



A collaboration between AWI, GRDC, MLA, RIRDC and Dairy Australia

Old man saltbush

Scientific name(s)

Atriplex nummularia

Strengths

- Good drought tolerance
- Suitable for saline soil
- Recovers well from grazing
- Provides stability to the year around feed supply

Limitations

- Can become too woody leading to a decrease in feed quality
- Relatively low palatability
- High salt content

Plant description

Plant: Large woody shrub that grows to 3m in height and diameter but occasionally more. It can range from erect to sprawling in growth form.

Stems: Woody much branched.

Leaves: Grey-green irregularly shaped leaves, 2-3cm long, commonly toothed along the edges. The cultivar Eyres Green has much larger leaves up to 5cm long.

Fruit: Fan shaped, up to 6mm in diameter.

Seeds: Reddish.

Pasture type and use

Old man saltbush is one of the most common forage shrubs used in southern Australia. It provides a useful forage resource particularly in times when other feed is scarce and has been planted on both saline and non-saline soils. Its drought tolerance has allowed it to be grown in areas of particularly low rainfall. It occurs naturally in many parts of the pastoral region and in some cases has been successfully established in these regions.

Where it grows

Rainfall

Whilst old man saltbush will grow in areas receiving less than 300mm of annual rainfall, the chance of successful establishment in these environments without watering is low. However, once established old man saltbush is very tolerant of dry conditions.

Soils

Old man saltbush occurs naturally on heavier textured soils but will grow on a range of soil types. It is tolerant to saline soils. It does not tolerate waterlogging.

Temperature

Old man saltbush grows predominately over the warmer months. Growth slows considerably once temperatures drop below 10°C. Old man saltbush is relatively frost tolerant but some leaf damage can occur.

Establishment

Companion species

Grasses: Summer growing grasses will compete strongly when grown together with old man saltbush and reduce its productivity. Cool season annual grasses will serve as an extra forage source during these times.

Legumes: Winter growing annuals such as medics and clovers will provide winter feed.

Shrubs: Sometimes a mixture of different shrub species has been sown in the past. There is currently research being done on the value of planting a range of species together in the hope of alleviating the nutritional limitations of species and increasing animal intake and performance.

Sowing/planting rates as single species

Best results with direct seeding have been obtained using a niche seeder. It is essential to test the viability of the seed that is to be used before seeding as old man saltbush seed viability can be low. It has been recommended to place enough viable seeds to allow for 50 seeds per placement. Leaching of saltbush fruits has also improved direct seeding success. Establishment of old man saltbush can also occur using established seedlings. The establishment of the cloned cultivar, Eyres Green can only be achieved with seedlings. These have been planted either by hand or with mechanical tree planters. Contract planters can plant seedlings and numerous organisations have planters which can be hired to landholders. Many different layouts and densities can be used depending on the situation, but generally shrubs have been planted as dense stands or in alleys or belts. Machinery access, establishment costs, salinity status and understorey companion species are all factors to consider in designing a shrub system layout.

Note: The establishment of shrub species is a critical step in obtaining productive stands. A number of factors are vital in ensuring establishment success. It is recommended to obtain further information on establishing shrubs from the sources listed at the end of this factsheet.

Sowing/planting rates in mixtures

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Sowing time

Old man saltbush should be planted as soon as possible after the break of season. Late planting will probably result in the need to water. Seedlings should not be planted into dry soil.

Inoculation

Not applicable.

Fertiliser

Slow release fertiliser has been recommended in some situations.

Management

Maintenance fertiliser

There is little information available on the benefits of regular fertilisation. However, it is likely that fertilisation would be beneficial especially to the companion pasture species.

Grazing/cutting

For best results with old man saltbush, attention must be paid to grazing management. Old man saltbush needs to be well established before grazing can take place. If good early growth has occurred, a light grazing can occur when plants are about a year old. It is critical that not too much damage is done to the woody fraction of the plant at this time. Older old man saltbush can be grazed until only a fraction (5-10%) of the original leaf remains. Plants should be grazed to this level within 6 weeks and then allowed to recover for at least 6 months. Old man saltbush should not be set stocked as continual grazing will kill the plants. Some producers have had good success with high stocking rates (more than 100DSE) using cell grazing. If plants are not grazed adequately they can become too tall and out of reach of stock. They can also become too woody with a decline in the amount of leaf available to stock. To prevent this, it is essential that old man saltbush is grazed even when other feed is adequate. Plants can be slashed back to 30cm in height if they have become too woody.

