

Studies on *Elsinoë* and *Sphaceloma* diseases of plants in Maharashtra (India)-VI

By D. D. Wani and M. J. Thirumalachar

(M. E. S. College of Science and Hindustan Antibiotics Research Centre,
Pimpri, Poona)

Spotted anthracnose and scab diseases of trees in the tropics are of considerable importance since they cause premature defoliation and open out the canopy and thus affect the plantations. In the present studies *Sphaceloma* diseases of some of the important forest trees like teak (*Tectona grandis* L.) and others which yield minor forest products of economic importance were studied and a brief account presented. The type material of the new species has been deposited in the Bureau of Plant Industry, Beltsville, Md., U.S.A., Instituto Biologico, Sao Paulo, Brazil, and Herb. Crypt. Ind. Orient, New Delhi.

1) Scab disease of *Asclepias curassavica*.

Asclepias curassavica L., native of West-Indies and naturalized in many parts of India, is a undershrub with orange red coloured flowers. Scabbed leaves of the succcept were first collected from Poona. Detailed studies of the pathogen have shown it to be similar to *Sphaceloma asclepiadis* Bitanc. & Jenkins, described on the same host from Brazil. However, it is a new record for India.

Sphaceloma asclepiadis Bitanc. & Jenkins.

Infection spots on leaves, numerous, small scattered all over lamina or running along the midrib, epiphyllous leaving dark areas on the lower surface of the leaf, sparse to aggregate forming large scabby lesion by coalescing with one another. On the fruits the spots are small, raised, numerous, closely grouped to form crusts. Individual spots circular to polygonal, chalkywhite, with thin brownish ring, 0.5—3 mm. in diameter. Acervuli numerous, oblong to obconical, brownish-red, intraepidermal, erumpent, 9—21 μ high and 20—30 μ broad. Conidiophores produced from basal pseudoparenchymatous stroma, cylindrical, compactly grouped, light-brown, 4.5—9 μ long and 3—6 μ broad. Conidia in the acervuli of the specimen material were not detected. Habit. — On leaves, shoots and fruits of *Asclepias curassavica* L. Fergusson canal Poona, November 11, 1958, Khandala, December 25, 1961, Leg. D. D. Wani. B. P. I. No. 91545, S. P. I. B. No. 10102.

2) Scab disease of *Cordia myxa*.

Cordia myxa L., a small tree with white flowers, is distributed in deciduous forests of Maharashtra State. Plants (*Cordia myxa*) in neighbourhood of Poona were found to be infected by Scab disease. Detailed studies of the pathogen have shown it to be identical to *Sphaceloma* stage of *Elsinoë mayaguensis* Bitanc. & Jenkins, described on *Cordia* species from South America. The fungus has been observed to produce only the conidial stage and *Elsinoë* stage was not detected. The species has not been recorded from India heretofore. The description of the same follows:

Elsinoë mayaguensis Bitanc. & Jenkins.

Infection spots on leaves, numerous, scattered, less often grouped to form larger spots, circular to polygonal, slightly depressed leaving elevation on the back surface of leaf—wax-white to buff in colour, measuring 1—4 mm. in diameter. Conidial fruit bodies acervular and are prominently in the centre of the infection spots in form of dark-brown raised pin heads. Acervuli numerous, epiphyllous elliptic to lenticular, intraepidermal, reddish-brown, 24—60 μ broad and 17—42 μ high. Conidiophores produced from basal stroma, erect, septate, with single transverse septum, grouped in heaped up form, 3—7.5 μ broad and 4.5—12 μ long. Conidia and the ascigerous stage, not detected.

The pathogen was isolated in pure culture on potato dextrose agar medium, on which it develops convolute type of growth, with radial striations. It is greyish-pink in colour from above and reddish-brown from the reverse side. The hyphae are closely septate, branched and produced large number of chlamydospores in aged cultures.

On leaves of *Cordia myxa* L. Vitthalvadi November 7, 1958; Pimpri December 20, 1960; Law College hill October 12, 1962. Leg. D. D. Wani, B. P. I. 91552, S. P. I. B. No. 10109.

3) Scab of *Heterophragma roxburghii*.

Heterophragma roxburghii A. DC., is a large tree with tomentose leaves and fragrant white flowers. Scabbing of the leaves of this plant was discovered in many localities from Maharashtra State. Numerous greyish-white spots were produced by the pathogen. Description of the same as new species of *Sphaceloma* follows.

Sphaceloma heterophragmae Wani & Thirum. Sp. nov.

