

DOCUMENT RESUME

ED 114 688

CE 005 770

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 TITLE Supervised Occupational Experience Record Forms for Ornamental Horticulture. (Revised) Master Set. 1974.
 INSTITUTION Pennsylvania State Univ., University Park. Dept. of Agricultural Education.
 SPONS AGENCY Pennsylvania State Dept. of Education, Harrisburg. Bureau of Vocational, Technical, and Continuing Education.
 REPORT NO VT-102-230
 PUB DATE 74
 NOTE 358p.

EDRS PRICE MF-\$0.76 HC-\$18.40 Plus Postage
 DESCRIPTORS *Cost Effectiveness; Efficiency; Floriculture; Greenhouses; Landscaping; Nurseries (Horticulture); *Ornamental Horticulture; Recordkeeping; Records (Forms); *Secondary Education; Turf Management; Vocational Agriculture; *Work Experience; *Worksheets

ABSTRACT

The worksheets have been developed for use with any production occupational or work experience record book for high school vocational agriculture programs. Separate units have been developed for each of 11 areas in ornamental horticulture, so the student and teacher can select the appropriate one, or several, for the experiences planned by the student. The areas are: flower shop employee; greenhouse crops; landscape maintenance and establishment; nursery production; field grown crops; field grown trees; field grown shrubs; container grown plants; and turfgrass maintenance, establishment, and production. Within each area, the five following record sheets are provided: approved practices, goals, efficiency factors, cost accounting or employment achievement, and analysis. (Author/KJ)

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APPENDIX E

**SUPERVISED OCCUPATIONAL EXPERIENCE
RECORD FORMS
for
ORNAMENTAL HORTICULTURE**

(REVISED)

1974

MASTER SET

Flower Shop Employee
Greenhouse Crops: Potted Plants
Greenhouse Crops: Cut Flowers
Outdoor Flower Crops
Landscape Maintenance and Establishment
Nursery Production: Field Grown Crops
Nursery Production: Field Grown Shrubs
Nursery Production: Container Grown Plants
Turfgrass Maintenance, Establishment, Production

Department of Agricultural Education
College of Agriculture
The Pennsylvania State University
University Park, PA
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education
Harrisburg, PA

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SUPERVISED OCCUPATIONAL EXPERIENCE
RECORD FORMS
for
ORNAMENTAL HORTICULTURE
(REVISED)

1974

MASTER SET

Flower Shop Employee

Greenhouse Crops: Potted Plants

Greenhouse Crops: Cut Flowers

Outdoor Flower Crops

Landscape Maintenance and Establishment

Nursery Production: Field Grown Crops

Nursery Production: Field Grown Shrubs

Nursery Production: Container Grown Plants

Turfgrass Maintenance, Establishment, Production

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Acknowledgements

This publication, "Supervised Occupational Experience Record Forms for Ornamental Horticulture", was prepared by R. W. Harrison and H. B. Gerhart, Area Vocational Education Consultants, and the following Pennsylvania Vocational Agriculture Teachers:

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This project was funded by The Pennsylvania State University and the Pennsylvania Department of Education.

Foreword

These record forms have been developed for use with any production occupational or work experience record book for high school vocational agriculture programs.

Separate units have been developed for each of eleven areas in ornamental horticulture, so the student and teacher can select the appropriate one, or several, for the experiences planned by the student. The areas are indicated in the table of contents. Within each area, the five following record sheets are provided: (1) Approved Practices, (2) Goals, (3) Efficiency Factors, (4) Cost Accounting, or Employment Achievement, and (5) Analysis.

Contents

Flower Shop Employee	A	1-10
Greenhouse Crops		
Potted Plants	B	1-34
Cut Flowers	B	35-54
Outdoor Flower Crops	C	1-16
Landscape Maintenance and Establishment.	D	1-20
Nursery Production		
Field Grown Trees	E	1-70
Field Grown Shrubs, etc.	E	71-138
Container Grown Plants	E	139-188
Turfgrass Maintenance, Establishment, Production	F	1-28

106

Supervised Occupational Experience Record Forms

for

Ornamental Horticulture

(REVISED)

1974

FLOWER SHOP EMPLOYEE - A 1-9

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Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are based on the comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting

form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

Efficiency Factor	Potted Chrysanthemum		ENTERPRISE	
	Local Efficiency Standards Average	Superior	Student Goal	Student Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms per 6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

* (optimum number)

Approved Practices
Flower Shop Employee

	<u>TASKS</u>	
	Ref. A	Ref. B
1. Retail Selling	p. 118 - 122	p. 171 - 178
2. Taking Orders	p. 118 - 122	p. 214 - 222
3. Shop Display	p. 129	p. 47 - 55
4. Floral Designing	p. 53 - 104	p. 271 - 371
5. Material Handling	p. 13 - 52	p. 223 - 230, 380 - 387
6. Delivering	p. 133	p. 231 - 237
7. Personal Appearance and Personality	p. 119	p. 127 - 128
8. Record Keeping	p. 125 - 126, 133	p. 238 - 270
9. Assist in Purchasing	p. 112 - 113	p. 132 - 137

A. RETAIL FLOWER SHOP OPERATION AND MANAGEMENT - P.S.U.

B. THE RETAIL FLOWER SHOP - PFAHL

Goals Stated in Relation to Efficiency

Flower Shop (Employee)

	<u>Efficiency Standards</u>	
	<u>Average</u>	<u>Superior</u>
1. Sales Concluded	95%	100%
2. Accuracy in Orders and Records	98%	100%
3. Customer Complaints	2%	1%
4. Accuracy Within Design Specifications	95%	100%
5. Maximum Utilization of Materials	95%	100%
6. Satisfactory Deliveries	95%	100%
7. Customer Satisfaction	Good	Excellent
8. Employer Satisfaction	Good	Excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Det
Flower Shop (Employer)	a. % Sales concluded	95%	100%	.2 poi
	b. % Accuracy in order and records	98%	100%	.5 poi
	c. % Complaints	2%	1%	.5 poi
	d. Accuracy within design specification	95%	100%	.2 poi
	e. % Maximum utilization of materials	95%	100%	2 poin
	f. % Satisfactory Deliveries	95%	100%	2 poin
	g. Customer satisfaction	Good	Excellent	
	h. Employer satisfaction	Good	Excellent	

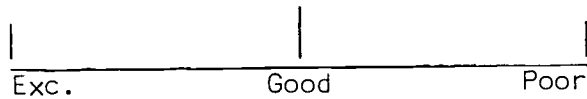
9-6

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
a. % Sales concluded	95%	100%	.2 points for every 1% over 95%
b. % Accuracy in order and records	98%	100%	.5 points for every 1% over 98%
c. % Complaints	2%	1%	.5 points for every 1% under 2%
d. Accuracy within design specification	95%	100%	.2 points for every 1% over 95%
e. % Maximum utilization of materials	95%	100%	2 points for every 1% over 95%
f. % Satisfactory Deliveries	95%	100%	2 points for every 1% over 95%
g. Customer satisfaction	Good	Excellent	-----
h. Employer satisfaction	Good	Excellent	-----

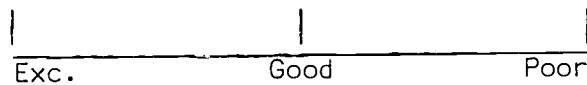
Employment Achievement

Flower Shop Employee

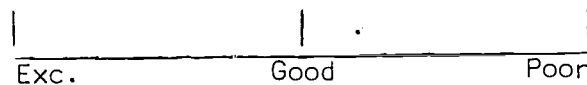
1. Personal satisfaction (Do you enjoy the work?)



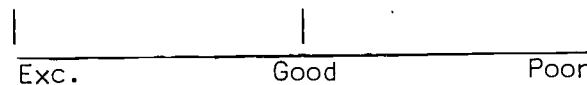
2. Monetary increases (after 3 to 6 months)



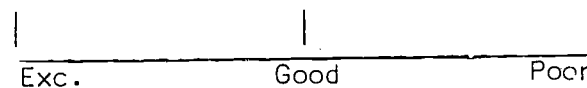
3. Fringe benefits (insurance, retirement, other)



4. Opportunity for advancement (in 1 to 5 years)



5. Variety of educational experience according to students occupational goals.



Analysis of Flower Shop Employee Experience

Name _____ Date Started _____ Ended _____
 School _____ Total Hours _____
 County _____ Income Per Year _____
 Employer _____
 Address _____

	Poor	Average	Superior
1.	<u>90%</u>	<u>95%</u>	<u>100%</u>
	Sales Concluded		
2.	<u>96%</u>	<u>98%</u>	<u>100%</u>
	Accuracy in orders and records		
3.	<u>4%</u>	<u>2%</u>	<u>1%</u>
	Complaints		
4.	<u>90%</u>	<u>95%</u>	<u>100%</u>
	Accuracy within design specifications		
5.	<u>90%</u>	<u>95%</u>	<u>100%</u>
	Maximum utilization of materials		
6.	<u>90%</u>	<u>95%</u>	<u>100%</u>
	Satisfactory deliveries		

Poor Average Superior
Poor Good Excellent
7. Customer satisfaction

Poor Good Excellent
8. Employer satisfaction

Place a red "G" on each line scale at the goal set. Place a red "A" on each line scale at the efficiency achieved.

Practices and conditions which limited income:

Practices and conditions which contributed to superior efficiency:

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agricultural Teachers.

1974

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
1974

GREENHOUSE CROPS - POTTED PLANTS - B 1-31	
Chrysanthemum	B 2-8
Poinsettia	B 9-13
Easter Lily	B 15-19
Geranium	B 21-25
Bedding Plants	B 27-31

To be used with any production,
occupational or work experience record
book.

Department of Agricultural Education
The Pennsylvania State University
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Efficiency Factor	Potted Chrysanthemum		ENTERPRISE	
	Local Efficiency Standards Average	Local Efficiency Standards Superior	Student Goal	Student Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/ 6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

*(Optimum number)

Approved Practices - Potted Chrysanthemum

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Crop Planning, Selection, Rotation Schedule	P. 72-75
2. Soil Mixing and Steaming	P. 42, 56
3. Potting	P. 75
4. Photoperiod Control	P. 74
5. Watering	P. 77
6. Temperature Control	P. 76
7. Fertilizing	P. 43-51, 77-78
8. Pest Control	P. 52-65
9. Growth Regulator Application	P. 79-80
10. Pinching and Disbudding	P. 78-79
11. Marketing Preparation	P. 80

Reference: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU 1969

Goals Stated in Relation to Efficiency

Potted Chrysanthemums

Efficiency Factor	Efficiency Standard	
	Average	Superior
1. Percent Marketed	95%	100%
2. Number of 6" pots per 100 sq. ft. of bench space	75	100
3. Number of blooms per pot	18	24
4. Height at Market including Pot	85%	95%
	(in 16"-18" height range)	
5. Marketed at Predetermined week	80%	95%
6. Intense foliage and flower color	Good	Excellent
7. Unblemished	90%	100%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	
Pot Mums	a. % Marketed	95%	100%	.2 points for over 95%
	b. No. of blooms per pot	18	24	.1 point for 18 (average)
	c. No. of 6" pots per 100 sq. ft. of bench space	75	100	.05 point for 75 up to 100
	d. % of pots in 16" to 18" height range at market including pot	90%	95%	.2 points for
	e. % Marketed at pre-determined week	95%	100%	.2 points for over 95%

B-6

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	95%	100%	.2 points for each 1% marketed over 95%
No. of blooms per pot	18	24	.1 point for each bloom over 18 (average)
No. of 6" pots per 100 sq. ft. of bench space	75	100	.05 point for each pot over 75 up to 100
% of pots in 16" to 18" height range at market including pot	90%	95%	.2 points for each 1% over 90%
% Marketed at pre-determined week	95%	100%	.2 points for each 1% marketed over 95%

Cost Accounting - Potted Chrysanthemums

1. Cost of rooted cuttings - varies from 9¢ to 18¢ each, depending upon variety. Use the actual price paid.
2. Container - 6" clay or plastic pots cost about 8¢ each: when actual price is not known, use this figure. Plastic drain pieces cost about 1¢ each.
3. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added costs about \$15.00. One cubic yard (27 cubic feet) will fill 504, 3/4 size 6-inch pots.
4. Overhead costs (depreciation, fuel, supplies, etc.) are about \$1.40 per square foot of actual growing space per year.
5. Labor costs are about \$1.60 per square foot of actual growing space per year.
6. The average marketing cost is 20% of the total of all other costs.

*Analysis of Potted Chrysanthemum Enterprise

Name _____ Date started _____ Ended _____
 School _____ Variety _____
 County _____ Total receipts _____ x
 Sq. Ft. of bench space _____ a Total expenses _____ y
 Total Production _____ pots b Labor and management income _____ z
 (x - y)
 Production/100 sq. ft. _____ pots Income/100 sq. ft. bench space _____
 (b ÷ a) x 100 (z ÷ a) x 100

	Poor	Average	Superior
1.	90%	95%	100%
		% Marketed	
2.	50	75	100
		6" pots/100 sq. ft.	200
3.	12	18	24
		No. of Blooms/pot	
4.	90%	95%	100%
		% Marketed at Predetermined Week	
5.	80%	90%	100%
		% of pots in 16" to 18" height range	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income

Practices and conditions which contributed to superior efficiency.

*Analysis based on 6" pots with 5 cutting/pot, pinched, disbudded.

Approved Practices - Poinsettias

	<u>REFERENCE</u>
1. Crop Planning, Selection, Rotation	P. 84-91
2. Soil Mixing and Steaming	P. 42-51
3. Potting	P. 92-93
4. Photoperiod Control	P. 91-92
5. Watering	P. 93-94
6. Temperature Control	P. 94-95
7. Fertilizer	P. 94
8. Pest Control	P. 52-65
9. Pinching	P. 95-96
10. Growth Regulator Application	P. 96-98
11. Marketing Preparation	P. 98-99

Reference: GREENHOUSE CROP PRODUCTION - STUDENT HANDBOOK, PSU 1969
POINSETTIA MANUAL - PAUL ECKE

Goals Stated in Relation to Efficiency

Poinsettia

Efficiency Factors	Efficiency Standard	
	Average	Superior
1. % Marketed	95%	100%
2. Number of 6" pots per 100 sq. ft. of bench space	75	100
3.* a. Number of blooms per pot (3 cutting/pot)	3	
b. Number of blooms per pot (pinched-3 cutting/pot)	6	7
c. Number of blooms per pot (self branching cultivar)	6	8
4. % Marketed at predetermined week	85%	95%
5. Height of marketed plant including pot	85%	95%
	(in 16"-18" height range)	
6. Intense foliage and flower color	Good	Excellent
7. Unblemished	90%	100%
8. Uniform growth	Good	Excellent

*Select 3a, or 3b, or 3c.

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score	Max. Efficiency Level for Determining Score	M Dete
Poinsettias	a. % of crop marketed	95%	100%	.2 p over
	b. No. of 6" pots per 100 sq. ft. of bench space	75	100	.05 over
	c.* No. of blooms per pot (3 cutting/pot)	3		.1 flo eff
	No. of blooms per pot (pinched-3 cuttings/pot)	6	7	.1 flo eff
	No. of blooms per pot (self branching cultivar-3 cuttings/pot)	6	8	.1 flo eff
	d. % of pots in 16"-20" height range at marketing including pot	90%	95%	.1 1%
	e. % marketed at predetermined week	95%	100%	.2 1%

*Select one.

Efficiency Factor	Min. Efficiency Level for Determining Score	Max. Efficiency Level for Determining Score	Method for Determining Score
% of crop marketed	95%	100%	.2 points for every 1% over 95%
No. of 6" pots per 100 sq. ft. of bench space	75	100	.05 point for each pot over 75 up to 100
No. of blooms per pot (3 cutting/pot)	3		.1 point for each flower over minimum efficiency factor
No. of blooms per pot (pinched-3 cuttings/pot)	6	7	.1 point for each flower over minimum efficiency factor
No. of blooms per pot (self branching cultivar-3 cuttings/pot)	6	8	.1 point for each flower over minimum efficiency factor
% of pots in 16"-20" height range at marketing including pot	90%	95%	.1 point for every 1% over 90%
% marketed at predetermined week	95%	100%	.2 points for each 1% marketed over 95%

Cost Accounting - Poinsettia

1. Cost of rooted cuttings or plants - 25¢ each, depending upon variety. Use the actual price paid.
2. Container - 6" clay or plastic pots cost about 8¢ each: when actual price is not known, use this figure. Plastic drain pieces cost about 1¢ each.
3. Soil mix - A cubic yard of mixed steamed soil to which fertilizer has been added costs about \$14.00. One cubic yard (27 cubic feet) will fill 504, 3/4 size 6-inch pots.
4. Overhead costs (depreciation, fuel, supplies, etc.) are about \$1.40/sq. ft. of actual growing space per year.
5. Labor costs are about \$1.60/sq. ft. of actual growing space/yr.
6. The wholesale marketing cost is close to 20% of total of all other costs.

Analysis of Potted Poinsettia

Name _____ Date Started _____ Ended _____
 School _____ Variety _____
 County _____ Total receipts _____ x
 Sq. Ft. of Bench Space _____ a Total expenses _____ y
 TOTAL Production _____ pots b Labor & Management income _____ z
 (x - y)
 Production/100 sq. ft. _____ pots Income/100 sq. ft. bench space _____
 (b ÷ a) (z ÷ a) × 100

	Poor	Average	Superior
1.	90%	95%	100%
		% Marketed	
2.	75	100	150
		6" pots/100 sq. ft.	
3.	2	3	4
		blooms/pot (three cutting/pot)	
4.	6	7	8
		blooms/pot (pinched-3 cuttings/pot)	
5.	6	7	8
		blooms/pot (self branching cv.-3 cuttings/pot)	
6.	85%	95%	100%
		% marketed in predetermined week	
7.	80%	90%	100%
		% of crop in the 16"-20" height range	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices & conditions which limited the production & income

Practices & conditions which contributed to superior efficiency

Approved Practices - Easter Lily

REFERENCE

- | | |
|---|----------------------|
| 1. Crop Planning, Selection-Rotation Schedule | P. 101-104 |
| 2. Soil Mixing and Steaming | P. 42-51, 104 |
| 3. Potting | P. 104 |
| 4. Timing and Temperature Control | P. 106-108 |
| 5. Photoperiod Control | P. 106-108, 110 |
| 6. Watering | P. 105-106 |
| 7. Fertilizing | P. 105 |
| 8. Pest Control | P. 52-65,
110-111 |
| 9. Market Preparation | P. 111 |

Reference: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU 1969

Goals Stated in Terms of Efficiency

Easter Lily

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	95%	100%
2. Number of 6" pot/100 sq. ft. of bench space	100	110
3. Number of blooms per pot (from 8-9 size bulbs)	4	5
4. Height (pot included)	16"	24"
5. Marketed at predetermined week, 1 bloom open	95%	100%
6. Intense foliage, color, and large bloom	Good	Excellent
7. Unblemished	90%	100%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	De
Easter Lily	a. % of crop marketed	95%	100%	.2 1%
	b. No. of blooms per pot	4	6	.3 bl
	c. No. of 6" pots per 100 sq. ft. of bench space	100	110	.0 po
	d. % of pots in 16 to 24 inch height range at market including pot	90%	95%	.1 ov
	e. Percent marketed at predetermined week	95%	100%	.2 1%

B-17

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
a. % of crop marketed	95%	100%	.2 points for each 1% marketed over 95%
b. No. of blooms per pot	4	6	.3 points for each bloom over 4
c. No. of 6" pots per 100 sq. ft. of bench space	100	110	.05 point for each pot over 100
d. % of pots in 16 to 24 inch height range at market including pot	90%	95%	.1 point for each 1% over 90%
e. Percent marketed at predetermined week	95%	100%	.2 points for each 1% marketed over 95%

Cost Accounting - Easter Lily

1. Cost of bulbs - 35¢ to 45¢ each, depending upon variety. Use the actual price paid.
2. Container - 6" clay or plastic pots cost about 8¢ each: when actual price is not known use this figure. Plastic drain pieces cost about 1¢ each.
3. Soil mix - a cubic yard of mixed steamed soil to which fertilizer has been added costs about \$14.00. One cubic yard (27 cubic feet) will fill 504, 3/4 size 6-inch pots.
4. Overhead costs (depreciation, fuel, supplies, etc.) are about \$1.40 sq. ft. of actual growing space/year.
5. Labor costs are about \$1.60 per sq. ft. of actual growing space/year.
6. The wholesale marketing cost is close to 20% of the total of all other costs.

Analysis of Easter Lily Enterprise

Name _____ Date started _____ Ended _____

School _____ Variety _____

County _____ Total receipts _____ x

Sq. ft. of Bench Space _____ a Total expenses _____ y

Total Production _____ b Labor and management income _____ z
 $(x - y) \times 100$

Production/100 sq. ft. _____
 $(b \div a) \times 100$ Income/100 sq. ft. of Bench Space
 $(z \div a)$ _____

	Poor	Average	Superior
1.	90%	95%	100%
	% Marketed		
2.	90	100	110
	Pots/100 sq. ft.		
3.	2	3	5
	Number blooms/pot (7-8" bulb)		
4.	12"	16"	24"
	Height at market time		
5.	90%	95%	100%
	% Marketed at predetermined week, one open bloom		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices & conditions which limited the production & income

Practices & conditions which contributed to superior efficiency

Approved Practices - Geranium, 4"

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Crop Planning, Selection, Rotation Schedule	P. 331-335
2. Soil Mixing and Steaming	P. 93-119, 332
3. Potting	P. 331-335
4. Pinching	P. 331-335
5. Watering	P. 331-335
6. Temperature Control	P. 331-335
7. Fertilizing	P. 331-335
8. Pest Control	P. 335-336, 120-128
9. Marketing Preparation	--- -- --

References: BALL RED BOOK - 12th EDITION, PRODUCED BY GEORGE J. BALL,
INC.

