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ABSTRACT

To improve vocational educational programs in agriculture, occupational information on a common core of basic skills within the occupational area of the greenhouse worker is presented in the revised task inventory survey. The purpose of the occupational survey was to identify a common core of basic skills which are performed and are essential for success in the occupation. Objectives were accomplished by constructing an initial task inventory to identify duty areas and task statements for the occupation. The initial task inventory was reviewed by consultants in the field, and 265 tasks were identified. A random sample of 77 greenhouse operations based on the 1975 mailing list of the Ohio Florist's Association was obtained. Data were collected utilizing employer and employee questionnaires. Forty-six questionnaires were returned of which 39 were usable. A compilation of basic sample background information is presented on size of greenhouse operation, total work experience, employment at current job, and preparation as a greenhouse worker. A compilation of duty areas of work performed and work essential for the occupation is given. Percentage performance by incumbent workers and the average level of importance of specific task statements are presented in tabular form. (Author/EC)

DETERMINATION OF A COMMON CORE OF BASIC SKILLS IN AGRIBUSINESS AND NATURAL RESOURCES

An Emperical Determination Of Tasks Essential To Successful Performance As A Greenhouse Worker

DEPARTMENT OF AGRICULTURAL EDUCATION
THE OHIO STATE UNIVERSITY
COLUMBUS, OHIO 43210

AN EMPERICAL DETERMINATION OF TASKS ESSENTIAL TO SUCCESSFUL PERFORMANCE AS A GREENHOUSE WORKER

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The Ohio State University Research Foundation

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FOREWORD

The Department of Agricultural Education at The Ohio State University is involved in a major programmatic effort to improve the curricula in education programs in agriculture. One product in this effort is this report of the greenhouse worker task inventory survey. The data reported were collected as part of a more comprehensive thrust designed to develop a common core of basic skills in agribusiness and natural resources.

It is hoped that the revised task inventory contained in this report will be useful to curriculum developers working for improved occupational relevance in schools. Twenty-seven additional inventories in other occupational areas are also reported from this project.

The profession owes its thanks to Paul H. Waddy, graduate research associate, for his work in preparing this report. Special appreciation is also expressed to Dr. D.C. Kiplinger, Secretary-Treasurer, Ohio Florist's Association, for his input and help in securing the cooperation of those employed in this occupational area.

J. David McCracken
Project Director

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INTRODUCTION

Occupational information is needed to develop and revise vocational and technical education curricula. Teachers and curriculum developers generally determine which skills might be taught in a program based upon teacher expertise, advisory committee input, informal and formal community surveys, and/or task inventories.

The Agricultural Education Department at The Ohio State University has utilized and revised a system for obtaining and using occupational information as an effective aid in planning, improving, and updating occupational education curricula. This report presents the results of a task analysis survey of the occupation, greenhouse worker. The information contained herein may be used by curriculum development specialists, teachers, local and state administrators, and others involved in planning and conducting vocational and technical programs in agriculture.

Purpose and Objectives

The major purpose of the occupational survey was to identify the skills which are performed and essential for success as a greenhouse worker. The specific objectives of this survey were as follows:

1. Develop and validate an initial task inventory for the greenhouse worker.
2. Identify the specific tasks performed by the greenhouse worker.
3. Determine the relative importance of the specific tasks to successful employment as a greenhouse worker.

Definition of the Occupational Area

The greenhouse worker assists in growing plants in privately owned greenhouse operations. The greenhouse worker is involved with the planting, growth, and harvesting of greenhouse plants grown for sale directly to the public or to other retail outlets. The greenhouse worker may be involved with either vegetable or flower production. The specific duties performed by the greenhouse worker will depend on the type and size of greenhouse operation. In general, the greenhouse worker usually mixes and prepares the growing medium; sows seeds, starts cuttings, and transplants plants and seedlings; waters, thins, and weeds plants; controls insects and diseases; regulates the greenhouse environment; maintains tools and equipment; and cuts or harvests greenhouse plants. In some firms the greenhouse worker may also be called a greenhouse employee or laborer.

METHODOLOGY

Objectives were accomplished by constructing an initial task inventory, validating the initial inventory, selecting a sample of workers, collecting data, and analyzing data.

