

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

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In an earlier paper (Part-I in Indian Phytopathology 1968) an account of the *Elsinoë* and *Sphaceloma* diseases of some euphorbiaceous plants collected in Maharashtra was presented. Further collections were made on different hosts, some of which have been presented here. Cultural studies have been carried out in case of *Sphaceloma flacourtiæ* and *S. ichnocarpi*, and the type cultures have been deposited in ATCC, Rockville, Maryland, CMI, Kew, England, Centraalbureau voor Schimmelcultures, and IARI, New Delhi. The types of the new species (herbarium material) have been deposited in the Bureau of Plant Industry, Beltsville, Md., Instituto do Biologico Sao Paulo, Brazil, Herb. CMI, Kew, England, and Herb. Crypt. Ind. Orient., New Delhi.

The authors wish to acknowledge their indebtedness to Dr. Anna E. Jenkins, and Dr. A. A. Bitancourt for several valuable suggestions and help in writing the paper.

Scab disease of *Cryptolepis buchanani* R. & S.

*Cryptolepis buchanani* R. & S., a large twining shrub is distributed in Deccan. Scab of this suspect was discovered in several localities from Maharashtra State. It affects leaves, and fruits, sometimes severely. Severe infection due to the fungus results in the early defoliation and sometimes premature dropping of the fruits. A spotted anthracnose of this new host genus has not been reported previously. The pathogen *Sphacelomma*, of the disease is presented as new species. The description follows.

*Sphaceloma cryptolepidis* Thirum. & Nasarimhan sp. nov.

Maculae anthracosae in foliis, culmis et fructibus in foliis quidem infectionis maculae plures, amphigenae, dispersae, calcareoalbae, in fructibus et surculis maculae plures, efformantes crustam griseo-albam. Maculae singulae circularis vel polygonales, paulum elevatae, 0.5–2 mm diam. Acervuli alti brunnei, oblongi vel elliptici, intra-epidermales, erumpentes, 10–22  $\mu$  alti et 13–38  $\mu$  lati. Conidiophori

pallide brunnei, acervuli in textibus vallribus erecti, une septo transverso ornati. 6—9  $\mu$  longi, 4.5—6  $\mu$  lati. Conidia non visa.

Habit: On leaves and fruits of *Cryptolepis buchanani* R. & S. Pimpri, February 2, 1958 (Type) -eg. M. J. Thirumalachar. Vittihalwadi, December 20, 1959; Katraj, January 10, 1962 Leg. D. D. Wani.

Anthracnose spots on leaves, stems and fruits; on leaves the spots are numerous, epiphyllous in the earlier stages later appearing amphigenous, scattered or more often grouped along the leaf margin, forming greyish-white crusts. Individual spots are circular to polygonal, slightly raised with 'Zanzibar brown' margin and 'Peach blossom' centre, measuring 0.5—2 mm. in diameter. Acervuli macroscopically visible as dark raised blunt bodies, numerous, deep-brown, oblong to elliptic, intraepidermal, erumpent, 10—22  $\mu$  high and 13—38  $\mu$  broad. Conidiospores produced from basal hyphae, light brown, crowded in groups, erect with one transverse septum, 6—9  $\mu$  long and 4.5—6  $\mu$  broad. Conidia not seen.

\* Colours as per Dictionary of colours by Mearz & Paul.

Scab disease of *Flacourtia* (*Flacourtia idica* (Burm. f.) Merr.

*Flacourtia indica* (Burm. f.) Merr., widely distributed in Maharashtra State, is a thorny shrub. The scab disease was first discovered severely attacking leaves and tender shoots of the suscept in localities near Poona. A subsequent detailed survey revealed its presence in various other places from Maharashtra State. The pathogen in association with the leaf rust *Kuehneola uguressae* (Petch.) Thirum. causes considerable damage to the host. The disease produces small chalky-white spots with purplish margin on the host parts. The pathogen of the newly discovered disease, is described as follows.

