Macalpinomyces viridans sp. nov. (*Ustilaginomycotina*) on *Sporobolus* (*Poaceae*) from Australia

Roger G. Shivas [1]*, Alistair R. McTaggart [1] & Kálmán Vánky [2]

[1] Queensland Department of Primary Industries and Fisheries, Plant Pathology Herbarium, 80 Meiers Road, Indooroopilly, Queensland 4068, Australia
[2] Herbarium *Ustilaginales* Vánky (H.U.V.), Gabriel-Biel-Str. 5, D-72076 Tübingen, Germany

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Abstract. A new smut fungus, *Macalpinomyces viridans* on *Sporobolus actinocladus* is described from Australia. It is compared with related species, and a key to the four *Macalpinomyces* species known on *Sporobolus* is given.

Key words: *Macalpinomyces viridans,* new species, smut fungi, *Sporobolus, Ustilaginomycotina*

Introduction

Sporobolus R. Br., in the subfam. *Chloridoideae,* tribe *Eragrostideae,* subtribe *Sporobolinae,* has about 160 species in the tropics and subtropics (Clayton & Renvoize 1986: 224). The smut fungi on *Sporobolus* were revised by Vánky (2003) who recognised sixteen species in six genera. Three species of *Macalpinomyces* are known on *Sporobolus:* 1. *M. spermophorus* (Berk. & M.A. Curtis ex De Toni) Vánky, type on *Eragrostis poaeoides* P. Beauv. var. *megastachya* (Link) A. Gray, U.S.A.; 2. *M. sporoboli* (Tracy & Earle) Vánky, type on *S. junceus* (Michx.) Kunth, U.S.A., and 3. *M. spinulosus* (L. Ling) Vánky, type on *S. patulus* Hack., Sierra Leone. A smut fungus on *Sporobolus actinocladus,* collected in Western Australia represents a new species of *Macalpinomyces,* which is described below.

Material and Methods

Specimens have been deposited in the herbaria BRIP and H.U.V. For light microscopy the specimens were mounted in lactoglycerol, gently heated and examined with a compound microscope (Leica DM 2500). Figures 3 and 5 are each composed of two images created using depth of field combination software (Auto-Montage Pro ver. 5.02, Syncroscopy, Cambridge, UK) to enhance image quality.

Taxonomy

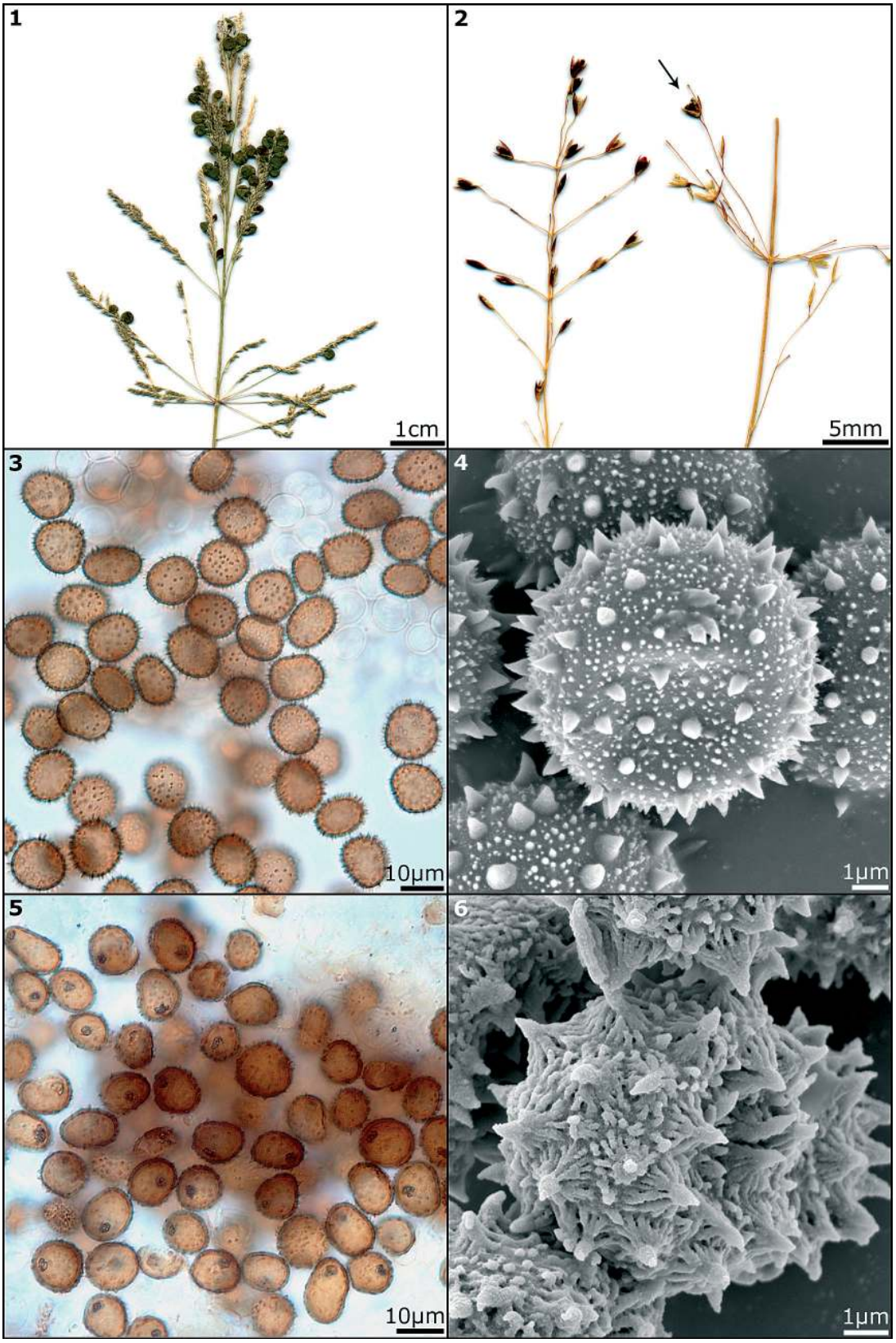
Macalpinomyces viridans R.G. Shivas, McTaggart & Vánky, **sp. nov.** **Figs 1, 3-4**
MycoBank # MB511091

