

A NEW PARASITIC SPECIES OF APIOSPORA

By EMIL MÜLLER*

Summary A new parasitic species of *Apiospora*. A new species of the ascomycete genus *Apiospora* Saccardo (*Lasio-sphaeriaceae*, *Sordariales*), *Apiospora deschampsiae* E. Müller is described and compared with other species of that genus. It is a parasite of *Deschampsia caespitosa* (L.) P.B. (*Poaceae*) and seem to occur only at elevated localities of the Swiss Alps.

During field work in connection with my intention to list the parasitic fungi of an alpine region of Switzerland (Canton Grison within the eastern portion of the country) I found among many other ascomycetes three species belonging to *Apiospora* Saccardo. Two of them are known species, viz. *Apiospora montagnei* Sacc. on stems of *Phragmites communis* Trin. and *Apiospora parallela* (Karst.) Sacc. on *Calamagrostis villosa* (Chaix) Gmelin. The third represents a new species unknown so far, which is described below.

Apiospora Saccardo (Synonyms: *Scirrhella* Speg., *Rhabdostroma* Sydow; Rehm, 1914; Höhnelt, 1919; Petrak, 1925; Müller et von Arx, 1962) comprises a number of ascomycetes with ascogonia developing on dead leaves of *Poaceae*. They form black, stripe-like stromata through the outer tissue layers of dying or dead leaves of its hosts. The ascogonia are densely immersed in the stroma to form one or two longitudinal rows. They are more or less globose, black, relatively small (up to 250 μm diam.) and surrounded by a thick peridium pierced by an apical periphysate ostiolum. The asci are clavate, ellipsoidal or cylindrical and inserted on the basal inside of the peridium. The hyaline ascospores are septate near the lower end, cylindrical or fusoid in the larger apical portion and banded in the short basal end.

The taxa of *Apiospora* are often considered to be saprobes because its type species, *Apiospora montagnei* Sacc. grows on dead stems of larger *Poaceae* e.g., *Andropogon*, *Arundo*, *Arundinacea*, *Bambusa*, *Donax*, *Phragmites*, *Saccharum*, *Zea*. It occurs throughout the world except subarctic and arctic regions. Its Anamorph, *Papularia arundinis* (Corda) Fries too is found on such hosts. Teleomorphs and

anamorphs often develop simultaneously in complete neighbourhood. The genus comprises at present less than ten species. Some may infect several different hosts as *Apiospora montagnei*, *A. curvispora* (Speg.) Rehm and *A. camptospora* Penz. et Sacc. Others are more specialized. *A. parallela* grows only on the stems of some species of *Calamagrostis* Adans. and suggests clearly parasitism as does the new species on *Deschampsia caespitosa*.

The taxonomic position of the genus *Apiospora* was disputed for many years. It was considered to belong to the *Dothideales* (bitunicate ascomycetes; Theissen & Sydow 1915) up to 1925, when Petrak recognized its position among the unitunicate ascomycetes. It was arranged with the *Amphisphaeriaceae* (Müller & von Arx), the *Hyponectriaceae* (Barr 1976), but both solutions did not satisfy. Recently the genus is thought to belong to the *Lasio-sphaeriaceae* (*Sordariales*, Barr 1990, following a suggestion of G. Samuels, Beltsville, USA).

Our new species fits well to the genus *Apiospora* in main features, as host plant, structure of ascus apex, ascospore arrangement, color, size, shape and septation; it is without doubts congeneric with the other species of the genus:

