

Lesson B3–1

Installing Interior Plantscapes

Unit B. Floriculture

Problem Area 3. Interior Plantscaping

Lesson 1. Installing Interior Plantscapes

New Mexico Content Standard:

Pathway Strand: Plant Systems

Standard: IV: Exercise elements of design to enhance an environment (e.g., floral, forest, landscape, farm).

Benchmark: IV-A: Apply basic design elements and principles to create a design using plants.

Performance Standard: 1. Conduct a site evaluation for physical condition and design implications. 2. Apply elements of design (e.g., line, form, texture, color). 3. Incorporate principles of design (e.g., space, scale, proportion, order). 5. Select hard goods, supplies and tools used in design. 6. Select plant(s) for design.

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

1. Explain interior plantscaping and its basic design principles.
2. Describe basic construction and irrigation techniques used in interior plantscapes.
3. Describe safety concerns associated with the installation of large plant materials.

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.

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

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

Ingels, Jack E. *Landscaping: Principles and Practices*, Fifth Edition. Albany, New York: Delmar Publishers, 1997.

Powell, Charles C. and Rosemarie Rossetti. *The Healthy Indoor Plant*. Columbus, Ohio: Rosewell Publishing Inc., 1992.

List of Equipment, Tools, Supplies and Facilities

Writing surface
Overhead projector
Transparencies from attached masters

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

Color plants
Drip irrigation system
Gantry crane
Interior plantscaping
Plant maintenance technician
Plant station
Subirrigation system
Tropical plants

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.

Scheduling a field trip to a mall where installation of new plant material is underway would be an ideal way to introduce this lesson. During the trip, identify basic design principles being put into practice. Have the students sketch the plan being used on graph paper. After the trip, ask the students how long the plants they saw will last. Will any of them have to be replaced? Suggest that the plants are not just simply installed and occasionally watered. Instead, they are regularly maintained using a number of techniques. Let this discussion lead into your presentation of the first learning objective.

Summary of Content and Teaching Strategies

Objective 1: Explain interior plantscaping and its basic design principles.

Anticipated Problem: What is interior plantscaping? What are some of the basic design principles it uses?

- I. **Interior plantscaping** is the use of plants in commercial and industrial settings. It is often referred to as interiorscaping or interior landscaping. **Tropical plants** grow naturally in equatorial rainforests and are commonly used in interior plantscaping because they are adapted to low light levels and warm year-round temperatures. Shopping malls, business lobbies, and atriums commonly feature interior plantscaping. All of these areas look more appealing when decorated with plants. Designing interior plantscapes that feature tropical plants brings about certain considerations.
 - A. Design principles—the same general design principles used in exterior landscaping are put to use in interior plantscaping. Taller plants are placed towards the back against a wall or in the center of a plant station. A **plant station** is the area, bed, or container in which plants are being planted. Medium plants are then placed in front with smaller color plants along the edge. Color plants are often selected for use as the smaller plants. **Color plants** are those that are temporarily installed to add color. Colors are regularly changed to match seasons of the year or holidays.
 - B. Tropical plants—these plants do not go through a dormant period like most plants typically found in North America. Their appearance remains the same throughout the year. This makes them ideal for interior plantscaping. Plant breeders are continually introducing new and improved varieties. This gives interior plantscapers increased choices for the plants to be included in a design.

Use TM: B3–1A to reinforce the definitions presented in this objective. Have students create their own plans of interior landscape designs using the descriptions of common houseplants. Make sure they consider plant heights and growth requirements. Grouping plants with similar growth requirements will be more successful. Use the lobby or other area within the school as the site for the design.

Objective 2: Describe basic construction and irrigation techniques used in interior plantscapes.

Anticipated Problem: What are some basic construction and irrigation methods used with interior plantscapes?

- II. When the first indoor shopping malls were built in the 1960's, little consideration was given to the installation and maintenance of interior plantings. Experience, research, and technology has impacted how plantscapes are constructed and irrigated.
 - A. Construction methods used by interior plantscapers have evolved over time.

1. During the 1960's, large planting beds were built into the floor to hold tropical trees and shrubs. Little consideration was given to growth requirements. The main concern was the final appearance of the plantings.
 2. Interior plantscapers have switched to movable planters. These planters are on wheels. They can be easily moved so that the cleaning and care is less difficult.
 3. In the past, large planting stations were filled with soil. Today, only the top 1/3 of the station is filled with soil. The remaining two thirds is comprised of a filler material like Styrofoam or gravel. A layer of material similar to the weed barrier used in outdoor landscaping separates the soil and filler. The filler material catches water runoff. A capped piece of PVC pipe extends through all of the layers. The cap can be removed to check for standing water in the bottom. If the water is fouled, it is removed with a pump.
 4. Large plant installations may require the use of a gantry crane. A **gantry crane** is a lifting device used to move trees. It is similar to cranes used in the building trades industry. Large trees are shipped from nurseries with their roots constrained in a large wooden box. The branches are tied back and wrapped with burlap to protect them. A gantry crane is then used to lift the tree and swing it into the planting location.
 5. Environmental conditions within an indoor area must be considered when locating plants. During the 1980's a number of malls experienced complete diebacks of newly installed plant materials. Research discovered that low levels of mercury used in the paint for the mall's interior walls was responsible. The small amount of mercury that was added to preserve the paint slowly killed the plants.
- B. Irrigating interior plantings used to consist of hand watering with a hose. New methods have been developed that are more efficient.
1. A **subirrigation system** consists of buried pipes that emit water below the soil surface. The pipes are connected to a water valve. When the valve is turned on, the entire area served by the system is irrigated.
 2. **Drip irrigation systems** are comprised of hoses that deliver small amounts of water at the surface level through pores in the hose. The hoses are attached to a timer, which controls the duration and frequency of the watering. Occasionally, the hoses may have to be flushed or replaced due to the pores becoming clogged with mineral deposits.