Initial Task Inventory

Duty areas and task statements for the greenhouse worker were identified by searching existing task lists, job descriptions, curriculum guides, and reference publications. Additionally, contacts with several industry personnel aided in clarifying the specific responsibilities of the greenhouse worker. All the

tasks that the project staff thought to be performed were assembled into one composite list.

The initial tasks were grouped into functional areas called "Duties".

After the task statements were grouped under the proper duty areas, each task statement was reviewed for brevity, clarity, and consistency. In all, 260 task statements were included in the initial task inventory.

Initial Inventory Validation

After the initial task inventory was constructed, it was reviewed by three consultants employed in greenhouse operations. These consultants were either greenhouse managers or owners.

The consultants were asked to respond to the initial task list inventory by performing the following activities:

1. Indicate whether any of the tasks listed were not appropriate.
2. Add any additional tasks they believed were performed by the greenhouse worker.
3. Make changes in the wording of tasks to help add clarity to the statements.

The comments from the three consultants were pooled and needed revisions were made. One new duty area was added as a result of the review process.

As a result of the initial task inventory review process, 265 tasks were identified.

Worker Sample Selection

Since the specific duties and tasks performed by the individual greenhouse worker are related to the size and type of business where employed, an attempt was made to survey greenhouse workers employed in various sizes and types of greenhouses. It was not possible to secure a list of the specific names and addresses of all incumbent workers in the state. Therefore, a sample of 77 greenhouse operations was obtained from the 1975 mailing list of the Ohio Florist's Association using a stratified random sampling approach. The strata used were type of business and geographical location.

Data Collection

A packet of materials was sent to the owner or manager of the randomly selected greenhouse operations. The packet of materials included:

1. A cover letter from the Ohio Florist's Association.
2. An employer questionnaire printed on blue.
3. An employee questionnaire printed on yellow.
4. A stamped and self-addressed return envelope.

The manager or owner was instructed to complete the employer questionnaire and to have a responsible greenhouse worker complete the employee questionnaire. The manager or owner was instructed to collect the employee questionnaire and return both the employer and employee questionnaire in the stamped and self-addressed return envelope by the date specified in the cover letter.

A follow-up of non-respondents consisted of mailing a packet of materials two weeks after the initial mailing. The first follow-up consisted of a packet of materials identical to the initial packet except that a cover letter on Ohio State University stationery replaced the cover letter on Ohio Florist's Association stationery.

A final follow-up of non-respondents was initiated four weeks after the initial mailing. A telephone contact by a project staff member was made with 50% of the non-respondents. The non-respondents were asked to complete the questionnaire and emphasis was placed on the importance of their response to the success of the project during the telephone conversation.

Data Analysis

The 46 questionnaires which were returned were checked for completeness and accuracy by the project staff. Information from the 39 usable responses was coded on Fortran coding sheets for key punching. In addition to coding appropriate respondent background information, each specific task statement was coded as to whether it was performed (1 = Task performed by respondent; blank = Task not performed by respondent) and the level of importance of the task (3 = Essential; 2 = Useful; 1 = Not Important). The information was keypunched on IBM cards and verified by personnel at the Instruction and Research Computer Center at The Ohio State University.

The data was analyzed using the SOUPAC computer program and the facilities of the Instruction and Research Computer Center. Consultant assistance for analyzing the data was provided by personnel at The Center for Vocational Education. The SOUPAC computer analysis resulted in the computation of relative frequencies, means, and rankings for each task statement. The results of the computer analyses were printed in tabular form for ease of interpretation.

FINDINGS

Objectives of the study resulted in the compilation of basic sample background information, the determination of tasks performed by the greenhouse worker, and the identification of tasks essential to successful performance as a greenhouse worker.

Description of the Sample

Information regarding the performance of tasks and the importance of the tasks to successful employment as a greenhouse worker was obtained from greenhouse workers in various greenhouse operations across Ohio.

Response to the Survey

A total of 77 questionnaires were mailed and 46 replies were received. This represented a 59.7% rate of return. The response to the questionnaire is summarized in TABLE I.

