

CHARACTERISTICS OF SECONDARY VOCATIONAL HORTICULTURE
CURRICULUM AS PERCEIVED BY HORTICULTURE
BUSINESSMEN WITH IMPLICATIONS FOR
DEVELOPING FUTURE CURRICULUM
MODELS

By

LISA M. TARON

Bachelor of Science in Agriculture

Oklahoma State University

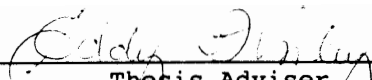
Stillwater, Oklahoma

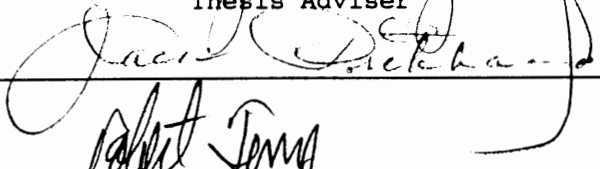
1986

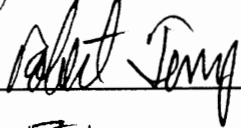
Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
December, 1994

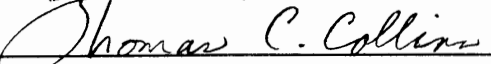
CHARACTERISTICS OF SECONDARY VOCATIONAL HORTICULTURE
CURRICULUM AS PERCEIVED BY HORTICULTURE
BUSINESSMEN WITH IMPLICATIONS FOR
DEVELOPING FUTURE CURRICULUM
MODELS

Thesis Approved:



Thesis Adviser






Dean of the Graduate College

ACKNOWLEDGMENTS

I wish to express my appreciation to those individuals who were instrumental in bringing this study to completion.

My deepest appreciation goes to my thesis adviser and friend, Dr. Eddy Finley, without whose support and guidance, this study would never have had a beginning or an end.

Thanks goes to the members of the Agricultural Education Department, particularly Dr. Robert Terry, Dr. Jim Key, and Dr. Jack Pritchard for their assistance and council.

My love and gratitude goes to my parents, Dr. and Mrs. Joe Taron, for without their love, support and encouragement, this study would never have begun.

I also want to express my sincerest appreciation and love to my brother, Denis "Pee Wee" Taron, and his wife, Karen Taron, and their children, Denis Jr., Rowdy, Jake, and Tiffany, for being there when I needed help, encouragement, or just a push to keep me going.

Finally, I wish to dedicate this study to my sister-in-law, Karen Taron, and my thesis adviser, Dr. Eddy Finley. These two people, through determination, a little stubbornness, and a lot of love, provided me with the courage and the confidence I needed to complete this study.

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
Statement of the Problem.	3
Purpose of the Study.	4
Objectives of the Study	5
Scope of the Study.	5
Definition of Terms	6
II. REVIEW OF LITERATURE	8
Introduction.	8
History of Horticulture	10
Profit Potential of Horticulture.	11
Oklahomas' Horticultural Industry	14
The Role of Vocational Horticulture	17
Summary of the Review of Literature	18
III. DESIGN AND METHODOLOGY	19
Introduction.	19
Institutional Review Board.	19
Population of the Study	20
Development of the Instrument	22
Conduct of the Study.	23
Analysis of Data.	24
IV. PRESENTATION AND ANALYSIS OF DATA.	25
Introduction.	25
Respondents' Perceptions.	25
V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS.	42
Summary	42
Purpose of the Study	42
Design of the Study.	43
Findings	44
Conclusions	47
Recommendations	48
Recommendations for Additional Research	52

Chapter	Page
A SELECTED BIBLIOGRAPHY	50
APPENDIXES.	52
APPENDIX A - QUESTIONNAIRE	53
APPENDIX B - INSTITUTIONAL REVIEW BOARD APPROVAL FORM	58

LIST OF TABLES

Table	Page
1. Horticulture Areas Represented by Respondents	21
2. Respondents' Perceived Level of Importance of Subunits of the Introduction to Horticulture Unit.	26
3. Respondents' Perceived Level of Importance of Subunits of the Equipment Operation Unit	27
4. Respondents' Perceived Level of Importance of Subunits of the Plant Growth and Development Unit.	29
5. Respondents' Perceived Level of Importance of Subunits of the Sexual Plant Propagation Unit.	29
6. Respondents' Perceived Level of Importance of Subunits of the Asexual Plant Propagation Unit	30
7. Respondents' Perceived Level of Importance of Subunits of the Plant Growth Regulators Unit	32
8. Respondents' Perceived Level of Importance of Subunits of the Chemical Safety Unit	32
9. Respondents' Perceived Level of Importance of Subunits of the Soils Unit	33
10. Respondents' Perceived Level of Importance of Subunits of the Plant Growth Media Unit.	33
11. Respondents' Perceived Level of Importance of Subunits of the Fertilizers Unit	34
12. Respondents' Perceived Level of Importance of Subunits of the Growing Facilities Unit.	34
13. Respondents' Perceived Level of Importance of Subunits of the Indoor Plants Unit	36
14. Respondents' Perceived Level of Importance of Subunits of the Nursery Stock Unit	36

Table	Page
15. Respondents' Perceived Level of Importance of Subunits of the Garden Flowers (Floriculture) Unit	37
16. Respondents' Perceived Level of Importance of Subunits of the Fruit and Nut Production Unit.	37
17. Respondents' Perceived Level of Importance of Subunits of the Vegetable Production Unit.	37
18. Respondents' Perceived Level of Importance of Subunits of the Turfgrass Management Unit.	39
19. Respondents' Perceived Level of Importance of Subunits of the Floral Design Unit	39
20. Respondents' Perceived Level of Importance of Subunits of the Technical Aspects Unit	40
21. Respondents' Perceived Level of Importance of Subunits of the Community Service Unit	40
22. Respondents' Perceived Level of Importance of Subunits of the Extra Curricular Activities Unit	40
23. Summary of Respondents' Perceived Level of Importance of the Horticulture Study Units	46

CHAPTER I

INTRODUCTION

Horticulture is a multi-million dollar per year business that is always expanding and changing. The expansion and change in the horticulture industry demands an expanding and changing work force.

The change and growth of the horticultural industry is due in large part to the continuous development of new varieties of plant materials for personal and commercial use. In addition to this, there is also the use of diverse advertising media which reaches a greater number of people and increases the awareness of the horticultural industry to the public.

The horticultural industry in Oklahoma has a strong potential for growth and profit. The potential is substantiated by the fact that Oklahoma has a long growing season and offers diverse growing conditions. The diverse growing conditions provide for the growth of a variety of horticultural crops. The potential for growth and profit of the horticultural industry in Oklahoma is supported by Oklahomas' central locations, which allows for lower shopping costs to other areas in the country.

The horticulture industry involves not only produce, but also includes ornamental production for indoor and outdoor landscaping, turf management for parks and golf courses, grounds keeping for public gardens and zoos, and floral design for personal and business

affairs. The aforementioned areas of horticulture offer a view of the great potential for growth and profit of the horticulture industry in Oklahoma.

Recognizing the potential for increased benefits brought about by the expansion of the horticultural industry in Oklahoma and realizing that there is and will continue to be a demand for a skilled work force in the horticultural industry proves that the implementation of instruction in and about horticulture in public schools is essential. The need for curriculum that meets the needs of a growing industry is essential in secondary vocational horticulture programs. To provide the horticultural industry in Oklahoma with high school graduates that are prepared to enter the industry substantiates the need for curriculum that is specifically geared to the horticulture industry. One effort to accomplish that was undertaken in 1990 when a study was conducted by Topliff (1990). The study was titled, Characteristics of Selected Secondary Agricultural Education Horticulture Programs in Oklahoma with Implications for Modeling Future Programs. According to Topliff (1990):

The purpose of this study was to determine and assess the characteristics of selected secondary educational horticulture programs as perceived by vocational horticulture teachers and horticultural businessmen in Oklahoma with implications for modeling future programs (p. 10).

