

SARDI Entomology

Guide to using native plants on the Northern Adelaide Plains
to benefit horticulture

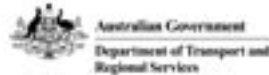


Funding bodies

This document is the result of a project facilitated primarily by Horticulture Australia Limited (HAL) in partnership with AUSVEG through the vegetable levy. The Australian Government provides matching funding for all HAL's R & D activities.

Other funding partners included

The Australian Government Sustainable Regions Programme through the Department of Transport and Regional Services (DOTARS)
Rural Industries Research & Development Corporation (RIRDC)
Natural Heritage Trust and the Australian Government ENVIROFUND
South Australian Research & Development Institute (SARDI)
City of Playford
Virginia Horticultural Centre



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Acknowledgements

This Guidebook has evolved from the SARDI 'Revegetation by Design' project that began in February 2003. It contains information collected over the subsequent six years of designing and planting native revegetation plots in the horticultural region of the Northern Adelaide Plains, and studying the insects associated with these plants.

The preparation of this guide, and the technical program that underpinned it, captured a wealth of experience from the following people: Glenys Wood, Richard Glatz, Helen DeGraaf, Peter Taverner, Nancy Schellhorn, Gitta Siekmann, Kelly Bailey, Claire Stephens, Gabriella Lankin Vega, Bill Doyle, Domenic Cavallaro, Stacey Brouers, Mario Niesingh, Nick Stevens, Julie Lindner, Judy Bellati, Nola Lucas, Kym Perry, Susan Ivory, Karen Geyer and Nathan Luke.

Front Cover:

Fruiting Fragrant saltbush (*Rhagodia parabolica*) plants established after revegetation of weed-infested land adjacent to horticultural production facilities on the Northern Adelaide Plains.

Design: janinemackintosh.com.au

Printing: digitalprintaustralia.com

Paper: Sustainable Forest Management and Environmental Management ISO14001 and Elemental Chlorine Free.

SARDI Sustainable Systems, Entomology 2009 ©



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Introduction

Current horticultural pest-management systems on the Northern Adelaide Plains rely heavily on the use of insecticides and the establishment and maintenance of bare-earth buffers around production facilities. Apart from having a huge negative impact on biodiversity, these strategies are unsustainable due to insecticide resistance appearing in various pest insect species.

The research that underpins this guide was aimed at improving the sustainability of horticultural systems through altering the environment to inhibit Western flower thrips (WFT) and other pest thrips which transmit an important vegetable virus, the Tomato Spotted Wilt Virus (TSWV). Research has shown that there are a

range of native plant species which do not harbour TSWV and on which pest thrips are rare. By contrast, weeds that usually grow on disturbed land around production facilities (such as various Brassica weeds), harbour large numbers of thrips and are known to be a source of TSWV.

It follows, therefore, that using these native plant species to replace weeds growing adjacent to horticulture, could be a low-tech and relatively cheap approach to sustainable reduction of horticultural pests and diseases. This would provide a range of ongoing benefits including potential reductions in pesticide use and associated resistance issues, and improved regional aesthetics/public amenity. In addition, it may provide natural resource managers with the tools to improve native biodiversity in a way that helps sustainable food/seed

production. Importantly, we have identified a range of useful native insects (eg. parasites and predators) from among the biodiversity associated with native plants we have planted. These insects may also help control nearby horticultural pests, a service we are currently investigating using our experimental revegetation sites.

The guide contains a brief discussion of the usefulness of the native plant species with respect to horticulture, followed by six steps to undertaking revegetation on horticultural properties. After these steps, we provide information about suggested native plant species and suppliers.

We hope this guide will prove useful as a simple starting point for those who wish to have their own native plant refuges that will inhibit pest thrips and TSWV, while supporting a diversity of



potentially beneficial insects. Users of this guide do not need a good pre-existing knowledge of native plants or revegetation. While the guide does not discuss all methods for revegetation, it summarises the methods we have found useful on the Northern Adelaide Plains and will provide a starting point for plantings to benefit your horticultural production. Although we have chosen native plant species aimed at revegetating degraded lands near horticulture, the methods herein can be applied more broadly to other native species and revegetation for a range of different applications.

Why plant native vegetation on your property?

Introduced weeds are an on-going problem on horticultural properties since they provide refuge and perfect breeding conditions for pest insects. The most damaging of these is the Western flower thrips (WFT) which was introduced to Australia in 1993. It can establish very large populations in stands of introduced weeds and then move into your crop and spread disease. This thrips is the major vector for the Tomato Spotted Wilt Virus (TSWV) which decimates a wide range of greenhouse vegetable crops.



Western flower thrips (*Frankliniella occidentalis*)



Wild raddish (*Raphanus raphanistrum*) is a common introduced weedy host for thrips and virus. It quickly establishes on bare earth and in other disturbed areas.



Tomato Spotted Wilt Virus causes production losses in many crops such as Capsicums.

This guide is to help you make a revegetation plan to suit your property. Good planning will save time and money for years to come.

Management of weeds is recognised as an important step in controlling thrips populations on a horticultural property.


Many people attempt to do this by using herbicide to remove all vegetation from around crops. However, controlling weeds by maintaining bare earth requires vigilance and a sustained effort that uses both your time and other resources. This approach is also environmentally damaging as it removes native plants and animals. In addition, we know it is not very effective as pest thrips are still trapped in bare-earth buffers.



