

This fact sheet was prepared with funding from the NSW Environmental Trust, based on a workshop and follow-up guide by Lindy Davis from Mountains to Sea Natural Area Management. It provides basic information and tips to help landholders and local landcare group volunteers do bush regeneration safely and effectively.

# BUSH REGENERATION BASICS

FACT SHEET



## FOLLOW-UP

Whichever techniques you use, follow-up will be essential for a number of years, depending on the weeds present, and the quality of the native vegetation when you started. **Patience, persistence** and **perseverance** are vital to long-term success.

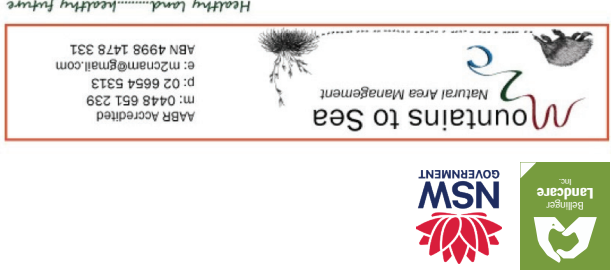
Each time you return to an area previously worked, it will build resilience and require less and less effort to maintain, until it can look after itself.

If you feel overwhelmed, break down your task list and focus on an achievable area using the principles above. If restoring your own land, it can maintain motivation to work with a neighbour or two, in return for help on their properties. You can form a Landcare group on public or private land. Remember contractors can be an excellent investment to help start, or push through, and occasionally funding is available to assist.

*We are saving the earth, one square meter at a time.*

## PROPAGULE MANAGEMENT

A propagule is any part of a plant that will allow it to reproduce (e.g. seeds, bulbs, tubers, nodes, crowns, flowers, fruits and even leaves and branches). Where possible, bag and dispose of propagules in the rubbish or at the tip.  
For heavily infested areas that can be spot-sprayed without risk to native plants, first hand-pull an edge area to clear weeds surrounding the heavy area of infestation.  
Seed can then be removed from weed clumps prior to spraying, so that once treated, seeds do not drop and germinate on the bare ground.  
This will break the weed seed cycle, and eventually exhaust the residual seed in the ground allowing natives to take over. Follow-up control efforts are essential in this process.  
If the weed can't be removed without dislodging the seed, then the entire plant can be bagged and removed from the site, or buried deep and composted on site.



## PERSONAL PROTECTIVE EQUIPMENT (PPE)

**Clothing** should be durable and loose enough to allow free movement and made of natural fibres for comfort when sweating. Many seeds stick to stretch fabrics. Insect repellent clothing or pyrethrum soak for existing clothing is worth considering.  
**Long pants and long-sleeved shirts with a collar** will protect best when moving through brambles and scrub.

**Broad brimmed hats** protect from the sun, and insects or sticks falling inside the collar, and offer some protection to the face from branches or vines. Spraying your hat (before you wear it) with strong insect repellent helps to control ticks.  
**Gloves and Boots** are important, or at least closed shoes.  
**Safety Glasses** should be worn when working in areas with thick understorey. Some professionals use fine mesh goggles that don't fog up when sweating.

Also remember **sunscreen, insect repellent** containing Deet, or another effective chemical, for hats, around ankles, waists and collars. A gentler product containing essential oils can be used on the skin for maximum protection. **Liquid soap** applied directly to the skin may stop leeches.  
**First aid kits**, including a **snake bite kit**, should be available to anyone working in the field. Tick freeze for large ticks and Lyclear for small ones is also important to carry. If you are part of a volunteer group and are anaphylactic, carry an EpiPen and make sure the coordinator on the day knows.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.

On a Landcare site there must be at least two people present. Ideally, do not work alone at home, but if you do make sure someone knows where you are going, and approximately when to expect your return.



# TECHNIQUES FOR WEED REMOVAL

Once you have identified your weeds, the NSW WeedWise app or website can help with specific control measures. Landcare has hardcopies of Weeds of the North Coast of NSW. Here are some general principles to follow:

## MANUAL REMOVAL

Depending on the soil moisture and type of plant, many small to medium weeds can be removed by hand, or with the use of an appropriate hand tool.

## HAND REMOVAL

- Weeding in moist or wet soils after rain events makes hand pulling easier.
- Sit, kneel on one or two knees, or use a lunge position to avoid back strain.
- If weeds are tall enough, bend knees and use thigh muscles to pull. Never pull with straight legs using back muscles.
- Wear gloves to improve grip and avoid injury or irritation to skin.
- Grab low and pull slowly to avoid breaking the stem.
- If a sod of earth comes out with the roots, return it to the hole and shake vigorously before removal. This will minimise disturbance and allow microorganisms to remain in the soil where they belong. It also ensures that the weed will die quickly, rather than continue to produce viable seed.

## CHEMICAL APPLICATION TECHNIQUES.

The following techniques involve the targeted application of herbicide using a dropper bottle containing undiluted glyphosate. Because this is only applied to the living outer layer (the cambium) surrounding the dead heart wood, it minimises the amount of chemical needed, as well as the risk to the user and the natural environment.

When a woody weed is in an area where pulling it could cause erosion (e.g. a sloped creek bank) then it is better to use a method that keeps the roots in place, for example:

### Cut-and-paint

This is used on **larger woody weeds** where total removal of the stem and branches is desired.

Once the plant is sawn through, the stump is treated by applying herbicide to the outer rim only. The dead centre of a woody plant will not transport the poison, so there is no point applying herbicide there.

### Snap-and-paint

**Smaller woody weeds (e.g. younger Ochna)** which can be snapped by hand should have the trunk snapped below any branches, *but not all the way through*.

