

# Arizona Grown Specialty Crop Lesson Plan

## Plants, Plants and More Plants



**LEVEL:** Grades 10-12

**SUBJECTS:** Science, Career  
Education, Language Arts,  
Social Studies, Math

**AZ ACADEMIC STANDARDS:** R-E2, W-P4, LS-P3, SCHS-S1C1, SCHS-S1C2, SCHS-S1C3, SCHS-S4C3, SCHS-S4C4

### **MATERIALS**

CD produced by University of Arizona on desert landscape plants. Samples of landscape plants in pots. Landscape plants around the school and community. Various books on landscape plants. Samples of seeds, plant parts such as cuttings, roots, rhizomes, stolons, and leaves. Various sizes of pots used in plant propagation. Potting soil, perlite, rock wool cubes and vermiculite.

### **VOCABULARY**

propagation, stolon, cutting, rhizome, bulb, hormone, seed, leaf, soil, bacteria, perlite, vermiculite, reproduction, species, shrub, woody, gametes, node germination, stratification, scarification, sexual, asexual, perennial, annual, cloning.

### **RELATED LESSONS**

If it Smells Good, is Edible and Attracts Wildlife, Then it's a Practical Garden!  
Where do They Go?  
Don't Wait, Just Propagate!  
Let's Make Stew  
How do Plants Make Food?  
Survival of the Fittest  
Getting to the Root of the Matter

This Can't be a Plant  
Soggy Seeds  
Plant Seedling

### **SUPPORTING INFORMATION**

Landscaping of residential areas is a booming business today. Various types of plants are used in this business. Landscaping involves knowing the type of plant to be used, the purpose of the uses and the environment in which the plant will be used. People in the landscape industry need to have a variety of knowledge and skills. Plants are usually grown from seed, or parts of the plant such as roots, leaves, stems, bulbs or rhizomes. Knowledge of the form of propagation is very important in growing plants. Landscape plants can be placed into three broad categories, these are: shrubs, trees and ground covers. Plants can be annuals, which means they grow for only one season, or perennials which grow year round for many years. A person working in landscaping or a nursery needs to know the types of plants that are best suited for the area and are adapted to the weather, as well as soil conditions. The explosion of housing communities in our state has increased the availability of jobs for people involved in landscaping. Several types of jobs exist in the nursery business such as Nursery Manager, Botanist, Soil Scientist, Plant Production Manager, Pest Controller, Sales Persons as well

### **BRIEF DESCRIPTION**

Students explore the various types of plants used in landscapes, and the various methods of propagation.

### **OBJECTIVES**

Students will be able to:

- Identify, name, and list at least 10 plants that are shrubs, trees, or groundcovers used in landscaping.
- Categorize the plants as: Shrubs, trees or groundcovers.
- Name and explain careers associated with the landscape industry.
- Research a selected landscape plant commonly used today in Arizona.
- Explain plant propagation procedures and propagate plants using the various methods studied.

### **ESTIMATED TEACHING TIME**

5 to 6 sessions of 50 to 55 minutes.

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**SUPPORTING INFORMATION (cont'd)**

as Semi-drivers who deliver the products all over the United States. Landscape plants can reproduce sexually and asexually. Sexual reproduction involves the production of a seed after a flower is pollinated. The male sperm or pollen grain unites with the female ovule to form a seed. This process occurs in the flower of the plant. Some plants produce a fruit or a pod to protect the seeds. Seeds may need to be scarified or stratified for the moisture to enter the seed so it can germinate. This can be done using several methods. These are Mechanical - in which files or hammers are used to scratch or chip the seed coat, hot water bath- in which seeds are placed in water 77 to 100 degrees Celsius for 12 to 24 hours until the water cools, Acid scarification- in which dried seeds are placed in a glass container and covered with sulfuric acid. Depending on the species the treatment time varies from 10 minutes to 6 hours. High Temperature scarification- in which seeds are exposed to fire. Some species of seeds require the heat to melt the seed coat. Flowers can be separated into two groups - Complete and Incomplete. Complete flowers have both male and female parts and Incomplete flowers have one of the sexual reproductive parts missing. The seed carries the genetic material from both the male and female and thus the new plant will have some similarities as well as differences in the new plant. Asexual reproduction of plants involve various plant parts such as, cuttings, leaves, roots, rhizomes, bulbs, and tubers. No gametes or reproductive

sexual cells are involved in this method. This is similar to cloning in that the new plant produced will be an exact replica of the parent plant. Several groups of plants are used in landscaping as they serve different purposes. The three main groups of plants are trees, shrubs, and groundcovers.

A tree is a perennial woody plant that has a main trunk and a distinct crown and branches. Trees grow anywhere from 10 to hundreds of feet tall and have various diameter sizes. Trees are divided into two groups with regards to landscaping, Deciduous and Evergreens. Deciduous trees lose all their leaves in the fall. Evergreen trees remain green year-round. Trees provide many things we need to survive. They give us oxygen, wood, shade, fruits and nuts, color to the landscape, homes for animals, and even medicines.

Trees can be used to provide shade or protection in a landscaped area. The most important thing to know before planting a tree is how big the tree will be when it is full grown. Next you need to know the purpose or use of the tree. If you need shade in the summer and sunlight in the winter you want to select a deciduous tree for that area. On the other hand if you need year-round shade or a permanent windbreak or privacy, you want to select an evergreen tree. If you are selecting fruit trees, you may want to check with a nursery for the trees that are suitable for your area and will survive in that climate. A few tips for selecting trees: pick a tree based on use or purpose, plant trees that are native or have adapted to the area. Exotic or imported trees may or may not survive in your area. Find out from a nursery

if the tree requires much pruning. Select trees that need very little or no pruning to avoid much work. Also inquire from the nursery whether the tree makes a mess when fruiting, blooming, or shedding leaves or bark. Nurseries are a suitable source for trees. They provide bare-roots, trees with no soil on the roots. Also they supply trees in plastic containers from 1 gallon sizes to 15 gallon. You may even purchase trees in wooden boxes. These trees are usually 10 to 15 feet tall. Trees are best transplanted in early spring or fall. Unlike trees that have a main trunk, shrubs are small woody plants that have several stems and grow about 6 to 10 feet tall. Shrubs may be purchased at a nursery in three categories. Deciduous- these shed their leaves in the winter. Example: Mexican Bird of Paradise. Broad-leaved evergreen, which have wide not narrow needle-like leaves. Example: Rhododendron. Needle leafed evergreens, these remain green year round. Example: Juniper. Shrubs can be purchased from a nursery as bare roots, planted in baskets, or in plastic containers. Shrubs can be used as barriers, windbreaks, for privacy, to add color or as accents. When purchasing a shrub consider the purpose or use of the shrub. Also keep in mind the size of the plant and the amount of light it needs. Groundcovers are plants that grow close to the ground. The most common groundcovers are grasses. Grasses are used in many areas, such as football fields, baseball fields, golf courses, and playgrounds. A few reasons why grasses are used in these areas are that grasses withstand traffic, keep dust

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**SUPPORTING INFORMATION (cont'd)**

down, prevent soil from being washed away, make the area look attractive, and do not need to be replanted every year. Two types of grasses that are grown in Arizona are the common Bermuda and Winter Rye. Bermuda is grown in the spring/summer season and the rye in the winter. Other low growing plants such as Ivy, Myoporum, and Lantana are also used as groundcovers. These are usually grown in areas where grass is not needed or can't grow. These plants also help control soil erosion. They can be obtained from most nurseries and come in different shapes, sizes and colors. Most of these groundcovers are used in areas to enhance the aesthetics or make yard keeping chores easier since they require low maintenance.

