



The Green Book Best Management Practice Guide

6. Pests & Weeds

Best Management Practice (BMP) of pests and weeds on horticultural farms strives to implement Integrated Pest and Disease Management (IPDM), and manage noxious animals and weeds to minimise their impact on farm and on the wider environment.

This section of *The Green Book* provides the key objectives of BMP for pest and weed 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).

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 – PESTS & WEEDS.



Photos: Pests - Wine Grapes Marketing Board; Weeds - Griffith City Council

Contents

BMP objective 1 - Manage pests and weeds using Integrated Pest and Disease Management (IPDM) principles

BMP objective 2 - Suppress and destroy feral animals that have been declared noxious; manage others to control their environmental impacts

BMP objective 3 - Identify noxious weeds and manage them in accordance with their classification

Key legislation and codes of practice - BMPs for pests and weeds on horticultural farms

More information - Key contacts and websites relevant to the BMPs

BMP checklist for pests and weeds management in the MIA

BMP objectives

Objective 1 – Manage pests and weeds using Integrated Pest and Disease Management (IPDM) principles

Integrated Pest and Disease Management is a risk management strategy that has the potential to minimise pesticide applications (and chemical and labour costs); reduce risks of resistance to chemicals; and minimise environmental threats of pesticide application (including threats to biodiversity and soil or water contamination).

Effective IPDM can be demonstrated on farm through the following actions:

- Develop a pest management strategy that identifies likely pests and diseases and when action will be taken, eg critical level of infestation or disease compared to potential economic loss. Review pest management strategy annually.
- Identify key monitoring sites (areas prone to infestation or where disease has been a problem in the past) and check regularly for evidence of pests and disease.
- Time monitoring to maximise opportunities for control, eg based on weather forecasts, pest/disease lifecycles.
- Where pests or disease are found above threshold limits use biological controls and non-residual chemicals as a first choice.
- Keep records of pest/disease monitoring that include:
 - target pest/disease and level of infestation required for action
 - sites monitored
 - pest numbers or disease symptoms, location and date
 - control measures taken and their effectiveness (ie level of pests/symptoms after action).
- Consider the use of weeds as a volunteer inter-row sod (can provide habitat for beneficial insects). Control by slashing or use of knock down herbicides at critical times.
- Manage native pest species in consultation with NSW National Parks and Wildlife Service.



Objective 2 – Suppress and destroy feral animals that have been declared noxious; manage others to control their environmental impacts

At least 25 introduced mammals have become pests in Australia. The most significant of these are rabbits, cats, foxes, goats and pigs. Introduced species are a threat to biodiversity and compete with local native species for habitat and food. They can also exacerbate existing land degradation and transmit diseases to native species and humans.

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

- Identify and monitor the impact of feral animals on farm to determine the best management:
 - local eradication
 - containment
 - sustained management
 - targeted management
 - one-off action
 - no action.
- Collaborate with neighbours and regional abatement plans to suppress and destroy animals declared as pests (wild dogs, wild pigs, rabbits) and other feral species (cats, red fox).
- Seek advice from the Rural Lands Protection Board on effective baiting and control methods. Strategic baiting times for foxes and rabbits are March–April with a follow up in August–September. Destroy warrens and dens.
- Record pest sightings and monitor the effectiveness of pest control actions.
- Do not return pest fish species (eg carp, redfin) to the water or move them to another location once caught.
- Prevent farm animals contributing to the feral population – have unwanted animals humanely destroyed; neuter cats and dogs not intended for breeding.

In focus - Cats out of control

Female cats are able to breed from about one year old. In a single year cats can have up to three litters with an average of five kittens in each litter. It is estimated that there are 400,000 feral cats in New South Wales and around 12 million feral cats across Australia. In Australia, cats have no natural predators. They are most active at night, dusk and dawn when the majority of native wildlife is also active. Their prey consists mainly of small to medium-sized animals, but they can also kill animals the same size as themselves. Even well-fed domestic cats will prey on and kill native wildlife. On average, one domestic cat can kill 30 native animals a year.

Toxoplasmosis is transmitted by cats and is a disease that can cause blindness, birth defects and miscarriage in humans, as well as blindness and damage to the central nervous system and respiratory organs of native wildlife. Some native animals, such as bandicoots and kangaroos, never recover from the disease.

Cat control

- Have unwanted animals put down – dumped animals can survive and breed.
- Keep pets indoors at dawn, dusk and night.
- Neuter cats not intended for breeding.
- Create refuges for lizards and small marsupials by placing terracotta pipes and piles of stones in the garden.
- Fence off native habitat to prevent cat access.

Source: www.nationalparks.nsw.gov.au

Objective 3 – Identify noxious weeds and manage them in accordance with their classification

The invasive nature of noxious weeds makes on-farm management a critical part of any regional control strategy. Weeds can lower the productive capacity of land, impact on water quality, displace native species, replace desirable species, harbour feral animals and be detrimental to health (through allergic and respiratory illnesses).

