Weed Control Methods

Weed management is an ongoing issue for many landholders. Selecting the appropriate method is important to achieve good weed management outcomes and to optimise use of time and money. There are a number of commonly used methods for environmental weed control. This Note provides basic information on the procedures involved and is useful when developing a weed management plan. For information on developing a plan refer to *Land for Wildlife Note EW1 - Weed Management Plan*. It is important to remember that ongoing control work and maintenance is likely to be required for any of these methods to successfully control weeds.

Velvety Tree Pear can be controlled by foliar spray, stem injection or manual removal.

Getting to know your weeds

It is important to learn as much about weeds and their life-cycle as you can. Weed fact sheets are readily available from your Land for Wildlife Officer, Council or Biosecurity Queensland to help identify individual weed species, life cycle and methods of control.

Methods of weed control

Five main methods of weed control as discussed in this Note.

1. Manual/hand removal

This method aims to remove the entire weed including its roots from the soil by hand pulling. This method is useful for small-scale infestations, or with a team of workers and is best done after rain when the soil is moist. It is not appropriate for all weed species such as those with underground bulbs. Hand tools such as broad knives and trowels can be used to remove underground parts of weeds that may reshoot. Gloves are essential as some weeds have harmful sap or thorns.

2. Mechanical

Some weeds can be controlled or suppressed by mechanical means such as slashing and ploughing. Machinery is usually only used at large accessible sites. Slashing can help keep down competitive weeds between rows of planted trees until the seedlings form a canopy.

3. Chemical control

In some situations, the use of herbicides offers the only practical and selective method of managing certain weeds. Herbicide applications are usually cost-effective. It is important to use the correct product and application rate as a specific weed may only be susceptible to one particular herbicide. A common mistake is using inappropriate products because they are the cheapest option.

It is extremely important to read and adhere to the information contained on the herbicide label. Using stronger or weaker dosages can reduce effectiveness.

There are two types of herbicides: **broad spectrum** - these work on a wide variety of plants, and **selective** - these work on a narrow range of plants. Herbicides can act in three different ways:

- **Contact** - these kill plant tissue at or near the point of contact (they do not move throughout the plant).
- **Systemic** - these move through the plant tissues via the plant's circulation system, and these can be injected into the plant.
- **Residual** - these can be applied to the soil in order to kill weeds by root uptake. They remain active in the ground for a period of time and can control germinating seedlings.

Use of herbicide: safety precautions

- Always read the label before opening the container and follow the instructions exactly.
- Wear protective clothing: long sleeves, long pants, sturdy shoes, gloves, a face mask and eye protection.
- Always wear waterproof gloves.
- Wearing a respirator or a face mask is advised when mixing or pouring liquid herbicides and when spraying.
- Do not eat, drink or smoke while using herbicide.
- Do not use herbicides in wet weather as it is less effective and may kill non-target plants.
- Keep children and pets away.
- Wash skin and equipment afterwards. Wash contaminated clothing separately.
- Clean up any spills, including on your skin, with large amounts of water, or by shovelling contaminated soil and disposing of it in an approved manner.

Foliar spraying

Herbicide is diluted with water at the label specified rate and sprayed over the foliage until every leaf is wet, but not dripping. This method is most suited to shrubs, grasses and dense vines less than six metres in height. Advantages include speed and cost effectiveness. Disadvantages include the potential for spray drift, off-target damage and the limited reach of the equipment.

A number of techniques for foliar spraying can be utilised; the most appropriate will depend on the weed species and size of the infestation. A hose and handgun can be used to spray herbicide from a tank and pump carried by a motor bike, ute or tractor for large infestations. For smaller and less accessible areas a backpack/knapsack spray unit or a splatter gun can be used.

Basal bark spraying is an effective method to use for controlling woody weeds with a trunk up to ten centimetres in diameter. It involves mixing an appropriate oil-soluble herbicide in diesel and carefully spraying a 30-40 cm band around the base of each stem making sure that complete coverage is achieved. Basal bark treatment is an effective way to treat thin barked woody weeds, saplings, regrowth and multi-stemmed shrubs and trees. This technique is a good way to tackle weeds in areas with limited accessibility, such as steep banks. The basal bark method of control leaves the root system of the plant in place (even though it is dead) which helps minimise potential soil erosion in steep areas.

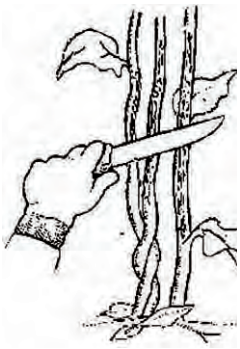
Stem injection or frilling involves cutting or drilling through the bark into the sapwood tissue of woody weeds and trees. Cuts are made around the stem or trunk with an axe or holes drilled at regular intervals leaving a gap of 2-5 cm between each cut or drill hole. Herbicide is immediately injected into each hole or cut after it is made. The aim is to place the chemical in the sapwood layer just under the bark, enabling it to be transported throughout the plant. Herbicide is often applied using a backpack reservoir and syringe that can deliver measured doses of herbicide solution. The stem injection method kills the tree or shrub where it stands, and only trees and shrubs that can be safely left to die and rot should be treated this way.