Have students research the use of various irrigation systems in local malls. Instruct them to determine which system is most commonly used.

Objective 3: Describe safety concerns associated with the installation of large plant materials.

Anticipated Problem: What are some safety concerns to be aware of when installing large plants?

- III. Job safety should be everyone's first priority. This includes the architect, construction supervisor, and plant maintenance technician. The *plant maintenance technician* is the person responsible for the care of the plants after their installation. Safety concerns with large plant materials involve the following:
 - A. Weight—large plant materials can weigh from hundreds to thousands of pounds. The use of hard hats, heavy boots, and gloves is important. Care around equipment used to handle the plant materials must be observed.
 - B. Dirt and insects—plant materials may carry insects such as spiders and centipedes. These insects travel with the tree as it makes its way from where it was grown to where it will be planted. The insects and dirt can drop as the plant is being handled. Safety glasses and gloves should be used. Dust masks and goggles are applicable in situations where dust from dirt and gravel is present.
 - C. Pesticides—pesticide residues may be present on some plant materials. Protective clothing, gloves, and safety glasses are important to prevent exposure to these chemicals.
 - D. Balance—balance relates to both the footing around the planting site and how a plant sits once it is planted. Workers need to be aware of possible footing hazards like hoses, tools, and holes. Care should also be taken to insure that the planted materials are firmly seated after planting. Palm trees have small root balls and can tip easily. To avoid tipping, palm trees should be held in place for the first six months or until the root system has developed.

Use TM: B3–1B to reinforce some of the safety concerns connected with the installation of large interior plantings. Take the class to visit a planting site. Have them observe the possible hazards and safety precautions associated with the work. Invite the owner of an installation company to visit the class and have him or her discuss safety concerns that relate to installations. If this is not possible, have the class develop an interview form that covers hazards and precautions. Assign individual students to conduct telephone interviews with industry representatives.

Review/Summary. Concentrate the review and summary around the student learning objectives for the lesson. Call on students to explain the content associated with each objective. Use student responses as a basis for determining if any areas or concepts need to be taught again. Questions at the end of the chapters in the recommended tests can be useful in reviewing.

Application. Application can involve the extended quests activities at the ends of the chapters in the recommended texts. The construction of a scaled down version of a large plant will assist the class in applying the lesson's content.

Evaluation. Evaluation should focus on student achievement of the objectives for the lesson. Chapter ending questions in the texts will be useful. A sample written test is also attached.

Answers to Sample Test:

Part One: Matching

1=e, 2=a, 3=b, 4=d, 5=c

Part Two: Completion

1. subirrigation
2. Interior plantscaping
3. plant maintenance technician
4. mercury

Part Three: Short Answer

1. Use the content presented in Objective 2 to grade answers.
2. Use TM: B3-1B and the content outlined in Objective 3 to grade answers.

Test

Lesson B3–1: Installing Interior Plantscapes

Part One: Matching

Instructions. Match the term with the correct response. Write the letter of the term by the definition.

- | | | |
|--------------------|------------------|-----------------|
| a. drip irrigation | c. gantry crane | e. color plants |
| b. tropical plants | d. plant station | |

Part Two: Completion

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

- _____ 1. Regularly changed to match season of the year and holidays.
- _____ 2. Comprised of hoses with pores that deliver small amounts of water at the surface.
- _____ 3. Grow in equatorial rainforests.
- _____ 4. The area, bed, or container in which plants are placed.
- _____ 5. Lifting device used to move large trees.

Part Three: Short Answer

1. A _____ system consists of buried pipes that emit water below the surface.
2. _____ is the use of plants in commercial and industrial settings.
3. The person responsible for the care of plants after their installation is the _____.
4. During the 1980's plants located in malls died due to the presence of _____ in paints.

Instructions. Provide information to answer the following questions.

1. Compare and contrast the use of subirrigation and drip irrigation systems.

2. List and explain four safety concerns associated with the installation of large plant materials.

INTERIOR PLANTSCAPING

Terms and Concepts

Interior Plantscaping

- The use of plants in commercial and industrial settings
- Also referred to as interiorscaping or interior landscaping

Tropical Plants

- Naturally grow in equatorial rainforests
- Do not experience dormant periods

SAFETY CONCERNS IN INSTALLING LARGE PLANT MATERIALS

- 1. Weight**
- 2. Dirt and insects**
- 3. Pesticides**
- 4. Balance**