plants and whether that they are truly adapted to a local environment.

That's all very well, you will say — but you have not got the time to play around like this — or the capital — and why should you do all the donkey work anyway? — That is where the Protea story comes in: — From about 400 species, only 12 were selected. There were problems: sorting out these problems was not a one-sided affair. The nursery trade did not progress very far on its own until it had help and cooperation from research bodies and from universities.

I am sure that there is a great future for the native flora of this country. The potential of some genera is enormous. But no nursery concern can afford the trials — or has sufficient expertise — to develop what is on our doorstep. So I suggest that the nursery trade take a look at this: a long creative look without quibbling; get together, put up a combined front; in fact, formulate a policy and then approach government and research organisations for support.

EFFECTS OF WATER QUALITY IN RELATION TO PROPAGATION

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During the last 20 years the propagation of a general range of shrubs and trees has been undertaken using poor quality irrigation water. Some practical observations and methods we have developed over this period of time under these conditions are as follows:

The quality of underground water we use is approximately 800 ppm of total soluble solids; the majority of the salts being sodium chloride 350 ppm; iron 0.3 ppm; calcium 34 ppm; zinc 0.10 ppm. The pH is approximately 7.5.

While cuttings of most species can be struck successfully, the overall percentage is poorer than if superior quality water is used. A fairly wide range of species are propagated, including both natives and exotics. Some susceptible species, such as soft-leaved deciduous shrubs and trees and azaleas are no longer attempted as the results are too poor to warrant the perserverance.

The damage to plant tissue from poor water quality seems to follow a fixed pattern, namely:

1. The first signs are damage to the leaf tips and margins.
2. Next comes damage and possible death to the plant or cutting, commencing at soil level and proceeding upwards.
3. The final effect observed is damage to the roots.

After many trial and error approaches to propagation by cuttings, we have settled on a basic formula as follows:

(a) Where it is possible to propagate with different types of wood the firmer cuttings generally give better results than the extremely soft ones.

(b) We try to avoid the hottest and driest period of summer as a time to take cuttings.

(c) We use more shade than normal.

(d) Because of the increase of soluble salts through evaporation, plastic pots are used in preference to clay.

(e) The benches are slightly inclined and covered with crushed slag or metal aggregate so as to ensure efficient drainage.

A mesh grid also worked effectively as a bench, but because of the necessity of maintaining a high humidity adjacent to the plant material, the solid type bench gives better results.

The area is treated with a copper oxychloride fungicide before every use.

(f) The propagation house is double skinned (glass outer, polythene or corflute inner) with a 6" air space between skins. The double skins help maintain even temperature, assist in shade control and ensure a very high humidity.

Misting systems have proved to be unsatisfactory and are not now used. The frequent light applications of moisture by misting causes excessive buildup of salts on leaves and soil surfaces. The creation of a high humidity (sweat) chamber appears to give better results.

(g) Shallow propagation pots are used to help drainage — 5" squat pots mainly. Tubes are not used because of the problems associated with maintaining adequate moisture.

(h) The propagation medium we use is, by volume, 70% sharp sand, 10% crushed slag, ($^3/_{16}$") 10% foam styrene ($^3/_{16}$"), and 10% crushed pine bark. This mixture has good drainage properties and allows us to water quite heavily, a desirable thing as it helps to flush the salts from the medium. Media containing peat moss, sphagnum, sawdust etc. in quantity have not been as successful as the above mixture, probably because they do not drain as well and retain too many salts. The sand should be very coarse — up to 1/16th". Man-made sands, e.g. crushed

aggregates are not as efficient as naturally occurring creek bed sands, probably because the man-made sands do not drain as readily.

(i) The selection of the most desirable plant material is necessary; weak or inferior wood affects the rooting percentage quite dramatically.

(j) The inclusion of any soluble material in the irrigation water appears to increase the problems encountered. However, we do include sulphuric acid (98%) at a rate of 25 ppm and polyphosphate 918 at 3 ppm, in the irrigation water to adjust to a pH of approximately 6.5 and to help in the cleaning of the leaves.

All materials that are added to the irrigation water appear to increase the total solids. Therefore we try to apply fertilisers, insecticides, fungicides etc. through the roots as they are less succeptible to damage than leaves. We try to avoid any form of liquid foliage feeding during extremely hot, dry periods. Should foliage feeding become necessary we use weak concentrations of fertilisers and apply them in the evenings on dull days. We water heavily and frequently to prevent the soils drying out but they must drain well.

Cuttings propagated with this inferior water take longer to strike (up to twice as long), the percentage of take is poorer, and the resultant growth slower than those propagated with demineralised water.

POTENTIAL FOR HORTICULTURAL DEVELOPMENT IN THE NORTHERN TERRITORY OF AUSTRALIA

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It is now 150 years since the first documented evidence of incipient horticultural activity in the Northern Territory and, in that time, it has suffered from the vagaries of numerous officials. Horticultural activities have been dampened by a lack of sympathetic government action and a severe lack of technical knowledge of suitable crops.

During the past 12 years, I have become more and more aware of the tropical fruits and their potential in the Northern Territory. With the advent of drip irrigation and a better understanding of tropical techniques (instead of "modifying" southern Australian techniques) even those plants condemned for