

Revegetation Fact Sheet

Fodder

Saltbush and tagasaste

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This option is for revegetation with deep rooted perennial species to establish blocks or alleys for the purpose of providing stock feed, increasing water use to reduce groundwater recharge, soil erosion control and stock shelter.

DESIGNS

Species selection

The two main species used in the Mallee for fodder are old man saltbush (*Atriplex nummularia*) and tagasaste/lucerne tree (*Chamaecytisus palmensis*). Tagasaste prefers deep, sandy well-drained soils in areas with more than 400mm annual rainfall. Both species respond well to grazing but require active management to ensure they do not grow beyond the reach of grazing animals or are overgrazed.

Ideally saltbush should only provide 20 to 25% to the total diet of your livestock. If pasture species between rows are of poor nutritional value it may be necessary to provide supplementary feeding or access to neighbouring pastures.

Tagasaste is better suited to cattle because it is very fast growing and it is likely that sheep will not be able to keep the shrubs under control and productive without regular and significant pruning. For the same reason tagasaste may not be appropriate for alley farming, unless shelter is a higher priority than fodder. Saltbush is suitable for grazing by either cattle or sheep. Check the genetic source of your saltbush (and tagasaste, if possible) and ensure that you get a type that is well balanced for longevity and palatability. Tagasaste seedlings are susceptible to severe frost. Mature plants are frost tolerant.

Shape and size

A major advantage of using fodder blocks and alleys is that they provide an opportunity to separate and manage land according to land class.



Old man saltbush fodder block near Karoonda



Cattle grazing on tagasaste in the southern Mallee

Blocks

Blocks of shrubs are usually planted specifically for intense, short term grazing by stock. Blocks can be arranged in shapes to suit overall grazing management of the property and utilise awkward pockets of land. However, it is important to carefully consider the size of your blocks relative to the number of animals grazing the area. If blocks are too small they will not be cost effective. If they are too big or long, they may be grazed unevenly, causing management problems. Locations of water and gates must also be taken into account to facilitate even grazing of the blocks and ease of mustering.

Saltbush Alley farming

Alley farming is when belts of fodder (usually consisting of two rows) are placed 30 to 60 metres apart within cropping paddocks. They are used to reduce wind erosion, sand blasting, groundwater recharge and provide stock fodder and shelter between reaping and sowing. The implementation of alley farming involves a significant management change. It is recommended that you read 'Low Rainfall Alley Farming Systems' by Knight, McGrath & Lawes (1998) and 'Oldman Saltbush' by Bartel & Knight (2000) for information about the factors to be considered.

Layout of rows

Straight parallel lines, 'spider webs' or contour patterns can be used for both block planting and alley farming, providing stock movement can be easily managed. However, if wind erosion control is a goal, then the majority of the rows should be close to right angles to the most damaging winds.

Tagasaste establishment should be in straight parallel lines where possible so that stock can be easily observed on a regular basis and to assist in mustering. Some paddocks will have a steep



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slope or ridge that will prevent a clear view from fence to fence. A vehicle track along the ridge will help with monitoring stock.

A gap of 15 to 20 metres should be left between the fence and the fodder to allow for the movement of machinery and stock.

PLANT SPACING

Blocks

For saltbush, rows are usually placed 3 to 5 metres apart and plants 1.3 to 1.8 metres apart (between 1800 and 2500 plants per hectare). This should allow room for other pasture to grow between the rows (your local contractor will be able to provide plant spacing information for your area, refer to the *Mallee Futures Program Resource Book* for contractor details).

For tagasaste establishment in the Mallee, rows are usually placed 8 to 9 metres and plants 1.5 metres apart. Do not establish rows closer than 6 metres as access can be restricted when plants are mature. Gaps up to 10 metres should be left at intervals (eg. every 40 metres) along the rows. These gaps create laneways running across the plantation to assist in mustering stock.

Where direct seeding is used the seedlings may emerge at close spacings along the seeding row and usually more than 2,000 seedlings per hectare will be established with successful direct seeding. As the seedlings grow some will die due to competition and they will sort out their own final spacing.

Saltbush Alley Farming

Spacing of alleys will depend on the width of your cropping machinery (Boom-sprayers and seeders). Often double rows (2 rows with seedlings 1.3 to 1.8 metres apart), 30 to 60 metres apart are used within cropping paddocks.

