

DETECTION OF NEAR INFRARED SPECTRAL DIFFERENCES IN *PINUS RADIATA*

Judith S. Nantongo¹, Thomas Rodemann², Hugh Fitzgerald¹,
Brad M. Potts¹, and Julianne O'Reilly-Wapstra¹

Selective bark stripping of *P. radiata* by wallabies and pademelons may be explained by differences in constitutive or induced chemistry (Miller et al. 2014). The potential of near infra-red spectroscopy (NIRS) to detect differences between the less and more susceptible genotypes was evaluated. Nine families classified as less susceptible (R) and more susceptible (S) were selected. Three families of each were treated with stress inducing Methyl jasmonate (MJ), mechanical stripping (strip) or no treatment (control) in a randomised block design. Physio-chemical changes were monitored by NIRS for 4 weeks. Partial least squares (PLS) regression was used to group the principle components (PC) of the spectra. The results showed clearly that NIRS distinguished less and more susceptible genotypes. NIRS also separated individuals subjected to different treatments. In conclusion, there is evidence of differences in bark physio-chemical attributes of the less and more resistant genotypes. NIRS provides a powerful tool for detecting physio-chemical differences in *P. radiata*.

REFERENCES

Miller, A.; O'Reilly-Wapstra, J.; Potts, B. 2014. Genetic variation in bark stripping among *Pinus radiata*. Internal Report. Submitted to the National Centre for Future Forest Industries (NCFI) and Timberlands Pacific Pty Ltd.

¹School of Natural Sciences, University of Tasmania (UTAS), Australia, (Judith.Nantongo@utas.edu.au).

²Central Science Laboratories, University of Tasmania (UTAS), Australia.

Citation for proceedings: Nelson, C. Dana; Koch, Jennifer L.; Sniezko, Richard A., eds. 2020. Proceedings of the Sixth International Workshop on the Genetics of Host-Parasite Interactions in Forestry—Tree Resistance to Insects and Diseases: Putting Promise into Practice. e-Gen. Tech. Rep. SRS-252. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 170 p.