Weed management techniques

Factsheet 2019

There are a number of effective techniques available to manage weeds, which take into consideration the species, the landscape it is in and how much is present.

Long-term weed management is best achieved by integrating a number of appropriate methods with other land management practices such as revegetation or pasture improvement.

Successful implementation of integrated weed management requires long-term planning based on knowledge of the life cycle of the weed, control methods and environmental variables such as climate, soil and surrounding vegetation.

Regular monitoring and follow-up is essential to evaluate progress and to allow actions to be adapted for greater efficiency.

Manual (non chemical) control

Hand pulling

Hand pulling needs to be done carefully to ensure there is a minimum of soil disturbance. Many weeds flourish when soil is disturbed.

Removal of small weeds can be achieved by placing one hand flat on the ground with the weed between two fingers. As the hand is pressed toward the ground the second hand can carefully remove the weed.

If soil is disturbed it should be tamped back in place to minimise the opportunity for another weed to become established.

The same principle is used when removing slightly larger weeds like young pine trees. In this situation the weed can be removed by hand with minimal disturbance by placing a foot either side of the stem base, bending the knees and using the legs to pull the plant out gradually with both hands grasping the stem.

Pulling weeds by hand should only be done when soil is relatively moist. If the soil is too dry, it will be excessively disturbed or the plant may break away from the roots resulting in regrowth later in the season. When soil is dry, weeds should be cut and swabbed using the method described later in this fact sheet.

Natural Resources Centres provide tree poppers at no cost for short-term hire. They work as a lever, making it easier to remove weeds. Please contact your local centre to book a tree popper.

Slashing

Slashing can be used on annual and perennial weed grasses and shrubs. When using this method, care needs to be taken to minimise damage to herbaceous native plants. Slashing can be undertaken using a tractor, brushcutter or, in sensitive areas, using hedge shears.

Annual grasses should be high slashed (10 cm above ground) before seed heads start to develop, typically in late winter and may require follow-up slashing after 4-6 weeks. As they are annuals, preventing the production of seed will ensure their seedbank will diminish with time.

Perennial grasses can be slashed at any time of year, however best results will be obtained during winter and spring.

Chemical control

The following weed management techniques rely on the effective use of herbicides. It is important to choose the correct method for different types of weeds and to ensure that the correct rate of herbicide is used.

When using herbicides, ALWAYS follow the instructions on the label.

Slash and spray

It is often more effective with tall herbaceous plants, such as grasses, and some woody weeds to first slash the area and only spray the re-growth. Allow 3–4 weeks for new lush growth and then spray. Most chemicals works best when plants are healthy and actively growing. By removing dry stems and forcing the plant to put on new growth the uptake of herbicide will be improved.

This method has the added benefit of opening up the space and improving access, and can result in less herbicide being used.

Cut and swab

The cut and swab technique is often used when a weed is too large, such as trees or shrubs, or the soil too dry for hand pulling.

This method is best carried out by two people. One person cuts the stem close to the ground (Figure 1), the second quickly applies herbicide to the exposed stump (Figure 2).

The herbicide needs to be applied immediately as some weeds begin sealing wounds within seconds, which reduces the absorption and effectiveness of herbicide.

