

Some new or interesting graminicolous *Melanotaenium* species from India.

M. C. Srinivasan and M. J. Thirumalachar.

With Plate III.

1. A leaf-smut disease of *Paspalidium geminatum*

Paspalidium geminatum Stapf. is a grass commonly growing in humid low-lying situations. An interesting leaf-streak disease incited by a smut was collected at Pimpri during September and October. The symptoms incited appear as elongated, non-erumpent, dull grayish-black streaks, 0.5–2 mm. wide and 1–3 cm. long. The streaks which are often discrete and well separated become confluent at times to form large diffuse patches extending over a considerable area on the leaf surface. Besides leaves, the fungus incites small diffuse infection patches on the flowering shoot. These when numerous and closely set impart a blackish tinge to the entire inflorescence stalk (Fig. 1). However, floral infection has not been observed.

Microscopic examination of the infected parts reveals the presence of numerous closely packed dark-brown chlamydo-spores distributed chiefly in the parenchyma cells surrounding the vascular bundles. The chlamydo-spores are subglobose to spherical with a hyaline hyphal appendage in some cases (Fig. 2), reddish-brown in mass and measure $8.8-15.5 \times 8.5-14.5 \mu$. They germinate in water in 36–48 hours forming a promycelium which developed a terminal whorl of sporidia (Fig. 3).

Regarding the identity of the fungus, it needs to be compared with *Entyloma speciosum* Schroet. & Henn. recorded in India by Thirumalachar and Pavgi (1952) on *Paspalidium flavidum* A. camus. They however pointed out that the dark brown colour of the chlamydo-spores to be a character more in agreement with *Melanotaenium* than *Entyloma*. In the present study, the smut on *P. geminatum* appears more allied to *Melanotaenium brachiariae* Viegas in its spore measurements and germination. *M. brachiariae* has been recorded on *Brachiaria distachya* Stapf. by several workers in India. (Mundkur and Thirumalachar, 1952). The fungus is presented as a new variety of *M. brachiariae* to indicate the minor differences in symptoms and spore measurements.

Melanotaenium brachiariae Viegas var. *paspalidii* var. nov.

Sori in leaves, leaf-sheaths and flowering shoots, inciting formation of elongated, non-erumpent coalescing streaks on leaves and diffuse

dull gray patches on flowering shoot; chlamydo-spores intercellular in mesophyll grouped around the vascular bundles and angular due to mutual compression, globoid, subglobose to angular with a hyphal appendage in some cases, reddish-brown, $8,8-15,5 \times 8,5-14,5 \mu$.

Sori foliicoli et culmicoli, in foliis strias plus minusve elongatas, tectas, saepe confluentes, in culmis maculas obscure griseas efficientes; chlamydo-spores in mesophyllo circa fasciculos vasorum evolutae, globosae vel subglobosae, e mutua pressione plus minusve angulosae et irregulares, rubescenti-brunneae, $8,8-15,5 \times 8,5-14,5 \mu$.

Hab. On *Paspalum geminatum* Stapf. Pimpri, Poona, 9-10-1956 (Type).

2. A new leaf smut disease of *Apluda aristata* L.

On leaves of *Apluda aristata* L. a leaf smut was collected in the vicinity of Yercaud, which on examination proved interesting. Infection appears as small, linear to rectangular dull gray non-erumpent spots with a pale-yellow peripheral zone. The spots are 3-6 mm. long and 1-4 mm. wide and often due to mutual coalescence appear irregular. Microscopic examination shows numerous closely aggregated intercellular chlamydo-spores in the mesophyll. Individual chlamydo-spores are angular to subglobose, thick-walled, dark-brown, $7,5-15 \mu$ (with a mean of $11,4 \mu$).

A comparison with other *Melanotaenium* species has indicated that the fungus is undescribed.

Melanotaenium apludae Thirum. & Srinivasan sp. nov.

Sori in leaves as discrete linear or rectangular dull gray non-erumpent spots 3-6 mm long and 1-4 mm wide often becoming irregular through confluence. Chlamydo-spores dark brown, thick-walled, angular to subglobose, $7,5-15 \mu$.

Sori in foliis maculas lineares vel angulares, obscure griseas, tectas, 3-6 mm. longas, 1-4 mm. latas, saepe confluentes, tunc plus minusve irregulares efficientes; chlamydo-spores obscure brunneae, subglobosae, saepe plus minusve angulosae, $7,5-15 \mu$ diam., episporio crasso.

Hab. On *Apluda aristata* L. Yercaud (South India) 11-1-1957. (Type).

3. A leaf-gall inciting *Melanotaenium* on *Sporobolus* sp.

On a patch of *Sporobolus tremulus* Kunth plants growing at Vadgaon, Bombay State, an interesting leaf spot inciting smut disease was collected during the months of July and August. Infection appears as minute, black, tar-like pustules on the under-surface of the leaves. 2-5 mm in diameter, raised and covered by a thin-membrane (Fig.4). Rupture of the covering membrane at maturity releases the chlamydo-spores in an agglutinated mass.

Early stages of infection appear in the form of pale-pinkish streaks at the centre of which the smut pustule develops. When

examined by sectioning the differentiation of intercellular chlamydo-spores is observed (Fig. 5). Mature chlamydo-spores are commonly found aggregated in small groups, globose or somewhat angular due to mutual compression, smooth, thick-walled, $11-17 \times 10,5-14,5 \mu$ (Fig. 6). The chlamydo-spores germinate in water after 72-96 hours developing a promycelium on which 6-8 sporidia are formed (Fig. 7).