TABLE I

EMPLOYEE RESPONSE TO THE QUESTIONNAIRE

	N	Percent of All Employees In the Survey
Employees in Survey	77	100.0
Total Returns	46	59.7
Usable Returns	39	50.6
Unusable Returns	7	9.1
Nonrespondents	31	40.3

Size of Greenhouse Operation

Greenhouse workers from various size greenhouse operations were included in the study. The number of full-time equivalent (two one-half time greenhouse workers equal one full-time equivalent) greenhouse workers employed in the business was used as an index to assess the size of operation where the greenhouse worker was employed. Of the 46 questionnaires received, 38 included information regarding the size of the greenhouse operation. TABLE II summarizes the responses to the question, "How many full-time equivalent greenhouse workers are employed in your business?" Twenty-two greenhouse workers or 57.8% were employed in operations employing one to ten full-time equivalent greenhouse workers. Ten greenhouse workers or 26.3% were employed in businesses employing 11-20 full-time equivalent greenhouse workers. Thus, 84.1% of the greenhouse workers were working in operations employing 1-20 full-time equivalent greenhouse workers. The average number of full-time equivalent greenhouse workers employed in the businesses was 12.2.

TABLE II

SIZE OF GREENHOUSE OPERATION WHERE CURRENTLY EMPLOYED

Number of Greenhouse Workers Employed in the Business	N	Percent of Respondents
1-10	22	57.8
11-20	10	26.4
21 or more	6	15.8
Total	38	100.0

$\bar{X}$ number of greenhouse workers in the business = 12.2

Total Work Experience

Greenhouse workers with varying amounts of work experience in the greenhouse industry were included in the study. TABLE III summarizes the responses to the question, "How many total years have you worked in the greenhouse industry?" Seventeen greenhouse workers or 43.6% had 23 or more years of total work experience in the greenhouse industry. Five greenhouse workers or 12.9% had from one to three total years of work experience in the greenhouse

industry. Five greenhouse workers or 12.9% had from seven to ten total years of work experience in the greenhouse industry. The total years of work experience in the greenhouse industry ranged from 1-45 years. Greenhouse workers had an average of 23.7 years of total work experience in the greenhouse industry.

TABLE III

TOTAL AMOUNT OF WORK EXPERIENCE IN THE GREENHOUSE INDUSTRY

Years	N	Percent of Respondents
1-3	5	12.9
4-6	2	5.1
7-10	5	12.9
11-14	3	7.6
15-18	3	7.6
19-22	4	10.3
23 or more	17	43.6
Total	39	100.0

$\bar{X}$ years in the industry = 23.7

Employment at Current Job

Greenhouse workers in the survey had spent varying amounts of time in their present job. TABLE IV summarizes the responses to the question, "How many years have you worked at your present job?". Nine greenhouse workers or 23% had worked at their present job from four to six years. Eight greenhouse workers or 20.6% had worked at their present job from one to three years. Seven greenhouse workers or 17.9% had worked at their present job from 23-26 years. The years of work at their present job ranged from 1-45 years. Greenhouse workers had been employed at their present job an average of 14.7 years.

Preparation as a Greenhouse Worker

Greenhouse workers obtained training for their job from various sources. TABLE V summarizes their responses to the question, "Where did you receive your training as a greenhouse worker?" Thirty-six greenhouse workers or 92.3% indicated they received

training on-the-job. Fourteen greenhouse workers or 35.8% indicated they attended a college or university program to receive training as a greenhouse worker. Three greenhouse workers or 7.6% indicated they had received training from other sources.

TABLE IV

LENGTH OF TIME AT PRESENT JOB

Years	N	Percent of Respondents
1-3	8	20.6
4-6	9	23.0
7-10	5	12.9
11-18	2	5.2
19-22	4	10.2
23-26	7	17.9
27 or more	4	10.2
Total	39	100.0

$\bar{X}$ years at present job = 14.7

TABLE V

SOURCE OF TRAINING RECEIVED AS A GREENHOUSE WORKER

Source	N	Percent of All Employees In the Survey
On-The-Job	36	92.3
High School Program	1	2.5
College/University Program	14	35.8
Adult Education Program	1	2.5
Other	3	7.6

Duty Areas of Work Performed by the Greenhouse Worker

The 265 tasks were grouped under nineteen duty areas. Each respondent indicated whether he performed the specific task in his current position as a greenhouse worker. The percentages of respondents performing each task were averaged for all tasks under each duty area. The mean percentage of incumbents who performed specific tasks in specified duty areas is presented in TABLE VI.

