

tips & tools

NATURAL RESOURCE MANAGEMENT

Encouraging biodiversity benefits

Diverse grassland and woodland systems with a healthy mixture of species are naturally resilient and more biologically stable than monocultures. A variety of animals (including livestock), plants, insects and microorganisms can help capitalise on environmental or management variations on the farm – they are nature’s way of managing risk. Working with these systems and making better use of naturally occurring species gives producers a better chance of maintaining viability over the long-term, and increasing property values.

Tactics

It is important to assess and prioritise the vegetation on your farm, indicating areas that should be *retained*, *restored* or *revegetated*, and to manage each area accordingly.

Retain: It is critical that existing areas of native vegetation are retained and protected, especially those with a high conservation value.

Restore: Reduce pressure on degraded native areas and apply tactical weed, pest and disease control to restore them to a healthier state.

Revegetate: Identify and revegetate suitable areas with native species to increase the size and diversity of ecosystems on the farm.

Promote mixtures, not mono-cultures, in any future revegetation. Establish a range of species at both the understorey and tree levels to create more viable ecosystems.

Create corridors for native species by linking vegetation patches on your farm and in the surrounding district. Make sure these corridors are wide enough to contain habitat between the edges, as a single row of trees with no understorey does not provide a corridor for most species.

Healthy soil and nutrient cycling

Retain as much litter on the soil surface as possible to keep soil organisms (including earthworms) well-fed and actively recycling nutrients for plant growth. Litter also acts as mulch, retaining vital soil moisture for plant growth and decomposition of organic matter.

Key benefits

- Understand the needs and interaction of farm ecosystems
- Learn to identify useful plants and animals within farm grasslands
- Better manage farm biodiversity for long-term viability and increased property value

Maintain a good plant cover to encourage friable soil. Well-structured soil enables dung beetles to bury nutrient-rich manure down to 30cm, while improving water infiltration rates through their large vertical tunnels.

Avoid soil compaction from vehicle or stock traffic, especially when the soil is wet, as this can damage soil organisms and reduce water entry into the soil.

Controlling pests and diseases

Woodlands and ungrazed grass areas should be maintained to provide habitat and refuge for natural predators of pests and diseases, although it should be noted that some pests and disease may also thrive in these areas. Foxes and feral cats will appreciate woodland and ungrazed areas and control programs might be necessary.

Reduce the use of non-selective pesticides that also damage beneficial predators and can reduce food sources that sustain useful native species.

Managing pastures

Maintain a variety of grassland types across your farm, as well as a balance of species within paddocks, to maximise grazing and produce forage at different times of the year. A mixture of species is usually best when sowing pastures.

Retain and strengthen your perennial grasses as these are the basis of sustainable grasslands. Most perennials respond best with rotational grazing for at least part of the year so they get a rest to replenish energy reserves. Avoid overgrazing – keep herbage mass above 1,000kg DM/ha to retain useful species. Rotational grazing helps prevent selective grazing of the most desirable species in the pasture.

Fertilise to foster desirable species and minimise less-desirable plants. Artificial nitrogen, phosphorous and potassium (NPK) fertilisers generally encourage beneficial

pasture species, but excess fertility can also select for nutrient-loving weeds such as barley grass, capeweed and thistles.

Biodiversity facts

- Healthy soils are the key to healthy ecosystems and productive pastures.
 - At drier times of the year, mulch plays an important role in capturing and retaining water for increased plant growth.
 - Ungrazed grass tussocks are essential for pest-eating beetles as these need drier, elevated areas to survive through winter.
 - Bats do an excellent job of eating insects. They often live under the loose bark of mature trees, and the closer they remain to your crops and pastures, the more use they will be for consuming insects.
- Scattered trees and woodlands are very valuable to these species.
- Diverse grasslands of persistent perennials that retain a herbage mass of greater than 1,500kg DM/ha are more resilient against weeds, even when many weed seeds are present.
 - Native pastures can respond positively to low rates of fertiliser. However, higher rates can destabilise the pasture, with annuals and weeds crowding out native perennial grasses. Because of their special requirements, it is best to seek professional, local advice before starting a fertiliser program on native pastures.

Management tips

- Don't do the same thing everywhere. The essence of managing diversity is to have a range of ecosystems in a landscape mosaic.
 - Although many pests and diseases have natural predators that help keep them in check, introduced organisms (both plants and animals) often lack natural predators in our environment, and require strategic control programs.
 - Refuge areas can be created for natural predators of pests and diseases by leaving border strips of ungrazed pasture crop paddocks and retaining overgrown fence-lines. Beneficial insect populations retained in these areas are then readily available to recolonise new crops.
 - Learn to identify useful species within your grasslands, when they grow and how your management influences them. Minor broadleaf species (forbs) could prove to be key indicators of how effective your management is.
 - Have a farm plan and record your practices. This is becoming increasingly important to satisfy the criteria of many value-added marketing programs that attract premiums.
- Ecosystems exist and interact at different scales with some organisms only moving a few millimetres (such as soil insects), while others require several kilometres (some birds and large reptiles). Both small and large patches of native vegetation are needed to cater for this diversity, and **all properties should aim to have at least one major area (10 hectares or greater) of native vegetation.**
 - Each ecosystem on a property will have special needs and will interact in some ways that are not always obvious. Some animals may use one area for refuge and another for food.

Glossary

Ecosystem – a community of organisms, interacting with one another and the environment

Forb – a broadleaf herb, lacking woody stems

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Further information

This publication is part of a series of *Tips & Tools* on biodiversity that can be ordered by calling MLA on 1800 675 717 or emailing publications@mla.com.au

Information on how to manage biodiversity and to enhance your longer-term profitability can also be obtained from rural facilities in Universities, Departments of Agriculture, Natural Resources and Land Management.



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