

Project Title: Applying new technologies to understand varietal performance of wheat
S 3-04 Final Report

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Project Supervisor: Dr Paul Heap

Contact Details: Ph: (08) 8303 9444
Mob: 0428 833119
Email: john.heap@sa.gov.au

Executive Summary:

Growers are responding to production challenges by growing more cereals and using Precision Agriculture (PA) to vary fertiliser rates between zones. They now need more information on the performance of cultivars in consecutive cereal rotations and in different zones, and on tolerance to soilborne pathogens that will emerge in these systems. Disease tolerance needs to be assessed in the field and very few of these trials are being undertaken at present. Cereal variety evaluation trials may be able to assist.

This project has examined the use of PA zoning for use in varietal evaluation of disease tolerance, and recommends the following:

- Cultivar evaluation sites should be characterised for soilborne pathogens.
- Sites with multiple soilborne pathogens should be avoided.
- Sites with significant take-all and Rhizoctonia should be avoided unless new cultivars have some tolerance.
- Sites could be located to target emerging farm practices eg stubble retention, sowing between rows, sowing dry etc.
- The emphasis on selecting a range of soil types etc. to characterise the main production zones within a region should continue, and soil types which are characteristic of most profitable zones should be selected.

Research needs to be done to monitor soilborne disease trends in the new farming systems and identify potential risks before the industry suffers large losses.