Duty areas of work in which 50% or more of the incumbent workers performed the tasks were:

1. Performing General Office Work
2. Recording Information
3. Maintaining Facilities
4. Following Safety Practices in Greenhouse Production
5. Maintaining Greenhouse Operations Equipment and Vehicles
6. Using and Maintaining Hand and Power Tools
7. Fertilizing Plants in Greenhouse Operations
8. Controlling Insects and Diseases in the Greenhouse
9. Controlling Weeds in the Greenhouse
10. Preparing the Greenhouse Growing Medium
11. Assembling and Installing Greenhouse Equipment and Structures
12. Managing and Controlling the Greenhouse Environment

Duty Areas of Work Essential for Successful Performance as a Greenhouse Worker

A level of importance rating was obtained for each task. The respondent could rate the task as essential, useful, or not important for successful performance as a greenhouse worker. A ranking of essential was assigned a numerical rating of "3", useful a numerical rating of "2", and not important a numerical rating of "1". The level of importance ratings for each task were averaged for all tasks under each duty area. The average level of importance ratings for the specific tasks in the specified duty areas are presented in TABLE VI.

Duty areas of work which received a 2.0 or higher level of importance rating by incumbent workers were:

1. Recording Information
2. Maintaining Facilities
3. Following Safety Practices in Greenhouse Production
4. Maintaining Greenhouse Operations Equipment and Vehicles
5. Using and Maintaining Hand and Power Tools
6. Testing Soil and Plant Tissues

7. Fertilizing Plants in Greenhouse Operations
8. Operating Equipment and Vehicles
9. Controlling Insects and Diseases in the Greenhouse
10. Controlling Weeds in the Greenhouse
11. Preparing the Greenhouse Growing Medium
12. Establishing Greenhouse Plants
13. Constructing and Maintaining Greenhouse Buildings and Structures
14. Assembling and Installing Greenhouse Equipment and and Structures
15. Managing and Controlling the Greenhouse Environment

Percentage Performance and Level of Importance Ratings of Specific Tasks

The percentage performance by incumbent workers and the level of importance for each specific task is also presented in TABLE VI.

It is recommended that the results for each specific task be examined by educators and others who are developing educational programs to determine curriculum content for preparing greenhouse workers. Specific tasks with a high level of performance and a high level of importance rating should be given more emphasis in the educational program than specific tasks with a low level of performance and a low level of importance rating.

TABLE VI

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE * OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Performing General Office Work		
File office forms and records	43	1.7
Meet various people	66	2.0
Schedule appointments	38	1.6
Use telephone	74	2.1
Write letters, memos, and notes	64	1.8
Mean Rating	57.0	1.8
Recording Information		
Record greenhouse crop production information	71	2.4
Record equipment maintenance information	46	2.2
Mean Rating	58.5	2.3
Maintaining Facilities		
Sweep work area floors	69	2.3
Mean Rating	69.0	2.3
Following Safety practices in Greenhouse Production		
Follow safe work habits	79	2.8
Identify potential safety hazards	76	2.7
Store chemicals	71	2.6
Use fire extinguishers	51	2.4
Wear appropriate protective clothing	69	2.7
Ventilate work areas	69	2.7
Interpret information on labels and signs	74	2.7
Use proper lifting and carrying methods	69	2.6
Store inflammable materials	56	2.4
Wear appropriate work clothes	69	2.3
Dispose of chemical containers	66	2.4
Adjust safety devices	48	2.4
Install safety devices	46	2.1
Correct potential safety hazards	61	2.5
Remove debris from work areas	58	2.3

