PREPARING INDUSTRY FOR EXOTIC STRAINS OF PHYTOPHTHORA INFESTANS CAUSING LATE BLIGHT OF POTATO


*PIRVic, DPI Victoria – Knoxfield Centre, PB 15, Fernree Gully DC, 3156, Vic
#Quarantine Solutions for your Agribusiness, PO Box 1107, Frankston, 3199, Vic

INTRODUCTION
Late blight is one of the most destructive diseases of potatoes worldwide, estimated to cause annual losses of 13% of global potato production. This is as a result of the spread of new and aggressive strains of the pathogen, Phytophthora infestans, around the globe over the past 30 years. There are two ‘mating types’ of P. infestans known as A1 and A2. Australia is one of the few countries that still only have ‘old’ strains of A1 (1). Outbreaks of late blight in Australia are sporadic and localised and readily controlled with metalaxyl-based fungicides. The presence of A2 can result in the development of tough survival spores (oospores), and therefore, long-term survival in soil. The offspring from the mating of compatible A1 and A2 strains are potentially more adaptable, resulting in higher disease risk.). If these new strains became established in Australia, production losses could be in excess of 100,000 tonnes p.a. and pesticide usage could increase substantially.

In 2004, the Australian potato industry invested in a desk-top study to prepare for the possible incursion of exotic strains, including the A2 mating type, of Phytophthora infestans.

MATERIALS AND METHODS
Relevant information was sourced from around the world and compiled into a Pest-Specific Contingency Plan, a Pest Risk Analysis and Grower Fact Sheets.

Pest-Specific Contingency Plan. A response plan, developed based on the guidelines outlined in PLANTPLAN, identified experts within Australia and overseas, and lists the relevant government contacts. Current National and State quarantine measures were reviewed and survey procedures, quarantine zones and movement controls drafted for use in an incursion situation.

Information was sourced worldwide regarding differences in host range, distribution, features, biology and epidemiology of the new strains of P. infestans.

Diagnostic capabilities available in Australia were examined and identified that Queensland is the only State with the immediate capability to distinguish old strains from new. The diagnostic tests used, however, are not really suited for incursion purposes due to a turn-around time of at least two weeks for strain confirmation.

Chemical control options available in Australia were compared with those used overseas and additional products were identified that would improve disease management options. Advice on the best options for managing a suspected incursion with fungicides must be sought from the major agrochemical companies at the time of the incursion.

Pest Risk Analysis. Risk assessment methodology prescribed by the IPPC (2) was used to determine the risk that these new strains pose to the Australian potato industry. Because Australia has excellent border control and import restrictions, the likelihood of entry was determined to be low. However, if entry did occur, the potential for spread and the subsequent consequences for industry were determined to be high.

RESULTS AND DISCUSSION
This is the first pest-specific National response plan for the Australian potato industry and reflects serious concern by industry about the economic impact of late blight should the exotic strains enter and become established in Australia.

The Pest Risk Analysis and Pest-Specific Contingency Plan were developed as appendices to the National Potato Industry Biosecurity Plan. Specific recommendations to industry to raise awareness and preparedness for potential incursions include:

• simulated incursion exercises to test the response plan;
• an immediate need to update and standardise National diagnostic protocols suitable for incursion purposes. Current diagnostic capability in Australia is inadequate. Diagnostic tests potentially more suitable for use in an incursion have been developed in Scotland and should be tested for their suitability.
• a surveillance program should be conducted in areas where late blight is currently known to occur in Australia. This would serve several purposes: (1) provide the opportunity to develop robust diagnostic protocols and train diagnosticians in their use, (2) increase the likelihood of early detection of new strains, and (3) provide baseline data to support pest free area status for market access in the event of an incursion.
• the Plans should be reviewed and updated as required.

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REFERENCES