



Control weeds

AHCPMG301A

By the end of this topic, you should be able to:

- Assess weed infestation
- Plan control measures
- Implement control measures
- Monitor control measures

- Plants are exposed to a range of organisms:
 - Beneficial organisms, which benefit the growing process (e.g. pollination, maintenance of soil health, controlling pests)
 - Pests
- For example:

Beneficial organisms	Pests
• Beetles • Caterpillars • Some insects • Moths • Spiders	• Birds • Diseases • Some insects (e.g. aphids, dung beetles) • Mites • Weeds

What are weeds?

- Weeds are a major threat to the natural environment
 - They compete with plants for space, light, nutrients and water
- Weeds may have varying lifecycles:

Annual	Live for one year Produce by seed
Biennial	Live up to two years Produce by seed
Perennial	Live for two years or more Produce by seed or vegetative propagules

- As outlined by the *Australian Weeds Strategy*, weeds are plants that require some form of action to reduce their effects on:
 - **Economy**
 - It is estimated that weeds cost Australian farmers around \$1.5 billion a year in weed control activities and a further \$2.5 billion a year in lost agricultural production
 - **Environment**
 - Major weed invasions change the natural diversity and balance of ecological communities
 - **Human health**
 - Parthenium weed, Ragweed, Rye grass and Privet cause asthma and other respiratory problems
 - Water weeds (e.g. Water hyacinth and Cabomba) can affect the quality of drinking water
 - **Amenity/aesthetics (i.e. the pleasantness or attractiveness of a place)**
 - Populations may grow unchecked to the point that they become so widespread

Impact of weeds

- Weeds affect a range of areas, including commercial crops, gardens, turf and natural areas.
- Some examples include:



Prickly acacia
Acacia pulchella

Affects natural areas



Nutgrass
Cyperus rotundus

Affects gardens and
turf



Barnyard grass
Echinochloa colona

Affects commercial
crops



Lantana
Lantana camara

Affects natural areas

Impact of weeds

- Weeds affect a range of areas, including commercial crops, gardens, turf and natural areas.
- Some examples include:



Onion weed

*Nothoscordum
inodorum*

Affects gardens



Milk thistle

Silybum marianum

Affects natural areas



Bindii

Soliva sessilis

Affects gardens and
turf



Common sowthistle

Sonchus oleraceus

Affects commercial
crops

- All States and Territories have worked together to identify the 32 worst invasive plants, known as the weeds of national significance (WoNS)
 - These weeds cause major economic, environmental and/or social and cultural impacts in a number of states/territories and have strong potential for further spread
- The model used by the Australian Weeds Committee to rank species:
 - $\text{Ranking} = (\text{Invasiveness} + \text{Potential for Spread}) \times (\text{Impacts} + \text{Socioeconomic \& Environmental Values})$, with equal weighting given to these four criteria

- WoNS initiatives aim to:
 - Encourage a collaborative, national approach to controlling infestations
 - Increase awareness of WoNS species and their impacts
 - Increase accessibility to weed information, including best management practices

- Noxious weeds are controlled and/or managed under state/territory legislation
 - However, the different state governments may have differing classifications for weeds
- In Queensland, the *Land Protection (Pest and Stock Route Management) Act 2002* imposes a legal responsibility for control of declared 'pest plants' by all landowners on land under their management

- Declared plants of Queensland are categorised as follows:

Class 1

- One that has the potential to be come a very serious pest in Queensland in the future.
- All landholders are required by law to keep their land free of Class 1 pests.
- It is a serious offence to introduce, keep, release or sell Class 1 pests without a permit.

Example: Mexican feather grass



- Refer to [this document](#) for a list of Class 1 plants

- Declared plants of Queensland are categorised as follows:

Class 2

- One that has already spread over substantial areas in Queensland, but its impact is so serious that we need to try and control it to avoid further spread.
- All landholders must try to keep their land free of Class 2 pests and it is an offence to possess, sell or release these pests without a permit.

Example: Parthenium



- Refer to [this document](#) for a list of Class 2 plants

- Declared plants of Queensland are categorised as follows:

Class 3

- One that is commonly established in parts of Queensland.
- Landholders are not required to control a Class 3 declared pest plant on their land unless a pest control notice is issued by a local government.
- It is an offence to supply a Class 3 pest.