Topliff further stated:

In order to accomplish the purpose of this study, the following specific objectives were formulated:

1. To identify those schools which have fully operational secondary agricultural education

horticulture programs and are considered to be exemplary in Oklahoma.

2. To identify curriculum content which is currently being used for instructional purposes within secondary vocational horticulture programs.

3. To determine the level of emphasis placed on teaching specific instructional units within the horticulture curriculum as perceived by vocational horticulture teachers.

4. To determine the level of importance placed on each instructional unit within the horticulture curriculum as perceived by selected horticultural businessmen.

5. To determine constraints relative to teaching horticulture as perceived by the vocational horticulture teachers and to determine suggestions for improvement as perceived by selected horticultural businessmen.

6. To develop a vocational horticulture curriculum model based upon the aforementioned objectives (p. 10).

The study conducted by Topliff (1990), involved 35 Oklahoma vocational horticulture teachers in public schools with fully operational horticulture programs. The 35 vocational horticulture teachers were asked to identify five horticultural businessmen in their respective communities. The teachers were asked to limit the five businessmen to: one representing the nursery industry, one representing the greenhouse industry, one representing the landscape industry, one representing the floral shop industry, and one representing fruit, nut, and/or vegetable production.

Statement of the Problem

Since the conduct of the study in 1990 by Topliff, many more vocational horticulture programs have been established within the

State of Oklahoma. The establishment of these programs as well as the growth and changes in the horticulture industry require a curriculum designed to meet the needs of a growing industry.

The horticultural industry in Oklahoma is a very diversified, ever-changing industry that requires a work force that is well prepared to enter the new job market. Oklahoma must realize that the effective education of its youth will enhance the realization of its potential for growth and profit in the horticultural industry. The implementation of public school agricultural education horticulture programs has aided in meeting the changing and expanding vocational training needs of students. Secondary vocational horticulture programs offer students a curriculum that addresses the many facets of the horticultural industry, but in view of the changing and expanding of the horticultural industry, the need arises for a curriculum that adapts to these changes. The establishment of a horticulture curriculum that meets the needs of the horticultural industry and also proves beneficial to teachers and students needs to be developed.

Purpose of the Study

The purpose of this study was to determine and assess the characteristics of the horticulture curriculum in secondary vocational horticulture programs as perceived by a selected group of horticultural businessmen with implications for developing future curriculum models.

Objectives of the Study

To accomplish the purpose of this study, the following objectives were developed:

1. To determine what subjects in the current horticulture curriculum should be stressed as perceived by the horticultural businessmen.
2. To determine what subjects should be omitted or least stressed in the current horticulture curriculum as perceived by the horticultural businessmen.
3. To determine what subjects should be added to the current horticulture curriculum to prepare secondary students for gainful employment upon graduation as perceived by the horticultural businessmen.
4. To determine what knowledge of the horticulture industry is expected of a potential employee as perceived by the horticultural businessmen.

Scope of the Study

The population of this study included 12 horticultural businessmen in and around the area of the City of Shawnee, Oklahoma. The city of Shawnee was selected as the site of this study because of its central location within the state of Oklahoma, as well as its close proximity to a major metropolitan area. This area has contributed to a rapid growth in the horticultural industry and the work force needed to support it. This area was also selected because it provided a broad range of types of horticultural

businesses within a relatively small geographic area and these businesses in the Shawnee area included in the study were involved with the areas of the horticultural industry include: nursery industry, the greenhouse industry, the landscape industry, and the floral shop industry.

Definition of Terms

The terms used in special ways in this study, are defined as follows:

1. Curriculum Model - refers to a suggested topic and suggested units and/or sub-units of instruction to be included within a comprehensive program at the secondary level within the public school system.
2. Greenhouse - a structure used for growing plants that has a transparent covering and an artificial heat source.
3. Headhouse - a work building in close proximity to or attached to a greenhouse.
4. Herbicide - a chemical used for killing weeds.
5. Horticulture Businessmen - refers to persons who are full-time owners and/or managers whose expertise is primarily in one area of horticulture (i.e., either nursery; greenhouse; landscape; floral; or fruit, nut and/or vegetable production.
6. Horticulture - the art and science of growing fruits, vegetables, flowers, and woody ornamentals as well as spice, medicinal, and beverage plants.

7. Insecticide - an agent or preparation used for killing insects.
8. Nursery - a business that grows and sells trees, shrubs, vines, and flowering plants.
9. Secondary School - formerly referred to as high school, usually includes grades nine through twelve.
10. Vocational Horticulture - refers to secondary school programs offering courses designed to train students for careers in production horticulture or other horticulture related fields.

CHAPTER II

REVIEW OF LITERATURE

INTRODUCTION

Horticulture is a science that deals with the production of plants to gain rewards either for personal satisfaction or for profit. Horticulture in Oklahoma is a growing and expanding industry that is rapidly being recognized as an alternative form of agriculture. To fully gain the benefits of horticultural commodities, one must understand where horticulture has been and where it is going (Topliff, 1990). The growth and profit potential of the horticulture industry in Oklahoma can be more fully realized by examining several areas of horticulture.

The economic impact of horticulture in Oklahoma is expanding (Oklahoma Agriculture 2000, 1982). More commercial acreage is being devoted to horticultural commodities, and therefore, more income is being generated by these commodities (Peirce, 1987). Monetarily, an acre of most horticultural crops will net a much greater profit than will an acre of agronomic crops (Topliff, 1990).

Oklahoma maintains a diversified horticultural industry. As well as vegetables, Oklahoma produces nuts, fruits, and ornamentals (Oklahoma Agriculture 2000, 1982). The aforementioned areas of horticulture in Oklahoma, have their own limitations and potential.

The growth and expansion of the horticultural industry in Oklahoma has made it necessary to provide students of secondary vocational horticulture programs with curriculum that will better prepare them to enter the work force in the horticultural industry. The growth of the horticultural industry in Oklahoma has made horticulture a focal point of secondary vocational horticulture programs. The examination and possible restructuring of current horticulture is necessary to insure that Oklahomas' youth are prepared to enter the work force in the horticultural industry.

Several studies have been conducted to determine the current curriculums being offered in vocational agricultural education horticulture programs (Topliff, 1990). Attempts have been made to determine personal and professional characteristics of horticulture teachers and characteristics of vocational horticulture departments (Burnett and Smith, 1983). Industry has been surveyed to determine the needs of business and what professionals expect employees to know as they begin their horticulture careers (Skinner, 1972, Griffith, 1971).

To aid in the development of this study, it was determined that the following subtopics be included in the review of literature:

- (1) History of Horticulture;
- (2) Profit Potential of Horticulture;
- (3) Oklahomas' horticulture industry; and
- (4) the role of vocational horticulture.

History of Horticulture

The word horticulture is derived from Latin hortus and cultura, which means "garden culture." Originally, horticulture referred to private plots where plants were cultivated. Trees have been an important horticultural crop since earliest times. More than 4000 years ago, Egyptians wrote of trees being transplanted with a ball of soil around the roots of each (Chadwick, 1971); some were moved 2400 km (1500 miles) by boat (Harris, 1983). In Greece, Theophrastus (370-285 B.C.) and Pliny (A.D. 23-79) gave rather complete directions for tree planting and care (Harris, 1983). Horticultural crops are generally classified as garden crops grown for personal reasons. Agronomic crops differ in that they are field grown crops raised as a cash crop. Fruits and vegetables, ornamentals, spices, and plants grown for medicinal purposes are considered to be horticultural crops. Overall, horticulture deals with those crops that are intensively cultivated (Topliff, 1990). These plants are of high enough value to warrant a large input of capital, labor, and technology per unit area of land (Janick, 1963).

