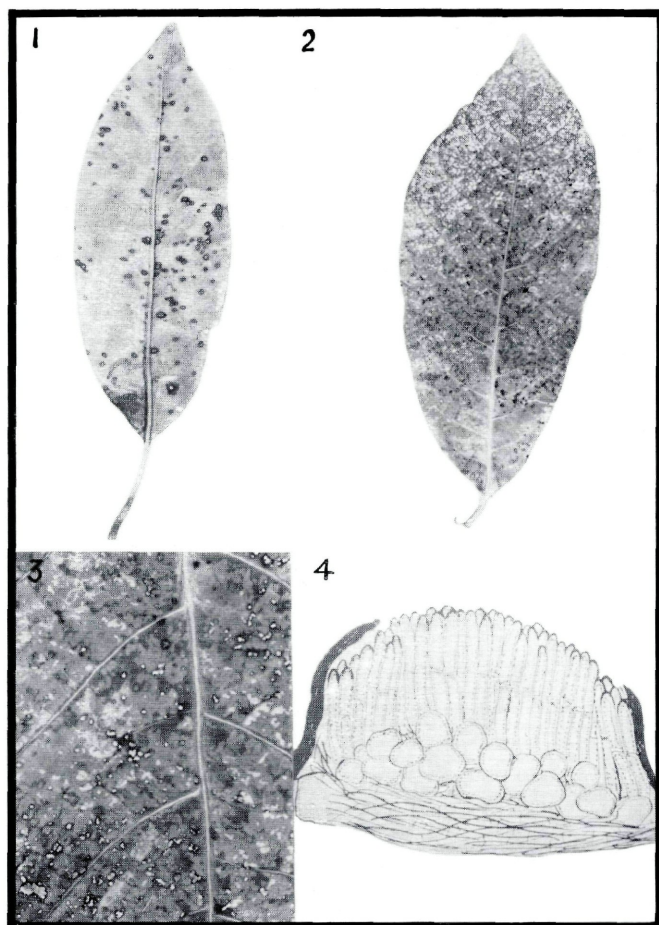
3. Infection spot on *Madhuca indica* magnified $\times 3$.
4. Acervulus of *Sphaceloma madhucae* $\times 500$.

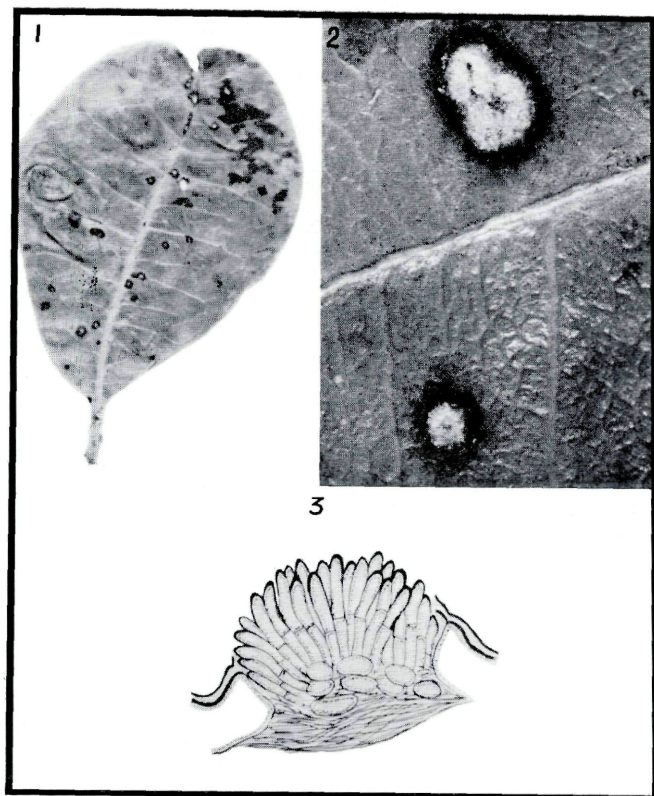
Plate II.

1. Infected leaf of *Sideroxylon tomentosum* \times nat. size.
2. Infection spot of *Sphaceloma sideroxylicola* $\times 10$.
3. Acervulus of *S. sideroxylicola* $\times 500$.

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Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Sydowia](#)

Jahr/Year: 1972/1974

Band/Volume: [26](#)

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Artikel/Article: [Studies on Elsinoe and Sphaceloma Diseases of Plants in Maharashtra State \(India\) - VII. 293-296](#)