

## *Teratosphaeria pseudoecalypti*, recently detected and seriously damaging red gum eucalypts in Uruguay

C.A. Pérez<sup>A</sup>, M.J. Wingfield<sup>B</sup>, E. Arbuat<sup>A</sup>, M.P. Codina<sup>A</sup>, R. García<sup>A</sup>, C. Perdomo<sup>A</sup>, O. Bentancur<sup>C</sup>, S. Simeto<sup>D</sup>, D. Torres<sup>D</sup>, G. Balmelli<sup>D</sup>

<sup>A</sup>Dept. Protección Vegetal, EEMAC, FAGRO, Universidad de la República, Ruta 3 km 363, 60000, Paysandú, Uruguay

<sup>B</sup>FABI, University of Pretoria, Pretoria, 0028, South Africa

<sup>C</sup>Dept. Biométrica, Estadística y Computación, EEMAC, FAGRO, Universidad de la República

<sup>D</sup>Programa Nacional Forestal, INIA Tacuarembó, Ruta 5 km 386, Tacuarembó, Uruguay

### INTRODUCTION

In 2011, a new and severe blight disease was observed on *Eucalyptus camaldulensis* and *E. tereticornis*, in the eastern part of Uruguay. *Teratosphaeria pseudoecalypti* was identified as the causal agent of this disease (Soria *et al.*, 2014). The disease incidence has subsequently increased substantially with many trees dead or dying. The aim of this study was to confirm the identify the causal agent of the disease, to identify the host range and to screen for resistance in provenances of *E. camaldulensis* and *E. tereticornis*

### MATERIALS AND METHODS

**Sampling, culture collection and identification.** Sampling was conducted throughout Uruguay from 2012 onwards. Symptomatic leaves were collected from affected plantations, and transported to the laboratory for analysis. Fresh leaves were examined under a microscope and direct isolations were made by lifting conidia oozing from single pycnidia with a sterile needle and transferring these to agar medium. Identification was based on colony s and spore morphology and confirmed based on DNA sequence comparisons for the ITS, Bt and EF1- $\alpha$  gene regions.

**Screening for resistance.** Susceptibility in *E. camaldulensis* and *E. tereticornis*, and resistance variation amongst *E. tereticornis* provenances was assessed in two field trials naturally inoculated with this pathogen. Genetic material of *E. tereticornis* included 163 open pollinated families from 34 provenances of Australia, Argentina and Uruguay. In both trials, disease severity was assessed 3 years after planting.

### RESULTS

The causal organism of the leaf blight disease was identified as *Teratosphaeria pseudoecalypti*, confirmed based on morphology and multigene analyses, grouping with sequences MUC598 and MUC599 from Andjic *et al.* (2010).

Field surveys showed that the disease, which was first observed in 2011, has now spread throughout Uruguay.

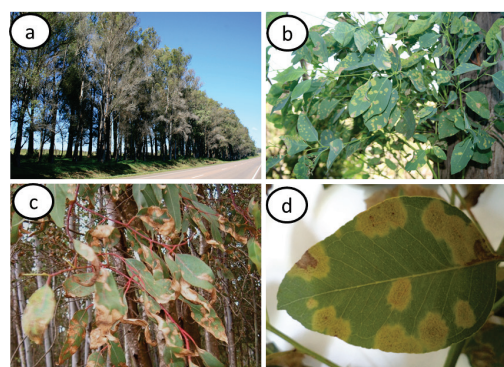
Defoliation in *E. camaldulensis* was higher than in *E. tereticornis*, with an average of 36 and 6%, respectively. Significant genetic variation at population, provenance and family level was found in *E. tereticornis*.

### DISCUSSION

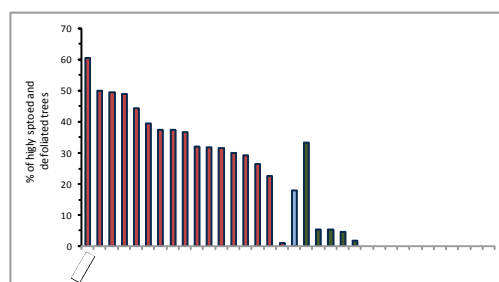
The leaf blight disease caused by *T. pseudoecalypti* has spread throughout Uruguay where it is seriously threatening the most susceptible species (i.e. *E. camaldulensis* and *E. tereticornis*). But it has also been found on *E. dunnii*, *E. globulus*, *E. grandis*, *E. botryoides*, *E. macarthurii*, and hybrids of *E. grandis* x *camaldulensis*. Together with the lerp psyllid (*Glycaspis brimblecombei*), the bronze bug (*Thaumastocoris peregrinus*), and the recently reported blue gum chalcid (*Leptocybe invasa*), leaf blight caused by *T. pseudoecalypti* adds a severe additional

stress to commercially propagated red gum eucalypts that have performed well in Uruguay in the past.

Our results showed that *E. camaldulensis* is significantly more susceptible than *E. tereticornis*. Furthermore differences in genetic resistance were found amongst *E. tereticornis* provenances. The high susceptibility of some Uruguayan provenances of *E. tereticornis* probably indicates natural hybridisation with *E. camaldulensis*. Resistant provenances of this species should now be selected and deployed to minimise the impact of this disease. Further investigations aimed at better understanding the biology and epidemiology of *T. pseudoecalypti* are underway, together with studies to evaluate the threat that this pathogen poses to exotic and native Myrtaceous hosts.



**Figure 1.** a) Red gum plantation affected by leaf blight disease; b) juvenile leaves of *E. camaldulensis* severely infected; c) leaf blight on adult leaves; d) new lesions on juvenile leaf.



**Figure 2.** Susceptibility of different provenances of *E. tereticornis* to *T. pseudoecalypti*. UR = Uruguay; ARG = Argentina; AU = Australia.

### ACKNOWLEDGEMENTS

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### REFERENCES

- Andjic *et al.*, 2010. *Teratosphaeria pseudoecalypti*, new cryptic species responsible for leaf blight of *Eucalyptus* in subtropical and tropical Australia. *Plant Pathology* 59:900–912.
- Soria *et al.*, 2014. First report of *Teratosphaeria pseudoecalypti* in Uruguay. *Australasian Plant Disease Notes* 9:146.