**GETTING STARTED**

Collect and display several samples of landscape plants that include trees, shrubs, and groundcovers. Examples are: Rosemary, Lantana, Texas Ranger, Bird of Paradise, Sweet Acacia, Acacia Salicina, Feathery Acacia, Myoporum, and mesquite. These can be in one or five gallon containers.

**PROCEDURES****Session One: Plant Reproduction**

Introduction:

Show students the display of landscape plants.

Ask them where have they seen such plants? (at a nursery, in peoples yards, along the roadsides, etc.)

Ask students to compare the plants and list differences. (size, shape, flowers, color of leaves, etc.)

Ask students how they think people in the nursery business propagate these plants? (Most likely answer will be from seeds)

Handout sheets with pictures of seeds, cuttings, bulbs, rhizomes, leaves (succulent) and have as many real samples as possible. Ask students if they think all these parts can grow into a new plant? (probably yes)

Step 1: Reproduction

Ask students what is reproduction in living things. (producing young ones)

Why do animals and plants need to reproduce? (To keep the species alive)

Discuss with students asexual and sexual reproduction in plants. (Asexual: no male or female reproductive cells. Sexual: include male and female reproductive cells, the egg, and sperm.)

Ask students where in a plant do they think the reproductive cells are produced? (answers may vary, looking for flower)

Step 2. Parts of a flower

Pass out sheet with picture of a flower along with a sample of a flower. Direct students to slowly remove the parts of the real flower and match it with the picture. Use overhead to assist students in matching the parts. Explain the function of each part. Explain to students that this is a complete flower because it has both male and female parts. Explain that reproduction in plants with these types of flowers is considered the sexual method because male and female gametes are present. Thus the seed has genetic materials from a female and male plant and as a result will have some similarities and differences in the new plant. Conclude by comparing this to animal and human reproduction where two cells unite to form a new organism.

In animals and plants the male produces the sperm and the female the egg. In plants pollen is the male cell, ovules are similar to the egg.

**Session Two: Plants from Plant Parts**

Getting Started:

Have samples of young plants growing from leaves, cuttings, seeds, bulbs, roots. If possible have samples for students to see and touch. Have sample of root hormone, pieces of plant and shears to demonstrate how to make a cutting..

Procedure:

Step 1

Place a scenario before students using examples of plants that do not produce seed that can be planted.

Example: Rosebush. How do we reproduce these plants?

Some may have the answers. (Using a piece of the plant or a leaf or root etc.).

Show sample of a cutting from a stem and a plant growing from such (e.g. Rosemary, Oleander, Texas Ranger, African Violet leaf)

Ask students to explain what they see. (parts of a plant)

Have them name them (roots, leaf, seed, etc.)

Do you think these plant parts can grow into a new plant?

Yes.

Tell students this is Asexual reproduction.

Ask students to explain what is Asexual Reproduction. (No gametes are involved). Ask students what they think is better about this method than using seeds. (A similar plant will grow from the plant part). Explain that this is a form of cloning because an identical organism will grow from the plant part.

Step 2. Cuttings and leaf propagation

Pass out Handout 2 with steps in propagating stems and leaf cuttings. Ask individual students to read

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out to the class each step, discuss with class.

### **PROCEDURES (cont'd)**

Emphasize that the cutting must have at least two nodes. Ask students why this is important? (For root and shoot growth).

#### **Step 3: Making cuttings**

Demonstrate to students how to make a stem cutting, a leaf cutting and a tip cutting. Have materials in two or three stations and have students perform a leaf cutting, tip cutting and a medial cutting for planting.

After all students are done with cuttings, have them dip it in the rooting hormone and place in prepared trays of moist growing medium such as perlite or vermiculite and place trays in an area where they will have the needed requirements to root. (If you have a school greenhouse ask to borrow a little space to place these.)

Have students do weekly observation on the cuttings to see if they are still green.

They need to note when the first leaf appears on the cutting. After 5 to 6 weeks have students remove the cuttings from the growing media and observe the root growth.

Conclude by reviewing the fact that Asexual reproduction is similar to cloning. An identical plant will be produced from the stock used.

#### **Session 3:**

Growing plants from seeds:

##### **Step 1**

Review parts of the complete flower using an overhead. Have individual students come up to label a part and state its function. Have a bunch of Red Kidney beans that have been soaked overnight, enough for at least 2 per student. Show students the dry seeds and the soaked seeds. Have students

compare them and explain what happened. Soaked beans look larger than dry ones. Seed coat in some is breaking. Ask: how do you think water entered the seed? Answers may vary. Show point of attachment and explain that this is the area where a microscopic hole exists that allows the water to enter the seed.

##### **Step 2**

Parts of a bean seed  
Provide students with paper towel sheets and a soaked bean seed. Ask them to remove the seed coat carefully and split the bean seed in its two sections carefully as not to damage the baby plant inside. Ask students to make a drawing of the two halves and what they see inside each one. Use a similar drawing of what they see in the bean seed on the overhead and label the parts and write down the function of each part. (handout provided)

##### **Step 3**

Propagating seeds  
Pass out the handout on seed germination. Select students to read each section. Discuss with the class. Why soak the seed? Discuss reasons to stratify or scarify seeds? Ask how this might occur in nature. (Seed passes through the digestive system of an animal, seed is bounced around by animals or wind or water). Provide several growing media, such as perlite, vermiculite, potting soil, and 6 or 8 ounce styrofoam cups for growing containers, several seeds and have students decide if they think the seeds need to be scarified or stratified. Have students plant at least three seeds, one in each styrofoam cup, label and date and place in a tray which will be placed in an area where the seeds can germinate. (If greenhouse is available place

in a section of the greenhouse). Have students observe what happens after 7 days, keep up observation for at least 3 weeks. Have them record shoot growth for each seed planted.

Conclude by emphasizing the factors needed by the seeds to grow: water, air, warmth. Have students observe at least every three days after seeds begin to germinate. Have them measure and compare the growth of the different seedlings.

#### **Session 4:**

Plants that are groundcovers, shrubs and trees.

##### **Introduction:**

Have samples of groundcovers, shrubs, and trees in containers for students to observe and compare. Include a sample or two of grasses.

Ask students to compare the plants, as to size, shape, color and maybe use. Ask them if they have seen any of these in landscapes. (answers may vary)

Select the samples of grasses and ask students to name places where these are used.

Examples: football fields, golf courses and on playgrounds. Ask students to list reasons why these grasses classified as groundcovers are used in these areas?

##### **Reasons:**

Can withstand traffic, keep dust down, prevent soil from washing away, makes it look pretty, does not need to be replanted every year.

Show samples of shrubs used as groundcovers. Have students compare the use of these grasses.

These cannot be walked on, do not need to be mowed, can grow in areas where grasses cannot grow, also help control erosion, need minimum maintenance, come in many shapes, sizes, and

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colors. They can be low growing, to creeping vines. These grasses and groundcovers are usually used in areas to enhance the beauty of an area or lighten yard keeping chores.

Shrubs:

Show samples of the shrubs to the students. Have them explain what they think is a shrub.

Explain that shrubs are available in three categories:

- Deciduous
  - Broad-leaved evergreens
  - Needle leafed evergreens
- Refer students to the information section to explain what is a deciduous, broad-leaf evergreen, and a needle leaf evergreen.

Shrubs can be purchased from a nursery as:

- Bare roots covered in burlap
- Planted in baskets
- In plastic containers

When planting shrubs select healthy looking plants. These are best if transplanted in early spring or fall so as not to subject them to high temperature and intense sunlight.

Conclude by listing the factors to consider when selecting shrubs for landscaped areas. Select the shrub you need for the specific area. Keep in mind the size of the plant, the soil type, the amount of light and the purpose or use of the shrub.

