Sporidial Discharge in Melanotaeumium brachiariae

This foliaceous rust Melanotaeumium brachiariae V. G. is fairly widespread in the country causing stripe to blotchy, nonresistant spots in the leaves and occasionally in the stems and taches of Brachiaria distachia (L.) St. × S. Morphology and cytology of telospores germination and development of telospores in vivo have been described earlier. Telospores from mature sorai in the withering leaves stored at low temperature (12°C) were teased out and induced to germinate on aird sown agar. Mature sorai floating on the water films were aseptically transferred to potato dextrose agar with 0.5% yeast extract (pH 6.5) and incubated at 28–30°C. Precooled telospores also were induced to germinate on plates PDA and those bearing young sporidia were transferred to PDA and incubated likewise. Association of compatible sporidial complements was ensured in both the culture isolates. The sporidia soon fission in compatible pairs and dikaryotic infective hyphae developed into small colonies. The colonies were slow in growth (1.5–2 cm diam./week), wrinkled, thick, dull, chalky white and smooth, irregular in margin. They soon produced subepithelial to allantoid secondary sporidia (3–8 x 1.4–2.5 μ) in large numbers. The colonies were thus composed of dikaryotic hyphae and secondary sporidia.

Incubation of cultures for 24–36 hr showed a growth of numerous tiny colonies scattered about the parent colony. Subcultures also showed growth of similar tiny colonies on PDA; both on slants and in petri plates. These obviously appeared from the secondary sporidia (buds) forcibly shot out from the young colony. The secondary colonies were circular, pale buff with crenate margin, slightly raised at the centre and composed of young budding sporidia; they soon enlarged and developed similarly as the parent colonies (Fig. 1).

Mature sorai on the host parts go down to the soil with the withering leaves and gradually become released from the decomposing debris. The agglutinated telospores in the sorai get separated with the onset of monsoon rains, germinate and build up dikaryotic mycelial/sporidial colonies on the soil underneath the host plants. The dikaryotic secondary sporidia bring about fresh infections on the young leaves late in August every year. Young grey spots become visible on the maturing leaves in early September.

Forcible discharge of infective or disseminating propagules is known to occur in several members of Basidiomycetes such as Sporebolomyces, Dacrymyces, Uredinales and Ustilaginaceae. Several species of Tetraspora, and Entyloma de Bury in the family Tilletiaceae (Ustilaginaceae) have been observed to expel their sporidia, tenderly supported over the stigmatic apex. Forcible expulsion of sporidia was hitherto not reported in the genus Melanotaeumium de Bury as by M. brachiariae.

FIG. 1. Tiny colonies by expelled sporidia of Melanotaeumium brachiariae, × 1.

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