

DEVELOPMENT OF NURSERY FACILITIES AND TRAINING PROGRAMMES AT THE QUEENSLAND AGRICULTURAL COLLEGE

J. GORDON

*Department of Agronomy
Queensland Agricultural College
Lawes, Queensland*

The Queensland Agricultural College offers a range of full time course in horticulture, ranging from a two-year Associate Diploma courses designed to train technicians and supervisors in the various horticultural disciplines, to a degree course in Horticultural Technology.

Traditionally, horticultural teaching at the college has centered around fruit and vegetable production, but now the scope has expanded with the introduction of specialist subjects such as Nursery Production, Ornamental Horticulture, Landscape Gardening and Turf Management. These specialist subjects are designed to meet the needs of the various sections of the horticultural industries and they have originated partly as a result of pressure from industry groups, such as the Queensland Nurseryman's Association, and the International Plant Propagators' Society. Our main emphasis now is on the development of the necessary practical facilities to effectively teach these subjects, particularly the facilities for the teaching of nursery production.

Plant propagation and nursery production are fundamental parts of the whole field of ornamental horticulture. Students intending to enter sectors of the horticultural industry such as Nursery Stock Production, Garden Center Management, Parks and Gardens Departments and Landscape Contruction must all possess a wide knowledge of plant production techniques.

To this end a one-hectare site has been allocated and development of a nursery has started.

EDUCATIONAL USES OF THE NURSERY

TEACHING OF PLANT PROPAGATION PRACTICES:

Nursery Stock Procedures: The needs of students entering the plant nursery industry will be catered for by regular participation in the propagation, potting and general care of a wide range of plant material, in addition to regular work on nursery design and management, plant protection studies, and mechanization.

To inject realism into the programme it will be necessary to structure the nursery on sound commercial lines. It is our intention that a significant proportion of the output from the nursery

will be sold. The income generated will go some way towards offsetting running costs of the nursery. However, commercial considerations will not be allowed to take precedence over educational requirements; we must not lose sight of the primary reason for our existence. It is not our intention to set up in competition with local nursery stock producers. All produce will be offered for sale to the wholesale trade and the Queensland Nurseryman's Association has already indicated its support for this project. The college will work closely with the Association and a joint decision will be made on the range of plant material to be grown for sale.

As previously mentioned, the main emphasis will be on production for wholesale outlets but when the nursery becomes well established we must begin to think about serving the needs of the retail nursery industry and establishing a model garden center to demonstrate modern retail systems.

The courses are designed to serve the needs of students intending to enter the horticultural industries at both management and technical levels. The facilities being developed must reflect this and so will be of the types that a commercial grower would use. We wish to avoid unnecessary expenditure on elaborate constructions which do not relate directly to current commercial practice.

We believe that the acquisition of a wide range of practical skills is an essential part of the education of horticulturists and the nursery complex will provide a central location for the teaching of these skills. It is intended that the nursery will propagate a wide range of ornamental plants of lesser commercial importance to enable students to become familiar with a wider range of plants than is normally available commercially. However, we do not imagine that the college nursery will be able to provide the full range of experiences necessary to train a competent horticulturist and it will be supplemented by visits and exercises in local nurseries as well.

Parks and Gardens Personnel: Students intending to specialize in parks or other government horticultural agencies require the same detailed knowledge of plant production. Therefore, a range of similar plant production exercises will be undertaken by students specializing in this sphere. Parks and gardens do have certain specialized requirements and it is intended that an area within the nursery will be set aside to cater for these requirements; e.g. the production of advanced nursery stock for "instant" landscaping.

It is proposed to develop a six-hectare site adjacent to the nursery as an environmental park. The establishment of the park will fulfill an extremely valuable educational requirement

of allowing students of ornamental horticulture to gain experience in park design and in the utilization of plant material raised in the nursery.

Annual bedding plants will also be produced in the nursery. Students will be involved in the production of batches of flowering annuals to provide successional displays within the environmental park.

Landscape Gardeners: The basic constituent of all landscapes is plant material. Intending landscape gardeners must be capable of growing a range of plant material to a size suitable for planting out; therefore a detailed knowledge of plant propagation is an important requirement. To enable these students to gain experience in design and in plant utilization, it is intended to initiate a series of design projects within the environmental park utilizing plant material raised in the nursery.

Fruit Producers: Commercial fruit growers require a knowledge of rootstock production and budding and grafting techniques used in the raising of fruit trees. Many of the practical skills necessary are common to other disciplines and students specializing in fruit will undertake a series of propagation exercises along with other groups. An area of the nursery will be set aside to cater for the specialized requirements of fruit tree production.