Typus *in matrice Sporobolus actinocladus (F. Muell.) F. Muell., Australia, Western Australia, inter Halls Creek et Kununurra, 18°10'39" S, 127°41'39" E, alt. c. 400 m.s.m., 11.IV.2007, leg. A.R. McTaggart, T.S. Marney, S.M. Thompson, M.J. Ryley, A.J., G.F., M.D.E. & R.G. Shivas.* ***Holotypus*** *in BRIP 49 133, isotypus in H.U.V. 21 454.*

Macalpinomyces viridans differt a M. spinuloso (L. Ling) Vánky (Ustilago spinulosa L. Ling, Sydowia 7: 154, 1953, typus in Sporobolo patulo Hack., Sierra Leone) quod habet sporas paulo maiores (9,5-13 µm longas), spinis altioribus (0,5-1,2 µm). In SEM, spinae M. viridantis compactae, superficies sporarum inter spinas subtiliter, dense echinulata. Sporae M. spinulosi sunt 7,5-11,5 µm longae, spinis 0,4-0,8 µm altis. In SEM, spinae M. spinulosi factae ex multis filis convergentibus, coniunctis in compactam partem distalem, apice acuto; paucis verrucis sparsim sitis inter spinas vel verrucis absentibus.

Sori (Fig. 1) in some spikelets of an inflorescence transforming the inner floral organs into a spherical or broadly ellipsoidal body, 1-3 mm in length, covered by a thin, at first green, later pale brown peridium of fungal and host origin, rarely with a short acute tip, occasionally with

*Corresponding author: e-mail: roger.shivas@dpi.qld.gov.au



Figs 1, 3-4. ***Macalpinomyces viridans*** (BRIP 49 133). **1.** Host symptoms (scale = 1 cm). **3.** Spores and sterile cells under light microscope (scale = 10 µm). **4.** Spores under SEM (scale = 1 µm). **Figs 2, 5-6.** ***Macalpinomyces spinulosus*** (IMI 48 887). **2.** Host symptoms (arrow indicates infected ovary; scale = 5 mm). **5.** Spores under light microscope (scale = 10 µm). **6.** Spores under SEM (scale = 1 µm)

remnants of sterile anthers and tips of inner floral envelopes. At maturity, the peridium ruptures irregularly to expose the dark brown, powdery spore mass intermixed with groups of sterile cells surrounding a short, blunt columella. **Spores** (Figs 3-4) globose, subglobose or ellipsoidal, 9.5-13 × 9-12 µm, yellowish brown; wall even, c. 1.5 µm thick, including the sparsely situated, 0.5-1.2 µm high, coarse spines, spore profile serrate, in SEM spines compact, spore surface between the spines minutely, densely echinulate. **Sterile cells** in groups, single cells globose, subglobose to subpolyhedrally irregular, 5.5-10.5 × 5-9.5 µm, hyaline; wall even, thin, c. 0.5 µm, smooth.

On Poaceae: *Sporobolus actinocladus* (F. Muell.) F. Muell.

Distribution: Australia. Known only from the type collection.

Macalpinomyces viridans differs from *M. spinulosus* (*Ustilago spinulosa* L. Ling, *Sydowia* 7: 154, 1953, type on *Sporobolus patulus,* Fig. 2) in having slightly larger spores (9.5-13 µm long), with higher (0.5-1.2 µm) spines. In SEM, the spines of *M. viridans* are conical; the spore surface between the spines is minutely, densely echinulate. The spores of *M. spinulosus* are 7.5-11.5 µm long, with 0.4-0.8 µm high spines (Fig. 5). In SEM, the spines of *M. spinulosus* are subtended by numerous, convergent filaments, united into a compact distal part with an acute tip; with few, sparsely situated warts between the spines or warts lacking (Fig. 6).

All species of *Macalpinomyces* on *Sporobolus* have globose or ellipsoidal sori, a few mm in diameter, in some spikelets of the inflorescence. They differ especially in the morphology of the spores, which is shown in the following key.

Key to the *Macalpinomyces* species of *Sporobolus*

1 Spores finely, moderately densely verrucose-echinulate . . . . . ***M. spermophorus***

1* Spores with coarse spines **2**

2 Spines densely situated, broadly conical, 1-2 (–2.5) µm high . . . . . ***M. sporoboli***

2* Spines sparsely situated, lower **3**

3 Spores 7.5-11.5 µm long; spines 0.4-0.8 µm high, in SEM subtended by numerous, convergent filaments, united into a compact distal part with acute tip . . . . . ***M. spinulosus***

3* Spores 9.5-13 µm long; spines 0.5-1.2 µm high, in SEM conical, not composed of filaments . . . . . ***M. viridans***

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