Repetitive herbicide spraying costs you time and money, and increases herbicide resistance in weeds. Pest thrips are still present in this environment.



Common introduced weeds: Marshmallow (*Malva parviflora*; top) and Common sow thistle (*Sonchus oleraceus*; above). The management of weeds is an important step in reducing thrips populations on horticultural properties.



An alternative option is to replace the weeds with native perennial vegetation that out-competes weeds, does not support the breeding of Western flower thrips and does not harbour Tomato Spotted Wilt Virus.

Fragrant saltbush (*Rhagodia parabolica*) planted 4 years ago as a buffer adjacent to horticultural production on the Northern Adelaide Plains. Established perennial native vegetation out-competes weeds providing a reduction in thrips populations and virus in the surrounding environment.



Native vegetation can rapidly grow to cover areas previously filled with weeds. These Ruby saltbushes (*Enchylaena tomentosa*) were planted 4 years ago on weed-mat with 1.5 metre spacing between plants.



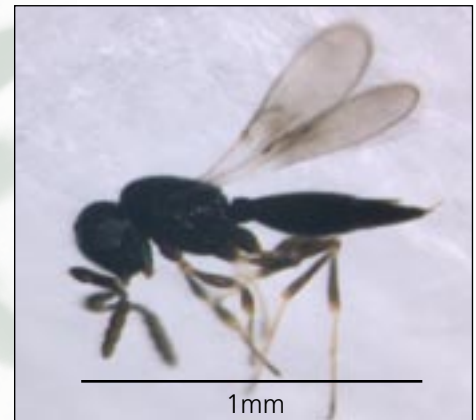
A patch of native vegetation will also provide refuge for beneficial insects. Above we see a pair of Spotted amber ladybirds (*Hippodamia variegata*) mating on Fragrant saltbush. These beetles and their larvae will eat a range of pest insects.



Insect predators and parasitoids act as biological control agents by attacking pest insects. Above we see a predatory brown lacewing (*Micromus tasmaniae*).

Above right is a parasitic wasp (*Ceraniscus* sp.) that attacks the Western flower thrips.

Another wasp (*Telenomus* sp.) attacks the eggs of the Rutherglen bug (*Nysius vinitor*) which is a pest of multiple vegetable and seed crops.



Benefits of planting native vegetation:

- It provides a long term solution to weed management which will save you time and money.
- Selected broad-leaf species will severely restrict weed growth within 2 years of planting.
- Once established, it requires little maintenance because it is adapted to the local environment.
- As an alternative to weeds, it can reduce the amount of plant disease and the number of pest insects on your property (introduced weeds harbour thrips and virus).
- It attracts and shelters beneficial insects that may provide biological control of pest insects.
- It is aesthetically appealing and improves the appearance of your property.
- It sustains a whole range of native biodiversity that may compete with pests.



Establishing native vegetation is a good way to out-compete weeds near horticultural production facilities. This may provide a range of production benefits as well as improving the look of your property and increasing regional biodiversity.

Step One: Site selection

Consider having native plant refuges instead of exotic weeds growing next to your crops because weeds will harbour high numbers of pest insects and perhaps the plant diseases they transmit.

Look around your property and identify areas that will not be used for cropping and/or are weed infested. Bare earth sites are also prime areas for revegetation.

It is important to consider areas immediately adjacent to crop growing areas as this is where the pest and disease pressure will have maximum impact on crops. Examples are the margins around field crops or spaces between greenhouses.



Many areas on the Northern Adelaide Plains are infested with Marshmallow and Wild raddish weeds, which may harbour TSWV. These areas are also perfect breeding sites for thrips and are therefore prime areas for native revegetation.



Weeds often infest the margin of field crops such as lettuce, and can directly supply pests and diseases in this situation. This is a perfect site for revegetation aimed at reducing pests and diseases.



Giant mustard (*Rhapistrum rugosum*) plants flowering next to horticultural crops. This weed harbours high number of pest thrips and can harbour TSWV. This is a key weed species that can be managed through native revegetation.



Apart from reducing pests and diseases, native plants can also be used to provide additional benefits. Consider using strategically planted native trees and/or shrubs to act as windbreaks. Ground covers and grasses are good species in areas that are driven on or require soil stabilisation (eg. dam banks). Native plants are also great candidates for preventing non-productive areas from becoming pest sources and improve the overall look of your property.



Low-growing gum trees can create an attractive and effective windbreak.



Exotic weeds (mainly Sow thistle and Mallow) infesting the strip between a vehicle track and a greenhouse. Such areas are perfect sites for native revegetation aimed at replacing exotic weeds.

Native ground covers and grasses are good options for stabilising earth banks and dam walls.



Wallaby grass (*Danthonia linkii*, above) and Blackhead grass (*Enneapogon nigricans*, above right) are hardy natives that are perfect for soil stabilisation.



Native grasses can be planted in areas where vehicle access is required.



Ruby saltbush (*Enchylaena tomentosa*) is an example of an attractive native ground cover that can withstand some vehicle access.



Non-productive areas may become sources of weeds, pests and diseases. In addition, they make the property look untidy. Low growing native plants can be used to remedy these problems.

