

Secondary Vocational Horticulture Programs - An Assessment

Dr. Michael F. Burnett
Assistant Professor
Department of Vocational
Agricultural Education
Louisiana State University

Dr. Charles W. Smith
Dean, College of Education
Louisiana State University

Prior to 1963, the vocational agriculture/agribusiness program placed primary emphasis on preparing individuals for careers in agricultural production occupations. This changed rapidly following the implementation of the Vocational Education Act of 1963. Results of research studies of the employment opportunities in nonfarm agricultural occupations in most states indicated that the horticulture industry was an expanding field and that consideration should be given to developing programs of vocational education in this area.

The growth of the horticulture industry, including both production and retail sales, has continued over the last twenty years. The demand for ornamental plants and related services has created an expanding field of employment for persons who possess the technical competencies and personal characteristics required in this segment of the labor market. The horticulture industry is recognized as an employment growth area as new opportunities emerge in nurseries, commercial greenhouses, garden centers, golf courses, parks, etc. With this growth has come a subsequent increase in the number of secondary vocational horticulture programs designed to meet the changing and expanding vocational training needs of youth.

The curricula of secondary vocational horticulture programs has been notably varied. Typically, one or more units of instruction in horticulture were added to the traditional instructional program. Some schools offered one or more courses for credit in addition to the regular courses while more recently, schools have developed specialized programs in horticulture for those students who have career objectives related to the horticulture industry.

At present there is a very limited data base from which conclusions might be drawn concerning the manner in which programs are currently being conducted or the directions they should take in the future. There is a need to determine the characteristics of existing programs at the national level in order to better plan and conduct effective instructional programs in secondary vocational horticulture.

Objectives of the Study

The purpose of this study was to determine selected characteristics of secondary vocational horticulture programs in the United States. More specifically the objectives were to determine the:

1. Personal and professional characteristics of secondary vocational horticulture teachers.

2. Organizational structure of horticulture departments.
3. Sources of funding for horticulture programs.
4. Nature and scope of specialized horticulture facilities.
5. Types of supervised occupational experience programs participated in by horticulture students.
6. Curriculum characteristics of vocational horticulture programs.

Methods

The descriptive method of research was utilized in this investigation. Data were collected with the use of a mailed questionnaire designed to obtain the information needed to accomplish the objectives of the study. A modified version of a questionnaire designed by Beals (1974) used to investigate the status of horticulture programs in secondary schools of Indiana was adapted for use in this study. The questionnaire focused on the personal and professional characteristics of teachers, departmental organization, sources of funding, supervised occupational experience programs, facilities, and curricular characteristics.

The population of this study consisted of all secondary school vocational agriculture/agribusiness programs in the United States that offered one or more vocational horticulture courses. A survey of all state supervisors of vocational agriculture/agribusiness in the United States revealed that 1,311 schools offered secondary vocational horticulture courses.

According to Krejcie and Morgan (1970), a random sample of 296 is needed to validly represent a population of 1,300. The sampling unit in this study was schools, therefore a total sample of 296 schools was selected. The population was stratified by geographical region using the regions defined by the National FFA organization, and a proportional sample of schools was drawn from each region. Table 1 shows the number of schools in each region with a vocational horticulture program and the corresponding sample size utilized in this study.

A questionnaire and a cover letter with a self-addressed stamped envelope was mailed to each of the 296 vocational agriculture/agribusiness departments selected in the sample. After a period of three weeks, a follow-up letter was mailed to those who had not responded to the first follow-up letter. This procedure resulted in responses from 208 departments; however, 15 of the departments indicated that vocational horticulture was no longer taught in the department. This decreased the sample size to 281.

Three weeks following the mail out of the second follow-up letter, a random sample of 16 of the non-respondents was selected. Each of

these teachers was contacted by telephone and asked if they would be willing to complete the questionnaire if another copy was mailed to them. All 16 non-respondents agreed to participate and were therefore sent another cover letter and questionnaire. Of the 16 departments, 11 returned usable questionnaires within a two week period of time.

The questionnaires were carefully reviewed visually to determine if the responses of the sample of 11 non-respondents differed from those originally secured. No major differences were determined to exist. In all, the research procedure resulted in a return of 204 usable questionnaires out of a possible 281 for a total return of 72.6%.

Results

The findings of the study were divided into seven major areas and are presented in the following sections.

Personal and Professional Characteristics of Teachers

1. Data relative to the age of teachers show that the majority (59.3%) of teachers teaching vocational horticulture were 35 years of age or less. In addition, 18.1% were 50 years old.
2. The respondents included 187 males (91.7%) and 17 females (8.3%).