Trees:

Introduction: What is a tree: Have a couple of samples of trees in five or fifteen gallon containers. Or use examples of trees in the school yard and have students explain what is a tree. After this is done have them compare with the given definition and complete theirs.

A tree is a perennial woody plant having a main trunk and a distinctive crown. Can usually grow from ten to

hundreds of feet tall and various diameter sizes.

Trees can be divided into two groups:

Deciduous: lose their leaves in the fall.

Evergreens: remain green all the time.

Elicit from students reasons for planting trees? (Possible answers)

- provide oxygen for us
- provide shade
- add color in the different seasons
- provide habitat and food for animals such as birds, squirrels, etc.
- can provide us with wood for homes
- provide materials to use as mulch (leaves, branches, etc.)
- to demarcate an area (fence line)
- as a dust or windbreak

What factors do you consider when planting a tree?

a. The most important is to know how big the tree will grow. Many people make the mistake of planting a little tree which will grow into a big tree too near the house and eventually may have to remove the tree.

b. The purpose or use: If you need shade in the summer and you need sunlight in the winter, you may want to plant a tree that is deciduous. If you want year round shade or a permanent windbreak you want to plant evergreen trees. If you are looking for fruit, select the fruit tree of your choice provided it can survive in the area you live.

c. Pick trees that will add accent to the landscape or house.

d. Plant trees that are adapted to the area. If possible, plant native trees as these will thrive better in the area. Exotic or imported trees may not survive in areas like the desert or cold areas.

e. Select trees that do not need much pruning.

f. Find out if the tree makes a mess when fruiting, blooming or shedding leaves or bark.

Where can we get trees to plant?

Nurseries usually have trees in two types:

Bare root - roots have no soil around them.

In plastic containers of 15 gallon size and usually about 6 to 8 feet tall.

In wooden boxes which may range from a small 10 foot tree to a larger 12 to 15 foot high tree.

When is it best to transplant trees?

Like shrubs, trees are best transplanted in early spring or early fall.

Conclusion:

Trees have a longer life than shrubs, grow bigger, and serve many purposes in our daily lives.

Session 5: Careers in Nursery: Plant Propagation Invite a Manager or Owner of a Nursery to speak to the class on the various jobs that are needed to operate a Nursery. Have students write down the jobs and list the various knowledge, skills, and attitudes needed for each of the jobs mentioned. Have students research or ask the speaker about the level of schooling needed for each job title and the pay range for each.

Conclusion: Review the requirements for the various jobs. Have students note that the jobs with more schooling have the highest pay range. Emphasize the importance of completing high school and going to higher education.

### **EVALUATION OPTIONS**

- Landscape Plant Production Quiz Sheet
  - Have students label parts of a flower
  - Have students label parts of a seed
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- Observe students as they participate in classroom lab work.

### **EXTENSIONS AND VARIATIONS**

- Have students research plants that have been successfully introduced into Arizona landscapes.
- Have students research invasive species of plants.

### **RESOURCES**

“Desert Landscape Plants” - CD ROM, U of A.

Epple, Anne Orth - [A Field Guide to Plants of Arizona](#) 1<sup>st</sup> edition, Falcon Press 1995.

“Growing Awareness” - 5<sup>th</sup> Annual Southwest Youth Garden Conference, February 22-23, 2002.

Time Life Books. “Complete Guide to Gardening and Landscaping”, Simon and Schuster 1991.

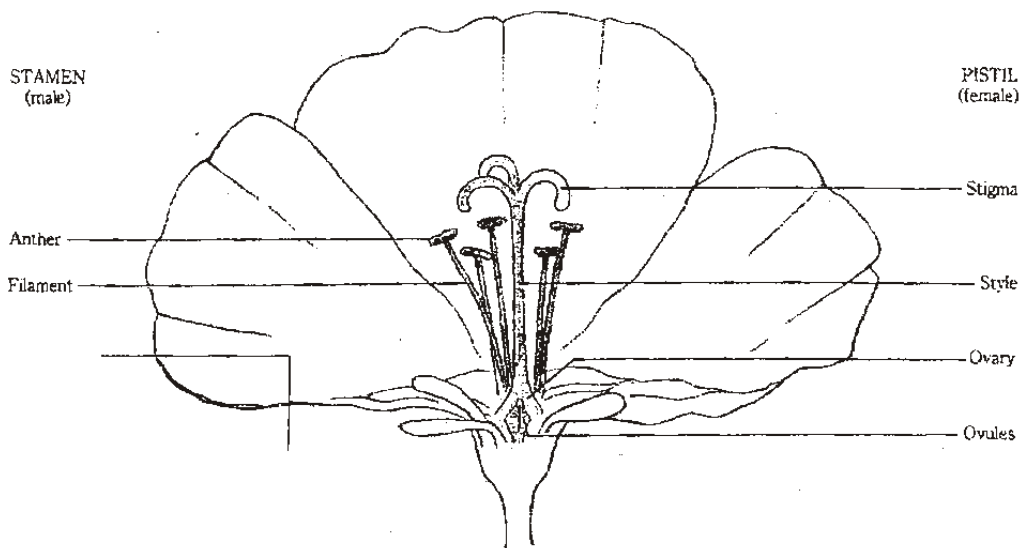
### **EDUCATORS’ NOTES**

#### **CURRICULUM DESIGN**

Bartolome Romero  
Grades 9-12  
Maricopa High School  
Maricopa Unified  
School District #20  
If you have further questions or concerns you may contact me at: [bromero@musd20.org](mailto:bromero@musd20.org). I will be more than willing to assist you.  
Good luck and best wishes.

*This Arizona Grown Specialty Crop Lesson Plan was paid for by a grant from the Arizona Department of Agriculture’s Office of Marketing and Outreach.*

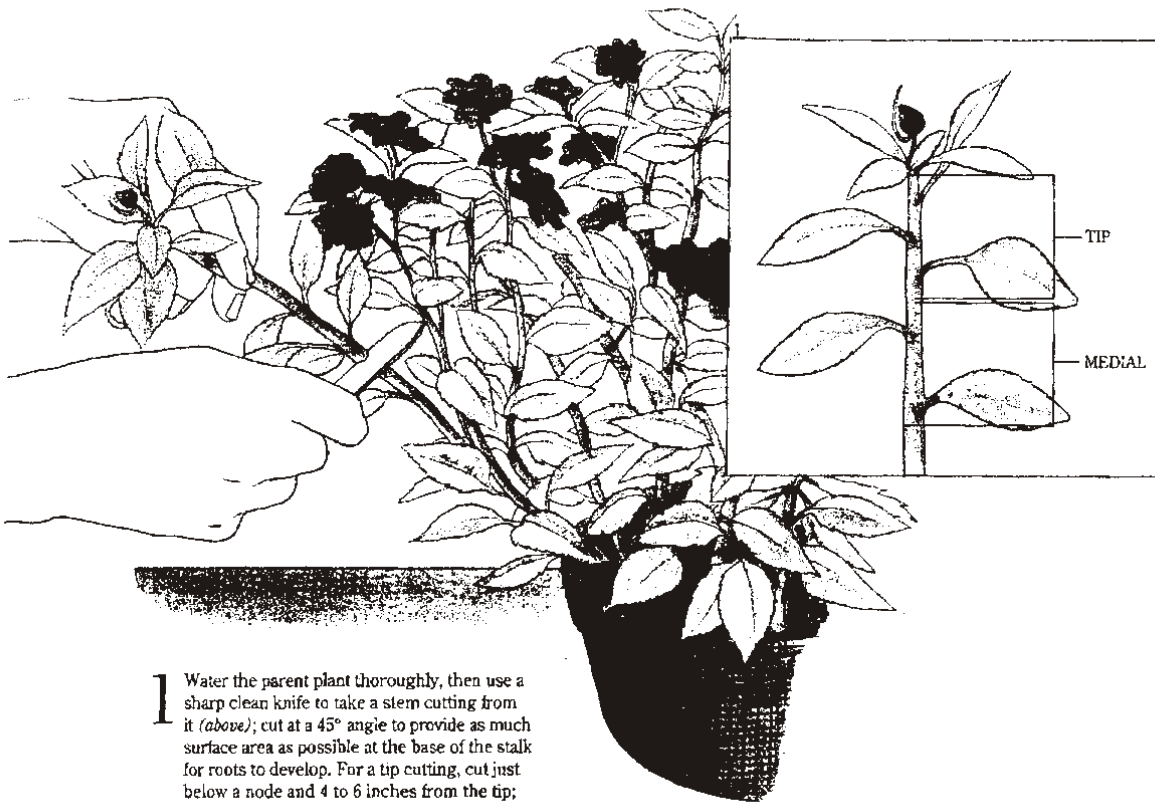
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### ANATOMY OF A FLOWER

