

Name of research project:

**Risk assessment and preventive strategies for herbicide resistance in the Northern Region (Phase III)**

Research organisation(s):

Queensland Primary Industries and Fisheries (Department of Employment, Economic Development and Innovation) and Industry and Investment New South Wales.

GRDC Project code:

DAQ00136

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Project objectives:

The prevention of further development of herbicide resistance as well as the management of current resistance.

Weed management alternatives for key 'at risk' weeds will be evaluated for resistance prevention, while herbicide resistance management will focus on the two priority areas of resistance, namely glyphosate resistance (existing and new cases) and resistance in wild oats. The project will keep abreast of new cases of resistance through regular consultation with stakeholders. New cases of resistance will be addressed with containment and control in mind.

In-depth ecological studies will take place on seed-bank dynamics for different environmental and tillage systems, including seed persistence and spread, and options for accelerated seed-bank decline for target weeds. Results will strengthen herbicide resistant prevention and management strategies and improve weed management overall in the long-term.

An existing glyphosate resistance model will be expanded to simulate development of glyphosate resistance in a broader range of key weeds and farming systems in the NR, and will be used to develop and further refine herbicide resistance preventive and management strategies for key 'at risk' weeds.

Project period: Start and finish dates

2008 - 2011

Project outcomes and status:

The most effective tactics and strategies for the prevention/management of glyphosate resistant barnyard and liverseed grass, and other 'at-risk' weeds are being developed, refined and extended to advisers and growers to maintain profitable farming systems. Field and controlled environment trials are testing these tactics and strategies and publications including factsheets on 'Testing for glyphosate resistance' and 'Glyphosate resistance risk questionnaire' have been developed and made available.

Improved understanding of important ecological characteristics, such as seed-bank dynamics, seed-bank depletion, fitness penalty and weed spread, for key 'at risk' weeds is being assessed in a series of on-going field and controlled environment experiments.

An existing model predicting the evolution of glyphosate resistance in barnyard grass in wheat/sorghum rotations is currently being extended to include other key weed species, and to widen the range of crops and weed control tactics. A wider range of risk ratings for NR farming systems and improved strategies for minimising HR risks for a greater variety of weeds will result.

By the project completion (June 2011) advisers and growers will be armed with tactics to either prevent resistance developing, or to manage resistant weed populations once they occur. Importantly, these tactics will enable growers to maintain flexibility in their farming operations. Due to the range of environments in the NR, successful tactics will vary between regions and individual growers.

Links:

[www.dpi.qld.gov.au](http://www.dpi.qld.gov.au)

The above link has relevant fact sheets and information on glyphosate resistance prevention and management.