Foliar, Shoot, Stem and Rust Diseases of Trees

Jointly organized by IUFRO working parties

"Foliage, shoot, and stem diseases" (7.02.02) and "Rusts of Forest Trees" (7.02.05)

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University of New Hampshire, Durham, New Hampshire, USA

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Evaluation of the expression of plant defense response genes in *Eucalyptus*

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The genetic investigation of plant's defense mechanisms against stress is an important factor for the discovery of response pathways. A *Eucalyptus* controlled cross produced a progeny with a malformation phenotype exhibiting low growth, tissue malformation and mortality in the first months of development. Leaf, root and stem tissues of anomalous and healthy plants were analyzed based on qPCR for five genes associated with pathogenesis-related (PR) proteins. All selected genes are related to plant defense pathways, such as thaumatin-like, pathogen related proteins, chitinases and cupin genes. The results point to high expression rates of all genes in the anomalous phenotype suggesting, as indicated by the Gene Ontology analysis, responses to plant defense mechanisms, including against pathogens. Complete parental sequencing, as well as offspring, may indicate the metabolic pathways or other genes associated with the defense mechanisms in the anomalous phenotype. These could serve as the basis for future pathogen inoculation tests and infection response studies, with possible indication of targets for plant disease control.