Horticulture is the branch of agriculture that deals with intensive cultivation of plants for food, medicine, or personal gratification. The areas of horticulture include, Fruit production known as Pomology, vegetable production known as Olericulture, flower production known as floriculture, and planting and care of trees known as Arboriculture. Nursery production is concerned with plants grown for ornamental use. Turf management deals with the production of grasses used for ground cover. Landscape design is

concerned with the use of ornamental crops to enhance one's surroundings.

Horticulture is a diverse discipline with many specialized areas each demanding its' own area of education. To be truly employable a person must have knowledge in all these areas (Topliff, 1990).

Profit Potential of Horticulture

The demand for horticultural crops is growing. The horticultural industry must continue to grow to meet these demands. The horticultural industry not only employs those persons in processing, shipping, equipment production and maintenance, but many other disciplines (Peirce, 1987).

Horticultural crops are in demand for a variety of reasons. The nursery industry is an area of horticulture that fulfills the demand for plants used for food, fiber, medicine, protection as well as far more pleasant surroundings. Most nurseries concentrate on growing plants for ornamental use. While producers concentrate on the production of species and varieties of plants demanded in large numbers, they produce a diverse group of plants including woody ornamentals, herbaceous plants, and potted plants (Furuta, 1978). The nursery industry offers a variety of areas of production, each with its' own potential for growth and profit. The nursery industry will continue to grow and diversify because plants are now considered essential to the environment. In the future, plants will be used in increasing numbers (Furuta, 1978).

The greenhouse industry is an area of horticulture which has and will continue to offer great potential. Greenhouse production offers a 52-week growing season for thousands of plant species because the entire growth process can be regulated and manipulated. The automation of plant care and climate control offered in a greenhouse provides a year round growing season for both high demand crops and specialty crops. The increased demand for fresh flowers and container grown plants has considerably boosted the greenhouse industry, and as the demand continues to grow, so must the greenhouse industry. The florist industry is an enormous contributor to the growth of the greenhouse industry and as the florist business expands from full-service florists to grocery stores and department stores, so must the greenhouse industry expand. The future holds much optimism for American production, the market will continue to expand rapidly, bringing an even greater demand for floral production (Nelson, 1981).

The landscape industry is one of the most profitable areas of horticulture. As public and private plantings become more common and more expensive to maintain, people responsible for such plantings are becoming more concerned about the proper selection and care of landscape plants (Harris, 1983). The growth of the environmental issue has largely contributed to the growth of the landscape industry.

Landscape plants offer physical, aesthetic, and economic enhancement, as well as offering air purification, noise reduction, erosion and influencing the climate. The landscaping industry is so

profitable, because, aside from all the aforementioned qualities of landscape plants, landscaping also increases the monetary value of land, whether it be farm land, personal estates, or businesses.

Landscaping is considered to be an essential part of American homes.

Schimid (1975) states that,

the plants which occupy Anglo-American front yards are present, neither because they enhance the mesoclimatic or acoustic environment, nor because they attract birds and small mammals, nor because they provide food or firewood, but rather because they are traditional setting for single family houses (p. 10).

Landscaping appeals to the pride and self-esteem of individuals, since these factors are permanent and personal, they are also constant, which means that the demand for the landscape industry will also be constant.

The floral shop industry is also a profitable area of horticulture. Originally florists met the traditional needs of consumers such as funerals and weddings. Today, funerals and weddings are only a percentage of a florists business. The floral industry has expanded to include not only the full service florist but has increased its market to supermarkets, discount stores, shopping malls, street vendors, and airports. Advertising has also played an important role in the growth of the floral industry, through television, newspaper, and magazine ads, the public has changed its view of the florist industry. Fresh and silk flower arrangements, potted plants and bouquets have become a part of everyday life. Flowers and plants offer personal gratification and aesthetic enhancement of an individuals life. As with landscaping,

floral products appeal to an individuals sense of pride and self-esteem, these personal traits are and always will be part of day to day life and as long as this is true, the demand for the floral industry will remain constant.

Horticulture is an area of agriculture that possesses the qualities and diversification that is demanded by the public. To meet these demands, the industry continues to grow and therefore, offers strong potential for profit. Just as plant roots will develop in the soil zone where moisture and nutrients are plentiful, business will develop wherever profit is rendered for a just service (Nelson, 1981).

Oklahomas' Horticultural Industry

The horticultural industry in Oklahoma continues to grow and prosper. Oklahoma's central location supports a strong horticultural market, the location not only provides for a long growing season, but also lowers shipping costs. The diverse soil conditions also allow for the production of a variety of horticultural crops. The abundance of natural water also supports the growth of horticultural crops. Many traditional farmers who once produced agronomic crops for profit are now growing horticultural crops because the profit margin is greater while its costs remain close to those of agronomic crops.

Oklahoma is a strong competitor in the horticultural industry in the areas of vegetable production, fruit production, nut production, nurseries, greenhouses, and landscaping.

Vegetables are grown for personal and commercial use in Oklahoma. The mild weather in the spring and fall and the warmer summers allow for the growth of a wide variety of vegetables. Cold season crops such as broccoli, cauliflower, potatoes, and spinach thrive in Oklahoma climates, and the length of the growing season of these crops allows them to be harvested before the hotter summer temperatures arrive or the colder winter temperatures prevail (Topliff, 1990). The hotter summer months in Oklahoma offer excellent conditions for the growth of warm season crops such as beans, cucumbers, sweet corn, and watermelon. The climate and other natural resources in Oklahoma are advantages to vegetable production, the disadvantage is that most vegetable crops are very labor intensive (Oklahoma Agriculture 2000, 1982). Vegetable crops are largely maintained by hand, from planting to harvesting. Family labor is sometimes used on smaller crops, but larger crops require more labor which leads to higher costs. The value of vegetable crops sometimes outweighs the cost, and larger operations are generally profitable.

Oklahoma is not a strong competitor in the fruit production area, but there are some fruit crops that do well in Oklahoma's climate. Peaches is the major fruit crop grown in Oklahoma. It has been estimated that peach production will reach 14 million pounds by the year 2000. The value of 14 million pounds is estimated to be 5,040,000 dollars. Strawberry and blackberry production is also expanding rapidly since they are adaptable to u-pick operations (Topliff, 1990).

The major nut crop in Oklahoma is Pecans. According to Oklahoma Agriculture 2000 (1982), it has been estimated that pecan production could reach 22,000,000 pounds by the year 2000. The value of the aforementioned pecan production has an estimated value of 25,300,000 dollars. Pecans can be an expensive crop because of the cost of pesticides and labor for harvesting may increase production costs, but these costs are often offset by the profit potential of this crop.

Nursery production in Oklahoma continues to expand. The moderate climate allows for production of a variety of nursery plants. Many nursery crops grown in Oklahoma are also suitable for surrounding states and therefore potential markets continue to grow (Oklahoma Agriculture 2000, 1982). The central location makes Oklahoma a strong competitor in the nursery market because shipping costs can be lower than those of more western states.

According to Topliff (1990), the greenhouse industry in Oklahoma has advantage over many northern production areas due to its' south-central location. It allows plant production without heating or with less heating for a longer period of time, thus reducing the total energy costs (Nelson, 1985, Oklahoma Agriculture 2000, 1982). The profit potential of greenhouse production in Oklahoma has been recognized, this is evident in the expansion and growth of greenhouse production.

The landscaping industry has a great deal of potential in Oklahoma. The population growth in Oklahoma demands an increase in public facilities which offer personal gratification. These demands

mean the development of parks, golf courses, and businesses that are attractive and appealing. Landscaping beautifies the surroundings and appeals to the personal needs of individuals. Landscaping in Oklahoma continues to grow and prosper.

