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## A case for re-inventory of Australia's plant pathogens

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Australia has efficient and visible plant quarantine measures, which through various border controls and survey activities attempt to prevent the entry of unwanted pests and diseases. The ability to successfully perform this task relies heavily on determining what pathogens are present and established in Australia as well as those pathogens that are exotic and threatening. There are detailed checklists and databases of fungal plant pathogens in Australia, compiled, in part, from surveys over many years sponsored by Federal and State programmes. These checklists and databases are mostly specimen-based, which enables validation of records with reference herbarium specimens and sometimes associated cultures. Most of the identifications have been based on morphological examination. The use of molecular methods, particularly the analysis of DNA sequence data, has recently shown that several well-known and important plant pathogenic species are actually complexes of cryptic species. We provide examples of this in the important plant pathogenic genera *Botryosphaeria* and its anamorphs, *Colletotrichum*, *Fusarium*, *Phomopsis*/*Diaporthe* and *Mycosphaerella* and its anamorphs. The discovery of these cryptic species indicates that many of the fungal names in checklists need scrutiny. It is difficult, and often impossible, to extract DNA for sequence analysis from herbarium specimens in order to validate identifications that may now be considered suspect. This validation can only be done if specimens are recollected, re-isolated and subjected to DNA analysis. Where possible, herbarium specimens as well as living cultures are needed to support records. Accurate knowledge of the plant pathogens within Australia's borders is an essential prerequisite for the effective discharge of plant quarantine activities that will prevent or delay the arrival of unwanted plant pathogens.

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