Direct seeding blocks or alleys is also an option, especially for tagasaste. However plant spacing is harder to control. It is important to use the appropriate rate of seed to get satisfactory results.

Gaps

Gaps within rows can cause stock movement problems and increase wind erosion risk if left. If any gaps occur due to deaths consider infill planting in the following year. However, this can also cause serious problems with your grazing management,



Saltbush speedling

especially with tagasaste. Small gaps may have to be ignored and large gaps may have to be fenced out and replanted.

SITE PREPARATION

Weed control

Good weed control is essential for the success of revegetation projects. Control weeds, as part of normal cropping practices is the best preparation for blocks of fodder and alleys. During the year of establishment it is best to keep a minimum 2 metre wide strip free of weeds, except for highly wind erodible sites where a 1 metre wide strip should be used. Weed control prior to planting can be achieved with herbicides or a scalping/grading blade.

Pest animal and kangaroo management

Rabbit and kangaroo control is essential and may need to be done up to two years ahead of revegetation works. If direct seeding, Red-legged earthmite and lucerne flea must be controlled to protect germinating seedlings.

Ripping

Ripping should not be necessary as contract planters should have equipment that prepare the soil, or they will advise you when a pre-rip is necessary as a separate operation in heavy soils.

Cover crop

A cover crop, such as cereal rye or triticale, will help with weed control and provide protection for light soils. Prior to planting or direct seeding the cover crop should be sprayed and left as mulch. If possible, only spray out a 2 metre wide strip in which the revegetation is to be done. The unsprayed cover crop outside of these strips will protect the seedlings and soil from wind. For alley farming, your crop will act as the cover crop.

Scalping or mounding

On very sandy well-drained soils and non-wetting sands, scalping should be used. On poorly drained, heavy or seasonally waterlogged soils, saltbush should be planted or seeded on mounds. These soils would not be suitable for tagasaste.

Fencing

Choose the style of fencing that best suits your needs, that keeps stock out and reduces the movement of kangaroos and rabbits. Where it is necessary to fence on highly erodible sand dunes, avoid sharp corners that may promote wind erosion.

ESTABLISHMENT OPTIONS

Seedling planting

Seedling planting is the most reliable method of establishment for saltbush and tagasaste. Both species are available at a low cost as 'speedlings' which can be quickly and easily planted by machine (up to 20,000 per day). With proper

ground preparation and by planting speedlings with modern hand planting tools such as a Pottiputki' one person can hand-plant between 1,000 3,000 speedlings per day. (Refer to the *Mallee Futures Program Resource Book* for contractor details).

Bare root seedlings

Both saltbush and tagasaste can be ordered as bare-root seedlings (advanced orders recommended) and can be used in a similar fashion to seedling planting above. They have the advantage of being able to be transported without soil in space saving bundles and can be a cost effective option for large orders.

Calculations

If planting seedlings or speedlings, calculate the length of the rows required for each block or alley then divide that distance by the chosen plant spacing for each row to determine the number of seedlings required for each row. For example, for an alley 600 metre long, with double rows and saltbush 1.8m apart within rows the seedling requirements are:

Total saltbush requirements = $(600\text{m}/1.8\text{m}) \times 2$ (rows) = 666 seedlings/alley or 333/row.

Direct seeding

Direct seeding is cheaper and easier than planting seedlings, but timing and weed control is more critical. Early seeding is critical for low rainfall sites. Direct seeding in low rainfall areas and on non-wetting soils has been most successful using a V-blade machine that prepares a V-shape in which the seed is sown. Tagasaste seed needs to be scarified or hot water treated and inoculated before seeding. Saltbush seed will need to be leached before seeding (refer to Bartel & Knight (2000) for method). De-husking or de-bracting saltbush has been used but research has shown that the seedlings germinating from de-bracted seed are very prone to fungal attack. For tagasaste you will need approximately 350 to 500 grams/km of direct seeding. For saltbush 500



Alley farm showing belts of saltbush near Waikerie

grams/km will be required, but ensure seed is fresh and germination tested to ensure quality. Refer to the *Mallee Futures Program Resource Book* for contractor and seed supplier details for more advice).

Fertilising

Fertilising at planting is often beneficial for good early seedling growth, especially on poor soils. Seek advice appropriate to your situation.

Timeline

In the year of planting, the weed control, planting and seeding should be done as soon as possible after the break of the season and generally no later than the end of July. Delay planting in frost prone areas, but not weed control.