GERANIUMS - PSU

Goals Stated in Terms of Efficiency

Geraniums, 4"

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	95%	100%
2. Number of pots per 100 sq. ft.	300	330
3. Number of flowers per pot	1	3
4. Height, including pot	8"	10"
5. Marketed at a predetermined week	85%	95%
6. Intense foliage color and flower color	Good	Excellent
7. Unblemished	90%	95%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	De
Geraniums	a. % marketed	95%	100%	.1 1%
	b. No. of 4" pots per 100 sq. ft. of bench space	300	330	.05 pot
	c. No. of blooms per pot at market stage	2	4	.05 blo
	d. Height - including pot	8"	10"	.2 ove 10"
	e. % marketed at predetermined week	85%	95%	.2 1%
	f. Foliage & flower color unblemished	90%	95%	.1 ove

B-23

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
a. % marketed	95%	100%	.1 point for each 1% over 95%
b. No. of 4" pots per 100 sq. ft. of bench space	300	330	.05 point for each pot over 300
c. No. of blooms per pot at market stage	2	4	.05 points for each bloom over 2
d. Height - including pot	8"	10"	.2 point for each $\frac{1}{2}$ " over 8" average to 10"
e. % marketed at predetermined week	85%	95%	.2 points for each 1% marketed over 85%
f. Foliage & flower color unblemished	90%	95%	.1 point for each 1% over 90%

Cost Accounting - Geranium, 4"

1. Cost of rooted cuttings - varies from .10 to .20 each, depending upon variety. Use the actual price paid.
2. Container - 4" clay or plastic pots cost about 4¢ each: when actual price is not known, use this figure. Plastic drain pieces cost about 1¢ each.
3. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added. Cost about \$14.00 one cubic yard (27 cubic feet) will fill 3916, 3/4 size 4-inch pots.
4. Overhead costs (depreciation, fuel, supplies, etc.) are about \$1.40/sq. ft. of actual growing space/year.
5. Labor costs are about \$1.60/sq. ft. of actual growing space/year.
6. The wholesale marketing cost is close to 20% of the total of all other costs.

Analysis of Geranium Enterprise

Name _____ Date started _____ Ended _____

School _____ Variety _____

County _____ Total receipts _____ x

Sq. ft. Bench _____ a Total expenses _____ y

Total Production _____ Pots b Labor management income _____ z
(x - y)

Production/100 sq. ft. _____ Income/100 sq. ft. of bench space
(b ÷ a) × 100 (z ÷ a) × 100 _____

	Poor	Average	Superior
1.	90%	95%	100%
	% of plants marketed		
2.	270	300	330
	Pots/100 sq. ft. bench space		
3.	1	2	3
	Blooms/pot		
4.	6	8	10
	Height of plant at market time		
5.	80	85	95
	Marketed at predetermined week		
6.	Poor	Good	Superior
	Intensity of foliage & flower color		
7.	Poor	Good	Excellent
	Unblemished		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices & conditions which limited the production & income

Practices & conditions which contributed to superior efficiency

Approved Practices - Bedding Plants .

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Crop Planning, Selection, Rotation Schedule	P. 115-121
2. Soil Mixing and Steaming	P. 42-57, 118
3. Seed Sowing	P. 120-121
4. Planting, Transplanting or Direct Seeding	P. 122-128
5. Watering	P. 121, 128- 130
6. Temperature Control	P. 122, 128- 130
7. Fertilizing	P. 125, 128- 130
8. Pest Control	P. 58-61, 130
9. Growth Regulator Application	P. 128-129
10. Market Preparation	P. 130-131
References: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU 1969 BEDDING PLANTS - PSU	

Goals Stated in Relation to Efficiency

Bedding Plants

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	95%	100%
2. No. of packs/100 sq. ft.	300	320
3. Percent of plants that survive transplant	90%	95%
4. Percent Marketed at predetermined week	75%	95%
5. Percent within 6-7 inch range	80%	90%
6. Intense foliage color	Good	Excellent
7. Unblemished	90%	95%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	De
Bedding Plants	a. % marketed	95%	100%	.2 1%
	b. No. of packs/100 sq. ft.	300	320	.0 pa
	c. % of plants that survived transplanting	90%	95%	.2 1%
	d. % marketed at a predetermined week	75%	95%	.0 1%
	e. % of plants within 6-7 inch range	80%	90%	.1 2%

B-29

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
1. % marketed	95%	100%	.2 points for every 1% above 95%
2. No. of packs/100 sq. ft.	300	320	.05 point for every pack above 300
3. % of plants that survived transplanting	90%	95%	.2 points for every 1% over 90%
4. % marketed at a predetermined week	75%	95%	.05 point for every 1% above 75%
5. % of plants within 6-7 inch range	80%	90%	.1 point for every 2% point above 80%

Cost Accounting - Bedding Plants

1. Cost of seeds - varies with plant material and variety, use actual cost.
2. Containers - "market paks" costs about 6 cents; when actual cost is not known, use this figure.
3. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added costs about \$14.00. One cubic yard (27 cubic feet) will fill 462 "market paks" (#42 market paks) (5 1/2 x 7 3/4 x 2 3/8).
4. Overhead costs (depreciation, fuel, supplies, etc.) are about \$1.40/sq. ft. of actual growing space/year.
5. Labor costs are about \$1.60/sq. ft. of actual growing space/year.
6. The wholesale marketing cost is close to 20% of the total of all other costs.

Analysis of Bedding Plant Enterprise

Name _____ Date Started _____ Ended _____

School _____ Variety _____

County _____ Total Receipts _____ x

Square Feet Bench _____ a Total Expenses _____ y

Total Production _____ mktg. packs b Labor Management Income _____
(x - y)

Packs/100 Sq. Ft. _____ c Income/100 Sq. Ft. of
(b ÷ a) × 100 Bench Space
(z ÷ a) × 100

	Poor	Average	Superior
1.	90	95	100
	Percent Marketed		
2.	230	300	320
	Packs/100 Square Feet		
3.	5 (11)	6 (12)	7 (13)
	Live Plants/Pack		
4.	65	75	95
	Percent Marketed at Pre-determined Week		
5.	70	80	90
	Percent Plants in 6-7" Range at Market Time		
6.	Poor		Excellent
	Intense Foliage		
7.	85	90	95
	Percent Unblemished		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income: _____

Practices and conditions which contributed to superior efficiency: _____

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers. 1974

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

GREENHOUSE CROPS - CUT FLOWERS B 35-54

Chrysanthemum	B 38-42
Carnation	B 43-47
Snapdragon	B 48-52

To be used with any production, occupational, or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected to them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

Efficiency Factor	Local Efficiency Standards		Student Goal	Student Achievement
	Average	Superior		
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

* (Optimum number)

Approved Practices - Cut Chrysanthemums

<u>PRACTICES</u>	<u>REFERENCE</u>
1. Crop Planning, Selection, Rotation Schedule	p. 152-154
2. Soil Bench Preparation	p. 33, 34, 153, 154
3. Planting	p. 155-156
4. Pinching and Disbudding and Thinning	p. 158
5. Supporting	p. 166
6. Photoperiod Control	p. 153-154
7. Carbon Dioxide	p. 158
8. Watering	p. 156
9. Temperature Control	p. 157
10. Pest Control	p. 52-65
11. Fertilizing	p. 157
12. Harvesting and Market Preparation	p. 158-159

Reference: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU, 1969

Goals Stated in Relation to Efficiency

Cut Chrysanthemums Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	95%	100%
2. Stems per 100 sq. ft. of bench space	a. Single Stem 475	550
	b. Pinched 800	900
3. Stem Length	Single - 36"	38"
	Pinched - 30"	32"
4. Marketed at predetermined date	95%	100%
5. Intense foliage color	Good	Excellent
6. Unblemished	90%	100%
7. Meeting Society of American Florists Standards	20% purple	25% purple
	45% blue	50% blue
	25% red	25% red
	10% green	

Contest	Efficiency Factor	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)
Cut Chrysanthemum	a. % Marketed	95%	100%
	b.(1). Stems per 100 sq. ft. of bench space	Single - 475	550
	(2). Stems per 100 sq. ft. of bench space	Pinched - 800	900
	c. Stem length	Single - 36"	38"
		Pinched - 30"	32"
d. Marketed at pre-determined week	75%	95%	
e. % of crop meeting 40% blue grade of the Society of American Florists Standards	45%	50%	

B-40

Efficiency Factor	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)	Method for determining score
Marketed	95%	100%	.2 points for each 1% over 95%
Stems per 100 sq. ft. of bench space	Single - 475	550	.026 point for each stem over 475 up to 550
Stems per 100 sq. ft. of bench space	Pinched - 800	900	.02 point for each stem over 800 up to 900.
Stem length	Single - 36"	38"	.5 point for each 1" over 36
	Pinched - 30"	32"	.5 point for each 1" over 30
Marketed at predetermined week	75%	95%	.05 for each 1% over 75% market at predetermined date max.
of crop meeting blue grade of Society of American Florists standards	45%	50%	.1 point for each 5% points over 45%

Cost Accounting - Cut Chrysanthemums

1. Cost of Rooted Cuttings - Varies from 8¢ to 15¢ depending upon variety. Use the actual price paid.
2. Soil Mix - A cubic yard of steamed soil to which fertilizer has been added costs about \$14.00.
3. Overhead Costs (Depreciation, Fuel, Supplies, Etc.) - Are about \$1.40/sq. ft. of actual growing space/year.
4. Labor Costs are about \$1.60/sq. ft. of actual growing space/year.
5. Wholesale marketing cost is close to 20% of the total of all other costs.

Analysis of Cut Chrysanthemum Crop

Name _____ Date Started _____ Ended _____

School _____ Variety _____

County _____ Total Receipts _____ x
(including ending inventory)

Number of sq. ft. Bench _____ a Total Expenses _____ y
(including beginning inventory)

Total number blooms _____ b Labor Management Income _____ z
or Total number of stems _____ b (x - y = z)

Blooms/100 sq. ft. _____ Income/100 sq. ft. of bench space _____
(b ÷ a) x 100 (z ÷) x 100

	Poor	Average	Superior
1.	90	95	100
	_____ % of Crop Marketed		
2.	475	512	550
	_____ Single Stem Crops, Stems/100 sq. ft.		
3.	700	800	900
	_____ Spray Pinched Crops, Stems/100 sq. ft.		
4.	34"	36"	38"
	_____ Single Stem Crops, Stem Length		
5.	28"	30"	32"
	_____ Pinched Crop, Stem Length		
6.	75	95	100
	_____ % of crop meeting "Blue Grade" standard of S. A. F.		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Carnations

PRACTICES

1. Crop Planting, Selection, Rotation Schedule
2. Soil Mixing and Steaming
3. Light and Photoperiod Control
4. Carbon Dioxide Control
5. Watering
6. Temperature Control
7. Fertilizing
8. Pest Control
9. Supporting
10. Pinching - Disbudding
11. Banding of Splits
12. Market Preparation

REFERENCES

- P. 162-163, 165
- P. 42-51,
153, 163
- P. 167-169
- P. 169
- P. 156
- P. 167
- P. 163-166
- P. 52-65,
171-172
- P. 166
- P. 169-171
- -- --
- P. 172-174

Reference: GREENHOUSE CROP PRODUCTION - STUDENT HANDBOOK, PSU 1969

Goals Stated in
Relation to Efficiency

Carnations Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	95%	100%
2. No. of plants/100 sq. ft.	280	300
3. No. of stems/sq. ft./year	25	27
4. Quality distribution	Blue 25%	30%
	Red 50%	55%
	Green 25%	15%
5. Intense flower color	Good	Excellent

Contest	Efficiency Factors	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)
Carnations	a. % Marketed	95%	100%
	b. No. of plants/100 sq. ft. bench space	280	300
	c. No. of stems/sq. ft./year	25	27
	d. Quality distribution	25% Blue 50% Red 25% Green	30% Blue 55% Red 15% Green

B-45

Efficiency Factors	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)	Method for determining score
Marketed	95%	100%	.2 points for each 1% over 95% marketed
No. of plants/100 sq. ft. bench space	280	300	.05 point for each stem over 300 max.
No. of stems/sq. ft./year	25	27	.1 point for each stem over 16
Quality distribution	25% Blue 50% Red 25% Green	30% Blue 55% Red 15% Green	.2 point for each 1% over 50% in Red

Cost Accounting - Carnations

1. Cost of Rooted Cuttings - varies from 8¢ to 15¢ each depending on variety. Use the actual price paid.
2. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added costs about \$14.00.
3. Overhead costs (depreciation, fuel, supplies, etc.) are about \$1.40/sq. ft. of actual growing space/year.
4. Labor costs are about \$1.60/sq. ft. of actual growing space/year.
5. The wholesale marketing cost is close to 20% of the total of all other costs.

Analysis for Carnations

Name _____ Date Started _____ Ended _____

School _____ Variety _____

County _____ Total Receipts _____ x
(including ending inventory)

Sq. ft. of bench space _____ a Total Expenses _____ y
(including beginning inventory)

Number of stems _____ b Labor Management Income _____ z
(x - y)

Stems/sq. ft. _____ c Income/100 sq. ft. of bench space _____
(b ÷ a) x 100 (z ÷ a) x 100

	Poor	Average	Superior
1.	90	95	100
	% Marketed		
2.	260	280	300
	Plants/100 sq. ft.		
3.	22	25	27
	Stems/sq. ft.		
4.	45	50	55
	% Quality distribution by color Red		
5.	Poor	Good	Excellent
	Intensity of flower color		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Approved Practices - Snapdragons, Single Stem

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Crop Planning, Selection, Rotation Schedule	P. 175-178
2. Soil Mixing and Steaming	P. 42-51, 178-179
3. Watering	P. 179
4. Temperature Control	P. 179
5. Fertilization	P. 179
6. Pest Control	P. 42-65, 180
7. Carbon Dioxide	P. 180
8. Response to light intensity and Duration	P. 176-177
9. Marketing Preparation	P. 175-176, 180-182

Reference: GREENHOUSE CROP PRODUCTION - A STUDENT HANDBOOK, PSU 1969
SNAPDRAGONS - CORNELL UNIV.

Goals Stated in Relation to Efficiency

Snapdragons, single stem

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	95%	100%
2. No. of plants per 100 sq. ft. of bench	550	600
3. No. of flowers per 100 sq. ft.	550	600
4. Quality distribution		
	Blue	20%
	Red	50%
	Green	20%
5. Percent marketed at a predetermined week	75%	95%
6. Intense foliage and flower color	Good	Excellent
7. Unblemished	90%	100%

Contest	Efficiency Factor	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)
Snapdragons Single stem	a. % Marketed	95%	100%
	b. No. of plants per 100 sq. ft. of bench space	550	600
	c. No. of flowers per 100 sq. ft.	550	600
	d. % Marketed at predetermined week	75%	95%
	e. Quality distribution	20% Blue 50% Red 20% Green	25% 55% 10%

B-50

67

68

Efficiency Factor	Min. efficiency level for determining Score (average)	Max. efficiency level for determining Score (superior)	Method of determining score
% Marketed	95%	100%	.2 points for each 1% marketed over 95%
No. of plants per 100 sq. ft. of bench space	550	600	.2 point for each 10 over 550
No. of flowers per 100 sq. ft.	550	600	.2 point for each 10 flowers over 550
% Marketed at predetermined week	75%	95%	.25 point for each % marketed over 75%
Quality distribution	20% Blue 50% Red 20% Green	25% 55% 10%	.2 point for each 1% over 50% in Red

Cost Accounting - Snapdragon, Single Stem

1. Cost of seed, about \$4.00 to \$5.00/trade packet of seed (2,000 seeds). Varies with variety, use the actual price paid.
2. Soil mix - a cubic yard of mixed, steamed soil to which fertilizer has been added costs about \$14.00.
3. Overhead costs (depreciation, fuel, supplies, etc.) are about \$1.40/sq. ft. of actual growing space/year.
4. Labor costs are about \$1.60/sq. ft. of actual growing space/year.
5. The marketing cost is close to 20% of the total of all other costs.

Analysis of a Snapdragon Enterprise

Name _____ Date Started _____ Ended _____
 School _____ Variety _____ Week group _____
 County _____ Total receipts _____ x
 Sq. ft. bench space _____ a Total expenses _____ y
 Total blooms _____ b Labor Management Income _____ z
 Blooms/100 sq. ft. _____ Income/100 sq. ft. of bench space _____
 $(b \div a) \times 100$ $(z \div a) \times 100$

	Poor	Average	Superior
1.	90%	95%	100%
		$\%$ Marketed	
2.	500	550	600
		Plants/100 sq. ft.	
3.	500	550	600
		Flowers (blooms)/sq. ft.	
4.	45%	50%	55%
		$\%$ Snapdragons Grading "Red"	
5.	65%	75%	95%
		$\%$ Marketed at Predetermined Week	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education, and Pennsylvania Vocational Agriculture Teachers 1974.

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

OUTDOOR FLOWER CROPS C 1-16

Chrysanthemum Plants C 2- 7

Gladiolus C 8-14

To be used with any production, occupational
or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using the Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the practices used and their relationship to production or service and income.

Example of the Use of
Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS:	Potted Chrysanthemum		ENTERPRISE	
Efficiency Factor	Local Efficiency Standards Average	Superior	Student Goal	Student Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range inclu- ding pot marketed	90%	95%	95%	92%

* Optimum number

Approved Practices - Outdoor Chrysanthemum Plants

Practices

1. Crop planning, selection, rotation schedule
2. Soil mixing and steaming
3. Watering
4. Fertilizing
5. Pinching
6. Pest control
7. Marketing preparation

References

- P. 286-290
- P. 286-290
- P. 286-290
- P. 286-290
- P. 286-290
- P. 286-290
- P. 286-290

Reference - BALL RED BOOK 12th EDITION, 1972

Goals Stated in Relation to Efficiency

Outdoor Chrysanthemum Plants

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent marketed	95%	100%
2. No. of plants on 100 sq. ft.	33	40
3. Height and diameter of plants with appropriate container	18"	20"
4. Percent marketed at pre-determined week	75	95
5. Intense foliage and flower color	Good	Excellent
6. Percent unblemished	90	95

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Outdoor Chrysanthemum Plants	a. % Marketed	95%	100%
	b. No. of plants per 100	33	0
	c. Height and diameter of plants with appropriate container	18"	20"
	d. % Marketed at a predetermined week	75%	95%

C-6

77

77

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
a. % Marketed	95%	100%	.2 points for each 1% over 95%
b. No. of plants per 100	33	0	.2 point for each plant over 33 max. 1.4 pts.
c. Height and diameter of plants with appropriate container	18"	20"	.5 points for each one inch over 18"
d. % Marketed at a predetermined week	75%	95%	.1 point for each 1% over 75%

76

77

Cost Accounting - Outdoor Mums Chrysanthemum Plants

(to be grown in the field and lifted and placed in pots)

(cost per 100 sq. ft.)

1. Cost of rooted cuttings - varies from 9¢ to 18¢ each, depending upon variety. Use the actual price paid per 100 sq. ft.
2. Cost of containers varies from 10¢ to 20¢ each, use actual price paid.
3. Cost of land/100 sq. ft.
4. Cost of labor/100 sq. ft.
5. Overhead (supplies, equipment, etc.)/100 sq. ft.
6. The marketing cost is close to 20% of the total of all other costs.

Analysis of Outdoor Chrysanthemum Plants

Name _____	Date started _____ Ended _____
School _____	Variety _____
County _____	Total receipts _____ x
Sq. ft. of field used _____ a	Total expenses _____ y
No. of plants _____ b	Labor & management income _____ z (x - y)
No. of plants/100 sq. ft. _____ c (b ÷ a) × 1000	Income per 100 sq. ft. _____ (z ÷ a) × 1000

	Poor	Average	Superior
1.	90%	95%	100%
	% marketed plants		
2.	28	33	40
	plants/100 sq. ft.		
3.	12"	16"-18"	20"
	height & diameter of plants		
4.	60%	75%	95%
	% marketed predetermined week		
5.	poor	good	excellent
	Intense foliage & flower color		
6.	85%	90%	95%
	% unblemished		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income.

Practices and conditions which contributed to superior efficiency.