Step Two: Site preparation

The site you select must be cleared of any rubbish or debris. Rubbish may suppress weeds directly below where it lays, but it may also make any nearby weeds hard to access. It is also unsightly. The amount of effort you put into site preparation now (effort that is needed only once), will determine how well your native plants grow and how good the revegetation looks.

Good preparation in advance of planting is a cornerstone to success in the process of establishing native plants. These next pages provide several options you can use for site preparation.



Rubbish creates hard-to-reach areas where weeds can grow. Rubbish will affect the growth of revegetation patches and is unsightly.



Using herbicide to remove weeds

Removing your weeds is a critical first step in preparing your site as this will give the native plants the best chance of establishing and lessen the time until they naturally out-compete new weeds.

We recommend the use of a general herbicide as this causes minimal disturbance to the topsoil and hence reduces the amount of new weeds that will grow. Spray the infested area with a general herbicide at least twice, to achieve good weed control. Spray several weeks apart to kill any weeds that remain or germinate in that time. Use herbicides strictly as per the label instructions.



A general herbicide is the most efficient way of removing weeds and causes minimal topsoil disturbance.



Grass can be sprayed-out from around existing native plants using a grass-specific herbicide.

Cultivation for weed removal and soil preparation

There are various situations where herbicide is unable to be used for weed removal. Some examples may include organic production systems and areas close to waterways. In these cases, cultivating the soil will provide temporary weed management. Cultivating will also soften the soil which will improve drainage and make it easier for the native plants to send strong roots deep into the soil.

However, this level of disturbance may mean that weeds also flourish, especially in areas they have previously infested and added to the soil seed bank. However, this problem is easily overcome if you intend to use weed-mat.



Cultivated soil will allow native plants to establish deep root systems quickly and allows good drainage.



Cultivation can be used for weed removal if herbicide can't be used, however, the topsoil disturbance allows new weeds to quickly establish. This can be overcome by using weed-mat to cover the cultivated area for later revegetation.

Suppressing weeds using weed-mat and mulch

Weed-mat can be used to inhibit weed growth. The mat is an artificial polymer that can be rolled out across an area to be revegetated. The mat is secured to the ground using pegs.

Weed-mat has been used successfully on a range of revegetation sites. Weeds are suppressed by lack of sunlight and the mat still allows water penetration. Weed-mat is particularly useful if shed seeds are to be collected for resale or further revegetation.



Weed-mat is purchased in rolls and then rolled onto the area for revegetation. The weed mat must be securely pinned as it is laid across the site. Note that weeds have been removed and the topsoil cultivated prior to laying the mat.



Weed-mat used to prepare an area for revegetation adjacent to production facilities. Holes have been cut in preparation for planting of native species.



Mature *Atriplex semibaccata* seeds fallen on weed-mat. These seeds can be collected (by sweeping) and used to maintain/increase the revegetation density or can be sold for use in other revegetation programmes.

It is essential that weed-mat is well secured to the ground as it is laid. Inappropriately pinned weed-mat can be torn or blown away in strong wind, resulting in damage to plants. This should be avoided as additional time and resources will be needed to replace both the weed-mat and damaged plants. The best way to secure the mat is with twisted rods hammered through the mat into the ground. Covering the edges of the weed-mat with mulch or soil will help prevent the wind from catching it.



If weed-mat is not secured correctly with metal rods/pins, it will be damaged in high wind. Treated pine fence-posts are not suitable to weigh down an unpinned mat as they will easily roll.

The weed-mat will be damaged if laid on ground accessed by vehicles and is therefore not suitable for areas where vehicle access is required.

Jute is a natural fibre which is used to produce weed-mat sections for placing around individual plants. They can be used alone or manoeuvred into the holes under polymer weed-mat to provide protection for the native plants.



An individual jute weed-mat used to protect a native plant seedling.



Individual jute weed-mats are consistently used by natural resource managers for large-scale revegetation projects.

Mulching can also be used to suppress weeds. It has the additional advantage of reducing soil-water loss and may add nutrition to the soil if composed of easily degraded organic matter. 'Composted forest mulch' has been used with success on revegetation sites. Other mulch types may be successful but advice should be sought because some mulches can adversely affect native plants and may affect soil pH and salinity.

In addition some mulches, if not prepared correctly, may contain weed seeds.



Mulch is commonly placed on the topsoil around native plants to suppress weeds and preserve topsoil moisture for the plants. It can be placed on cultivated soil or weed-mat.





Over a year, mulched native grass species can grow to almost twice the size of their un-mulched counterparts.



Mulching to a depth of five centimetres is good for native grasses.

Which should you choose: weed-mat or mulch?

To make a decision you need to consider the advantages and disadvantages of each method (see right) in relation to your resources. Your aims are also very important. For example, if your main aim is to collect seeds then weed-mat would be the best option, however, if vehicle access is important then mulch would be best.

Weed-mat

Advantages

- Excellent weed suppression, no follow up weeding required
- Long-term weed suppression
- Aids in seed collection

Disadvantages

- Higher initial cost
- Not as efficient for water retention
- Doesn't supply nutrients
- More effort required to lay mat
- Restricts recruitment of native seedlings
- Cannot withstand any vehicle traffic

Mulch

Advantages

- Combined weed suppression and moisture retention
- Permits recruitment of native seedlings
- Lower cost
- Less effort to apply
- Can withstand occasional vehicle traffic
- Organic mulches will supply 'slow-release' nutrients

Disadvantages

- Weed suppression not as effective, may require monitoring and follow-up treatment
- Some organic mulches break down and will need periodic replacement
- Doesn't aid in seed collection
- May contain weed seeds if not prepared well

Step Three: Choosing and obtaining native plants

Use the plant information at the end of this guide to select the native plants to suit your needs.