Example: Cat's claw creeper



- Refer to [this document](#) for a list of Class 3 plants

- What should you do if you find weeds?
 - Visually identify the weed
 - If the weed is not immediately apparent, send a sample to a horticulturalist, herbarium or weed spotter
 - Record details about the weed on a report form, identifying
 - Weed location
 - Area covered: L x W (m²)
 - Percentage covered
 - Beneficial organisms in the area
 - Potential threats the weed/s pose to surrounding environment

- The Australian Weeds Strategy identifies the following goals and objectives:
 - Preventing new weed problems
 - Reducing the impact of existing priority weed problems
 - Enhancing Australia's capacity and commitment to solve weed problems

- When preparing to control weeds, you should undertake the following:
 - Identify requirements (e.g. tolerable levels of weed infestation) by referring to:
 - Your client
 - Weeds may exceed the client's aesthetic threshold (i.e. weeds lower the appearance of the area)
 - For example: Nut grass present on a manicured turf area; Sow thistle in garden beds
 - The market
 - Weeds should be treated when they exceed the economic threshold (i.e. weeds interfere with the utilisation of the area)
 - For example: Cobblers peg; Lantana
 - Environmental requirements
 - Weeds should be treated when they exceed the environmental threshold (i.e. weeds threaten the native plant population)
 - For example: Rubber vine on trees; Mother of millions; Water hyacinth
 - IPM requirements

- When preparing to control weeds, you should undertake the following:
 - Familiarise yourself with the work area
 - Identify any WHS hazards and assess risks (e.g. manual handling injuries)
 - Identify environmental hazards (e.g. damage to flora/fauna, waste)
 - Collaborate with others, as necessary:
 - As required, ask questions and seek clarification – applying active listening
 - Report hazards to your supervisor within a timely fashion – especially emergency situations

Workplace risk assessment

- Risk is measured in terms of the seriousness of the possible **consequences** of the hazard and the **likelihood** that those consequences will occur, as in the matrix shown below:

Likelihood

- 1: Very Likely
- 2: Likely
- 3: Possible
- 4: Unlikely
- 5: Very Unlikely

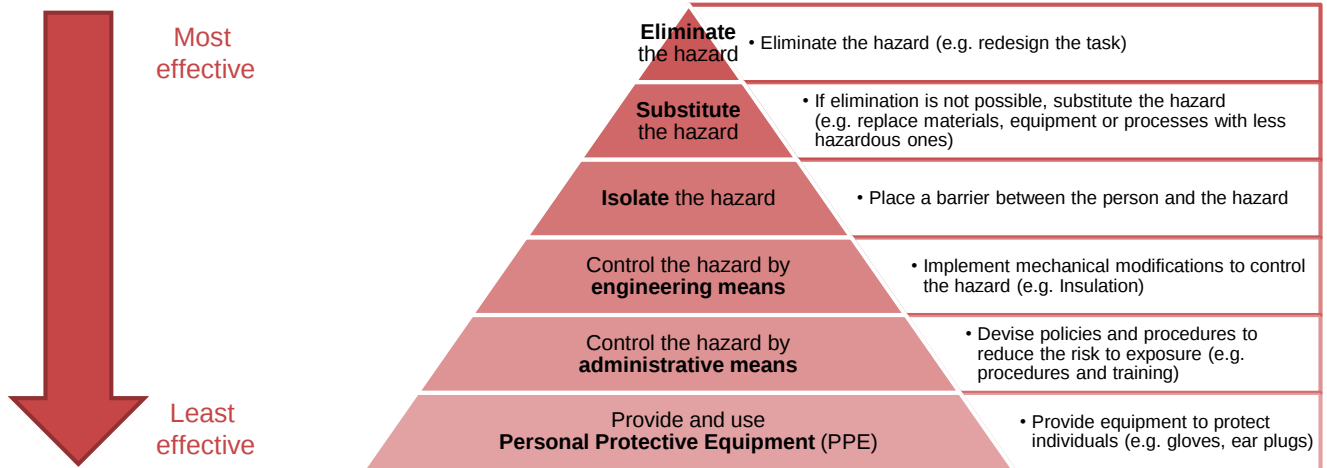
Consequences

- A: Death or Permanent Disability
- B: Serious Injury
- C: Lost Time Injury
- D: Casualty Treatment
- E: First Aid

Matrix	A	B	C	D	E
1	E	E	H	H	M
2	E	H	H	M	M
3	H	H	M	M	L
4	H	M	M	L	L
5	M	M	L	L	L

Workplace risk control

- The hierarchy of control gives priority to the order in which hazard and risk controls should be implemented.