The fungus is an undescribed species of *Melanotaenium* which is named as *M. sporoboli*. Ramakrishnan and Sundaram (1954) studied a smut on *Sporobolus wallichii* and referred it to *Tolyposporella sporoboli* Jackson. Comparative studies with this material indicates that fungus is identical with the species under study and should be referred to *Melanotaenium sporoboli*.

Melanotaenium sporoboli Thirum. & Srinivasan, sp. nov.

Sori in leaves, grayish-black, warty, pustular, 2-5 mm in diameter and enclosed by a covering membrane, chlamydo-spores intercellular, released as agglutinated mass at maturity, brownish-black, thick-walled, globose or somewhat angular, smooth, $11-17 \times 10,5-14,5 \mu$, germinating by promycelium with 6-8 apical sporidia.

Sori in foliis pustulas griseo-nigrescentes, verruciformes, 2-5 mm diam. metientes, membrana propria inclusas efficientes; chlamydo-spores intercellulares, postea in massulas irregulares conglutinatae, $11-17 \times 10,5-14,5 \mu$, germinatione promycelium sporidiis apicalibus 6-8 ornatum protrudentes.

Hab. On *Sporobolus tremulus* Kunth. Vadgaon, Bombay State, 11-7-1957.

In conclusion the authors wish to express their gratitude to Prof. Dr. Franz Petrak for kindly giving the Latin diagnosis of the new species.

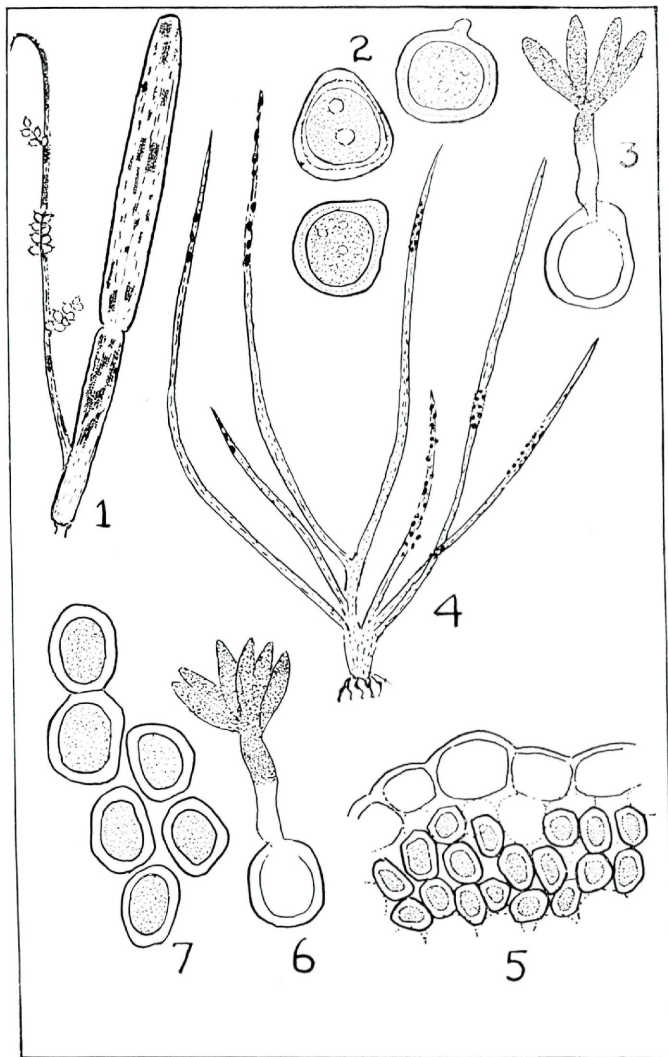
Literature cited.

- Mundkur, B. B. and M. J. Thirumalachar. 1952: Ustiliginales of India, Commonwealth Mycological Institute, Kew, Surrey, pp. 70-71.
 Ramakrishnan, T. S. and N. V. Sundaram, 1954. Additions to Fungi of Madras XXI. Proc. Indian Acad. Sci. 'B', 40: 17-23.
 Thirumalachar, M. J. and M. S. Pavgi, 1952: Notes on some Indian Ustilagineae V. Sydowia Ann. Mycol. 6: 389-395.

Explanation of Plate III.

Figs. 1-3: *Melanotaenium brachiariae* var. *paspalidi*. - 1: Symptoms on leaves and flowering shoot of *Paspalidium geminatum* ($\times \frac{3}{4}$). - 2: Chlamydo-spores ($\times 950$). - 3: Germination of chlamydo-spore ($\times 950$).

Figs. 4-7: *Melanotaenium sporoboli*. - 4: Symptoms on *Sporobolus tremulus* ($\times 1$). - 5: Showing intercellular chlamydo-spore formation ($\times 450$). - 6: Mature chlamydo-spores ($\times 950$). - 7: Germination of chlamydo-spore ($\times 950$).



ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Sydowia](#)

Jahr/Year: 1964

Band/Volume: [17](#)

Autor(en)/Author(s): Srinivasan M. C., Thirumalachar M. J.

Artikel/Article: [Some new or interesting graminicolous Melanotaenium species from India. - I. 20-22](#)