Tube-stock seedlings are the best option for easy planting and allow for faster establishment of seedlings. Direct seeding is a cost effective method for establishing large native revegetation sites, although it is not recommended for native grasses in degraded soils.



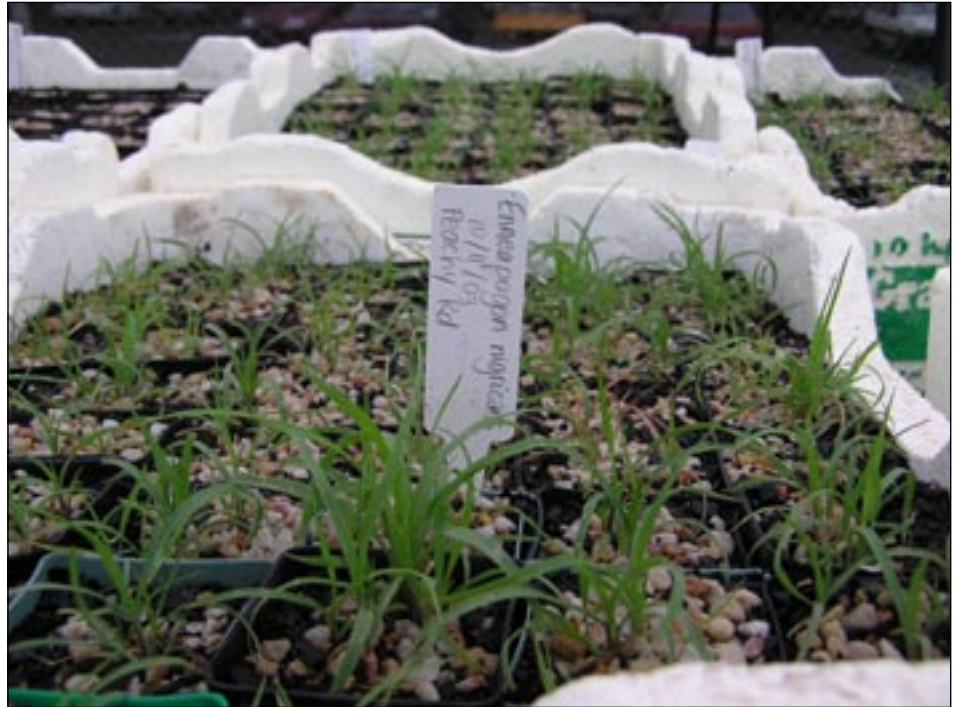
Fleshy saltbush (*Rhagodia crassifolia*) growing in weed-mat adjacent to horticultural production facilities. This species is an attractive native shrub which can be easily planted using tube-stock or directly seeded.



Kangaroo grass (*Themeda triandra*) growing in weed-mat adjacent to horticultural production facilities. Native grasses are more successful when planted from tube-stock.

Contact a plant nursery to order your native seedlings. A list of possible nursery contacts is provided at the end of the guide. It is crucial to plan well and to order plants early to ensure nurseries can cater for the number of tube-stock seedlings you will need. When producing tube-stock, suppliers generally sow seeds in mid-summer so that the tube-stock seedlings are mature enough to be planted into the revegetation site after the break of season in autumn. Ideally you should order your plants in December so that you have them available for an early winter planting.

Seeds and tube-stock should not be planted prior to the break of season as they will struggle to survive in the hot, dry conditions of late-summer. Rainfall will help the young plants to develop the roots they will need to survive the following summer season, with minimal extra watering required.



Healthy tube-stock seedlings of the native grass, *Enneapogon nigricans* (Blackhead grass).





Mature native plant tube-stock seedlings of various species shown growing at a commercial nursery. Plants are purchased in this form for autumn planting at revegetation sites and should be ordered well in advance.



Native plant tube-stocks obtained from a nursery and ready for planting at a revegetation site prepared with mulch.

Before ordering your tube-stock, check the individual plant data sheets for information on planting density. This will help you determine how many seedlings will be needed to revegetate your particular area. The densities we have suggested for each species are aimed at producing a stand of continuous vegetation able to resist weed incursions. Grass plantings will be denser as the adult plants are generally smaller.



Rhagodia parabolica (Fragrant saltbush)

Step Four: Planting

Tube-stock seedlings

Dig the hole at least 20cm wide and about 2cm deeper than the tube height. Back-fill a small amount of loose soil into the bottom of the hole to allow for ease of initial root penetration.



Planting tube-stock into an area previously prepared with weed-mat. In cultivated soil, a manual post-hole digger is an easy and quick way to produce holes that are reasonably consistent.

Carefully remove the plant and root-ball from the tube and place the plant in the centre of the hole. It is very important that these native plants are NOT placed into deeper holes as they will not respond well to waterlogging.

Backfill remaining soil around the plant, ensuring that when the soil is filled to the level with the top of the root ball, the plant lies at the centre of a shallow basin to allow for water retention.

Plant grass seedlings with the same method as broad-leaf species. Grasses generally require a higher density of seedlings to provide a cover which will adequately compete with weeds.



