

Finding fungi to fight invasive grasses: developing a mycoherbicide for GRT in Australia

Tracey Steinrucken¹, Joe Vitelli², David Holdom², Yu Pei Tan³

¹CSIRO Health & Biosecurity, Dutton Park, Australia,

²Biosecurity Queensland, Dutton Park, Australia,

³Queensland Department of Agriculture and Fisheries, Dutton Park, Australia

(tracey.steinrucken@csiro.au)

Summary The five weedy *Sporobolus* grasses (a.k.a. the rat's tail grasses, which includes *Sporobolus natalensis*: "GRT") collectively cause a \$60 million per year problem for Northern Australia's beef industry. If left unmanaged, these unpalatable, undesirable, and highly competitive grasses have the potential to spread to over 30% of Australia. With seed production of around 80,000 seeds per m² per year and seed viability up to 10 years, managing these grasses in a long term, sustainable and low-cost way is essential. Enter biocontrol. CSIRO, together with Biosecurity Queensland, have spent the last six years finding, identifying, and testing a suite of native fungal pathogens as potential biocontrol agents against the rat's tail grasses. After starting with 110 pathogens, we are now closer to developing a mycoherbicide as we now have a priority list of 8 potential agents. During the process of identifying our pathogens, we discovered and have described at least six novel

species, with dozens more to be published, including several new genera. Our priority list includes some of these new fungal species such as *Stagonospora tauntonensis* and *Phaeosphaeria* sp., as well as known species from *Alternaria* and *Fusarium*. In this talk we describe the results of virulence bioassays, phylogenetic analyses, glasshouse pathogenicity experiments and host range studies. We also discuss the way forward in the development of a safe, effective and reliable product. We've had continuous consultation with, and input from, landholders, property managers and council representatives. We now have a clear way forward for turning this project into useful, highly adaptable tools, which we hope will reduce the cost and reliance of herbicides for controlling these invasive rat's tail grasses, and which can complement existing management strategies.

Keywords Pasture weeds, pathogens, biocontrol, invasive grasses, GRT, Queensland