Seed production

Old man saltbush can have male, female or bisexual plants. Plantations derived from cuttings therefore may only contain plants of one sex. Seed production can be highly variable and many saltbush fruit contain no seed. Grazing can limit the amount of seed produced.

Ability to spread

Old man saltbush has a limited ability to spread. There has been limited occurrence of spread from plantings in Australia. It does not establish easily from seed and has limited vegetative reproduction.

Weed potential

The weed potential of old man salt bush is low. It has rarely spread from plantings in Australia. It does not regenerate well from seed and old man saltbush fruit contains germination-inhibiting chemicals. Grazed plantations will produce limited seed and any seedlings are likely to be controlled. Observations from South Africa suggest establishment is only likely on disturbed sites.

Major pests

Red-legged earth mite and lucerne flea can cause significant damage to young plants, especially seedlings. There has also been a number of species of caterpillars recorded which feed on the leaves of old man saltbush. Plants generally recover after the caterpillars mature. Economic losses from these pests have been rare. Other insect pests associated with old man saltbush include scale, leafhoppers and borers.

Major diseases

It is probable that old man saltbush hosts many pathogens. However, there has been no research conducted to identify and quantify the effect of these on saltbush productivity.

Herbicide susceptibility

There are no herbicides currently registered for weed control in saltbush. From trial work, old man saltbush is sensitive to a number of herbicides when at the seedling stage. However this can be dependant on the rates used. 2,4-D Ester and MCPA 500 have been found to cause the most significant damage. Once the plants are well established they are much more tolerant to a range of herbicides including glyphosate.

Animal production

Feeding value

Old man saltbush has a moderate to low feeding value. It has been regarded to be adequate in crude protein content but low in energy. The high amount of salt limits the potential of old man saltbush as a high value feed and it can also have a range of nutrient imbalances. Leaves have a higher nutritive value than twigs, so management to ensure the plants do not become too woody is vital. Supplementing with grain or good quality hay is necessary for optimum animal performance. The value of old man saltbush as a feed source is really strengthened by the strategic use of it during times when other feed is not available.

Palatability

Palatability can vary very widely in old man saltbush with some individual plants being preferred over others. Generally old man saltbush is less palatable than companion pasture species and grazing at low stock densities will result in overgrazing of palatable species. Grazing for short periods at higher stocking rates will result in more uniform grazing of both old man saltbush and the pasture base. Animals will not start grazing immediately on old man saltbush and require a period to become familiar with the plant.

Production potential

Old man saltbush alone is suitable as a maintenance feed, particularly to assist in carrying animals over periods of feed shortage. It is unsuitable for animals with a high requirement for energy. It should not be expected that animals will fatten grazing old man saltbush. Supplementing with grain or good quality hay is necessary to achieve increased animal production.

Livestock disorders/toxicity

The salt content of old man saltbush can be high, especially on saline sites. This will limit feed

intake and increase the consumption of water. Stock must have access to adequate quantities of high quality water. Due to the amount of salt in an old man saltbush diet, the salt content of the water should be below 1000ppm. Consumption of water can increase by 2-3 times when grazing a diet high in salts.

Old man saltbush also contains a significant level of oxalates which can cause kidney damage. These levels are considered below the toxic threshold but they are responsible for lowering feed intake.

Cultivars

Cultivar	Seed source/Information
Eyres Green [Ⓟ]	Topline Plant Company
De kock	-

[Ⓟ] Denotes that this variety is protected by Plant Breeder's Rights Australia

Further information

'Oldman saltbush' by Brett Bartel and Alex Knight,

'Saltland Pastures in Australia: a practical guide' by Ed Barrett-Lennard, Department of Agriculture, Western Australia

'Getting the best from old man saltbush' Brett Honeysett, Peter Milthorpe & Margaret Wynn, Agfact P2.5.43, NSW Agriculture

Acknowledgements

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Author and date

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December 2008