Table 1

Number of Horticulture Programs and Sample Size by Region

Region	Number of schools	Sample size
Eastern	482	110
Southern	265	60
Western	286	64
Central	<u>278</u>	<u>62</u>
Total	1,311	296

3. Approximately 57% of teachers indicated they were members of AVA, and almost 59% belonged to NVATA.
4. Most of the teachers (180 or 88.2%) indicated their highest educational degree completed was a B.S. Fifteen (7.4%) held an M.S. degree, and five or 2.4% had a Ph.D.
5. The majority of respondents (126 or 61.8%) indicated they had completed 18 or fewer semester hours of horticulture. However, almost one-fifth (39 or 19.1%) had completed in excess of 30 semester hours of horticulture. The semester hours of horticulture completed by teachers is presented in Table 2.

Table 2

Semester Hours of Horticulture Completed

Hours	Number	Percent
0	16	7.8
1 - 6	31	15.2
7 - 12	45	22.1
13 - 18	34	16.7
19 - 24	19	9.3
25 - 30	20	9.8
31 - 36	6	2.9
37 Plus	<u>33</u>	<u>16.2</u>
Total	204	100.0

6. Eighty-five or 41.7% of the teachers reported having one year or less of horticulture work experience before teaching, while only 37 or 18.0% indicated they had four or more years of work experience.
7. Years of teaching experience in vocational agriculture and vocational horticulture is presented in Table 3. Examination of these data reveal more than one-third (70 or 34.3%) had taught vocational agriculture for five years or less and 24 (11.8%) had taught for more than twenty years. In addition, over half of the respondents (115 or 56.3%) had taught vocational horticulture for five years or less, while only 4 (2.0%) had taught horticulture for more than twenty years.

Table 3

Years of Teaching Experience

Years Experience	Vocational Horticulture		Vocational Agriculture	
	Number	Percent	Number	Percent
0 - 5	115	56.3	70	34.3
6 - 10	51	25.0	29	14.2
11 - 15	22	10.8	22	10.8
16 - 20	1	0.5	9	4.4
Over 21	4	2.0	24	11.8
No response	<u>11</u>	<u>5.4</u>	<u>50</u>	<u>24.5</u>
Total	204	100.0	204	100.0

8. Most of the teachers participating in the study (165 or 81.0%) indicated they were certified through a degree program in agricultural education. In addition, 21 (10.5%) had completed a dual major degree program in agricultural education and a technical agriculture field.

Department Organization

1. When asked how many years the vocational horticulture program had been in operation, teachers responded that over one-third (34.8%) had been offered five years or less, more than one-third (38.7%) had been offered from six to eleven years, and about one-fifth (20.6%) had been in operation 12 years or more. Refer to Table 4 for more complete information on number of years horticulture programs have been in operation.
2. It was discovered that 94 (46.1%) of the programs were single teacher departments, 60 (29.4%) were two teacher departments, 28 (13.7%) were three teacher departments, 5 (2.5%) were four teacher departments, and 14 (6.9%) of the departments employed five or more teachers.
3. Less than one-third (31.8%) of the departments surveyed included exploratory courses in horticulture.
4. Vocational agriculture/agribusiness departments included in the survey were found to exist in a wide variety of school sizes. Thirty-one (15.2%) of the departments were in schools with total enrollments of less than 300 students; 36 (17.7%) were in schools enrolling between 300 and 600 stu-

dents; 33 (16.2%) were in schools with total enrollments of 600 to 1,000 students; 68 (33.3%) were in schools with enrollments of 1,000 - 2,000 students; and 19 (9.5%) were in schools enrolling more than 2,000 students.

5. Programs utilizing horticulture advisory councils constituted 60.8% or 124 of the 204 departments.
6. Almost one-third (61 or 30.2%) of the departments offered adult classes in vocational horticulture.
7. Of the 204 departments responding to the survey, 127 or 62.3% were located in regular high schools, and 52 or 25.5% were in area vocational centers.

Table 4

Number of Years Horticultural Programs Have Been in Operation

Years	Number	Percent
0 - 2	22	10.8
3 - 5	49	24.0
6 - 8	41	20.1
9 - 11	38	18.6
12 Plus	42	20.6
No response	<u>12</u>	<u>5.9</u>
Total	204	100.0

Funding

1. The length of the annual teaching contract held by teachers varied. Only 13 or 6.4% were on a 9-month contract; 40 or 19.8% were on a 10-month contract; 37 or 18.1% were on an 11-month contract; and 103 or 50.5% were on a 12-month contract.

Facilities

1. All schools did not have greenhouses as might be expected; however, 167 or 81.9% did have greenhouses. Other major facilities available for instructional purposes were: land labs, 83 or 40.6%; lathhouses, 64 or 31%; headhouses, 53 or 26.0%; cold frames, 52 or 25.2% and shops, 77 or 37.7%.