Infectionis maculae in follis, griseo-albidae, ut plurimum epiphyllae, parvae, numerosae, dispersae, vel aggregatae ad margines foliorum, Maculae singulae circulares vel ovaes, paulum elevatae, areas fuscas in inferiore pagina foliorum producentes, 0.25—1 m. diam. Acervuli rari, obconici vel oblongi, rubri-brunnei, intra-epidermales, 11—24 μ alti, 26—39 μ lati. Conidiophori producti ex stromatae hyalino basali, erecti, cylindrici, ornati — uno transverso septo et apice conico, 6—10.5 μ longi — et 3—4.5 lati. Conidia non observanta.

Habit: On leaves of *Heterophragma roxburghii* A. DC. = *H. quadrilocularis* (Roxb.) K. Schum. Pimpri (Poona), November 17, 1959 (Type) Leg. D. D. Wani, Khandala, January 9, 1961, Katraj, February 5, 1962. Leg. D. D. Wani.

Infection spots greyish-white, numerous, scattered or aggregated along leaf margin, chiefly epiphyllous leaving dark areas on the back surface of the leaf. Individual spots circular to oval, slightly raised, 0.25—1 mm. in diameter. Acervuli few, obconical to oblong, reddish-brown, intraepidermal, 11—24 μ high and 26—39 μ broad. Conidiophores develop from basal pseudoparenchyma, erect, cylindrical with single transverse septum and conical apex, 6—10.5 μ long and 3—4.5 μ broad. Conidia not seen, in the specimen material. B. P. I. No. 91586, S. P. I. B. No. 10143.

*) Colours as per 'Dictionary of colours' by Mearz and Paul.

4) Spotted anthracnose disease of *Tectona grandis* L.

Tectona grandis L. is a large deciduous tree, grows abundantly along the slopes of Western Ghats and monsoon and mixed deciduous forests of South India. Teak is one of the most valuable timbers. The leaves and young shoots infected with the new species of *Sphaceloma* were collected from Katraj Ghats near Poona in 1958. Subsequent dates of collections indicate that the disease appears in July—August and becomes epiphytotic by about December. The fungus under study in association with the leaf rust *Olivea tectonae* (Racib.) Thirum. incites severe damage to the host plant by hastening the defoliation of leaves and in case of seedlings it leads to the suppression of their initial growth vigor. The description of the pathogen as a new species of *Sphaceloma* is given below:

***Sphaceloma tectonae* Wani & Thirum. Sp. nov.**

Infectionis maculae infoliis et surculis teneribus, plures, minutae, saepius aggregatae in locis inter nervos laterales, conspicuae in pagina inferiore ut maculae fusce brunneae, ovatae vel polygonales, marginibus castaneobruneis, centro paulum depresso et colore 'French-grey' 1—3 mm. diam. Acervuli plures, fusce brunnei, elliptici vel circulares, intra-epidermales, erumpentes, 22—45 μ alti, 30—60 μ lati, Conidiophori evoluti ex stromate basali pallide lueto, erecti, compacte aggregati, bis tervi septati, paulum divergentes ad apices, 6—9 μ longi, 1.5—3 μ lati. Conidia non visa.

In foliis et surculis teneribus *Tectonae grandis* L. Katraj Ghat October 15, 1958 (Typus). Leg. D. D. Wani, Law College Hill, — December 25, 1960; Bhor August 14, 1961; Kasara September 14, 1962. Leg. D. D. Wani.

Infection spots on leaves and young shoots are numerous, small,

more often grouped in areas between lateral veins or sometimes involving them, epiphyllous and conspicuous on the lower surface as dark brown areas. On shoots spots are many, small, elongated, closely grouped, coalescing with one another forming crusts. Individual spots ovate to polygonal with 'Walnut-brown' margin and slightly depressed 'French-grey' centre, measuring 1—3 mm, in diameter. Acervuli macroscopically visible in areas of grouping in form of raised pin heads, numerous, dark-brown, elliptic to circular, intraepidermal, erumpent, 22—45 μ high and 30—60 μ broad. Conidiophores produced from basal stroma, erect compactly grouped in palisade layers, 2—3 septate, slightly divergent at apex. 6—9 μ long and 1.5—3 μ broad. Conidia were not noticed in the specimen material. B. P. I. No. 91578, S. P. I. B. No. 10135.

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Explanation of Plate XII

Fig. 1. Infection spots of *S. mayaguensis* \times 5. — Fig. 2. Growth in artificial culture \times 2. — Fig. 3. Infection spots of *S. heterophragmae* \times nat. size. — Fig. 4. Acervulus \times 1000. — Fig. 5. Acervulus of *S. tectonae* \times 800. — Fig. 6. Infection spots of *S. tectonae* enlarged \times 20.

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Autor(en)/Author(s): Wani D. D., Thirumalachar M. J.

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