

Lesson B1–9

Growing Foliage Plants

Unit B. Floriculture

Problem Area I. Greenhouse Crop Production

Lesson 9. Growing Foliage Plants

New Mexico Content Standard:

Pathway Strand: Plant Systems

Standard: III: Apply fundamentals of production and harvesting to produce plants.

Benchmark: III-A: Apply fundamentals of plant management to develop a production plan.

Performance Standard: 2. Manipulate and evaluate environmental conditions (e.g., irrigation, mulch, shading) to foster plant germination, growth and development. 3. Evaluate and demonstrate planting practices (e.g., population rate, germination/seed vigor, inoculation, seed and plant treatments). 6. Control plant growth (e.g., pruning, pinching, disbudding, topping, detasseling, staking, cabling, shearing, shaping).

Student Learning Objectives. Instruction in this lesson should result in students achieving the following objectives:

1. Describe the importance and scope of the foliage plant industry.
2. Discuss production practices used in growing foliage plants in the greenhouse.
3. Explain practices used in caring for foliage plants in the home or office.

List of Resources. The following resources may be useful in teaching this lesson:

Recommended Resources. One of the following resources should be selected to accompany the lesson:

Biondo, Ronald J. and Dianne A. Noland. *Floriculture: From Greenhouse Production to Floral Design*. Danville, Illinois: Interstate Publishers, Inc., 2000.

Other Resources. The following resources will be useful to students and teachers:

Boodley, James W. *The Commercial Greenhouse*, Second Edition. Albany, New York: Delmar Publishers, 1998.

Ball, Vic. *Ball RedBook*, Sixteenth Edition. Batavia, Illinois: Ball Publishing, 1998.

Schroeder, Charles B., et al. *Introduction to Horticulture*, Third Edition. Danville, Illinois: Interstate Publishers, Inc., 2000.

Biondo, Ronald J. and Jasper S. Lee. *Introduction to Plant and Soil Science and Technology*, Second Edition. Danville, Illinois: Interstate Publishers, Inc., 2003.

List of Equipment, Tools, Supplies and Facilities

Writing surface
Overhead projector
Transparencies from attached masters
Copies of student lab sheet
Computer
LCD projector
Foliage plants for identification

Terms. The following terms are presented in this lesson (shown in bold Italics):

Acclimatization
Foliage plants
Interior plantscaping

Interest Approach. Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Challenge the students by asking them to list all the foliage plants grown in their homes. Build a list on the chalkboard or overhead. Assist the students in identifying plants they can describe but for which they cannot name. A reference book with photographs would help in this process. Also, encourage the students to share personal stories about extraordinary plants or something they have seen grandma do with her plants.

Summary of Content and Teaching Strategies

Objective 1: Describe the importance and scope of the foliage plant industry.

Anticipated Problem: What is the importance and scope of the foliage plant industry.

- I. Tropical or subtropical plants selected for their ability to be grown indoors are referred to as *foliage plants*. Foliage plants are used to improve the appearance of interior spaces, a practice known as *interior landscaping*.
 - A. The production of foliage plants in the United States ranks third behind bedding plants and potted flowering crops.
 - B. Florida accounts for 69% of foliage plant production in the United States. It is followed by California, Texas, and Hawaii.
 - C. Twelve foliage plants make up 60% of all foliage plant sales. They are *Dracaena*, pothos, *Ficus*, dumbcane, palms, Chinese evergreen, peace lily, English ivy, *Philodendron*, *Schefflera* and *Brassaia*, nephthytis, and ferns.

Have the students read appropriate sections of Floriculture: From Greenhouse Production to Floral Design. Then, lead a class discussion over the content of the reading. Require students to take notes during the discussion. Also, engage students during the discussion through selective questioning. For this portion of the lesson and the others, build multimedia presentations using materials found in this lesson and recommended references. Show the presentation as a visual aid to emphasize key points. Incorporate TM: B1–9A into the lesson. If a local greenhouse operation produces foliage plants, arrange a field trip for the students to see the production practices in use.

Objective 2: Discuss production practices used in growing foliage plants in the greenhouse.

Anticipated Problem: What cultural practices are used in commercial foliage plant production?

- II. Foliage plant production involves propagation of plant materials, rapid growth under optimum growing conditions, and preparation for sale.
 - A. Different foliage plants require different methods of propagation. Some plants are produced from seed. Others are propagated through various asexual methods of propagation. The method of propagation that has grown tremendously in importance is tissue culture.
 - B. Most foliage plants do well with soilless media with pH readings between 5.5 and 6.5. However, it is advisable to review the needs of particular plants.
 - C. Light requirements for most foliage plants fall between 1,500 and 8,000 foot candles.
 - D. Due to their tropical or sub-tropical origins, foliage plants do best with night temperatures between 65° and 80°F and day temperatures between 75° and 95°F.
 - E. Watering practices depend largely on the species. A general rule is to water thoroughly, then wait until the plant needs water before watering again.

- F. Provide a constant feeding program at a suggested rate of 150 ppm nitrogen, 25 ppm phosphorus, and 100 ppm potassium.
- G. Foliage plants must adjust to a new environment. This process of becoming accustomed to less humid, darker, and cooler environments than found in the greenhouse is known as **acclimatization**. To prepare plants for sale, light intensity is reduced in the greenhouse and fertilization levels are lowered four to six weeks before sale.

Take time to lead a class discussion over the content of the reading assignment in Floriculture: From Greenhouse Production to Floral Design. Focus on the production practices use in the industry. Require students to take notes during the discussion. Also, engage students during the discussion through selective questioning. Assign LS: B1–9A as homework or as a supervised study exercise.

