

# LESSON | What is vegetative

## 15 | propagation?

Plants are living things. Therefore, they reproduce. Many plants reproduce from seeds. Others reproduce without seeds. Reproduction from seeds is sexual reproduction. Reproduction without seeds is asexual reproduction. Asexual reproduction in plants is called **vegetative propagation** [VEJ-uh-tayt-iv prahp-uh-GAY-shun]. In vegetative propagation, roots, stems, or leaves reproduce one or more new plants. There are several kinds of vegetative propagation. Some kinds are natural. Other kinds are artificial.

Two kinds of natural vegetative propagation take place by means of **bulbs** and **tubers**.

**BULBS** A bulb is really a short underground stem surrounded by thick colorless leaves. They are special leaves. They do not make food like green leaves do. They store the food made by the green leaves above the ground. The leaves protect and nourish the bulb.

The bulb you know best is the onion. An onion plant produces many bulbs. Each bulb may grow into a new onion plant. Other plants that grow from bulbs are tulips and lilies.

**TUBERS** A tuber also is a heavy underground stem. It stores food made by the green leaves above the ground. The white potato is a tuber. (The sweet potato is not a tuber.)

A tuber has several "eyes." Each eye is really a bud. Each bud can sprout into a complete new plant.

Two kinds of artificial propagation take place by means of **cuttings** and **grafting**.

**CUTTINGS** You may have made a cutting from a house plant yourself. You cut the stem or a leaf from a plant. You placed the cutting in water or in moist soil or sand. In a few days, roots developed. Then you could plant the cutting in soil.

Geraniums may be grown from stem cuttings. Begonias may be grown from leaf cuttings.

**GRAFTING** Attaching a stem cutting of one plant to another plant is called grafting. The plants then grow together. A plant can be grafted only to another plant that is related.

Grafting is most often done with fruit trees.

## BULBS AND TUBERS

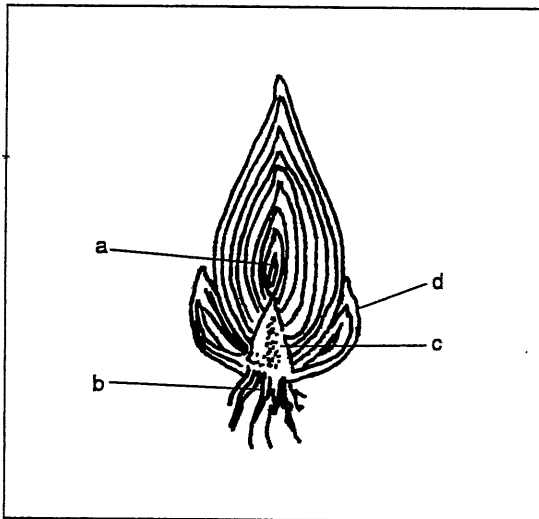


Figure A

Figure A shows a bulb. It has colorless leaves (a), roots (b), a stem (c) and bulblets (d). Look at an onion and see if you can identify these parts.

1. What is the job of the colorless leaves?

\_\_\_\_\_

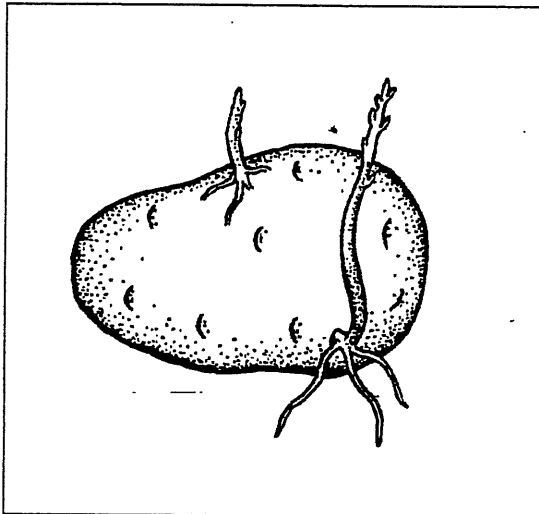


Figure B

Figure B shows a tuber. Notice the "eyes" of the potato. Also look for the smaller roots growing out of the "stem."

2. What is the job of a tuber? \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

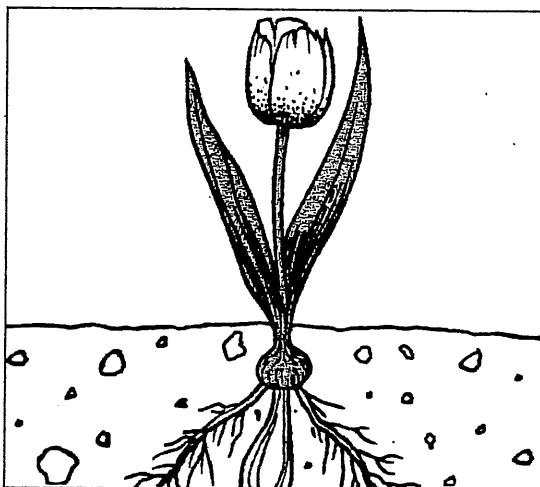


Figure C

Figure C shows what a complete bulb plant looks like.

It has roots, above-ground stems, green leaves, colorless leaves, and a flower.

