

SOME NEW RUSTS FROM HYDERABAD

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Rhynchosia Lour, one of the genus of the sub-family Papilionaceae of the family Leguminosae, is commonly found in different parts of India. In a recent survey of the rust fungus flora of Hyderabad the authors collected rust-infected plants of *Rhynchosia* Lour. The disease was found during October–December. The infection was caused by hitherto undescribed species of *Aecidium*.

Aecidium rhynchosiae Bagyanarayana and Ramachar sp nov

Spermogoniis ignotis. Aeciis hypophyllis, culmicola, etiam fructicola, auranteo brunneo, densus, plerumque aggregatis, raro sparsa, minuta, 0.4–0.8 mm diam., cupulata, subepidermalia, erumpentis, pulverulentia, epidermide rupta conspicua; aeciosporae globosa vel ellipsoidea, 13.5–27×14–23 μm, pariete 1–2 μm, verrucosis, hyalino.

Holotypus: In foliis vivis *Rhynchosia* sp (Papilionaceae), Bollaram, Yellareddy, Nizamabad (A. P.), India, October 1981, leg. G. Bagyanarayana, HCIO 38237 (TYPE).

Aecidium rhynchosiae Bagyanarayana and Ramachar sp nov

Spermogonia unknown. Aecia hypophyllous, culmicolous, sometimes present on pods also, orange brown, dense, usually aggregated, rarely scattered, minute, 0.4–0.8 mm in diam., cupulate, sub-

epidermal, erumpent, pulverulent, ruptured epidermis conspicuous; aeciospores globose or ellipsoide, 13.5–27×14–23 μm, verrucose, wall 1–2 μm thick.

Holotype: On living leaves of *Rhynchosia* sp, Bollaram, Yellareddy, Nizamabad (A. P.), India, coll. by G. Bagyanarayana, October 1981, HCIO 38237 (TYPE).

Uromyces dolicholi Arth is the only rust reported^{1–5} so far on *Rhynchosia*. In addition the original description pertained to uredinia and telia whereas the present rust showed the presence of aecia only. Therefore the present rust is described as a new species of *Aecidium*.

Taxonomy of the rusts occurring on Aristida (Gramineae) from India

In December 1976 rust-infected leaves of *Aristida* L (Gramineae) were collected. A careful examination of the infected material revealed the presence of *Puccinia aristidae* Tracy var *chaetariae* Cumm and Hussain and *P. unica* Holw var *chica* Cumm and Hussain. So far there is no report of the occurrence of these rusts from India^{2,3,6}. The report of *P. unica* Holw var *chica* forms the only other report of its occurrence apart from being originally recorded from Mexico.

The correct nomenclature of the two rusts occurring on *Aristida* L which were wrongly cited by earlier authors is given below.