Approved Practices - Field Grown Gladiolus

<u>Practice</u>	<u>Reference</u>
1. Crop planning, selection, rotation schedule	P. 312-316
2. Site and soil selection and sterilization	P. 312-316
3. Crop Sterilization	P. 312-316
4. Watering	P. 312-316
5. Fertilizing	P. 312-316
6. Pest control	P. 312-316
7. Marketing preparation	P. 312-316

Reference: COMMERCIAL FLOWER FORCING, 7th EDITION, LAURIE,
KIPLINGER AND NELSON

Goals Stated in Relation to Efficiency

Field Grown Gladiolus

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent of stems marketed	80%	90%
2. No. of plants per 100 sq. ft.	100	110
3. No. of stems per 100 sq. ft.	150	170
4. Percent marketed at pre-determined week	75%	95%
5. Stem length	24"	36"
6. No. of florets/stem (1-3 flowers open at harvest)	12	16
7. Percent blemish free	90%	95%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown Gladiolus	a. Percent stems marketed	80%	90%
	b. No. of plants/100 sq. ft.	100	110
	c. No. of stems/100 sq. ft.	150	170
	d. Marketed at predetermined week	75%	95%
	e. Stem length	24"	26"
	f. No. of florets at harvest	12	16

C-11

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
Number of stems per plant	80%	90%	.05 point for every 1% above 80%
Number of plants/100 sq. ft.	100	110	.1 point for every 1 plant above 100
Number of stems/100 sq. ft.	150	170	.05 point for every 1 stem above 150 (max. of 1)
Efficiency at predetermined	75%	95%	.05 point for every 1% above 75%
Plant length	24"	26"	.1 point for every 1" above 24"
Number of florets at harvest	12	16	.25 points for every 1 above 12

Cost Accounting - Field Grown Outdoor Gladiolus

1. Cost of #2 bulbs, varies from 5¢ to 10¢ each depending upon variety. Use the actual price paid per 100 sq. ft.
2. Cost of land/100 sq. ft.
3. Cost of labor/100 sq. ft.
4. Overhead (supplies, equipment, etc.)/100 sq. ft.
5. The marketing cost is close to 20% of the total of all other costs.

Analysis of Field Grown Gladiolus

Name _____ Date started _____ Ended _____
 School _____ Variety _____
 County _____ Total receipts _____ x
 No. of sq. ft. of field space _____ a Total expenses _____ y
 No. of stems produced _____ b Labor and management income _____ z
 (x - y = z)
 No. of stems produced/100
 sq. ft. (b ÷ a) x 100 _____ c Income/100 sq. ft. _____
 (z ÷ a) x 1000

	Poor	Average	Superior
1.	60%	80%	90%
	Percent Stems Marketed		
2.	90	100	110
	Plants/100 sq. ft.		
3.	130	150	170
	Stems/100 sq. ft.		
4.	70	75	95
	Percent Marketed at Predetermined Week		
5.	20	24	36
	Stem Length (inches)		
6.	10	12	16
	No. of Florets		
7.	1	2	3
	Open Florets at Harvest		
8.	85	90	95
	Blemish Free		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income.

Practices and conditions which contributed to superior efficiency.

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers. 1974

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

LANDSCAPE MAINTENANCE AND ESTABLISHMENT - D 1-20
Landscape Maintenance (except Turfgrass) D 2-10
Landscape Establishment (except Turfgrass) D11-18

To be used with any production, occupational
or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupations.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the sample below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS:	Potted Chrysanthemum		ENTERPRISE	
	Local Efficiency Average	Standards Superior	Student Goal	Student Achievement
Percent marketed	95%	100%	100%	97%
No. of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
No. of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

* Optimum number

Approved Practices - LANDSCAPE MAINTENANCE (Except Turfgrass)

<u>Practice</u>	<u>Reference</u>
1. Pruning	P. 12
2. Mulching	P. 24
3. Soil Sampling	P. 16
4. Fertilizing	P. 16
5. Watering	P. 24
6. Pest Control	P. 25, Appendix D
a. Weeds	
b. Insects	
c. Diseases	
7. Winter Protection	P. 29 Appendix B
8. Tree Removal, Repair, and Replacement	P. 15, 47
9. Planting Garden Flowers	P. 28
10. Ornamental Pool Maintenance	P. 29
11. Written Contract	P. 39-41

Reference: LANDSCAPE MAINTENANCE AND ESTABLISHMENT, A STUDENT
HANDBOOK, PSU 1968

Goals Stated in Relation to Efficiency

Landscape Maintenance (except Turfgrass)

Efficiency Factor	Efficiency Standard	
	Average	Superior
1. Profit	10%	15%
2. Healthy and vigorous trees, shrubs and flowers	Good	Excellent
3. Neat appearance of landscape	Good	Excellent
4. Good renovation of landscape	Good	Excellent
5. Satisfied customer	Good	Excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Landscape Maintenance (Except Turfgrass)	a. Profit	10%	15%
	<u>or</u> Employer Satisfaction	Good (90)	Excellent (100)
	b. Health and Vigor		
	1. Trees	Good (90)	Excellent (100)
	2. Shrubs	Good (90)	Excellent (100)
	3. Hedges	Good (90)	Excellent (100)
	c. Freedom from pests and winter damage	Good (90)	Excellent (100)
	d. Neatness (overall appearance)	Good (90)	Excellent (100)
e. Renovation (improvement of plant material)	Good (90)	Excellent (100)	
f. Customer satisfaction	Good	Excellent	

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
Profit	10%	15%	2 points for every 1% over 10%
Employer Satisfaction	Good (90)	Excellent (100)	1 point for each point over 90
Health and Vigor			
1. Trees	Good (90)	Excellent (100)	1 point for every score point over 90
2. Shrubs	Good (90)	Excellent (100)	1 point for every score point over 90
3. Hedges	Good (90)	Excellent (100)	1 point for every score point over 90
Freedom from pests and winter damage	Good (90)	Excellent (100)	1 point for every score point over 90
Neatness (overall appearance)	Good (90)	Excellent (100)	1 point for every score point over 90
Renovation (improvement of plant material)	Good (90)	Excellent (100)	1 point for every score point over 90
Customer satisfaction	Good	Excellent	

Cost Accounting - Landscape Maintenance (except Turfgrass)

1. Labor - use actual hourly wages.
2. Equipment cost - divide original cost of equipment by anticipated years of life to get annual depreciation rate. Estimate annual hours of use, and divide this figure into annual depreciation to get hourly charge per machine.
3. Supplies - use actual cost of plant materials, peat, fertilizer, etc.
4. Overhead - includes rent, social security, taxes, utilities, secretary-bookkeeper's salary, etc.
5. Profit - difference between receipts and expenses (usually about 10% of receipts).

Analysis of Landscape Maintenance (except Turfgrass)

Name _____ Date started _____ Ended _____
 School _____ Total receipts _____ x
 County _____ Total expenses _____ y
 Labor and management _____ z
 Profit _____
 (x - (y + z) = profit)

	Poor	Average	Superior
1.	<u>5%</u>	<u>10%</u>	<u>15%</u>
	Profit		
2.	<u>poor</u>	<u>good</u>	<u>excellent</u>
	Health and Vigor of Plant Material		
3.	<u>poor</u>	<u>good</u>	<u>excellent</u>
	Freedom from Pest and Winter Injury		
4.	<u>poor</u>	<u>good</u>	<u>excellent</u>
	Neatness (Overall Appearance)		
5.	<u>poor</u>	<u>good</u>	<u>excellent</u>
	Renovation (Improvement of Plant Material)		
6.	<u>poor</u>	<u>good</u>	<u>excellent</u>
	Fulfillment of Written Contract		
7.	<u>poor</u>	<u>good</u>	<u>excellent</u>
	Customer Satisfaction (Minimum of One Season)		

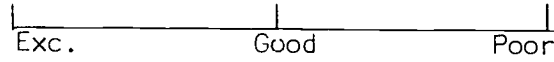
Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

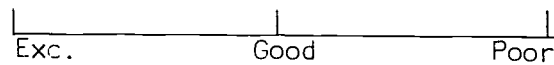
Practices and conditions which contributed to superior efficiency:

Landscape Maintenance (except Turfgrass) Employee

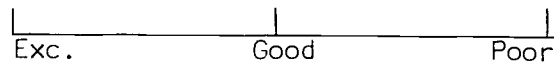
1. Personal Satisfaction (Do you enjoy the work?)



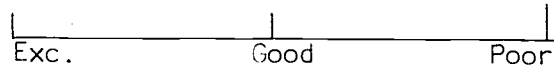
2. Monetary Increases (after 3 to 6 months)



3. Fringe Benefits (insurance, retirement, other)



4. Opportunity for Advancement (in 1 to 5 years)



Analysis of Landscape Maintenance (except Turfgrass) Employee

Name _____ Date started _____ Ended _____
 School _____ Total Hours _____
 County _____ Income per year _____
 Employer _____
 Address _____

	Poor	Average	Superior
1.	poor (80)	good (90)	excellent (100)
	Employer Satisfaction		
2.	poor	good	excellent
	Relations with Other Employees		
3.	96%	98%	100%
	Accuracy in Performing Work		
4.	4%	2%	1%
	Complaints		
5.	90%	95%	100%
	Neatness and Cleanliness of Work		
6.	poor	good	excellent
	Customer Satisfaction		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Landscape Establishment (except Turfgrass)

<u>Practice</u>	<u>Reference</u>
1. Laying out landscape site	A p. 34-39 Appendix C
2. Cost estimating	B p. 97-100
3. Bidding	B p. 97-100
4. Contracting (written)	A p. 39-41
5. Grading	A p. 45
6. Soil modification	A p. 42-44
7. Installing landscape structures	A p. 45, Appendix F
8. Purchasing nursery stock materials and supplies	A p. 47-56
9. Moving existing plants and installing plant material	A p. 11-31
10. Maintenance under guarantee	Contractor's Written Guarantee

Reference: A - LANDSCAPE MAINTENANCE AND ESTABLISHMENT - A STUDENT
HANDBOOK, PSU 1968.
B - LANDSCAPE DESIGN - A STUDENT HANDBOOK, PSU 1968.

Goals Stated in Relation to Efficiency

Landscape Establishment (except Turfgrass)

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Profit	10%	15%
2. Healthy vigorous trees, shrubs, flowers, ground covers and vines	Good	Excellent
3. Quality of plant material at the end of one year	Good	Excellent
4. Neat appearance of landscape	Good	Excellent
5. Satisfied Customer	Good	Excellent

Contest	Efficiency Factors	Level for Determining Score (average)	Level for Determining Score (superior)
Landscape Establishment (Except Turfgrass)	a. Profit	10%	15%
	<u>or</u> Employer satisfaction	Good (90)	Excellent (100)
	b. Percent replacement cost	5%	0%
	c. Quality of plant material at end of 1st year	Good (90)	Excellent (100)
	d. Quality of physical structures at end of 1st year	Good (90)	Excellent (100)
	e. Customer satisfaction	Good (90)	Excellent (100)

D-13

Efficiency Factors	Level for Determining Score (average)	Level for Determining Score (superior)	Method for Determining Score
Profit	10%	15%	.2 points for every 1% over 10%
Employer satisfaction	Good (90)	Excellent (100)	.1 point for every 1 point over 90
Percent replacement cost	5%	0%	.2 point for every 1% under 5%
Quality of plant material at end of 1st year	Good (90)	Excellent (100)	.1 point for every score point over 90
Quality of physical structures at end of 1st year	Good (90)	Excellent (100)	.1 point for every score point over 90
Customer satisfaction	Good (90)	Excellent (100)	.1 point for every score point over 90

Cost Accounting - Landscape Establishment (except Turfgrass)

1. Labor - use actual hourly wages.
2. Equipment cost - divide original cost of equipment by anticipated years of life to get annual depreciation rate. Estimate annual hours of use, and divide this figure into annual depreciation to get hourly charge per machine.
3. Supplies - use actual cost of plant materials, peat, fertilizer, etc.
4. Overhead - include rent, social security, taxes, utilities, secretary-bookkeeper's salary, etc.
5. Profit - difference between receipts and expenses (usually about 10% of receipts.)

Analysis of Landscape Establishment (except Turfgrass)

Name _____ Date started _____ Ended _____
 School _____ Total receipts _____ x
 County _____ Total expenses _____ y
 Labor and management _____ z
 Profit _____
 (x - (y + z) = profit)

	Poor	Average	Superior
1.	5%	10%	15%
	Percent Profit		
2.	80%	90%	100%
	% Plants Established Under Guarantee, by Plant Cost		
3.	Poor	Good	Excellent
	Quality of Plant Material at end of 1st Year		
4.	Poor	Good	Excellent
	Quality of Physical Structures at End of 1st Year		
5.	Poor	Good	Excellent
	Fulfillment of Written Contract		
6.	Poor	Good	Excellent
	Customer Satisfaction		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

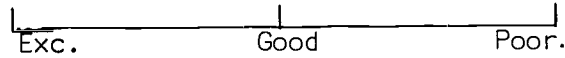
Practices and conditions which limited the production and income.

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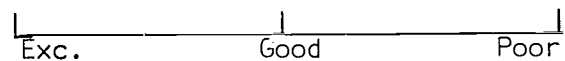
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_____	_____
_____	_____

Landscape Establishment (except Turfgrass) Employee

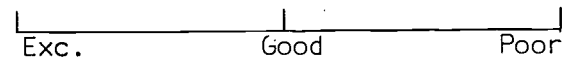
1. Personal Satisfaction (Do you enjoy the work?)



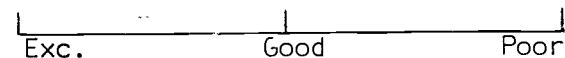
2. Monetary Increases (after 3 to 6 months)



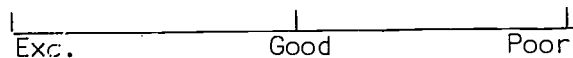
3. Fringe Benefits (insurance, retirement, other)



4. Opportunity for Advancement (in 1 to 5 years)



5. Variety of educational experience according to occupational goals



Analysis of Landscape Establishment (except Turfgrass) Employee

Name _____ Date started _____ Ended _____
 School _____ Total Hours _____
 County _____ Income Per Year _____
 Employer _____
 Address _____

	Poor	Average	Superior
1.	poor (80)	good (90)	excellent (100)
	Employer Satisfaction		
2.	poor	good	excellent
	Relations with Other Employees		
3.	96%	98%	100%
	Accuracy in Performing Work		
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	Customer Satisfaction		

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Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers. 1974

Supervised Occupational Experience Record Forms
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(REVISED)
1974

NURSERY PRODUCTION - FIELD GROWN TREES-E 1-70

European White Birch	E 2-8	White Pink	E 39-43
Thornless Honey Locust	E 9-13	Canada Hemlock	E 44-48
Pin Oak	E 14-18	Flowering Crabapple	E 49-53
European Mountain Ash	E 19-23	Japanese Maple	E 54-58
Norway Maple	E 24-28	Kwazan Cherry	E 59-63
Norway Spruce	E 29-33	Flowering Dogwood	E 64-69
Concolor Fir	E 34-38		

To be used with any production, occupational or work experience record book

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

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Example of the Use of
Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS: Potted Chrysanthemum ENTERPRISE

Efficiency Factor	Local Efficiency Standards		Student Goal	Student Achievement
	Average	Superior		
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92

* Optimum number

Approved Practices - Field Grown B&B or Bare Root
Deciduous trees European White Birch, *Betula pendula* "alba"

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK PSU, 1971

Goals Stated in Relation to Efficiency

Nursery Production, Field Grown B&B or Bare Root Deciduous Trees
European White Birch, *Betula pendula* "alba"

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Years of plant growth to marketing at 1" caliper	5	4
4. Symmetrical branching	Good	Excellent
5. Blemish free	90%	95%
6. Percent of trees conforming to AAN Standards	80%	90%

Contest	Efficiency Factors	Min Efficiency Level for Determining Score (Average)	Max Efficiency Level for Determining Score (Superior)	Met
Field Grown B & B or Bare Root Deciduous Trees	a. % marketed	90%	95%	.1 point over 90
European White Birch	b. Number of plants per 1000 sq. ft.	63	70	.015 po 1000 s to exc
* Betula pendula "alba"	c. % of crop reaching a 1" caliper or better	90%	95%	.1 point over 90
	d. Years of plant growth* to market a 1" caliper tree	5	4	.5 point months 5 year
	e. % blemish-free trees (free of disease, insect, & mech.)	90%	95%	.1 point over 90
	f. % conforming to AAN Standards	80%	90%	.05 poi over 80

* Plant growth must include age of liner plus years of growth in the field.

Factors	Min Efficiency Level for Determining Score (Average)	Max Efficiency Level for Determining Score (Superior)	Method of Determining Score
etted	90%	95%	.1 point for every % point over 90%
of plants 00 sq. ft.	63	70	.015 point for every plant/ 1000 sq. ft. over 63 - not to exceed 70 plants/1000 sq. ft.
rop reaching aliper or	90%	95%	.1 point for every % point over 90
of plant growth* ket a 1" caliper	5	4	.5 point for every six (6) months harvested before the 5 years
ish-free trees of disease, , & mech.	90%	95%	.1 point for every % point over 90%
orming to AAN rds	80%	90%	.05 points for every % point over 80%

rowth must include age of liner plus years of growth in the field.

112

113

Cost Accounting - Nursery Production

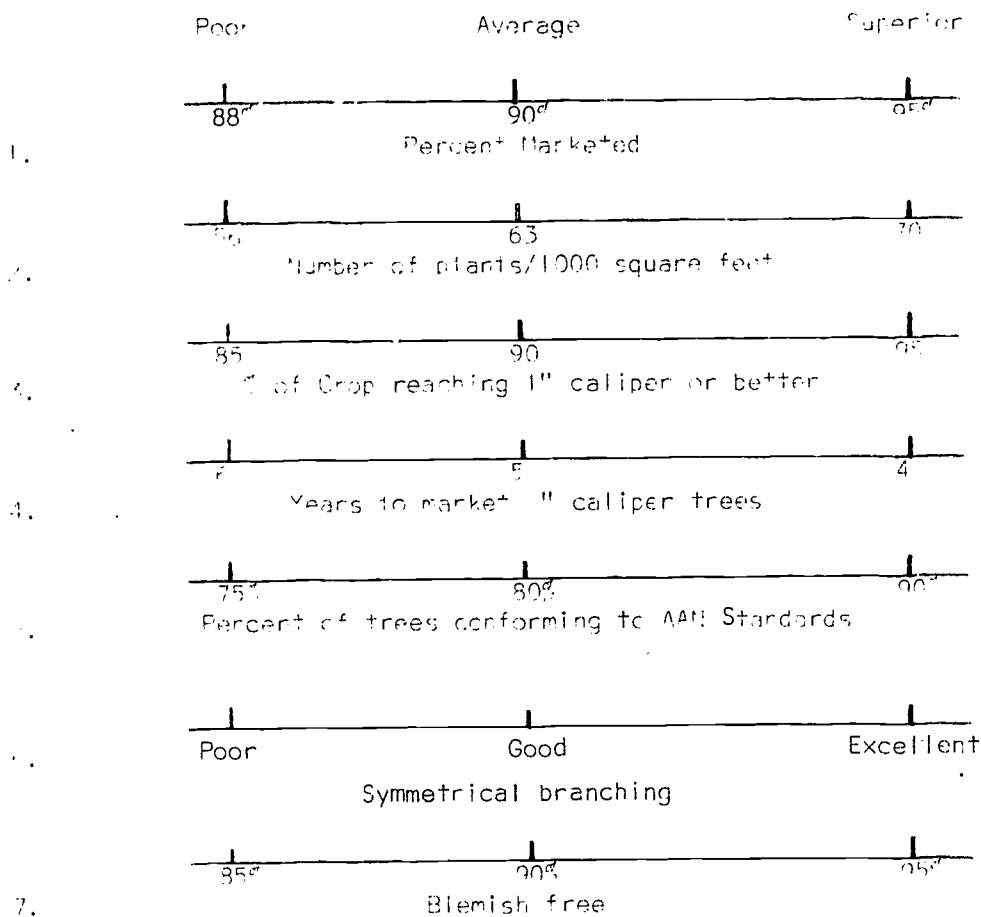
Field Grown B & B or Bare Root Deciduous Trees, White Birch, *Betula pendula* "alba":

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average about 20% of sum of all other costs.

Analysis of B&B on Bare Root Deciduous Trees.

European White Birch, *Betula pendula* "alba"

Name _____ Date started _____ Ended _____
 Street _____ Genus _____ Species _____
 County _____ Total receipts _____
 Square feet/used _____ a Total expenses _____
 Number of trees sold B&B _____ Labor and management income _____
 (x - y = z)
 Number of trees sold PR _____ Income/1000 sq. ft. _____
 Number of trees/1000 sq. ft. _____ (z ÷ a) x 1000



Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B & B or Bare Root Deciduous Trees
Thornless Honeylocust, *Gleditsia triacanthos inermis*

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and	p. 35-43, 105-106, 203
2. Soil preparation	p. 107-109
3. Lining out and planting	p. 109-112, 128-129
4. Watering	p. 112
5. Fertilizing	p. 114-117
6. Pest control (weeds, insect, disease)	p. 121-127
7. Pruning, supporting, and root pruning	p. 117-121
8. Digging	p. 134-138
9. Grading and market preparation	p. 139-141, 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK PSU, 1971

Goals Stated in Relation to Efficiency

Nursery Production Field Grown B&B or Bare Root Deciduous Trees
Thornless Honeylocust, *Gleditsia tricanthos inermis*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Symmetrical branching	Good	Excellent
4. Blemish free	90%	95%
5. Years of plant growth to marketing at 1" caliper	5	4
6. Percent of trees conforming to AAN Standards	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (Average)	Max. Efficiency Level for Determining Score (Superior)	Method
Field Grown B&B or Bare Root Deciduous Trees	a. % marketed	90%	95%	.2 points
	b. Number of plants per 1000 sq. ft.	63	70	.015 points per sq. ft. exceed 70
Thornless Honey Locust				
Gleditsia tricanthos inermis	c. % of crop reaching a 1 1/2" caliper	90%	95%	.2 points 90%
	d. Years of plants growth* to market a 1 1/2 caliper tree	5	4	.5 points months
	e. % blemish-free trees (free of insect, disease, & mech. damage)	90%	95%	.2 points 90%
	f. % conforming to AAN Standards	80%	90%	.05 points 80%

*Plant growth must include age of liner plus years of growth in the field.

