Wood anatomy of six species of *Lycium*, with comments on fibriform vessel elements

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**Abstract:** The study of wood anatomy of 6 species of *Lycium* L. was made. These species share an homogeneous structure. The essential wood characteristics are: dendritic distribution, presence of spiral thickness in the secondary wall of vascular elements and tracheids, apotracheal and paratracheal axial parenchyma, radial heterogeneous, and libriform fibres. The presence of fibriform vessel elements is described in six species of *Lycium* for the first time.

**Key words:** vessel tracheids, wood anatomy, *Lycium*, Solanaceae.

This paper is a further contribution to a series describing the wood anatomy of *Lycium* indigenous to Argentina (Norverto, 1988; 1989). *Lycium* comprises 75 – 80 species of shrubs and small trees widely distributed in all the world (Hunziker, 1979; Bernardello, 1986). From the 22 species of Argentina only *L. ciliatum* Schlecht., *L. elongatum* Miers, *L. chilense* Miers, *L. gilliesianum* Miers, *L. infaustum* Miers and *L. tenuispinosum* Miers were studied, belonging to arid and semiarid regions (Cabrera, 1971).

**MATERIALS AND METHODS**

Wood samples have been obtained from the following Argentine Herbaria:
- **BAw:** Museo Argentino de Ciencias Naturales “B. Rivadavia”.
- **MERL:** Herbario “Ruiz Leal”, Mendoza.
- **SL:** Universidad Nacional de San Luis.
- **SRFA:** Universidad Nacional de La Pampa, Facultad de Agronomía de Santa Rosa.

*Lycium cestroides*. Cozzo (BAw 52297), Córdoba Prov.; Patridge (BAw 68440), Corrientes Prov. – *Lycium ciliatum*. Cozzo (BAw 52295), Córdoba Prov.; Troiani & Prina (SRFA 9734), La Pampa Prov. – *Lycium chilense var. chilense*. Troiani & Prina (SRFA 9732), La Pampa Prov. – *Lycium chilense var. minutifolium* Troiani & Prina (SRFA 9733), La Pampa Prov. – *Lycium chilense var. glaberrimum*. Del Vitto (SL 2269), San Luis Prov.; Roig (MERL 12499), Mendoza Prov. – *Lycium elongatum*. Castellanos (BAw 11697), Córdoba Prov.; Luna Ruíz (BAw 53405), Santiago del Estero Prov. – *Lycium gilliesianum*. Norverto (BAw 74970); 75015), La Pampa Prov. – *Lycium infaustum*. Lorentz (BAw 41223), Santiago del Estero Prov. – *Lycium tenuispinosum*. Troiani, Prina & Alfonso (SRFA 9617), La Pampa Prov.

The samples in dried conditions were boiled in water and stored in 50% aqueous ethyl alcohol. With a sliding microtome, transversal, longitudinal tangential and radial sections of approximately 13 μm thick were prepared. Thicker sections were out only in order to reduce tearing. Maceration's were prepared with Boodle` following Argentine Herbaria: **BAw:** Museo Argentino de Ciencias Naturales “B. Rivadavia”. **MERL:** Herbario “Ruiz Leal”, Mendoza. **SL:** Universidad Nacional de San Luis. **SRFA:** Universidad Nacional de La Pampa, Facultad de Agronomía de Santa Rosa.

All quantitative data are based upon 25 measurements per feature. Terminology follows that of the IAWA Committee on Nomenclature (1964) and IAWA list of microscopic features for hardwood identification (Wheeler et. al., 1989). Of the mentioned codes for the materials, only BAw is included in the Stern’s Index Xilariorum (1991).

**RESULTS**

Wood semi-ring porous. Vessels in dendritic pattern, solitary, in clusters or radial and tangential short multiples; oval or angular in transverse section; average tangential diameter 47 μm. Simple perforation plates in obliques to lightly obliques end walls. Tails present on vessel elements (Fig. 1). Intervessel pits alternate; inner apertures included. Vessel-ray and vessel-
Figs. 1–5. Graphics of cells from macerated wood of _Lycium chilense_. 1, Vessels elements. 2, Tracheids. 3, Fibre - tracheids. 4, Fibriform vessel element. 5, Libriform fibres.
Norvero: Wood anatomy of six species of Lycium

DISCUSSION

Certain groups of dicotyledons have fibriform vessel elements (Woodworth, 1935; Carlquist, 1988). In the present study fibriform vessel elements were found for the first time in the Solanaceae. Lycium has fibriform vessel elements of fusiform shape, the tips of which extend well beyond perforation plates. It also has been reported the presence of fibriform vessel elements in other families of Tubiflorales (Melchior, 1964); Convolvulaceae (Menega, 1969); Hydrophyllaceae (Carlquist et al., 1983; Carlquist and Eckhart, 1984); and Polemoniaceae (Carlquist et al., 1984).

Since the present, Tubiflorales is the group with major number of species characterised by the presence of fibriform vessel elements.

Vessels in dendritic pattern and helical thickenings in the walls of vessel elements, tracheids and fibre-tracheids are indicative features of wood xeromorphy (Norvero, 1989; Carlquist, 1992).

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BIBLIOGRAPHY


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