

Biodiversity and Productivity



Biodiversity and productivity

Grain & Graze research aims to improve the financial and environmental performance of mixed farming systems across Australia.

The biodiversity research in Grain & Graze focuses on the relationships between biodiversity (plants, animals, insects and micro-organisms) and on-farm production. Over many years, monitoring four paddocks with different land uses on 47 mixed farms, the project will contribute to answering the following questions:

- Does enterprise diversity on-farm lead to increased biodiversity?
- Is there a relationship between site conditions, land use, landscape, terrain and biodiversity?

Results of the long term research should inform farmers about what can be done to maintain and enhance biodiversity in mixed farming systems.

Some key data to date

- Over 150 bird species across the 9 Grain & Graze regions (some rare and threatened) have been identified.
- Over 780 different species of beetle, ants and spiders have been recorded.
- More than 200,000 individual invertebrates have been counted.
- Vegetation data is providing information on habitat provision for birds, invertebrates and fungi and also on landscape spatial information – whether isolated remnants or large areas of native vegetation within the farm's proximity.

Some key findings to date

- Plant species richness is greater in the pasture and the remnant areas.
- As expected, the greatest amount of decomposition has been found in crop paddocks, as they contain most of the nutrients.



The benefits of encouraging biodiversity

- Understanding the potential to contribute to conservation targets through landscape design should allow Catchment Management Authorities to develop incentive programs to maximise conservation outcomes on private land.
- By understanding the needs and interaction of farm ecosystems, farmers can increase productivity and aim for long-term sustainability.
- Mixed farming systems have the potential to conserve biodiversity at all levels, from landscapes to individual species.

Land use and biodiversity: What's being done?

Over a two year period biological samples are being taken in autumn and spring from four paddocks on 47 farms and biodiversity indicators (soils, plants, birds and invertebrates) are being monitored.

The different land uses on the four paddocks are:

- A paddock under crop that has been in a crop rotation for three years.
- A paddock in the break crop phase of the rotation.
- A perennial pasture paddock established for at least three years.
- An area of remnant vegetation on the farm.

The data collected will help determine the biodiversity range in the mixed farming phases and how production influences these relationships.

What information is being collected?

The project is collecting a range of biological information on soils (nutrients and decomposer activity); vegetation (crops, pastures and remnant vegetation); invertebrates (beetles, spiders and ants) and birds.

Soil nutrient levels are being measured for nitrogen, phosphorus, potassium, carbon, conductivity and acidity/alkalinity. All plant species are identified and percentage groundcover is assessed to give an indication of management and habitat provision for other species such as invertebrates.

Important to a wide variety of bird species, the relative health and condition of remnant vegetation is also being recorded.

For more information on the National Biodiversity in Grain & Graze Projects contact the National Project Coordinator:

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Glossary

Biodiversity

Species diversity – number of different living organisms (plants, animals, insects and micro-organisms).

Ecosystem

A community of organisms, interacting with one another and the environment.

For more information contact:

For more information about Grain & Graze, contact Richard Price, National Coordinator, on 02 6295 6300; Gillian Stewart, National Extension Coordinator, on 02 6263 6042; Merryn West, Communications Officer, on 02 6263 6013 or visit www.grainandgraze.com.au

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November, 2007

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