Efficiency Factors	Min. Efficiency Level for Determining Score (Average)	Max. Efficiency Level for Determining Score (Superior)	Method of Determining Score
Marketed	90%	95%	.2 points for every % over 90%
Number of plants per 1000 sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - not to exceed 70 plants/1000 sq. ft.
% of crop reaching 1 1/2" caliper	90%	95%	.2 point for every % point over 90%
Years of plants growth* to market a 1 1/2 caliper	5	4	.5 points for every six (6) months harvested before 5 years
Defoliation-free trees free of insect, disease, & mech. damage)	90%	95%	.2 points for every % point over 90%
Conforming to AAN standards	80%	90%	.05 point for every % point over 80%

*growth must include age of liner plus years of growth in the field.

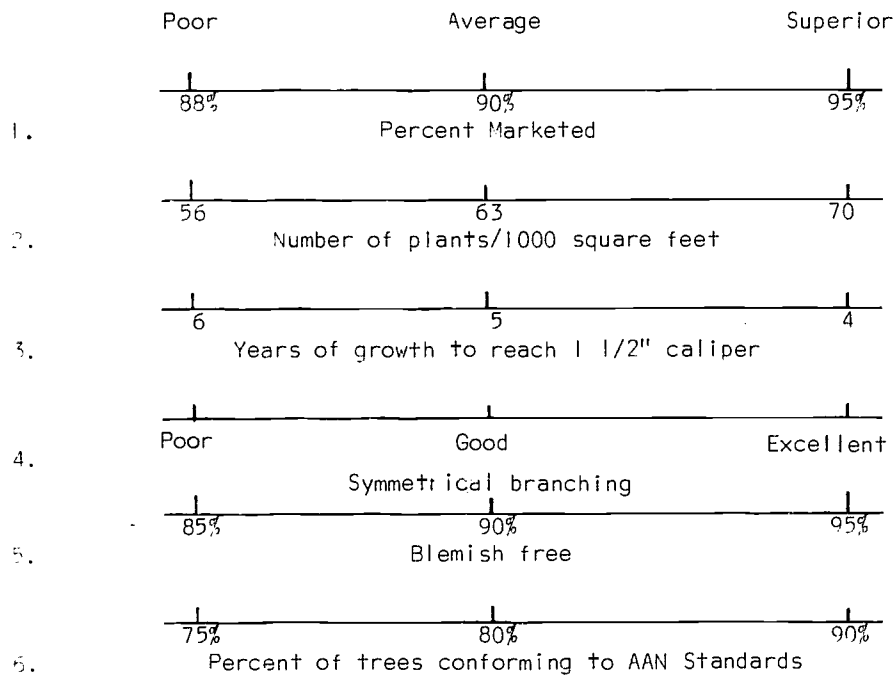
Cost Accounting - Nursery Production

Field Grown B&B or Bare Root Deciduous Trees, Thornless
Honeylocust, *Gleditsia tricanthos inermis*

1. Cost of lining out stock from 5¢ to 35¢ per plant. The actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average about 20% of sum of all other costs.

Analysis of B&B or Bare Root Deciduous Trees
Thornless Honeylocust, *Gleditsia tricanthos inermis*

Name _____	Date started _____ Ended _____
School _____	Genus _____ Species _____
County _____	Total receipts ^{number} _____ x
Square feet/used _____ a	Total expenses ^{number} _____ y
Number of trees sold B&B _____	Labor and management income _____ z
Number of trees sold BR _____	(x - y = z)
Number of trees/1000 sq. ft. _____	Income/1000 sq. ft. _____
	(z ÷ a) × 1000



Place a red "G" on each line scale at goal set. Place a red A on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B and Bare Root Deciduous Trees
Pin Oak, *Quercus palustris*

<u>Practice</u>	<u>References</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 128-129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK PSU, 1971

Goals Stated in Relation to Efficiency

Nursery Production Field Grown B&B and Bare Root Deciduous Trees
Pin Oak, *Quercus palustris*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Symmetrical branching	Good	Excellent
4. Blemish free	90%	95%
5. Years of plant growth to Marketing at 1" caliper.	6	5
6. Percent of trees conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Trees Pin Oak Quercus palustris	a. % Marketed	90%	95%
	b. Number of plants per 1000	63	80
	c. Years of plants growth* to market a 1" caliper tree	5	5
	d. % of crop reaching a 1" caliper	90%	95%
	e. % blemish-free trees (free of insect, disease, and mech. damage)	90%	95%
	f. % conforming to AAN Standard	80%	90%

* Plant growth must include the age of the liner plus the years of growth

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
a. % Marketed	90%	95%	.2 points for every % point over 90%
b. Number of plants per 1000	63	80	.015 point for every plant/1000 sq. ft. above 63 - not to exceed 70 plants/1000 sq. ft.
c. Years of plants growth* to market a 1" caliper tree	6	5	.5 points for every 6 months under 5 years
d. % of crop reaching a 1" caliper	90%	95%	.1 point for every % point over 90%
e. % blemish-free trees (free of insect, disease, and mech. damage)	90%	95%	.5 point for every % point over 80%
f. % conforming to AAN Standard	80%	90%	.05 point for every 6 months harvested before 6 years

Plant growth must include the age of the liner plus the years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Trees, Pin Oak, Quercus palustris

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, average \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of B&B and Bare Root Deciduous Trees
Pin Oak, *Quercus palustris*

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total receipts _____ x
 Square feet used _____ a Total expenses _____ y
 Number of trees sold B&B _____ Labor and management income _____ z
 Number of trees sold BR _____ (x - y = z)
 Number of trees/1000 sq. ft. _____ Income/1000 sq. ft. _____
 (z ÷ a) × 1000

	Poor	Average	Superior
1.	88%	90%	95%
	Percent Marketed		
2.	56	63	70
	Number of plants/1000 square feet		
3.	7	6	5
	Years of growth to reach 1" caliper		
4.	Poor	Good	Excellent
	Symmetrical branching		
5.	85%	90%	95%
	Blemish free		
6.	75%	80%	90%
	Percent of trees conforming to AAN Standard		
7.	85%	90%	95%
	Percent of crop having 1" cal. at marketing		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:	Practices and conditions which contributed to superior efficiency:



Approved Practices - Field Grown B&B and Bare Root Deciduous Trees
European Mountain Ash, Sorbus aucuparia

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU - 1971

Goals Stated in Relation to Efficiency

Nursery Production, Field Grown B&B and Bare Root Deciduous Trees, European Mountain Ash, *Sorbus aucuparia*

<u>Efficiency Factors</u>	<u>Efficiency Standards</u>	
	<u>Average</u>	<u>Superior</u>
1. Percent Marketed	63	70
2. Number of plants/1000 sq. ft.	90%	95%
3. Symmetrical branching	Good	Excellent
4. Blemish free	90%	95%
5. Years of plant growth to marketing at 1" caliper	5	4
6. Percent of trees conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Trees European Mountain Ash Sorbus aucuparia	a. % Marketed	90%	95%
	b. Number of plants per 1000 sq. ft.	63	70
	c. % of crop reaching a 1" caliper or better	90%	95%
	d. Years of plants growth* to market a 1" caliper tree	5	4
	e. % blemish-free trees (free of insect, disease and mech. injury)	90%	95%
	f. % conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the field

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
a. % Marketed	90%	95%	.2 points for every % point over 90%
b. Number of plants per 1000 sq. ft.	63	70	.05 point for every plant per 1000 sq. ft. over 63 - not to exceed 70 plants per 1000 sq. ft.
c. % of crop reaching a 1" caliper or better	90%	95%	.1 point for every % point over 90%
d. Years of plants growth* to market a 1" caliper tree	5	4	.5 points for every six (6) months harvested before the 4 years
e. % blemish-free trees (free of insect, disease and mech. injury)	90%	95%	.1 point for every % point over 90%
f. % conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

* Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Trees, European Mountain Ash,
Sorbus aucuparia

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, average \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of B&B and Bare Root Deciduous Trees
European Mountain Ash, Sorbus aucuparia

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total receipts _____ x
 Square feet/used _____ a Total expenses _____ y
 Number of trees sold B&B _____ Labor and management income _____ z
 Number of trees sold BR _____ (x - y = z)
 Number of trees/1000 sq. ft. _____ Income/1000 sq. ft. _____
 (z ÷ a) × 1000

	Poor	Average	Superior
1.	88%	90%	95%
	Percent Marketed		
2.	56	63	70
	Number of plants/1000 square feet		
3.	6	5	4
	Years of growth to 1" caliper		
4.	Poor	Good	Excellent
	Symmetrical branching		
5.	85%	90%	95%
	Blemish free		
6.	75%	80%	90%
	Percent of trees conforming to AAN Standard		
7.	85%	90%	95%
	Percent of crop having 1" cal. at marketing		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income	Practices and conditions which contributed to superior efficiency



Approved Practices - Field Grown B&B and Bare Root Deciduous Trees
Norway Maple, Acer platanoides

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 123-219
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (seeds, insects, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency

Nursery Production, Field Grown B&B and Bare Root Deciduous Trees, Norway Maple, *Acer platanoides*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Symmetrical branching	Good	Excellent
4. Blemish free	90%	95%
5. Years of plant growth to marketing at 1" caliper	6	5
6. Percent of trees conforming AAN Standard	80%	90%



Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Trees Norway Maple Acer platanoides	a. % Marketed	90%	95%
	b. Number of plants per 1000 sq. ft.	63	70
	c. % of crop reaching a 1" caliper or better	90%	95%
	d. Years of plants growth* to market a 1" caliper tree	6	5
	e. % blemish-free trees (free of disease, insect, and mech. damage)	90%	95%
	f. % conforming to AAN Standard	80%	90%

* Plant growth must include age of liner and years of growth in the field

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
a. % Marketed	90%	95%	.2 points for every % point over 90%
b. Number of plants per 1000 sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - not to exceed 70 plants/1000 sq. ft.
c. % of crop reaching a 1" caliper or better	90%	95%	.1 point for every % point over 90%
d. Years of plants growth* to market a 1" caliper tree	6	5	.5 points for every 6 months harvested before the 6 years
e. % blemish-free trees (free of disease, insect, and mech. damage)	90%	95%	.1 point for every % point over 90%
f. % conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

* Plant growth must include age of liner and years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Trees,
Norway Maple, Acer platanoides

1. Cost of holding out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, average \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of B&B and Bare Root Deciduous Trees
Norway Maple, *Acer platanoides*

Name _____ Date started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total receipts _____ x
 Square feet used _____ a Total expenses _____ y
 Number of trees sold B&B _____ Labor and management income _____ z
 Number of trees sold BR _____ (x - y = z)
 Number of trees/1000 sq. ft. _____ Income/1000 sq. ft. _____
 (z ÷ a) × 1000

	Poor	Average	Superior
1.	88%	90%	95%
	Percent Marketed		
2.	56	63	70
	Number of plants/1000 square feet		
3.	7	6	5
	Years of growth to 1" caliper		
4.	Poor	Good	Excellent
	Symmetrical branching		
5.	85%	90%	95%
	Blemish free		
6.	75%	80%	90%
	Percent of trees conforming to AAN Standard		
7.	85%	90%	95%
	Percent of crop having 1" cal. at marketing		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Evergreen Trees
Norway Spruce, Picea abies

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112
4. Watering	P. 112
5. Fertilizing	P. 117-114
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Norway Spruce, Picea abies

Nursery Production - Field Grown
B&B Evergreen Trees

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Number of plants per 1000 sq. ft.	63	70
3. Dense and symmetrical growth	Good	Excellent
4. % blemish free	90%	95%
5. Intense color	Good	Excellent
6. Years of growth to marketing a 2-3' sheared plant	6	5
7. % conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Me
B & B Evergreen Trees Norway Spruce Picea abies	a. % Marketed	90%	95%	.1 po
	b. Number of plants per 1000 sq. ft.	63	70	.0 10 no 10
	c. % of crop reaching a 2-3' height	90%	95%	.1 ov
	d. Years of plants growth to market a 2-3" sheared plant*	5	4	.5 mo 5
	e. % blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 po
	f. % conforming to AAN Standard	80%	90%	.0 po

* Years of growth must include age of liner plus years of growth in the f

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Number of plants per 1000 sq. ft.	63	70	.05 point for every plant/1000 sq. ft. over 63 - not to exceed 70 plants/1000 sq. ft.
% of crop reaching a 2-3' height	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 2-3" sheared plant*	5	4	.5 points for every 6 months harvested before 5 years
% blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 point for every % point over 90%
% conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

*Years of growth must include age of liner plus years of growth in the field

Cost Accounting - Nursery Production
Field B&B Evergreen Trees, Norway Spruce, Picea abies

1. Cost of lining out grafts about 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, averages \$167 per 1000 sq. ft.
4. Overload (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of Nursery Production
Field B&B Evergreen Trees, Norway Spruce, Picea abies

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total receipts _____ x
 Sq. ft. of field space _____ a Total expenses _____ y
 Total plants _____ Labor and Management _____ z
 (x - y = z)
 No. of plants/1000 sq. ft. _____ Income/1000 sq. ft. _____
 (z ÷ a) x 1000

	Poor	Average	Superior
1.	80%	90%	95%
	Plants marketed		
2.	56	63	70
	Plants/1000 sq. ft.		
3.	6	5	4
	Years of growth to harvesting crop		
4.	Poor	Good	Excellent
	Dense and symmetrical growth		
5.	85%	90%	95%
	% Blemish free		
6.	Poor	Good	Excellent
	Intense color		
7.	75%	80%	90%
	% Conforming to AAN Standard		
8.	85%	90%	95%
	% of crop reaching 2.3 ft., sheared		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Evergreen Trees
Concolor Fir, *Abies concolor*

<u>Practice</u>	<u>Reference</u>
1. Block Planning, species Selection, Site and Soil Selection, and Crop Rotation	P. 35-43, 105-106, 203
2. Soil Preparation	P. 107-109
3. Lining out and Planting	P. 109-112
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest Control (Weeds, Insects, and Disease)	P. 121-127
7. Pruning, Supporting, and Root Pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and Marketing Preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Concolor Fir, *Abies concolor*

Nursery Production - Field Grown
Evergreen Trees

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Marketed	90%	95%
2. No. of plants per 1000 sq. ft.	63	70
3. Years of growth to marketing a 2-3' sheared plant	6	5
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Net
B&B Evergreen Trees Concolor Fir Abies concolor	a. % Marketed	90%	95%	.1 point over 90%
	b. Number of plants per 1000 sq. ft.	63	70	.015 point over 1000 sq. ft. to exc
	c. % of crop reaching 2-3' height	90%	95%	.1 point over 90%
	d. Years of plants growth to market a 2-3' sheared plant*	6	5	.5 point over harvest
	e. % Blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 point over 90%
	f. Conforming to AAN Standard	80%	90%	.05 point over 80%

* Years of growth must include age of liner plus years of growth in the field

146

147

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Number of plants per 1000 sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - not to exceed 10 plants/1000 sq. ft
% of crop reaching 2-3' height	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 2-3' sheared plant*	6	5	.5 point for every 6 month harvest before 6 years
% Blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 point for every % point over 90%
Conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

*Years of growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Trees, Concolor Fir, Abies concolor

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 100 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Nursery Production
Field B&B Evergreen Trees, Concolor Fir, Abies concolor

Name _____ Date started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total receipts _____ x
 Sq. ft. of field space _____ a Total expenses _____ y
 Total plants _____ b Labor and Management _____ z
 (x - y = z)
 No. of plants/1000 sq. ft. _____ Income/1000 sq. ft. _____
 (b ÷ a) x 1000 (z ÷ a) x 1000

	Poor	Average	Superior
1.	80%	90%	95%
	Plants Marketed		
2.	56	63	70
	Plants/1000 sq. ft.		
3.	7	6	5
	Years of growth to harvesting crop at 2 to 3' height		
4.	Poor	Good	Excellent
	Dense and symmetrical growth		
5.	85%	90%	95%
	% Blemish Free		
6.	Poor	Good	Excellent
	Intense color		
7.	75%	80%	90%
	% Conforming to AAN Standard		
8.	85%	90%	95%
	% reaching 2 - 3 ft. in height at 95% marketing		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited production and income: _____ _____ _____	Practices and conditions which contributed to superior efficiency: _____ _____ _____
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Approved Practices - Field Grown B&B Evergreen Trees
White Pine, Pinus strobus

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 137-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
White Pine, *Pinus strobus*

Nursery Production - Field Grown
Evergreen Trees

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. No. of plants per 1000 sq. ft.	83	70
3. Years of growth to marketing a 2-3' sheared plant	6	5
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. Intense color	Good	Excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Meth
B & B Evergreen Trees White Pine Pinus strobus	a. % Marketed	90%	95%	.1 poi over 9
	b. Number of plants per 1000 sq. ft.	63	70	.015 p 1000 s to exc
	c. % of crop reaching a 2-3' height	90%	95%	.1 poi over 9
	d. Years of plants growth to market a 2-3' sheared plant*	6	5	.5 poi harves
	e. % Blemish free trees (free of insect, disease and mech. injury)	90%	95%	.1 poi over 9
	f. % Conforming to AAN Standard	80%	90%	.05 po point

* Years of growth must include age of liners plus years of growth in the field

E-41

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Marketed	90%	95%	.1 point for every % point over 90%
Number of plants per 1000 sq. ft.	63	70	.015 point for each plant/1000 sq. ft. over 63 - not to exceed 70/1000 sq. ft.
Percentage of crop reaching 2-3' height	90%	95%	.1 point for every % point over 90%
Number of years of plants growth in market a 2-3' sheared plant*	6	5	.5 point for every 6 months harvested before 6 years
Percentage of blemish free trees (free of insect, disease and mech. injury)	90%	95%	.1 point for every % point over 90%
Conforming to AAN standard	80%	90%	.05 point for every % point over 80%

*Years of growth must include age of liners plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Trees, White Pine, *Pinus strobus*

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land about \$98 per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Nursery Production
Field B&B Evergreen Trees, White Pine Pinus strobus

Name _____ Date started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total receipts _____ x
 Sq. ft. of field space _____ a Total expenses _____ y
 Total plants _____ b Labor and Management _____ z
 (x - y = z)
 No. of plants/1000 sq. ft. _____ Income/1000 sq. ft. _____
 (b ÷ a) × 1000 (z ÷ z) × 1000

	Poor	Average	Superior
1.	80%	90%	95%
	Plants Marketed		
2.	56	63	70
	Plants/1000 sq. ft.		
3.	7	6	5
	Years of growth to harvesting crop at 2 to 3' height		
4.	Poor	Good	Excellent
	Dense and symmetrical growth		
5.	85%	90%	95%
	% Blemish Free		
6.	Poor	Good	Excellent
	intense color		
7.	75%	80%	90%
	% Conforming to AAN Standard		
8.	85%	90%	95%
	% reaching 2 - 3 ft. height, sheared, at marketing		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Evergreen Trees
Canada Hemlock, *Tsuga canadensis*

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Canada Hemlock, *Tsuga canadensis*

Nursery Production - Field Grown
Evergreen Trees

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. No. of plants per 1000 sq. ft.	63	70
3. Years of growth to marketing a 3-4' sheared plant	6	5
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method
B & B Evergreen Trees, Canada Hemlock Tsuga canadensis	a. % Marketed	90%	95%	.1 point over 90%
	b. % of crop reaching 4-5' height or better	90%	95%	.1 point over 90%
	c. Number of plants per 1000 sq. ft.	63	70	.015 poi 1000 sq. to excee
	d. Years of plants growth to market at 3-4' sheared plant*	. 6	5	.5 point 6 months 6 years
	e. % Blemish free (free from insects, diseases and mech. injury	90%	95%	.1 point over 90%
	f. % Conforming to AAN Standard	80%	90%	.05 poin over 80%

* Years of growth must include age of liners plus years of growth in the field

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
Marketed	90%	95%	.1 point for every % point over 90%
of crop reaching height or better	90%	95%	.1 point for every % point over 90%
Number of plants per 1000 sq. ft.	63	70	.015 point for each plant/1000 sq. ft. over 63 - not to exceed 70/1000 sq. ft.
Years of plants growth market at 3-4' bare plant*	.6	5	.5 points for every (six) 6 months harvesting before 6 years
blemish free from insects, diseases and mech. injury	90%	95%	.1 point for every % point over 90%
Conforming to AAN standard	80%	90%	.05 point for every % point over 80%

Years of growth must include age of liners plus years of growth in the field.