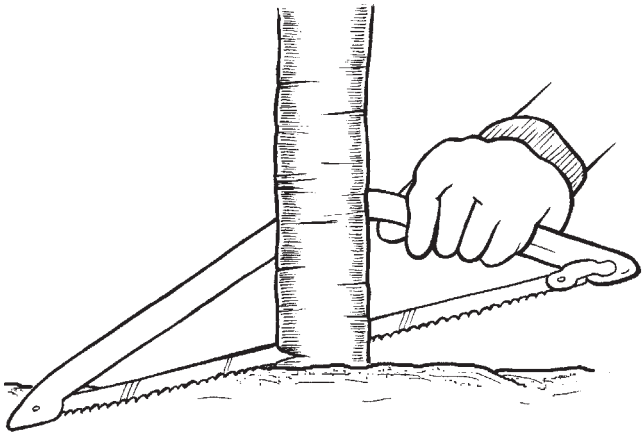

Figure 1: Cutting the stem close to the ground

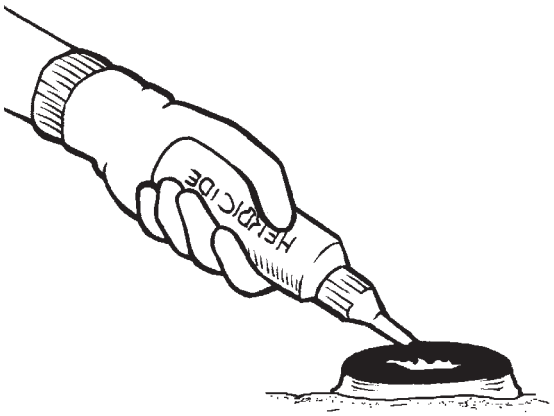

Figure 2: Applying herbicide to the freshly exposed stump

Stem and tree injection

For larger trees and shrubs, with trunks or stems that cannot easily be sawn through, tools such as hand or power drills or hatchet can be used to gain access to the cambium layer (where sap flows just beneath the bark layer) (Figure 3). Two broad types include drill and fill and frilling or chipping.

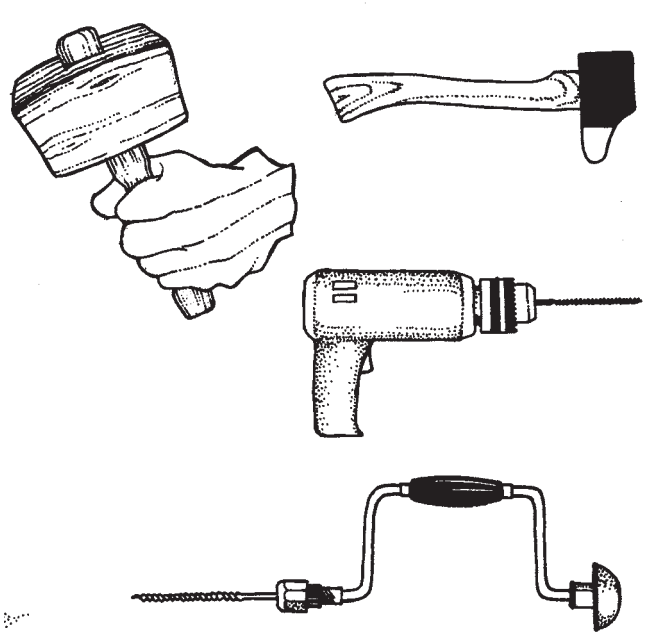

Figure 3: Useful tools for exposing the cambium layer in larger woody weeds

Basal bark treatment

Basal bark treatment is suitable for a number of woody weeds with mainly thin barks. It requires the base of a plant, the trunk and stems to be completely coated to a certain height with the herbicide mix. For detailed information on this method see the *Controlling Wild Olives using the basal bark treatment* fact sheet.

Drill and fill

The drill and fill technique is very useful for large woody weeds. It has been used successfully on a range of large woody weeds, but is best known for killing olive trees.

The drill and fill method, shown in Figure 4, can be used on any woody weeds that have a base 4 cm in diameter or larger.

A drill is used to drill 45 degree holes into the plant's cambium layer. The hole is then immediately filled with herbicide. This is repeated every 2.5 – 5 cm until the base of the plant has been circled. A good rule of thumb is, if you are thinking 'have I done enough drilling' then you probably haven't and you should drill a few more holes to ensure a 100 per cent kill.

The plant drops its leaves within 6 weeks and dies within a few months. It will be necessary to monitor the plant and if it resprouts, the process will need to be repeated. The soil beneath large woody weeds usually contains huge numbers of seeds from the parent plant. These seeds will germinate and, if left untreated, will become a worse problem than the original plant. It is essential that follow-up control of seedlings or regrowth is undertaken in subsequent years.

