Radial and axial variation on the wood structure of some 'giant' mistletoes: three species of Loranthaceae

Victor Sibinelli (victor.sibinelli@usp.br)
Luiza Teixeira-Costa, Gregorio Ceccantini

Introduction

The hydraulic properties of a plant are intimately related to the structure of wood. Since parasites are known to operate under very negative hydric potentials, enabling water uptake from the host, but highering the risk of embolism.

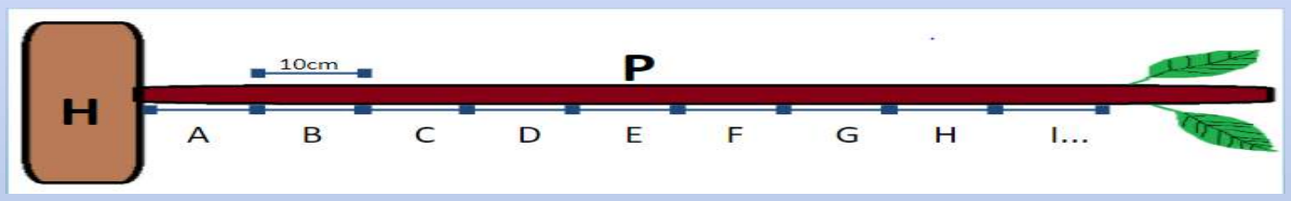
Therefore, our initial hypothesis was that parasites of big dimensions should have plasticity in xylogenesis to maintain both efficiency and safety as it grows bigger/longer. So,his work investigated whether and how the wood structure of some mistletoes varies within the stem topology.

Psittacanthus robustus (photo by G. Ceccantini)

Materials and Methods

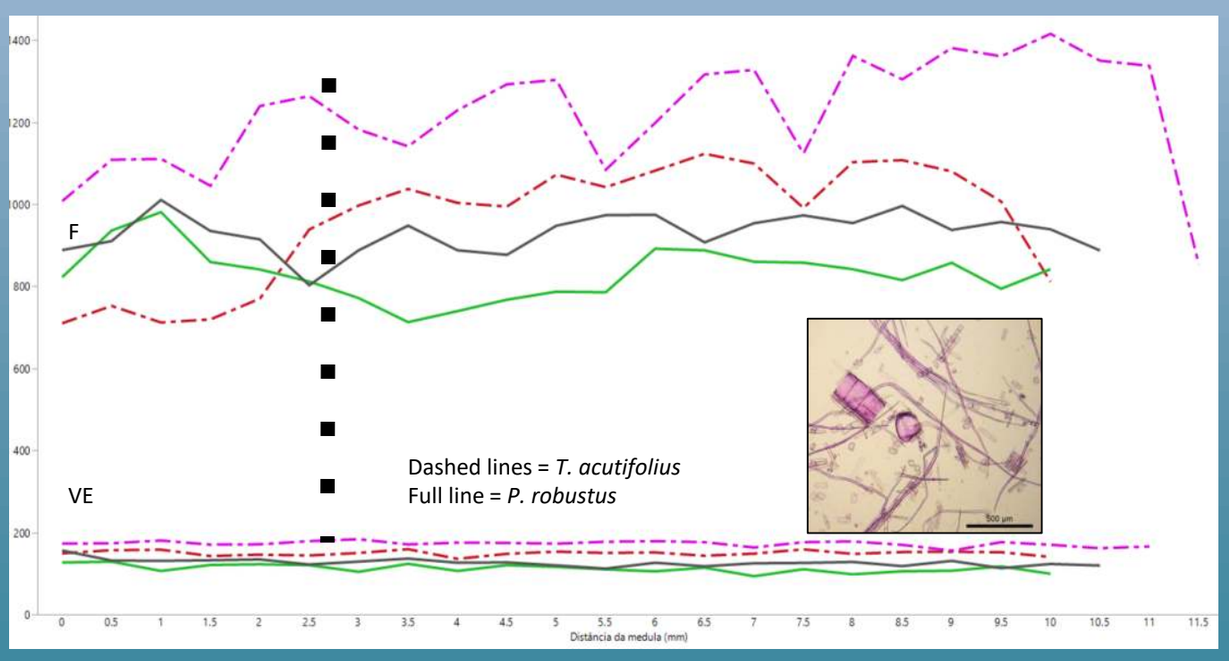
For understanding the changes in wood formation along the radial axys, samples of 0,5mm from the outer part until the pith was reached. This procedure was repeated for two individuals each of *Psittacanthus robustus* and *Tripodanthus acutifolius.* This sample were later macerated.