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

- Be familiar with the noxious weeds listed in the local control area, in particular alligator weed, parthenium weed, scotch thistle, silverleaf nightshade, devil's claw, spiny burr grass, Johnson grass and onion weed.
- Look for noxious weeds during regular farm/pest inspections and have suspicious plants identified by local council or NSW DPI.
- Destroy, suppress or contain noxious weeds in accordance with their classification (**Note** that W1 weeds **MUST** be reported to local council).
- Identify opportunities for the spread of noxious weeds (either via seed, stem, or root material) and adopt management practices to prevent this occurring, eg:
 - decontaminate boots, machinery and vehicles before moving to another site
 - suppress or destroy weeds before seed heads mature
 - do not cultivate weeds that spread by root and stem material (eg silverleaf nightshade).

In focus – Alligator weed

Alligator weed is proclaimed noxious throughout NSW under the *Noxious Weeds Act 1993*. Infestations must be reported to local council so that control measures can be undertaken. It is an offence to spread alligator weed. Fines up to \$5000 can be imposed. In 1994 alligator weed was found in Barren Box Swamp near Griffith. It has also been found in the Wah Wah Main Canal, Barren Box Outfall Canal, Corynnia Channel, Wah Wah Channel No. 1, Wah Wah Channel No. 18, and the by-wash area between Willow Dam and Barren Box Swamp.

Alligator weed normally grows from a small piece of stem as a free floating raft or with roots attached to the soil. Alligator weed growing on land is more difficult to control because of its dense underground root system. It is spread mainly by the movement of plant fragments - small pieces float down waterways or are carried by animals.



Accidental spread on machinery, boats or in soil or hay easily introduces the plant to new areas.

Prevention of spread

1. Be aware of alligator weed – the threat it imposes and how it is spread.
2. Identify alligator weed – know what it looks like and look for it. Check channels, borrow pits, swampy areas and inlets into irrigation bays. Have suspicious plants identified by local council or NSW DPI.
3. Notify local council – all outbreaks **MUST** be reported
4. Clean all machinery and vehicles thoroughly if moving from an infested area (includes boats, motor vehicles, channel cleaning equipment, cultivators).
5. Avoid entering areas infested with alligator weed.

Key legislation and codes of practice

- *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth)
- *Threatened Species Conservation Act 1995* (NSW)
- *National Parks and Wildlife Act 1974* (NSW)
- *Rural Lands Protection Act 1998* (NSW)
- *Noxious Weeds Act 1993* (NSW)

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.

More information

Key contacts

NSW Department of Primary Industries (Griffith)	02 6960 1300
Murrumbidgee Irrigation	02 6962 0200
Rural Lands Protection Board (Wagga Wagga)	02 6923 0900
Rural Lands Protection Board (Narrandera).....	02 6959 2322
Griffith City Council.....	02 6962 8100
Leeton City Council	02 6953 2611
RSPCA	02 6921 1120
NSW DPI - Fisheries & aquaculture	02 6959 9021
Murrumbidgee Landcare Incorporated	02 6925 7718
Greening Australia	02 9560 9144

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
CSIRO Entomology	www.ento.csiro.au
Cooperative Research Centre for Viticulture.....	www.crcv.com.au
CropLife Australia	www.croplifeaustralia.org.au
Department of Environment, Water, Heritage and the Arts	www.environment.gov.au
Environment Protection and Heritage Council	www.ephc.gov.au
NSW DPI	www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds
NSW DPI - Fisheries & aquaculture	www.dpi.nsw.gov.au/fisheries
NSW Landcare	www.landcarensw.org
Murrumbidgee Irrigation	www.mirrigation.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.rlpbnsw.org.au
Land & Water Australia - River Landscapes	www.rivers.gov.au

Best Management Practice checklist for pests & weeds 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 An Integrated Pest and Disease Management strategy is devised annually and critical pest thresholds are agreed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Key monitoring sites are identified and visited at critical times (based on pest life cycle and disease risk conditions).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Action is taken in response to critical pest/disease thresholds with biological control and “soft chemicals” the first choice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Pest native species are managed with the advice of the National Parks and Wildlife Service. Permits for culling are obtained where required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Records of monitoring activities are kept and used to prepare the following season’s pest management strategy. Records identify target species, disease thresholds, monitoring sites, control measures adopted and their effectiveness.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Feral animals that have been declared noxious (rabbits, wild dogs, wild pigs, carp) are suppressed and destroyed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 Other feral animals (red fox, cats) are managed to reduce their environmental impacts (eg warren ripping, strategic baiting with advice from Rural Lands Protection Board).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Farm animals (particularly cats) not intended for breeding are neutered and unwanted litters are humanely destroyed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 Noxious weeds are identified and managed in accordance with their classification (W1 are reported to local council).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10 All farm workers and contractors follow hygiene practices to limit the spread of noxious weeds (eg boots, equipment and vehicles are decontaminated before moving to another site).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>