After the tube-stock is placed in its hole, the loose soil is back-filled so that the plant is in the centre of a shallow depression.



Grasses planted as tube-stock in cultivated soil will establish their root systems and begin to grow within weeks.



Fragrant saltbush (*Rhagodia parabolica*) tube-stock seedling recently planted into weed-mat.

Water the plants when planting unless the soil is very moist or there is good rain that day.

If planting broad-leaf species into polymer weed-mat, a jute mat may be first placed below the weed-mat and over the hole. The tube-stock is then placed into the hole by passing it through the slit in the jute mat. This reduces follow up weeding almost to zero and will reduce water loss at the

root-ball. Mulching with coarse mulch (eg. pine-bark chips) is another option and this can be added onto the weed-mat holes, after planting. It is important to use a substance that drains easily to prevent rotting of the plant stem.

DO NOT use a jute mat below polymer weed-mat with grass species. It will inhibit the plants ability to spread.



Kangaroo grass (*Themeda triandra*) tube-stock seedling planted into weed-mat. Additional jute mats are not used for grasses as they prevent the grass from spreading easily.

In the absence of jute mats or coarse mulch, weeds can often grow in the holes and may need to be removed (by hand) until the plant is mature. Grass weeds can be sprayed with a grass-specific herbicide without affecting most broad-leaved species (see Step Five: Maintenance).



Native tube-stock planted through a jute mat.



If weed-mat is not being used then mulching is strongly recommended for tube-stock in order to suppress weeds and maintain soil moisture levels. A mulch layer of 5-10cm depth is recommended. DO NOT pile mulch onto the stems of plants as this may cause fungal infections that rot the plant.

Mulching is highly recommended for grasses as it significantly boosts growth and markedly reduces weed incursions (grasses are less efficient at outcompeting weeds compared to broad-leaf species).

Stakes and plant-guards should also be used in exposed areas that are subject to strong winds or grazing animals such as rabbits. Plant guards are not required for grasses except to protect from grazing pressure when young.



Mulch should be applied to seedlings (and can be applied to established plants), especially if polymer or jute matting is not used. It is particularly recommended for grasses.



Blackhead grass (*Enneapogon nigricans*) that has become well established after planting tube-stock into mulch.



Young native plant established after planting directly into mulch layer with no additional matting.



Stakes and plant-guards being used to protect newly planted native seedlings in a wind-prone area next to production facilities. This extra protection is not required for grasses.

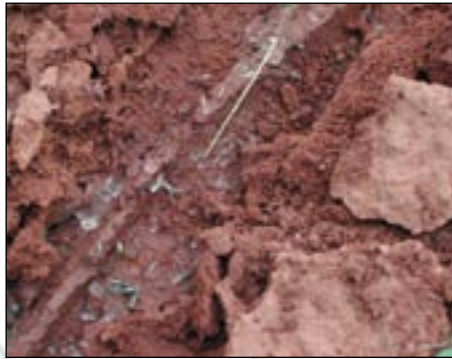
Direct seeding

Direct seeding is the term used for planting seeds into the ground, either by hand or with direct seeding machinery.

If revegetating a large area, commercial seeders are the most efficient method and they work well for native plant seeds. In this case, professional advice is recommended to ensure the seeder you use is designed for your particular native seed(s). Grass seeds may require specialised seeders due to their shape, and for difficult species they can be delivered pre-coated in a protective gel.



A commercial seeder is good for revegetating large areas. It is towed and creates furrows into which seeds are automatically applied.



Native seeds automatically sown into a furrow using a commercial seeder.

Alternatively, if you are only seeding a small area or using small amounts of different varieties of seed, you can use an ordinary home-garden fertiliser spreader to spread the seeds onto prepared soil. This is a simple process and the only requirement is that the seed is pre-mixed with sand to ensure a more even distribution of seed through the spreader. It is best to lightly rake the sand/seed mixture after spreading.

Advantages of direct seeding are that seeds may be available on short notice and that the cost per plant is cheaper as there is no labour needed to grow tube-stock. The main disadvantages of direct seeding are; specialised equipment is required, germination may be patchy (or occasionally fail completely!), and that plants may take longer to become competitive.



Direct seeding with a fertilizer spreader onto cultivated soil, is a cheap and efficient way to revegetate small areas or with small amounts of multiple seed types.

Step Five: Maintenance

Good site preparation (see Step Two) will considerably lessen any requirements for follow-up maintenance.

Therefore, a small short-term investment at the early stages of your revegetation programme will result in minimal later maintenance being required for long-term weed management.

Some maintenance, mainly weed control, will be required in revegetation plots in the period until the native plants naturally suppress weed growth. Broad-leaf saltbush species should be able to severely limit weed incursions 12–18 months after planting. Other species, such as grasses or slower growing shrubs, will require a longer period,

depending on the planting densities (higher densities will provide quicker weed-suppression but will also increase early expenses).



Saltbushes will provide almost total weed-suppression several years after planting. In this situation they aid in suppressing the build-up of thrips and TSWV, at the border of covered crops.

To maximise the effectiveness of early maintenance, learn to distinguish desirable native plants from weeds. Apart from introduced grasses, most weedy species are annual plants that die-back in summer.

