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Hawaiian Forest Fungi VI. A New Species of *Brasiliomyces* on *Sapindus Oahuensis*

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that a post-meiotic mitosis occurs within the spore. It is relevant to note that the basidia of heterothallic isolates are also predominantly four-spored with binucleate spores.

In summary, isolates of *H. annosum* from Australia that we have examined (and probably those from New Zealand and Fiji as well) are homothallic, not heterothallic. Although our present sample of homothallic isolates is small (data shown above), the observations that all of our isolates from certain geographical areas are homothallic and all (more than several hundred) from other geographic areas are heterothallic, suggests that this may reflect their true distribution in nature.

Key Words: homothallism, intersterility, clamp connections, biological species, *Heterobasidion annosum, Fomes annosus.*

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HAWAIIAN FOREST FUNGI VI. A NEW SPECIES OF *BRASILIOMYCES* ON *SAPINDUS OAHUENSIS*

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An unusual powdery mildew occurring on *Sapindus oahuensis* Hbd., a small tree endemic to Oahu and Kauai in the Hawaiian Islands, was brought to my attention by Mrs. Evangeline Funk of the University of Hawaii Department of

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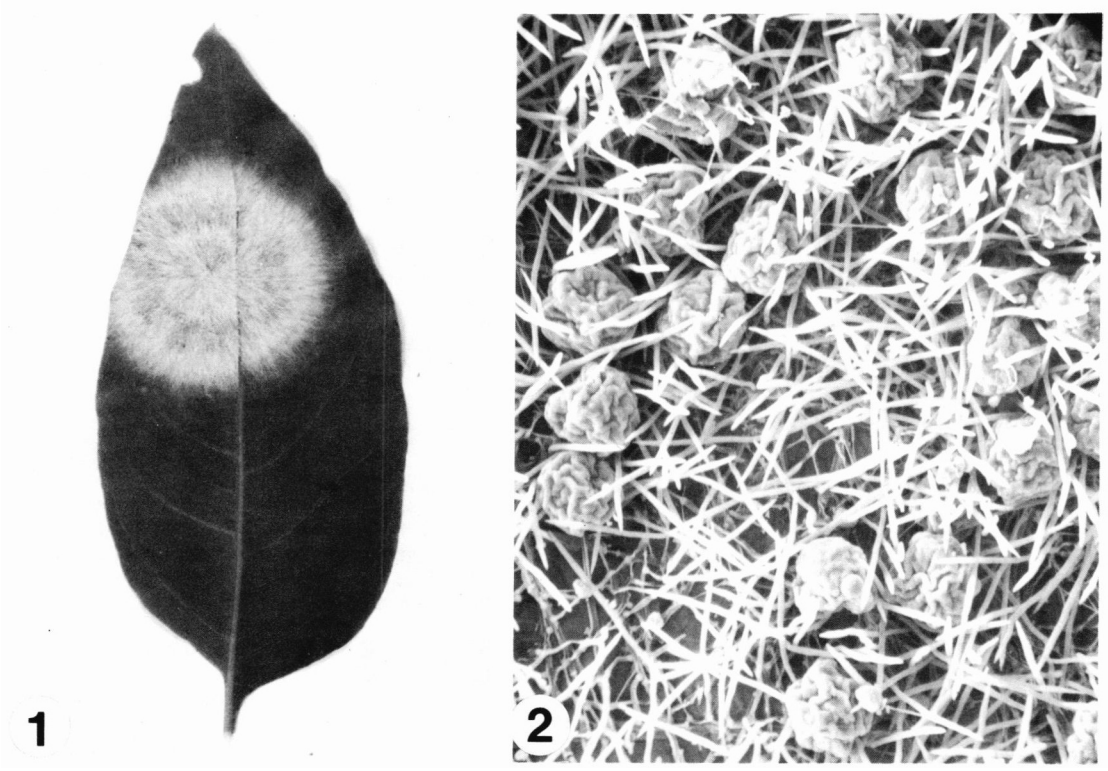


FIGS. 1, 2. *Brasiliomyces setosus.* 1. Colony on leaf of *Sapindus oahuensis,* ×1. 2. Portion of colony showing setae and ascocarps. SEM micrograph, ×250.

Botany. The fungus was referable to the genus *Brasiliomyces,* but was distinctly different from the three species now in that genus. A new species, *Brasiliomyces setosus,* is proposed to accommodate this organism.