The cambium needs to remain intact on the underside, so the plant will continue to photosynthesise and drawing up liquid through the plant stem. Apply herbicide to the broken section, as for the cut-and-paint technique. If the weed is multi-stemmed, then each trunk will need to be treated in this way.

### Scrape-and-paint

This is the most effective way of treating many **vine weeds**. Once a vine has been cut from a tree at head height (see “skirting” technique, above) it can be cut again at knee height. Using a knife or secateur blade, scrape the cambium on one side of the stem, along a section of at least 40cm. Immediately and carefully apply herbicide to the scraped area. This is where a dabber bottle is useful, in avoiding unwanted run off.

This also works on woody weeds which are too slender to absorb enough poison at the cut, but too thick to easily snap. A number of scrapes below the stump will help to ensure a good outcome.



## TOOL ASSISTED REMOVAL

- **Serrated knives** can be used effectively for most small annuals and weed grasses, especially if the stem typically breaks when hand pulled.
- By loosening the soil **below the growing tip**, weeds can be more easily removed with minimal soil disturbance, leaving soil in the ground.
- Clumping grasses like weedy Paspalum grasses can be effectively cut with a serrated knife leaving the roots in the ground, which will not grow if cut below the growing tip.
- **Hand trowels** can be used to help loosen running grasses (e.g. Kikuyu grass) and to knock dirt off sods back into holes left by the weeds.
- **Garden forks** can be used to loosen the soil prior to hand weeding to make the job much easier and more effective. (e.g. Buffalo grass)
- **Narrow tree planting shovels** are effective in removing bulbs and tubers (e.g. Formosan Lily) as well as some weed grasses with minimal disturbance.
- **Mattocks** can be effective on some weeds, have the disadvantage of being heavy to use risking back injury, and can sometimes cut through roots (e.g. privet) which can then reshoot from well under the ground.

- **Tree Poppers™** are specialist tools for manual removal of woody plants, vines and shrubs. They come in three sizes, and allow for the effective removal of entire medium sized saplings without strain on the body, eliminating the need for chemicals or motorised machinery. They can be tricky to use, ideally get someone experienced to show you the best method.
- **Closing the wound.** Press the soil back firmly into the hole where a weed has been removed, with either a fist, the heel of the hand, or a boot. If the soil is left open and disturbed it can facilitate the germination of residual or newly arrived weed seed.
- **Skirting** is a method used when a vine is smothering a native tree. Using a pair of secateurs, cut each vine at head height, then again at knee height, removing a one-meter section. Do this systematically right around the tree to every vine which will leave a ‘skirt’. This allows for a quick visual check that all the vines have been cut, and also stops any regrowth of vines to easily climb back up the tree. The thicker, older stems at ground level can then be scraped and painted (see below) while thinner, younger stems can be left, to be sprayed at a later date.

### Drilling (Stem Injection)

This method is best used on **trees**. By leaving a dead tree to breakdown slowly, it not only reduces the shock to the surrounding vegetation but also provides a perch for birds that can drop native seed and enhance natural regeneration.

Using a cordless drill with a 7-10mm bit, drill holes in the trunk about every 15cm (at various heights) on a diagonal angle pointing down. Fill the hole with undiluted herbicide, watching the level to avoid overflow. Treat each trunk of a multi-stemmed plant in the same way, including and where branches connect to the trunk.

An alternative method which is quicker and can be successful, is to drill a single large hole, and fill with undiluted Glyphosate. It may be that the total amount of herbicide, not the number of holes made, which determines success.

### Frilling

This technique uses the same principle as drilling, but uses an electric chainsaw or a handsaw or axe. Cut a series of overlapping V’s into each side of the trunk, so that when the herbicide is applied at the top it runs down and feeds into all the cuts. This method can be quicker than drilling, but is not always as effective and may require follow-up effort, if sections of the tree remain alive.



## HERBICIDE BASED CONTROL

This fact sheet does not cover chemical spraying, which is usually left to professional contractors. However, there are a number of effective techniques that can be used safely and legally by volunteers, to maximise their effort (especially when managing woody weeds and vines). Make sure to read the Safety Data Sheet for the herbicide you are using. You can get a copy where you purchased the herbicide, or online. This guide refers to glyphosate use.

### Herbicide Hygiene

*Dropper Bottles* with screw top lids are most commonly used with undiluted herbicide (e.g. Glyphosate), allowing effective control of application. *Dabber bottles* (flexible neck with sponge applicator) can also be used in some cases, and minimise unwanted runoff.

Always use clean **chemical proof gloves** (PVC, Viton and Nitrile Rubber, not rubber or surgical) in good condition when using, filling or handling applicators or other chemical containers.

**Carry a rag** to keep everything clean, and use coloured marker dye with the herbicide so it can be seen after application. This helps to keep the chemical only where it is needed. If herbicide gets on the skin, it should be immediately removed with a rag then washed off with water. If it gets in eyes, the eye should be immediately washed under running water for 10 minutes and medical attention sought.

**Carry secateurs**, so if herbicide accidentally drips onto a native plant that part of the plant can be pruned immediately and bagged to prevent further damage.

A **one-litre plastic container** (e.g. milk) can be cut to create a carrier that can be threaded onto a tool belt and carried safely away from the body. A rag or a clump of dry grass can be put in the container to stop the herbicide bottle from moving around and catch any drips that may occur. Keep everything clean, mopping up any drips on applicators as they occur, so as to avoid unwanted contamination.

*To the left is a standard bush regenerators kit (secateurs, folding saw, sharp hand shovel) and a milk carton to the right holding the herbicide bottle*