

# SALTBUSH FOR SALINE SOILS

## Dryland Salinity Information Sheet #6

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### What Is Saltbush?

Saltbush generally refers to numerous species of shrubs known as *Atriplex*. A number of perennial species are suited to saline areas and provide forage suitable for livestock. Well managed stands of saltbush are expected to live 20 to 50 years.

### Where To Plant Saltbush

Saltbush is most suited to areas with mild to moderate salinity. This often corresponds with soil covered by sea barley grass and may include a few small bare patches. Saltbush will not tolerate prolonged waterlogging.

### What Species Should I Grow?

**River saltbush** (*Atriplex amnicola*). Preferred species based on productivity and tolerance to salinity and waterlogging.

**Wavy leaf saltbush** (*A. undulata*). Easier to establish by direct seeding than river saltbush but is not as salt and waterlogging tolerant.

**Quail brush** (*A. lentiformis*). Tolerance similar to wavy leaf, but shorter lived.

**Grey saltbush** (*A. cinerea*). Has erect and prostrate forms, the prostrate form being more suited to grazing.

**Oldman saltbush** (*A. nummularia*). Tolerates high salinity but not excessive waterlogging. Very suitable for dry salt ("magnesia") patches and low rainfall areas.

**River Murray saltbush** (*A. rhagodioides*). A local species that shows potential to be a versatile and productive shrub.

### Site Preparation

Fence the area to be planted. Construct diversion banks to reduce the movement of runoff water onto the area and install shallow drains where practical to remove excess water. Drainage water must be disposed of with care.

Control weeds. Options include chemical topping the previous spring, burning, knockdown herbicide and cultivation. Use a combination of methods. Cultivate to prepare the ground for planting.

## **Establishment**

Compacted soils should be ripped along planting rows. Plant into mounds to reduce waterlogging. Aim for rows 3 to 5 m apart with 1 to 2 m between plants.

**Direct seeding** Use a niche seeder that will form an "M" shaped mound and deposit seed (or fruits) together with a covering of vermiculite along the depression in the mound. Sow 30-50 viable seeds per placement. **A germination test of seed used is CRITICAL to determine appropriate sowing rates!**

Sow in late winter to early spring; earlier in low rainfall areas (< 400mm). If waterlogged, sow when the land is trafficable after winter and risk of waterlogging is reduced. Control insect pests such as red legged earth mite. Direct seeding is least successful on clay or hard setting soils.

**Seedlings** Generally the most reliable. Mechanical planters are suitable. An adequate tith along the rows is required for best results.

## **Grazing**

Allow about 18 months for plants to establish before grazing. Remove stock when most of the leaf material from shrubs has been eaten. Regular (yearly) grazing of shrubs produces the highest quality fodder and prevents the shrubs from becoming too woody. Over-grazing or continuous grazing of shrubs will damage plants and reduce longevity.

Plant salt-tolerant grasses such as puccinellia or tall wheat grass between saltbush rows. Grass or stubble grazed in conjunction with saltbush will provide a more balanced ration. Saltbush/grass pastures can carry high stocking rates (eg 20 DSE/ha) for 2 to 3 months.

Provide ample quantities of fresh water for stock grazing saltbush.

### ***Saltbush - forage from saltland***

For further information contact Tim Herrmann, Saltland Agronomist, Primary Industries SA, Phone (08) 391 7507, or your local Primary Industries SA office. Updated July 1996

## Guidelines to select forage shrubs for saline soils

Species	Common name	Size W*H (m)	Tolerance to		Palatability	Grazing recovery	Ease to establish by direct seeding	Suitability for dry saline sites (magnesia)	Comments
			Salinity	Waterlogging					
<i>Atriplex amnicola</i>	River saltbush	2*1	****	****	****	****	**	*** ?	Recommended for most situations. Highly productive. Can be difficult to establish from seed.
<i>Atriplex undulata</i>	Wavy leaf saltbush	1.5*1	****	***	***	****	****	**	Recommended for most situations. Productive and readily established from seed.
<i>Atriplex lentiformis</i>	Quail brush	2.5*2	****	***	****	***	***	**	Recommended as part of a mixture. Rapid early growth but shorter lived (6-10 years).
<i>Atriplex cinerea</i> (prostrate form)	Grey saltbush	5*0.5	****	***	****	***	**	**	Readily grazed and requires careful management. Spreading habit makes it ideal for covering bare areas.
<i>Atriplex cinerea</i> (upright form)	Coastal saltbush	3*2	***	**	****	*	*	*	Large woody shrub with rapid early growth. Readily eaten by stock but is unable to withstand heavy grazing.
<i>Atriplex nummularia</i>	Old man saltbush	1.5*2	****	**	**	****	**	****	Has a deep tap root and is very drought tolerant. Most productive for dry saline sites (eg magnesia patches). Due to lower palatability it is best grown as a single species for easier grazing management.
<i>Atriplex nummularia</i> "DeKock"	Oldman "DeKock"	1.5*2	****	**	**	****	**	****	South African selection of old man saltbush with improved palatability. Little difference shown under Australian conditions.
<i>Atriplex rhagodioides</i>	Murray River saltbush	2*1.5	**** ?	**** ?	*** ?	*** ?	** ?	**** ?	Limited information suggests it has the potential to be a versatile and productive shrub. Similar to old man in many characteristics.
<i>Atriplex semibaccata</i>	Creeping saltbush	1*0.2	***	*	****	*	****	****	Good ground cover. Short lived (2-3 years) but readily regenerates from seed.
<i>Atriplex paludosa</i>	Marsh saltbush	1*1	***	**	****	*	****	*	Readily eaten by stock but unable to withstand heavy grazing. Easily established from seed.
<i>Atriplex vesicaria</i>	Bladder saltbush	0.5*0.5	***	*	****	*	***	****	Sensitive to grazing. Limited information suggests set stocking at low rates is an appropriate management strategy.
<i>Atriplex bunburyana</i>	Silver saltbush	1*1	***	*	*	*	****	****	Low palatability. Unable to withstand heavy grazing.
<i>Atriplex halimus</i>	North African saltbush	1.5*2	***	***	***	***	**	* ?	Susceptible to insect/disease attack.
<i>Maireana brevifolia</i>	Small-leaved bluebush	1*1	***	*	****	**	****	****	Readily regenerates from seed. High quality feed but contains significant levels of oxalate.
<i>Rhagodia parabolica</i>	Rhagodia	1*1	**	*	*	* ?	* ?	***	Understorey shrub. Poor palatability.
<i>Enchylaena tomentosa</i>	Ruby saltbush	1*0.5	**	*	****	** ?	*** ?	****	Small understorey shrub. Unable to withstand heavy grazing.