For the axial study, samples of 10cm were taken from the longest shoot of a *Struthanthus flexicaulis* individual, from the connection to the host until a terminal leaf. This section were used to the confection of anatomical slides, stained with astra blue and safranin.



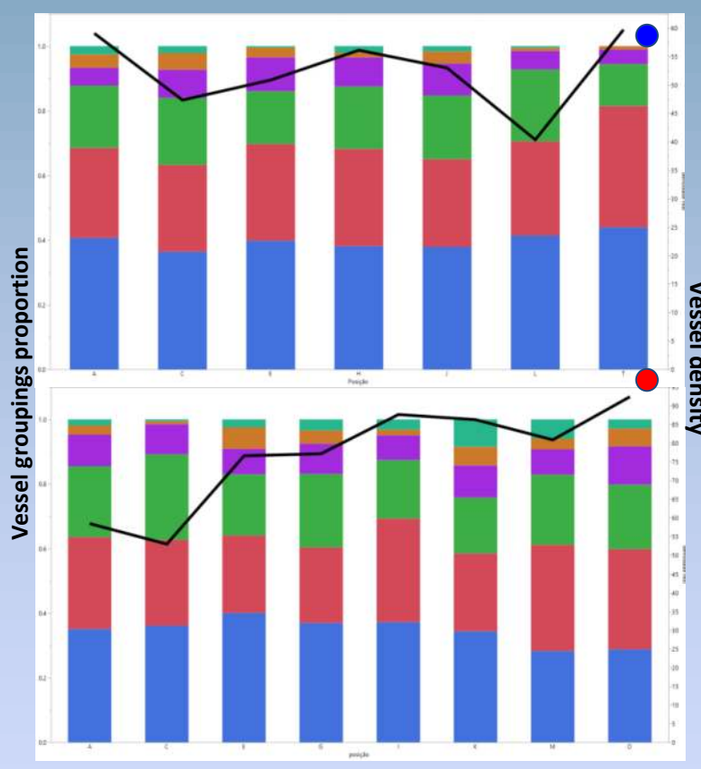
Results

Vessel element and fibre length x distance from the pith of *Tripodanthus acutifolius* and *Psittacanthus robustus*



Distance from the pith (Radius - mm)

Vessel density and groupings proportions x stem position in *Struthanthus flexicaulis*

