ADDITIONS TO THE FUNGI OF MADRAS—XVIII

BY T. S. RAMAKRISHNAN, F.A.Sc. AND N. V. SUNDARAM

Received July 12, 1955

*Phakopsora grewiae* (Pat. and Har.) Cummins


Uredia minute, hypophyllous, erumpent, bounded by marginal incurved paraphyses, occurring in groups; urediospores light brown, subglobose, oblong or elliptic, germ pores indistinct, $22 \times 19 \mu$ ($16-31 \times 16-22$), verrucose; paraphyses mostly marginal, incurved, swollen towards the upper half, thickened very much on the outer side; telia mixed with the uredia, scattered or in groups, blackish, subepidermal, later erumpent; teliospores in several irregular layers, chestnut brown or reddish brown, one-celled, smooth, apex thickened or not, sometimes obtuse, $24 \times 11 \mu$ ($16-28 \times 9-12$).

Cummins has described *Phakopsora grewiae* (revising *Uredo grewiae* Pat. and Har.) on *Grewia* sp. from Senegal. The rust under study closely resembles this rust though the teliospores exhibit slightly higher measurements. It has not been recorded from India.

*Phakopsora zizyphi-vulgaris* (P. Henn.) Diet

Syn. *Uredo zizyphi-vulgaris* P. Henn.


Uredia hypophyllous, scattered, reddish brown, subepidermal, erumpent, paraphysate, paraphyses invariably marginal incurved, thickened, more on the outer side, $24-50 \times 6-12 \mu$; urediospores borne on long stalks, obovate or elliptic, narrowed towards the base, $25 \times 16 \mu$ ($19-31 \times 12-19$), echinulate above, the lower one-third smooth, germ pores 2–3, cinnamon brown.

On living leaves of *Zizyphus trinervia* Roxb. (Rhamnaceae), Kallar (Coimbatore), 10-1-1955, T. S. Ramakrishnan and N. V. Sundaram.

The uredia alone were present. Three rusts have been recorded on this host genus. Comparison with the uredia of *Crossopsora zizyphi* (Syd. and Butl.) Syd. and *Catenulopsora zizyphi* Ramak. and Sub. revealed that this rust is different. But it exhibited resemblance to *Phakopsora zizyphi-vulgaris*. This is a new host for the rust.

58
Macrophoma berhaaviae sp. nov.

Leafspots not evident; pycnidia mostly epiphyllous, isolated but occurring in groups, black, intra-epidermal, ostiolate, 50–93×62–100 µ; pycnidiospores unicellular, subglobose elliptical or oblong, hyaline, 12×7 µ (9–19×6–9), with mucilaginous sheath.


The incidence of infection is visible as pin-head-like minute black dots invariably confined to the upper surface of the leaves. These are often formed close to one another to form groups. Definite lesions are not evident. As a matter of fact there is no discolouration even of the tissues. The pycnidia are confined to the epidermal cells.

Macrophoma glycosmidis sp. nov.

Spots amphigenous, circular, 2–4 mm. in diameter, upper surface greyish white in the centre with dark brown raised margin, lower surface light brown in the centre with dark raised margin; pycnidia epiphyllous in the middle of the spot appearing as black dots, subepidermal, ostiolate, 78–124×78–132 µ; pycnidiospores hyaline, oblong, one-celled, exhibiting wide variation in size, 12×7 µ (9–19×6–9).


The spots are quite prominent and exhibit differences in colour between the upper and the lower surfaces. Phyllosticta glycosmidis Syd. and Butl. has been recorded on this host. But the fungus under study has much bigger spores and has to be included under Macrophoma.
Macrophoma gordoniae sp. nov.

Leafspot non-existent, pycnidia epiphyllous, scattered or in groups, subepidermal, ostiolate, black at the tip; pycnidiospores oblong, hyaline, sometimes upper half broader than the lower, rounded at the ends, $19 \times 7.5 \mu$ (16–25 × 6–9), one-celled.

Foliorum maculae nulla; pycnidia epiphylla, dispersa vel aggregata, subepidermalia, ostiolata, nigra ad apicem; pycnosporae oblongae, hyalinae, non-numquam superiore parte quam inferiore latiore, rotundatae ad apices, $19 \times 7.5 \mu$ (16–25 × 6–9), unicellulatae.


The pycnidia appear as raised hemispherical projections on the upper surface of the leaves. The centre of the projection is black and denotes the location of the ostiole. No leaf spot is evident. The pycnidia are isolated though several of them may be seen near one another forming distinct groups.

Macrophoma sapindi sp. nov.

Spots amphigenous, greyish brown surrounded by a deeper coloured ring, more or less circular, 2–4 mm. in diameter; pycnidia amphigenous, in an irregular ring, black, subepidermal, ostiolate, 93–152 × 114–160 μ; pycnidiospores numerous, hyaline, one-celled, oblong to elliptical, $16 \times 10 \mu$ (12–20 × 9–12).