158

159

Cost Accounting - Nursery Production
Field Grown Evergreen Trees, Canada Hemlock, *Tsuga canadensis*

1. Cost of lining out stock from 6¢ to 35¢ per plant. Use actual price paid.
2. Cost of land 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Nursery Production
Field B&B Evergreen Trees, Canada Hemlock, *Tsuga canadensis*

Name _____ Date started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total receipts _____ x
 Sq. ft. of field space _____ a Total expenses _____ y
 Total plants _____ b Labor and Management _____ z
 (x - y = z)
 No. of plants/1000 sq. ft. _____ Income/1000 sq. ft. _____
 (b ÷ a) × 1000 (z ÷ a) × 1000

	Poor	Average	Superior
1.	80%	90%	95%
	% Plants Marketed		
2.	56	63	70
	Plants/1000 sq. ft.		
3.	7	6	5
	Years of growth to harvesting crop		
4.	Poor	Good	Excellent
	Dense and symmetrical growth		
5.	85%	90%	95%
	% Blemish free		
6.	Poor	Good	Excellent
	Intensity of color		
7.	75%	80%	90%
	% Conforming to AAN Standard		
8.	85%	90%	95%
	% Reaching 3-4 ft. height, sheared, at marketing		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B and Bare Root
Deciduous Ornamental Trees
Flowering Crabapple, Malus cultivars

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-113, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Flowering Crabapple, Malus cultivars

Nursery Production - Field Grown
B&B and Bare Root Ornamental Trees

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. No. of plants/1000 sq. ft.	63	70
3. Years of plant growth to marketing a 1 1/2" caliper plant	5	4
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Meth
Field Grown B&B and Bare Root	a. % Marketed	90%	95%	.1 poi over 9
Deciduous Ornamental Trees	b. % of crop reaching 2" caliper at harvesting	90%	95%	.1 poi over 9
Flowering Crabapple	c. Number of plants per 1000 sq. ft.	63	70	.015 p over 6 70 pla
Malus cultivars	d. * Years of plants growth to market at 1 1/2" caliper	5	4	.5 poi months 5 year
	e. % blemish free trees (free of insect, disease, and mechanical injury)	90%	95%	.1 poi over 9
	f. % Conforming to AAN Standard	80%	90%	.05 po over 8

* Plant growth must include age of liner plus years of growth in the field.

E-51

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
Marketed	90%	95%	.1 point for every % point over 90
of crop reaching caliper at harvesting	90%	95%	.1 point for every % point over 90
Number of plants per 1000 sq. ft.	63	70	.015 point for every plant over 63 - not to exceed 70 plants/1000 sq. ft.
Years of plants growth to market at 1 1/2" caliper	5	4	.5 points for every six months harvested before 5 years
blemish free trees free of insect, disease, and mechanical injury	90%	95%	.1 point for every % point over 90
Conforming to AAN standard	80%	90%	.05 point for every % point over 80

Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Ornamental Trees,
Flowering Crabapple, Malus cultivars

1. Cost of grafted lining out stock about 35¢ per plant. Use actual price paid.
2. Cost of land 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Ornamental
Flowering Crabapple, Malus cultivars

Name _____ Date started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. ft. used _____ a Total Expenses _____ y
 No. sold B&B _____ b Labor - Mgmt. Income _____ z
 (x - y = z)
 No. sold Bare Root _____ c Income/1000 sq. ft. _____
 (z ÷ a) x 1000
 No. per 1000 sq. ft. _____
 (b + c ÷ a) x 1000

	Poor	Average	Superior
1.	80%	90% % Marketed	100%
2.	85%	90% % of crop reaching 2" caliper at harvest	95%
3.	6	5 Years of growth to reach 1 1/2" caliper	4
4.	56	63 No. Plants per 1000 sq. ft.	70
5.	Poor	Good Symmetrical Branching	Excellent
6.	80%	90% % Blemish Free	95%
7.	70%	80% % Conforming to AAN Standard	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Deciduous Ornamental Trees
Japanese Maple *Acer palmatum*

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-112
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION - A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
Japanese Maple, Acer palmatum

Nursery Production, Field Grown
B&B Ornamental Trees

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to marketing at 1" caliper	6	5
3. No. of plants/1000 sq. ft.	63	70
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % conforming to AAN Standard	80%	90%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method
Field Grown B&B	a. % Marketed	90%	95%	.1 point over 90%
Deciduous Ornamental Trees	b. Number of plants per 1000 sq. ft.	63	70	.015 point per 1000 sq. ft. to exceed 1000 sq. ft.
Japanese Maple Acer palmatum	c. % of crop reaching a 1" caliper or better	90%	95%	.1 point
	d. Years of plants growth to market a 1" caliper tree (base measurement)*	6 yrs.	5 yrs.	.5 point vested
	e. % Unblemished trees (free of insect, disease, and mechanical injury)	90%	95%	.1 point above 90%
	f. % Conforming to AAN Standard	80%	90%	.05 point above 80%

* Plant growth must include age of liner plus years of growth in the field.

E-56

1662

170

171

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Marketed	90%	95%	.1 point for every % point over 90%
Number of plants per 1000 sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - not to exceed 70 plants/1000 sq. ft.
% of crop reaching 1" caliper or better	90%	95%	.1 point for each 1% above 90%
Years of plants growth market a 1" caliper tree (base measurement)*	6 yrs.	5 yrs.	.5 point for every 1 year harvested before 6 years
Unblemished trees free of insect, disease, and mechanical injury)	90%	95%	.1 point for each % point above 90%
Conforming to AAN standard	80%	90%	.05 point for each % point above 80%

* Total growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Deciduous Ornamental Trees, Japanese Maple,
Acer palmatum

1. Cost of grafted lining out stock about 35¢ per plant. Use actual price paid.
2. Cost of land about \$98 per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B Ornamental Trees
Japanese Maple, Acer palmatum

Name _____ Date started _____ Ended _____

School _____ Genus _____ Species _____

County _____ Total Receipts _____ x

Sq. ft. used _____ a Total Expenses _____ y

No. sold B&B _____ b Labor-Mgmt. Income _____ z
(x - y = z)

No. sold Bare Root _____ c Income/1000 sq. ft. _____
(z ÷ a) x 1000

No. per 1000 sq. ft. _____
(b + c ÷ a) x 1000

	Poor	Average	Superior
1.	80%	90% % Marketed	100%
2.	85%	90%	95%
	% of Crop Reaching 1" Caliper or Better at Harvest		
3.	7	6	5
	Years of Growth to Reach 1" Caliper		
4.	56	63	70
	No. Plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B and Bare Root
Deciduous Ornamental Trees - Kwazan Cherry, *Prunus serrulata*

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 187-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971.

Goals Stated in Relation to Efficiency

Nursery Production - Field Grown Ornamental Trees, Kwazan Cherry, *Prunus serrulata*
B&B and Bare Root

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to marketing at 1" caliper	5	4
3. No. of plants/1000 sq. ft.	63	70
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Me
Field Grown B&B and Bare Root	a. % Marketed	90%	95%	.1 po over
Deciduous Ornamental Trees	b. % of crop reaching 1" caliper at harvest	90%	95%	.1 po over
Kwazan Cherry	c. Years of growth to market at 1" caliper	5	4	.5 po harve
Prunus serrulata	d. Number of plants per 1000 sq. ft.	63	70	.015 over plant
	e. % Blemish free trees (free of insect, disease, and mechanical injury)	90%	95%	.1 po over
	f. % Conforming to AAN Standard	80%	90%	.05 p over

* Plant growth must include age of liner plus years of growth in the field

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
% of crop reaching 1" caliper at harvest	90%	95%	.1 point for every % point over 90%
Years of growth to market at 1" caliper	5	4	.5 point for every 6 months harvested before 5 years
Number of plants per 1000 sq. ft.	63	70	.015 point for every plant over 63 - not to exceed 70 plants/1000 sq. ft.
% Blemish free trees (free of insect, disease, and mechanical injury)	90%	95%	.1 point for every % point over 90%
% Conforming to AAN Standard	80%	90%	.05 points for every % point over 80

Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Ornamental Trees,
Kwazan Cherry, *Prunus serrulata*

1. Cost of grafted lining out stock about 35¢ per plant. Use actual price paid.
2. Cost of land 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root
Deciduous Ornamental Trees, Kwazan Cherry, Prunus serrulata

Name _____ Date started _____ Ended _____

School _____ Genus _____ Species _____

County _____ Total Receipts _____ x

Sq. ft. used _____ a Total Expenses _____ y

No. sold B&B _____ b Labor-Mgmt. Income _____ z
(x - y = z)

No. sold Bare Root _____ c Income/1000 sq. ft. _____
(z ÷ a) × 1000

No. per 1000 sq. ft. _____
(b + c ÷ a) × 1000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	85%	90%	95%
	% of Crop Reaching 1" Caliper or Better at Harvest		
3.	6	5	4
	Years of Growth to Reach 1" Caliper		
4.	56	63	70
	No. Plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Deciduous Ornamental Trees
Flowering Dogwood, Cornus florida

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 129
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-217
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference - NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency

Nursery production, Field Grown, B&B Ornamental Trees, Flowering Dogwood,
Cornus Florida

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to marketing at 1 1/2" caliper	6	5
3. No. of plants/1000 sq. ft.	63	70
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method
Field Grown B&B	a. % Marketed	90%	95%	.1 point over 90%
Deciduous Ornamental Trees	b. % of crop reaching 1 1/2" caliper or better	90%	95%	.1 point over 90%
Flowering Dogwood	c. Years of plants growth to market at 1 1/2" caliper*	6	5	.5 point harvest
Cornus florida	d. Number of plants per 1000 sq. ft.	63	70	.015 point to 1000 sq. ft.
	e. % Blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 point over 90%
	f. % Conforming to AAN Standard	80%	90%	.05 point

* Plant growth must include age of liner plus years of growth in the field.

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Marketed	90%	95%	.1 point for every % point over 90%
of crop reaching 1/2" caliper or better	90%	95%	.1 point for every % point over 90%
years of plants growth market at 1 1/2" caliper*	6	5	.5 point for every 5 months harvest before 6 years
number of plants per 1000 sq. ft.	63	70	.015 point for every plant/1000 sq. ft. over 63 - max. point total 1.05
Blemish free trees free of insect, disease, and mech. injury)	90%	95%	.1 point for every % point over 90%
Conforming to AAN standard	80%	90%	.05 point for every 1% over 80%

Plant growth must include age of liner plus years of growth in the field.

182

183

Cost Accounting - Nursery Production
Field Grown B&B Deciduous Ornamental Trees, Flowering
Dogwood, Cornus florida

1. Cost of lining out stock or grafts from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land, per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B Ornamental Trees
Flowering Dogwood, *Cornus florida*

Name _____ Date started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. ft. used _____ a Total Expenses _____ y
 No. sold B&B _____ b Labor-Mgmt. Income _____ z
 (x - y = z)
 No. sold Bare Root _____ c Income/1000 sq. ft. _____
 (z ÷ a) × 1000
 No. per 1000 sq. ft. _____
 (b + c ÷ a) × 1000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	85%	90%	95%
	% of Crop Reaching 1 1/2" Caliper or Better at Harvest		
3.	7	6	5
	Years of Growth to Reach 1 1/2" Caliper		
4.	56	63	70
	No. Plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers. 1974

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

NURSERY PRODUCTION - FIELD GROWN SHRUBS - E 71-138

Convexleaf Holly	E 71-78	Pfitzer Juniper	E 101-106
Hybrid Rhododendron	E 79-83	Dwarf Bruning Bush	E 107-112
Mugo Pine	E 84-88	Forsythia	E 113-118
American Arborvitae	E 89-94	Lilac	E 119-124
Spreading Yew	E 95-100	Mockorange	E 125-130
		Viburnum	E 131-137

To be used with any production, occupational
or work experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.,

The Employment Achievement form is used in place of the Cost Accounting

form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS:	Potted Chrysanthemum		ENTERPRISE	
	Local Efficiency Standards	Student Goal	Student Achievement	
Percent marketed	95%	100%	100%	95%
No. of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
No. of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

* Optimum number

Approved Practices - Field Grown B&B Evergreen Shrubs
Convexleaf Holly, *Ilex crenata convexa*

<u>Practice</u>	<u>Reference</u>
1. Block planning, species selection, site and soil selection, and crop Rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B Exergreen Shrubs,
Convexleaf Holly, *Ilex crenata convexa*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent marketed		
2. Years of growth to market a 24" to 30" plant	90%	95%
3. No. of plants per 1,000 sq. ft.	4	3
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. Percent conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B Evergreen Shrubs, Con- vexleaf Holly, Ilex crenata convexa	a. Percent marketed	90%	95%
	b. Years of plants growth to market (24-30") *	4	3
	c. Percent of plants reaching 24" to 30" market class at harvest	90%	95%
	d. No. of plants per 1,000 sq. ft.	125	140
	e. Percent blemish free (free of insect disease and mech. injury)	90%	95%
	f. Percent conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the field.

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
a. Percent marketed	90%	95%	.1 point for every % over 90
b. Years of plants growth to market (24-30") *	4	3	.5 point for every 6 months harvested before 4 years
c. Percent of plants reaching 24" to 30" market class at harvest	90%	95%	.1 point for every % point over 90
d. No. of plants per 1,000 sq. ft.	125	140	.035 point for every plant over 125--not to exceed 140 plants/1,000 sq. ft.
e. Percent blemish free (free of insect disease and mech. injury)	90%	95%	.1 point for every % point over 90
f. Percent conforming to AAN Standard	80%	90%	.05 point for every % point over 80

st include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs, Convexleaf Holly,
Ilex crenata convexa

1. Cost of lining out Stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1,000 sq. ft.
3. Cost of labor chargeable to this crop, average \$167 per 1,000 sq. ft.
4. Overhead (supplies, equipment) per 1,000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs,
Convexleaf Holly, *Ilex crenata convexa*

Name _____	Date started _____ Ended _____
School _____	Genus _____ Species _____
County _____	Total Receipts _____ x
Sq. ft. used _____ a	Total Expenses _____ y
No. sold _____ b	Labor-Mgmt. Income _____ z (x - y = z)
No. per 1,000 sq. ft. (b ÷ a) x 1,000 _____	Income/1,000 sq. ft. (z ÷ a) x 1,000 _____

	Average	Superior
1.	90% % Marketed	100%
2.	4 Years of Growth Until Marketed	3
3.	90% % of Plants Reaching 24"-30" Grade at Harvest	95%
4.	125 No. Plants per 1,000 sq. ft.	140
5.	Good Dense and Symmetrical Growth	Excellent
6.	90% % Blemish Free	95%
7.	Good Color Intensity	Excellent
8.	80% % Conforming to AAN Standard	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income.

Practices and conditions which contributed to superior efficiency.

Approved Practices - Field Grown B&B Evergreen Shrubs
Hybrid Rhododendron - Catawbiense

PRACTICE

REFERENCE

- | | |
|--|------------------------------|
| 1. Block planning, species selection, site and soil selection, and crop rotation | P. 35-43,
105-106,
203 |
| 2. Soil preparation | P. 107-109 |
| 3. Lining out and planting | P. 109-112,
130 |
| 4. Watering | P. 112 |
| 5. Fertilizing | P. 114-117 |
| 6. Pest control (weeds, insects, and disease) | P. 121-127 |
| 7. Pruning, supporting, and root pruning | P. 117-121 |
| 8. Digging | P. 137-138 |
| 9. Grading and market preparation | P. 139-141,
178-181 |

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency

Field Grown B&B Evergreen Shrubs,
Hybrid Rhododendron, Catawbiense

Efficiency Sactors	Efficiency Standards	
	Average	Superior
1. Percent marketed	90%	95%
2. Years of growth to market an 18" to 24" plant	5	3
3. No. of plants per 1,000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. Percent conforming to AAN Standard	Good	Excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B Evergreen Shrubs, Hybrid Rhododendron, Catawbiense	a. Percent marketed	90%	95%
	b. Years of plants growth to market 18"-24" *	5	3
	c. Percent of plants reaching 18"-24" market class at harvest	90%	95%
	d. No. of plants per 1,000 sq. ft.	125	140
	e. Dense and symmetrical	Good (90)	Excellent (100)
	f. Percent blemish free (free of disease, insect, and mech. injury)	90%	95%
	g. Percent conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the field.

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
Percent marketed	90%	95%	.1 point for every % point over 90
Years of plants growth to market 18"-24" *	5	3	.5 point for every 6 months harvested before 5 years
Percent of plants reaching 18"-24" market class at harvest	90%	95%	.1 point for every % point over 90
No. of plants per 1,000 sq. ft.	125	140	.035 points for every plant over 125--not to exceed 14- plants/1,000 sq. ft.
Shape and symmetrical	Good (90)	Excellent (100)	.05 point for every point over 90
Percent blemish free (free of disease, insect, and mech. injury)	90%	95%	.1 point for every % point over 90
Percent conforming to AN Standard	80%	90%	.05 point for every % point over 80

*Include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs,
Hybrid Rhododendron, Catawbiense

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1,000 sq. ft.
3. Cost of labor chargeable to this crop, averages \$167 per 1,000 sq. ft.
4. Overhead (supplies, equipment) per 1,000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs,
Hybrid Rhododendron, Catawbiense

Name _____ Date started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. ft. used _____ a Total Expenses _____ y
 No. sold _____ b Labor-Mgmt. Income _____ z
 (x - y = z)
 No. per 1,000 sq. ft. _____ Income/1,000 sq. ft. _____
 (b ÷ a) x 1,000 (z ÷ a) x 1,000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	6	5	4
	Years of Growth Until Marketed		
3.	85%	90%	95%
	% of Plants Reaching 18"-24" Grade at Harvest		
4.	110	125	140
	No. Plants per 1,000 sq. ft.		
5.	Poor	Good	Excellent
	Dense and Symmetrical Growth		
6.	80%	90%	95%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Evergreen Shrubs
Mugho Pine - *Pinus mugo mugo*

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Market preparation	P. 139-141, 178-181

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B Evergreen Shrubs
Mugho Pine, *Pinus mugo mugo*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Percent Marketed	90%	95%
2. Years of Growth to Market a 12" to 18" plant	6	5
3. No. of plants per 1,000 sq. ft.	125	140
4. Dense and Symmetrical Growth	Good	Excellent
5. Blemish Free	90%	95%
6. Intense Color	Good	Excellent
7. Percent Conforming to AAN Standard	80%	90%

E-86

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B Evergreen Shrubs, Mugho Pine, Pinus mugo mugo	a. Percent marketed	90%	95%
	b. Years of plants growth to market (12"-18") *	6	5
	c. Percent of plants reaching 12"-18" market class at harvest	90%	95%
	d. No. of plants per	125	140
	e. Percent blemish free trees (free of insect, disease, and mech. injury)	90%	95%
	f. Color intensity	Good (90)	Excellent (100)
	g. Percent conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the field

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
Percent marketed	90%	95%	.1 point for every % point over 90
Years of plants growth to market (12"-18") *	6	5	.5 point for every 6 months harvested before 6 years
Percent of plants reaching 12"-18" market class at harvest	90%	95%	.1 point for every % point over 90
No. of plants per	125	140	.035 point for every plant over 125-not to exceed 140 plants/sq. ft.
Percent blemish free trees (free of insect, disease, and mech. injury)	90%	95%	.1 point for every % point over 90
Color intensity	Good (90)	Excellent (100)	.05 point for every point over 90
Percent conforming to AAN Standard	80%	90%	.05 point for every % point over 80

Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs,
Mugho Pine, *Pinus mugo mugo*

1. Cost of lining out grafts about 35¢ per plant. Use actual price paid.
2. Cost of land per 1,000 sq. ft.
3. Cost of labor chargeable to this crop, average \$167 per 1,000 sq. ft.
4. Overhead (supplies, equipment) per 1,000 sq. ft.
5. Marketing cost - averages 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs
Mugho Pine, *Pinus mugo mugo*

Name _____ Date started _____ Ended _____

School _____ Genus _____ Species _____

County _____ Total Receipts _____ x

Sq. ft. used _____ a Total Expenses _____ y

No. sold _____ b Labor-Mgmt. Income _____ z
(x - y = z)

No. sold bare root _____ Income/1,000 sq. ft. _____
(z ÷ a) × 1,000

No. per 1,000 sq. ft. _____
(b ÷ a) × 1,000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	6	5½	5
	Years of Growth Until Marketed		
3.	85%	90%	95%
	% of Plants Reaching 12"-18" Grade at Harvest		
4.	110	125	140
	No. Plants per 1,000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		
7.	Poor	Good	Excellent
	Color Intensity		
8.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Evergreen Shrubs
American Arborvitae - *Thuja occidentalis*

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Block planning, species, selection, site and soil selection, and crop rotation	P. 35-43, 105-106
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated In Relationship to Efficiency

Field Grown B&B Evergreen Shrubs,
American Arborvitae, *Thuja occidentalis*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 36"-48" plant	5	3
3. No. of plants per 1,000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
B&B Ever-green Shrubs American Arborvitae Thuja occidentalis	a. % Marketed	90	95
	b. Years of plants growth to market 36"-48" *	5	3
	c. % of plants reaching 36"-48" market class at harvest	90	95
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free trees (free of insect, disease, and mech. injury)	90	95
	f. Color intensity	Good (90)	Excellent (100)
	g. % Conforming to AAN Standard	80	90

