

Plant Pathology

– Summer 2011

INTRODUCTION

The Plant Pathology Research Unit helps to reduce the effects of diseases on the yield, quality and marketability of grain and horticultural crops using effective and environmentally sustainable practices. Major crops targeted include wheat, pulses and oilseeds, field and greenhouse vegetables, citrus, deciduous fruits, nuts, and cotton.

Research conducted underpins the surveillance, prevention, control or eradication strategies for significant agricultural and horticultural plant diseases, both endemic and exotic. New diagnostic methodologies are developed and delivered as diagnostic protocols for national endorsement.

Our research seeks to reduce the impacts of diseases by integrating disease resistance and management into programs that are breeding improved plant cultivars. The development of integrated disease management strategies for plant production systems is also a key area.

The Unit works closely with the Plant Entomology, Scientific Collections, Forest Health and Diagnostics and Analytical Services Units as well as the Department's plant biosecurity policy, regulatory and extension networks.

Research information from the unit provides a sound science basis for policy decisions by the NSW, Commonwealth and other state governments in plant health science, quarantine and biosecurity areas.

RESEARCH CAPABILITIES

- » The Unit's skilled scientists operate specialised laboratories and glass houses in 7 sites across NSW.
- » Staff have access to specialised laboratories, glass houses and field sites at our research stations. Selected sites also include higher level containment facilities that comply with specifications of biosecurity legislation.

CONTACT US

For more information on our full portfolio please contact Deborah Hailstones (02 4640 6333) or deborah.hailstones@industry.nsw.gov.au.

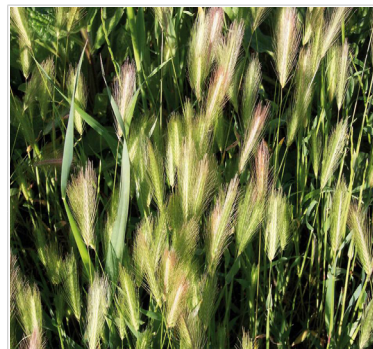
- » The unit fosters and develops valuable and productive partnerships with a wide range of collaborators and funding bodies and RDCs such as GRDC, CRDC, Horticulture Australia Ltd and RIRDC. Scientists within the unit are also actively engaged in CRCs including the CRC for National Plant Biosecurity and the Cotton Catchment Communities CRC.

PROJECT UPDATES

INTEGRATED MANAGEMENT OF DISEASES IN GRAINS – NORTHERN REGION (JULY 2010–2013)

INTRODUCTION – The top five diseases in wheat, barley and pulse crops have been estimated to cost growers in the northern region over \$350 million annually. This project aims to develop strategies to support industry in minimising losses to and reducing the risk of key diseases in winter cereals and pulses in the region.

FINDINGS – This project will provide growers with information to reduce losses that are expected with the main diseases of the target crops. Environmental benefits will be provided through greater grower confidence in the use of farming methods such as reduced tillage and retaining stubble, both of which reduce erosion and increase soil water storage and reduced dependence on chemical control options. Disease management is a priority for the wheat, barley and pulse industries.



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Partners – Grains R&D
Corporation (GRDC)

INTEGRATED MANAGEMENT OF DISEASES IN GRAINS – SOUTHERN REGION (JULY 2010–2013)

INTRODUCTION – The grains industry in southern NSW and northern Victoria covers a wide variety of rainfall zones and cropping systems and cereal, oilseed and pulse crops form the basis of cropping rotations. Despite the recent dry seasons, diseases are still a major constraint to grain production. This project focuses on the evaluation of disease management options for the region, increasing awareness of emerging disease threats, identifying varieties with improved levels of disease resistance and extension of information to industry.

FINDINGS – The key findings in this project will be to provide improved disease resistant crop varieties and disease management practices for adoption by the grains industry. Exotic and emerging disease that are recognised threats to industry sustainability will be identified and managed and reliable and relevant disease management information provided to industry. Overall the impact of diseases on the important grain industry in southern NSW and northern Victoria will be reduced.



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Partners – GRDC

FIGHTING DISEASES OF VEGETABLE CROPS (2006–2011)

INTRODUCTION – Vegetables can suffer serious losses due to various diseases, especially those caused by fungi. Often the pathogens are found in soils, affecting roots and stems, or are aurally transmitted, causing damage to leaves. Research focuses on soil borne diseases of beans and snow peas and powdery mildew of carrots, diseases that have been building up over time and could potentially cause increasing damage to crops. New control strategies will ensure the ongoing sustainability of these vegetable industries.

FINDINGS – The outcomes of these projects will lead to integrated management of diseases of vegetable crops through improved identification of these diseases, improved grower awareness and better control options. As a consequence, profitability, quality and reliability of vegetable supply will all increase



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Partners – HAL

MORE PROFITABLE CHICKPEAS (2008–2010)

INTRODUCTION – This project set out to increase adoption and profitability of chickpeas leading to a more sustainable and flexible cropping system for growers in the northern economic region.

FINDINGS – The project has developed better management packages for controlling diseases such as *Ascochyta* and *Phytophthora*; improved reliability of *Phytophthora* screening; improved fungicide efficiency; explored novel control measures; continued surveys; progressed grower and agronomist training; and provided pathology support to a precision agriculture project.



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Partners – GRDC

DISEASES OF COTTON (1983–2012)

INTRODUCTION – Cotton production in Australia is worth up to \$2 billion in export income but diseases can cause yield losses that threaten the profitability and sustainability of production. NSW DPI has led the “Diseases of Cotton” project since its inception in 1983. It conducts bi-annual disease surveys across all production areas to document the incidence, absence and severity of diseases. Research conducted enables the further development and confirmation of disease management strategies, transfers information to growers for the more effective control of cotton diseases, identifies new disease threats if they arise and benchmarks the distribution and potential importance of diseases of cotton. Comprehensive pre-emptive surveillance of exotic diseases ensures early detection in the event of an incursion .

FINDINGS – This project has guided the formulation of strategies for integrated disease management to increase the sustainability and biosecurity of the cotton industry. Most recently this has included the optimisation of existing and novel strategies for disease control, such as combinations of fungicide treatments. Findings have also directly contributed to industry awareness and the preparedness to deal with biosecurity threats. Controlling diseases in cotton diseases benefits the long-term profitability and sustainability of the industry and associated rural communities.

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Partners – CRDC and CCC CRC

PIS&R PROJECT UPDATES