

New single test to detect plant viruses

July 20 2016, by Pepita Smyth

A Plant Biosecurity Cooperative Research Centre team are rolling out a plant diagnostic toolkit that can accurately detect plant viruses and viroids in a single test.

"By tapping into the plant's natural defences we are able to detect nearly every known plant virus with much greater accuracy – giving us a test with a very high level of confidence," said Dr Roberto Barrero, project leader from Murdoch University.

The test is based on next generation small RNA sequencing technologies and is part of a [toolkit](#) that provides comprehensive guidance on the new techniques including sample collection, preparation, operating procedures, the informatics analytical environment and screening tools.

The toolkit will be mainly used by Post-Entry Quarantine (PEQ) facilities operated by government quarantine agencies including the Australian Department of Agriculture and Water Resources (DAWR), and the New Zealand Ministry for Primary Industries.

"The new test will significantly reduce the time imported plant material spends in Australia's quarantine system, while improving accuracy of detection," said Mark Whattam, plant pathologist at the new national PEQ Facility at Mickleham in Victoria.

"The toolkit has many benefits for our operations, including improved sensitivity, reduced screening costs and the reduction of manual screening times which can currently take more than two years.

"It means that imported material such as elite cultivars and breeding lines will be available to Australian plant breeders and nurseries as much as 12 months sooner."

The Australian Government has already accepted and adopted the technology in the toolkit as the new PEQ standard for the screening of viral pathogens in clonal grasses.

Further roll-out of the technology currently underway includes hands-on and remote workshops for biosecurity professionals, not only providing training in the use of the toolkit but also gathering useful end-user feedback to improve usability.

"There is further potential for state agriculture departments, diagnostic laboratories and research institutions to use the toolkit, not to mention developing countries that are often highly dependent on agricultural imports and exports," said Dr Barrero.

Due to strong interest in the project, the Board of the Plant Biosecurity CRC approved an extension to the project at its last meeting that will support further engagement with end-users, training workshops on the new system, and the development of supporting material for policy-makers.

Provided by Murdoch University

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