



South West
NRM

Case Study

Establishing and grazing saltbush

The researcher - Dr Hayley Norman

Livestock producers seeking a better return from marginal land could consider supplementing their pasture with old man saltbush (*Atriplex nummularia*), according to CSIRO researcher, Dr Hayley Norman, who has been studying saltbush for more than twenty years.

South West NRM spoke to Dr Norman in 2020 to find out how saltbush is best used.

"Saltbush does not need salt to grow. So, where land is marginal for other reasons, such as rocky areas or infertile sandy soils, shrubs can still be a valuable supplement," Hayley said.

"Farmers need to consider the opportunity cost of what else they could do with that land, but if they're trying to fill a feed gap and they're seeing nutrient deficiencies through summer and autumn, I think shrubs offer great value. Shrubs provide a whole range of minerals, particularly vitamin E, and are a source of protein. As well as reducing supplementary feed costs, shrubs can also provide shade in summer and shelter during lambing."

While old man saltbush is usually associated with low to medium rainfall areas, Hayley said it grows quite happily in the high rainfall zone, as long as it doesn't get waterlogged.

*"River saltbush (*Atriplex amnicola*) is about the only forage shrub that will tolerate waterlogging."*

There's also no difference between sheep and cattle in terms of how much saltbush they will select in their diet if given a choice.

"In one study we did, merino sheep and cattle both chose 35% saltbush in their diet. While sheep are known to have greater salt tolerance than cattle, if there is plenty of fresh water, cattle perform well. The shrubs would probably prefer cattle because they're less likely to strip off every last leaf. However, you need to be careful grazing establishing shrubs for the first time with cattle because they are more likely to pull them out of the ground"

While saltbush is very hardy and, if rested, will come back after being grazed down to bare sticks, shrubs are unlikely to do well if constantly grazed. This means the timing of grazing needs to be considered. "In the central wheatbelt,

farmers will tend to put sheep into saltbush paddocks when crop stubbles are finished in late summer, and often leave the sheep in those paddocks while they undertake intensive feeding to allow winter pastures to establish.

"Access to shrubs while stock are on crop stubbles or dry pasture helps increase levels of vitamin E (an antioxidant) and key minerals associated with antioxidant pathways (sulphur, copper, zinc, selenium and manganese). So, in summer you could set animals up to have antioxidant pathways working, improving health, meat quality and perhaps reproductive capacity. Letting the animals into shrubs every month for a bit of a top up may be a good way to go about it"

How quickly stock graze shrubs after being brought into the paddock depends on whether they recognise it as food.

*"If you just put naive weaner sheep into a saltbush paddock, they don't recognise it as food and it will take about two to three weeks for them to learn to eat it. Ewes more familiar with the feed would take less time. Also, if it's a relatively palatable variety such as Anameka™ (*Atriplex nummularia* cv Anameka), the animals will eat it more quickly so need even less time."*



Of course, it's not always ideal to eat all the shrubs, especially if part of the aim is to provide shade or shelter. So deferring grazing until the time shelter is no longer needed, or having less palatable species in the mix, may be beneficial.

"Rhagodia preissii is a relative of saltbush and has high energy value but is very high in saponins and stock often won't eat it, so it could be a good option for shelter. It's a nice dense shrub and it loves sandy soils."

The critical aspect of using shrubs is that there needs to be an understorey, because shrubs will only make up about one-third of the animal's diet. This is why they are often planted in alleys or blocked onto the poorest parts of the paddock to allow easy access for re-seeding of the understorey.

"The understorey is a really important part of the productivity. Saltbush is up around 20% crude protein, but some of that is non-protein nitrogen, so animals will only use it to make protein if there's sufficient energy available to them. If they just ate shrubs and didn't have any additional energy, they would probably just urinate out some of that nitrogen."

"Anameka saltbush has reasonable energy and low fibre, but there's definitely excess nitrogen to energy, and the same goes for sulfur. Sulfur levels tend to be really high, which is great for wool production, but if they just ate saltbushes, they'd either eat too much salt or too much sulfur, and they'd tend to stop before they met their nutritional requirements. So saltbush is only one-third of the diet. It's better to think of it as a high value supplement within the diet."