If weed infestation of newly revegetated plots is light, it is best to hand-pull weeds when the soil is damp, or to chop at the base of weeds with a hoe.



Low-level weed infestations are best removed manually. This can be done easily by hand when the soil is damp.

Herbicide use for early weed suppression and maintenance

The next few pages provide hints on spraying weeds that are growing amongst either native grasses or native broad-leaf species.

There are specialised herbicides for each situation. When choosing a herbicide, you therefore need to consider the type of native vegetation you are protecting. Plant-guards can provide small seedlings with some shielding from herbicide sprays as well as providing protection against the wind.

Herbicides should be used strictly in accordance with label instructions. Always apply herbicide carefully when the wind strength is low. Do not spray herbicides close to water-courses.



If herbicide is applied carefully when the wind is light, it is possible to effectively remove weeds from amongst young native plants.



A grass revegetation plot where weeds have been killed by herbicide. The milk-carton plant-guards provide some protection against herbicide drift.

Maintaining native broad-leaf species

A monocot-selective (grass-selective) herbicide can be used where weedy grass species infest broad-leaf revegetation plants. To use grass-selective sprays, wait for the grassy weeds to develop a reasonable leaf area and then be sure to spray before seeds develop to prevent any seedlings being produced by the weedy grasses. This type of herbicide will not effect broad-leaf natives, however, it is also ineffective against broad-leaf weeds. A spray shield is advisable if the native broad-leaf seedlings are very young, since at that age they may not tolerate these sprays.

If broad-leaf weeds infest broad-leaf natives then a general (or broad-leaf specific) herbicide can be used carefully, avoiding spray-drift onto the native species.



Grass-selective herbicides are good for situations where grassy weeds infest broad-leaf native plants. Broad-leaf plants of this size will not be affected by grass-selective sprays.

Maintaining native grasses

In this case, use a broad-leaf selective herbicide as this will control broad-leaf weeds and will not affect the native grasses you have planted. However, grassy weeds will also remain unaffected. Some native grasses such as Windmill grasses (*Chloris* sp.) may be damaged by large amounts of broad-leaf selective herbicide so it is advisable to minimise off-target spraying in all cases.

As for grassy weeds, broad-leaf weeds should be treated before they can develop seeds (early flowering is best).

If established native grasses are infested by weedy grasses then a general (or grass-specific) herbicide can be used carefully, avoiding spray-drift onto the native species. In this case, it is best to



apply the herbicide when the native grass is dormant. Native grasses can be the summer-active or winter-active, so consult the plant data sheets near the end of the book to learn if your grass will begin to grow in autumn or spring.

Remove broad-leaf weeds from amongst native grasses by using a broad-leaf specific herbicide.

Trimming and watering

Dense plantings of saltbushes may be trimmed easily with a standard brush-cutter but plants should not be trimmed within the first 18 months of planting. Saltbushes should not be trimmed below 40cm overall height as this will remove most of the wood from which new growth will arise. Before trimming, check the growth-stage of the plants to avoid compromising flowering and seed formation. Of the non-saltbush species we suggest in this guide, DO NOT trim any of them except *Acacia victoriae* which may be cut back when mature.

Seedlings should be carefully watered during their first summer and may benefit from supplementary watering in extremely dry conditions. It is important that native plants do not become waterlogged.



Saltbushes such as *Maireana brevifolia* can be lightly trimmed with a brush-cutter once they are 18 months old.



Utilising your own native plant seed

Your native plants will not live forever, but they will produce seed that can create a new generation of plants that will continue to suppress weeds. Most native species produce very high numbers of seeds each season. Saltbushes in particular (especially *Atriplex* and *Enchylaena* species) produce large amounts of seed with high germination rates. If weed-mat is used, seeds can be easily collected and sold or redistributed in gaps in your native vegetation plot or over other suitable revegetation sites on your property. Seed germination for native plants usually occurs in late winter and early spring. Birds and insects can also spread seeds as part of their natural behaviour.



Saltbush seeds are easy to collect once fallen onto weed-mat. The weed-mat keeps seeds from degrading quickly or germinating in the soil. This photo shows how *Enchylaena tomentosa* seed can be collected from the weed-mat by lifting the foliage and sweeping beneath.



Native seeds can be dispersed by a range of animals. Ants in particular will collect the seeds and leave them near the entrance to their nest; here we see *Enchylaena tomentosa* seeds germinating around a small ant-hill after being collected by the inhabitants of the nest.



Finally... native plants are like any other crop. It's hard work to begin with and follow-up maintenance is absolutely essential to the success of any planting.

But, it's not forever... because generally your native plants will be easy to maintain after two seasons. Most of the native plants in our selection live for a long time and will provide a long-term sustainable vegetation buffer that will inhibit large pest thrips populations and will not harbour crop viruses such as TSWV. In addition, the native plants will provide a refuge for a whole range of potentially useful insects that will attack crop pests.

**Step Six:
Enjoy the
benefits of
your native
vegetation**





Suggested native plants for revegetation



Windmill grass

Chloris truncata

Description

A small, low-growing grass to 25cm (50cm with heads). Summer active. The seeds dry on the 'windmill' inflorescence and blow off. Short-lived to about 3 years but a prolific seeder.

Establishment & maintenance

As for grass species in the 'Planting' section. Space at 30cm.

Notes

Use herbicide carefully around this plant. This species does NOT strongly resist weed incursions – mulching or matting essential. Trim once to 10cm in spring to encourage new low growth.



