

## Additional strains of the Noogoora burr rust fungus to enhance biocontrol in Northern Australia

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**Summary** Noogoora burr (*Xanthium occidentale* Bertol.) is a weed across northern Australia, mostly of riparian areas. It is a major problem to the livestock industry because it competes with palatable plants, seedlings are toxic to stock, burrs reduce wool values and it poses quarantine issues. In far northern Australia it continues to invade previously un-infested catchments and is currently perceived to be a major threat by some pastoralists and government agencies.

An exotic rust fungus (*Puccinia xanthii* Schw.), illegally or accidentally introduced to Australia in the mid-1970s, has been highly effective in controlling Noogoora burr in south-eastern Queensland, but has failed to have a major impact in tropical northern Australia (Morin *et al.* 1996). The introduction of additional exotic strains of this rust fungus better adapted to tropical conditions has been suggested as an approach to improve impact of this biocontrol agent in far northern regions (van Klinken and Julien 2003).

Surveys for *P. xanthii* were conducted in Mexico, Dominican Republic and Venezuela because parts of these countries climatically match regions of northern Australia where Noogoora burr is troublesome. The rust accessions recovered have been imported into the CSIRO Black Mountain Containment Facility. Testing will be performed to compare the pathogenicity of these strains with that of Australian strains on Noogoora burr accessions originating from different sites across Australia. The host-specificity of the exotic and Australian strains will also be compared using a selected range of non-target plant species closely related to Noogoora burr. Results from these tests will be presented at the conference and used to assess whether these new exotic strains will pose a greater risk to non-target plants than the existing population of the rust fungus in Australia.

Baseline data on populations of Noogoora burr, the rust fungus and the gall-forming biocontrol insect *Epiblema strenuana* (Walker) are also being collected at two sites in the Northern Territory (Daly

and Victoria Rivers) and one in northern Western Australia (Cunningham River near Fitzroy Crossing). This work is undertaken to better understand the ecology of Noogoora burr and population dynamics of the existing biocontrol agents. The baseline data gathered will be essential to assess future impact of the additional strains, should they be approved for release in Australia.

At each site, five transects set up at approximately 500 m intervals along the river are monitored once a year and data are collected on Noogoora burr density, plant structure, reproduction and the incidence and severity of damage caused by the biocontrol agents. Soil core samples are also taken to assess the soil seed bank.

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