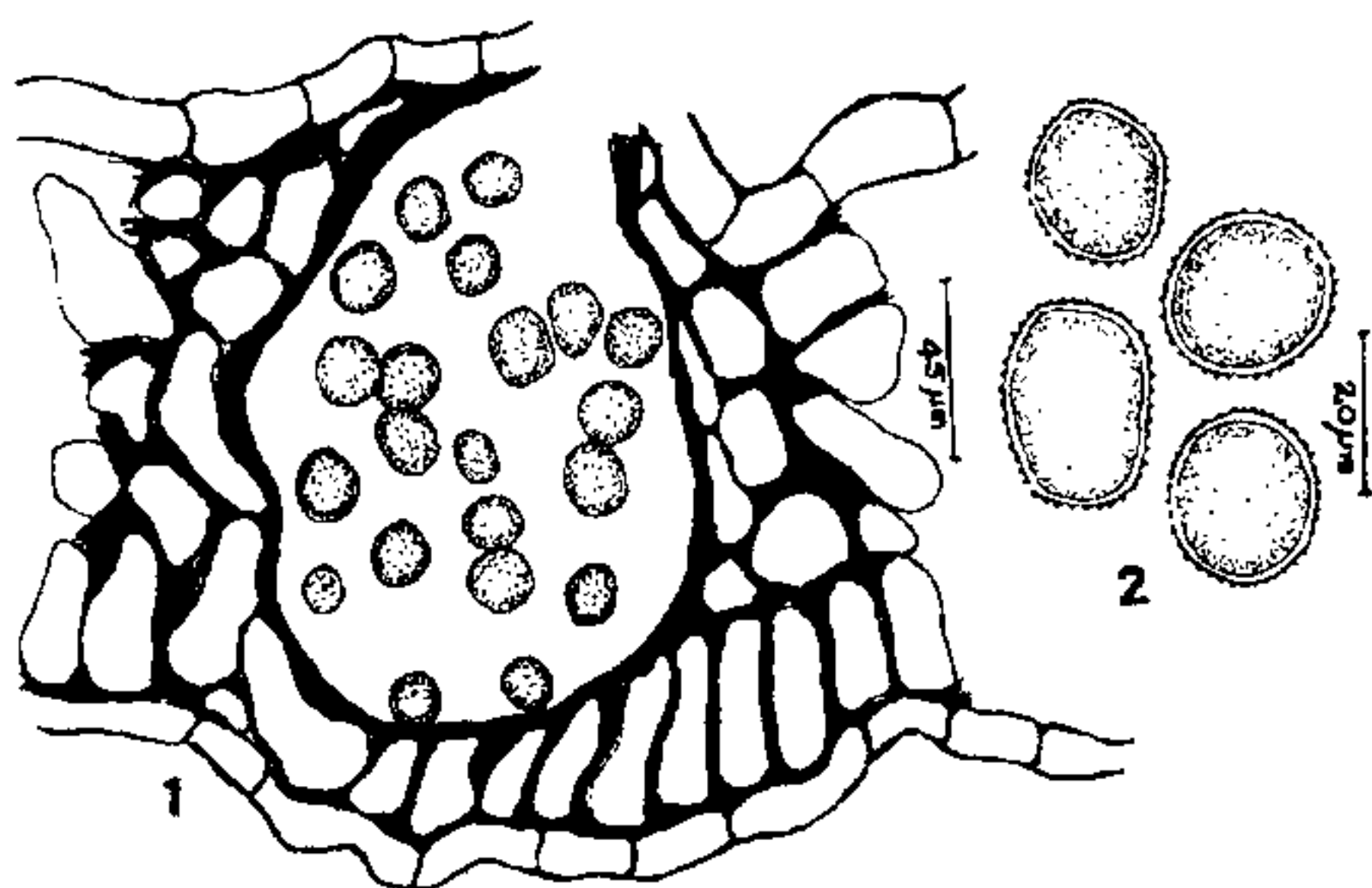
Puccinia vexans Farl Proc. Am. Acad., 18, 82, 1883 = *Uromyces brandegei* Pk. Bot. Gaz., 4, 127, 1879 = *Puccinia aristidicola* P. Henn. Hedwigia, 35, 243, 1896.

Puccinia unica Holw var *bottomleyae* (Doidge) Cumm and Hussain Bull. Torrey Bot. Club, 93, 60, 1966 = *Puccinia bottomleyae* Doidge, Bothalia, 2, 498, 1928.

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1. Arthur, J. C., *Manual of the rusts in United States and Canada*, Purdue Res. Found., Lafayette, Ind., 1934, p. 487.



Figures 1 and 2. Camera lucida drawings of *Aecidium rhynchosiae*. 1. Vertical section of the leaf showing the aecial cup. 2. Aeciospores.

