

Notes on African plants

VARIOUS AUTHORS

ACAROSPORACEAE

A NEW YELLOW *ACAROSPORA* (LICHENES) FROM THE WATERBERG, SOUTH WEST AFRICA/NAMIBIA

***Acarospora elegans* Brusse sp. nov.**, thallo ut in *A. oxytona* (Ach.) Massal. sed excipulo tenuiore (5–10 μm), et ascosporis latioribus.

Thallus citrinus, crustosus et effiguratus, saxicola, usque ad 20 mm diametro. *Lobi* marginales usque ad 2,5 mm longi, 0,3–1,0 mm lati. *Areolae* irregulares, 0,2–1,0 mm diametro, sessiles vel subpeltatae. *Fissurae* 0,1–0,2 mm latae, 0,2–1,0 mm profundae. *Superficies* opaca, laevis vel undulata, plana vel convexa, citrina. *Cortex superior* 25–45 μm crassus (in lateribus et in pagina inferior, 10–15 μm crassus), paraplectenchymatus, cellulis 3–8,5 μm diametro. *Stratum gonidiale* 60–80 μm crassum, algis *Trebouxii*, 5–15 μm diametro. *Medulla* alba, 70–300 μm crassa. *Pagina inferior* pallida vel brunnescens. *Apothecia* usque ad 1,5 mm diametro, emergentia vel sessilia; pagina hymenii pallida. *Excipulum thalatinum* in lateribus circa 120 μm crassum. *Excipulum hyalinum*, J–, pericline prosoplectenchymatum, 5–10 μm crassum, sed crassius ad paginam. *Hypothecium* 15–50 μm crassum, hyalinum, J+ caeruleum. *Hymenium* hyalinum, 80–90 μm altum, J+ caeruleum. *Paraphyses* fere simplices vel anastomosantes, in gelatina arcte inclusae, septatae, luminibus 1,2–1,3 μm crassis, gelatinis J+ caeruleis. *Asci* clavati vel acuminate clavati, 60–75 $\times$ 14–19 μm , parietibus incrassatis, J– (Figure 2). *Ascospores* numerosae, hyalinae, ellipsoideae, simplices, 4–5 $\times$ 1,8–2,8 μm . *Pycnidia* globosa, hyalina, 230–290 μm profunda, 160–200 μm lata, cum algis cincta, parietibus hyalinis, circa 10 μm crassis, pericline prosoplectenchymatis, cavitatibus convolutis. *Pycnidiosporae* hyalinae, longe ellipsoideae, 2,0–3,5 $\times$ 1,0–1,2 μm . *Thallus* acidum rhizocarpicum continens.

TYPE.—South West Africa/Namibia, 2017 (Waterberg): Waterberg campsite trail, common on S facing sandstone cliffs (–CA), *F. Brusse* 4218, 1984.03.22 (PRE, holo.; COLO, LD, iso.) Figure 1.

Thallus as in *A. oxytona*, but the exciple thinner (5–10 μm), and the ascospores broader.

Thallus yellow, effigurate-crustose, saxicole, up to 20 mm diam. (larger by confluence). *Lobes* marginal, up to 2,5 mm long, 0,3–1,0 mm broad. *Areoles* irregular, 0,2–1,0 mm across, sessile to subpeltate. *Fissures* 0,1–0,2 mm wide, 0,2–1,0 mm deep. *Upper surface* opaque, smooth to undulate, plane to convex, yellow. *Upper cortex* 25–45 μm thick (10–15 μm thick on sides and lower surface), paraplectenchymatus, cells 3–8,5 μm diam. *Algal layer* 60–80 μm thick; algae *Trebouxia*, 5–15 μm diam. *Medulla* white. 70–300 μm thick. *Lower surface* pale to brownish. *Apothecia* up to 1,5 mm diam., emergent

to sessile; hymenial surface pale. *Thalline exciple* about 120 μm thick on sides. *Exciple* hyaline, J–, periclinally prosoplectenchymatus, 5–10 μm thick, but thicker at surface. *Hypothecium* 15–50 μm thick, hyaline, J+ blue. *Hymenium* hyaline, 80–90 μm high, J+ blue. *Paraphyses* largely simple, but often anastomosed, strongly gelled, septate, lumens 1,2–1,3 μm thick, gel J+ blue. *Asci* clavate or acuminate-clavate, 60–75 $\times$ 14–19 μm , walls thick (particularly at apex), J– (Figure 2). *Ascospores* numerous, hyaline, ellipsoid, simple, 4–5 $\times$ 1,8–2,8 μm . *Pycnidia* globose, hyaline, 230–290 μm deep, 160–200 μm wide, surrounded by algae; walls hyaline, about 10 μm thick, periclinally prosoplectenchymatus; cavity convoluted. *Pycnidiospores* hyaline, long-ellipsoid, 2,0–3,5 $\times$ 1,0–1,2 μm . *Chemistry*: Rhizocarpic acid in the cortex.