Maculae amphigenae, griseole brunnea, circumdatae annulo coloris fuscioris, plus minus circulares, 2–4 mm. diameter; pycnidia amphigena in annulum irregulararem disposita, nigra, subepidermalia, ostiolata, 93–152 × 114–160 μ; pycnosporae plures, hyalinae, unicellulatae, oblongae vel ellipticae, $16 \times 10 \mu$ (12–20 × 9–12).

On living leaves of Sapindus emarginatus Vahl. (Sapindaceae), Kallar (Coimbatore), 16–2–1955, N. V. Sundaram.

The spots are prominent but sometimes the pycnidia develop on the leaves even outside the spots. The pycnidia are conspicuous. The peridium consists of three or more layers of dark brown pseudo-parenchymatous cells.

Phyllosticta hederæ Sacc. and Roume.


Leaf spot amphigenous, large, circular, zonate, upper surface with a greyish centre surrounded by dark brown margin, lower surface greenish brown; pycnidia epiphyllous, arranged in concentric zones. The spots are conspicuous on account of their size and colour.

*Cercospora effusa* (Berk. and Curtis) Ellis

Ellis, J. B., *J. Mycol.*, 1885, 1, 53.


Leaf spot amphigenous, distinct or not, more often angular, with a reddish tinge, spores produced on the lower surface in effuse layers, which are light coloured; conidiophores in clusters emerging through stomata, stromata not prominent, length of conidia and conidiophores much affected by the humidity of the weather, conidiophores sometimes branched and bending over, conidia sub-hyaline.

The sporiferous regions on the lower surface have a light ferruginous woolly appearance.

*Cercospora insulana* Sacc.


Spots on stem, leaves and flower-bearing stalks, amphigenous, more prominent on the upper surface of the leaves, elliptic or circular, brownish white with olive-grey centre and bordered by a purplish zone, the affected portions thinner and giving way early; internal hyphae hyaline to light smoky brown; fruiting mostly confined to the upper surface, conidiophore clusters dark olive brown, stromata dark, conidiophores straight or sometimes flexuous, 2–3 septate, light brown but paler towards the apex; conidia hyaline, straight or slightly curved, acicular sometimes obclavate, with many indistinct septa.

On living leaves, stem and flowering shoots of *Statice* sp. (Compositae), Ootacamund and Coonoor, 15–6–1954, T. S. Ramakrishnan.

This disease is common on the Nilgiris where this plant is grown as an ornamental plant. The infection increases on the receipt of rains in May.
Highest infection occurs in June–July when many of the leaves turn brown and wither.

_Titaeospora pterolobii_ sp. nov.

Spots circular, amphigenous, depressed, upper surface grey surrounded by a dark brown raised marginal ring, lower surface with brown centre and dark brown raised margin, 0.5–1 mm. in diameter; stromata sclerotioid, amphigenous, subepidermal, globose, dark brown, 45–61 μ in diameter; conidiophores in dense clusters, hyaline to subhyaline, flexuous, septate, septa few, 16–22 × 3–6 μ; conidia hyaline, spindle-shaped, with 0–2 septa, 19 × 3 μ (12–25 × 2–4.5).

Maculae circulares, amphigenae, depressae, in superiore pagina griseae circumdatae annulo marginali elevato fusce brunneo, in inferiore vero brunnea in medio, marginibus elevatis fusce brunneis, 0.5–1 mm. diameter; stromata sclerotioidea, amphigena, subepidermalia, globosa, fusce brunnea, 45–61 μ diameter; conidiophori dense aggregati, hyalini vel subhyalini, flexuosi, septati, septis paucis, 16–22 × 3–6 μ; conidia hyalina, fusiformia, septis 0–2 ornata, 19 × 3 μ (12–25 × 2–4.5).


The fructifications appear as whitish dots on both sides of the spots. The black rounded sclerotioid stromata are quite characteristic. The conidiophores when formed appear as a compact cluster breaking through the epidermis.

We wish to express our grateful thanks to Rev. Dr. H. Santapau for the Latin translations.

**EXPLANATION OF TEXT-FIGURES**

**Text-Figs. 1–7. Phakopsora grewiae.** Fig. 1. Section through an uredium. Fig. 2. Urediospores. Fig. 3. Teliospores. Fig. 4. Section through a telium. Figs. 5–6. Cercospora insulana. Fig. 5. Conidia. Fig. 6. Section showing a cluster of conidiophores. Fig. 7. Phakopsora zigyphi-vulgaris; section through an uredium.

**Text-Figs. 8–12.** Fig. 8. Macrophoma sapindi: diagrammatic sketch of leaf-spot and section of a pycnidium. Fig. 9. _M. barhaavia_; section of a pycnidium. Fig. 10. _Titaeospora pterolobii_; section through a fructification. Fig. 11. _M. gordoniae_; section of a pycnidium; Fig. 12. _M. glycosmidis_; section of a young pycnidium.