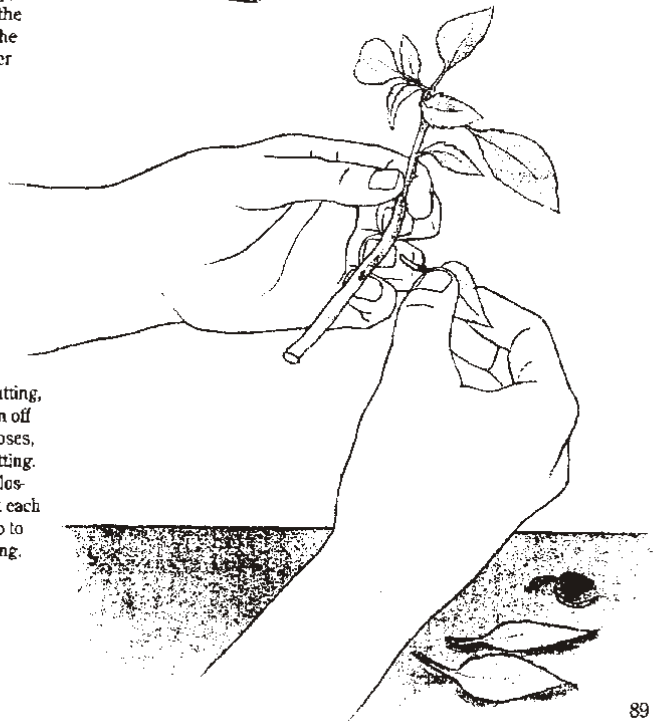
Most flowers (like the portulaca illustrated here) contain both male and female sex organs; the technical name for such flowers is "perfect." The male sex organ, called the *stamen*, consists of a thin stalk (the *filament*) and a broader top part (the *anther*) where pollen is made. The female sex organ, called the *pistil*, consists of an *ovary* (containing unfertilized eggs known as *ovules*), the upright *style* and a broader top part (the *stigma*) that receives pollen. Fertilization occurs when a grain of pollen travels down the style, enters the ovary and unites with an ovule. Fertilized ovules become the seeds for the next generation. They reside at the base of the pistil until the ovary ripens; then it bursts and the seeds scatter.

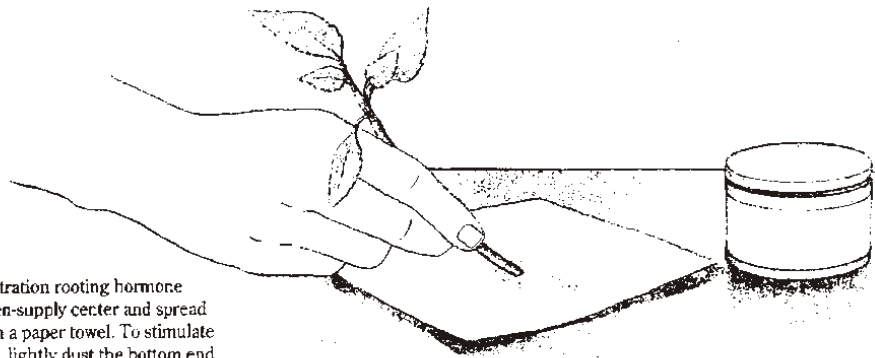
Beneath the stamens and pistils of a rose lies the rose hip. This is where the seeds that will produce a new rose mature. If a bloom is pollinated successfully, the hip swells, then in about three months turns color (red, yellow, orange or brown) as the seeds inside ripen. If pollination fails, the hip does not swell but dries up and falls off.



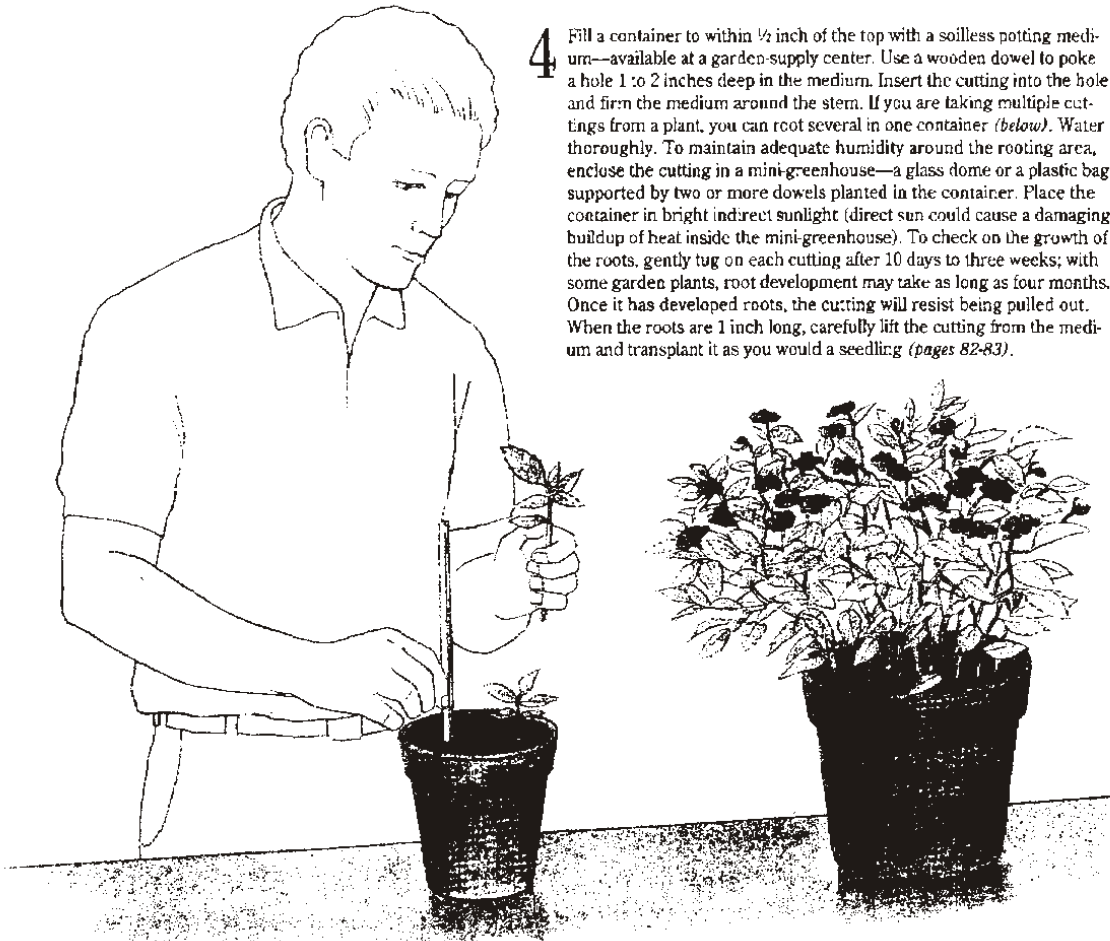
**1** Water the parent plant thoroughly, then use a sharp clean knife to take a stem cutting from it (*above*); cut at a 45° angle to provide as much surface area as possible at the base of the stalk for roots to develop. For a tip cutting, cut just below a node and 4 to 6 inches from the tip; for a medial cutting, cut a lower portion of the stem 4 to 6 inches long, making sure that the upper cut is just above a node and the lower cut is just below a node (*inset*).