Provide hands-on learning experiences in propagating and caring for foliage plants. Refer to Floriculture: From Greenhouse Production to Floral Design for information pertaining to propagation techniques. Conduct a tissue culture lab exercise following instructions found in Introduction to Plant and Soil Science and Technology Activity Manual. Use foliage plant explants in the activity.

Objective 3: Explain practices used in caring for foliage plants in the home or office.

Anticipated Problem: How should foliage plants be cared for in the home or office?

- III. Most foliage plants can be acclimatized to the indoor environments and thrive if given proper care. There are some general guidelines that can be followed.
 - A. Select plants for the conditions they will encounter.
 - B. Provide optimum lighting for the plant species.
 - C. Maintain temperatures above 55°F.
 - D. Humidify the air in the winter months.
 - E. Select appropriately sized containers.
 - F. Repot the plants when they become root bound.
 - G. Water when the plants need water, not on a fixed schedule, such as every Friday. When watering, water thoroughly and do not allow plants to stand in water filled saucers.
 - H. Fertilize sparingly, perhaps every 4–6 weeks.

Use TM: B1–9B during the class discussion on foliage plant care. Assign students the task of growing foliage plants either at school or at home. Encourage student ownership by having them perform tasks involved in production including the selecting of plants, propagating, potting, watering, fertilizing, and adjusting temperatures. Also, require the students to maintain records of their plant care.

Review/Summary. Conclude the lesson by restating the student learning objectives. Review the material covered when addressing the objectives. Call on students to explain the content associated with each objective. Use their responses as the basis for determining any areas that need re-teaching. Questions at the end of the chapters in the textbook may also be used in the re-

view/summary. Reinforce student learning by having students grow foliage plants in the classroom or school greenhouse.

Application. Grow foliage plants in the school greenhouse or classroom. Give the students the responsibility for caring for different plants and for keeping records on the tasks they perform. Students should research the specific cultural requirements for the plants grown and follow the recommended guidelines for care of the plants.

LS: B1–9A—Guidelines for Growing Select Foliage Plants

Evaluation. Focus on student achievement of the objectives for the lesson when evaluating student performance. Use various evaluation techniques, such as student performance during oral review of the material, application of skills in the greenhouse setting, completion of the laboratory sheet, and a written exam. A sample written test is included with this lesson and can be adapted to local needs.

Answers to Sample Test:

Part One: Completion

1. foliage plants
2. acclimatization
3. interior plantscaping
4. tissue culture
5. Florida
6. 5.5, 6.5
7. wait until the plants need water before watering again
8. reduced, lowered
9. 1,500, 8,000
10. 60

Part Two: Short Answer

1. Select plants for the conditions they will encounter.
Provide optimum lighting for the plant species.
Maintain temperatures above 55°F.
Humidify the air in the winter months.
Select appropriately sized containers.
Repot the plants when they become root bound.
Water when the plants need water, not on a fixed schedule, such as every Friday.
When watering, water thoroughly and do not allow plants to stand in water filled saucers.

Fertilize sparingly, perhaps every 4–6 weeks.

2. *Dracaena*, pothos, *Ficus*, dumbcane, palms, Chinese evergreen, peace lily, English ivy, *Philodendron*, *Schefflera* and *Brassaia*, nephthytis, and ferns.
3. Florida, California, Texas, and Hawaii

Test

Lesson B1–9: Growing Foliage Plants

Part One: Completion

Instructions. Provide the word or words to complete the following statements.

1. Tropical or subtropical plants selected for their ability to be grown indoors are referred to as _____.
2. The process of becoming accustomed to a different growing environment is known as _____.
3. Foliage plants are used to improve the appearance of interior spaces, a practice known as _____.
4. The method of propagation that has grown tremendously in importance is _____.
5. _____ accounts for 69 % of foliage plant production in the United States.
6. Most foliage plants do well with soilless media with pH readings between ____ and ____.
7. A general rule is to water thoroughly, then _____.
8. To prepare plants for sale, light intensity is _____ in the greenhouse and fertilization levels are _____ 4-6 weeks before sale.
9. Light requirements for most foliage plants fall between _____ and _____ foot candles.
10. Twelve foliage plants make up _____ % of all foliage plant sales.

Part Two: Short Answer

Instructions. Provide information to answer the following questions.

1. List eight recommended practices for growing foliage plants in the home or office.
2. List the twelve foliage plants that make up 60% of sales.
3. List four states that produce the majority of the foliage plants in the United States.

THE TOP TWELVE FOLIAGE PLANTS BY SALES

- 1. *Dracaena***
- 2. pothos**
- 3. *Ficus***
- 4. dumbcane**
- 5. palms**
- 6. Chinese evergreen**
- 7. peace lily**
- 8. English ivy**
- 9. *Philodendron***
- 10. *Schefflera* and *Brassaia***
- 11. nephthytis**
- 12. ferns.**

GUIDELINES FOR FOLIAGE PLANT CARE

- 1. Select plants for the conditions they will encounter.**
- 2. Provide optimum lighting for the plant species.**
- 3. Maintain temperatures above 55°F.**
- 4. Humidify the air in the winter months.**
- 5. Select appropriately sized containers.**
- 6. Repot the plants when they become root bound.**
- 7. Water when the plants need water, not on a fixed schedule, such as every Friday.**
- 8. When watering, water thoroughly and do not allow plants to stand in water filled saucers.**
- 9. Fertilize sparingly, perhaps every 4–6 weeks.**

Lab Sheet

Guidelines for Growing Select Foliage Plants

Purpose:

Students will gain a greater understanding of the production and care of select foliage plants.

Instructions:

Identify twenty foliage plants grown in the school, grown at home, or for which you have a special interest. Then, use various resources to complete the table below:

Foliage plant (common and Latin names)	Method(s) of propagation	Light requirements	Watering recommendations	Humidity preference	Pest problems