Wallaby grass

Austrodanthonia spp.

Description

Small grasses to 25cm (40cm with heads).

Establishment & maintenance

As for grass species in the 'Planting' section. Space at 30cm.

Notes

Seeds dry on inflorescences and these should be left until late autumn. Then trim once to 15–20cm to encourage low growth habit. The species resists weed incursions – mulching or matting beneficial to plant growth. Winter active.



Blackhead grass

Enneapogon nigricans

Description

A small grass to 25cm (40cm with heads). Summer active. Heads go dark green or black before drying out to creamy seeds.

Establishment & maintenance

As for grass species in the 'Planting' section. Space at 30cm.

Notes

May produce seed several times in a season depending on rainfall or watering. Trim once or twice to 15cm in spring to encourage growth. This species does NOT strongly resist weed incursions – mulching or matting essential.



Kangaroo grass

Themeda triandra

Description

A substantial grass to 1m (1.5m with heads). Summer active. Spectacular copper-coloured heads in summer.

Establishment & maintenance

As for grass species in the 'Planting' section. Space at 1m.

Notes

Trim once to 30cm at the beginning of autumn to encourage new shoots before winter dormancy, and to remove dried thatch. Trim once to 20cm in spring to encourage lush new growth. If season is dry, water if trimming in spring.



Berry saltbush

Atriplex semibaccata

Description

Dense, hardy, salt-tolerant groundcover to 30cm H and 2m W. This species is very effective at screening out weeds. Will grow into and between other saltbush species. Also acts as a living mulch below other species.

Establishment & maintenance

As for broad-leaf species in the 'Planting' section. Spacing 1–1.2m.

Notes

Do not trim this species for height, trim only to constrain horizontal sprawl. This species is relatively short-lived (less than 2 years).



Grey coastal saltbush

Atriplex cinerea

Description

Dense, hardy, salt-tolerant shrub to 1m H and 1.5m W. Tends to sprawl when grown inland. Attractive silver foliage, This species is very effective at screening out weeds.

Establishment & maintenance

As for broadleaf species in the 'Planting' section. Space at 1–1.5m. Trim if desired to constrain horizontal sprawl.



Marsh saltbush

Atriplex paludosa

Description

Salt-tolerant shrub to 1.2m H and 1.2m W.

Establishment & maintenance

As for broad-leaf species in the 'Planting' section. Space at 1–1.5m. Trim to no lower than 1m overall height. Remove straggly tops only.



Small-leaved saltbush

Maireana brevifolia

Description

The Maireanas are the bluebushes of the great inland plains. Hardy, salt-tolerant upright shrub to 1.5m H and 1.2m W, may become straggly. Stems are woody in mature plants.

Establishment & maintenance

As for broad-leaf species in the 'Planting' section. Space at 1.5–2m. Trim to no lower than 40cm overall height, and always ensure there is still abundant leafy material on the plant. Recommended trim to 1m to maintain dense appearance.



Fragrant saltbush

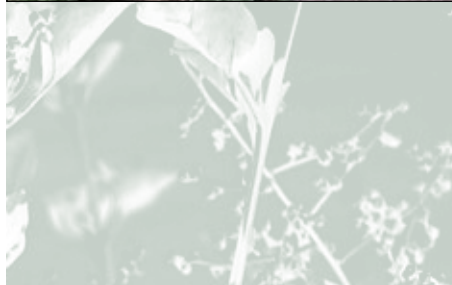
Rhagodia parabolica

Description

Very hardy, salt-tolerant dense large shrub to 1.5m H and 2–2.5m W. Palatable to stock. This species is very effective at screening out weeds.

Establishment & maintenance

As for broad-leaf species in the 'Planting' section. Spacing 2–2.5m. Trim to no lower than 40cm overall height. Suggest trimming to 1m to create a hedge in mature plants.



Fleshy saltbush

Rhagodia crassifolia

Description

A very hardy, salt tolerant dense large shrub to 1.5m H and 1.5–2m W.

Establishment & maintenance

As for broad-leaf species in the 'Planting' section. Spacing 1.5–2m. Trim to no lower than 40cm overall height. Suggest trimming to 1m to create hedge in mature plants.

Notes

This plant was not long lasting on our trial site but may fare better on other sites. An alternative species could be *Rhagodia candolleana*. It differs in size (1m H and 1.5m W), is a very effective weed screen, probably can't be hedged and should be spaced at 1–1.5m.



Ruby saltbush

Enchylaena tomentosa

Description

Dense, hardy, salt-tolerant groundcover to 40cm H and 1.2m W. This species is very effective at screening out weeds.

Establishment & maintenance

As for broad-leaf species in the 'Planting' section. Spacing 1–1.2m. Trim only to constrain horizontal sprawl. Will grow into and between other saltbush species. Also acts as a living mulch below other species. For optimal seed-collection on weed-mat, replce plants every 2 years.



Elegant wattle

Acacia victoriae

Description

Very hardy, salt-tolerant large shrub to small tree to 4m H and 4m W. Seeds are edible (processed only – NOT raw) and are used extensively in the 'wild food' industry. Prickly, creates a virtually impenetrable hedge when densely planted.

Establishment & maintenance

As for broad-leaf species in the 'Planting' section. Spacing 3m, or 2m to hedge. Suggest horizontal trimming only to create a hedge in mature plants.