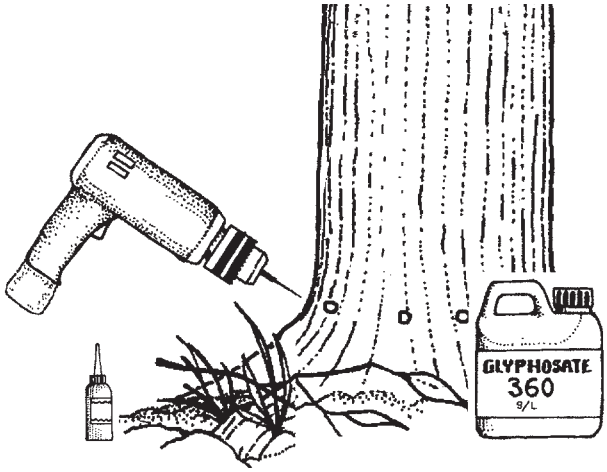

Figure 4: Many holes, 2.5-5 cm apart are drilled into the cambium layer until the base of the plant has been circled

Frilling or chipping

Instead of using a drill, a small hatchet or a chisel with a mallet can be applied to the trunk at a 45 degree angle to frill, or chip, the outer layers of the trunk, exposing the cambium layer (Figure 5).

These cuts must circle the entire trunk, at 5 cm intervals. Ensure that the plant is not ringbarked as herbicide will not be transported into the plant. Herbicide should be immediately applied to the exposed cambium.

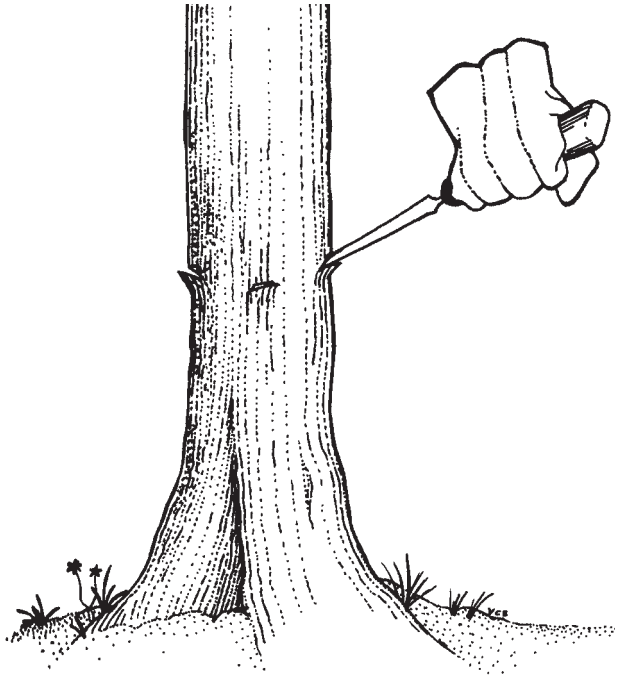

Figure 5: Chip or frill at 5 cm intervals, completely circling the trunk

Cut and swab vs stem or tree injection

There are a number of ecological advantages in using the drill and fill, or frilling/chipping technique over cut and swab.

The primary advantage is that habitat structure remains in place, which allows fauna to continue using the weeds for shelter and to raise their young as the weed dies.

Retaining the structure will give native animals time to re-locate to new areas that provide suitable shelter. In contrast, cut and swab would result in an abandoned nest.

Wiping

Wiping foliage using a weedbrush or tongs (Figure 6) is extremely useful where isolated broadleaf weeds occur in good quality vegetation. This method can also be used on plants with bulbs, tubers or corms.

The weedbrush or tongs are light and easy to carry when walking in bushland. Weeds can be treated immediately, avoiding the need to return at a later time.

It is also useful when there is high risk of off-target damage, e.g. broadleaf weeds occurring amongst native grasses and lilies.

When using the weedbrush, clean water is mixed with concentrated glyphosate. A small amount of dye marker (or food colouring) can also be added.

Directions are clearly labelled on the weedbrush. The brush is then wiped onto the foliage of individual weeds.

