

On living leaves of *Dieffenbachia picta* Schott., Bhubaneswar (Orissa), 28.6.1978, D. Gupta, H.C.I.O. 32879.

Phyllosticta dieffenbachiae sp. nov.

Maculae foliaries amphigenae, irregulares, pallidae flavae margin cum atra fulva, metiuntur 25–60 mm in longitudine et 20–60 mm in latitudinem. Pycnidia amphigena, singulatim vel cetervatim (tres vel quatuor simul), dissmminata, paulo depressa, globosa, 90–240 μm in diametro, aequa cum singulo ostiolo totundo de 10–20 μm in diametro. Septum 1–4 cellae (15–20 μm) crassae, constitutum cellarum brunneolarum part in crassitunicatarum partim leptodermarum, obscuriore et densiore circa porum, subtile hyalinumque conidiogenam regionem versus. Cellae conidiogenae cylindratae, 8–12 \times 2–2.5 μm .

Pycnidiosporae unicellulares, ovideae vel globosae cum fundamento truncto inventute, late rotundatae apicaliter, 8–14 \times 5–8 μm , circumferatae mucosa lamina densa, continentes granulas virudilas cum breve ad longam appendicem.

In foliis vividis de *Dieffenbachiae pictae* Schott., Bhubaneswar (Orissa), 28.6.1978, D. Gupta, H.C.I.O. 32879.

2. *Phyllosticta dracaenicola* sp. nov.

Leaf spots amphigenous, initially red on both surfaces, later centre turns to white with dark red margin, elongated, 2–35 mm in length and 2–20 mm in width. Pycnidia epiphyllous, scattered in group (3 together), somewhat depressed, globose, 120–150 μm in diam., with 15–30 μm wide pore. Wall 1–5 cells (10–15 μm) thick, brownish with thicker cell walls in the upper part and around the pore, hyaline and flattened

towards the conidiogenous region. Conidiogenous cells cylindrical, 5–10 \times 1.5–2 μm . Pycnidiospores one-celled, ovoidal, ellipsoidal or pyriform, broadly rounded apically, 7–10 \times 4–5.5 μm , surrounded by thick slime layer, containing greenish granules with apical appendage (figure 2).

On living leaves of *Dracaena marginata* Lam., Bhubaneswar, (Orissa), 23.11.1977, D. Gupta, H.C.I.O. 32880.

Phyllosticta dracaenicola sp. nov.

Maculae foliaries amphigenae, primo superficiebus ambobus rufae, posterius media pars in albam vertitur margine cum rubido, productae, 2–35 mm in longitudine atque 2–10 mm in latitudinem. Pycnidia epiphylla, dispersa, aggregata (trio simul), paulo depressa, globosa, 120–150 μm in diametro, cum poro 15–30 μm lato. Septum 1–5 cellae (10–15 μm) densum, brunneolum crassioribus cum cellis septis in superioris parte et circa porum, hyalinum et applanatum regiones conidiogenae cylindratae, 5–10 \times 1.5–2 μm . Pycnidiosporae unicellae, ovoideae, ellipsoideae vel pyriformes, late rotundatae apicaliter, 7–10 \times 4 \times 5.5 μm , cinulatae a crassa mucosa lamina, continetes granulas virudilas cum appendicula apicale.

In foliis vividis de *Dracaenae marginatae* Lam., Bhubaneswar (Orissa), 23.11.1977, D. Gupta, H.C.I.O. 32880.