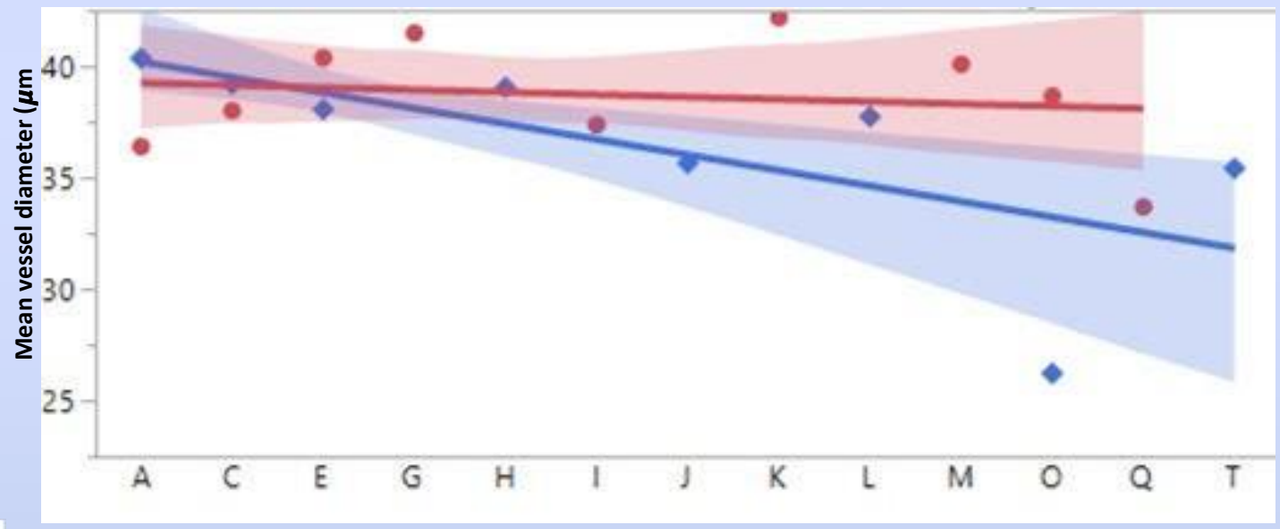


Struthanthus flexicaulis

Groupings of 6+ Vessels
Groupings of 5 Vessels
Groupings of 4 Vessels
Groupings of 3 Vessels
Groupings of 2 Vessels
Solitary Vessels

Sample VSB-4
Sample VSB-5

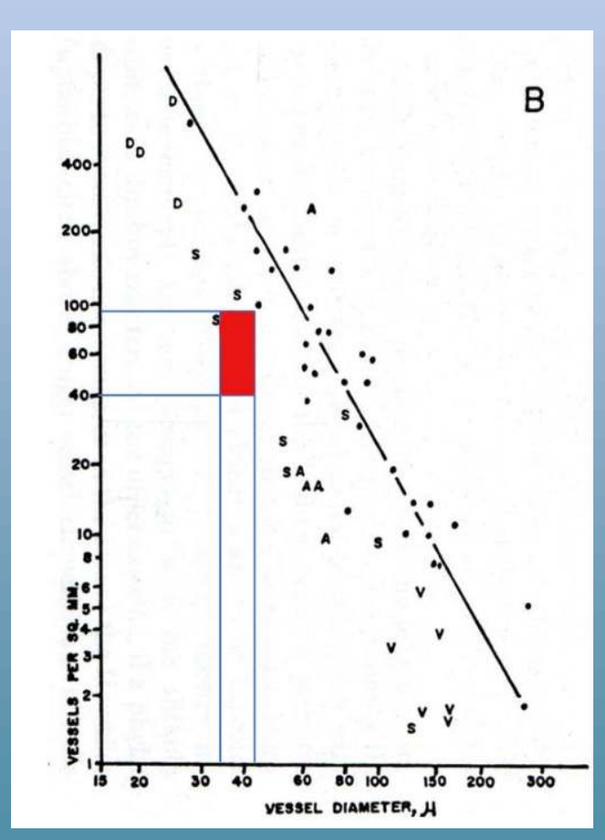
Mean Vessel diameter x stem position in *Struthanthus flexicaulis*



Position in the stem

Conclusions

- It seems that the wood of Loranthaceae species reach maturity at very thin diameters (~5-6mm).
- No clear pattern about vessel groupings and diameter was found in *S. flexicaulis*. However both individuals showed some kind of adjustment for dealing with lower water potentials (either increasing VE density or producing safer vessels) .
- These species showed a similar pattern of VE density x VE width to the one found in succulent plants. This suggests some convergent adaptation to high hydric stress and low water potentials.



modified from Carlquist (1975)