



The Green Book Best Management Practice Guide

7. Biodiversity

Best Management Practice (BMP) for management of biodiversity on horticultural farms strives to protect and enhance on-farm biodiversity; minimise threats to local biodiversity from horticultural activities; and through on-farm activity, support regional strategies for biodiversity management.

This section of *The Green Book* provides the key objectives of BMP for biodiversity management and presents a list of management actions to help achieve those objectives. At the end of this section is a checklist of BMPs recommended for sustainable management of horticulture farms in the Murrumbidgee Irrigation Area (MIA).



Photo - Wine Grapes Marketing Board

The actions for BMP presented in this document are a summary of the key issues for environmentally sustainable horticulture in the MIA. Full details and references can be found in *The Green Book* companion chapter – BIODIVERSITY.

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BMP objectives

Objective 1 – Minimise threats to local and regional biodiversity from horticultural activities in the MIA

Biodiversity is an indicator of the health of the environment. It relates to the number of interactions between species as well as to the number and variety of species in an ecosystem. Key threats to biodiversity have been identified as land clearing, salinity and invasion from pest species.

Minimising threats to biodiversity can be demonstrated on farm through the following actions:

- Identify sensitive areas (water bodies and surrounding vegetation, native vegetation) on farm or adjoining the property boundary on a Whole Farm Plan.
- Identify and manage threats to sensitive areas from farm management practices (eg pesticide application, irrigation drainage and run-off, fertiliser use, cultivation, land clearing) to minimise their impacts (eg spray drift is contained within the property boundary and risks from pesticide application are managed by chemical selection and use of buffer zones - see CHEMICALS section).
- Manage noxious and environmental weeds to prevent invasion of native vegetation (see PESTS & WEEDS section).
- Manage feral animals to prevent habitat destruction and the displacement of native species.
- Humanely destroy unwanted farm animals.
- Neuter cats and dogs not intended for breeding.

Objective 2 – Protect and enhance on-farm biodiversity

In general, larger areas of native vegetation will more effectively maintain biodiversity than smaller pockets. However, small remnants (even individual trees) can be critical in maintaining habitat for mobile species such as birds. Protecting and enhancing existing native vegetation on farms can greatly assist regional biodiversity objectives. In addition, soil health and pest management can be enhanced by a diversity of soil and insect species.

Protection and enhancement of on-farm biodiversity can be demonstrated by the following actions:

- Retain existing native vegetation (including dead trees and litter for habitat) on farm and protect from stock and invasion by feral species (including weeds).
- Avoid clearing native vegetation. Undertake clearing in accordance with the NSW Biodiversity Strategy (Department of Environment and Climate Change 2009).
- Cooperate with neighbours to use vegetation offsets to create areas large enough to support biodiversity or act as a wildlife corridor.
- Develop a Property Vegetation Plan that identifies current and future opportunities to protect and enhance biodiversity (eg planting of wind breaks, buffer zones for noise or privacy, landscape gardening, channel vegetation for silt traps or bank stabilisation).
- Consider using reclaimed land (eg channel strips after conversion to drip) as wildlife corridors where benefits to biodiversity are likely.
- Use local native species for new plantings and ensure that plantings are consistent with surrounding land use (wetlands, bush, etc) and habitat needs.
- Adopt farm management practices that promote soil organism and insect biodiversity. For example:
 - minimise runoff, drainage and waterlogging
 - reduce cultivation
 - use inter-row swards
 - use integrated pest and disease management principles.

Objective 3 – Support regional strategies for native vegetation conservation and enhancement, and pest control

For effective long-term viability, biodiversity must be managed at the regional and catchment levels. The amount and complexity of native vegetation is an indicator for biodiversity. Retaining and enhancing existing native vegetation are key management objectives of the Murrumbidgee Catchment Action Plan and the MIA EnviroWise Biodiversity Strategy.

Sustainable management can be demonstrated on farm through the following actions:

- Support regional and catchment strategies to enhance existing vegetation as well as to regenerate and replant depleted areas.
- Collaborate with neighbours and regional abatement plans to suppress and destroy animals declared as pests (wild dogs, wild pigs, rabbits, carp, red fin) and other feral species (cats, red fox).
- Be familiar with the noxious weeds listed in the local control area and have suspicious plants identified.
- Manage noxious weeds on farm to prevent their spread and report sightings on common land to local council.
- Protect and enhance vegetation along water courses in collaboration with neighbours and regional management initiatives (eg fence out stock, revegetate with local native species, manage undergrowth and weeds).
- Report sightings of native fauna to Murrumbidgee Irrigation as part of the Biodiversity Monitoring Program being conducted in the MIA.
- Protect native roadside vegetation from tidying up, burning off, clearing, firewood collection and unnecessary disturbance. Roadside vegetation can be important for native seed collection and habitat.

In focus – For the birds

Birds have been identified as indicators of biodiversity because they are relatively easy to observe, they are at or near the top of the food chain, and they are well known and appreciated by many people. Woodland birds are representative of other native fauna and flora species, and of the health of native woodland ecosystems. For these reasons bird surveys are a widely used tool for monitoring the effects of land management on biodiversity.

Birds are being used as an indicator in the Murrumbidgee Irrigation Biodiversity Monitoring Program. Initial data from the survey has recorded several threatened species, with many sightings on private land. Features of woodlands important to biodiversity include size, connectivity and structure. Larger areas with links to other remnants and complex structure (lots of shrubs, regenerating trees, native grasses and tussocks) encourage and maintain biodiversity.

Further information on the Biodiversity Monitoring Program can be obtained from the Murrumbidgee Irrigation Biodiversity/Wetlands Project Officer on 02 6962 0200.