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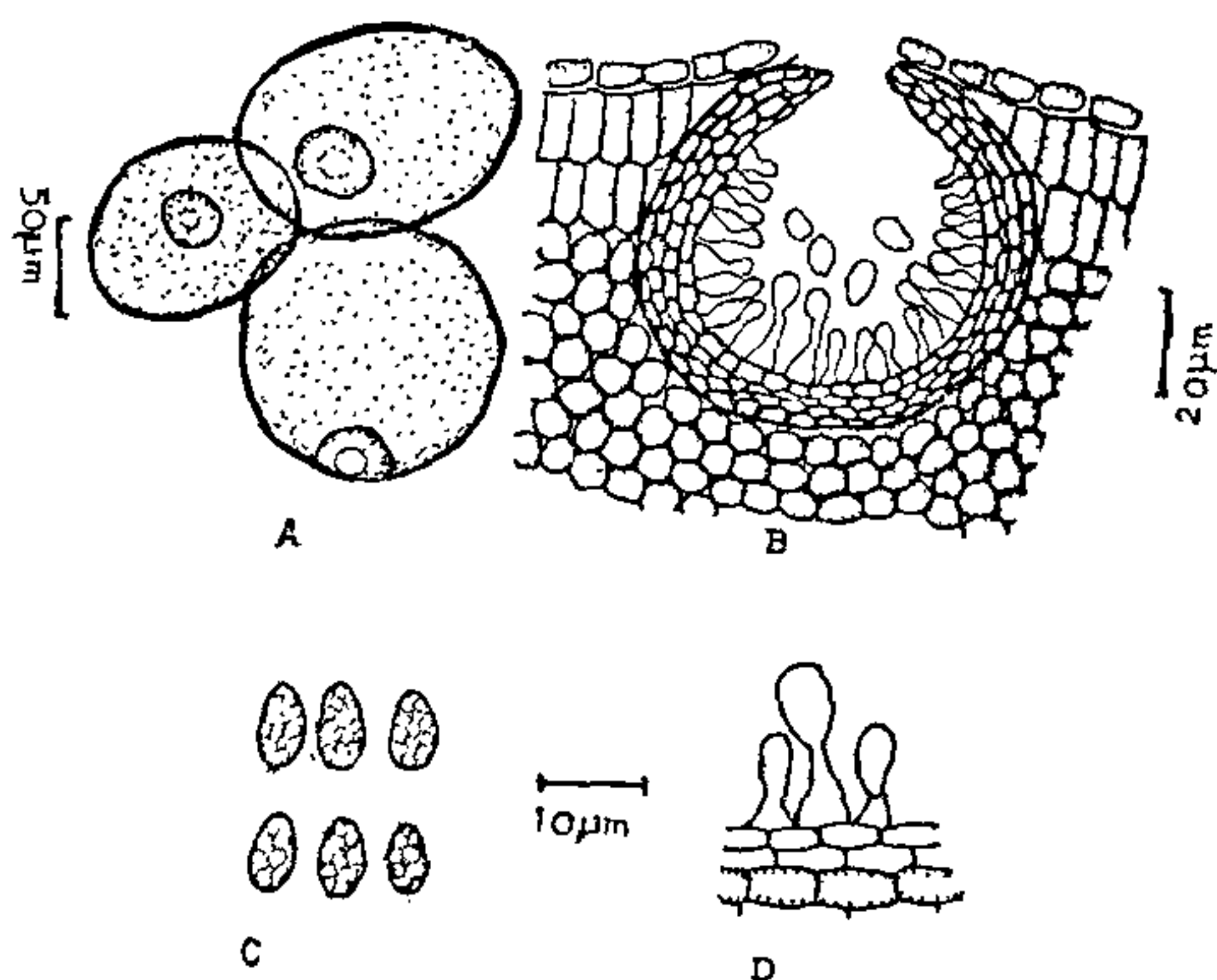


Figure 2. *Phyllosticta dracaenicola* A. Habit sketch B. V.S. through pycnidia C. Pycnidiospores D. Conidiogenous cells

OCCURRENCE OF SEXUPARAE AND SEXUAL MORPHS OF WOOLLY APPLE APHID (*ERIOSOMA LANIGERUM* HAUSMANN) IN SIMLA HILLS, INDIA

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THERE are contradictory reports in the literature about the mode of reproduction of woolly apple aphid (*Eriosoma lanigerum* Hausmann) in India^{1,2}. In North America, heterogony (cyclic parthenogenesis) is the common mode of reproduction of this insect pest on elm (primary host) and apple or related plants (secondary hosts)³. However, in this subcontinent,