2. Bilgrami, K. S., Jamaluddin and Rizvi M. A., *Fungi of India*, Part I, Today and Tomorrow Printers and Publishers, New Delhi, 1979, p. 467.
3. Butler, E. J. and Bisby, G. R., revised by Vasudeva, R. S., *The Fungi of India*, ICAR Publication, New Delhi, 1960, p. 522.
4. Cummins, G. B., *The rust fungi of composites and legumes in North America*, University of Arizona Press, Tucson, Arizona, 1978, p. 424.
5. Patel, M. K., Kamat, M. N. and Bhide, V. P., *Indian Phytopathol.*, 1949, 2, 142.
6. Rangaswami, G., Seshadri, V. S. and Chenna-ma, K. A. L., *Fungi of South India*, University of Agric. Sci., Bangalore, 1970, p. 193.

HISTO-MORPHOLOGY OF SPERMATHECA OF SPHAERODEMA (= DIPLONYCHUS) RUSTICUM FABR (BELOSTOMATIDAE—HETEROPTERA—INSECTA)

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IN the female reproductive system of an insect, the spermatheca which receives sperms from male during pairing, is generally associated with tubular spermathecal gland or diverticulum¹. But in some, it is absent^{2,3}. It has been suggested that, in such cases, the spermathecal epithelium becomes glandular and secretes material acting as exogenous substrate for the spermatozoa². Such a condition is found in the spermatheca of *Sphaerodema rusticum*. The present note deals with the histomorphological observations of the spermatheca of the aquatic bug *S. rusticum*.

The insects were collected locally. The gravid female bugs were dissected alive in insect ringer solution. The spermatheca with genital chamber were fixed in Cornoy's fixative and with the usual procedure, the microtome sections of 7 μ were made, and stained with delafield haematoxyline and eosin.

The spermatheca is tubular but dilated at the base into a sac-like structure (figure 1). The spermathecal

sac opens into the dorsal side of the genital chamber with a fine duct, which traverses through the thick musculature of the dorsal wall of the genital chamber (figure 4). The lumen of the spermathecal tubule is full of spermatozoa. The sperms are free and not in the form of bundles or spermatophores and are darkly stained with haematoxyline (figure 2). The thick and chitinous intima in the tubular region of the spermatheca is not straight and uniform but with depressions and elevations (figure 3). In the dilated basal sac, the intima is thin. The epithelium of the tubular region of spermatheca is made up of three types of cells which can be differentiated from the nature of the nucleus. The cell boundaries are not so clear. These three types of cells are as follows:— (i) Cells with large irregular shape nucleus with reticulated granular chromatin and round nucleolus (figures 2 and 3), (ii) Cells seen below the intima with small round nuclei with granular chromatin material (figures 2 and 3), and (iii) Cells when the nuclei are elliptical.

There are intracellular canals leading to dilations. These canals are at right angle to the long axis of the lumen (figures 2 and 3). On the outer side of epithelium, there is a layer of muscle (figure 3). The duct which connects the spermathecal sac with genital chamber is lined by cuboidal epithelium. The epithelial cells of spermathecal sac are very tall and columnar, with wedge-shaped apical ends. The nuclei of these cells are basal, large and oval in shape with granular reticulated chromatin and are all of the same size. The intracellular canals in the epithelial cells of spermathecal sac are more uniformly arranged giving a longitudinal striated appearance (figure 5). The lumen of the posterior end of the spermathecal sac is divided into two chambers by a non cellular septum (figure 6).

Pendergrast⁴, while describing the spermatheca of *S. rusticum* states that vaginal wall may be raised to form vaginal pouch, but in the present study, it is observed that the basal dilated region of the spermatheca is not a vaginal pouch raised from the vaginal wall. The spermathecal duct which joins the spermathecal sac and the vagina is completely embedded in the muscles of the dorsal side of the vaginal wall, and hence the spermathecal sac may be mistaken for a dilated pouch raised from the dorsal wall of the vagina (figure 4). The ridges and folds in the intima of the tubular region may enable the shortening and lengthening of the tubule with corresponding movement of the musculature⁵. Two