



Coorong Tatiara

Sustainability, Agriculture & the Environment



Fact Sheet #1 Native forage shrubs

The addition of tough perennial shrubs to key farm locations can supplement shrinking feed resources during seasonal deficits, better use unreliable land, and secure erodible soils.

The importance of native shrubs as livestock forage in unreliable regions of southern Australia has waxed and waned. Historically, they have played a core role in the pastoral zone. In recent decades, they have been promoted as a supplementary forage, a 'stop-gap' to fill seasonal feed deficits in late summer and autumn, or as a 'living haystack' for longer deficits. Recently, forage shrubs are being promoted more broadly in the 'inside' country.

What are forage shrubs?

Most forage shrubs are perennial plants. As such, they are long-lived species, surviving short- and long-term soil-water deficits and high temperatures. Many species grow actively during late spring and summer. Summer growth can capture and use 'out-of-season' rainfall or tap deeper soil water reserves. This reduces deep recharge, improving water use efficiency and reducing deep drainage that can add to saline discharge elsewhere in the landscape.

Native forage shrubs include:

- chenopods which include saltbushes (atriplexes), bluebushes (maireanas), rhagodias, and ruby saltbush (enchyleanas)
- native wattles (acacia), along with the exotic Tagasaste [both in the pea family]
- tar bush (eremophilas)

Animal choices

Domestic livestock graze a wide range of plants, including the shrubs, but discriminate between plants according to nutritive values, digestibility, tastes, toxicities and saltiness. When choosing what to graze, animals are influenced by the species available, the amounts in which they are present, how efficiently they can be grazed, and the animals' preferences. Generally, animals prefer other herba-ceous plants, when available, over forage shrubs. Choice has a great effect on grazing livestock's use of native shrubs.

Possible benefits

The shrubs are well-adapted, robust perennial plants that can offer a variety of benefits in agricultural regions. Forage shrubs can:

- add size and stability to the farm's feed supply
- produce relatively nutritious feed in late summer or autumn
- provide useful levels of copper, iron, selenium, and vitamin E
- improve the productivity of saline or infertile land
- provide shelter/shade and windbreaks
- reduce recharge and excessive deep drainage



Potential shortcomings

As undomesticated 'wild' plants, it is unsurprising that shrubs have shortcomings – one of the most marked being the differences in their chemical make-up relative to other forages.

In particular, plant secondary compounds (PSC) and ash content are critical factors affecting the use of many forage shrubs. Plant secondary compounds are the natural by-products of plant energy-fixing processes. These compounds include tannins, terpenes, saponins and oxalates. They occur in low concentrations in domesticated agricultural plants, such as oxalates in pasture and cereal species. These PSCs influence the nutritive value of the shrubs, how much an animal can harvest and digest in a day, and the extent to which browsing livestock will choose shrubs over companion plants.

Salt and ash

Ash content is a 'catch-all' estimate of plant saltiness – the total concentration of all salt ions. The shrubs contain high concentrations of mineral salts such as sodium, potassium, calcium, magnesium, phosphorus and chloride. The concentrations of these elements in shrubs such as old man saltbush are often high, and greater than those recommended for good health. Daily intake, feed digestibility and efficient digestion are reduced by high concentrations of salts. High concentrations of these elements present considerable challenges to balancing the diets of livestock grazing shrubs. Importantly, the daily demand for good quality water can double for livestock grazing old man saltbush.

Surprisingly, as a result of complicated effects of one element on another and the changes in the digestion and absorption in response to these high concentrations, deficiencies in other minerals such as calcium and magnesium might occur. Mineral additives do not necessarily reverse these deficits.

Nutritive value

The higher concentrations of the salts and plant secondary compounds affect the tastes, and the nutritive value of the forages. Generally, they reduce the rates at which shrubs are chosen, the rates at which shrubs are eaten in preference to other shrubs or pasture plants, and the efficiency with which they contribute to growth, maintenance and, in the case of sheep, wool production. They are the central challenge to grazing management.

"Daily intake, feed digestibility and efficient digestion are reduced by greater concentrations of salts. High concentrations of these elements present considerable challenges to balancing the diets of livestock grazing."



This factsheet is proudly sponsored by the following:



South Australian
Sheep Industry Fund

Coorong Tatiara LAP
Tintinara Office

37 Becker Tce Tintinara
Po Box 399
Tailem Bend SA 5260

P: (08)85 723 116
F: (08)87 572 222

www.coorong.sa.gov.au/gotolap
www.tatiara.sa.gov.au