The Role of Vocational Horticulture

As the horticultural industry grows, the demand for knowledgeable workers also grows. Vocational horticulture programs recognize the industries demands and have designed instruction to meet these demands.

Burnett and Smith (1983), state:

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 (p. 61).

Industry requires a skilled work force, ready to enter the job market upon graduation from secondary schools. According to Smith, "What many of the new courses strengthen in students is basic skills - communication, mathematics, science, critical thinking, and problem-solving. That's exactly what business and industry leaders across the nation are demanding of public schools."

Vocational horticulture programs offer training and preparation of students for entering the work force upon graduation. Many programs provide supervised experiences which provide the student with practical experience. Horticulture and greenhouse based programs offer many possibilities for the development of creative supervised experiences (Harris and Birkenholtz, 1990). Some examples of supervised experience opportunities offered in vocational horticulture programs include; greenhouse manager, groundskeeper, orchard manager, and landscape design.

Vocational horticulture programs provide students with experience and skills necessary for entering the work force and fulfilling the needs of the horticultural industry.

Summary of the Review of Literature

The changes and expansion occurring in the horticultural industry demand changes and expansion in the curriculum offered to students in secondary schools. The growth of the industry is supported by the public's recognition of the value of horticulture both personally and commercially. The traditional farmer is looking to horticulture for alternative crops.

The potential for profit within the horticultural industry is substantial. The growth of the horticultural industry is inevitable based on the increasing demand for horticulture crops. The growth of the industry offers a growth in the job market. The job potential is present and the need for skilled individuals to fill these jobs is strong.

CHAPTER III

DESIGN AND METHODOLOGY

INTRODUCTION

The purpose of this chapter is to explain the methods and procedures used in conducting this study. In order to gather data needed to support the purpose and objectives of this study, a population was decided upon and an instrument was selected to collect the data. The instrument selected was developed by Topliff for her study conducted in 1990. The procedures and methods for data analysis were selected.

The study was designed to gather information concerning the assessment of characteristics of horticultural curriculum in secondary vocational horticulture programs as perceived by horticultural businessmen with implications for developing future curriculum models.

Institutional Review Board

Review and approval of research studies involving human subjects is required by Oklahoma State University policy and Federal regulations. Approval must be granted before conduct of the research can begin. The Oklahoma State University Office of University Research Services and the IRB conduct the review in order that the rights and welfare of human subjects involved in

biomedical and behavioral research are protected. In compliance with policy this study received proper review and was permitted to continue. A copy of the IRB approval form is to be found in Appendix B.

Population of the Study

Twelve horticultural businesses in and around the area of the city of Shawnee were selected for this study. The businesses selected were as follows; Devie & Company, Flowers & Decor Etc., Graves Floral & Greenhouses, Mary Janes, Pratts Floral Department, Shawnee Floral, Suzi's House of Flowers, Homeland Floral Department, Gerdes Nursery & Garden Center, Green World Nursery, Highway 9 Garden Center, and Oklahoma Landscape Management Inc.

The businesses selected for this study represent four major areas of horticulture, these areas include: Nursery Production, Greenhouse Production, Landscape, and Floral Shop.

The distribution of horticulture areas represented by respondents is presented in Table 1. Of the 12 horticultural businesses surveyed, nine (75 percent) responded to the questionnaire. Of the nine horticultural businessmen who participated in this study, five (55.6 percent) represented the Flow Shop Industry. There were two representations each of the landscape, greenhouse, and nursery phases of the industry, but this was from among only four independent businesses.

TABLE I
HORTICULTURE AREAS REPRESENTED BY RESPONDENTS

Areas	<u>Frequency Distribution</u>	
	N	Percent
Floral Shop	5	55.6
*Landscape	2	22.2
*Greenhouse	2	22.2
*Nursery	2	22.2

*These respondents represented two areas

Development of the Instrument

As mentioned previously in the Introduction to Chapter I, this study is based on a study conducted in 1990. Because of this, the instrument used for this study is the same instrument used in the aforementioned study. The researcher of that study indicated that the various sources used to design the questionnaire included: The current horticulture curriculum used in Oklahoma ("Study Finds," 1988), the current horticulture curriculum used in New Mexico ("Study Finds," 1987), horticulture subjects proposed by Griffith (1971), a syllabus from Basic Floral Design at Oklahoma State University (Topliff, 1988), and suggestions from professors in the Agricultural Education Department at Oklahoma State University. Areas of horticulture study were divided into two main categories, general plant production, and specialty areas (Topliff, 1990). Topliff further stated that these two main areas were divided into units which were sub-divided into subunits. More specifically, units within the general plant production area included:

- (1) Introduction to Horticulture;
- (2) Equipment Operation;
- (3) Plant Growth and Development;
- (4) Sexual Plant Propagation;
- (5) Asexual Plant Propagation;
- (6) Plant Growth Regulator;
- (7) Chemical Safety;
- (8) Soils;
- (9) Plant Growth Media;
- (10) Fertilizers; and
- (11) Growing Facilities (Topliff, 1990).

Units within the specialty area included: (12) Indoor plants; (13) Nursery Stock; (14) Garden Flowers (Floriculture); (15) Fruit and Nut Production; (16) Vegetable Production; (17) Turfgrass Management; (18) Floral

Design; (19) Technical Aspects; (2) Community Service; and (21) Extracurricular Activities (Topliff, 1990).

As in Topliff's study, in addition to questions pertaining to each of the aforementioned units, the final question asked of the horticultural businessmen was, "Any suggestions regarding the Horticulture curriculum?"

The horticultural businessmen were asked to rate each subunit by the level of importance they believed should be placed on teaching each of the subunits by vocational horticulture teachers. Subunits were rated by the following scale: 1=not important; 2=slightly important; 3=more important; and 4=most important (Topliff, 1990).

Conduct of the Study

The distribution of the instrument involved a visit to each business to present an oral explanation of why the study was being conducted and to explain what the purpose of the instrument was. The instrument was given to each businessman with both oral and written directions for answering the questionnaire. The businessmen were requested to answer the questionnaire within two weeks and were also told that there would be a follow-up phone call midway through the two weeks to make sure there were no problems or questions.

Analysis of Data

Each respondent identified a numerical value describing the perceived importance of each subunit. The collected data were compiled and computed by the researcher. The frequencies, means, and standard deviations were calculated using basic statistical analysis methods. A high mean and a narrow standard deviation were considered to indicate a cluster value for the subunit, this indicated a need for that area of study. The real limits and descriptors of the measures of perceived importance were established as follows: 1.00-1.49=not important; 1.50-2.49=slightly important; 2.50-3.49-more important; and 3.50-4.00=most important.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

INTRODUCTION

The purpose of this chapter is to present the horticultural businessmen' (hereafter referred to as businessmen) perceived level of importance of teaching horticulture units of instruction.

The data were collected from selected businessmen. The data were analyzed using descriptive statistics.

Respondents' Perceptions

Respondents' perceived level of importance of subunits of the Introduction to Horticulture unit is reported in Table 2. Businessmen considered teaching the subunit Orientation and Career Information as "most important" (mean=4.33). Businessmen considered it "more important" to teach the subunit Leadership and the FFA (mean=3.11), and they considered teaching the subunit Public Speaking "slightly important" (mean=2.44).