- There are a range of different treatment options, including:
 - Cultural
 - Involves manipulating farming practices to suppress weed growth and production, while promoting plant development
 - Biological
 - Makes use of the weed's naturally occurring enemies, such as insects and pathogens (e.g. fungi and bacteria)
 - Chemical methods (i.e. herbicides)
 - These have varying modes of action:
 - May speed up, stop or change the plant's normal growth patterns
 - May dry out the weed's leaves or stems
 - May cause the weed drop its leaves
 - Can be selective (affects particular weeds) or non-selective (affects all plants)

- There are a range of different treatment options, including:
 - Genetic
 - Planting pest-resistant varieties
 - Mechanical
 - Includes the use of covers/screens and vacuums
 - Physical
 - Includes hand weeding, slashing, burning, cutting, ripping

Treatment options

- Chemical treatment options are selected based on the type of pest.
- For example:

Herbicide	Used to kill unwanted plants
Insecticide	Used for killing insects
Pesticide	Used to attract and then destroy/mitigate pests

- When preparing, handling, using and disposing of chemicals, refer to the following documents:
 - Product labels for active constituent details and application information
 - Safety Data Sheets (SDS) for hazard/risks and safe usage information (e.g. handling, transport, disposal, emergency and spill requirements)
- Be aware of signage/labels, such as:



Acute toxicity



Corrosive



Flammable



Danger to
human health



Warning

- Integrated Pest Management (IPM) involves a range of methods to stop pests.
- Integrated Pest Management involves using more than one method to control a particular problem
 - The aim is to lower long term risks to the environment (e.g. chemical resistance)
 - Well considered IPM is generally more cost-effective in the long run as well

Treatment options

- A range of equipment can be used for applying weed treatments:

Technique	Equipment
Chipping/grubbing out	• Hoe, shovel
Cutting/pruning and painting	• Loppers, saw or secateurs • Paint brush or spray bottle
Manual removal	• Gloves, knife, trowel
Mechanical removal	• Brush cutter, chainsaw, slasher, tractor
Spraying	• Hand-held pump spray unit or splatter gun
Stem injection	• Drill or small axe • Herbicide container with narrow nozzle
Stem scraping	• Knife • Paint brush

- Follow the steps outlined below to control weeds:
 - Use Personal Protective Equipment (PPE), such as:
 - Gloves
 - Face shield
 - Goggles
 - Protective clothing
 - Work boots

Select PPE in accordance with workplace policies and procedures, SDS and chemical product labels

- Follow the steps outlined below to control weeds:
 - Prepare and apply treatment methods
 - Follow environmental requirements
 - Apply chemicals only when weather conditions are ideal
 - Protect non-target plants with guards or shields
 - Substitute less toxic chemicals
 - Observe re-entry periods
 - Follow WHS requirements
 - Training/manual for instructions on safe calibration and equipment use
 - Obey withholding periods to ensure chemical product integrity is maintained

- Equipment is calibrated in varying ways. For example:

Backpack sprayer

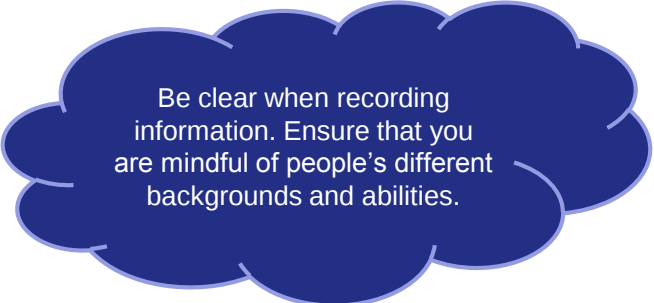
- Fill tank with water, closing caps taps and lids
- Pump the handle to pressurise the tank
- Look for leaks
- Check the spray stream, making adjustments as required to avoid spray drift

Boom spray

- Clean the filter/nozzles/tank
- Check the pump and pressure gauge
- Fill the tank with clean water and prime the spray unit
- Measure and perform calculations
 - Swath width
 - Liquid put out by single nozzle
 - Liquid put out by all nozzles combined
 - Time take to travel 100m
 - Spray application rate
- Calculate the amount of fertiliser you need to add to the tank

- Apart from eradicating weeds, treatments may have a range of other unwanted effects, including:
 - Chemical spillage
 - Surface run-off
 - Changes in soil structure
 - Soil contamination
 - Leaching and contamination of the water table
 - Reduction in habitat
 - Spray drift and damage to off-target organisms/produce
 - Unwanted consequences for humans and animals

- The law requires a number of records need to be kept when treating weeds, including:
 - Name of operator
 - Treatments applied
 - Date/time and location of application
 - Rate of application
 - Equipment settings
 - Weed numbers
 - Numbers of beneficial organisms
 - Accident and dangerous occurrence reports



Be clear when recording information. Ensure that you are mindful of people's different backgrounds and abilities.

Refer to the relevant legislation for your state.
For example, in Queensland refer to the *Agricultural Chemicals Distribution Control Act 1966* (Qld)