MAINTENANCE

Watering

If seedlings are properly established watering should not be necessary.

Weed control

Controlling weeds throughout the spring and summer after planting will help the survival of seedlings and boost their growth. It is common to spray the weeds either side of the seedlings while protecting the seedlings from spray drift using a shielded sprayer. In many situations Saltbush over 3 months old has tolerated over-spray of low rates of Ally® (2-4g/ha) or glyphosate (up to 1 L/ha of 360g/L) for weed control. If a blade has been

	Jan	Feb	Mch	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Preparation year							Begin weed control				Order seed and seedlings	Feral animal control
Planting year				Fencing red-legged earth mite control	Sow cover crop	Weed control and planting						
Follow-up year				Light graze								

Pull out of planting if it is still too dry

used for the initial weed control to scrape away the weeds and weed seeds the treated strip usually remains weed free throughout the first season.

Insect control

Check regularly for red-legged earthmites after planting and spray an appropriate insecticide if necessary. Direct seeded germinants are vulnerable to attack by red-legged earthmites.

Infill planting

Be prepared for the possibility of infill planting in the following year.

Fertiliser

Follow-up fertiliser applications may be useful however seek advice appropriate to your situation.

GRAZING MANAGEMENT

Saltbush

A light graze in the autumn after planting will help ensure the plants become bushy. Bushy plants are important because when full grazing is under way stock may ring-bark stems but they will not be able to ring-bark all stems and the central stems on bushy plants. If not grazed within 18 months they may become woody and less productive.

Stock should be removed once most of the leaf matter is removed, but before young shoots and twigs are eaten. Monitoring of pasture grazing between rows is also important to prevent overgrazing and erosion. Shrubs should be grazed down within 6 to 8 weeks then left for 6 to 8 months to recover.

Good access to water may be required to compensate for a higher salt intake with saltbush.

Tagasaste

Young plants can be grazed carefully with cattle at about 18 months after establishment, with full production from 3 years of age. At the first introduction of stock to tagasaste (preferably in winter or spring when it is most palatable), they may not eat it immediately. It can take several weeks for them to get a taste for it after they have eaten any other available pasture.

Tagasaste grows fast and can easily grow out of reach of stock, requiring regular and costly pruning if not managed properly. This also significantly reduces productivity.

Once established, tagasaste should be grazed multiple times each year. If only grazed once or twice a year it will tend to develop long, rank stems, which are less digestible. It is therefore preferable to graze often enough to keep stems short throughout the year (less than 20 cm long).

Grazing pressure should be reduced or stock removed when stems have been eaten down to about pencil thickness and only leafy material on bigger stems remains. **DO NOT OVERGRAZE.**

Although more suitable for cattle, if grazing with sheep, the plants should be monitored daily. Sheep can nibble right to the stem and are known to strip the bark off stems and the lower trunk, particularly when grazing pressure is too high. Aim to start re-grazing when stems have 10 to 20 cm of fresh new growth.

Pruning

Ideally young tagasaste should be topped (cut) in the winter after establishment to a minimum height of 30 cm to promote branching. They must be cut cleanly with sharp blades similar to a reciprocating mower or a header cutter bar. If grazing with sheep, a second pruning may be necessary the next year to form a protective low-branch barrier to the trunk. If your fodder shrubs grow beyond the reach of your stock then you will need to consider pruning to keep them productive.

Pest animals and plants

Be prepared for ongoing control of rabbits and hares.

Tagasaste is an exotic plant originally from the Canary Islands and if left to set seed can become an invasive weed of bushland areas, especially in higher rainfall zones.

Financial incentives and technical support

Contact the Murray Mallee Local Action Planning Association Inc for:

- Information about the availability of financial incentives and technical support to assist with the costs of establishing fodder species.
- A copy of the *Mallee Futures Program Resource Book*, which contains additional contact details for further advice about establishing fodder species.

Ph 08 8531 2066, Fax 08 8532 5300,
email mmlap@lm.net.au

Project Planning Checklist

- Calculate the area to be planted in hectares.
- Calculate the spacings for seedlings and the number of seedlings required and/or calculate the total direct seeding distance in kilometres and the rate of seed planned in grams per kilometre.
- Determine the most suitable species to be planted and where seed can be collected locally.
- Determine the length of fencing required.
- Plan a weed and vermin control program.
- Plan a maintenance program.

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