TABLE I

Distinguishing characteristics of adult virginopara, sexupara and sexual morphs of woolly apple aphid

| Characteristic | Virginopara | Sexupara | Sexuals | |
|-------------------------|---|--|---|--------------------------|
| | | | Oviparous female | Male |
| 1. Colour | Reddish brown | Head and thorax are dark black and abdomen is brown. | Reddish brown | Dark brown |
| 2. Rostrum | Extends upto hind coxae. | Extends upto middle coxae. | Arostrate | Arostrate |
| 3. Antenna | Six-segmented, primary rhinaria on last two segments. | Six-segmented, secondary rhinaria on last four segments. | Five segmented, primary rhinaria on last two segments. | (As in oviparous female) |
| 4. Wings | Apterous | Alate (two pairs of wings) | Apterous | Apterous |
| 5. Tarsus | Two-segmented, distal segment has a pair of claws. | Two-segmented, distal segment has a pair of claws. | One-segmented having three pairs of long digitules, a pair of hair and a pair of claws. | (As in oviparous female) |
| 6. Mode of reproduction | Parthenogenetic viviparous | Parthenogenetic viviparous | Sexual oviparous | — |
| 7. Progeny | Parthenogenetic viviparae | Sexuals (males and oviparous females) | Egg | — |
| 8. Body form | Elliptical or pyriform | Elongate | Elongate (bigger in size as compared to males) | Elongate |

woolly apple aphid has completely adapted itself to apple plants and all the previous reports^{1, 4, 5} indicate that this insect pest generally reproduces parthenogenetically throughout the year. There is also no mention in the literature about the distinguishing morphological characteristics of different morphs of woolly apple aphid in India.

Preliminary information on the occurrence of sexual morphs from the Kashmir valley² also needs further confirmation as the occurrence of sexual morphs in Simla, Solan and Kulu (Himachal Pradesh) has been denied by other workers^{1, 5}. Observations were made both in natural populations of this insect pest in the apple orchards around Simla Hills as well as in the laboratory culture maintained on apple nursery plants under 12L:12D.

In the present investigations, the different morphs recorded in nature and under laboratory conditions are *virginoparae*, *sexuparae* and *sexuals*; the latter two morphs are reported for the first time from this region. Their main distinguishing morphological characteristics are summarised in table I.

Virginoparae: *Virginoparae* occur throughout the year. These are apterous parthenogenetic viviparous females and their progeny consists of parthenogenetic

viviparous females only. Four moults occur resulting in five instar stages. Nymphal stages are very active as compared with adult individuals.

Sexuparae: These are the only alates recorded on apple plants and appear from July to November. These are viviparous and parthenogenetic. *Sexuparae* are male-female producers and they lay sexuals (males and oviparous females).

Sexuals: These also appear from July to November. Sexuals (males and oviparous females) are apterous, arostrate and undergo four moults before they become sexually mature. Sexual dimorphism is also observed. There is a pair of claspers at the posterior end of the male and in between these protrudes the aedeagus. In the female, a single egg can be seen inside the abdomen from first instar to adult stage.

Present observations contradict earlier reports^{1, 5} that the sexual morphs do not occur in Himachal Pradesh. It is interesting to note that the sexuals have degenerate mouth parts (arostrate) and survive presumably on the stored reserves in the body. Egg occupies the whole of the abdomen of the oviparous female and this stage appears as 'a walking egg'. The egg is laid at the base of leaves and tender shoots and is

covered with wax secreted from the special wax glands of oviparous female, which dies in the process of egg laying. A significant finding is that the sexuals do not increase in body size from first instar to adult stage.

It is quite striking to note the occurrence of virginoparae, sexuparae and sexual morphs in the same region from July to November. The role of different environmental factors and the cytogenetic mechanisms involved in the production of different morphs in this aphid species are still unknown; however, the present findings are useful in stimulating further work on these aspects in the woolly apple aphid.

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1. Rahman, K. A., and Khan, A. W., *Indian J. Agric. Sci.*, 1941, **11**, 265.
2. Fotedar, M. R., and Kapur, A. P., *Curr. Sci.*, 1943, **12**, 84.
3. Baker, A. C., *U. S. Dept. Agric. Ent. Rep.*, 1915, **101**, 55.
4. Lal, K. B., and Singh, R. N., *Indian J. Agric. Sci.*, 1947, **17**, 211.
5. Thakur, J. R., and Dogra, G. S., *Tropical Pest Management*, 1980, **26**, 8.