Businessmens' perceived level of importance of subunits of the Equipment Operation Unit is listed in Table 3. Businessmen considered all the subunits to be "more important": Use of Hand Tools (mean=2.78), Hand Tool Safety (mean=3.22), Use of Power Tools (mean=2.89), Power Tool Safety (mean=3.44), Use of Garden Tractors

TABLE 2
 RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
 THE INTRODUCTION TO HORTICULTURE UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Orientation & Career Information	9	4.33	.5	Most Important
B. Leadership & the FFA	9	3.11	.61	Most Important
C. Public Speaking	9	2.44	1.00	Slightly Important

TABLE 3
 RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
 THE EQUIPMENT OPERATION UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Use of Hand Tools	9	2.78	1	More Important
B. Hand Tool Safety	9	3.22	1.12	More Important
C. Use of Power Tools	9	2.89	.94	More Important
D. Power Tool Safety	9	3.44	.87	More Important
E. Use of Garden Tractor	9	3.11	.61	More Important
F. Garden Tractor Safety	9	3.22	.71	More Important
G. Use of Farm Equipment	9	3.00	.71	More Important
H. Farm Equipment Safety	9	3.44	.87	More Important

(mean=3.11), Garden Tractor Safety (mean=3.22), Use of Farm Equipment (mean=3.00), and Farm Equipment Safety (mean=3.44).

Table 4 contains a summary of the perceived level of importance of subunits of the Plant Growth and Development Unit. Businessmen considered all the subunits to be "more important," with the mean response for subunits being as follows: Plant Parts: Structure and Function (mean=3.11), Photosynthesis (mean=2.67), Respiration (mean=2.76), and Water Absorption, Translocation and Transpiration (mean=2.89). The suggestion was made by one businessman concerning the unit of Plant Growth and Development that a subunit on Plant Identification and Use should be included.

Table 5 contains the respondents' perceived level of importance of subunits within the Sexual Plant Propagation Unit. The respondents considered all of the subunits to be "more important," with the mean response by subunit being as follows: Introduction to Sexual Plant Propagation (mean=3.00), Seeds (mean=2.78), Seeding in Flats (mean 2.67), Seeding in the field (mean-2.56), and Care and Transplanting of Seedlings (mean=2.89).

Respondents' perceived level of importance of subunits of the Asexual Plant Propagation Unit are contained in Table 6. The respondents perceived all the subunits to be "more important," with the mean response by subunit being as follows: Introduction to Asexual Plant Propagation (mean=3.00), Propagation by cuttings (mean=2.78), Propagation by Layerage (mean=2.67), Propagation by Division (mean=2.67), Propagation by Budding (mean=2.56), and Grafting (mean=2.56).

TABLE 4
RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE PLANT GROWTH AND DEVELOPMENT UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Plant Parts: Structure and Function	9	3.11	.94	More Important
B. Photosynthesis	9	2.67	.9	More Important
C. Respiration	9	2.78	.87	More Important
D. Water Absorption, Translocation, & Transpiration	9	2.89	.79	More Important

TABLE 5
RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE SEXUAL PLANT PROPAGATION UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Introduction to Sexual Plant Propagation	9	3.00	1	More Important
B. Seeds	9	2.78	.87	More Important
C. Seeding in Flats	9	2.67	.79	More Important
D. Seeding in the Field	9	2.56	.87	More Important
E. Care & Transplanting of Seedlings	9	2.89	.79	More Important

TABLE 6
 RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
 THE ASEQUAL PLANT PROPAGATION UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Introduction to Asexual Plant Propagation	9	3.00	1	More Important
B. Propagation by Cuttings	9	2.78	1	More Important
C. Propagation by Layerage	9	2.67	1.06	More Important
D. Propagation by Division	9	2.67	1.06	More Important
E. Propagation by Budding	9	2.56	1.12	More Important
F. Grafting	9	2.56	1.12	More Important

Respondents considered both subunits of the Plant Growth Regulators Unit as reported in Table 7, to be "more important": Introduction to Plant Growth Regulators had a mean of 3.11 and Specialized Growth Regulators had a mean of 2.56.

Table 8 contains respondents' perceived level of importance of subunits of the Chemical Safety Unit. The respondents considered the subunit Herbicides to be "most important" (mean=3.56), and the subunit Insecticides "more important" (mean=3.44).

Respondents' perceived level of importance of subunits of the Soils Unit is illustrated in Table 9. The three subunits were rated "more important". The mean for Nature and Properties of Soils was 3.11, the mean for Organic Matter was 2.67, and the mean for Soil Management Techniques was 2.89.

Table 10 was developed to illustrate respondents' perceived level of importance of subunits of the Plant Growth Media Unit. Respondents rated both subunits to be "more important". The mean for Introduction to Plant Growth Media was 3.11 and the mean for Soil Sterilants and Soil Sterilization was 2.89.

Table 11 contains the perceived level of importance of subunits of the Fertilizers Unit. Respondents considered each subunit to be "more important," with the mean response by subunit being as follows: Introduction to Fertilizers (mean=3.33), Inorganic Fertilizers (mean=2.78), Organic Fertilizers (mean=2.78), and Methods of Fertilizer Application (mean=2.89).

The perceived level of importance of subunits of the Growing Facilities Unit is reported in Table 12. The subunits Greenhouses,

TABLE 7

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE PLANT GROWTH REGULATORS UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Introduction to Plant Growth Regulators	9	3.11	1.06	More Important
B. Specialized Growth Regulators	9	2.56	1.22	More Important

TABLE 8

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE CHEMICAL SAFETY UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Herbicides	9	3.56	.87	Most Important
B. Insecticides	9	3.44	.87	More Important

TABLE 9

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE SOILS UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Nature and Properties of Soils	9	3.11	.79	More Important
B. Organic Matter	9	2.67	.94	More Important
C. Soil Management Techniques	9	2.89	.94	More Important

TABLE 10

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE PLANT GROWTH MEDIA UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Introduction to Plant Growth Media	9	3.11	.94	More Important
B. Soil Sterilants & Soil Sterilization	9	2.89	.79	More Important

TABLE 11

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE FERTILIZERS UNIT

<u>Perceived Level of Importance</u>				
Subunit	N	\bar{X}	S.D.	Descriptor
A. Introduction to Fertilizers	9	3.33	.79	More Important
B. Inorganic Fertilizers	9	2.78	.87	More Important
C. Organic Fertilizers	9	2.78	.87	More Important
D. Methods of Fertilizer Application	9	2.89	.79	More Important

TABLE 12

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE GROWING FACILITIES UNIT

<u>Perceived Level of Importance</u>				
Subunit	N	\bar{X}	S.D.	Descriptor
A. Greenhouses	9	3.00	1.00	More Important
B. Lathhouses	9	2.67	.94	More Important
C. Cold & Warm Frames	9	2.56	.87	More Important
D. Headhouses	9	2.44	.87	Slightly Important

Lathhouses, and Cold and Warm Frames were rated "more important", with means of 3.00, 2.67, and 2.56 respectively. The subunit Headhouses was perceived as "slightly important" with a mean of 2.44.

Table 13 reports the perceived level of importance of subunits of the Indoor Plants Unit. Respondents considered both subunits to be "more important": Introduction to Indoor Plants (mean=3.44), and Identification of Indoor Plants (mean=3.44).

Respondents' perceived level of importance of subunits of the Nursery Stock Unit is reported in Table 14. Introduction to Nursery Stock was considered "most important" (mean=3.56). The subunits, Identification of Nursery Stock (mean=3.44), Container Stock Care (mean=3.00), Bare-root Plant Care (mean=3.00), and Balled and Burlapped Plant Care (mean=3.22) were considered "more important".

Table 15 is a report of the level of importance of subunits of the Garden Flowers (Floriculture) Unit. Respondents rated all subunits as being "more important": Annuals (mean=3.44), Perennials (mean=3.33), and Bulbs and Tubers (mean=3.22).

The perceived level of importance of subunits of the Fruit and Nut Production Unit is summarized in Table 16. Respondents rated the subunit Home Production "more important", with a mean of 2.67. The subunit Commercial Production was rated "slightly important" with a mean of 2.44.