**2** Whether you take a tip cutting or a medial cutting, remove all flowers and flower buds; pull them off gently with your fingers (*right*). Except for roses, remove leaves from the lower third of the cutting. For a stem cutting from a rose, remove the blossoms and only the top and bottom leaves; cut each of the remaining leaves so that you retain two to four leaflets in the middle section of the cutting.

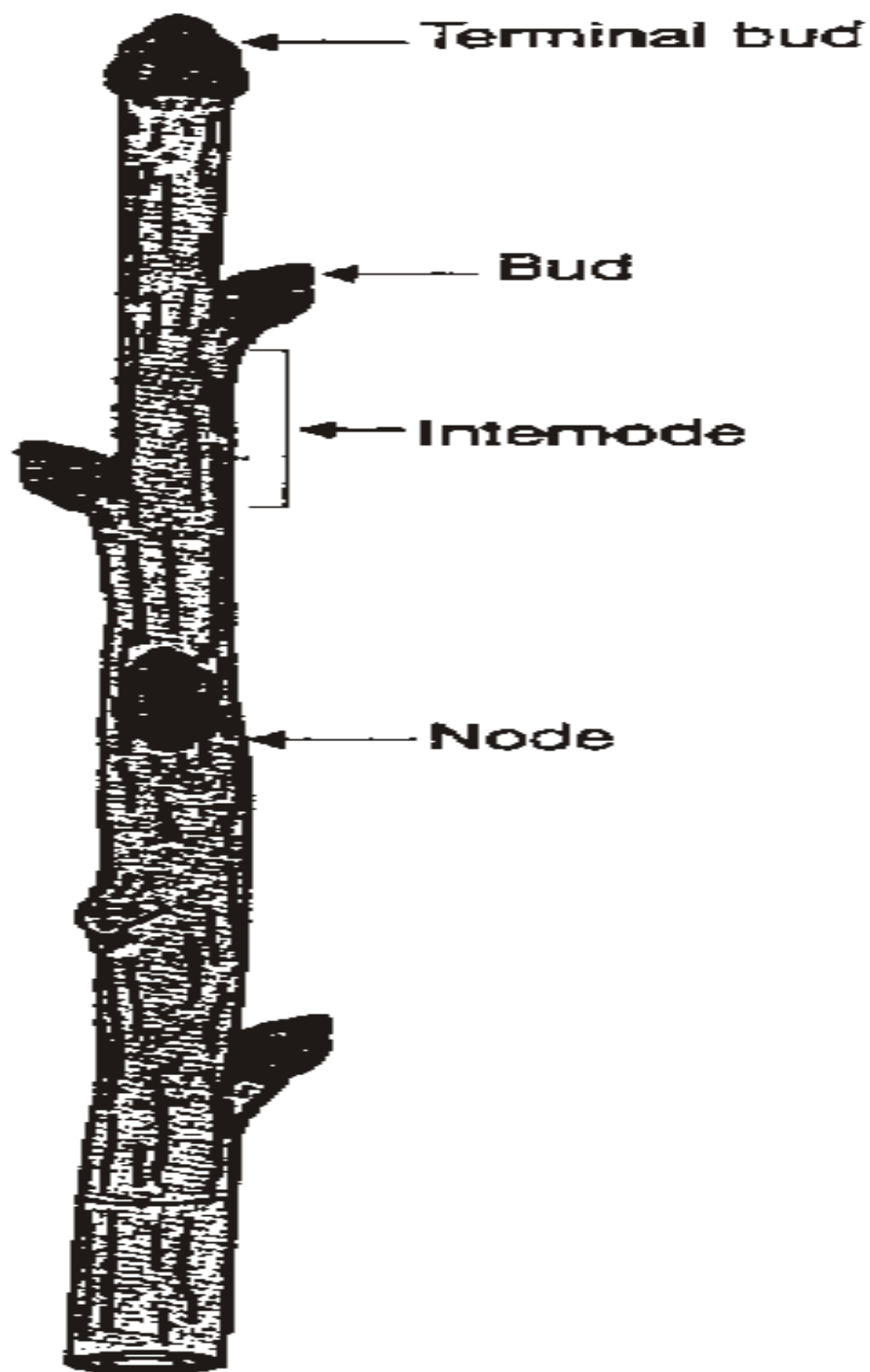




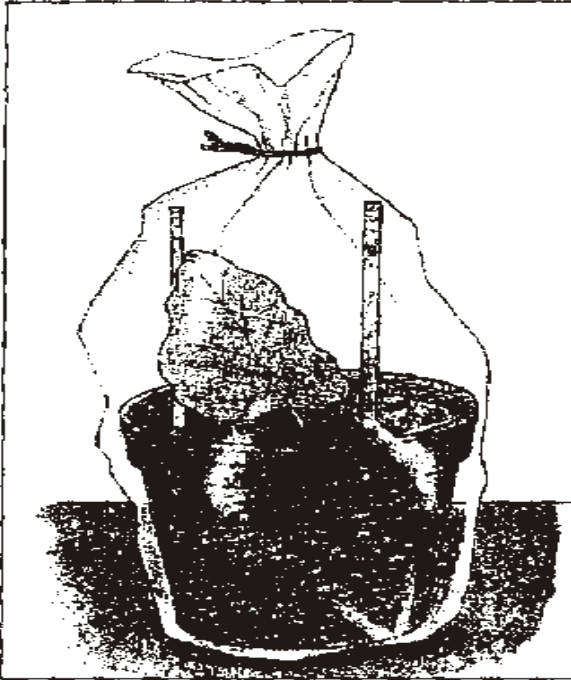
**3** Buy a low-concentration rooting hormone powder at a garden-supply center and spread a small amount on a paper towel. To stimulate root development, lightly dust the bottom end of the cutting with the powder (*right*).



**4** Fill a container to within  $\frac{1}{2}$  inch of the top with a soilless potting medium—available at a garden-supply center. Use a wooden dowel to poke a hole 1 to 2 inches deep in the medium. Insert the cutting into the hole and firm the medium around the stem. If you are taking multiple cuttings from a plant, you can root several in one container (*below*). Water thoroughly. To maintain adequate humidity around the rooting area, enclose the cutting in a mini-greenhouse—a glass dome or a plastic bag supported by two or more dowels planted in the container. Place the container in bright indirect sunlight (direct sun could cause a damaging buildup of heat inside the mini-greenhouse). To check on the growth of the roots, gently tug on each cutting after 10 days to three weeks; with some garden plants, root development may take as long as four months. Once it has developed roots, the cutting will resist being pulled out. When the roots are 1 inch long, carefully lift the cutting from the medium and transplant it as you would a seedling (*pages 82-83*).