OCCURRENCE OF THELEPHORA TERRESTRIS IN INDIA

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DURING a survey of fungi in mycorrhizal association with *Pinus patula* in Kodaikanal, Tamil Nadu, we collected sporophores of *Thelephora terrestris* in two consecutive seasons. This fungus has been known to produce ectomycorrhizae with *Pinus elliotii*¹, *P. virginiana*², *P. strobus*³, *P. rigida*⁴, *P. echinata*⁵, *P. palustris*, *P. clausa*, *P. sylvestris*, *P. lambertiana*, *P. monticola*, *P. ponderosa*⁶, *P. michoacana*, *P. teocote*, *P. rudis*, *P. pseudostrobus*, *P. ayacahite*, *P. leiophylla*⁷, *P. taeda*⁸, *Arbutus menziesii*⁹, *Arctostaphylos ura-ursi*¹⁰ and *Picea sitchansis*¹¹. It is possible that *T. terrestris* is in mycorrhizal association with *Pinus patula* in the Kodaikanal area and further experimental work is in progress. Since *T. terrestris* has not so far been reported from India a description

of the fungus is given below. The colour terminology used is that of Kornerup and Wanscher¹². The specimens are deposited at the Herbarium of Madras University Botany Laboratory (MUBL).

Thelephora Terrestris Fr., *Syst. Mycol.* 1:432 (1921)

Pileate, sessile to subsessile, in imbricating rosettes, effuso-reflexed, up to 10 cm broad in masses. Pileus up to 5 cm broad, ascending, tomentose to fibrillose scaly, soft, dark brown (6F6-8F5); margin incised. Hymenium inferior, papillose, greyish brown (8D3) or chocolate brown (5F4). Context up to 2 mm thick, greyish brown (8D3). Spore print colour brownish grey (4D2). Spores 8.4-11.2 × 5.6-8.4 μm, angularly ellipsoid, lobate, smooth to echinulate, spines very small, guttulate. Basidia 35.0-70.0 × 7.0-11.2 μm, 4-spored, sterigmata up to 7.0 μm long, thin walled, hyaline. Cystidia absent but basidioles present, brown in 10% KOH. Hyphae 4.2-11.2 μm diam., branched, thick walled (up to 1.4 μm thick), with clamp connections, brownish in 10% KOH, hyphal fibrils turning dark brown in 10% KOH.

On ground in *Pinus patula* plantation, in groups, 1972 Pine regeneration area, Konalaru, Kodaikanal, Tamil Nadu, 13 August, 1978, Coll. K. Natarajan and N. Raman. Herb. MUBL No. 2670.

On ground, in groups, *Pinus patula* plantation, Kundar, Kodaikanal, Tamil Nadu, 21 December, 1979, Coll. K. Natarajan and N. Raman. Herb. MUBL No. 2671.

Corner¹³ recognised 6 forms under this species. The present collections agree with *T. terrestris* f. *terrestris* because of the sessile, effuso-reflexed, dark brown pileus.

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1. Zak, B., and Marx, D. H., *For. Sci.*, 1964, **10**, 214.
2. HacsKaylo, E., *For. Sci.*, 1965, **11**, 401.
3. Fassi, B., and Fontana, A., *Allionia*, 1966, **12**, 47.
4. Schramm, J. R., *Trans. Am. Phil. Soc.*, 1966, **56**, 1.
5. Marx, D. H., and Davey, C. B., *Phytopathology*, 1969, **59**, 559.
6. Marx, D. H., and Bryan, W. C., *Can. J. Bot.*, 1969, **47**, 1903.
7. Marx, D. H., *For. Sci.*, 1975, **21**, 353.
8. Marx, D. H., Morris, W. G., and Mexal, J. G., *For. Sci.*, 1978, **24**, 193.
9. Zak, B., *Mycologia*, 1976, **68**, 362.
10. Zak, B., *Can. J. Bot.*, 1976, **54**, 1297.
11. Thomas, G. W., and Jackson, R. M., *Trans. Br. Mycol. Soc.*, 1979, **73**, 117.