increasing, it is intended that short-duration courses will be provided in aspects such as nursery container production, propagation techniques, and so on.

THE FUTURE

Since 1980, horticultural education in the Northern Territory has been placed on a firm footing and, with the basic courses now established, a steady supply of staff trained in various aspects of tropical and arid-zone horticulture should be available to keep the industry growing.

Whether providing horticultural education in our colleges or by distance education through the means of correspondence, adequate funding must be provided. This means that the industry must make its needs clear and present a good case to our government. Perhaps by the 1900's we might be offered a seat in the University of the Northern Territory.

HOW COMPUTERISED RECORD KEEPING CAN HELP THE PROPAGATOR

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Why the propagator needs records. The nursery industry in Australia has grown from being a small cottage industry in which the owner-operator "knew it all" from years of on-the-job experience, or simply "green thumb", to one which is literally a branch of agricultural science. As no scientist can exist without records so, in 1983, should no horticulturist.

The propagator needs records not just to prove a technique does or does not work but to compare techniques. In a time when making a profit is essential for survival it is enormously important to know exactly which plants are being produced economically, which techniques give the best results, and which operators are the most efficient.

What records are needed. The records needed are determined by the type of information required. Before collecting information, it is essential to ensure that it will be used.

Consider some of the questions which may be asked of the propagator and for which he may have to search out data in order to provide the answers:

1. How long does it take *Plant A* to reach a saleable size? Is this an optimum time? Does it vary with the seasons? Does

it vary with the operator? Does it vary with the source of the material?

2. What percentage of the cuttings taken reached a saleable size? Is this always the same? At what stages during the production cycle were the losses encountered? Were they due to unusual circumstances?

3. Is the production of *Plant B* economic. Is it time consuming at any stage? How long did it stay in each stage?

4. When were cuttings taken of *Plant C*? Could they have been taken earlier or later and been ready at a more suitable time?

5. What seed should be ordered next month in order that plants scheduled, say for spring, can be sown?

6. If you run a series of experiments on propagation of *Plant D*, can you provide parallel results for comparison during the normal course of record keeping?

What information should be collected. The information on plant production can be collected at each stage. Basically it will be as follows:

PLANT NAME — Batch Number

The batch number will be a specific number related to the date during which the group of plantlets (cuttings or seeds or culture) starts life. A normal system would include YEAR-MONTH-NEXT NUMBER, thus 83-05-001, 83-05-002 for groups of plants started in May, 1983.

NUMBER OF PLANTS

In the case of cuttings, where these are set individually or into community trays with standard spacing, these can be estimated fairly exactly. For seeds — with large seeds this may be accurate but with small seeds this will have to be an estimate. Where an estimate is used it may be useful to weigh the seed and record it.

SOURCE OF MATERIAL

Where seed is bought in, the supplier should be noted. Where stock is taken from plants on ground, mother plants, or general nursery plant beds, this too is important information.

LOCATION IN GLASSHOUSE

The location in which cuttings or seeds are placed should be noted with date they were put in.

OTHER INFORMATION

Other information which may be collected at the time the plant "starts life" includes the following:

Contract # — where plants form part of a forward order contract

Operator — the group or special operator performing the task

Hours — the time in hours or minutes as apppropriate for task to be performed.

General information — this might include number of trays used, type of hormone, mix for cuttings, special treatment, formula code for tissue culture medium, and a host of other specific information for the batch which may indicate reasons for success or failure.

Manual or computerised record storage. There are a number of reasons why computerised record keeping is far superior to manual records. The most important is the time saving involved. There can be no doubt if genuine reports are required on a number of different plant species grown by any nursery then computerised record keeping is the ultimate. The ultimate, provided the computer has been programmed to receive the type of data to be collected and to report meaningfully on it.

The advantages of computer record keeping come in two ways:

(a) The time taken to enter data through a keyboard as compared to sorting through cards (as in a manual system) and hand writing the information is minimal.

(b) The computer is able to perform sorts, comparisons, and match required information in a tiny fraction of the time which would be needed by a clerk. Thus, information is available from a computer exactly when it is needed and up to the minute correct.

In addition to this, computerised record keeping ensures that the propagator is kept working in the area in which he is skilled, growing plants, the clerk is kept working in the area in which she is skilled, typing on the keyboard, and generating reports for the propagator.

What sort of reports can be obtained. Depending, of course, upon the software and on the options that are available to the user of the computer, reports CAN be obtained for any information that the propagator can think up. Once the data is entered to the computer, reports may be generated to give:

— Comparisons of batches of the same plant

— History of the batch of a particular plant from the time it is started to the time of last sale.

— Reports on the plants available at a particular age, particular container size, for a particular contract . . .

— Plants ready to be planted out.

— Plants ready to be sown as seeds in a particular month.

What size computer. Many computer companies promise many things. By the time you find out they aren't quite what you thought it is too late.

A good rule of thumb is that to integrate and control all the functions of a plant production nursery, a minimum of 15 megabytes of disc storage (Winchester or fixed disc preferably), a 16 bit processor, suitable backup medium, one visual display unit, and a printer is needed. In May 1983, this would have cost about 25,000 Australian dollars. However, in a very short time additional visual display units and a second printer would be required. To install something smaller simply means that less information can be stored and retrieved with less speed. Although time is ensuring you receive more for your money, the money you spend is not going down because the labour involved in putting the systems together is increasing. Software, or the programmes which make the computer think and work, are still the most expensive part and least efficient area of computerisation.

MACADAMIA HUSKS AS A POTTING MEDIUM FOR ORNAMENTALS

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Abstract. Ten ornamental species were grown in two combinations of sand and macadamia husks (1:1, 1:3) and compared to a control which included sand, peat, sawdust, and polystyrene beads (1:2:2:3). After 51 days all species growing in both the sand and husks media showed significantly ($P<0.05$) greater vigour than the control. The fresh and dry weight determinations of the tops of one species examined (Nephrolepis exaltata) showed significantly ($P<0.05$) higher growth rates than the control. Macadamia husks are suitable for use in potting media with a wide range of ornamentals.

INTRODUCTION

Macadamia husks, the fibrous carpels which enclose the nut and are mechanically removed after harvest have been shown to be an inexpensive alternative to peat as a component