Brasiliomyces setosus Hodges, sp. nov. FIGS. 1–9

Coloniis hypophyllis, albis, irregularis, usque ad 6 cm diam; myceliis superficialibus, hyalinis, tunicatis leviter verrucosis, dense setosis; setibus acicularibus, hyalinis, laevibus, inramis, rectis vel flexis, 1(–2)-septatis, 94–(117)–160 μm longis, 3–(4.7)–5 μm latis ad basi; ascocarpis non ostiolatis, albis, globosis, parietibus tenuibus, absque appendicibus, 3-ascis, 62–(74)–83 μm diam; ascis late clavatis, (4–)5–6 sporis, 57–(63.2)–68 × 37–(43.2)–49 μm; ascosporis aseptatis, hyalinis, oblongis, granulatis, 27–(31)–33 × 13–(14.8)–18 μm.

Holotypus: ad vivens foliis *Sapindus oahuensis,* Hawaiensis Insularis, Oahuensis, 24-X-1984. BPI 71934.

The white colonies (FIG. 1) of *B. setosus* are conspicuous on the lower leaf surface of *S. oahuensis* and sometimes reach six cm diam. The leaf surface opposite the colony eventually turns yellow. The hyphae are hyaline, superficial, slightly roughened, and 4–6 μm diam. The conspicuous nature of the colonies is due to the large number of setae produced along the upper sides of the hyphae. These setae (FIGS. 2–4) are hyaline, acicular, rigid, straight, curved or bent, 1(–2)-septate, 94–(117)–160 μm long, and 3–(4.7)–5 μm wide at the base. They arise from distinctive footcells which are produced from short pegs (FIGS. 3, 5) on the surface of the hyphae. The setae disarticulate readily at the septum separating the footcell from the hyphal peg.

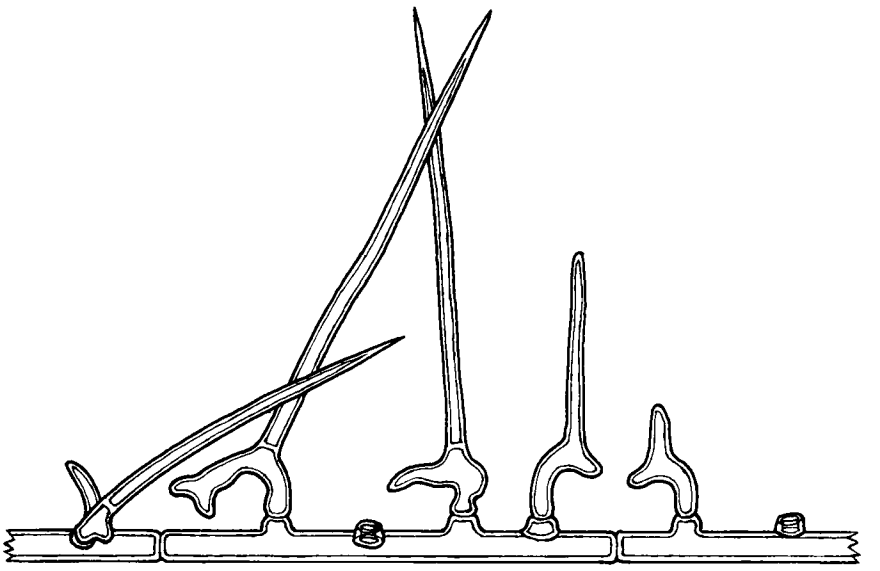


FIG. 3. *Brasiliomyces setosus.* Setae arising from hyphal pegs on surface hypha, ×800.