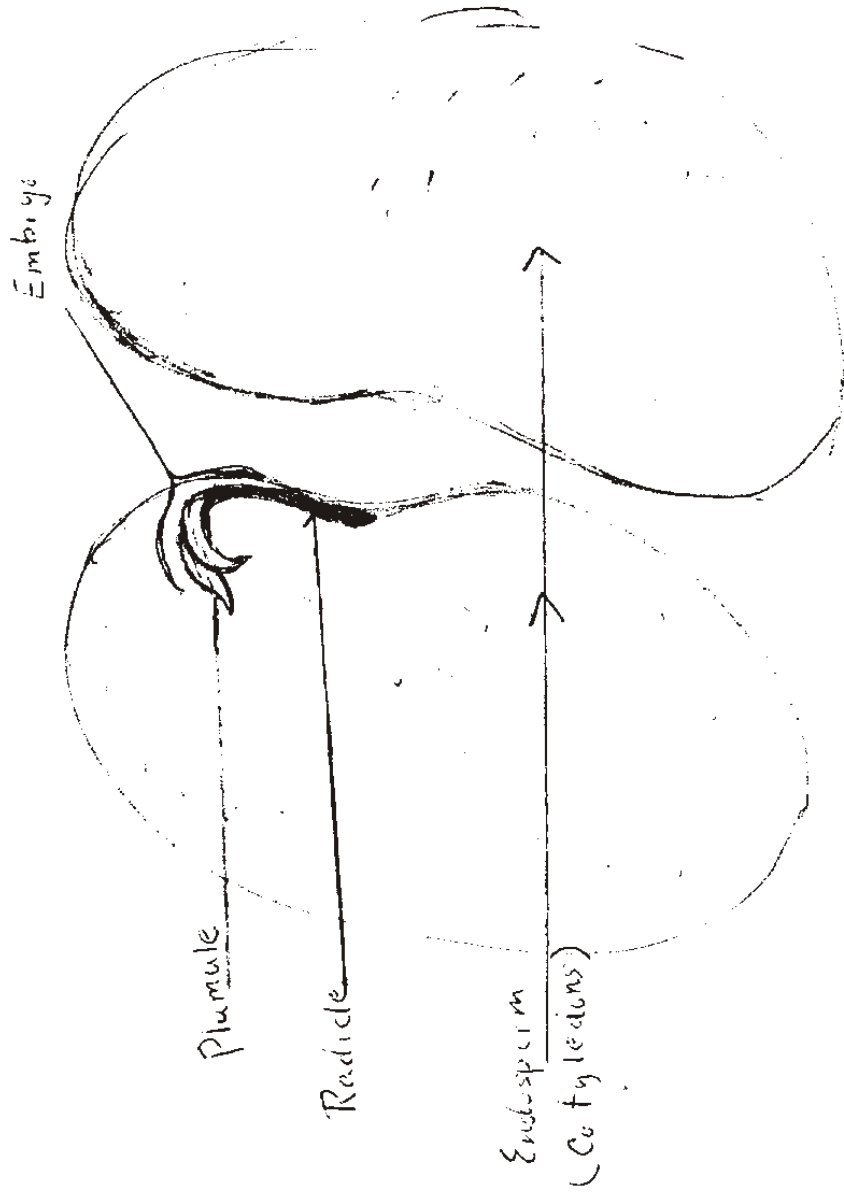
■ **FIGURE 20-18**  
Nodes and buds on a stem.



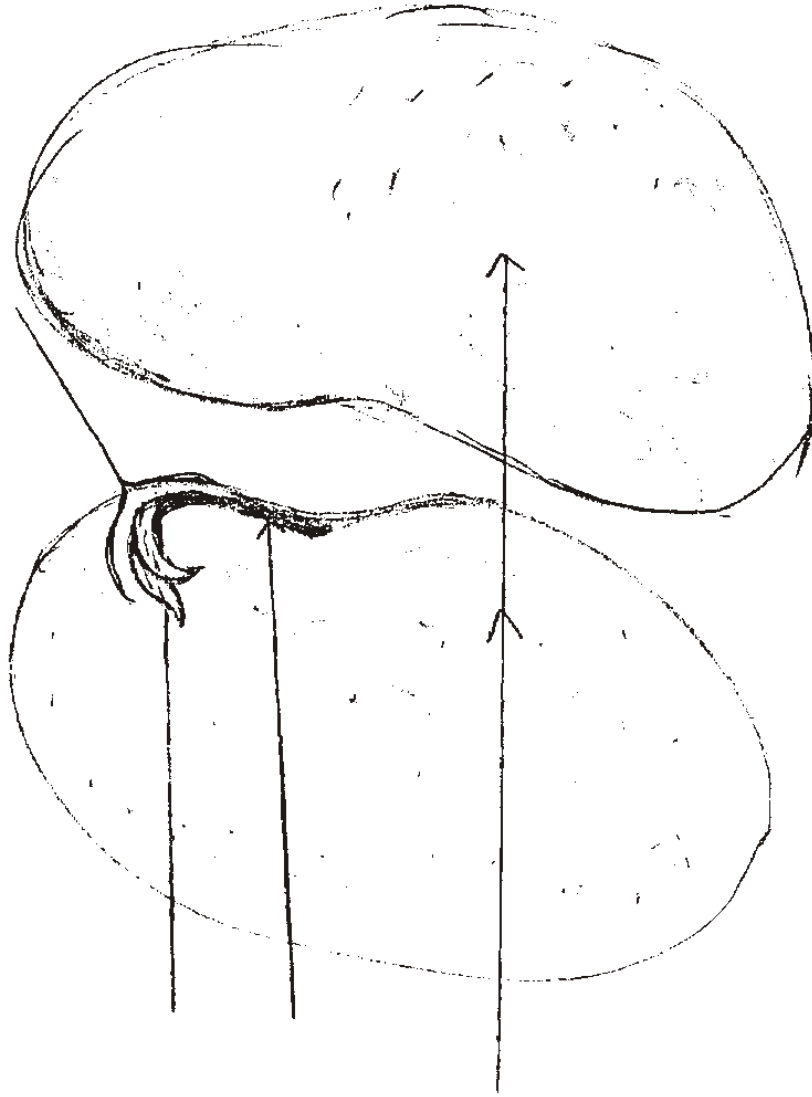
### ROOTING A LEAF CUTTING

To propagate African violets and some begonias, select a healthy, mature leaf with a stalk that is 1 to 2 inches long. Dip the cut end in rooting hormone powder and insert the base of the stalk, at a 45° angle, into a standard rooting medium to a depth of 1 inch. Water thoroughly. Enclose the pot in a mini-greenhouse (*left*) and place it in bright indirect light. In a few weeks, a shoot will develop at the base of the parent leaf. When the plantlet is about 1 inch across and well formed, remove the mini-greenhouse and cut off the parent leaf at its base and discard it. Let the plantlet continue to grow in the same pot.