* Plant growth must include age of liner plus years of growth in the field

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90	95	.1 point for every % over 90
Years of plants growth to market 36"-48" *	5	3	.5 point for every 6 months harvesting before 6 years
% of plants reaching 36"-48" market class at harvest	90	95	.1 point for every % point over 90
Number of plants per 1000 sq. ft.	125	140	.035 point for every plant over 125-not to exceed 140 plants/1000 sq. ft.
% Blemish free trees (free of insect, disease, and mech. injury)	90	95	.1 point for every plant over 125-not to exceed 140 plants/1000 sq. ft.
Color intensity	Good (90)	Excellent (100)	.05 point for every point over 90
% Conforming to AAN Standard	80	90	.05 point for every % over 80

Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs, American Arborvitae,
Thuja occidentalis

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land averages \$98 per 1000 sq. ft.
3. Cost of labor chargeable to this crop, averages \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - average 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs
American Arborvitae, *Thuja occidentalis*

Date Started _____ Ended _____
 Genus _____ Species _____
 Total Receipts _____
 Total Expenses _____
 Labor-Management Income _____
 $(x - y = z)$
 Income/1000 sq. ft. _____
 $(z \div a) \times 1000$

Poor	Average	Superior
80%	90%	100%
% Marketed		
7	5	3
Years of growth until marketed		
85%	90%	95%
% of plants reaching 36-48" grade at harvest		
110	125	140
No. plants per 1000 sq. ft.		
Poor	Good	Excellent
Symmetrical branching		
80%	90%	95%
% Blemish free		
70%	80%	90%
% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions
which limited the production
and income:

Practices and conditions which
contributed to superior efficiency:

Approved Practices - Field Grown B&B Evergreen Shrubs
Spreading Yew, *Taxus cuspidata*

PRACTICE

REFERENCE

- | | |
|--|------------------------------|
| 1. Block planning, species selection, site and soil selection, and crop rotation | P. 35-43,
105-106,
203 |
| 2. Soil preparation | P. 107-109 |
| 3. Lining out and planting | P. 109-112,
130 |
| 4. Watering | P. 112 |
| 5. Fertilizing | P. 114-117 |
| 6. Pest control (weeds, insects, and disease) | P. 121-127 |
| 7. Pruning, supporting, and root pruning | P. 117-121 |
| 8. Digging | P. 134-138 |
| 9. Grading and market preparation | P. 139-141,
178-187 |

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

B&B Evergreen Shrubs,
Spreading Yew, *Taxus cuspidata*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 24"-36" sheared plant	5 125	3 140
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

E-97

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
R&B Ever-green Shrubs Spreading Yew Taxus cuspidata	a. % Marketed	90%	95%
	b. Years of plants growth to market (24"-36") *	5	3
	c. % of plants reaching 24"-36" spread at harvest, sheared	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free trees (free of insects, disease, and mech. injury)	90%	95%
	f. Color intensity	Good (90)	Excellent (100)
	g. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the field

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every 1% point over 90
Years of plants growth to market (24"-36") *	5	3	.5 point for every 6 months harvesting before 5 years
% of plants reaching 24"-36" spread at harvest, sheared	90%	95%	.1 point for every % point over 90
Number of plants per 1000 sq. ft.	125	140	.035 point for every plant over 125-not to exceed 140 plants/1000 sq. ft.
% Blemish free trees (free of insects, disease, and mech. injury)	90%	95%	.1 point for every % point over 90
Color intensity	Good (90)	Excellent (100)	.05 point for every point over 90
% Conforming to AAN Standard	80%	90%	.05 point for every % point over 80

Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs, Spreading Yew,
Taxus cuspidata

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs
Spreading Yew, *Taxus cuspidata*

Date Started _____ Ended _____
 Genus _____ Species _____
 Total Receipts _____ x
 Total Expenses _____ y
 Labor-Management Income _____ z
 $(x - y = z)$
 Income/1000 sq. ft. _____
 $(z \div a) \times 1000$

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	7	5	3
	Years of growth until marketed		
3.	85%	90%	95%
	% Of plants reaching 24-36" grade at harvest		
4.	110	140	125
	No. plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical branching		
6.	80%	90%	95%
	% Blemish free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.



Practices and/or conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B Evergreen Shrubs
Pfitzer Juniper, *Juniperus chinensis*

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest Control (weeds, insects, and disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference; NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B Evergreen Shrubs,
Pfitzer Juniper, *Juniperus chinensis*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 24-30" sheared plant	4	3
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. Intense color	Good	Excellent
7. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B Ever- green Shrubs Pfitzer Juniper Juniperus Chinensis	a. % Marketed	90%	95%
	b. Years of plants growth to market 24"-30" size *	4	3
	c. % of plants reaching 24"-30", sheared	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free trees (free of insects, disease and mech. injury)	90%	95%
	f. Color intensity	Good (90)	Excellent (100)
	g. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the field.

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Marketed	90%	95%	.1 point for every % point over 90
Years of plants growth to market 24"-30" size *	4	3	.5 point for every 6 months harvesting before the 5 years
% of plants reaching 24"-30", sheared	90%	95%	.1 point for every % point over 90
Number of plants per 1000 sq. ft.	125	140	.035 point for every plant over 125-not to exceed 140 plants/1000 sq. ft.
% Blemish free trees (free of insects, disease and mech. injury)	90%	95%	.1 point for every % point over 90
Color intensity	Good (90)	Excellent (100)	.05 point for every point over 90
Conforming to AAN standard	80%	90%	.05 point for every % point over 80

Plant growth must include age of liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B Evergreen Shrubs,
Pfitzer Juniper, *Juniperus chinensis*

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B Evergreen Shrubs
Pfitzer Juniper, *Juniperus chinensis*

Name _____ Date started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. Ft. used _____ a Total Expenses _____ y
 No. sold B&B _____ b Labor-Management Income _____ z
 No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
 $(b \div a) \times 1000$ $(z \div a) \times 1000$

	Poor	Average	Superior
1.	80%	90% % Marketed	100%
2.	5	4 Years of growth until marketed	3
3.	85%	90% % of Plants reaching 24"-30" spread at harvest, sheared	95%
4.	110	125 No. plants per 1000 sq. ft.	140
5.	Poor	Good Symmetrical branching	Excellent
6.	80%	90% % Blemish free	95%
7.	Poor	Good Color Intensity	Excellent
8.	70%	90% % Conforming to AAN Standard	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

227

Practices and/or conditions
which limited the production
and income:

Practices and conditions which contri-
buted to superior efficiency:

Approved Practices - Field Grown B&B and Bare Root
Deciduous Shrub Dwarf Burning Bush, *Euonymus alatus compacta*

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 177-187

Reference; NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
 Field Grown B&B and Bare Root Deciduous Shrub
 Dwarf Burning Bush, *Euonymus alatus compacta*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 30"-36" plant	4	3
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Shrub Burning Bush Dwarf Eynonymus alatus compacta	a. % Marketed	90%	95%
	b. Years of plants growth to market a 30"-36" plant *	4	3
	c. % of crop reaching 30"-36"	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. Blemish free (free of insect, disease, and mech. damage)	90%	95%
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus the years of growth in the field

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 30"-36" plant *	4	3	.5 point for every 6 months harvested before 4 years
% of crop reaching 30"-36"	90%	95%	.1 point for every % point over 90
Number of plants per 1000 sq. ft.	125	140	.035 point for every plant/1000 sq. ft. over 125 not to exceed 140 plants/1000 sq. ft.
Blemish free (free of insect, disease, and mech. damage)	90%	95%	.1 point for every % point over 90%
% Conforming to AAN Standard	80%	90%	.05 point for every % point over 90%

*Plant growth must include age of liner plus the years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrubs,
Dwarf Burning Bush, *Euonymus alatus compacta*

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost--about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrubs,
Dwarf Burning Bush, *Euonymus alata compacta*

Name _____ Date Started _____ Ended _____

School _____ Genus _____ Species _____

County _____ Total Receipts _____ x

Sq. ft. used _____ a Total Expenses _____ y

No. sold B&B _____ b Labor-Management Income _____ z
(x - y = z)

No. sold Bare Root _____

No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
(a ÷ b) x 1000 (z ÷ a) x 1000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	5	4	3
	Years of growth until marketed at 30-36" size		
3.	85%	90%	95%
	% of plants reaching 30-36" grade at harvest		
4.	110	125	140
	No. plants per 100 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical branching		
6.	80%	90%	95%
	% Blemish free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B or Bare Root Deciduous Shrub
Forsythia, Forsythia Intermedia spectabilis

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-110
4. Watering	P. 112
5. Fertilizing	P. 114
6. Pest control (weeds, insects, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Market preparation	P. 171-185

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B and Bare Root Deciduous Shrub,
Forsythia, Forsythia intermedia spectabilis

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 5'-6' plant	5	3
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min..Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Shrubs Forsythia Forsythia intermedia spectabilis	a. % Marketed	90%	95%
	b. Years of plants growth to to market a 5'-6' plant *	4	3
	c. % of crop reaching a 4'-6' height or better	90%	95%
	d. Number of plants per 1000	125	140
	e. % blemish free shrubs	90%	95%
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liners and years of growth in the field.

Efficiency Factors	Min..Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
Marketed	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 5'-6' plant *	4	3	.5 points for every 6 months harvesting before the 4 years
% of crop reaching a 4'-6' height or better	90%	95%	.1 point for every % point over 90%
Number of plants per 1000	125	140	.035 point for every plant/1000 sq. ft. over 125- not to exceed 150 plants/1000 sq. ft.
blemish free shrubs	90%	95%	.1 point for every % point over 90%
Conforming to AAN standard	80%	90%	.05 point for every % point over 80%

Plant growth must include age of liners and years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrub, Forsythia,
Forsythia intermedia spectabilis

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrub,
 Forsythia, Forsythia intermedia spectabilis

Name _____ Date Started _____ Ended _____

School _____ Genus _____ Species _____

County _____ Total Receipts _____

Sq. ft. used _____ a Total Expenses _____ y

No. sold B&B _____ b Labor-Management Income _____ z
 (x - y = z)

No. sold Bare Root _____ c

No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
 $[(b + c) \div a] \times 1000$ $(z \div a) \times 1000$

	Poor	Average	Superior
1.	80%	90% % Marketed	100%
2.	5	4	3
	Years of growth until marketed at 5-6' height		
3.	85%	90%	95%
	% of plants reaching 5-6' grade at harvest		
4.	110	125	140
	No. plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

Practices and conditions which contributed to the superior efficiency:

Approved Practices - Field Grown B&B and Bare Root Deciduous Shrubs
Lilac, Syringa vulgaris

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insects, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B and Bare Root Deciduous Shrub,
Syringa vulgaris

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 4'-5' plant	5	4
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Shrubs Lilac Syringa vulgaris	a. % Marketed	90%	95%
	b. Years of plants growth	5	4
	c. % of crop reaching a 4'-5' height	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free shrubs (free of insects, disease, and mech. injury)	90%	95%
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liners plus years of growth in the field

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
% Marketed	90%	95%	.1 point for every % of 90%
Years of plants growth	5	4	.5 point for every 6 months harvested before the 5 years
% of crop reaching a 4'-5' height	90%	95%	.1 point for every % point above 90%
Number of plants per 1000 sq. ft.	125	140	.035 point for every plant/1000 sq. ft. over 125- not to exceed 140 plants/1000 sq. ft.
% Blemish free shrubs (free of insects, disease, and mech. injury)	90%	95%	.1 point for every % point above 90%
% Conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

Plant growth must include age of liners plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrub,
Lilac, *Syringa vulgaris*

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrubs
Lilac, Syringa vulgaris

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. Ft. used _____ a Total Expenses _____ y
 No. sold B&B _____ b Labor-Mgmt. Income _____ z
 (x - y = z)
 No. sold Bare Root _____ c
 No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
 (b + c ÷ a) x 1000 (z ÷ a) x 1000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	6	5	4
	Years of growth until marketed at 4-5' height		
3.	85%	90%	95%
	% of Plants reaching 4-5' grade at harvest		
4.	110	125	140
	No. Plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical branching		
6.	80%	90%	95%
	% Blemish free		
7.	70%	80%	90%
	% Conforming to AAN standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Crown B&B and Bare Root Deciduous Shrubs
Mockorange, *virginalis*

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
 Field Grown B&B and Bare Root Deciduous Shrubs
 Mockorange, *Philadelphus virginalis*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 4'-5' plant	5	4
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

E-127

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Shrubs Mockorange Philadelphus virginalis	a. % Marketed	90%	95%
	b. Years of plants growth to market a 4'-5' plant *	5	4
	c. % of crop reaching a 4'-5' height	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free shrubs (free of insect, disease and mech. injury)	90%	95%
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liners plus years of growth in the fi

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
a. % Marketed	90%	95%	.1 point for every % point over 90%
b. Years of plants growth to market a 4'-5' plant *	5	4	.5 point for every 6 month harvested before the 5 years
c. % of crop reaching a 4'-5' height	90%	95%	.1 point for every % point above 90%
d. Number of plants per 1000 sq. ft.	125	140	.035 point for every plants/1000 sq. ft. over 125- not to exceed 140 plants/1000 sq. ft.
e. % Blemish free shrubs (free of insect, disease and mech. injury)	90%	95%	.1 point for every % point above 90%
f. % Conforming to AAN Standard	80%	90%	.05 point for every % point above 80%

* Plant growth must include age of liners plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrub,
Mockorange, *Philadelphus, virginalis*

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrubs
Mockorange, *Philadelphus virginalis*

Name _____ Date Started _____ Ended _____

School _____ Genus _____ Species _____

County _____ Total Receipts _____ x

Sq. ft. used _____ a Total Expenses _____ y

No. sold B&B _____ b Labor-Management Income _____ z
(x - y = z)

No. sold Bare Root _____ c

No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
[(b + c) ÷ a] x 1000 (z ÷ a) x 1000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	6	5	4
	Years of growth until marketed at 4-5' height		
3.	85%	90%	95%
	% of plants reaching 4-5' grade at harvest		
4.	110	125	140
	No. plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and/or conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Field Grown B&B and Bare Root Deciduous Shrubs
Viburnum, Viburnum sieboldi

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Block planning, species selection, site and soil selection, and crop rotation	P. 35-43, 105-106, 203
2. Soil preparation	P. 107-109
3. Lining out and planting	P. 109-112, 130
4. Watering	P. 112
5. Fertilizing	P. 114-117
6. Pest control (weeds, insect, disease)	P. 121-127
7. Pruning, supporting, and root pruning	P. 117-121
8. Digging	P. 134-138
9. Grading and market preparation	P. 139-141, 178-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency

Field Grown B&B and Bare Root Deciduous Shrub,
Viburnum, Viburnum sieboldi

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of growth to market a 3'-4' plant	5	4
3. No. of plants per 1000 sq. ft.	125	140
4. Dense and symmetrical growth	Good	Excellent
5. % Blemish free	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Field Grown B&B and Bare Root Deciduous Shrub Viburnum, Viburnum sieboldi	a. % Marketed	90%	95%
	b. Years of plants growth to market a 3'-4' plant *	5	4
	c. % Crop reaching a 3'-4' height	90%	95%
	d. Number of plants per 1000 sq. ft.	125	140
	e. % Blemish free shrubs (free of insect, disease, and mech. injury)	90%	95%
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of the liner plus years of growth in the

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Years of plants growth to market a 3'-4' plant *	5	4	.52 point for every 6 months harvested before 5 years
% Crop reaching a 3'-4' height	90%	95%	.12 points for every % point above 90%
Number of plants per 1000 sq. ft.	125	140	.015 point for every plant/1000 sq. ft. over 125-not to exceed 140 plants/1000 sq. ft.
% Blemish free shrubs (free of insect, disease, and mech. injury)	90%	95%	.1 point for every % point over 90%
% Conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

Plant growth must include age of the liner plus years of growth in the field.

Cost Accounting - Nursery Production
Field Grown B&B and Bare Root Deciduous Shrub,
Viburnum, Viburnum sieboldi

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of land per 1000 sq. ft.
3. Cost of labor chargeable to this crop, about \$167 per 1000 sq. ft.
4. Overhead (supplies, equipment) per 1000 sq. ft.
5. Marketing cost - about 20% of sum of all other costs.

Analysis of Field Grown B&B and Bare Root Deciduous Shrubs
 Viburnum, Viburnum sieboldi

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. ft. used _____ a Total Expenses _____ y
 No. sold B&B _____ b Labor-Management Income _____ z
 (x - y = z)
 No. sold Bare Root _____ c
 No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
 $[(b + c) \div a] \times 1000$ $(z \div a) \times 1000$

	Poor	Average	Superior
1.	80%	90% % Marketed	100%
2.	6	5	4
	Years of growth until marketed at 3-4' height		
3.	85%	90%	95%
	Percent of plants reaching 3-4' grade at harvest		
4.	110	125	140
	No. plants per 1000 sq. ft.		
5.	Poor	Good Symmetrical Branching	Excellent
6.	80%	90% % Blemish free	95%
7.	70%	80%	90%
	% Confirming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers. 1974

264
E-137

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Revised)
1974

NURSERY PRODUCTION - CONTAINER GROWN PLANTS	E 139-186
Red Leaf Japanese Maple	E 142-146
Chinese Wisteria	E 147-152
Weigela	E 153-158
Dwarf Pfitzer Juniper	E 159-163
Spreading Cotoneaster	E 164-169
Deciduous and Evergreen Groundcovers	E 170-175
Deciduous and Evergreen Vines	E 176-181
Herbaceous Perennial Flowers	E 182-188

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheets included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures, are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

PRODUCTION GOALS:	Potted Chrysanthemum		ENTERPRISE	
	Local Efficiency Standards Average	Superior	Student Goal	Student Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90%	95%	95%	92%

* Optimum number

Approved Practices - Container Grown Plants
Red Leaf Japanese Maple, *Acer palmatum atropurpureum*

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Nursery Production, Container Grown, Red Leaf Japanese Maple, *Acer
palmatum atropurpureum*

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market an 18"-24" plant	4	3
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free trees	90%	95%
6. % conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Deciduous Plants 2 gal. containers Red Leaf Japanese Maple Acer palmatum atropurpureum	a. % Marketed	90%	95%
	b. Years of plant growth to market a 18-24" plant (including container height)*	4 yrs.	3 yrs.
	c. % of crop reaching 18-24" height including container	90%	95%
	d. Container plants per 1000 sq. ft.	250	275
	e. % Unblemished (free of insects disease and mech. injury)	90%	95%
	f. % conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the container

270

271

E-144

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90
Years of plant growth to market a 18-24" plant (including container height)*	4 yrs.	3 yrs.	.5 point for every year of harvest under 3 yrs.
% of crop reaching 18-24" height including container	90%	95%	.1 point for every % point over 90
Container plants per 1000 sq. ft.	250	275	.02 point/plant over 250 plants-not to exceed 275 plants/1000 sq. ft.
% Unblemished (free of insects disease and mech. injury)	90%	95%	.1 point for every % point over 90
% conforming to AAN Standard	80%	90%	.05 point for every 1% over 80%

Plant growth must include age of liner plus years of growth in the container

270

271

Cost Accounting - Nursery Production
Container Grown Plants, Red Japanese Maple
Acer palmatum atropurpureum

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of container.
3. Cost of growing medium, about \$14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Red Japanese Maple *Acer palmatum atropurpureum*

Name _____	Date Started _____ Ended _____
School _____	Genus _____ Species _____
County _____	Total Receipts _____ x
Sq. ft. used _____ a	Total Expenses _____ y
No. sold _____ b	Labor-Mgmt. Income _____ z (x - y = z)
No. per 1,000 sq. ft. _____ (b ÷ a) x 1000	Income/1,000 sq. ft. _____ (z - a) x 1,000

	Average	Superior
1.	90% % Marketed	100%
2.	4 yrs.	3 yrs.
	Years of growth until marketed at 18"-24" height	
3.	90%	95%
	% of plants reaching 18"-24" grade at harvest	
4.	250	275
	No. plants per 1,000 sq. ft.	
5.	Good Symmetrical branching	Excellent
6.	90%	95%
	% Blemish free	
7.	80%	90%
	% Conforming to AAN Standard	

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited reproduction and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Container Grown Plants
Chinese Wisteria, *Wisteria sinensis*

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Nursery Production, Container Grown, Chinese Wisteria,
Wisteria sinensis

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market an 18"-24" plant	3	2
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free plant	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Deciduous Plants 2 gal. containers Chinese Wisteria Wisteria sinensis	a. % Marketed	90%	95%
	b. Years of plant growth to market at 18"-24" *	3 yrs.	2 yrs.
	c. % of crop reaching 18'24" height at market time	90	95
	d. Container plants per 1000 sq. ft.	250	275
	e. % Unblemished (free of insect, disease and mechanical injury)	90%	95%
	f. % conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the container

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90
Years of plant growth to market at 18"-24" *	3 yrs.	2 yrs.	.5 point for every year of harvest under 2 yrs.
% of crop reaching 18'24" height at market time	90	95	.1 point for every % point over 90
Container plants per 1000 sq. ft.	250	275	.02 point/plant over 250 plants- not to exceed 275 plants/1000 sq. ft.
% Unblemished (free of insect, disease and mechanical injury)	90%	95%	.1 point for every % point over 90
% conforming to AAN Standard	80%	90%	.05 point for every 1% over 80%

Plant growth must include age of liner plus years of growth in the container.

