

HORTICULTURAL SCIENCE IN THE HIGH SCHOOL

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Those of us associated with the field of horticulture are aware of the acute shortage of qualified employees in the labor market. We are aware that even though we have one of the highest standards of living among the nations of the world, we have not been entirely successful in motivating our young people towards a greater appreciation of horticulture. Our institutions of higher learning are turning out students who have satisfied the requirements for a baccalaureate degree but who are failing to satisfy the requirements of today's horticultural industry. The educational segment of our society is not at fault for this shortcoming: the industry itself has failed in properly identifying its needs — and transmitting these needs down through the educational strata. The potential employee, professional or practical, must be exposed to the programs and requirements in the field of horticulture and I feel the members of the industry must help.

To place this presentation in its proper perspective would require an author with far greater talents than I possess. My primary purpose in presenting this topic is to focus your attention on a program which may help to resolve some of our training weaknesses. I am not a professional educator and it is not my intent to lecture to the faculty members in this audience. I would like to present the outline of a program which was initiated in the Middletown High School in response to a definite need expressed by the professional nurserymen of Aquidneck Island.

The program, now in its third year of operation, evolved through the cooperative efforts of nurserymen, a school committee, the superintendent's office, and the diligent leadership capabilities of a high school principal. I have been very fortunate in serving as an advisor in the development of this horticultural prototype; for this reason some of my observations may appear biased. It has been a singular challenge for me to be associated in the initiation and implementation of this horticultural science curriculum, the only one of its type being offered at the high school level in Rhode Island.

The program as it was first envisioned was to be offered as an elective course to the four upper grades in the secondary school system. A rough draft of the proposed curriculum was presented to the high school principal for refinement and, after several sessions, it was ready to be presented to the school committee. Due in large part to a very progressive and open-minded committee, the proposal received majority endorsement at the first reading and we began in earnest to finalize the program. A definitive cur-

riculum was prepared, budgetary requirements were established, an instructor was selected, and the task of organizing the program for presentation to the students began.

During the summer, the curriculum was revised to more adequately reflect the needs and desires of the students. Independent study projects, an integral part of the curriculum, were continued at the upper class level. Enrollment in the fall semester 1973 increased to 78 students in the upper 3 grades and planning was begun to build a greenhouse-classroom structure to properly house the program. A special grant under Title III NEDA was requested for the greenhouse project and work began in December 1973. The students participated not only in the planning phase of the greenhouse, but in its actual construction. The adage of "learn by doing" was apparent during the spring semester of 1974 as the greenhouse became a reality.

When classes resumed in September 1974, the new facility was ready to receive 54 regular students and 8 special education pupils. The popularity of the hort science course was such that registration had to be closed since it was felt that 3 classes of 18 students each was the ideal learning situation. Students are now participating in all phases of classroom horticulture to include bench crop production, pot plant production, seedage and propagation by cuttings. Throughout the school year, students are taken on field trips to commercial nurseries on the island, as well as florist shops and retail garden centers.

The curriculum, which is being constantly reviewed, now offers subject matter which is representative of the entire horticultural industry. Students are exposed through lecture, practical labs, field trips, and independent study projects. Many of the students were employed by nurseries on the island during the summers and their learning experiences continued year round. Because of the unstructured nature of the course, students are able to concentrate on those areas of study which appeal to them and which offer them the greatest challenge.

I have been privileged to teach several classes each year in the program and I am impressed by the motivation of the students in these classes. They are enrolled because they are interested in the subject matter and because they enjoy the practical exercises required. As an academic science course, it attracts college-bound students; as a practical educational pursuit, it attracts the non-college bound; whatever their original motivation, these students become informed and aware of the horticultural field which was our original purpose in establishing the program. Hopefully, some will consider it as a serious vocational choice.

Curriculum Credits. The current curriculum for the hort science program is very broad and exposes students to all aspects of

horticulture. The course meets college entrance requirements for laboratory science and carries a 10 credit per yr rating in the high school (Equal to 10 hr/wk in classtime). Some of the topics covered this semester are: basic botany, identifying ornamental horticultural plants, plant propagation, landscape design, organizing a school flower shop, and horticultural mechanics. Greenhouse maintenance is a functional daily activity now that it has been completed. As the student progresses through the course and during subsequent years, he builds his knowledge on the basic blocks of instruction presented in his first year.

Funding. When the hort science program was initiated, funding was provided by the local educational budget. As the program expanded and since greenhouse facilities have been constructed, matching aid has been provided under Title III NEDA. Additional funding has been provided by mini-grants awarded by the State and from Island Ecology, a local citizens' group. The current budget for the program is below \$10,000. The classroom-greenhouse complex was constructed at a cost of \$12,000, of which 50% was reimbursed under Title III. It is anticipated that the operation of the greenhouse will be self-supporting through the sale of pot plants, cut flowers, flower arrangements, terrariums, Christmas decorations, etc. Sale of these items will be restricted to teachers, students and their families.

Future Potential. The expansion potential of this program is unlimited and plans are already on the drawing board for cold frames, growing areas, and an addition to the greenhouse. Most of these projects will be implemented with student participation during school hours. The flexibility of the program is such that new areas of instruction can be added as the need arises without appreciably increasing the budgetary appropriation. Another facet of possible expansion is that of distributive education, whereby the student will be gainfully employed during part of his school day by a private sector of the horticultural industry.

Seek and Share. The motto of our Society states very simply that we will seek and share information and knowledge in the field of horticultural propagation. My aim in presenting this paper is to share with you what can be done if and when we earnestly seek a solution to the problem. Rather than passively criticizing an inadequate program at the high school level, let us aggressively and enthusiastically seek a program which will benefit the student as a potential contributor to the field. Let us coordinate our efforts at the college level to ensure that graduating students will meet the needs of the industry and not just those requirements of the universities.

The challenge exists for all of us. The time has passed when we can limit our activities to the confines of the propagating facil-

ity. We must broaden our horizons, expand our knowledge, apply our talents, and "seek and share" within the field of education.

MODERATOR HARAMAKI: Thank you, Larry, I heartily agree with your comments concerning the teaching of horticulture, particularly at the high school level. Many teachers at the high school level are not prepared to teach horticulture. Several years ago Penn State was involved in preparing materials to assist the teaching of horticultural subjects at the high school level. Several manuals have been prepared and these are available from Penn State University.

At this time I'll turn the microphone over to Mr. John Roller who will serve as moderator for the second half of this afternoon's program.

MODERATOR ROLLER: This portion of the program is known as "Propagation Potpourri" and as the name implies, it is a mixture of topics dealing with various aspects of nursery work. Our first speaker is James Aylsworth, whose topic is "Optimum Harvest Time for Woody Ornamentals".

ECONOMIC FACTORS DETERMINING THE OPTIMAL TIME TO HARVEST WOODY ORNAMENTAL PLANTS

J.Q. AYLSWORTH and J.T. SCOTT, JR.¹

Woody ornamental plants generally represent a long term investment of land, labor, capital and management inputs of production. Unlike orchard development costs which can be capitalized and depreciated over the productive life of the orchard, ornamental plants can be harvested but once and all development costs must be charged against current revenue.

Woody ornamental plants are harvested in many sizes corresponding roughly to the number of years of production. The revenue accruing to the crop at various ages of development provides the basis of determining the optimal time to harvest the crop to maximize income, over time, to the producer. Demands for current, over future expected income, cause the optimal harvest date to fluctuate among producers. A strong preference for current income reduces the profitability of holding long term appreciating

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