Respondents' perceived level of importance of teaching the Vegetable Production Unit is reported in Table 17. Respondents rated the subunit Home Production "more important", with a mean of

TABLE 13

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE INDOOR PLANTS UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Introduction to Indoor Plants	9	3.44	.87	More Important
B. Identification of Indoor Plants	9	3.44	.71	More Important

TABLE 14

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE NURSERY STOCK UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Introduction to Nursery Stock	9	3.56	.87	More Important
B. Identification of Nursery Stock	9	3.44	.94	More Important
C. Container Stock Care	9	3.00	1.12	More Important
D. Bare-Root Plant Care	9	3.00	1.12	More Important
E. Balled & Burlapped Plant Care	9	3.22	.87	More Important

TABLE 15

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE GARDEN FLOWERS (FLORICULTURE) UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Annuals	9	3.44	.71	More Important
B. Perennials	9	3.33	.61	More Important
C. Bulbs & Tubers	9	3.22	.50	More Important

TABLE 16

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE FRUIT AND NUT PRODUCTION UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Home Production	9	2.67	1.06	More Important
B. Commercial Production	9	2.44	.87	Slightly Important

TABLE 17

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE VEGETABLE PRODUCTION UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Home Production	9	2.67	1.06	More Important
B. Commercial Production	9	2.33	.79	Slightly Important

2.67. The subunit Commercial Production was rated "slightly important" with a mean of 2.33.

Table 18 is intended to summarize the level of importance of subunits of the Turfgrass Management Unit. Respondents rated all subunits as being "slightly important": Lawn Establishment by Seeding (mean=2.44), Sodding (mean=2.33), Irrigation (mean=2.44), and Mowing Practices (mean=2.11).

Table 19 was developed to illustrate respondents' perceived level of importance of subunits of the Floral Design Unit. All subunits were rated "more important," with the mean response by subunit being as follows: Introduction to Floral Design (mean=3.11), Identification of Flowers and Greenery (mean=3.33), Care of Cut Flowers (mean=3.22), Arrangements (mean=3.11), Corsages and Boutonnieres (mean=3.11), Wedding Flowers (mean=3.11), and Funeral Flowers (mean=3.11).

Table 20 is a report of the perceived level of importance of subunits of the Technical Aspects Unit. Respondents considered all subunits to be "more important". The subunits Repotting, transplanting, and Pruning had means of 3.00, 3.11 and 2.78 respectively.

Respondents' perceived levels of importance of subunits of teaching Community Service Unit are reported in Table 21. The subunits were rated "slightly important," Banquets (mean=2.44), and Plantings (mean=2.33).

Table 22 contains respondents' perceived level of importance of teaching the Extra Curricular Activities Unit. Respondents rated

TABLE 18
 RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
 THE TURFGRASS MANAGEMENT UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Lawn Establishment by Seeding	9	2.44	1.12	Slightly Important
B. Sodding	9	2.33	.93	Slightly Important
C. Irrigation	9	2.44	1.12	Slightly Important
D. Mowing Practices	9	2.11	.79	Slightly Important

TABLE 19
 RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
 THE FLORAL DESIGN UNIT

Subunit	<u>Perceived Level of Importance</u>			
	N	\bar{X}	S.D.	Descriptor
A. Introduction to Floral Design	9	3.11	1.37	More Important
B. Identification of Flowers & Greenery	9	3.33	.94	More Important
C. Care of Cut Flowers	9	3.22	1.12	More Important
D. Arrangements	9	3.11	1.27	More Important
E. Corsages & Boutonnieres	9	3.11	1.27	More Important
F. Wedding Flowers	9	3.11	1.27	More Important
G. Funeral Flowers	9	3.11	1.27	More Important

TABLE 20

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE TECHNICAL ASPECTS UNIT

<u>Perceived Level of Importance</u>				
<u>Subunit</u>	<u>N</u>	<u>\bar{X}</u>	<u>S.D.</u>	<u>Descriptor</u>
A. Repotting	9	3.00	.71	More Important
B. Transplanting	9	3.11	.61	More Important
C. Pruning	9	2.78	.71	More Important

TABLE 21

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE COMMUNITY SERVICE UNIT

<u>Perceived Level of Importance</u>				
<u>Subunit</u>	<u>N</u>	<u>\bar{X}</u>	<u>S.D.</u>	<u>Descriptor</u>
A. Banquets	9	2.44	1.41	Slightly Important
B. Plantings	9	2.33	1.00	Slightly Important

TABLE 22

RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF SUBUNITS OF
THE EXTRA CURRICULAR ACTIVITIES UNIT

<u>Perceived Level of Importance</u>				
<u>Subunit</u>	<u>N</u>	<u>\bar{X}</u>	<u>S.D.</u>	<u>Descriptor</u>
A. Fund Raising	9	1.89	.61	Slightly Important
B. Horticulture Club	9	2.33	.94	Slightly Important
C. FFA Activities	9	2.44	1.12	Slightly Important

all the subunits as "slightly important": Fundraising (mean=1.89), Horticulture Club (mean=2.33), and FFA Activities (mean=2.44).

Businessmen were asked for suggestions regarding the horticulture curriculum. One suggested that the Unit on Indoor Plants should be restructured to include the subunit, care of indoor plants. The inclusion of the subunit Identification and Use to the teaching unit Plant Growth and Development was also considered to be an important addition to the existing curriculum by another person.

Two other businessmen suggested that curriculum be kept simple with an emphasis on practical knowledge, and teach the student to identify plant materials, then they will want to learn the care and use of those plant materials.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

This portion of the chapter is intended to present summaries of the following topics: Purpose of the Study; Design of the Study; and Findings of the Research. Also, conclusions and recommendations were developed and are presented in later sections of the chapter.

Purpose of the Study

The purpose of this study was to determine and assess the characteristics of the horticulture curriculum in secondary vocational horticulture programs as perceived by horticulture businessmen with implications for developing future curriculum models.

The objectives of this study were as follows:

1. To determine what subjects in the current horticulture curriculum should be stressed as perceived by horticultural businessmen.
2. To determine what subjects should be omitted or least stressed in the current horticulture curriculum as perceived by horticultural businessmen.

3. To determine if there are subjects which should be added to the current horticulture curriculum to prepare secondary students for gainful employment upon graduation as perceived by horticultural businessmen.

4. To determine what knowledge of the horticulture industry is expected of a potential employee as perceived by horticultural businessmen.

Design of the Study

After a review of literature and research related to the study methods were established to satisfy the purpose of this study.

Twelve horticultural businessmen, representing four major areas of horticulture (Nursery Production, Greenhouse Production, Landscape and Floral Shop) were selected.

For this study, an instrument (Appendix A) which had been utilized in a previous study was selected to address curriculum material that could be taught in secondary vocational horticulture programs in Oklahoma. The areas of horticulture were divided into two main categories: general plant production and specialty areas. The two main areas were divided into units which were then subdivided into subunits.

Along with the questions pertaining to each unit, businessmen were asked for "Any suggestions regarding the horticulture curriculum?"

The horticultural businessmen were asked to rate the horticulture areas of study by level of importance of each subunit.

Subunits were rated by the following scale: 1=not important; 2=slightly important; 3=more important; 4=most important.

The questionnaires were hand delivered to each businessman. The businessmen were given both oral and written directions for answering the questionnaire. The businessmen were given two weeks to complete the questionnaires and were telephoned mid-way through the two weeks to aid in any questions or problems. At the end of two weeks, the questionnaires were collected.

Respondents placed a numerical value on the level of importance of each subunit. The data were collected and computed by the researcher. Frequencies, means, and Standard Deviations were calculated using basic statistical analysis methods. Real limits and descriptors were established as follows: 1.00-1.49=not important; 1.50-2.49=slightly important; 2.50-3.49=more important; and 3.50-4.00=most important.