Supervised Occupational Experience Programs

1. The most frequently used sites for supervised occupational experience programs included: home (123 or 60.3%), school (114 or 55.9%), and placement in horticulture business (97 or 47.5%).
2. Most teachers responding to the survey (125 or 61.3%) indicated that 30% or less of their students had a declared occupational objective in vocational horticulture while only 28 (13.7%) teachers responded that more than half of their students had a declared vocational horticulture occupational objective.
3. Almost two-thirds (134 or 65.7%) of respondents indicated they make supervisory visits to vocational horticulture students.

Curricular Organization

1. More than two-thirds of teachers surveyed taught the following instructional units as part of their curriculum; plant propagation (96.6%); plant identification (95.1%); disease, insect, and weed control (90.2%); plant nutrition (88.2%); greenhouse management (85.3%); landscape design (84.3%); occupational information (75.5%); agricultural leadership/FFA (72.5%); and vegetable production (69.6%). A complete listing of instructional units taught and percent of teachers surveyed that taught each of the units is presented in Table 5.
2. One hundred and eight (52.9%) of the teachers indicated that they devoted 4.1 to 6.0 class hours per day to instruction.

Agricultural Leadership/FFA

1. One hundred seventy or 83.3% of departments included in the study had active FFA chapters and 41 or 20.1% had horticulture clubs.
2. The data indicate that students of 152 (74.5%) of responding programs participated in the FFA Awards Programs and students of 165 (80.9%) participated in FFA contests.
3. Data related to percent of vocational horticulture students who are members of the FFA chapter are shown in Table 6. Only 79 or 38.7% of the departments had greater than 80% membership in the FFA. In addition, 82 or 40.3% reported that 60% or less of their vocational horticulture students were FFA members.

Table 5

Units Taught in Vocational Horticulture by Department (n = 204)

Unit	Number	Percent
Plant propagation	197	96.6
Plant identification	194	95.1
Disease, insect, and weed control	184	90.2
Plant nutrition	180	88.2
Greenhouse management	174	85.3
Landscape design	172	84.3
Occupational Information	154	75.5
Agricultural leadership/FFA	148	72.5
Vegetable production	142	69.6
Nursery management	126	61.8
Erection, care and use of horticultural structures	119	58.3
Supervised occupational experience program	118	57.8
Turf management	116	56.9
Floral arranging	107	52.4
Fruit production	103	50.5
Production, processing, storage, and marketing of horticultural crops and products	97	47.5
Economics of horticultural operations	92	45.1
Related agricultural mechanics	91	44.6
Plant breeding	74	36.3
Other	18	8.8

Conclusions

Based on the findings of the study, the researchers were led to the following conclusions:

1. Vocational horticulture teachers are relatively young, and few have completed master's degrees.
2. In the area of horticulture, few women have joined the agriculture teaching profession.
3. The rate of membership in vocational education professional associations, among horticulture teachers, is relatively low.

Table 6

Percentage of Students Who are Members of FFA Chapter by Department

Range in Percent	FFA	
	Number	Percent
1 - 20	34	16.7
21 - 40	24	11.8
41 - 60	24	11.8
61 - 80	14	6.8
81 -100	79	38.7
No response	<u>29</u>	<u>14.2</u>
Total	204	100.0

4. Conventional teacher education certification programs are the primary avenues of preparation for vocational horticulture teachers.
5. The fact that most programs are less than 12 years old leads the writers to conclude that horticulture programs have experienced a recent period of rapid growth.
6. In departments with specialized vocational horticulture programs, there exists a slight predominance of multiple teacher staffs.
7. Vocational horticulture programs exist in virtually all school sizes from very small to very large.
8. Although advisory councils and adult classes are considered to be an important part of a total vocational agriculture program, a large portion of vocational horticulture teachers do not utilize advisory councils and do not offer adult classes.
9. Almost half of the vocational horticulture teachers are on less than 12-month contracts, a fact which might be related to the relatively low incidence of adult classes and advisory councils.
10. The majority of vocational horticulture students were enrolled for reasons other than specific occupational preparation.
11. Home projects are still the most frequently used supervised occupational experience programs.
12. Rate of FFA membership in vocational horticulture programs varies widely.

Recommendations

The findings and conclusions of the reported study served as the basis for the following recommendations:

1. A teaching specialty in horticulture should be established to give prospective teachers additional experience in technical horticulture.
2. Efforts should be made to increase membership of vocational horticulture teachers in vocational education professional associations (AVA, NVATA, and state affiliates).
3. Opportunities for women in teaching vocational horticulture should be examined through a study of local educational administrators' attitudes toward women vocational horticulture teachers.
4. In-service teachers should be encouraged to pursue master's degrees with some emphasis on technical horticulture coursework, since many do not have the advanced degree and many have relatively few courses in horticulture.
5. Increased emphasis should be placed on the importance of advisory councils and adult instructional programs to in-service and pre-service vocational horticulture teachers.
6. Appropriate screening procedures should be developed for admission into vocational horticulture programs to enroll classes that include more students with specific interest in horticulture and related areas.

References

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