276

277

Cost Accounting - Nursery Production
Container Grown Plants, Chinese Wisteria, *Wisteria sinensis*

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of container.
3. Cost of growing medium, about \$14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Chinese Wisteria, *Wisteria sinensis*

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. ft. used _____ a Total Expenses _____ y
 No. sold _____ b Labor-Mgmt. Income _____ z
 (x - y = z)
 No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
 (b ÷ a) × 1000 (z ÷ a) × 1000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	4	3	2
	Years of Growth Until Marketed at 18-24" Height		
3.	85%	90%	95%
	% of Plants Reaching 18-24" Grade at Harvest		
4.	225	250	275
	No. Plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	70%	80%	90%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which
limited production and income:

Practices and conditions which
contributed to superior efficiency:

Approved Practices - Container Grown Plants
Weigela, Weigela florida

PRACTICE

REFERENCE

1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-187

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Nursery Production, Container Grown, Weigela,
Weigela florida

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to marketing an 18"-24" plant	3	2
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free shrubs	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
E-155 Deciduous Plants 2 gal. containers Weigela Weigela florida	a. % Marketed	90%	95%
	b. Years of plant growth to market 18"-24" including container height *	3 yrs.	2 yrs.
	c. % of crop reaching 18"-24" height at market time	90	95
	d. Container plants per 1000 sq. ft.	250	275
	e. % Unblemished (free of insect, disease, and mech. injury)	90	95
	f. % Conforming to AAN Standard	80%	90%

* Plant growth must include age of liner plus years of growth in the container

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Marketed	90%	95%	.1 point for every % point over 90
Years of plant growth market 18"-24" including container height *	3 yrs.	2 yrs.	.5 points for every month of harvest under 2 yrs.
% of crop reaching 18"-24" height at market time	90	95	.1 point for every % point over 90
Number of container plants per 1000 sq. ft.	250	275	.02 points/plant over 250 plants- not to exceed 275 plants/1000 sq. ft.
Percentage of unblemished (free of insect, disease, and mech. injury)	90	95	.1 point for every % point over 90
Conforming to U.S. Standard	80%	90%	.05 point for every 1% over 80%

Plant growth must include age of liner plus years of growth in the container

Cost Accounting - Nursery Production
Container Grown Plants, Weigela, Weigela florida

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of containers.
3. Cost of growing medium about \$14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Container Grown Plants
Analysis of Weigela, Weigela florida

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. ft. used _____ a Total Expenses _____ y
 No. sold _____ b Labor-Mgmt. Income _____ z
 (x - y = z)
 No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
 (b ÷ a) × 1000 (z ÷ a) × 1,000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	4	3	2
	Years of Growth Until Marketed at 18-24" Height		
3.	85%	90%	95%
	% of Plants Reading 18-24" Grade at Harvest		
4.	225	250	275
	No. Plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Container Grown
Dwarf Pfitzer Juniper, *Juniperus chinensis pfitzeriana compacta*

<u>PRACTICE</u>	<u>REFERENCE</u>
1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-169
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU 1971

Goals Stated in Relation to Efficiency
Nursery Production, Container Grown Dwarf Pfitzer Juniper,
Juniperus chinensis pfitzeriana compacta

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market an 18"-24" plant	3	2
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free shrubs	90%	95%
6. % Conforming to AAN Standard	80%	90%

Cost Accounting - Nursery Production
Container Grown Plants, Dwarf Pfitzer Juniper,
Juniperus chinensis pfitzeriana compacta

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of containers.
3. Cost of growing medium about \$14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Approved Practices - Container Grown Plants
Spreading Cotoneaster, *Cotoneaster divaricata*

<u>Practice</u>	<u>Reference</u>
1. Crop Planning, Rotation Schedule	P. 144-150, 164-169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated In Relation to Efficiency
Nursery Production, Container Grown Spreading Cotoneaster,
Cotoneaster divaricata

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market a plant with an 18" to 24" spread	3	2
3. No. of plants/1000 sq. ft.	250	275
4. Symmetrical branching	Good	Excellent
5. Blemish free shrubs	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	
Deciduous Plants 2 gal. containers Spreading Cotoneaster, Cotoneaster divaricata	a. % Marketed	90%	95%	.1 ove
	b. Years of plant growth to market 18-24" spread*	3 yrs.	2 yrs.	.5 har
	c. % of crop reaching 18-24" spread at market time	90%	95%	.1 ove
	d. Container plants per 1000 sq. ft.	250	275	.02 pla pla
	e. % Unblemished (free of insects, disease and mechanical injury)	90%	95%	.1 ove
	f. % Conforming to AAN Standard	80%	90%	.05 80%

* Plant growth must include age of liner plus years of growth in the co

Efficiency	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90
Years of plant growth to market 18-24" spread*	3 yrs.	2 yrs.	.5 point for every year of harvest under 2 years
% of crop reaching 18-24" spread at market time	90%	95%	.1 point for every % point over 90%
Container plants per 1000 sq. ft.	250	275	.02 point/plant over 250 plants - not to exceed 275 plants/1000 sq. ft.
% Unblemished (free of insects, disease and mechanical injury)	90%	95%	.1 point for every % point over 90%
% Conforming to AAN Standard	80%	90%	.05 point for every 1% over 80%

Plant growth must include age of liner plus years of growth in the container.

Cost Accounting - Nursery Production
Container Grown Plants, Spreading Cotoneaster,
Cotoneaster divaricata

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of containers.
3. Cost of growing medium about \$14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Spreading Cotoneaster, *Cotoneaster divaricata*

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. ft. used _____ a Total Expenses _____ y
 No. sold _____ b Labor-Mgmt. Income _____ z
 (x - y = z)
 No. per 1000 sq. ft. _____ Income/1,000 sq. ft. _____
 (b ÷ a) x 1000 (z ÷ a) x 1,000

	Poor	Average	Superior
1.	80%	90% % Marketed	100%
2.	4 yrs.	3 yrs.	2 yrs.
	Years of Growth Until Marketed at 18-24" Spread		
3.	85%	90%	95%
	% of Plants Reaching 18-24" Spread Grade at Harvest		
4.	225	250	275
	No. Plants per 1000 sq. ft.		
5.	Poor	Good Symmetrical Branching	Excellent
6.	80%	90% % Blemish Free	95%
7.	70%	80% % Conforming to AAN Standard	90%

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which
limited the production and income:

Practices and conditions which
contributed to superior efficiency:

Approved Practices - Container Grown Plants
Deciduous and Evergreen Ground Covers in 6" Cans
Carpet Bugle, Rockspray Cotoneaster, English Ivy,
Creeping Juniper, Japanese Spurge

<u>Practice</u>	<u>Reference</u>
1. Crop Planning, Rotation Schedule	P. 144-150, 169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
 Container Grown Deciduous and Evergreen Ground Covers in 6" Cans

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market a 12-15" plant	1	1
3. No. of plants/1000 sq. ft.	2750	3000
4. Symmetrical Form	Good	Excellent
5. Blemish Free Plants	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Container Grown Deciduous and Evergreen Ground Cover Plants in 6" Cans	a. % Marketed	90%	95%
	b. Years of plant growth to market at 12-15 "	2 yrs.	1 yr.
	c. % of crop reaching 12-15" height at market time	90%	95%
	d. Container plants per 1000 sq. ft.	2750	3000
	e. % Unblemished (free of insect, disease, and mechanical injury)	90%	95%
	f. % of plants conforming to AAN Standard	80%	90%

E-172

302

303

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
Years of plant growth to market at 12-15"	2 yrs.	1 yr.	.5 point for every month of harvest under 1 year
% of crop reaching 12-15" height at market time	90%	95%	.1 point for every % point over 90%
Container plants per 1000 sq. ft.	2750	3000	.01 point/plant over 2750 plants - not to exceed 3000 plants/1000 sq. ft.
% Unblemished (free of insect, disease, and mechanical injury)	90%	95%	.1 point for every % point over 90%
% of plants conforming to AAN Standard	80%	90%	.05 point for every % point over 80%

302

303

Cost Accounting - Nursery Production
Container Grown Deciduous and Evergreen Ground Covers in 6" Cans,
Carpet Bugle, Rockspray Cotoneaster, English Ivy,
Creeping Juniper, Japanese Spurge

1. Cost of lining out stock from 5¢ to 35¢ per plants.
2. Cost of containers.
3. Cost of growing medium about \$14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supples, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Deciduous and Evergreen Groundcovers in 6" Cans

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. ft. used _____ a Total Expenses _____ y
 No. sold _____ b Labor-Mgmt. Income _____ z
 (x - y = z)
 No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
 (b ÷ a) x 1000 (z ÷ a) x 1,000

	Poor	Average	Superior
1.	80%	90% % Marketed	100%
2.	3 yrs.	2 yrs.	1 yr.
	Years of Plant Growth to Market at 18-24" Height		
3.	70%	80%	90%
	% of crop Reaching 18 to 24" Grade at Harvest		
4.	2500	2750	3000
	No. Plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which
limited the production and income:

Practices and conditions which
contributed to superior efficiency:

Approved Practices - Container Grown
Deciduous and Evergreen Vines in 6" Cans
European Bittersweet, Clematis, Wintercreeper Euonymus, English Ivy

<u>Practice</u>	<u>Reference</u>
1. Crop Planning, Rotation Schedule	P. 144-150, 169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
 Container Grown Plants, Deciduous and Evergreen Vines in 6" Cans

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market a 12" to 15" plant	2	1
3. No. of plants/1000 sq. ft.	2750	3000
4. Symmetrical Form	Good	Excellent
5. Blemish free plants	90%	95%
6. % Conforming to AAN Standard	80%	90%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Container Grown Deciduous and Evergreen Ground Cover Plants in 6" Cans	a. % Marketed	90%	95%
	b. Years of plant growth to market at 12-15"	2 yrs.	1 yr.
	c. % of crop reaching 18-24" height at market time	90%	95%
	d. Container plants per 1000 sq. ft.	2750	3000
	e. % Unblemished (free of disease, insect, and mechanical injury)	90%	95%
	f. % of crop conforming to AAN Standard	80%	90%

E-178

309

310

Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
a. % Marketed	90%	95%	.1 point for every % point over 90%
b. Years of plant growth to market at 12-15"	2 yrs.	1 yr.	.5 points for every month of harvest under 1 year
c. % of crop reaching 18-24" height at market time	90%	95%	.1 point for every % point over 90%
d. Container plants per 1000 sq. ft.	2750	3000	.01 point/plant over 2750 plants not to exceed 3000 plants/1000 sq. ft.
e. % Unblemished (free of disease, insect, and mechanical injury)	90%	95%	.1 point for every % point over 90%
f. % of crop conforming to AAN Standard	80%	90%	.05 point for every % point over 90%

309

310

Cost Accounting - Nursery Production
Container Grown Deciduous and Evergreen Vines in 6" Cans
European Bittersweet, Clematis, Wintercreeper Euonymus, English Ivy

1. Cost of lining out stock from 5¢ to 35¢ per plant. Use actual price paid.
2. Cost of container.
3. Cost of growing medium about \$14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft. .
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Deciduous and Evergreen Vines in 6" Cans

Name _____ Date Started _____ Ended _____

School _____ Genus _____ Species _____

County _____ Total Receipts _____ x

Sq. ft. used _____ a Total Expenses _____ y

No. sold _____ b Labor-Mgmt. Income _____ z

(x - y = z)

No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____

(b ÷ a) x 1000 (z ÷ a) x 1,000

	Poor	Average	Superior
1.	80%	90%	100%
	% Marketed		
2.	3 yrs.	2 yrs.	1 yr.
	Years of Growth Until Marketed at 18-24" Height		
3.	70%	80%	90%
	% of Crop Conforming to 18-24" Height Grade at Harvest		
4.	2500	2750	3000
	No. Plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		
7.	70%	80%	90%
	% Conforming to AAN Standard		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which
limited the production and income:

Practices and conditions which
contributed to superior efficiency:

Approved Practices - Container Grown Plants
Herbaceous Perennial Flowers in 6" Cans
Garden Chrysanthemum, Delphinium, Daylily, Peony, Oriental Poppy

<u>Practice</u>	<u>Reference</u>
1. Crop Planning, Rotation Schedule	P. 144-150, 169
2. Container Selection	P. 145-147
3. Soil Preparation	P. 150-153
4. Planting	P. 153-154
5. Staking	P. 117-120
6. Watering	P. 154-158
7. Pruning	P. 160-161
8. Fertilizing	P. 158-160
9. Pest Control	P. 161-162
10. Environmental Control	P. 47
11. Winter Protection	P. 162-164
12. Grading and Market Preparation	P. 164, 177-178, 184-188

Reference: NURSERY PRODUCTION, A STUDENT HANDBOOK, PSU, 1971

Goals Stated in Relation to Efficiency
 Container Grown Herbaceous Perennial Flowers in 6" Cans

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. % Marketed	90%	95%
2. Years of plant growth to market a 12" to 15" plant	1	1
3. No. of plants/1000 sq. ft.	2750	3000
4. Symmetrical Form	Good	Excellent
5. Blemish free plants	90%	95%

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	
Herbaceous Perennial Flowers in 6" Cans	a. % Marketed	90%	95%	.1 p ove
	b. % of crop reaching 12-15" height at market time	90%	95%	.1 p ove
	c. Years of plant growth to market at 12-15"	1 yr.	1 yr.	.1 p hary
	d. Container plants per 1000 sq. ft.	2750	3000	.01 plan plan
	e. % Unblemished (free of insect, disease, and mechanical injury)	90%	95%	.1 p ove

E-184

316

317

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
% Marketed	90%	95%	.1 point for every % point over 90%
% of crop reaching 12-15" height at market time	90%	95%	.1 point for every % point over 90%
Years of plant growth to market at 12-15"	1 yr.	1 yr.	.1 point for every month of harvest under 1 yr.
Container plants per 1000 sq. ft.	2750	3000	.01 point/plant over 250 plants - not to exceed 275 plants/1000 sq. ft.
% Unblemished (free of insect, disease, and mechanical injury)	90%	95%	.1 point for every % point over 90%

314

317

Cost Accounting - Nursery Production
Container Grown Herbaceous Perennial Flowers in 6" Cans
Garden Chrysanthemum, Delphinium, Daylily, Peony, Oriental Poppy

1. Cost of lining out stock from 10¢ to 35¢ per plant.
2. Cost of container.
3. Cost of growing medium about \$14 per cubic yard.
4. Cost of land per 1000 sq. ft.
5. Cost of labor chargeable to this crop.
6. Overhead (supplies, equipment) per 1000 sq. ft.
7. Marketing cost - about 20% of sum of all other costs.

Analysis of Container Grown Plants
Herbaceous Perennial Flowers in 6" Cans

Name _____ Date Started _____ Ended _____
 School _____ Genus _____ Species _____
 County _____ Total Receipts _____ x
 Sq. ft. used _____ a Total Expenses _____ y
 No. sold _____ b Labor-Mgmt. Income _____ z
 (x - y = z)
 No. per 1000 sq. ft. _____ Income/1000 sq. ft. _____
 (b ÷ a) × 1000 (z ÷ a) × 1,000

	Poor	Average	Superior
1.	80%	90% % Marketed	100%
2.	2 yrs.	1 yr.	1 yr.
	Years of Growth to Reach 12-15" Height		
3.	70%	80%	90%
	of Crop Conforming to 12-15" Height Grade at Harvest		
4.	2500	2750	3000
	No. Plants per 1000 sq. ft.		
5.	Poor	Good	Excellent
	Symmetrical Branching		
6.	80%	90%	95%
	% Blemish Free		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Prepared by the Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agriculture Teachers.

Supervised Occupational Experience Record Forms
for
Ornamental Horticulture
(Preliminary)
1974

TURFGRASS MAINTENANCE, ESTABLISHMENT, PRODUCTION - F 1-28
Turfgrass Maintenance - Residential F 2-8
Golf Course Maintenance - Employee F 9-14
Turfgrass Establishment F 15-20
Sod Production F 21-26

To be used with any production, occupational or work
experience record book.

Department of Agricultural Education
The Pennsylvania State University
in cooperation with
Bureau of Vocational Education
Pennsylvania Department of Education

Using The Forms

The five record sheet included in this unit are intended to be used with any production, occupational or work experience record book for high school vocational agriculture programs.

Approved Practices gives specific references to production or service practices that are generally accepted in industry as giving superior results if appropriately applied. A particular business firm might use variations of some of these practices because of unusual local conditions. Students carrying out production projects should find these references especially helpful. Students in agricultural production or services work experience will find them useful guides to what will be expected of them on the job.

Goals are stated in relation to efficiency. They are drawn up on the basis of comparisons of superior achievement with average achievement. The goals given are considered realistic in terms of production enterprises or work experience in production or services occupations. Successful businesses rank somewhere between "average" and "superior" in their goals.

The Efficiency Factor form provides a means for giving a numerical score on goal achievement. It is equally applicable to production enterprises, production occupations or service occupations. The scores are used as one base for comparisons in the judging of record books in regional and state record book contests.

Cost Accounting record forms serve as a guide for calculating the costs and profit in a production enterprise or a production experience. These figures, together with production figures are used in the analysis of the enterprise.

The Employment Achievement form is used in place of the Cost Accounting form when the experiences involve employment in a service occupation rather than production occupation.

The Analysis form should be marked at the beginning of the experience program with a "G" to indicate the goal that a student has set for himself. The same scales are marked with an "A" to indicate actual achievement at the end of the experience program. The analysis sheet provides for an evaluation of the approved practices used and their relationship to production or service and income.

Example of the Use of Efficiency Factors and Production Goals

The Pennsylvania Agricultural Production Program Record Book provides space for the student to list appropriate efficiency factors for each productive enterprise. In the example below, the figures in the column "Local Efficiency Standards" will have been obtained through group study by the students with the help of the teacher. An analysis of records of similar enterprises completed in previous years by students in the same school will also serve as a guide.

Efficiency Factor	Potted Chrysanthemum		ENTERPRISE	
	Local Efficiency Standards Average	Local Efficiency Standards Superior	Student Goal	Student Achievement
Percent marketed	95%	100%	100%	97%
Number of 6" pots per 100 sq. ft. of bench space	75	100*	100	98
Number of blooms/6" pot	18	24	24	22
Percent of pots in 16" to 18" height range including pot marketed	90	95	95%	92%

*Optimum Number

Approved Practices
Turfgrass Maintenance - Residential

<u>Practice</u>	<u>Reference</u>
1. Mowing	P. 48-51
2. Soil Sampling	P. 38-39
3. Fertilizing	P. 39-48
4. Watering	P. 52-55
5. Dethatching	P. 51, 109-110
6. Aerating	P. 51-52, 97-98
7. Insect and Disease Control	P. 84-92
8. Weed Control	P. 55-83
9. Trimming and edging	P. 51
10. Resodding and Reseeding	P. 144-145

Reference: TURFGRASS, MAINTENANCE AND ESTABLISHMENT - A STUDENT
HANDBOOK, PSU, 1968

Goals Stated in Relation to Efficiency
Turfgrass Maintenance - Residential

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Profit or 1. Employer satisfaction	10%	15%
2. Maintain lawn height at 1 1/2 inches	remove 1/2"	remove 1/4"
3. Maintain weed-free	2% weeds	0% weeds
4. Maintain disease-free	medium	none
5. Maintain insect free	medium	none
6. Maintain good color	medium green	dark green
7. Maintain good density	medium dense	very dense
8. Maintain neat appearance	good	excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Turfgrass Maintenance - Residential	a. Profit <u>or</u> a. Employer Satisfaction	10% good (90)	15% excellent (100)
	b. Mowing rate per hour	4,000 sq. ft./hr.	5,000 sq. ft./hr.
	c. Material application per hour liquid (Knap Sack) granular (Broadcast spreader)	3,000 sq. ft./hr.	4,000 sq. ft./hr.
		8,000 sq. ft./hr.	10,000 sq. ft./hr.
	d. Trimming (Powered Equipment)	500 ft./hr.	700 ft./hr.
	e. Lawn Sweeping (with Lawn Sweeper Machine)	4,000 sq. ft./hr.	5,000 sq. ft./hr.

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Profit	10%	15%	.1 point for every % over 10%
Employer Satisfaction	good (90)	excellent (100)	.1 point for every point over 90%
Mowing rate per hour	4,000 sq. ft./hr.	5,000 sq. ft./hr.	.2 point for every 100 sq. ft. over 4,000 sq. ft.
Material application per hour liquid (Knap Sack)	3,000 sq. ft./hr.	4,000 sq. ft./hr.	.2 point for every 100 sq. ft. over 3,000 sq. ft.
granular (Broadcast spreader)	8,000 sq. ft./hr.	10,000 sq. ft./hr.	.5 point for every 1000 sq. ft. over 8,000
Trimming (Powered Equipment)	500 ft./hr.	700 ft./hr.	.5 point for every 100 sq. ft. over 500 sq. ft.
Lawn Sweeping (with Lawn Sweeper Machine)	4,000 sq. ft./hr.	5,000 sq. ft./hr.	.05 point for every 100 sq. ft. over 4,000 sq. ft.

