# Saltbush — just what can it contribute in the Mallee?

**Case study:** Brian P Barry
**Location:** South of Manangatang, north-west Victoria
**Property size:** 3200 ha
**Mean annual rainfall:** 300mm
**Soils:** Mallee and sandy loams
**Enterprises:** Wheat and prime lambs – 650 ewes, plus lambs ("the lowest we've been for 25 years" says Brian)
**Pastures:** Saltbush, oats to graze, medic and volunteer grass
**Producer's goals:** Profitability and sustainability

**High-saline soils in the Mallee region traditionally remain disused on farming properties. Now, a livestock and cropping farm is trialling saltbush on saline soil as a feedstock – and is already increasing productivity.**

The Mallee is a mixed dryland cropping area that stretches from south-west New South Wales to north-west Victoria, into South Australia. 'Mallee' also denotes a highly saline and alkaline soil, with a pH of 8-9, a stark contrast to Australia's mostly acidic soils, according to Rob Sonogan, dryland cropping agronomist for the Department of Primary Industries (DPI).

Mr Sonogan is supervisor of an on-farm monitoring program, part of which involves saltbush plantings, in the Mallee region of Victoria. As part of the *Grain & Graze* research and development program, saltbush is being trialled on their high-saline soils for use as feedstock, and monitoring its effectiveness on farm productivity – and, ultimately, profits.

*Grain & Graze* is one of the biggest producer-driven research and development programs ever undertaken in Australia. It's the result of a partnership between four of Australia's major research and development corporations: Meat & Livestock Australia, Australian Wool Innovation Limited, Grains Research and Development Corporation and Land & Water Australia. The RDCs are working closely with catchment management authorities in the Mallee across three States, and farm groups, to improve the financial and environmental performance of mixed livestock and cropping enterprises.

Photo: R Sonogan

Ewes and lambs grazing saltbush on the Barry property in July 2005 after very late opening

## Getting the most from an old favourite

Saltbush is a perennial Australian shrub that's found to grow well on saline soils. Knowing this, Mallee farmers have planted the species on their properties but use it only when they need to.

"Throughout the Mallee, thousands of hectares of saltbush are grown," says Mr Sonogan.

The purpose of the Grain & Graze saltbush trials is to use saltbush more effectively, incorporating it into sheep-grazing enterprises. "It's about selecting unprofitable land and reversing this trend," Mr Sonogan says.

The particular demonstration property in Victoria – just outside of Manangatang – is owned by father and son team Brian and Brian Jr Barry and was chosen by *Grain & Graze* as a saltbush study around 12 months ago. "We chose a typical mixed-Mallee farm," Mr Sonogan says of the intensive sheep and cropping (in particular wheat and barley) enterprise.

"This property contains an above-average amount of heavy textured, low-elevation saline soil," Mr Sonogan says. "This soil has a very high salt content — 0.6–0.8 per cent in the topsoil and 1–1.4% in the subsoil (40–50 centimetres in depth). These percentages are inhospitable for most plant growth.

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Rob Sonogan

"There's a regional high-saline water table at about three metres beneath the soil surface. In dry years, these soils yield poor, unproductive, unprofitable crop growth. Salt prevents moisture uptake by plants, which is the real problem for crops in dry spring seasons, and causes them often to fail.

"We tested the feed value of different saltbush varieties, then selected a high-protein variety – Eyres Green Giant – and put it in the saline areas."

Mr Sonogan says 50 hectares of saltbush was already established on the property around three years ago, and this area is now incorporated into the farm's saltbush monitoring project. "This area is now subdivided into five paddocks," he says. "This year, another 40 ha have been planted and we are looking at expanding it even more."

Brian Barry (junior) says, "Each year, we'd like to plant an additional 40–50 ha of saltbush, until the empty patches have been filled. That's up to about 200 ha."

Mr Barry says saltbush can also lower soil salinity. "It can lower the water table because its roots go quite deep."

The farm's traditional, major crops – still grown – are wheat and barley. "On these saline areas, they would only perform well in wet winters and spring," Mr Sonogan explains.

"We looked at cereal yields over the last five to ten years, and on the saline soils, yields have been less than half of the average of the whole farm. Yet, to date, inputs – fertiliser, chemicals, herbicides, cultivation, harvesting – have been the same. Some $100-180 per hectare each year.

"Saltbush is the only answer for this type of soil. It's deep-rooted and can handle water-table salinity of 50,000 EC. Nothing else can handle that amount of salt."

Saltbush has already proved to be a good feed source by farmers and various other saltbush trials. With its persistent leaf, it can be used as feed over long periods, and it's a hardy plant that can't be trampled by livestock. But Mr Sonogan insists it needs to be properly managed.

"Oldman Saltbush is now an integral part of Brian's whole farming system," he says. "It needs to be grazed for short periods – three to four weeks. Brian has now up to eight paddocks in saltbush, rotating the sheep through them."

Mr Barry adds that the feed-rotation system ensures saltbush is eaten twice a year. "We put the sheep on it in December to March; then in April to August they eat sown pastures, then they're back on saltbush in September and October. We harvest our crops in November. Before the saltbush, we used only a third of the farm every year for crops. Now we crop more than 50%."

## Saltbush alone is not enough

Mr Sonogan says ewes and lambs require 14% crude protein and 11% metabolisable energy in their diets

In saltbush, the crude protein is too high and the metabolisable energy is marginal for needs of production. Cereal straw and/or lower quality hay fed out in among the saltbush plants, with or without some grain, can provide a balanced diet. Saltbush has a high-salt load within the leaf (4–6% sodium) and must be managed. When sheep are feeding on saltbush, they need to be provided with lots of water – usually double the amount. High-quality water readily available is essential."

While it's still early to look at results, Mr Sonogan and the Barrys believe there could be an increase in sheep productivity, and therefore profits, in the medium to long term.

Mr Sonogan says that ewe growth has already been maintained in autumn and winter. "Most farmers go by visual assessment to see if sheep are gaining weight or not. But by that time, they've already lost production," he says. "Dedicating paddocks to saltbush avoids feed shortages in autumn." Through monitoring, and understanding the rationale of supplementary feeding, he says, farmers can avoid production losses.

## The bottom line

Mr Barry says he'll measure results via output. "That is, our ability to run more stock, and crop more country. Our goal is to turn unprofitable country into something profitable."

He says extra costs involved in the monitoring project include the saltbush plantings themselves – around $120/ha in seedlings, plus labour – and fencing off the saltbush paddocks to enable feed rotation.

"It took 18 months for the saltbush to grow to maturity. But after they're planted, you can leave them alone."

But saltbush is just part of a larger program on the farm. "We're monitoring the profitability of the whole farm," Mr Sonogan says, "and trying to maximise both enterprises – cropping and livestock.

"Other changes on this property include the switch to a direct drilling sowing program to counteract soil erosion. Also, we are considering pregnancy testing of sheep, sowing paddocks in March for dedicated pastures for livestock, and more intensive cereal-crop production."

The Manangatang study will continue for at least another two years.

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