

Profitable Broadleaf Crop Sequencing in South Eastern Australia

RESEARCH

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Why do the project?

In low rainfall regions of south-eastern Australia, farmers have increasingly adopted continuous cereal cropping strategies as non-cereal crops are perceived as riskier than cereals due to yield and price fluctuations. Broad-leaf crops make up only a very small proportion of the total area of sown crops. There is a need for non-cereal crop and pasture options to provide profitable rotational crops, disease breaks and weed control opportunities for cereal production. The current alternative to cereals is pastures, and poorly managed grass dominant pastures can be havens for cereal pests and disease and may have a negative impact on subsequent cereal yields and quality.

This project will develop an improved understanding and implementation of management practices for Brassica, pulse crops, pastures and other options to reduce the risk of crop failure and improve whole farm profitability in low rainfall south-east Australia.

How will it be done?

This is a collaborative project between five farming systems (FS) groups (Eyre Peninsula, Upper North, Mallee Sustainable Farming, BCG and Central West). Over-arching guidance and support will be provided by the Low Rainfall Collaboration Project (LRCP).

This project incorporates 4 approaches which when combined to develop a package will provide industry confidence in broad-leaf crops as components of risk minimisation cropping strategies:

- An opportunistic combination of crops, cereals, canola, pulses and pastures, and crop sequences, based on soil and seasonal variables.
- Integrating grain legume or oilseed varieties better suited to dry climates into crop sequences.

- Growing crop or pasture mixtures such as a legume and an oilseed may increase benefits to subsequent cereals over that expected of component species, through enhanced nitrogen availability from the legume and enhanced root disease control by the oilseed. In addition, mixtures could have higher combined yields than component crops through more efficient partitioning of resources through space and time.

- Multipurpose use of broad-leaf crops as grain, hay or forage based on seasonal and enterprise requirements.

Issues restricting the more widespread use of non-cereal phases will be identified in each region from the evaluation processes which each group is currently developing. These issues will be integrated across the project by a management group consisting of representatives from each FS group and major projects in the area.

Five small plot experiments will be conducted at locations and environments to be decided by each management group to investigate not only a wide range of break crop and pasture types but also differing management options. The sites will be on long term wheat paddocks and central to each experiment will be a break phase of 2 years followed by 2 years of cereal.

A design has been developed which will allow the rigorous comparison of up to 44 individual break sequences (unique combinations of break type and management options over 2 consecutive years) analysed spatially with a continuous cereal as a monitoring check.

Commercial paddocks which are already addressing a problem from a continuous cereal phase with a 2 year break will also be monitored in each FS region.

Agronomic outcomes from this project will be examined for their economic and risk impacts through existing activities of each group.

Extension of project outcomes will be achieved via the existing activities, networks and infrastructure of the 6 FS groups partnering in this proposal. The project management group will ensure scientific outcomes are reported to the industry. A guide for improved decision making for the implementation and management of break phases in low rainfall south-eastern Australia will be developed and promoted to the regional communities as part of this project.

What will it mean?

The outcome from this project will be more reliable and more productive low rainfall farming systems through the increased use of less risky broad leaved break phases.

This will be achieved through the promotion of the following outputs from the proposal in low rainfall regions of south eastern Australia

1. More reliable management strategies for the production of broad leaved phases.
2. Identification of more reliable break phase options.
3. Guidelines to identify trigger points for when, for how long and which break phases to use for improved farming systems outcomes.
4. Reliable estimation of risks with break phases as well as their total impacts on following cereal crops.

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