

BIODIVERSITY IN GRAIN & GRAZE

- a national project of the Grain & Graze Program



A farmer checking the health of a Eucalyptus tree on his mixed farm. These trees provide valuable habitat for attracting beneficial native birds and other wildlife. Photo courtesy of Land, Water & Wool, LWA.

Trapping the 'BiGG' benefits of biodiversity

A groundbreaking national research project is underway on 43 mixed farms to quantify the relationships between biodiversity and on-farm production. The Biodiversity in Grain & Graze (BiGG) Project will:

- investigate how on-farm biodiversity is influenced by site conditions and land management practices; and
- examine how biodiversity supports on-farm production.

Land use and biodiversity

Farms were selected for the project based on monitoring of four paddocks with different land usages:

- a cropping paddock that has been in a crop rotation for at least three years;
- a paddock in the break crop phase of the rotation (lucerne or annual legume);
- a perennial pasture paddock established for at least three years; and
- an area of remnant vegetation on the farm.

In a first for Australian agriculture, farmers on 43 mixed farms are working together with researchers to explore the relationship between on-farm production and biodiversity.

Research question:

Is there a relationship between biodiversity and land use?



Wetlands support a rich source of animal and plant diversity on a mixed farm in Victoria. Photo courtesy of Land, Water & Wool, LWA.

Biological sampling is being undertaken in autumn and spring over the next two years. Each indicator species being monitored forms part of a complex system. The data collected will assist in a better understanding of the range of biodiversity that exists in the various mixed farming phases and how production is influencing these relationships. So what is being sampled?

The project is collecting information on:

- soils (nutrients and decomposer activity);
- vegetation (crops, pastures and remnant vegetation);
- invertebrates (beetles, spiders and ants); and
- birds.

Getting the dirt on soils

Soil nutrient levels are being measured for nitrogen, phosphorus, potassium, carbon, conductivity and acidity/alkalinity. Soil biological activity levels are assessed by measuring the decomposition rates of natural cotton strips buried in the different land usage paddocks for two weeks.

Investigating vegetation

Plant biodiversity is assessed by identifying all species within the focus paddocks and recording growth stages and percentage groundcover taken. The relative health and condition of vegetation is being recorded.

The Biodiversity in Grain & Graze (BiGG) project will gain an understanding of how land use can support biodiversity and how biodiversity can support production on mixed farms.

Research question:

Has rotational farming increased biodiversity compared to monoculture farming?

Trapping bugs and watching birds

Pitfall traps (plastic cups left in the ground for a week and then removed) are used to collect invertebrates – specifically beetles, spiders and ants. Samples are being sent to the University of Tasmania for species' counting and identification.

Regional staff involved in the project are working together with local bird observers to conduct surveys using a standard method provided by Birds Australia.

What do we hope to unearth?

By collecting information about biodiversity, Grain & Graze farmers will help researchers answer these questions:

- Is there is a relationship between biodiversity and land use?
- Does enterprise diversity on-farm lead to increased biodiversity?
- Has rotational farming increased biodiversity compared to monoculture farming?
- Can farms be managed to improve ecosystem services and profitability?
- Is there is a relationship between paddock management, biodiversity and profit outcomes?
- How does landscape and terrain influence farming practices and biodiversity outcomes?



King parrot among acacias on-farm. Photo: Judith James.

Research question:

Can farms be managed to improve ecosystem services and profitability?

Research question:

Does enterprise diversity on-farm lead to increased biodiversity?



Native plants kept on a mixed farm in the NSW Mallee. Remnant vegetation on-farm can provide valuable habitat for beneficial biodiversity. Photo: Gillian Stewart, Grain & Graze Program, LWA.

How can I find out more?

As results and recommendations emerge, Grain & Graze will plan a range of activities which will enable farmers, advisers, researchers and regional groups to adopt relevant project findings into practice.

For regional contacts or to sign up for the bimonthly Grain & Graze electronic newsletter, please visit www.grainandgraze.com.au

Or, you can contact the national biodiversity project coordinator:

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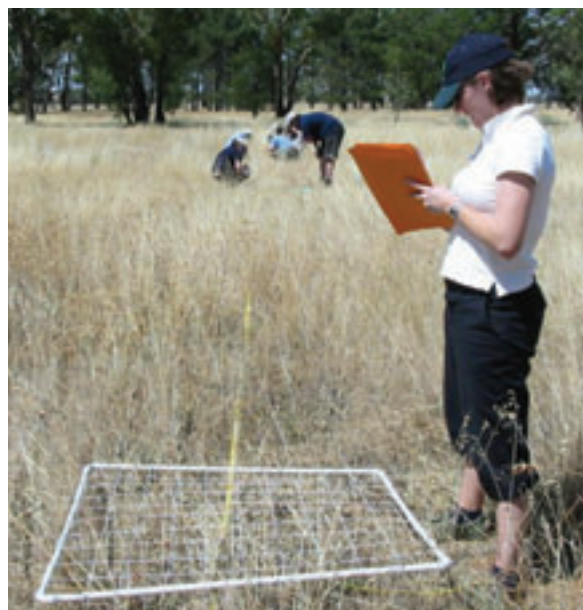
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The National Biodiversity Project is a partnership between Grain & Graze and the Natural Heritage Trust (NHT).



Measuring biodiversity on-farm. A researcher records the percentage of ground covered by various plant species over a square metre using a 'quadrat'. Photo: Gillian Stewart, Grain & Graze Program, LWA.

Research question:

How does landscape and terrain influence farming practices and biodiversity outcomes?

THE GRAIN & GRAZE PROGRAM

Grain & Graze helps mixed farmers increase their profitability and social capital while better managing water, soils and biodiversity. The program works across nine regions in five states. Grain & Graze is a joint initiative of the Grains Research and Development Corporation, Meat and Livestock Australia, Australian Wool Innovation Ltd and Land & Water Australia.

www.grainandgraze.com.au