#### **Spahceloma flacourtiæ** Thirum. & Narasimhan sp. nov.

Infectionis maculae in foliis plures, dispersae, ut plurimum aggregatae ad efformandes maculas ampliores fuscas, vulgo epiphyllae; maculae minutae, polygonales vel irregulariter angulares, 0.5—3 mm. diam., margin 'Corsair blue' colore, centro calcaveoalbo. Acervuli apparentes macroscopice ut puncta fusca acum brunnea, plures, circulares vel elliptici, intraepidermales, erumpentes, 18—37  $\mu$  alti, 37—78  $\mu$  lati. Conidiophori producti ex stromatae basali pallide luteo, erecti compactae aggregatti, non septati, 4.5—6  $\mu$  longi, 3—4.5  $\mu$  laiti producentes conidia spherica unicellularia, hyalina. Conidia 1.5—3  $\mu$ .

Habit. — On leaves and tender shoots of *Flacourtia indica* (Burm. f.) Merr. Pimpri Jan. 1, 1959 (type) leg. M. J. Thirumalachar. Law College hill Jan. 12, 1960, Leg. D. D. Wani on leaves

of *Flacourtia ramontchi* D. & G., Khandala Jan. 14, 1961 Leg. D. D. Wani.

Infection spots on leaves and young shoots. On leaves infection spots are numerous, small, scattered all over lamina or grouped to form larger patches, epiphyllous at first but later become amphigenous. On young shoots they are small, elongated, closely grouped to form crusts by coalescence. Individual spots polygonal to irregularly angular with 'Corsair blue' raised margin and 'chalky-white' slightly depressed centre, measuring 18—37  $\mu$  high and 37—78  $\mu$  broad. Conidiophores proceed from the hyphae of the basal stroma, erect, grouped to form crowded mass, non-septate, 4.5—6  $\mu$  long and 3—4.5  $\mu$  broad; bearing conidia at the apices. Conidia unicellular, oval to oblong, hyaline, 1.5—3  $\mu$ .

Pathogen when isolated in pure culture on potato dextrose agar medium, shows a characteristic heaped up, crustose type of growth, with deep fawn coloured margin and reddishbrown colour on the reverse side, bearing ashy white mycelium on the top. The mycelium is profusely branched and produces large number of chlamydospores and few fruiting bodies of *Sphaeloma* stage. ATCC. 14654.

#### Scab disease of *Gymnosporia*

*Gymnosporia montana* Benth., is commonly found in deciduous forests of South India. Scab of the suscept was first noticed in October on plants from Pimpro. Subsequently it was observed in various other localities, indicating its probable widespread distribution in Maharashtra State. Numerous greyish-white spots was the noticeable symptoms of the pathogen. This disease on a new host genus for *E'sinoe* or *Sphaeloma* has not been reported hertofore. It is described as a new species of *Sphaeloma* as follows.

#### *Sphaeloma gymnosporiae* Thirum. & Narasimhan sp. nov.

Infectionis maculae foliicolae, dispersae, vulgo, aggregatae ad margines foliorum, amphigenae, coalescentes, inter se ad foliorum, margines. Singulae maculae circulares vel ovales, margine paulum elevato, 'Catawba' colore, et centro 'Chantilly pink', 0.5—2 mm diam. Acervuli pallide brunnei, circulares vel elliptici, intra-epidermales vel subcuticulares cum erumpentes 15—39  $\mu$  alti et 30—47  $\mu$  lati, stromat basali hyalino producente conidiophores, verticales, pallide brunneos, compacte aggregatis apifilibus festigatis 6—9  $\mu \times$  4—3.5  $\mu$ . Conidia non observata.

Habit. — On leaves of *Gymnosporia montana* Benth. Pimpro, January 19, 1959; (Zype), Leg. M. J. Thirumalachar. Tamaswadi, October 30, 1961, Katraj, November 11, 1962 Leg. D. D. Wani.