Key: \*\*\*\*\* Very high, \*\*\*\* High, \*\*\* Moderate, \*\* Low, \* Very low.

# GROWING SALTBUSH IN NON-SALINE SOILS

Fodder Shrub Information Sheet  
Tim Herrmann & Helen Lamont

## SALTBUSH

Saltbush generally refers to numerous species of shrubs known as *Atriplex*. Many species are adapted to low rainfall or saline conditions and provide forage suitable for livestock. This Information Sheet deals with growing saltbush in non-saline and non-waterlogged situations.

## WHY GROW SALTBUSH?

Saltbush/grass pastures can carry high stocking rates (eg. 30 DSE/ha) for two months.

- Provide feed to fill the autumn feed gap.
- Improve drought risk management.
- Reduce erosion risks.
- Provide protection for stock.
- Increase overall carrying capacity.
- Defer grazing of regenerating pastures.
- Reduce recharge of rainfall to groundwater.

### *Where to grow saltbush!*

- Sand where clay is present within 1-2m of the surface.
- Paddocks marginal for cropping.

### *Where not to grow saltbush!*

- Deep sands that are low in fertility and water repellent.
- In the SE of South Australia below Keith. Initial trial results indicate that species such as tagasaste are more suitable.

## WHAT SPECIES SHOULD I GROW?

**Oldman saltbush** (*Atriplex nummularia*). The most common species grown. Adapted to low rainfall conditions and is very drought tolerant.

**River Murray saltbush** (*A. rhagodioides*). A local species that shows potential to be a versatile and productive shrub. Similar to Oldman. More information is required on this species.

**River saltbush** (*A. amnicola*). Good palatability but prefers areas with at least 350mm rainfall.

## SPACING

Distance between plants will vary depending on paddock management. Aim for 1.2-1.5m apart along the row, and 4-5m between rows. This gives 1300 to 2100 plants per ha. Wider row spacing allows for machinery access to renovate pastures or crop between rows.

## **ESTABLISHMENT**

### **Site preparation**

Plan to control weeds 6 to 12 months before planting to allow conservation of moisture. Soils with rock or a hard pan should be ripped to about 30cm along the planting rows. Cultivate to prepare a good tilth. A cover crop may be sown before planting the saltbush.

### **Planting**

Planting seedlings (or speedlings) is the most reliable method of establishment. Plant seedlings soon after the opening rains to allow them to be well established before summer. Simple mechanical planters allow 5,000 to 10,000 seedlings to be planted in a day. Some planters are capable of watering the seedlings (about 250ml), but this is not necessary under ideal conditions.

**Do not plant if the site is too dry!**

### **Fertiliser**

Fertilise plants when planting in low fertility sites (eg. sandy soils or poor cropping ground). Some mechanical planters place fertiliser near the base of the plant. Slow release fertiliser (10g per plant) is ideal. High analysis fertiliser (eg. 18:20) can be applied at 15-20g per plant at depth, or at 50g per plant if applied on the surface. Avoid placing high analysis fertiliser in direct contact with the roots as this can burn the seedlings.

### **Pasture**

Saltbush alone does not supply a balanced diet for livestock. Ideally, saltbush should only provide about 20-25% of the diet. Establish pasture between saltbush rows to provide extra grazing and to help balance the diet. Supplementary feeding with grain or hay is an option.

### **Grazing**

A light grazing at 12 months will promote a bushy growth habit. In later grazings, remove stock when most of the leaf material from the shrubs has been eaten. Regular grazing (once or twice per year) of shrubs produces the highest quality fodder and prevents the shrubs from becoming too woody. Over-grazing or continuous grazing of shrubs will damage plants and reduce longevity.

Provide ample quantities of fresh water for stock grazing saltbush.

For further information contact Helen Lamont (086 261 108) or Tim Herrmann (08 391 7507), or your local Primary Industries SA office. July 1996