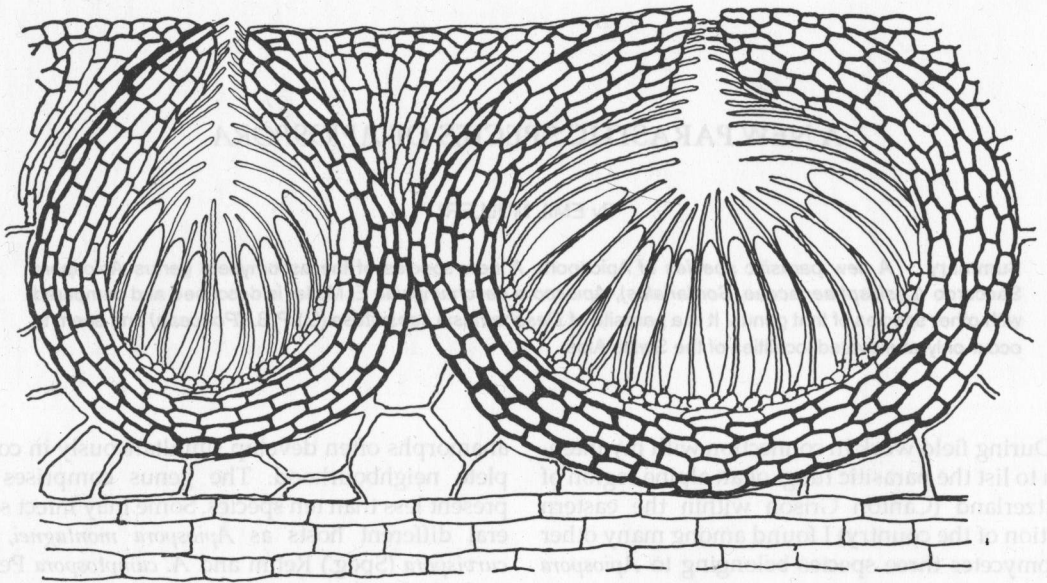
***Apiospora deschampsiae* nov. spec.**

Ascogonia nigra, globosa, depressa vel conica, 120-250 μm diam.; peridium ascogonium 20-30 μm crassum, cellulis cubicis 6-8 x 3-6 μm magnitudinis compositum, apicaliter ostiolata, immersa in stromatis longitudinalis; asci unitunicati ellipsoidei, 40-50 x 9-11 μm , 8-spore: ascosporae hyalinae, cylindraceae, ad basin leniter curvatae, prope basin septatae, 16-19 x 2-3 μm , paraphyses filiformes, ad 2 μm crasis.

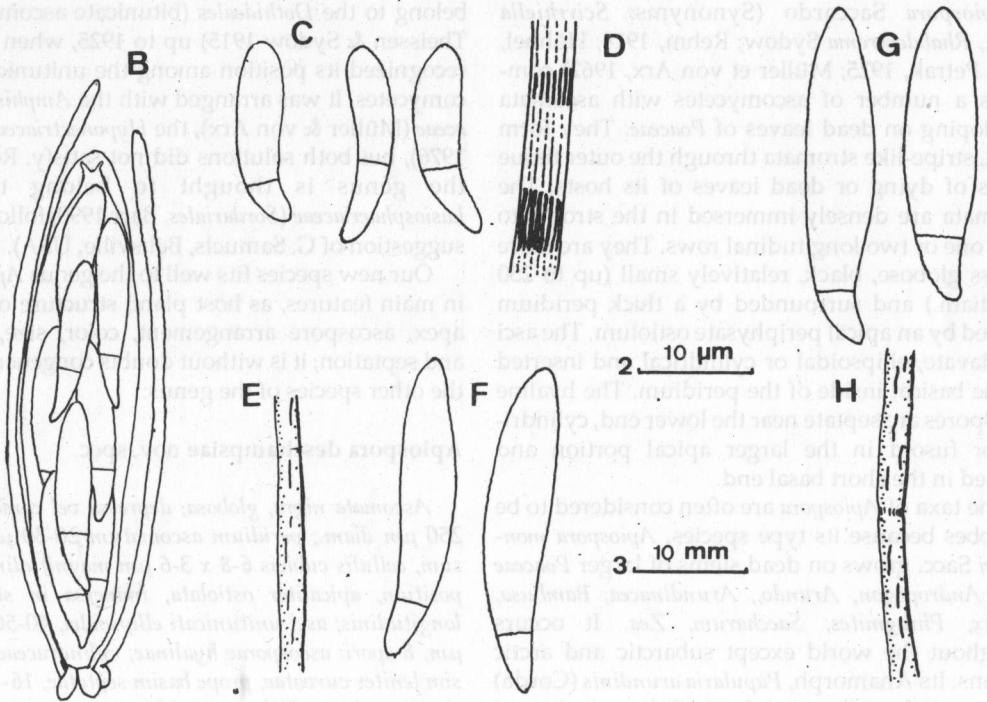
Holotypus: Hab. in folia *Deschampsiae caespitosae* (L.) P.B. - HELVETIA, Raetia, Engiadina, Scuol, Val S-charl, Tamangur, 22-9-1964, leg. E.M. et al. (ZT).

