

SEM study on *Frullanoides tristis* (St.) Van Slageren, (Liverwort, Bryophyta)

Praveen K. Verma¹ and Suresh C. Srivastava²

¹Rain Forest Research Institute, Deovan, Sotai Ali, Jorhat-785001, India

²National Botanical Research Institute, Rana Pratap Marg, Lucknow-226001, India

E-mail: pkverma_bryo@yahoo.co.in; sri_scs@rediffmail.com

ABSTRACT

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The scanning electron microscopic study of leaf-lobule and leaf-cells is an important tool in determination of taxonomical variability. The leaf architecture has been provided for the first time in liverwort *Frullanoides tristis* (St.) Van Slageren.

Key-words: Liverwort, Lejeuneaceae, *Frullanoides*, Scanning electron microscopy.

INTRODUCTION

The genus *Frullanoides* Raddi is pan-tropical in distribution and belongs to subfamily Ptychanthoideae of family Lejeuneaceae (Van Slageren 1985). The genus *Frullanoides* Raddi was earlier known as *Brachiolejeunea* subgen. *Plicolejeunea* Schust. (Schuster 1980). Van Slageren (1985) raised subgenus *Plicolejeunea* to the generic rank as *Frullanoides* Raddi. The genera *Brachiolejeunea* and *Frullanoides* are almost identical but they differ in secondary pigmentation (absent in *Brachiolejeunea*, present in *Frullanoides*), cortex (thick-walled cortical cells and thin-walled medullary cells in *Brachiolejeunea* and vice-versa in *Frullanoides*) and leaf-lobule teeth (1-4 in *Brachiolejeunea*, 6-10 in *Frullanoides*), while sporophytic character shows difference in capsule wall (nodular in *Brachiolejeunea*, fenestrate in *Frullanoides*). However, in India only a single species, *Frullanoides tristis* (St.) Van Slageren, is found (Awasthi & Srivastava 1988). Plants grow in smooth mats as epiphytic population on the angiospermic trees and shrubs as well as on decaying logs.

The SEM study is an important taxonomic tool used in recent years for delimiting taxa (Asthana & Srivastava

2003, Singh & Singh 2008, Verma & Srivastava 2010). In several cases, it is made up of only cluster of small cells tooth to numerous distinct teeth. The paper discusses the leaf architecture of the genus *Frullanoides* for the first time.

MATERIAL AND METHOD

Plants were collected from Nilgiri hills, Tamil Nadu [Nilgiri hills – Ootacamund (Pykara water fall); ca. 2100 m; 28.11.2001; P.K. Verma and A. Alam; 14490/2001, 14491/2001, 14495/2001 (LWU)] and were passed through series of Ethanol for dehydration followed by centrifuge at 5000 RPM. The leaf of the plant was placed over the stubs taped by double adhesive and coated with gold palladium. The material was stereo-scanned through SEM at the Birbal Sahni Institute of Palaeobotany, Lucknow.

RESULTS

The SEM of leaf-lobule and leaf-cells plays a resolution role to establish variable species of the genus *Frullanoides*. The SEM of leaf-lobule shows 6 (9) blunt ended teeth lined in a row covering 1/3 of the lobe length. The leaf-cells are peculiar forming confluent

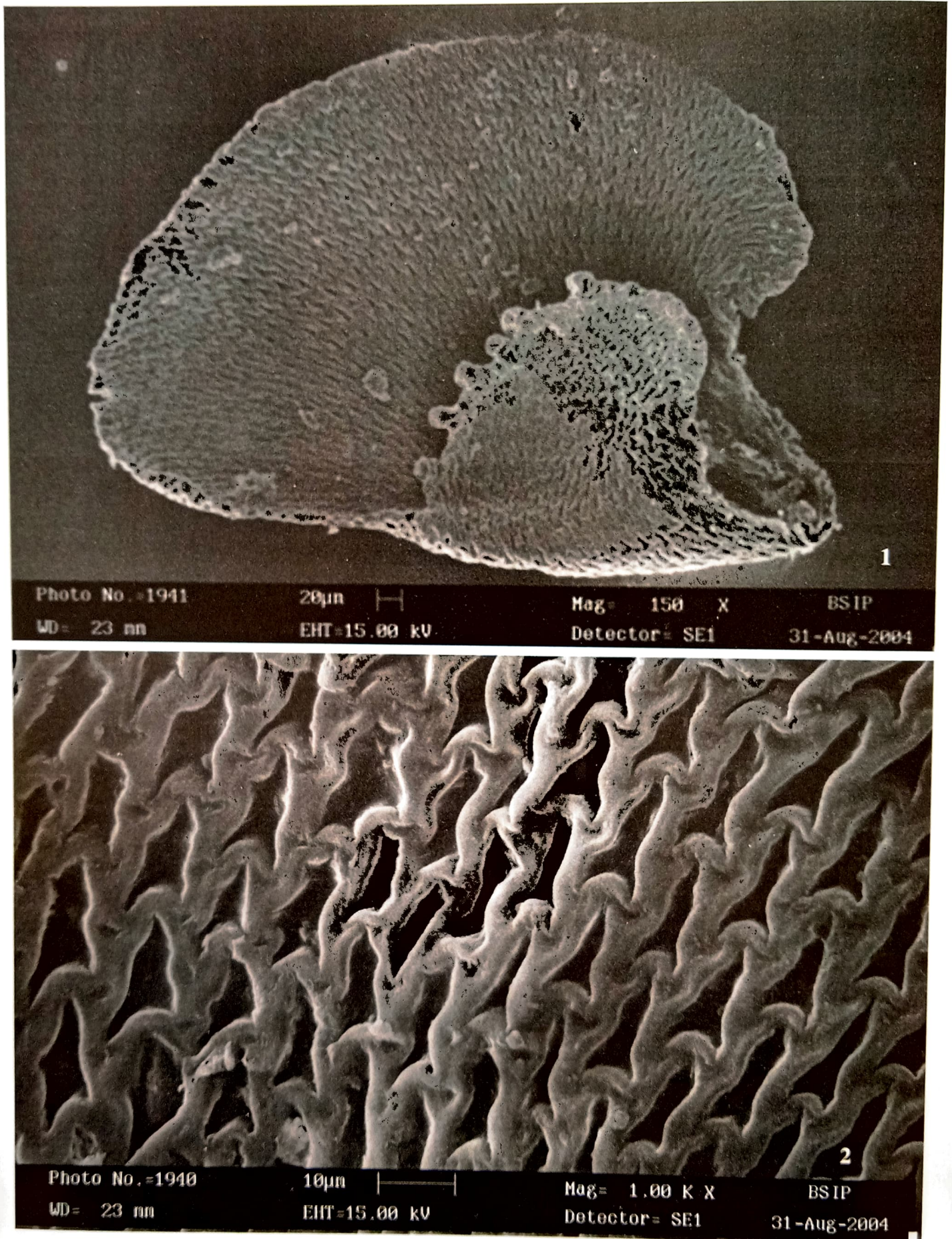


Plate 1

1-2. *Frullanoides tristis* (St.) Van Slageren. 1. Leaf-lobule with leaf lobe. 2. Leaf-cells showing peculiar type of thickened trigones.

trigones. The cell walls are thickened forming small cavity (Plate 1).

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