# PARTS OF A BEAN SEED



PARTS OF A BEAN SEED

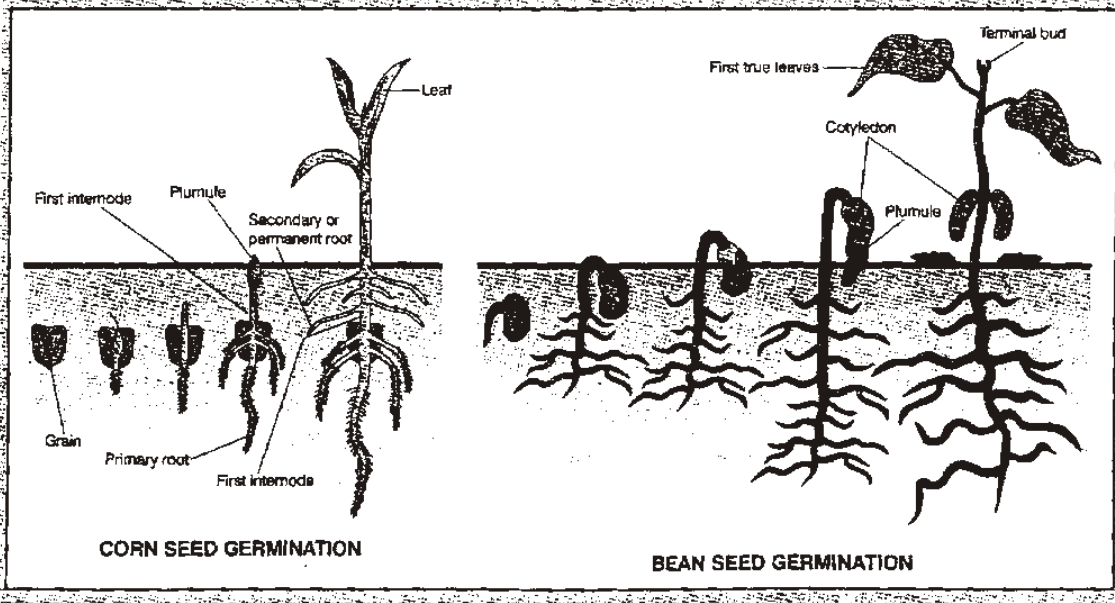


Germination occurs in several steps:

1. Water is absorbed by the dry seed. Water softens the seed coat and the interior parts of the seed.
2. Due to the presence of water, enzymes in the seed activate.
3. Cells within the seed begin to grow and elongate. This causes the *radicle*, the growing tip of the root, to emerge

## Try this!

Watch some seeds germinate. Soak two corn seeds and two bean seeds in water overnight. Fill a beaker with moist paper towels. Wedge the four seeds between the paper towels and the beaker so that you can see the seeds. Check the paper towels daily to keep them moist. Compare your seeds to the drawings below. Can you identify the radicle and the plumule?



**Evaluation**  
**Landscape Plant Production**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**PART 1. True or False.**

In the given space write "T" if the given statement is TRUE and "F" if it is FALSE. (1 point each)

- \_\_\_\_ 1. Complete flowers have only male reproductive parts.
- \_\_\_\_ 2. Asexual reproduction involves two cells, a male and a female cell.
- \_\_\_\_ 3. Shrubs grow very thick and high.
- \_\_\_\_ 4. Grasses make good ground covers.
- \_\_\_\_ 5. Cuttings are used in asexual reproduction of plants.
- \_\_\_\_ 6. All plants reproduce from seeds.

**PART 2. Matching.**

Match a statement from column B with a term from column A. (1 point each)

- |                     |  |
|---------------------|--|
| ____ 1. Propagation | A. Chemical that stimulates root growth in cuttings  |
| ____ 2. Asexual     | B. Ability of a seed to grow                         |
| ____ 3. Gametes     | C. Distance between two leaf scars                   |
| ____ 4. Seed        | D. Soil-less medium used to grow cuttings            |
| ____ 5. Hormone     | E. A young plant                                     |
| ____ 6. Perlite     | F. The art of growing plants                         |
| ____ 7. Germinate   | G. Reproductive male and female cells                |
| ____ 8. Node        | H. Reproduction of plants without the use of gametes |

**PART 3. Short Answers.**

Answer the question in simple terms. (2 points each answer)

1. Name two plants that are shrubs.

a.

b.

2. Name two types of reproduction that occurs in plants.

a.

b.

3. Name two reasons for planting ground covers.

a.

b.

4. Name two trees that are adapted to living in Arizona.

a.

b.

5. Name the male and female parts of a complete flower.

a.

b.

**PART 4. Short Answers.**

Explain each answer as briefly as possible. (5 points each)

1. Explain what is Asexual reproduction in plants.

2. Explain why you use parts of a plant such as a stem, root or bulb to reproduce it.

3. What is cloning? Why is it done?

4. What is the function of a seed leaf (cotyledons) in a seed?

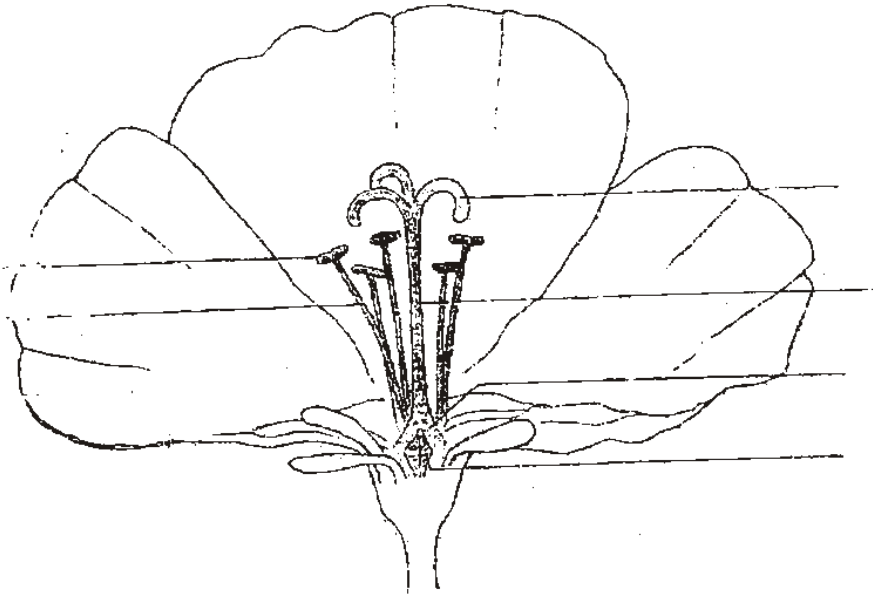
5. Explain why a Nursery operator needs to know how plants reproduce and grow?

6. Explain how you make a plant stem cutting.

**PART 5. Flower parts ID and Labeling.**

On the given drawing of a complete flower, identify and label the parts. (2 points each)

STAMEN  
(male)



PISTIL  
(female)

Evaluation  
Landscape Plant Production

Name: \_\_\_\_\_ KEY \_\_\_\_\_

Date: \_\_\_\_\_

**PART 1. True or False**

In the given space write "T" if the given statement is TRUE and "F" if it is FALSE. (1 point each)

  F   1. Complete flowers have only male reproductive parts.

  F   2. Asexual reproduction involves two cells, a male and a female cell.

  F   3. Shrubs grow very thick and high.

  T   4. Grasses make good ground covers.

  T   5. Cuttings are used in asexual reproduction of plants.

  F   6. All plants reproduce from seeds.