Findings

A mean of means was calculated to determine the perceived level of importance of teaching the horticulture units of instruction. The summary of businessmen's perceived level of importance of teaching the horticulture units is contained in Table 23. The only unit rated "most important" by businessmen was: Chemical Safety (mean=3.50).

The units rated "more important" by businessmen (means=2.50-3.49) and presented in Table 23 in descending order of mean perceived importance included: Introduction to Horticulture,

Equipment Operation, Plant Growth and Development, Sexual Plant Propagation, Asexual Plant Propagation, Plant Growth Regulators, Soils, Plant Growth Media, Fertilizers, Growing Facilities, Indoor Plants, Nursery Stock, Garden Flowers (Floriculture), Fruit and Nut Production, Vegetable Production, Floral Design, and Technical Aspects. Those units considered to be "slightly important" (means=1.50-2.49) included: Turfgrass Management, Community Service, and Extra Curricular Activities.

Table 23 also reports the ranking of units (needed to set priorities and establish models) based on the mean responses. Based on mean ranking it was determined that Chemical Safety was perceived by businessmen to be a unit that was most important. The ranking, in descending order, is as follows: (2) Indoor Plants, (3) Garden Flowers (Floriculture), (4) Introduction to Horticulture, (5) Nursery Stock, (6) Floral Design, (7) Equipment Operation, (8) Plant Growth Media, (9) Technical Aspects, (10) Fertilizers, (11) Soils, (12) Plant Growth and Development, (13) Plant Growth Regulators, (14) Sexual Plant Propagation, (15) Asexual Plant Propagation, (16) Growing Facilities, (17) Fruit and Nut Production, (18) Vegetable Production, (19) Community Service, (20) Turfgrass Management, and (21) Extra Curricular Activities.

Concerning the qualitative statement, one or two respondents offered suggestions for improving the horticulture curriculum by restructuring the unit on Plant Growth and Development to include a subunit on Identification and Use; and that the unit on Indoor

TABLE 23

SUMMARY OF RESPONDENTS' PERCEIVED LEVEL OF IMPORTANCE OF
THE HORTICULTURE STUDY UNITS

Unit	Businessmens' Perceived Level of Importance	\bar{X}	Rank
Chemical Safety	Most	3.50	1
Indoor Plants	More	3.44	2
Garden Flowers (Floriculture)	More	3.33	3
Nursery Stock	More	3.24	4
Floral Design	More	3.16	5
Equipment Operation	More	3.14	6
Introduction to Horticulture	More	3.11	7
Plant Growth Media	More	3.00	8
Technical Aspects	More	2.96	9
Fertilizers	More	2.94	10
Soils	More	2.89	11
Plant Growth & Development	More	2.86	12
Plant Growth Regulators	More	2.83	13
Sexual Plant Propagation	More	2.78	14
Asexual Plant Propagation	More	2.70	15
Growing Facilities	More	2.67	16
Fruit & Nut Production	More	2.56	17
Vegetable Production	More	2.50	18
Community Service	Slightly	2.39	19
Turfgrass Management	Slightly	2.33	20
Extra Curricular Activities	Slightly	2.22	21

Plants should include a subunit on care of Indoor Plants. It was also suggested that curriculum be kept simple, with an emphasis on practical knowledge.

Conclusions

The analysis of data and the findings of this study were the basis for the following conclusions:

1. Based upon the findings, it was concluded that the businessmen perceived that the large majority of the horticulture study units represented areas of study which should require high amounts of emphasis in instructional programs.

2. It was concluded that for the study units, Turfgrass Management, Community Service, and Extra Curricular Activities less emphasis should be placed on these units, because not only the unit as a whole, but all of the subunits were considered only "slightly important."

3. The units and subunits included in this study are perceived by the businessmen surveyed to be comprehensive enough to prepare secondary students for employment in their businesses.

4. Based upon the findings and final rankings, it was concluded that the prioritized list of horticulture study units could be used to establish the basis for curriculum models. However, adaptations would have to be made to accommodate the nature of the businesses for which students were being trained.

Recommendations

The horticulture industry in Oklahoma continues to grow and with that growth comes the need for a skilled workforce. Students enrolled in vocational horticulture programs need to be provided with the skill and knowledge needed to enter the horticulture job market. Based on the aforementioned need for a skilled workforce as well as the review of literature, and the analysis of data, the following recommendations are made.

1. It is recommended that none of the horticulture study units be excluded from the curriculum; however, it is recommended that the units, Turfgrass Management, Community Service, and Extra Curricular Activities receive less emphasis.

2. It is recommended that before the additions of subunits suggested by only one or two of the businessmen are incorporated into the respective units, the need should be further validated.

3. It is recommended that the perceived levels of importance expressed by those surveyed be utilized as the basis for horticulture curriculum models. The level of importance placed on units and subunits could serve as guides for the amount of emphasis to be placed upon each. However, the nature of the business for which students are being trained should be considered in selecting which of these to include in programs.

Recommendations for Additional Research

Recommendations for additional research are made based on the conclusions of the study and the analysis of the findings of the study.

1. Further research should be developed to include follow-up studies to determine the effectiveness of curriculum developed as a result of this study.

2. This study should be replicated, using a complete list of horticultural businesses in Oklahoma to provide for either a random sampling or a sampling of the total population.

Such a replication should result in a higher level of validity and applicability of the findings.

A SELECTED BIBLIOGRAPHY

- Burnett, M. F. and Smith, C. W. (1983). Secondary vocational horticulture programs--Assessment. The Journal of the American Association of Teacher Educators in Agriculture, 29, 24-31, 48.
- Childers, N. (1987). Modern fruit science. Chicago, IL: J. B. Lippincott.
- Dowdell, D. and Dowdell J. (1975). Careers in horticulture sciences. New York, NY: Julian Messner.
- Furuta, T. (1976). Environmental plant production and marketing. Arcadia, CA: Cox Publishing Company.
- Gillispie, M. and Mulcahy, J. (1990, December). Bullish on capitalism. The Agricultural Education Magazine, 12-13.
- Griffith, H. V. (1971). Formulation of behavioral objectives for training in selected ornamental horticulture jobs. (Unpub. Ed.D. dissertation, Oklahoma State University.)
- Harris, R. W. (1983). Arboriculture--Care of trees, shrubs, and vines in the landscape. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Harris, C. R. and Birenholtz, R. J. (1990, October). Creative supervised experiences for horticulture students. The Agricultural Education Magazine, 9-10, 15.
- Iverson, M. J. and Robinson, B. F. (1990, February). Changing the mission of agricultural education through curriculum modification. The Agricultural Education Magazine, 20-21, 23.
- Janick, J. (1963). Horticultural science. San Francisco, CA: W. H. Freeman and Company.
- National Research Council. (1988). Understanding agriculture--New directions for education. Washington, DC: National Academy Press.
- Nelson, P. V. (1981). Greenhouse operation and management. Reston, VA: Reston Publishing Company.
- Oklahoma Agriculture 2000. (1982). Stillwater, OK: Division of Agriculture, Oklahoma State University.

- Peirce, L. C. (1987). Vegetables, characteristics, production, and marketing. New York, NY: John Wiley and Sons.
- Schmid, J. A. (1975). Urban vegetation. Chicago, IL: University of Chicago Department of Geography Research Paper, #161.
- Skinner, J. D. (1972). A plan of study in ornamental horticulture for vocational agriculture students at John Marshall High School. (Unpub. M.S. thesis, Oklahoma State University.)
- Smith, E. (1991, May). Modernizing agricultural education. The Agricultural Education Magazine, 6-7.
- "Study Finds." (1987). Horticulture I: A curriculum manual. Las Cruces, NM: New Mexico State University.
- Topliff, L. A. (1988). Basic floral design: Syllabus. Stillwater, OK: Department of Horticulture, Oklahoma State University.
- Topliff, L. A. (1990). Characteristics of selected secondary agriculture education programs in Oklahoma with implications for modeling future programs. (Unpub. Ed.D. dissertation, Oklahoma State University.)
- Zubrick, P. R. (1990, April). Promoting the work ethic. The Agricultural Education Magazine, 3.