Tallerack

Eucalyptus tetragona

Description

A gum tree. Hardy small mallee tree to 5m H and 5m W – though if being managed for cut flower yield, it should never attain this size. The stems are harvestable.

Establishment & maintenance

As for broad-leaf species in the 'Planting' section. Spacing 5m, or 3m to hedge.



Muntries

Kunzea pomifera

Description

Spreading or climbing groundcover
– NOT dense. Grows well on trellises
to 1.2m will sprawl on ground to
the same distance. After 3-4 seasons
produces small edible fruits in summer
– these have the taste of spicy apples.
The white spring flowers have
a pleasant fragrance.

Establishment & maintenance

As for broad-leaf species in the
'Planting' section. Spacing 1m.
This species should NOT be trimmed.
It may be trained onto trellises.
Very susceptible to herbicide –
exercise caution when spraying in
the vicinity.



Native plant growers/suppliers list

Please ring the growers before you visit to check that they are happy about direct sales and to ensure that they have appropriate stock.

Adelaide Metro

Provenance Indigenous Plants

Contact person: Peter Hemmings
27 Circuit Drive, Hendon, SA 5014
E: provendig@bigpond.com
Ph: 8345 0300, Fax: 8345 0311
Plant supply. Individual sales to the public on Sundays 10am–4pm.

Trees for Life

Contact persons:
Maureen Redfern (tubestock) and
David Hein (direct seeding)
5 May Terrace, Brooklyn Park, SA 5045
Ph: 8406 0500
W: www.treesforlife.org.au
Local provenance tubestock for large projects grown to order. Direct seeding for broadscale revegetation. Low cost local native seedlings for landowners and revegetation projects.

Indigeflora Nursery

Contact person: Jamie Mugridge
43 Chapman Road, Hackham, SA 5163
Ph: 8326 2143, Mob: 0404 130 053
Fax: 8326 6501
E: indigeflora@internode.on.net
Seed collection, broad range of native plants. Contract growing. Plant supply available in tube cells or pots.

Southern Native Plant Nursery

Contact person: Morine Gould
Chalk Hill Road, McLaren Vale, SA 5171
Ph: 8323 8259, Fax: 8323 8191
Provenance plants and Australian natives.

Environmental Regeneration Australia

Contact person: Mario Niesingh
Mob: 0408 813 636,
E: marioera@adam.com.au
Growing local native plants to order.
Mt Lofty Ranges to the Barossa Ranges, Springton/Eden valley area and adjacent regions.

State Flora Nursery

Queens Jubilee Drive
Belair National Park, Belair, SA 5052
Ph: 8278 7777, Fax: 8278 7801
W: www.stateflora.com.au
Plant supply. Open to public.
Open Mon–Fri 9–5pm, Sat/Sun/Pub.
Hols. 10–5pm.

Greening Australia SA Ltd

Contact person: James McGregor
5 Fitzgerald Road, Pasadena, SA 5042
Ph: 8372 0100, Fax: 8372 0122
W: www.greeningaustralia.org.au
Commercial supply of provenance native plants, Vegetation services including seed collection, plans and on-ground works.

Outside Adelaide Metro

Barossa Bushgardens

Contact person: Pam Payne
Community Nursery, Research Road
Nuriootpa, SA 5355
Mob: 0448 676 348
Specialising in local native plants of the Barossa region, also Eremophilas. Local advice given. Seed available. Nursery open Tues & thurs 8.30–4pm. Open day plant sales each April & September.

Bluebush Nursery

Contact person: Peter Hart
Anlaby, Kapunda, SA 5373
Ph: 8566 2553
Specialising in understorey plants, native grasses and Eremophilas of the Barossa region. Plants grown to order, open by appointment only.

Mt Barker Woodlots & Wildflower Nursery

Contact persons:
Jeff and Margie Barnett
2 Fletcher Road, Mt. Barker, SA 5261
Ph: 8391 1971
Propagate large range of tree, shrubs, grasses and wetland species using local provenance seed. Plants grown to order.

Raywood Nursery

Tapanappa Road, Delamere, SA 5204
Ph: 8598 0267, Fax: 8598 0000
E: raywood@iinet.net.au
Plant nursery. Native endemic plant supply from locally sourced seed. Check plant availability.

State Flora Nursery

Bremer Road, Murray Bridge, SA 5253
Ph: 8539 2105, Fax: 8532 5646
W: www.stateflora.com.au
Plant supply. Open to the public.
Open Mon–Fri 8–4.30pm, Sun 10–4pm.

Blackwood Seeds

Main Road, Inman Valley, SA 5211
Ph: 8558 8288, Fax: 8558 8288
Open 7 days 9–5pm.

Further information

For further information about
revegetation or our research:

SARDI Entomology Guide to the Insects
on the Northern Adelaide Plains.

'Revegetation by Design' Guidebook
A guide to using selected native plants
to reduce pests and diseases in the
horticulture region of the Northern
Adelaide Plains.

[http://www.sardi.sa.gov.au/
pestsdiseases/research_projects2/
research_projects/revegetation_by_
design/useful_publications](http://www.sardi.sa.gov.au/pestsdiseases/research_projects2/research_projects/revegetation_by_design/useful_publications)

<http://www.sardi.sa.gov.au>