**PART 2. Matching.**

Match a statement from column B with a term from column A. (1 point each)

  F   1. Propagation                      A. Chemical that stimulates root growth in cuttings

  H   2. Asexual                            B. Ability of a seed to grow

  G   3. Gametes                            C. Distance between two leaf scars

  E   4. Seed                                    D. Soil-less medium used to grow cuttings

  A   5. Hormone                            E. A young plant

  D   6. Perlite                                F. The art of growing plants

  B   7. Germinate                        G. Reproductive male and female cells

  C   8. Node                                    H. Reproduction of plants without the use of gametes

**PART 3. Short Answers.**

**Answer the question in simple terms. (2 points each answer)**

**1. Name two plants that are shrubs.**

- a. **Lantana**
- b. **Bird of Paradise**

**2. Name two types of reproduction that occurs in plants.**

- a. **Sexual**
- b. **Asexual**

**3. Name two reasons for planting ground covers.**

- a. **Prevent soil erosion**
- b. **Control dust**

**4. Name two trees that are adapted to living in Arizona.**

- a. **Mesquite**
- b. **Palo Verde**

**5. Name the male and female parts of a complete flower.**

- a. **Stamen**
- b. **Pistil**

**PART 4. Short Answers.**

**Explain each answer as briefly as possible. (5 points each)**

**1. Explain what is Asexual reproduction in plants.**

*Reproduction using parts of a plant or organism. No gametes or reproductive cells are involved.*

2. Explain why you use parts of a plant such as a stem, root or bulb to reproduce it.

*They will grow into an exact copy of the parent plant. (Clone)*

3. What is cloning? Why is it done?

*Allows for organisms to reproduce exact copies to keep the same genes.*

4. What is the function of a seed leaf (cotyledons) in a seed?

*To provide food for the young growing plant until it develops leaves to produce its own food.*

5. Explain why a Nursery operator needs to know how plants reproduce and grow?

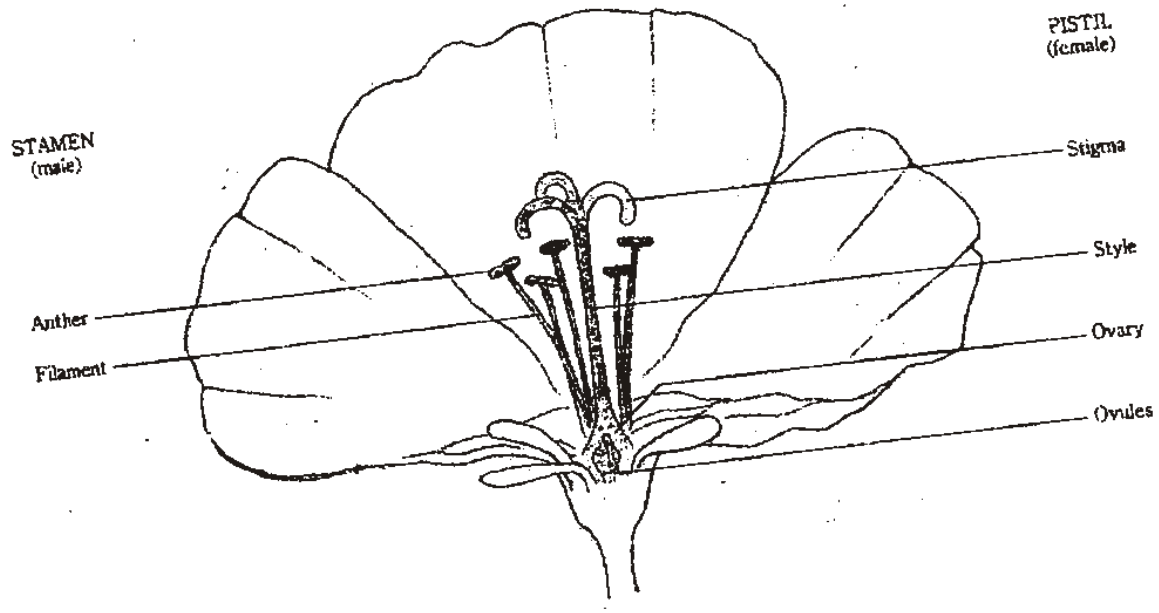
*So he/she can grow them properly.*

6. Explain how you make a plant stem cutting.

*Take a piece of the stem and make sure you have 2 to 3 nodes in the cutting.*

**PART 5. Flower parts ID and Labeling.**

On the given drawing of a complete flower, identify and label the parts. (2 points each)



# Plant Production Terms

S E I C E P S A N N U A L N I  
S S T R A T I F I C A T I O N  
L C O E D H H S F F L H A Z P  
A N A P N Z O Y E A A I G R E  
T O W R L O D R U T R E O S R  
N L O O I G I X M E E P L E L  
N O O D O F E T T O O M A F I  
E T D U S S I C A G N S A B T  
R S Y C M H A C A N E E U G E  
E M B T W B R T A X I L N D G  
P H Z I B E I U U T B M O V T  
G H Y O A O H A B C I N R Y Z  
Z N F N N R L D E E S O M E P  
E T I L U C I M R E V S N F G  
A S K C U T T I N G N K X B X

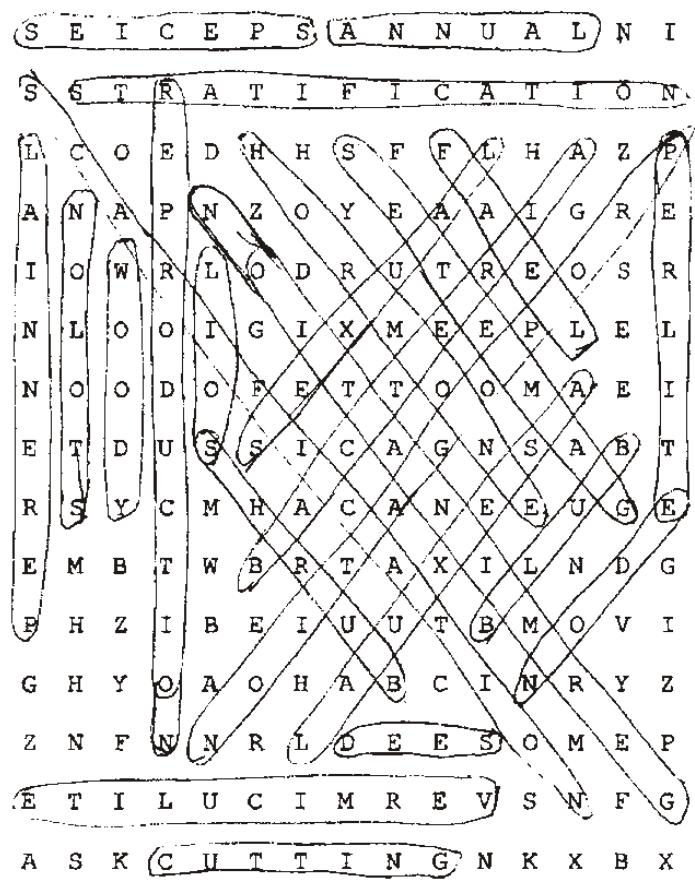
ANNUAL  
BULB  
GERMINATION  
NODE  
PROPOGATION  
SEED  
SOIL  
STRATIFICATION

ASEXUAL  
CUTTING  
HORMONE  
PERENNIAL  
REPRODUCTION  
SEXUAL  
SPECIES  
VERMICULITE

BACTERIA  
GAMETES  
LEAF  
PERLITE  
SCARIFICATIC  
SHRUB  
STOLON  
WOODY

Key

# Plant Production Terms



- ANNUAL
- BULB
- GERMINATION
- NODE
- PROPOGATION
- SEED
- SOIL
- STRATIFICATION
- ASEXUAL
- CUTTING
- HORMONE
- PERENNIAL
- REPRODUCTION
- SEXUAL
- SPECIES
- VERMICULITE
- BACTERIA
- GAMETES
- LEAF
- PERLITE
- SCARIFICATION
- SHRUB
- STOLON
- WOODY

## LANDSCAPING PLANT RESEARCH AND PRESENTATION

Objective: To research a plant used in landscaping.  
To present the information orally to the class.

Factors to include in report.

Plant common and scientific name

Origin of plant

Habitat of plant

Diseases or pests that may attack plant

Uses of the plant

Indicate if plant is a groundcover, shrub, or tree.

Indicate if plant is an evergreen or a deciduous

Method of propagating plant

Is plant heat or shade tolerant

Report is worth 50 points and presentation is 50 points.

Presentation will be graded on:

Voice

Poise

Organization

Interest of audience