*Average rating of importance may range from 1-3 with 3 being the highest

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Use electrical connectors and safety devices	56	2.4
Mean Rating	63.6	2.5
Selling and Marketing Greenhouse Plants		
Complete sales slip	61	2.1
Describe items to customers	61	2.2
Determine when merchandise is to be delivered	58	2.1
Greet customers	64	2.1
Determine what customer is describing	56	2.1
Interpret plant care instructions	61	2.1
Label merchandise	61	2.1
Make change	48	2.0
Price various items for customers	51	2.0
Receive customer orders by telephone	58	2.4
Use billing machine	41	1.8
Prepare advertisements	23	1.5
Determine whether specific plants requested by customers are in stock	53	2.2
Handle customer complaints and objections	53	2.0
Operate cash register	41	1.7
Identify seasonal items	41	1.9
Use sales catalogs	38	1.7
Make in-store sales contact	38	1.5
Follow-up sales	35	1.7
Close a sale	41	1.6
Mean Rating	49.1	1.9
Storing and Warehousing Greenhouse Plants		
Evaluate influence improper storage has on product quality	58	2.3
Remove dead and diseased blooms and plant parts from storage	58	2.5
Rotate stock in storage areas	43	2.0
Place cut flowers in environmental storage	35	1.7
Pack plants in fiberboard cartons	38	1.9
Use appropriate materials for packaging	46	2.1

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Pack cut flowers	33	1.7
Box or crate large plants	23	1.6
Use pot plant sleeving device to wrap potted plants	51	1.8
Mean Rating	42.7	1.9
Maintaining Greenhouse Operations Equipment and Vehicles		
Add coolant to radiators	48	2.1
Add oil to equipment	56	2.5
Change oil and oil filters	48	2.3
Clean debris from equipment	58	2.5
Grease equipment	61	2.4
Inflate tires	58	2.4
Inspect cooling system on vehicles for leaks	51	2.2
Install and adjust belts	56	2.3
Install and service battery	51	2.1
Interpret general maintenance instructions in equipment operator's manuals	56	2.3
Remove equipment from storage	51	2.1
Service air cleaners	51	2.0
Prepare equipment for storage	43	2.0
Mean Rating	52.9	2.2
Using and Maintaining Hand and Power Tools		
Adjust tools	61	2.4
Clean tools	64	2.5
Identify tools	61	2.5
Interpret tool operation instructions	53	2.4
Recondition tools	43	2.0
Select tools for specific jobs	64	2.5
Sharpen tools	53	2.3
Store tools	56	2.5
Use hand tools safely	66	2.7
Use power tools safely	66	2.8
Mean Rating	58.7	2.4

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Testing Soil and Plant Tissues		
Interpret plant tissue test results	38	2.1
Interpret soil test results	51	2.2
Prepare forms to submit with plant tissue	28	1.9
Prepare forms to submit with soil samples	46	2.2
Prepare plant tissues to be submitted to testing laboratory	25	1.8
Prepare soil to be submitted to testing laboratory	41	2.2
Use portable kits to determine soil pH	20	1.8
Take representative soil sample	48	2.2
Mean Rating	37.0	2.0
Fertilizing Plants in Greenhouse Operations		
Determine costs of fertilizers	53	2.0
Determine amount of fertilizer and lime to apply	66	2.5
Determine kind of fertilizer and lime to apply	64	2.5
Determine when to apply fertilizer and pH adjustment materials	69	2.5
Identify nutrient deficiency symptoms in growing plants	64	2.4
Interpret labels on fertilizer bags	66	2.6
Apply fertilizer in liquid form	66	2.6
Apply dry fertilizer	58	2.4
Mix fertilizer solutions	69	2.6
Interpret manufacturer's fertilization rate charts	71	2.6
Evaluate influence various nutrients have on plant growth	64	2.4
Differentiate between organic and inorganic fertilizers	48	2.0
Use fertilizer injectors	61	2.6
Determine the nutrient requirements of various plants	58	2.3
Mean Rating	62.6	2.4
Operating Equipment and Vehicles		
Interpret gauge readings	66	2.3
Operate equipment and vehicles on public highways	58	2.2
Adjust equipment safety shields	53	2.2
Connect front end operated equipment	38	1.9
Connect hydraulic systems and hydraulic operated equipment	33	1.9

