

# HORTICULTURAL TRAINING AT THE UNIVERSITY OF CALIFORNIA, DAVIS

DALE E. KESTER

*University of California  
Davis, California 95616*

Horticulture at UCD is typical of teaching at many State and Land Grant Universities. Actually it is taught under various guises and names. We need to consider undergraduate, M.S., Ph.D., and University Extension programs. In addition, we should not forget the Cooperative Extension Service as part of a widespread continuing education system which is available to the farmers, nurserymen, handlers, and manufacturers of the state. Farm Advisors and Extension Specialists may, in many instances, contribute significantly to the education of individual horticulturist.

However, let us concentrate for the purposes of this talk on residence instruction at UCD. Undergraduate students interested in horticulture will major in *Plant Science*. This major was produced several years ago by combining instruction provided by numerous faculty in subject matter departments of Pomology (fruit), Viticulture (grape), Vegetable Crops, Agronomy, and Environmental Horticulture. Each of the departments includes 10 to 15 or more faculty members, each of which not only has a commitment to teach but also to do research in the Agricultural Experiment Station and to carry on public service activities. Thus, you must realize that his time commitments can be stretched pretty far.

Part of the philosophy for changing to a Plant Science major was to encourage a broader program at the undergraduate level. Thus, within the Plant Science major, a student may take a general program or he may specialize in any of the above departmental specialities, plus floriculture, landscape horticulture, turf, nursery management, and plant pathology. Also there exists majors in: (a) Ag Science and Management and (b) Individual major. Academic programs in Plant Sciences are relatively flexible, part required to provide basic subject matter, the rest adjusted to meet the student's individual needs as far as possible. He is assigned to an advisor in the area of his special interest. Between advisor and student an academic program is worked out. Traditionally, the approach in teaching has been academic, depending on lecture and laboratory type courses, where the emphasis has been toward providing the student with a background in basic sciences. Other subject matter is combined with sufficient application, so that students are prepared to adapt to changing needs and to particular situations once they leave the academic area.

Regarding nursery production, the emphasis is on the use of technical information in the analysis and solution of planning, scheduling, production and post-harvest problems. Synthesis and integration of facts is important. Because many students now come into Plant Science and Horticulture without much actual field or work experience, there is a growing emphasis on providing opportunities for experience on or away from the campus and to stress application as well as principles. A *Work-Learn* program has been in operation for many years but has recently been given added emphasis. In fact, UC would be interested in developing greater work-learn opportunities with commercial operators in horticulture. Also, a "stop-out" program is available where students can leave the University for a couple of years, returning later to finish their studies.

Many students find it desirable to go two years to a junior college and transfer to UCD for the junior and senior years. Competition within classes for a beginning freshman student is high. He must compete with engineering, math, bio-science, pre-med, pre-vet, etc.

Undergraduate course work can be divided into several categories:

1. Basic required areas which should be completed during first couple of years.

Chemistry - inorganic/organic, (biochemistry optional).

Physics

Statistics

English and Social Sciences

Biology and Botany, Plant Physiology

2. General horticulturally-related courses, followed by more advanced or applied courses in each of these fields:

1. Soils, Irrigation,  
Soil Management

2. Entomology

3. Plant Pathology

4. Genetics

5. Weed Science,  
Nematology

3. Plant Science - Horticulture

An introductory plant science course was started several years ago. It utilized the VAST system (visual, audio, self-tutorial) and presents a broad introduction to the field of agriculture and plant propagation by a series of mini-courses which are taped and utilized by students independently in combination with work-books, slides, and various demonstrations, followed by special discussion sections.

In a plant growing laboratory, each student is assigned a 200-ft. field bed in which he grows vegetables, ornamental plants, grains, etc. This course is open to all students. It has been quite successful, with an enrollment of 150 in the fall, and 300 in the

spring quarter. It has been instrumental in encouraging a number of students to adopt plant science areas as a professional interest. Other general plant science courses are "Ecology of Crop Plants", "Physiology of Crop Plants", and "Origin of Crop Plants".

4. Plant propagation is taught in the spring quarter (April to June); enrollment increased to 96 this past year and may increase further. It includes 2 lectures per week and so far, 4 lab sections; it includes opportunities for students to perform the basic propagation procedures as seed propagation, cuttings, and grafting. Aseptic culture of orchid seeds is included and we wish to expand this tissue culture area. Lectures emphasize the biological principles involved.

5. In addition, courses in the various horticultural topics are given in nursery management, viticulture, pomology, seed production, floriculture, plant materials, turf, etc.

6. Special problem courses, Work-Learn, and field trip courses are available to students, but are not required. These give actual work in the field.

All in all, a very large array of opportunities are available to students.

M.S. degree — Many students continue for graduate work. A *Master of Science degree in Horticulture* is given which includes the areas of Environmental Horticulture, Pomology, and Viticulture. The program requires 1 to 2 years to complete and provides not only additional technical training but also the opportunity to *work on special projects or research problems*.

Ph.D. degree — Training of graduate students at Ph.D. level is important to the training aspects of horticulture. At UCD, training may involve a horticultural problem but requires the application of a basic scientific discipline, such as botany, plant physiology, or genetics, to it. This program has produced primarily teachers of horticulture and research scientists, not only in the University and College area but also for private industry, such as chemical companies.

As we look into the future, perhaps some of the areas of propagation and production will be carried out by specialists who may require very technical training — at least an M.S., but perhaps also, the Ph.D. degree.

#### UNIVERSITY EXTENSION AND CONTINUING EDUCATION

This area is directed toward adults or part-time students and seems destined to become more important in the future. It is a relatively recent development. Consequently, at present, anyone can come to the university and take any course, providing space is available.

I am encouraged by aspects of the present situation by:

- (a) Numbers of bright young people coming into the field, who are interested and who show growing awareness of plants and agriculture.
- (b) Interest by faculty in innovations in teaching and not being bound by old methods. To some extent a shift in faculties is taking place as a new generation is occurring all over the country with present and upcoming retirements.
- (c) Attitudes and interest of the industry in encouraging students to come into nursery and agriculture program and, most of all, to look towards college-trained students as recruits for their industry.

MODERATOR BROWN: Thank you, Dale. A very nice presentation. Our next speaker came a great distance to talk with us. I want to allow him full time for the message he has. He has been introduced to you previously. He is principal of the Pershore College of Horticulture, Pershore, England, and was a prime mover in the formation of the IPPS GB&I Region. He is President this year of GB&I. Speaking on the topic of, "The Educational Gap" is Mr. Richard Martyr.

## **THE EDUCATIONAL GAP<sup>1</sup>**

RICHARD MARTYR

*Pershore College of Horticulture  
Pershore, Worcestershire, England*

I have taken this title from two articles in the "American Nurseryman" which reported the considerations of the Point Committee on 'Focus on the Future — Education'. Here a number of prominent nurserymen and two academics discussed many aspects of education and training for the industry and, in particular, looked at the lines of communication between the industry and the training establishments.

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<sup>1</sup>See also page 440.