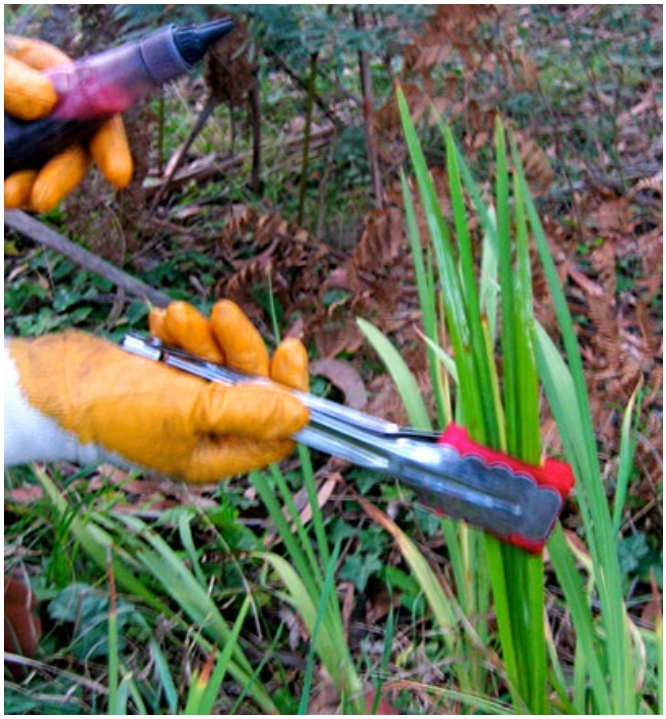

Figure 6: Wiping foliage using tongs

Spraying with herbicide

Blackberry control - spraying pine oil on an organic blueberry farm

Spraying with herbicide is often the most efficient method of removing herbaceous weeds but must be done with care and in the right conditions. Spraying must be done in the correct season when the plant is actively growing and should be avoided in windy conditions. This will also use less herbicide. When spraying, care needs to be taken to minimise off-target damage.

Training in the safe use of chemicals should be undertaken prior to using herbicide. Appropriate safety equipment should always be used to minimise harm to the operator.

Numerous herbicides are available from local hardware shops, however each herbicide has advantages and disadvantages.

Glyphosate

Used carefully and appropriately for bush regeneration, glyphosate-based herbicides are very useful. The main advantages are:

- generally less persistent in soil, although will persist in sand for several weeks
- easy to measure and use
- relatively cheap.

The most important disadvantage with glyphosate is that it is non-selective; it will kill any plant with which it comes into contact. It is essential that correct training in bush regeneration is undertaken before glyphosate is used amongst native vegetation.

When spraying, the manufacturer's label rates should be referenced and used accordingly. If possible, add dye marker to the spray equipment to ensure that weeds are not sprayed twice. This will also help avoid off-target damage and improve personal safety.

Note: glyphosate should not be sprayed in close proximity to any delicate or threatened species to ensure these plants do not become victims of off-target damage.

Other herbicides

Other herbicides may be more selective but have disadvantages such as:

- extended residual life within soils of up to two years; some herbicides can move through soil, killing trees and shrubs some distance away
- measuring small quantities can be difficult, as many are designed for broadacre usage
- toxicity of herbicide may require considerable safety equipment.

Safe use of herbicide

Irrespective of which herbicide is used, anyone who uses or deals with herbicides must read the label to ensure they are familiar with dosage rates and safety requirements. It should be noted that very little information is available on the long-term effects of any herbicide. Caution should always be used.

Great care needs to be taken as it is easy for off target damage to occur. Spray equipment requires very little pressure when spraying weeds in a bushland setting; weeds should not be sprayed past the point where herbicide run-off occurs.

Need more information?

Natural Resources Centres

Eastwood
205 Greenhill Road, Eastwood 5063
T 08 8273 9100

Gawler
43 High Street, Gawler East 5118
T: 08 8115 4600

Willunga
5 Aldinga Road, Willunga 5172
T 08 8550 3400

Black Hill
115 Maryvale Road, Athelstone 5076
T 08 8336 0901

More resources are available at:
www.naturalresources.sa.gov.au/adelaidemtloftyranges

Acknowledgements

This fact sheet provides an overview of general weed management techniques. For more specific weed management advice, contact your local Natural Resources Centre.

All figures provided courtesy of www.weedsbluemountains.org.au

The original fact sheet was funded from the Australian Government's Caring for our Country.