PRACTICALITIES

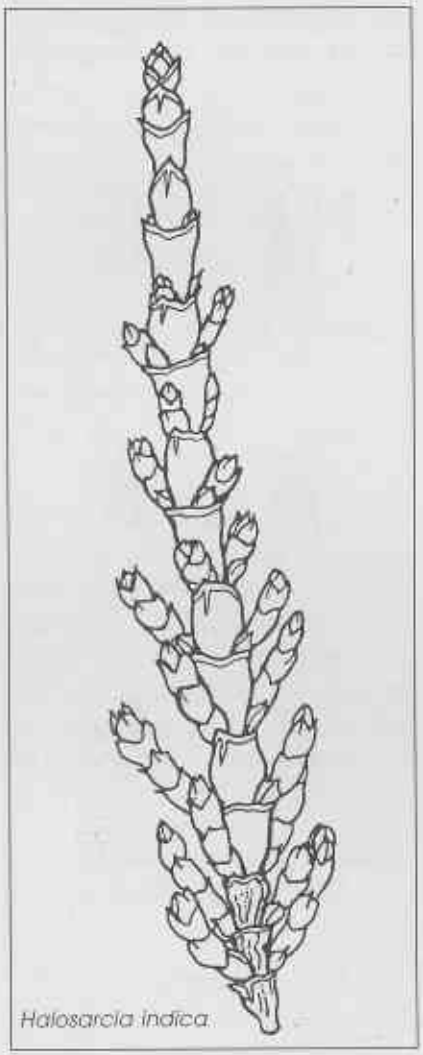
GROWING SAMPHIRE

Clive Malcolm

IN *Western Wildlife vol 7 no 1*, Penny Hussey made an appeal for information on how to grow samphires. In the 1960s I carried out research in this area. Seeds of two species of samphire, *Arthrocnemum halocnemoides* varieties *pergranulata* and *pterygosperma* (now named *Halosarcia pergranulata* and *H. pterygosperma*) were harvested and germination tests made at a range of temperatures and salinity levels (Malcolm, 1964). Some of the seeds were scarified with sandpaper to try to break their dormancy. Germination was tested at four concentrations of sodium chloride and eight temperature regimes. Salinity caused a reduction and delay of germination in both varieties. A 50% reduction in germination for *pterygosperma* occurred at about 8 g/L and for *pergranulata* at about 20 g/L. *Pterygosperma* was very temperature specific only giving significant germination at the temperature range 5-35C, the temperature range at which *pergranulata* gave the best germination. Scarification of seeds of *pergranulata* increased and accelerated germination. There was an interaction between scarification and temperature.

The next step was to try to establish samphire on highly saline and waterlogged lands which were refusing to respond to sowing with saltbushes and bluebush. Field observation showed that if areas of saltland close to samphire bushes were protected from grazing the samphire spread by seeds. To revegetate areas remote from a seed source it was necessary to harvest and sow seeds. There is a problem with harvesting of samphire seeds because the seedheads remain green and succulent after the seeds are mature. Tests showed that for *H. pergranulata* the mature black seeds could be seen in the fleshy inflorescences in late summer, a good time for working with harvesting machinery on severe saltland. The seeds used in the above germination tests were carried out on seeds harvested in green material.

In February 1964, with the co-operation of the late Grant MacDonald of Toolibin, a forage harvester was used to harvest the tops of a stand of mature black-seeded samphire. The resulting material was spread on bare saltland to dry for about two weeks. A side delivery hay rake was used to knock the seed heads off the sticks and rake the sticks aside. Feeding the dry seed heads into a grain harvester did not produce a clean seed sample and clogged up the machine. A clover harvester managed to produce a clean seed sample. But the best solution was to put the material through a hammer mill to thresh the seeds out, turn the remainder into a fine bran and probably give the seeds a degree of scarification. The resulting seed-rich material was spread on cultivated soil in the autumn at a wide range of wheatbelt sites resulting in the establishment of seedlings. Only black seeded samphire was used in this work.


Halosarcia indica

In 2002 inspection visits were made to old research sites ranging from Wongan Hills to Gutha. Samphire had been sown on some of these sites in 1964 and it had increased in presence greatly. On other sites grazing protection had encouraged samphires to colonise and a total of seven species were identified (J-P Collins, pers com.) in the old sites where no samphire had been when the sites were fenced.

The reduction in sheep numbers in the Northern Wheatbelt appears to have resulted in an enormous increase in the area of land carrying samphires. In some cases the areas are highly saline and waterlogged and there is little or no annual understorey with the samphire. In other areas colonised by samphires annual understorey is common and these areas are probably capable of growing *Atriplex* or other species.

Two examples of saline areas colonised aggresively by samphires have been observed in the past. In a grazing experiment at Kondut (Malcolm and Pol, 1986) plots of river saltbush (*Atriplex amnicola*) grazed hard every autumn for six years retained a good stand of saltbush. In the same experiment plots of marsh saltbush (*A. paludosa*) were so badly affected by grazing that they had to be rested. This enabled samphire to invade these plots. A similar case of samphire colonising around a strip of river saltbush was observed East of Gutha.

So to answer Penny's questions:

1 You can grow samphire (at least *H. pergranulata*) by spreading seeds on cultivated highly saline waterlogged ground in the late autumn in the wheatbelt.

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2 If there are samphire plants in the vicinity you can achieve revegetation by excluding grazing animals and allowing the plants to colonise.

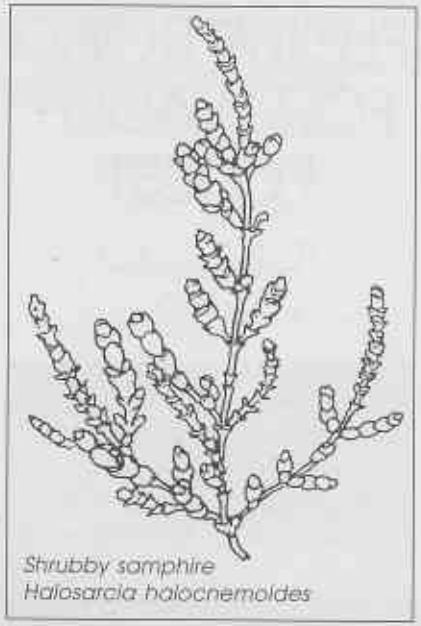
Do not assume that the presence of a dense stand of samphire precludes the possibility of growing species from further up the ecotone.

There are over 250 old saltland agronomy research sites many of which have been protected from grazing for decades and some for up to 50 years. I have records and photos relating to the old sites. A programme of visits to assess the old sites includes recording colonising plants, lichens and fungi and making notes on vertebrates and invertebrates. The old sites range from Yuna to Salmon Gums and Busselton to Walgoolan. The results of this work will be used to guide the 1MPULS> Project for revegetation of one million hectares of saline land in WA farming areas over ten years both for forage production and biological conservation.

References:

Malcolm, C.V. (1964) Effects of salt temperature and seed scarification on germnation of two varieties of Arthrocnemum halocnemoides. *J. Royal Society of WA, vol 47 pt 3, pp72-4.*

Malcolm, C.V. and J.E. Pol. (1986) Grazing and management of saltland shrubs. J. Agriculture WA 27:59-63.



Shrubby samphire
Halosarcia halocnemoides

Clive Malcolm worked as a Research Scientist within the Department of Agriculture, and is a pioneer of saltland revegetation. Now retired (but when do keen scientists ever really retire!) he can be contacted by email: cmalcolm@denmarkwa.net.au

WAGIN WOOLORAMA

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