Hayley encouraged farmers to consider what the critical limitation is in their farming system.

"What do you supplementary feed, how are you providing it and how else could you achieve that goal. I wouldn't be putting shrubs into my best cropping or forage country. At the same time, if you're going to spend money on AnamekaTM, which is more expensive than a standard saltbush because it has to be vegetatively propagated, I would put it in the better marginal country and see the value for it. It's heartbreaking to see somebody put Anameka into a waterlogged and highly saline area where it is doomed to fail."

Hayley said that researchers have learnt some golden rules over the past twenty years:

- **Right plant in the right place.**
AnamekaTM has higher feeding value and relative palatability so use it in the better marginal country. Use River saltbush where waterlogging is expected.
- **Site selection.**
Choose sites that are not too saline and not waterlogged. Saltbush will tolerate sandy soils but performs best where there is some gravel below the sand. Saltbush can thrive on clay soils
- **Establishment.**
Plant seedlings deep to keep the root ball as moist as possible during the establishment year (a few leaves visible above ground). Planted in winter, shrubs can be lightly grazed the following summer/autumn as long as animals don't rip them out and leave one-third of the leaves behind. Watch out for bugs and Kangaroos.
- **Supplement or complement.**
Aim to fill one-third of the diet with saltbush leaf and the remainder with something else such as understorey, hay, herbaceous perennials or a good stubble.
- **Drinking Water.**
Provide unlimited cool non-saline drinking water.
- **Do they know it's a feed?**
Utilise opportunities to train young animals by putting them in with mum or experienced peers.
- **Water-table drawdown.**
If water table use is the primary objective, keep plants leafy in summer.

The practitioner – Dustin McCreery

To provide farmers with some basic management considerations, South West NRM invited Dustin McCreery from Chatfield's Tree Nursery in Tammin to speak at a Forage Options field day at Bell Pasture Seeds in 2020.

Dustin said that it's important for farmers to discuss the problem they want to address with a nursery before designing a forage shrub planting. However, he was able to speak about some of the more common approaches to growing and using saltbush.

"One of the more common ways of setting up a saltbush paddock is to set up a paddock for shade and shelter," Dustin said. "These are usually 10 to 20-hectare areas with rows of shrubs in blocks of four to six rows, planted about 2.5 to 3 metres apart. There's a gap between each block of rows wide enough for a ute or machine, and blocks can also be split perpendicularly to the row direction to make mustering easier."

Design is influenced by the rainfall, with high rainfall areas capable of supporting a maximum of 1,200 stems per hectare, medium rainfall about 1,000 and low rainfall 800. This means that in the high rainfall zone, shrubs can be planted closer along the row, such as 1.5 to 2 metres apart.

The gap or inter-row between the blocks could be sown to pastures prior to planting seedlings in winter.

"You could spray out and seed the interrow, then come back in with trees in August with a pre-strip spray. Glyphosate is the only thing I recommend before trees," Dustin said.

For farmers looking to grow perennial pastures, the inter-row may be a good location according to the event's host Rob Bell from Bell Pasture Seeds.

"If you go down the line of planting perennial grasses and clovers, do them under these shrubs, not out in the open where the heat knocks them around. It creates a better environment for them to survive. Plants under extreme stress become unpalatable."

Dustin said that ripping a fracture in the ground is very important, consisting of a single rip line to concentrate water where seedlings will be planted. This could be done when pastures are seeded or even earlier.

"Timing is important too, don't do it when the ground is too wet," Dustin said.

Just like perennial pastures, weed management is a key aspect of establishing shrubs.

"If you transplant where something has already germinated, it's got a head start," Dustin said. "So, preparation is key. You can spray or mechanically scalp. I like scalping because you're taking the weed seed burden away."

The detail that surprised some farmers was how deep it can be planted.

"A lot of people plant too shallow. Seedlings are grown so they can be planted deep, leaving the top few leaves that will do the growing. You don't want too many leaves transpiring and putting pressure on a small root system looking for moisture."

Final recommendations were to pack plants tightly into the soil, keep chemicals away from the seedlings and don't leave the gate open and let the stock in!