Source: *Murrumbidgee Irrigation Information Sheet "Birds of the MIA Woodland Remnants"*.



Key legislation and codes of practice

- *Native Vegetation Act 2003* (NSW)
- *Threatened Species Conservation Act 1995* (NSW)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
- *National Parks and Wildlife Act 1974* (NSW)
- MIA and Districts Community Land and Water Management Plan (MIA EnviroWise)
- Biodiversity Strategy for NSW (2009). <http://www.environment.nsw.gov.au/biodiversity/nswbiostrategy.htm>

Acts, and amendments and regulations relating to acts, of the NSW Government can be found at www.legislation.nsw.gov.au/ and then easily found using the 'Browse' or 'Search' facilities at the site.

In focus – Riches of riparian land

Riparian land is any land that adjoins or directly influences a body of water. It includes:

- land immediately alongside creeks and rivers, including the river bank
- gullies and dips which sometimes run with surface water
- areas surrounding wet lands and lakes
- areas on river floodplains that interact with the river in times of flood.

These lands generally have better soils, higher moisture and a greater diversity of plant species than the adjacent land. As a result riparian land plays a crucial role as habitat and nesting sites, a corridor for the movement of plants and animals, and as a refuge in times of stress (fire, drought).

Complete or over-clearing of riparian lands is common in agricultural areas. Over-clearing of native riparian vegetation can disrupt corridors for wildlife movement and lead to invasion by weeds and feral animals resulting in a local decline or extinction of species.

Riparian land needs to be managed at the landscape or catchment scale because this is the scale at which species move and evolve. Individual efforts in isolation are unlikely to have any long-term benefits.

The Mirrool Creek Project in the MIA focuses on the stretch of creek upstream of the Griffith- Darlington Point Road. Landholders along the creek, Murrumbidgee Irrigation and Landcare are collaborating to protect and enhance remnant vegetation, improve biodiversity and manage excessive flooding adjacent to the creek.



Source: *Riverlands Fact Sheet 5: MIA EnviroWise Newsletter "Water Works" Issue 5*

More information

Key contacts

Murrumbidgee Irrigation	02 6962 0200
NSW Department of Primary Industries (Griffith)	02 6960 1300
NSW Department of Environment & Climate Change (Griffith)	02 6969 0700
NSW Department of Environment & Climate Change (general)	131 555
Murrumbidgee Landcare Incorporated	02 6925 7718
Greening Australia	02 9560 9144
NSW National Parks and Wildlife Service.....	02 6966 8100
Department of Water & Energy (Leeton)	02 6953 0700
Murrumbidgee Catchment Management Authority (Wagga).....	02 6932 3232

Industry

Murrumbidgee Horticulture Council.....	02 6964 2420
Wine Grapes Marketing Board.....	02 6962 3944
Australian Prune Industry Association.....	03 5023 5174
Riverina Citrus	02 6964 4333

Web sites

Department of Agriculture, Fisheries & Forestry.....	www.affa.gov.au
NSW Department of Primary Industries	www.dpi.nsw.gov.au
Australian Museum On-line	www.amoline.net.au
Cooperative Research Centre for Viticulture.....	www.crcv.com.au
Department of Environment, Water, Heritage and the Arts	www.environment.gov.au
NSW Department of Environment and Climate Change.....	www.environment.nsw.gov.au
DPI - Fisheries & Aquaculture.....	www.dpi.nsw.gov.au/fisheries
Environment Protection and Heritage Council	www.ephc.gov.au
NSW Landcare	www.landcarensw.org
Land & Water Australia	www.lwa.gov.au
Murray-Darling Basin Commission	www.mdbc.gov.au
MIA EnviroWise.....	www.mirrigration.com.au/EnviroWise
Murrumbidgee Irrigation	www.mirrigration.com.au
Nature Conservation Council of NSW	www.nccnsw.org.au
Natural Heritage Trust.....	www.nht.gov.au
NSW National Parks and Wildlife Service.....	www.nationalparks.nsw.gov.au
NSW Rural Lands Protection Board	www.rlpb.org.au
Land & Water Australia - River Landscapes	www.rivers.gov.au

Best Management Practice checklist for biodiversity management in the MIA

Use this checklist to assess how you are managing pests and weeds on your farm.
Depending on your answers, this list can form the basis of a plan
for improving the sustainability of your farm management practices.

Best Management Practice	Yes	Partly achieved	To do	N/A
1 Risks to biodiversity from pesticide application are managed through the use of Integrated Pest and Disease Management principles and buffer zones – see CHEMICALS section.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Threats to biodiversity from water contamination (including nutrients and silt) and salinity are managed by efficient irrigation (see WATER section) and farm management practices (see SOILS section).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Threats to biodiversity from air, noise and land pollution are identified and managed – see AIR, NOISE and WASTES sections.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 A Vegetation Management Plan (VMP) has been developed as part of the Whole Farm Plan. The VMP identifies sites for conservation, enhancement, regeneration or revegetation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Existing native vegetation (including dead timber) is retained where practical and clearing is in accordance with NSW Biodiversity Strategy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Vegetation offsets are used to create areas large enough to support biodiversity or wildlife corridors.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 New plantings of native vegetation use local species where possible and are integrated with existing remnant vegetation and surrounding land use (eg bush land, wetlands).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Feral animals and noxious and environmental weeds are managed to limit their impact on biodiversity – see PESTS & WEEDS section.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 Land around water bodies is protected and enhanced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 Regional and catchment management initiatives are supported and implemented where appropriate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>