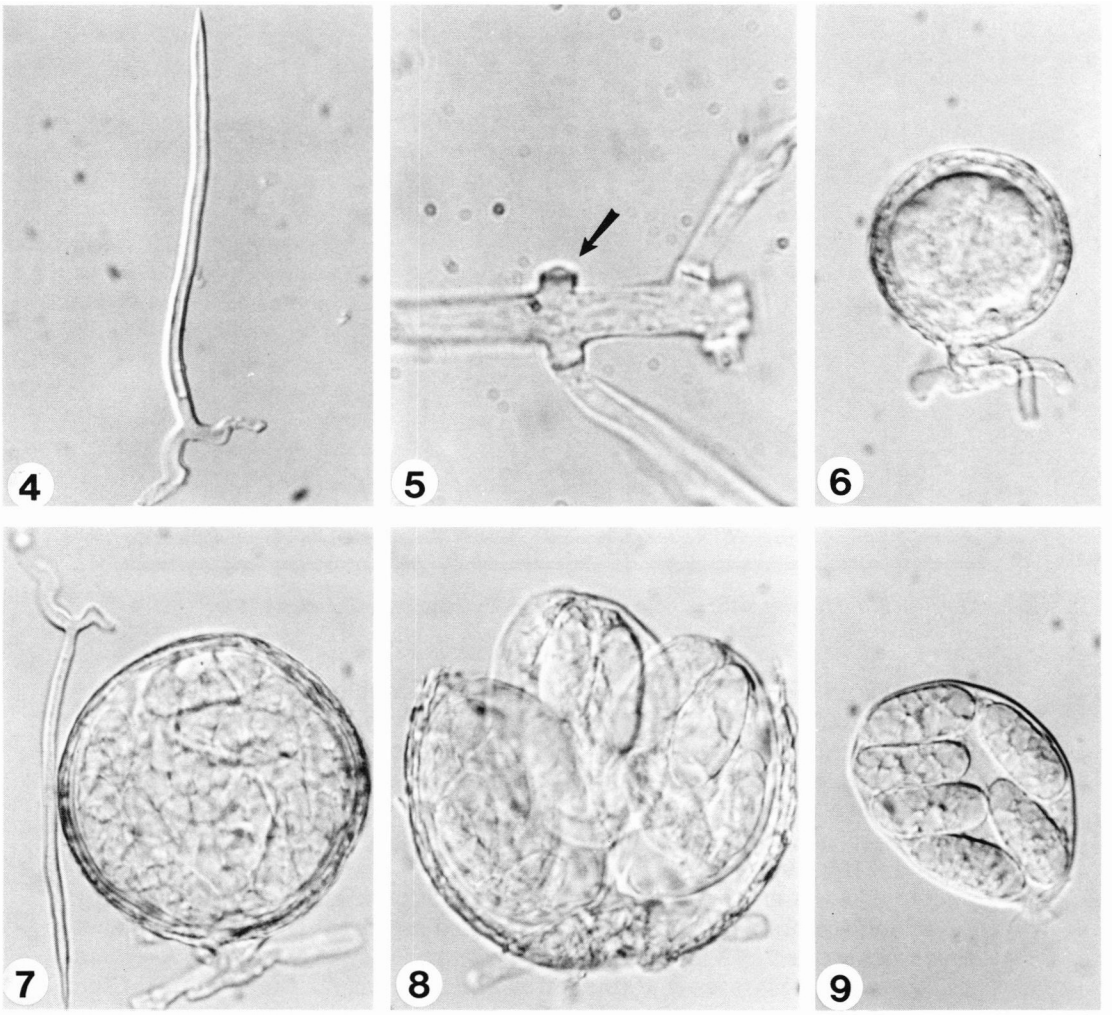
The ascocarps (FIGS. 6–8) are non-ostiolate, hyaline, globose, thin-walled, 62–(74)–83 μm diam, and are attached to the superficial hyphae by a short stalk (FIG. 6). Ascocarps are devoid of appendages, and each contains three, thin-walled, broadly clavate asci 57–(63.2)–68 × 37–(43.2)–49 μm (FIGS. 8, 9). Each ascus typically has 5–6 ascospores, although 3- or 4-spored asci are occasionally seen. Ascospores are unicellular, hyaline, elongate, granular, and 27–(31)–33 × 13–(14.8)–18 μm (FIG. 9).

Brasiliomyces is a little-known genus of powdery mildews characterized by hyaline or light-colored, non-ostiolate, thin-walled ascocarps lacking appendages. The genus was erected by Viégas (**6**) with *B. malvastri* Viégas as the type. A second species, *B. entadae* Marasas & Rabie, on *Entada spicata* (E. Mey.) Druce, from South Africa, was added in 1966 (**5**). Subsequently, two species, *B. malachrae* (Seaver) Boesewinkel (**2**) and *B. trina* (Harkness) Zheng (**7**) were transferred to the genus from *Erysiphe.* These two species had previously been placed in the monotypic genera *Salmonia* Blumer & Muller (**1**) and *Californiomyces* Braun (**3**), respectively.