This new species resembles *Acarospora oxytona* (Ach.) Massal. in thallus habit and lobe anatomy, but differs in the thickness of the exciple and in the ascospore size. The exciple is only 5–10 μm thick in *A. elegans*, whereas it is 30–50 μm thick in *A. oxytona* (Magnusson 1929). The ascospores are somewhat broader in the former species, reaching 2,8 μm in equatorial diameter, and are ellipsoid. *A. oxytona* ascospores only reach 2 μm in equatorial diameter, being narrowly ellipsoid. The hypothecium of *A. oxytona* also tends to be thicker and is darker blue in Lugol's iodine solution as well.

The lobe surfaces (Figure 3) of *A. elegans* are never scabrous as they often are in *A. oxytona* (Figure 4), however, and the latter is often an alpine lichen in the northern hemisphere. *A. elegans* is abundant on south facing vertical or near vertical sandstone cliffs in the Waterberg of South West

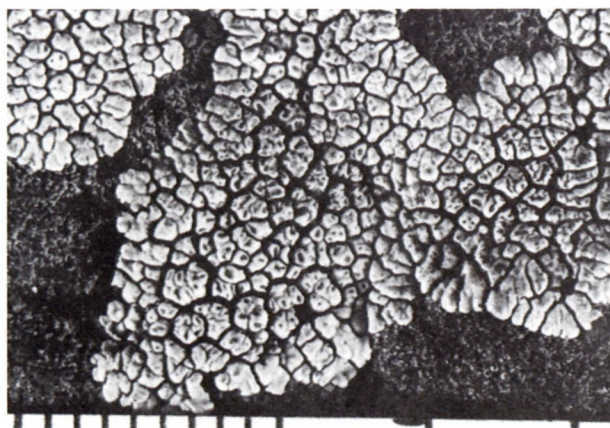


FIGURE 1.—*Acarospora elegans* Brusse, habit. *F. Brusse* 4218, holotype. Scale in mm.

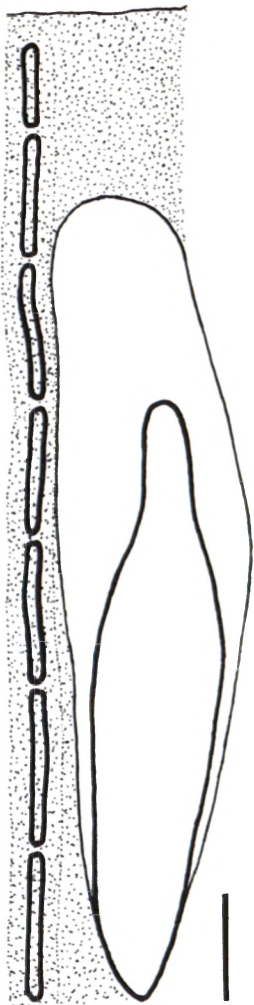


FIGURE 2.—*Acarospora elegans* Brusse, ascus and paraphysis. F. Brusse 4218, holotype. Bar = 10 μ m.

Africa/Namibia. A photograph of this lichen from a distance, is given by McDonald (1986), where the yellow areas on the rocks are mainly or wholly this new lichen. This is an unusually shaded place for an *Acarospora*, particularly a yellow one, which usually competes best in dryer places. In this regard, the new species is similar to *A. oxytona*, because the