A number of chemicals are available for stem injection treatment of weeds. Check with your local farm supplies agent, agronomist or Land for Wildlife Officer as to the most appropriate chemical to use for your needs.

Drawings of various control methods (above and on opposite page) are reproduced from Living in the Landscape - the Lockyer Valley. SEQ Catchments 2009.

Morning Glory is a vigorous climbing environmental weed that smothers native vegetation.

Cut stump can be used for controlling a wide range of woody weeds. Cut each stem off as close as possible to the ground using a handsaw, chainsaw, brushcutter, machete or secateurs. **Immediately** (within 15 seconds) apply a suitable herbicide (e.g. glyphosate) mixture liberally to the cut surface paying particular attention to achieving good coverage around the outer edge or cambium layer. The objective with this technique is to kill the stump and the root system. Two operators working as a team can carry out this method very effectively. It is a good idea to use a brightly coloured dye in the herbicide to mark the stumps so you can tell which have been treated. This method has the benefit of removing the weed immediately and is used mainly for trees, woody weeds, shrubs and vines.



Stem scrape and paint is a useful technique to use on vines and scrambling plants with a woody stem. Starting at the base, use a sharp knife and scrape 15-30 cm of one side off the stem to expose the sap layer taking care not to ringbark the stem. **Immediately** apply a suitable herbicide to the scraped area. Stems greater than one cm can be scraped on two sides. Stem scraping can also be used for vines with aerial tubers (e.g. Madeira Vine).

Wick applicators apply herbicide via a wick or rope soaked in herbicide from a reservoir attached to a handle or assisted with a 12 volt pump. The wetted wick is used to wipe or brush herbicide over the weed. There are several commercially available wick applicators. This method is most suitable for targeting taller plants while leaving more desirable low-growing species unaffected.

Madeira Vine is a difficult weed to control due to its aerial tubers, but combining stem scrape and manual removal has proven to be successful.

4 . Biological control

Biological control can be used in an integrated weed management program. Biosecurity Queensland undertakes research into biological weed control and their website contains information on research projects about specific weed species.

5. Other control methods

Fire can be a useful technique for weed management but it needs to be used careful as some native plants will die when exposed to fire and some weeds actually benefit from fire. Using fire at times when weed seeds are developing or ripening can help prevent the release of seeds; however, timing of the burn is critical. Fire is most effective with annual weeds that depend on each season's seed crop. It can also be a useful way to reduce the bulk of a plant so that the plant can be treated more effectively using other control methods.

The use of fire as a weed control method requires detailed planning and all relevant permits and approvals must be obtained.

Moisture and nutrient manipulation can be used to stress some weeds. Some weed infestations occur due to water runoff where extra nutrients from gardens, paddocks or drains are carried in the water. If this nutrient supply is prevented, weeds are less likely to thrive. Covering weeds with mulch, newspaper or black plastic are other ways of altering the growing environment for the weed and will usually prevent weeds from germinating. This method is only suitable for small infestations.

Over-planting with local native species is a long-term weed control strategy. The objective is to establish a canopy which will shade out and out-compete weeds. This method is usually combined with other weed control measures.

Competitive grazing using livestock to eat and trample weeds can be an effective method of suppressing weeds. Commonly called 'crash-grazing', this method should only be used in fenced areas and for short durations.

The growth of these Cat's Claw Creeper plants (shown left) is being slowed by a biological control agent - a leaf-sucking tingid bug.

What you can do

- ✓ Identify weeds present on your property.
- ✓ Seek weed management advice from your Land for Wildlife Officer.
- ✓ Prepare a weed management plan.
- ✓ Identify the most appropriate method of weed control for your situation.
- ✓ Follow-up all treated areas on a regular basis – maintenance is critical.
- ✓ Wear protective clothing and follow manufacturers directions when using chemicals.

References and further reading

Biosecurity Queensland (Dept of Employment, Economic Development and Innovation) - www.dpi.qld.gov.au/4790.htm

Vines of the Moreton Bay region - Available from www.moretonbay.qld.gov.au

Some equipment for small-scale foliar spraying are illustrated here.

At this site shown above, lantana is being controlled manually. It is left to decompose on the ground helping form a layer of mulch to protect the soil on the steep slope.

Cut stump is a very effective method for controlling a range of woody weeds. It is important to apply the herbicide within 15 seconds of cutting the stump so that the chemical is transported into the roots.

Land for Wildlife is a voluntary program that encourages and assists landholders to provide habitat for wildlife on their properties. For more information about Land for Wildlife South East Queensland, or to download *Land for Wildlife Notes* free of charge, visit **www.lfwseq.com.au**

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