

THE MULTIPLE USE OF SALINE WATER; TURNING AN UNDER-UTILISED RESOURCE INTO A VIABLE ONE

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With Western Australia set to lose up to 6 million hectares of arable land (one third of total arable) to salinity between now and the years 2050 and 2070, new forms of agriculture must be developed to utilise these changing farming conditions. The concept of turning saline land into a resource must be constantly encouraged instead of perceiving salinity as a problem.

Worldwide 131 species of halophytic plants are presently being studied. Potentially 250 commercial halophytes could be developed from the 10 000 salt tolerant plants that are known to exist. Opportunities are present and we must as individuals and as an industry explore them further. Australia has a huge biodiversity that is under developed and under researched. Many other countries are exploiting these resources in their quest to support their farm sector. We must continually ask how we support these "potential" crops or industries in Australia.

Salt tolerant crops like salicornia (*Salicornia bigelovii*), Nypa ® Forage (*Distichlis palmeri*), and guayule from overseas present opportunities that are not exploited at present in our production systems. The valley floors in the eastern wheatbelt were the most productive soils before salinisation, and with a change in our agricultural systems they could be that once again.

A farming system that includes halophytes and aquaculture on saline land has a synergistic benefit to present grain production practices. New shrimp farming ventures in the USA are conservatively estimated to return 38% (IRR) including establishment costs. Inland aquaculture has the benefit of disease and pest freedom, a processing industry that can employ people in declining rural communities and the proximity to grain for food.

In many areas of the world agricultural drainage is viewed as an environmental problem. Integrated drainage management systems have been developed in the State of California to deal with discharge water from agricultural land at a farm and district scale. In each of these systems salts are concentrated through a series of plant systems and then used for a combination of aquaculture, salt harvesting and potentially solar gradient ponds.