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Correct potential equipment safety hazards	51	2.3
Hitch towed equipment	38	1.9
Identify equipment safety hazards	48	2.2
Interpret hand operating signals	41	2.0
Interpret safety instructions in operator's manuals	46	2.1
Interpret safety symbols on equipment	53	2.2
Operate equipment under work conditions	61	2.4
Refuel power units	64	2.3
Use appropriate equipment and vehicles for specific jobs	56	2.5
Mean Rating	47.0	2.0
Controlling Insects and Diseases in the Greenhouse		
Apply chemicals in aerosol bombs	41	2.1
Apply chemicals in liquid form	66	2.5
Apply chemicals in dust form	51	2.1
Apply chemicals through steam systems	28	1.6
Determine amount of chemical to apply	69	2.6
Determine when to apply chemicals	69	2.7
Evaluate influence of diseases and pests on greenhouse production	64	2.5
Evaluate influence of temperature, light, and humidity on disease and insect problems	56	2.5
Evaluate life cycle of insects to determine appropriate control procedures	48	2.3
Identify common diseases	64	2.6
Identify common insects	71	2.6
Identify damage caused by insects and diseases	69	2.5
Identify disease and insect resistant varieties for planting	43	2.2
Identify various means by which diseases and pests are spread	56	2.4
Mix chemicals with appropriate carrier	58	2.4
Select appropriate chemicals to control various insect pests and diseases	61	2.5
Use appropriate method to apply chemicals	64	2.5
Inspect greenhouse crops to determine when infestations require control	69	2.6
Mean Rating	58.1	2.4

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Controlling Weeds in the Greenhouse		
Apply chemicals to control weeds	56	2.4
Determine amount of chemical to apply	61	2.3
Determine when to apply chemical	58	2.2
Evaluate influence weeds have on greenhouse crops	51	2.3
Identify common weeds	41	1.9
Inspect greenhouse crops to determine when weeds require control	56	2.4
Install plastic to control weeds	33	1.6
Mix chemicals	53	2.4
Select appropriate chemical to control weeds	53	2.3
Use appropriate method to apply chemicals	51	2.4
Use mechanical tools to remove weeds	48	2.1
Mean Rating	56.1	2.4
Preparing the Greenhouse Growing Medium		
Determine appropriate soil mix for specific plants	64	2.4
Determine soil texture	56	2.3
Evaluate physical, chemical, and biological effects steam has on soil	35	1.9
Fill benches and pots	64	2.4
Fill soil bins	46	2.2
Identify greenhouse soil materials	58	2.4
Level soil surface	64	2.4
Mark soil for planting	56	2.2
Mix soil with appropriate plant growing materials	66	2.2
Prepare compost	28	1.7
Shred or screen soil	43	2.1
Spread peat moss	48	2.2
Steam soil	51	2.4
Sterilize and heat mixed soils with chemicals	30	1.8
Mean Rating	50.6	2.1
Establishing Greenhouse Plants		
Clean seeds	20	1.8

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Cultivate beds	46	2.2
Determine air temperature	61	2.5
Determine number of cuttings to include in a pot	61	2.3
Determine percent germination	38	2.0
Determine planting rates for various varieties	51	2.3
Determine proper planting depth	61	2.5
Determine proper time to plant	66	2.5
Determine soil temperature	48	2.2
Disbud plants	56	2.4
Evaluate influence "poor" seed or bulb has on germination	28	1.8
Force bulbs	43	2.0
Grade cuttings for size	51	2.1
Graft cacti	2	1.2
Identify problems related to propagation failures	56	2.2
Identify various plants	64	2.4
Inoculate seeds	12	1.5
Interpret information on seed or bulb tags	56	2.2
Make a bark graft	0	1.2
Make a machine graft	0	1.2
Make a patch-bud graft	0	1.2
Make a saddle graft	0	1.2
Make a splice graft	0	1.2
Make a T-bud graft	0	1.2
Make a whip-and-tongue graft	0	1.2
Make an approach graft	0	1.2
Make leaf cuttings for appropriate plants	41	2.1
Make stem cuttings for appropriate plants	53	2.3
Mist cuttings	66	2.6
Pencil label planted specimens	43	2.2
Place cuttings in rows	58	2.3
Plant cuttings in flats	46	2.0
Prune plants	38	2.0
Remove cuttings from propagation benches	58	2.3
Select appropriate seeds and bulbs	46	2.2
Select appropriate pots for various plants	53	2.2
Select cuttings and seeding stock	51	2.3
Sow seed for greenhouse stock	48	2.2
Thin seedlings	33	1.9
Tie plants	43	2.1
Transplant seedlings	56	2.4