Turf Producers: Turf production is a rapidly expanding sector of the horticultural industries. The demand for good quality turf for landscape projects and home gardens is expanding at such a rate that the conventional production methods will soon be inadequate to cope with the projected demands. New production techniques have been developed to shorten the growing period, and it is proposed that an area within the nursery be set aside to evaluate these techniques for Queensland conditions.

TEACHING OF HORTICULTURAL ENGINEERING:

As the nursery is developed, a range of specialized horticultural machinery and equipment will be built up. This will be an invaluable asset in familiarizing horticultural students and others with a wider range of machinery and equipment. Examples are automatic irrigation equipment, mist propagation equipment, automatic glasshouse ventilation, media sterilizing equipment, media mixing equipment, potting machines, etc.

TEACHING OF BUILDING CONSTRUCTION:

During the construction period there will be considerable student involvement in a range of building construction exercises.

TEACHING OF PLANT PROTECTION;

The appearance and value of nursery stock can be seriously

affected by a wide range of pests and diseases. Weed control can be another major factor in maintaining plant quality. The College has a specialist team of plant protection staff who will be concerned with the problems of nursery production. It will also be very much to the advantage of the local nursery industry to be able to obtain precise information on the latest plant protection techniques.

TEACHING OF BUSINESS STUDIES AND VALUATION:

The nursery will provide a more realistic practical teaching facility to widen the range of business experiences of students. Examples of possible study areas including work study, financial planning, accounting systems, labor surveys, profitability studies, project evaluation, marketing investigations, etc.

PRODUCTION OF PLANT MATERIAL FOR LABORATORY USE:

It is envisaged that the nursery will raise substantial amounts of plant material for laboratory investigation work.

SITE FOR STUDENT AND STAFF RESEARCH WORK:

In addition to direct teaching use it is expected that the nursery will be used for practical project work by students and for staff research programmes. Third and fourth year degree students must carry out detailed project work as an essential part of their course. In this respect we must also look towards the future. It is intended that Graduate Diploma and Masters degrees be established in the future and provision for space must be made.

AUSTRALIAN NATIVE STOCK REPOSITORY:

One area in which we can be of value to the nursery industry is in being able to maintain a collection of the most useful Australian native plant species not readily available through commercial channels. Large numbers of cultivars and hybrids of native species are being introduced into the trade but by no means all of these are good enough for large scale production. The environmental park is a suitable area to act as a repository for this material and we aim to evaluate the performance and to propagate the most suitable lines for supply to interested nurserymen.

VIRUS-FREE NURSERY STOCK REPOSITORY:

As developments proceed we should undertake the production of, and maintain, a range of virus-free propagation material for distribution to nurserymen. The plant protection group at the College is concerned with an integrated system for maintaining plant health and quality and would have a major role in this programme.

BENEFITS TO THE NURSERY INDUSTRY

Apart from the direct benefits to be gained from the availability of a pool of well-trained nursery staff we feel that this development can provide other substantial help to the industry. A fund of specialized knowledge will be available at the college to help overcome the problems of the industry and, we hope, lead the way forward with the introduction of new techniques. We intend to organize a series of field days at which growers can see a range of production techniques and discuss problems with other growers and with college staff. The college staff will also be available for consultation with individual growers and a two-way interchange of ideas and information will develop to our mutual advantage.

CUTTING-GRAFTS OF CAMELLIA RETICULATA

STEVE CLARK

Camellia Grove Nursery P/L
St. Ives, New South Wales

Camellia reticulata has been propagated in this nursery for many years by cleft grafting. However the numerous disadvantages — use of four-year-old understocks, no buds formed in the first season after grafting, single stem with few or no lateral branches for the first year — made a cutting-graft seem worthwhile trying.

A side veneer graft carried out in the summer has worked well. The procedure is as follows.

Camellia hiemalis 'Kanjiro' is used as the understock. A vigorously growing plant that has made stout shoots on the top is selected. Understock cuttings are prepared about 5 inches long with 2 or 3 leaves. A single sloping cut about 1/2 inch long is made into the stem about 1½ inches from the base. This is where the wood is thickest and the possibility of cutting right through is minimized.

The scion of the desired cultivar is prepared by cutting to approximately 3 inches in length with two leaves at the top and the base is shaped into a wedge about 1/2 inch long. The scion is inserted into the cut in the understock and tied at this point. If the scion and the understock are exactly the same diameter there is no problem at all, but in most cases it is necessary to line up the cambium layer on one side only and overlap or underlap the other side as required. Where the scion is grossly oversized trim down one side to approximately understock size and proceed as before. For best results tie with a rubber band