* Wieslerstrasse 15, CH-8702 Zollikon, Switzerland

A



1 40 μm



2 10 μm

3 10 mm

Fig. 1.-- A-D: *Apiospora deschampsiae*. A: section through two ascomata and the connecting stroma; B: ascus with ascospores and two paraphyses; C: ascospores; D: portion of leaf with leafspots; E-F: *Apiospora parallela*. E: stem portion with linear stromata; F: ascospores. G-H: *Apiospora montagnei*. G: ascospores; H: stem portion with linear stromata; scale 1: A; scale 2: B, C, F, G; scale 3: D, E, H.

Stromatic tissue subcuticular, filling epidermal cells and parenchyma of dying and dead leaves with a black pseudostromatic structure (composed of fungal and host elements) in parallelly arranged, longitudinal stripes connected to form conspicuous black leaf spots up to 10 mm length on both leaf sites; ascomata immersed in the stromatic tissues, globose, depressed or conical, with a diameter of 120 to 250 μm , often densely arranged within the stromata to form longitudinal rows, surrounded by a 20-30 μm thick peridium which is composed of several layers of thickwalled cubical cells 5-8 μm long and 3-6 μm wide and apically pierced by a periphysate ostiolum.

Asci unitunicate, eight-spored, ellipsoid, inserted along the inner side of the peridium, forming a hymenium over the lower half of the ascumatal loculus. Ascospores hyaline, arranged biserially in the ascus, cylindrical, slender basically slightly bended and septate within the lower third of length, 16-19 \times 3-4 μm . Interascal filaments (paraphyses) 1-2 μm broad, without septa, later dissolving.

Deschampsia caespitosa (L.) P.B. (Poaceae): Switzerland, Hinterrheintal, Averstal, Alp above Letziwald above Cröt, 15-8-1978, E.M., O.P., M. Küchler; Albulatal, Albulapass, path from Alp Weissenstein to Murtel digl Crap alv, 2200 m, 20-8-1979, G. Samuels, O. Petrini, E.M.; Engiadina, Val S-charl, Tamangur, 22-9-1964, E.M. et al.; Val S-charl, S-charl, 2-9-1970, leg. R.W.G. Dennis, E.M. (all ZT).

Apiospora parallela differs from the two other species found in Grison by growth on leaves, by the conspicuous leaf spots, by smaller ascospores, and by the ascospore septation (which is less typically apiosporic); the three species may be compared by the following key:

1. Stromata demonstrated to be larger, dark spots, longitudinally stretched in the direction of growth, ascospores slightly clavate, hyaline, septate near the lower end.
- 2
- 1*. Stromata demonstrated to be thin, dark lines aggregated into larger dark spots, ascospores slightly clava-

te, lower end somewhat bended, septate up to lower third, 22-32 \times 4-6 μm , on *Calamagrostis* spp.

Apiospora parallela

2. Stromata up to 5 mm long, often united to form larger spots, ascospores 19-30 \times 6-11 μm , on different Poaceae.

Apiospora montagnei

- 2*. Stromata up to 10 mm long, composed of numerous parts, ascospores 16-19 \times 3-4 μm , on *Deschampsia*.

Apiospora deschampsiae

Apiospora deschampsiae is a parasite which infects young leaves. Dark leaf spots are developing on the end of June or in July, but mature ascomata may be found not before August of the following summer. The host is an abundant plant of moist localities, but infections with *Apiospora deschampsiae* are rare and may only occur on single individuals, whereas others in the neighbourhood remain healthy. The above mentioned collections are situated between 1800 and 2300 m altitude, the fungus seems to be adapted to the hard climatic conditions typical for that altitude.

I am pleased to dedicate that paper to Prof. Dr. Jorge E. Wright, Buenos Aires, Argentina.

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