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Use appropriate planting method	56	2.5
Use rooting hormones with cuttings	53	2.2
Water the soil	74	2.7
Mean Rating	39.4	2.0
Constructing and Maintaining Greenhouse Buildings and Structures		
Apply wood and metal preservatives	56	2.2
Clean and oil electric motors	58	2.5
Clean heating and cooling systems	58	2.3
Construct and remove concrete forms	46	2.0
Construct and repair benches and frames	64	2.3
Determine cost of repairs needed	48	1.9
Develop bill of materials needed for repairs	48	2.0
Hang and repair doors	41	2.0
Install electrical motors	46	2.1
Lay concrete blocks	38	1.9
Make minor repairs on metal quonset superstructure	20	1.7
Pour, finish, and cure concrete	41	1.9
Read and interpret blueprints	25	1.7
Repair bracing in buildings	33	2.1
Repair electrical cords and wires	53	2.3
Repair minor leaks in roof of buildings	51	2.3
Replace belts and pulleys	56	2.3
Reset circuit breakers	61	2.3
Replace electrical switches	51	2.1
Replace fuses	64	2.3
Replace lighting fixtures	58	2.2
Replace plastic covering on temporary greenhouses	48	2.2
Replace traps in heating system and water line	46	2.1
Replace valves in water lines	58	2.3
Replace or repair water faucets	61	2.3
Replace water pipes	56	2.2
Replace window panes	58	2.3
Wash greenhouse glass	46	2.1
Wire simple electrical circuit	51	2.1
Mean Rating	49.5	2.0

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Assembling and Installing Greenhouse Equipment and Structures		
Adjust belts on equipment	61	2.3
Adjust chains on equipment	46	2.1
Adjust controls on equipment	58	2.1
Adjust safety shields on equipment	51	2.3
Check for missing equipment parts or hardware	58	2.2
Follow written assembly instructions	56	2.4
Identify hardware	58	2.3
Inspect assembled equipment for operating defects	56	2.2
Install equipment and structures in appropriate places	56	2.3
Interpret assembly diagrams	48	2.1
Interpret assembly instructions	51	2.2
Use proper equipment and tools to assemble and install equipment	51	2.3
Mean Rating	54.1	2.2
Managing and Controlling the Greenhouse Environment		
Alter spacing of plants	66	2.5
Apply shading compound to glass	69	2.5
Basin plants for watering	33	1.6
Control air temperature	69	2.6
Control humidity	66	2.5
Control light quantity and quality	64	2.5
Determine appropriate temperatures for various plants	71	2.5
Evaluate affect temperature has on plants	61	2.2
Evaluate influence relative humidity has on plant growth	64	2.2
Hang lath or saran cloth	38	1.9
Interpret light meters	25	1.8
Mist plants	61	2.3
Regulate carbon dioxide generating equipment	23	1.7
Set automatic water timers	51	2.2
Temper water	25	1.8
Water greenhouse plants	74	2.1
Wet greenhouse walks	48	1.9
Mean Rating	53.4	2.1

TABLE VI (Cont.)

PERCENTAGE PERFORMANCE AND AVERAGE RATING OF IMPORTANCE OF SPECIFIC TASKS

TASK STATEMENTS	Percent Performing	Average Level of Importance
Harvesting Greenhouse Plants		
Cut flowers	38	2.0
Determine when various plants should be cut or removed	51	2.1
Determine whether various flower plants are to be marketed as pots, baskets, or as individual flowers	18	1.5
Evaluate the influence stage of maturity has on quality and value of plant	23	1.9
Label harvested plants by common name	21	1.8
Observe plants to determine stages of bloom	23	1.8
Pot flowering plants	21	1.8
Remove plants from beds	28	2.1
Mean Rating	27.8	1.8