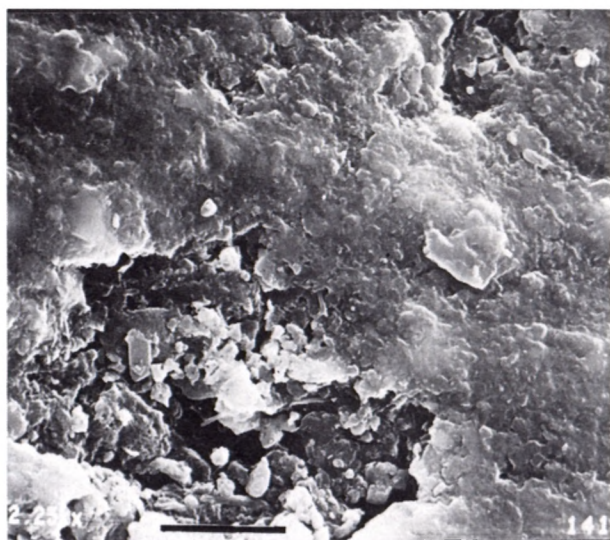


FIGURE 3.—*Acarospora elegans* Brusse, scanning electron micrograph of upper surface. F. Brusse 4218, holotype. Bar = 8,9 μ m.

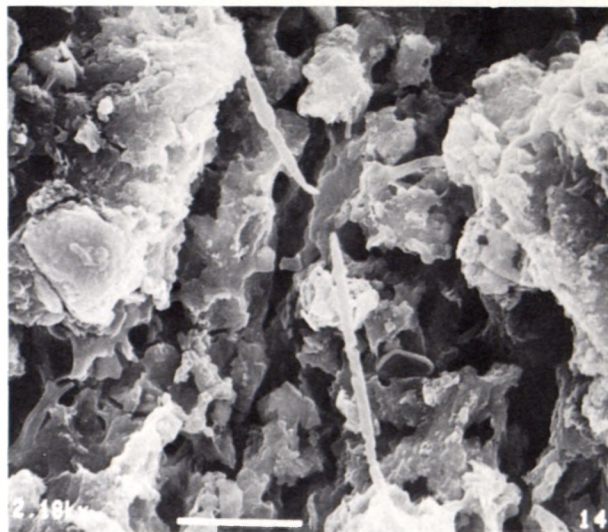


FIGURE 4.—*Acarospora oxytona* (Ach.) Massal., scanning electron micrograph of upper surface. Hora s.n. (Arnold Lichen Exsiccati 1159a). Bar = 9,2 μ m.

latter also grows on steep cliff faces and under rock overhangs (Magnusson 1929; Santesson 1984).

The cortical chemistry is usual for a yellow *Acarospora*, containing the bright yellow pigment rhizocarpic acid. The medulla contains acetone extractable substances which show up as faint spots on TLC plates (Culberson 1972; Culberson & Johnson 1982) in longwave UV light. These substances are identical to those found in *A. oxytona*, the extract of which was co-chromatographed with that of *A. elegans*. However, *A. oxytona* contains acaranoic and acarenoic acids (Sarma & Huneck 1968; Follmann & Huneck 1971; Huneck & Hofle 1980) in addition, which could not be detected in *A. elegans*.

Several other effigurate yellow *Acarosporae* are known from southern Africa (Magnusson 1933), but these all have cylindrical ascospores, which are only 1 or 1,5 μ m wide. Two of these (*A. austroafricana* (Zahlbr.) H. Magn. and *A. finckei* Zahlbr.) are Namib Desert lichens, known from schistose rocks. The remaining species, *A. calviniensis* Magn., is a thinner lichen, reaching 0,25 mm in thickness, and with areoles only up to 0,5 mm across. The pycnidiospores of the last lichen are also shorter, reaching 1,7 μ m long.

A. elegans is presently known only from the Waterberg in South West Africa/Namibia, on steep sandstone rock faces with a southern aspect.

Specimens of *Acarospora oxytona* (Ach.) Massal. examined:

CZECHOSLOVAKIA.—4916: An Gneissfelsen bei Rossatz [Rossitz] im Donauthale, Baumgartner s.n., 1898 (Arnold, *Lichenes Exsiccati* 1159c; PRE CH3216). 5014: An Quarzfelsen der Scharka bei Prag, Hora s.n., Frühjahr 1886 (Arnold, *Lichenes Exsiccati* 1159a; PRE CH3213).

RUMANIA.—4422: Hungaria austro-orientalis (Banatus), in rupibus calcareis ad Mehadiam, Lojka s.n. (*Flora Exsiccata Austro-Hungarica* 1951; PRE CH606). 4522: An senkrechten Quarztrachytwänden unter dem Gipfel des Berges Treszkovácz bei Saviniczá an der unteren Donau, Comitat Krasso-Szörény [Caras-Severin] in Ungarn, Lojka s.n., 25. April 1886 (Arnold *Lichen Exsiccati* 1159b; PRE CH3214).

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