Cost Accounting - Turfgrass Maintenance - Residential

1. Cost of supplies, fertilizer, herbicides, fungicides, insecticides, limestone. Charge or costs of quantities applied for 1000 sq. ft.
2. Equipment use charge - use hourly rate per machine based on depreciation rate and estimated total hours of use the machine will provide until replaced.
3. Wages, based on hourly rate. It could be estimated per 1000 sq. ft. for particular task.
4. Overhead - transportation, taxes, telephone, office services, etc.
5. Profit - difference between income and costs.

Employment Achievement

Turfgrass Maintenance, Residential - Employee

1. Personal Satisfaction (Do you enjoy the Work?)

Exc. _____ Good _____ Poor _____

2. Monetary Increases (After 3 to 6 Months)

Exc. _____ Good _____ Poor _____

3. Fringe Benefits (Insurance, Retirement, Other)

Exc. _____ Good _____ Poor _____

4. Opportunity for Advancement (In 1 To 5 Years)

Exc. _____ Good _____ Poor _____

5. Variety of educational experience according to students occupational goals

Exc. _____ Good _____ Poor _____

Analysis of Turfgrass Maintenance-Residential

Name _____ Number of Customers _____
 School _____ Name of employer _____
 County _____ Address _____
 Address _____
 _____ Total Receipts _____
 Date Started _____ Ended _____ Total Expenses _____
 Total Hours _____ Profit (x-y) _____

	Poor	Average	Superior
1.	5%	10%	15%
	Profit		
or			
1.	Poor	Good	Excellent
	Employer Satisfaction		
2.	Poor	Good	Excellent
	Maintenance of Lawn Height		
3.	Poor	Good	Excellent
	Pest Free (weeds, insects, diseases) Maintenance		
4.	Poor	Good	Excellent
	Maintenance of Good Color		
5.	Poor	Good	Excellent
	Maintenance of Density		
6.	Poor	Good	Excellent
	Maintenance of Heat Appearance		
7.	Poor	Good	Excellent
	Customer Satisfaction		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions that
limited achievement:

Practices and conditions which
contributed to superior achievement:

Approved Practices
Golf Course Maintenance - Employee

<u>Practice</u>	<u>Reference</u>
1. Whipping or Poling	P. 108
2. Mowing:	P. 106-198
Fairways	P. 106-107
Greens	P. 107-108
Tees	P. 107
Roughs	P. 106
3. Soil Sampling	P. 38-39
4. Fertilization	P. 104-105
5. Sand Traps	P. 112
6. Irrigation and Syringing	P. 110-111
7. Cap and T Marker Changing	P. 111-113
8. Dethatching	P. 109-110
9. Aerating	P. 108-109
10. Top Dressing	P. 109
11. Disease Control	P. 84-87
12. Insect Control	P. 87-92
13. Trimming and Edging	P. 51
14. Resodding and Reseeding	P. 144
15. Weed Control	P. 55-83

Reference: TURFGRASS MAINTENANCE AND ESTABLISHMENT - A STUDENT
HANDBOOK, PSU 1968.

Goals Stated in Relation to Efficiency
Golf Course Maintenance Employee

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Maintain grass heights		
Roughs	3" to 6"	
Fairways	1 3/4" to 2"	
Tees	1/2" to 1"	1/4" to 1/2"
Greens	none	3/16" to 5/16"
2. Wear distribution		
Cups changed	daily	twice daily
Ball marks and divits	weekly	daily repair
3. Sand trap raking	every four days	every two days
4. Trimming, collars, trap edges, walks, etc.	weekly	twice weekly
5. Free of insects, diseases and weeds	some	none
6. Good color and dense growth	good	excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Me Det
Golf Course Maintenance- Employee	a. Mowing, 18 holes per day*			
	(1) Rough	60 acres/day	80 acres/day	.5 po ove
	(2) Fairways	80 acres/day	100 acres/day	.5 po ove
	(3) Greens (riding m.)	4 hrs/18 holes	3 hrs/18 holes	.5 po les
	(4) Tees (hand m.)	4 hrs/18 holes	3 hrs/18 holes	.5 po les
	b. Material application (powered)			
	(1) liquid - greens	4 hrs/18 greens	3 hrs/18 greens	.5 po les
	- fairways	8 hrs/18 fairways	10 hrs/18 fairways	.5 po tha
	(2) granular - greens	5 hrs/18 greens	4 hrs/18 greens	.5 po tha
	-50 acre fairway	12 hrs.	8 hrs.	.5 po tha
	c. Topdressing/green	2 hrs.	1 hr.	.5 po les
	d. Aerating/green	60 minutes	45 minutes	.5 po les
	e. Cup, Tee marker changing, 18 holes	2 hrs.	1 1/2 hrs.	.5 po les
f. Trap raking, powered, 18 holes	6 hrs.	4 hrs.	.5 po tha	
g. Verticutting, slicing, spiking-per green, hand machine	30 minutes	20 minutes	.5 po les	

* Depending upon terrain and equipment.

Efficiency Factors	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method of Determining Score
Mowing, 18 holes per day*			
1) Rough	60 acres/day	80 acres/day	.5 point, every 10 acres over 60
2) Fairways	80 acres/day	100 acres/day	.5 point, every 10 acres over 80
3) Greens (riding m.)	4 hrs/18 holes	3 hrs/18 holes	.5 point, every 1/2 hr. less than 4
4) Tees (hand m.)	4 hrs/18 holes	3 hrs/18 holes	.5 point every 1/2 hr. less than 4
Material application (powered)			
1) liquid - greens	4 hrs/18 greens	3 hrs/18 greens	.5 point every 1/2 hr. less than 4
- fairways	8 hrs/18 fairways	10 hrs/18 fairways	.5 point every hour less than 8
2) granular - greens	5 hrs/18 greens	4 hrs/18 greens	.5 point every hour less than 12
-50 acre fairway	12 hrs.	8 hrs.	.5 point every hour less than 12
Topdressing/green	2 hrs.	1 hr.	.5 point every half hour less than 2
Watering/green	60 minutes	45 minutes	.5 point every 15 minutes less than 60
Cup, Tee marker changing, 18 holes	2 hrs.	1 1/2 hrs.	.5 point every 1/2 hour less than 2
Trap raking, powered, 18 holes	6 hrs.	4 hrs.	.5 point every hour less than 6
Verticutting, slicing, spiking-per green, hand machine	30 minutes	20 minutes	.5 point every 10 minutes less than 30

Train and equipment.

EMPLOYMENT ACHIEVEMENT
Golf Course Maintenance - Employee

1. Personal satisfaction (Do you enjoy the work?)

Exc. Good Poor

2. Monetary increases (After 3 to 6 months)

Exc. Good Poor

3. Fringe benefits (Insurance, retirement, other)

Exc. Good Poor

4. Opportunity for advancement (in 1 to 5 years)

Exc. Good Poor

5. Variety of educational experiences according to students occupational goals

Exc. Good Poor

Analysis of Golf Course Maintenance-Employee

Name _____ Date Started _____ Ended _____
 School _____ Total Hours _____
 County _____ Income _____
 Address _____ Employer _____

- | | Poor
Poor | Average
Good | Superior
Excellent |
|----|---|-----------------|-----------------------|
| 1. | Supervisor's Rating of Performance | | |
| | Greater than 6" | 3"
Roughs | 4" |
| 2. | Greater than 2" | | |
| 3. | Greater than 2" | 2"
Fairways | 1 3/4" |
| 4. | 1/4" | 1/2"
Tees | 3/4" |
| 5. | 5/16" | 1/4"
Greens | 3/16" |
| | <u>Amount of grass removed per mowing</u> | | |
| 6. | 0% | 2% | 5% |
| | Approximate % of area in weeds | | |
| 7. | Excellent | Good | Poor |
| | Turfgrass Density | | |
| 8. | None | Medium | Severe |
| | Insect and Disease Damage | | |
| 9. | Excellent | Good | Poor |
| | Neatness | | |

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions that limited achievement:

Practices and conditions which contributed to superior achievement:

Approved Practices
Turfgrass Establishment

<u>Practice</u>	<u>Reference</u>
1. Grading and drainage	P. 116-122
2. Soil testing	P. 38-39
3. Soil preparation, applying fertilizer and physical conditioners	P. 112-130
4. Species and cultivar selection	P. 132-136
5. Seeding	P. 130-132, 136-141
6. Sodding	P. 142
7. Sprigging, stolonizing, or plugging	P. 141-142
8. Care of New Grass	P. 143
9. Watering	P. 143
10. Mulching	P. 140-141
11. Renovation	P. 144-145
12. Pest Control (weeds, insects, diseases)	P. 55-92

Reference: TURFGRASS MAINTENANCE AND ESTABLISHMENT - A STUDENT
HANDBOOK, PSU 1968.

Goals Stated in Relation to Efficiency

Turfgrass Establishment

Efficiency Factors	Efficiency Standards	
	Average	Superior
1. Profit	10%	15%
2. Sod established in	4 weeks	3 weeks
3. Seeding established 3" high	6 weeks	5 weeks
4. Plugging established	6 weeks	4 weeks
5. Sprigging established	6 weeks	4 weeks
6. Turfgrass density	good	excellent
7. Customer satisfaction	good	excellent

Contest	Efficiency Factors	Min. Efficiency Level for Determining Score (Average)	Max. Efficiency Level for Determining Score (Superior)
Turfgrass Establishment	1. Percent Profit	10%	15%
	1. Sod established in:	4 weeks	3 weeks
	2. Seeding established in:	6 weeks	5 weeks
	3. Plugging established in:	6 weeks	4 weeks
	4. Sprigging established in:	6 weeks	4 weeks
	5. Turfgrass density	good (90)	excellent (100)
	6. Customer satisfaction	good (90)	excellent (100)

Efficiency Factors	Min. Efficiency Level for Determining Score (Average)	Max. Efficiency Level for Determining Score (Superior)	Method of Determining Score
Percent Profit	10%	15%	.2 points for each % over 10%
Sod established in:	4 weeks	3 weeks	.1 point for each day less than 28
Seeding established in:	6 weeks	5 weeks	.1 point for each day less than 35
Plugging established in:	6 weeks	4 weeks	.5 point for each day less than 28
Sprigging established in:	6 weeks	4 weeks	.5 point for each day less than 28
Turfgrass density	good (90)	excellent (100)	.1 point for rating each point over 90
Customer satisfaction	good (90)	excellent (100)	.1 point for rating each point above 90

340

341

Cost Accounting - Turfgrass Establishment

1. Cost of plant materials per 100 sq. ft.
 - (a) seed
 - (b) sod
 - (c) sprigs
 - (d) plugs
2. Cost of grading, machinery hourly rate, plus operator hourly rate, per 100 sq. ft.
3. Cost of supplies: fertilizer, limestone, straw mulch, soil hauled in etc. per 100 sq. ft.
4. Labor, other than grading machine operator.
5. Equipment use charge, hourly rate, (based on depreciation).
6. Overhead: transportation, telephone, office services, taxes, etc.
7. Range of usual charges:
 - sodding - 25¢ to 35¢/sq. ft.
 - seeding - 10¢ to 15¢/sq. ft.
 - plugging - 20¢ to 30¢/sq. ft.
 - sprigging - 20¢ to 30¢/sq. ft.

Analysis of Turfgrass Establishment

Name _____ Date Started _____ Ended _____

School _____ Total Hours _____

County _____ Number of Customers _____

Address _____ Total Receipts _____ x

_____ Total Expenses _____ y

Profit (x-y) _____

	Poor	Average	Superior
1.	5%	10%	15%
	Profit		
2.	3 wks.	4 wks.	5 wks.
	Sod Establishment-Weeks		
2.	5 wks.	6 wks.	7 wks.
	Seeding Established to 3" high-weeks		
2.	4 wks.	6 wks.	8 wks.
	Plugging Established-weeks		
2.	4 wks.	6 wks.	8 wks.
	Sprigging Established-weeks		
2.	excellent	good	poor
	Turfgrass Density		
3.		good	poor
	Customer Satisfaction		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.



Practices and conditions that limited achievement:

Practices and conditions that contributed to superior achievement:

Approved Practices
Sod Production

<u>Practice</u>	<u>Reference</u>
1. Site selection	--
2. Rotations	--
3. Soil testing, grading, preparation	B p. 38-39, 112-130
4. Crop selection	B p. 132-136
5. Seeding	B p. 130-132, 136-141
6. Fertilizing	B p. 39-48
7. Watering	B p. 52-55
8. Pest Control, weeds, insects, diseases	B p. 55-92
9. Mowing	B p. 48-51
10. Harvesting	A p. 124
11. Preparation for Market	A p. 124
12. Transportation	

Reference: A. - TURF MANAGEMENT, 1962, Musser, McGraw-Hill
B. - TURFGRASS MAINTENANCE AND ESTABLISHMENT. A
STUDENT HANDBOOK, PSU 1968.

Goals Stated in Relation to Efficiency

Sod Production

Efficiency Factors	Efficiency Standards	
	Average	Superior
Months of growth to market	24	18
Percent marketed	85	95
Percent marketed within specification for state certification	85	95

Contest	Efficiency Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)
Sod	a. Percent marketed	85	95
	b. Months of growth to market	24	18
	c. Percent marketed which meets specification for state certification	85	95

F-24

347

348

Factor	Min. Efficiency Level for Determining Score (average)	Max. Efficiency Level for Determining Score (superior)	Method for Determining Score
marketed	85	95	.075 point for each 1% over 85%
of growth to	24	18	2 points for each month less than 24
marketed which specification for certification	85	95	.075 point for each 1% over 85%

347

348

Cost Accounting - Sod Production

1. Land cost
2. Seed cost
3. Supplies
4. Labor
5. Equipment
6. Overhead
7. Marketing cost, (20% of production cost)

ANALYSIS OF SOG PRODUCTION

Name _____ Date Started _____ Ended _____

School _____ Variety _____

County _____ Total receipts _____ x
(including ending inventory)

No. of sq. ft. of space _____ a Total expenses _____ y
(including beginning inventory)

No. of sq. ft. harvested _____ Labor and management income _____ z
(x - y = z)

Income/1000 sq. ft. _____
a ÷ (a ÷ 1000)

	Poor	Average	Superior
1.	75	85	95
	Percent Marketed		
2.	30	24	18
	Months Required to Harvest		
3.	75	85	95
	Percent Meets Specification for State Certification		

Place a red "G" on each line scale at goal set. Place a red "A" on each line scale at efficiency achieved.

Practices and conditions which limited the production and income:

Practices and conditions which contributed to superior efficiency:

Prepared by The Department of Agricultural Education, The Pennsylvania State University, in cooperation with the Pennsylvania Department of Education and Pennsylvania Vocational Agricultural Teachers.

LANDSCAPE MAINTENANCE AND CONSTRUCTION MANUAL

Outline

Part I. Job Opportunities In Landscape Construction

- Landscape Worker
- Garden Center Worker
- Garden Center Salesman
- Landscape Foreman
- Park Foreman
- Landscape Contractor
- Garden Center Manager
- Grounds Superintendent

Part II. Landscape Maintenance

Chapter 1: Lawn Maintenance

- Weed Identification
- Turf Identification
- Cultural Practices

- pest control
- mowing, trimming, and edging
- fertilizing and liming
- aeration, dethatching, and verticutting
- irrigation
- renovation: seeding and vegetative
- soil conditioners

Chapter 2: Bed Maintenance (annual, perennial, ground cover)

- Plant Identification
- Cultural Practices

- thinning and transplanting
- fertilization
- renovation
- watering
- pest control
- soil conditioners and mulches

Chapter 3: Shrub Maintenance

- Plant Identification
- Cultural Practices

- pruning (thinning out, heading back, shearing and root pruning)
- fertilizing and liming
- soil conditioners and mulches
- pest control
- watering
- transplanting

Chapter 4: Tree Maintenance*

Plant Identification Cultural Practices

pruning (thinning out, heading back, root pruning)
 fertilizing and liming (punch bar, foliar, and tree injection)
 soil conditioners and mulches
 pest control (identification, materials available and safe
 application procedures)
 watering
 transplanting

*If any extensive tree work is to be done, the individual should
 have further training.

Chapter 5: Maintenance of Paved Areas and Structures

Paved Area Maintenance

cleaning
 repair
 snow removal

Landscape Structures Maintenance

painting
 minor repair

 cement patching
 park replacement

 cleaning

Chapter 6: Safe Use and Maintenance of Tools, Equipment and Machinery

Safe Hand Tool Use and Care

soil handling tools

 shovel
 mattocks and picks
 digging iron
 rales

 cutting tools

 saws
 axes
 shears

Safe Equipment Operation

walk behind mowers

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

riding mowers

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

power trimming and edging equipment

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

spraying and spreading equipment

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

garden tractors and attachments (rototiller, trailer, blade, snow blower)

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

turf renovation equipment (dethatchers, spikers, aerators, vacuums, blowers)

- safety and maintenance check list
- use of safety apparatus
- proper methods and techniques in relation to situation

preventive maintenance on equipment

- lubrication
- power train
- sharpening blades (rotary blades)

Part III. Landscape Construction

Chapter I: Blueprint Reading and Laying Out Blueprint Reading

Legend

- map orientation
- scale

Construction Symbols
 Paving Symbols
 Boundries Symbols
 Contour Lines
 Utilities Symbols
 Plant Symbols

trees-

deciduous
 coniferous

shrubs-

deciduous
 coniferous
 broadleaf

beds

Laying Out Plans

use of blueprints
 throwing a tape
 marking and staking (large and specimens plant material)
 cutting beds
 placing of plant material

Chapter 2: Construction; Drainage, Irrigation, and Grading

Drainage

tiling
 french drains

Irrigation

parts nomenclature
 pipe fitting (metal)
 pipe fitting (poly)
 lead assembly
 drainage

Grading

tools and equipment

Abney level
 Builders level
 Philadelphia Reading Rod

sub or rough

contour lines (map)
contour staking
contour establishment

final

use of soil conditioners and amendments
use of grading tools

iron rake
grading rake
shovel

use of equipment

Abney level
Builders level
Philadelphia Reading Rod

Chapter 3: Construction of Plantings

Soil Modification

soil conditioners
soil amendments and fertilizers

Proper handling of Plant Material

moving and transplanting
watering before planting

Digging

proper hole size and shape according to AAN standards
filling

adding organic matter
watering
replacing soil around root ball
making "save on"

Staking and Wrapping

trees with a 2" caliber or less

double stake
wire and hose

trees with a longer than 2" caliber

double stake or thicker stake
wire and hose

wrapping

method
materials
functions

Mulching

types available
special preparation for mulching
when and where to mulch
depth needed for proper coverage

Chapter 4: Construction of Lawns

Drainage
Irrigation
Soil Sampling
Soil Modifications

conditioners
amendments
fertilizers and lime

Grading
Seeding

equipment selection (hopper seeder spreader, broad east
seeder spreader, brillion seeder spreader)
variety of seed in relation to specific condition
seeding rate
rolling
mulching (straw, peat, netting, hydro-mulching)
watering

Vegatative

sodding

variety of sod in relation to specific conditions
proper installation methods and techniques
rolling
watering

other methods

spriging
stolonization
plugging

Chapter 5: Landscape Structures

Traffic areas (drives, walks, steps, ramps, landings, and patios)

concrete
 asphalt
 bricks
 patio blocks
 flag stone
 mulches
 rail road ties
 stone
 tile
 wood

Proper methods, procedures, and techniques applicable in constructing with these materials

Retaining walls (uses: tree walls, planters and terraces)

dry

stone
 rail road tie
 brick

Proper methods, procedures, and techniques applicable in constructing with these materials

masonry

stone
 brick
 poured concrete
 concrete block

Proper methods, procedures, and techniques applicable in constructing with these materials

Screen and fences

wood

setting posts
 setting posts in concrete
 section placing

metal

setting posts
 setting posts in concrete
 section placing

Ornamental Pools

forms
 mixing
 finishing techniques

Chapter 6: Safe Equipment Operation and Preventive Maintenance

Rototillers

safety and maintenance check list
 use of safety apparatus
 proper methods and techniques in relation to situation

Sod cutters

safety and maintenance check list
 use of safety apparatus
 proper methods and techniques in relation to situation

Seeders

safety and maintenance check list
 use of safety apparatus
 proper methods and techniques in relation to situation

Garden tractor

safety and maintenance check list
 use of safety apparatus
 proper methods and techniques in relation to situation

Preventive Maintenance on Equipment

lubrication
 power train

Part IV. Ornamental Plant Materials

Chapter 1: Plant Characteristics

Hardiness Zone
 Form and Size at Maturity
 Foliage (type, size, time)
 Flower and Fruiting (type, size, time)
 Growth rate
 Value and Usage

Chapter 2: Plant Classification

Trees, shrubs, vines, groundcovers
 Deciduous
 Evergreen

needled
 broad leaved

Small, medium, large

Chapter 3: Plant Identification

Visual Appearance (general)
 Use of keys (Binomial system of nomenclature)

Appendices

- A. Trouble shooting plant problems
- B. Trouble shooting construction problems
- C. Commonly used ornamental plants
- D. Plant substitutes