When he described *Brasiliomyces,* Viégas (**6**) stressed the lack of appendages on the ascocarp as an important characteristic of the genus. Recently, Zheng (**7**) examined the types and other specimens of all species currently assigned to *Brasiliomyces* and concluded that at least some ascocarps in all species had a few rudimentary appendages, and emended the genus accordingly. During the course of the present study, I examined most of the same specimens seen by Zheng and, with the exception of *B. trina,* did not observe structures I believed to be appendages. Appendages are also lacking in *B. setosus.*

Zheng (**7**) concluded that *B. malvastri* was conspecific with *B. malachrae,* and thus recognized three species, *B. malachrae, B. entadae,* and *B. trina.*

With the exception of the ascospores of *B. trina,* the ascocarps, asci, and ascospores of *B. setosus* are somewhat larger than those of the other species currently recognized in *Brasiliomyces.* Like *B. malachrae* and *B. trina, B. setosus* has three asci per ascocarp, but differs from *B. entadae* which has 4–5. The unique



FIGS. 4–9. *Brasiliomyces setosus*. 4. Seta with footcell, ×490. 5. Hyphal pegs (arrow) on hypha to which footcells of setae are attached, ×1540. 6. Immature cleistothecium showing attachment to hypha by short stalk, ×550. 7. Mature cleistothecium, ×550. 8. Mature cleistothecium showing three asci, ×550. 9. Ascus with six ascospores, ×550. All photographs made using Nomarski optics.

and characteristic feature distinguishing *B. setosus* from the other species of *Brasiliomyces* is the dense layer of setae covering the superficial hyphae. Examination of the types and other specimens of the other species show the colonies to be composed of sparse, superficial, non-setose mycelium on which scattered cleistothecia are produced. Compared to those of *B. setosus,* the colonies of the other species are relatively inconspicuous.

No anamorph has been observed associated with *B. setosus.* Of the other described species of *Brasiliomyces,* only *B. malvastri* is reported to produce conidia (**6**). The type and other specimens of this species from Brazil contain conidia of the *Oidium* type as mentioned in the original description, but colonies with either or both morphs are present. It is not possible to determine if the two morphs are genetically connected. A conidial state referable to *Oidiopsis gossypii* (Wakefield) Raychaudhuri sometimes occurs together with *B. malachrae* in Peru (**1**)

and Venezuela (**4**). Blumer and Müller (**1**), however, concluded that the two morphs are unrelated, and this conclusion was accepted by Hanlin and Tortolero (**4**). Since Zheng (**7**) has reduced *B. malvastri* to synonymy with *B. malachrae,* the status of a possible anamorph for this species remains in doubt.

Brasiliomyces setosus is common on *S. oahuensis* in the Waianae Mountains of Oahu. The host is not common on Kauai, but *B. setosus* was present on the few trees seen. It was not seen on *S. saponaria* L., a large tree indigenous to Hawaii.

I thank the curators of BPI, PRE, and IAMC for loan of the specimens examined during this study, Dr. Michael Larsen for preparation of the Latin description, and Ronald Walker for the line drawing.

Key Words: *Brasiliomyces setosus, Sapindus,* powdery mildew.

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PUCCINIA CTENOLEPIDIS, A NEW RUST ON *CTENOLEPIS* (CUCURBITACEAE) FROM INDIA

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Ctenolepis Hook. f. is one of six genera of the tribe Trichosantheae of the family Cucurbitaceae that is commonly found in different parts of India (Hooker, **1872**). Rust fungi have been reported parasitizing species of *Gymnopetalum* Arn. and *Trichosanthes* L., from India (Bilgrami *et al.,* **1981**) but not representatives of the other genera of the tribe. In a recent survey of the rust fungus flora of Mannanur Forest, Mahbubnagar District, Andhra Pradesh, the authors found a severe infection on the leaves of *Ctenolepis* sp. This infection was caused by a hitherto undescribed species.

Puccinia ctenolepidis Ramachar & Bagyanarayana, sp. nov. FIGS. 1–5

Spermogoniis paucis, subepidermalibus. Aeciis (Aecidium) amphigenis; aeciosporis 21–28(–30) × 17–21.5 μm, membrana 1–3.3 μm crassa, pallide flavida, verrucosa, poris germinationis 2–4(–6).