APPENDIXES

APPENXIX A

QUESTIONNAIRE

Please indicate the number that best represents your opinion concerning the level of importance a vocational horticulture teacher should place on each of the following instructional units.

- 1 = Not Important
- 2 = Slightly Important
- 3 = More Important
- 4 = Most Important

GENERAL PLANT PRODUCTION

1. Introduction to Horticulture

- A. Orientation and Career Information..... _____
- B. Leadership and the FFA..... _____
- C. Public Speaking..... _____
- D. Other, Please List _____

2. Equipment Operation

- A. Use of Hand Tools..... _____
- B. Hand Tool Safety..... _____
- C. Use of Power Tools..... _____
- D. Power Tool Safety..... _____
- E. Use of Garden Tractors..... _____
- F. Garden Tractor Safety..... _____
- G. Use of Farm Equipment..... _____
- H. Farm Equipment Safety..... _____
- I. Other, Please List _____

3. Plant Growth and Development

- A. Plant Parts: Structure and Function..... _____
- B. Photosynthesis..... _____
- C. Respiration..... _____
- D. Water Absorption, Translocation, and
Transpiration..... _____
- E. Other, Please List _____

4. Sexual Plant Propagation

- A. Introduction to Sexual Plant Propagation.... _____
- B. Seeds..... _____
- C. Seeding in Flats..... _____
- D. Seeding in the Field..... _____
- E. Care and Transplanting of Seedlings..... _____
- F. Other, Please List _____

5. Asexual Plant Propagation
- A. Introduction to Asexual Plant Propagation..._____
 - B. Propagation by Cuttings....._____
 - C. Propagation by Layerage....._____
 - D. Propagation by Division....._____
 - E. Propagation by Budding....._____
 - F. Grafting....._____
 - G. Other, Please List_____
6. Plant Growth Regulators
- A. Introduction to Plant Growth Regulators....._____
 - B. Specialized Growth Regulators....._____
 - C. Other, Please List_____
7. Chemical Safety
- A. Herbicides....._____
 - B. Insecticides....._____
 - C. Other, Please List....._____
8. Soils
- A. Nature and Properties of Soils....._____
 - B. Organic Matter....._____
 - C. Soil Management Techniques....._____
 - D. Other, Please List_____
9. Plant Growth Media
- A. Introduction to Plant Growth Media....._____
 - B. Soil Sterilants and Soil Sterilization....._____
 - C. Other, Please List_____
10. Fertilizers
- A. Introduction to Fertilizers....._____
 - B. Inorganic Fertilizers....._____
 - C. Organic Fertilizers....._____
 - D. Methods of Fertilizer Application....._____
 - E. Other, Please List_____
11. Growing Facilities
- A. Greenhouses....._____
 - B. Lathhouses....._____
 - C. Cold and Warm Frames....._____
 - D. Headhouses....._____
 - E. Other, Please List_____
- SPECIALTY AREAS
12. Indoor Plants
- A. Introduction to Indoor Plants....._____
 - B. Identification of Indoor Plants....._____
 - C. Other, Please List_____

13. Nursery Stock
- A. Introduction to Nursery Stock.....
 - B. Identification of Nursery Stock.....
 - C. Container Stock Care.....
 - D. Bare-root Plant Care.....
 - E. Balled and Burlapped Plant Care.....
 - F. Other, Please List_____
14. Garden Flowers (Floriculture)
- A. Annuals.....
 - B. Perennials.....
 - C. Bulbs and Tubers.....
 - D. Other, Please List_____
15. Fruit and Nut Production
- A. Home Production.....
 - B. Commercial Production.....
 - C. Other, Please List_____
16. Vegetable Production
- A. Home Production.....
 - B. Commercial Production.....
 - C. Other, Please List_____
17. Turfgrass Management
- A. Lawn Establishment By Seeding.....
 - B. Sodding.....
 - C. Irrigation.....
 - D. Mowing Practices.....
 - E. Other, Please List.....
18. Floral Design
- A. Introduction to Floral Design.....
 - B. Identification of Flowers and Greenery.....
 - C. Care of Cut Flowers.....
 - D. Arrangements.....
 - E. Corsages and Boutonnieres.....
 - F. Wedding Flowers.....
 - G. Funeral Flowers.....
 - H. Other, Please List_____
19. Technical Aspects
- A. Repotting.....
 - B. Transplanting.....
 - C. Pruning.....
 - D. Other, Please List_____

20. Community Service
- A. Banquets....._____
 - B. Plantings....._____
 - C. Other, Please List _____
21. Extra Curricular Activities
- A. Fund Raising....._____
 - B. Horticulture Club....._____
 - C. FFA Activities....._____
 - D. Other, Please List _____
22. Please Indicate what Field of Horticulture your Business Represents.....
- 1. Nursery
 - 2. Greenhouse
 - 3. Landscaping
 - 4. Floral Shop
23. Any suggestions regarding the horticulture curriculum?

APPENDIX B

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
FOR HUMAN SUBJECTS RESEARCH

Date: 01-31-94

IRB#: AG-94-013

Proposal Title: CHARACTERISTICS OF HORTICULTURE CURRICULUM IN
SECONDARY VOCATIONAL HORTICULTURE PROGRAMS AS PERCEIVED BY
HORTICULTURE BUSINESSMEN WITH IMPLICATIONS FOR DEVELOPING FUTURE
CURRICULUM MODELS

Principal Investigator(s): Dr. Eddy Finley, Lisa M. Taron

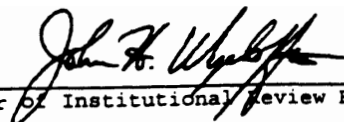
Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT
MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION
OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL. ANY
MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for
Deferral or Disapproval are as follows:

Signature:


Chair of Institutional Review Board

Date: February 1, 1994

VITA

LISA M. TARON

Candidate for the Degree of

Master of Science

Thesis: CHARACTERISTICS OF SECONDARY VOCATIONAL HORTICULTURE
CURRICULUM AS PERCEIVED BY HORTICULTURE BUSINESSMEN WITH
IMPLICATIONS FOR DEVELOPING FUTURE CURRICULUM MODELS

Major Field: Agricultural Education

Biographical:

Personal Data: Born February 1, 1962, the fifth child of
Dr. and Mrs. Joe Taron, two brothers, Joe Taron, Sr., and
Denis "Pee Wee" Taron, three sisters, Debbie Carlile, Kay
Stith, and Becky Taron.

Education: Graduated from Bethel High School, Shawnee,
Oklahoma in May, 1980; attended Murray State College,
Tishomingo, Oklahoma, August, 1980 to May, 1982; received
Bachelor of Science degree in Agriculture from Oklahoma
State University, Stillwater, Oklahoma in May, 1986 with a
double major in Agricultural Education and Horticulture;
completed requirements for the Master of Science degree at
Oklahoma State University in December, 1994 with an
emphasis in Agricultural Education.

Professional Experience: Production Supervisor, Simmons
Industries, Siloam Springs, Arkansas, January, 1987 to
June, 1990; Employed by Mobil Chemical Corporation, Films
Division, Shawnee, Oklahoma, September, 1990 to present.

Organizations: Oklahoma Vocational Agriculture Teachers
Association, American Vocational Association, Collegiate
FFA.