

Samphire for waterlogged saltland

By C.V. Malcolm, Senior Research Officer, and G.J. Cooper, Technician, Division of Resource Management

For non-waterlogged and mildly waterlogged saltland, a number of salt-tolerant shrubs may be used for forage production. These shrubs are not suited to areas which are highly saline and regularly waterlogged. However, during Department of Agriculture trials with shrub species, samphires (*Halosarcia* spp.) volunteered and grew well on these sites.

Background

Samphires are a group of succulent, highly salt-tolerant, perennial shrubs which occur naturally on waterlogged saltland throughout the agricultural areas in Western Australia. Established samphire stands provide useful grazing in many parts of the Western Australian wheatbelt.

Extensive, natural areas of samphires are associated with the salt lake systems in the wheatbelt. However, samphires have also volunteered over land which became salty after development.

The most common species are black-seeded samphire (*Halosarcia pergranulata*), pale-seeded samphire (*H. lepidosperma*) and woody-seeded samphire (*H. indica* spp. *bidens*).

The woody-seeded samphire is most common in the northern wheatbelt. The other two species are widely distributed, with black-seeded samphire more common than pale-seeded samphire. There are a number of other species of lesser importance.

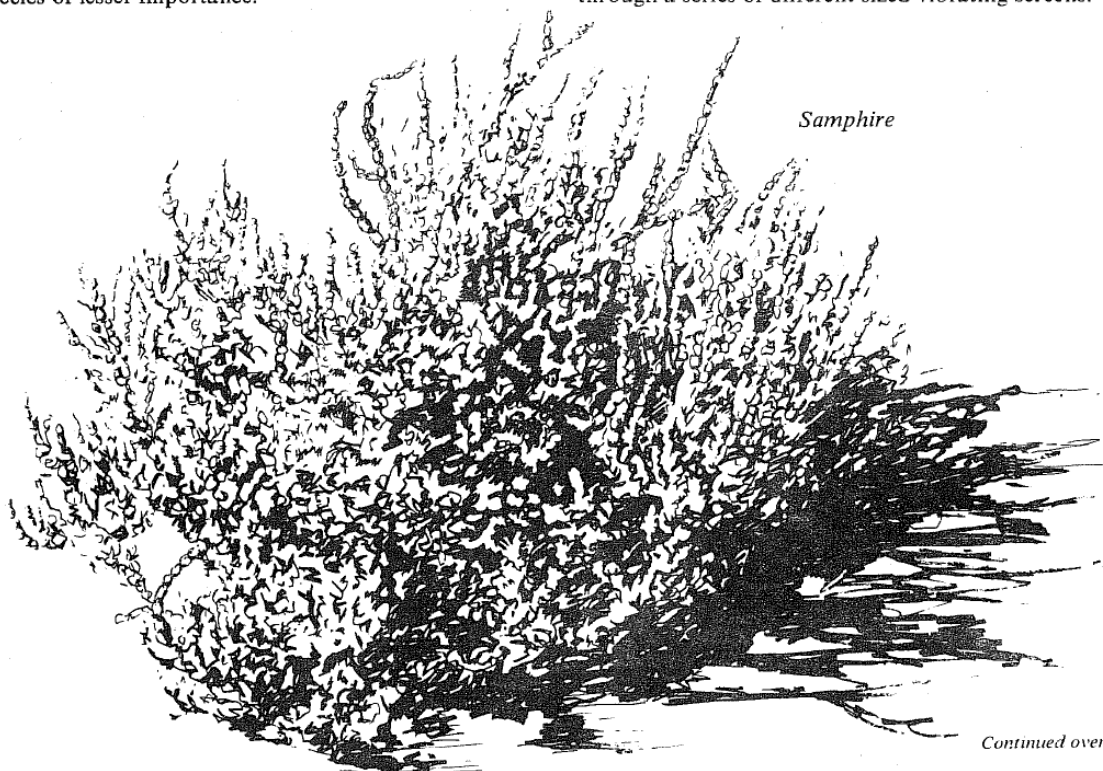
Research into the use of samphires has shown that it is possible to harvest seed and obtain a seed sample suitable for sowing through a drill.

Seed harvesting

Samphire plants do not have true leaves. The stem is thickened into a succulent cylinder with joints at the points where leaves or shoots would normally be. The seeds are produced on elongations of the stem on black and pale-seeded samphire, but in woody-seeded samphire they are on small shoots attached to the main stem.

Mechanical harvesting of woody-seeded samphire has not been attempted, but is possible with the other samphires.

A forage harvester is used to cut the bushes. The cut material may be spread directly on areas to be seeded or it may be spread in a layer several centimetres thick on a bare salty area to dry. When dried, a side delivery rake is used to separate the stems and knock the seed-head off. As a result a layer of seed-heads and broken plant material three to five centimetres thick remains on the soil. This material can be spread on saline areas without further treatment or it may be threshed and cleaned to obtain a sample suitable for a seed drill. Threshing is preferred because germination improves and the material can be spread more evenly. Clover cleaning machinery will handle dried samphire seed-heads or they can be passed through a series of different sized vibrating screens.



Samphire

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Harvesting should be carried out in late summer when the mature seeds can be seen embedded in the green fleshy seed-heads. The ripe seeds of black-seeded samphire are easily identified by squashing the seed-heads in the palm of the hand.

Harvesting destroys the existing bushes but normally a good stand of seedlings regenerates in the year following harvesting.

Germination and establishment

Samphire seeds have a natural ability to remain alive in saline soils and to germinate when conditions become suitable. Black-seeded samphire is known to have a proportion of "hard" seeds which may germinate in the second season after sowing.

Black-seeded samphire has been established in field trials by scarifying the ground and spreading the seed material on the surface in autumn before the first rains.

The plants normally remain very small (one to two centimetres tall) until the summer, then may grow to about half a metre high by the autumn. Grazing protection during the first summer and autumn is essential.

Grazing and management

The common black-seeded samphire contains about 14 per cent crude protein on an oven dry basis. Pale-seeded samphire tends to be higher in salt and lower in protein.

As the plants normally contain about 20 per cent chloride, excessive salt intake by the grazing animals must be avoided. Because sheep are more salt tolerant than cattle, samphire is better suited to grazing by sheep.

Under farm conditions, samphire has supported 0.5 to 0.8 dry sheep equivalents per hectare. However, grazing usually occurs in autumn only.

Grazing precautions are similar to those adopted when moving sheep from a fresh to a salty drinking water supply. Sudden, large intakes should be avoided and special care taken with ewes and young sheep. It is important to provide water with a low salt content, otherwise the overall salt intake is likely to be too high. Adequate trough space must be available to ensure all sheep have free access to fresh water.

The most practical way to ensure that sheep do not eat excessive quantities of samphire is to have other feed available or to feed hay. In some areas it is possible to sow *Puccinellia* in the samphire stand to provide an alternative feed. Providing these precautions are observed, samphire can be grazed usefully.

Samphire is most useful for late summer and autumn grazing because other feeds are scarce at this time of the year. Grazing at this time also allows the plant to make normal summer growth and produce seed for regeneration. However, continuous heavy grazing will kill the samphire stand.

Well managed, mature stands of samphire usually thicken-up and improve. They are occasionally invaded by some annual pasture species in favourable spots to provide a useful supplement to the samphire. Unfortunately, this does not indicate that the saline area has been reclaimed - it would still be unsuitable for cropping.



Forage harvesting of samphire