Infection spots are foliicolous, scattered, chiefly grouped along leaf margins, amphigenous, coalescing with one another to form larger patches. Individual spots are circular to oval, slightly elevated with 'Catawba brown' margin and 'Chantilly pink' centre, measuring 0.5–2 mm. in diameter. Acervuli macroscopically visible in individual spots as also in the areas of coalescence, numerous, circular to elliptic, intraepidermal, seeming subcuticular after becoming erumpent, 15–39  $\mu$  high and 30–47  $\mu$  broad with basal hyaline stroma giving rise to compactly grouped light-brown conidiophores. Conidiophores non-septate with tapering apices, 6–9  $\mu$  long and 3–4.5  $\mu$  broad. Conidia not noticed.

Scab disease of *Ichnocarpus frutescens* Ait.

*Ichnocarpus frutescens* Ait. is a woody climber, distributed in evergreen forests of Maharashtra State. The bark yields fibre of commercial importance. Anthracnose spotting of leaves was first discovered from neighbourhood of Poona. A noticeable leaf symptom is, small greyish spots. This spotted anthracnose, the first to have been recorded on *Ichnocarpus*, is described as new species of *Sphaeloma* as follows.

*Spaeloma ichnocarpi* Thirum. & Narasimhan sp. nov.

Infectionis maculae in foliis, petiolii, apparantes ut crusta griseo-alba secundum nervum medium et nervos laterales, paulum elevatae, prodecentes depressionem in pagina inferiore foliorum, circulares vel polygonales, 0.5–1 mm. diam. Acerculi plures, fuscae brunnei, elongati, intra-epidermales, erumpentes, 15–31  $\mu$  alti, 30–60  $\mu$  lati. Conidiophori evoluti ex stormatae pallide luteo, erecti, non septati, aggregati in textibus vallaribus, apice conico, 4.5–6  $\mu$  longi, 3–4.5  $\mu$  lati. Conidia non visa.

Habit. — On leaves and petioles of *Ichnocarpus frutescens* Ait., Pimpri (Nr. Poona), November 17, 1958 (Type) Leg. M. J. Thirumalachar. Law College hill, January 10, 1960, Pimpri, December 24, 1962 Leg. D. D. Wani.

Infection on leaves and petioles appearing as greyish-white crusts along midrib and lateral veins. Individual spots slightly raised,

Infection on leaves and petioles appearing as greyish-white crusts along midrib and lateral veins. Individual spots slightly raised, leaving depression on the lower leaf surface, circular to polygonal, greyish-white in the centre with dark brown margin, intra-epidermal subcuticular when erumpent, elongate to elliptic, 15–31  $\mu$  high and 30–60  $\mu$  broad. Conidiophores develop from basal stroma, erect, greyish-white in the centre with dark brown margin, intra-epiderma subcuticular when erumpent, elongate to elliptic, 15–31  $\mu$  high and

30–60  $\mu$  broad. Conidiophores develop from basal stroma, erect, non-septate, grouped in palisade, conical at apex, 4.5–6  $\mu$  long and 3–4.5  $\mu$  broad. Conidia not seen.

The pathogen has been isolated in pure culture on potato dextrose agar. Well grown culture of the organism is fluffy, spreading with radiating furrows. It is 'Heliotrope grey' at margin, 'blood red' on the reverse side and produces ashy-white aerial mycelium. Microconidia were not noticed, however chains of chlamydospores were quite common. ATCC. 14655.

#### Explanation of plate VI.

Fig. 1. Leaf of *Cryptolepis buchanani* R & S (Natural size). — Fig. 2. Drawing of acervulus of *Sphaceloma Cryptolepidis*  $\times 1000$ . — Fig. 3. Spotted portion of leaf of *Flacourtia indica*  $\times 20$ . — Fig. 4. Artificial culture of *S. flacourtiæ*  $\times 2$ . — Fig. 5. Infected leaf of *Ichnocarpus frutescens* — Natural size. — Fig. 6. Two month old culture of *Sphaceloma ichnocarpii* Natural size.