3. Which part takes in water and minerals? \_\_\_\_\_
4. Which part of the plant makes food?  
 \_\_\_\_\_
5. Where is this food stored? \_\_\_\_\_

\_\_\_\_\_

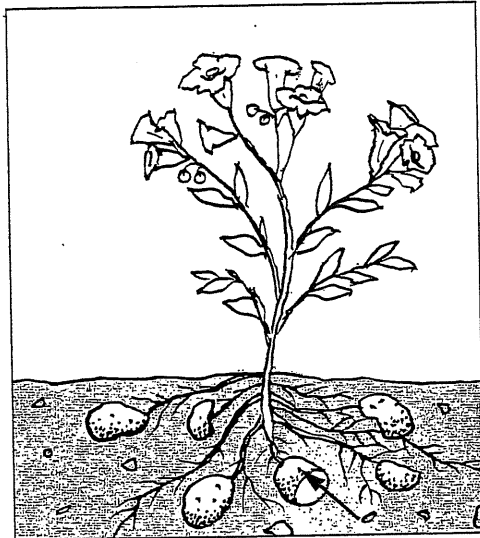


Figure D

This is what a complete potato plant looks like.

It has **roots, tubers, above-ground stems, green leaves, and several small flowers.**

6. Where does a potato plant make its food? \_\_\_\_\_
7. Where is this food stored? \_\_\_\_\_  
\_\_\_\_\_
8. Find the part of a tuber labeled with an arrow—one of the potato's "eyes."  
What was it used for?  
\_\_\_\_\_

### SOMETHING INTERESTING

- Flowers produce fruits.
- Fruits have seeds.
- Seeds produce new plants.
- Bulb and tuber plants have flowers, fruits, and seeds. Yet, bulb plants are rarely grown from seeds. Potato plants are never grown from seeds!

### WHY?

- The seeds of bulb plants take too long to grow.
- Potato seeds are weak. They rarely grow into plants.

### MATCHING

Match each term in Column A with its description in Column B. Write the correct letter in the space provided.

Column A	Column B
_____ 1. vegetative propagation	a) a bud
_____ 2. tuber	b) short underground stem surrounded by thick colorless leaves
_____ 3. tuber eye	c) asexual plant reproduction
_____ 4. bulb	d) store food
_____ 5. tubers and colorless leaves of bulbs	e) heavy underground stem

## REPRODUCTION FROM CUTTINGS

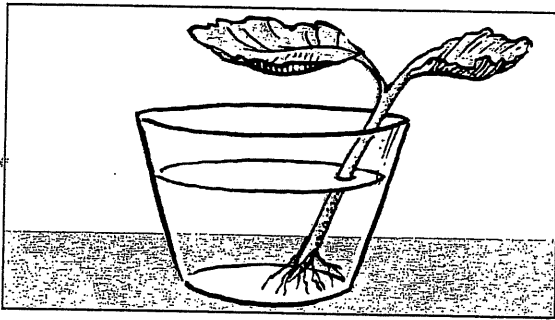


Figure E A stem cutting

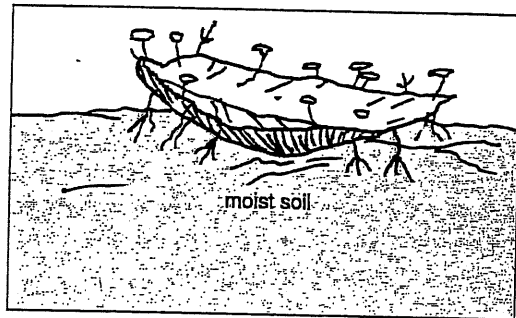


Figure F A leaf cutting

Some plants that reproduce from stem cuttings are geraniums, ivy, and many types of grapes. Roses also can be reproduced from stem cuttings.

African violets and some begonias reproduce from leaf cuttings.

Reproduction from cuttings is \_\_\_\_\_ vegetative propagation.  
natural, artificial

## REPRODUCTION BY GRAFTING

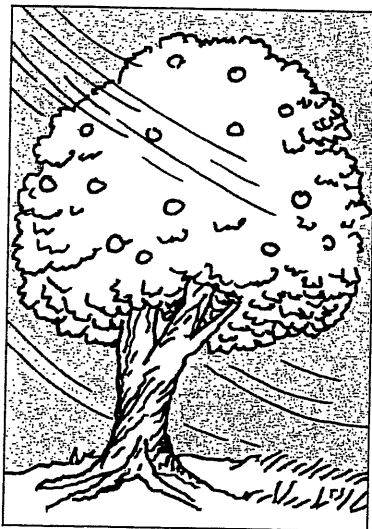


Figure G

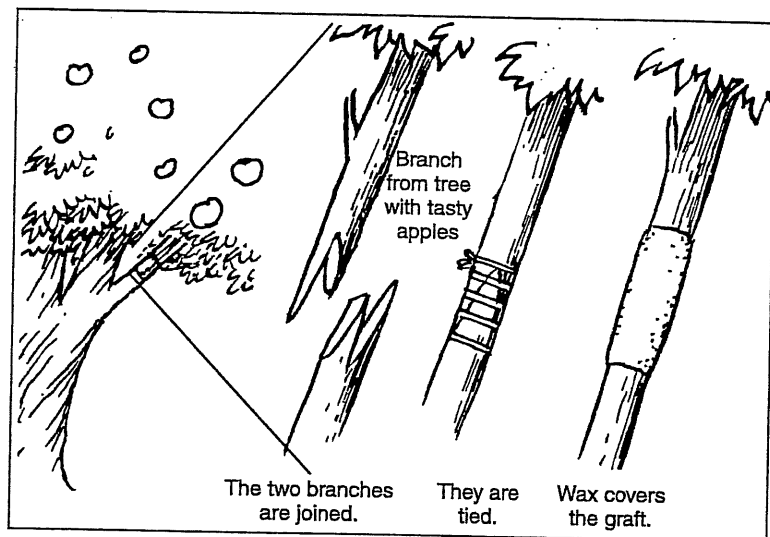


Figure H

The large tree in Figure G is very strong and can live in bad conditions. But the apples from it are small and do not taste good.

Branches from apple trees that produce large and tasty apples may be grafted to the strong tree. Figure H shows how it is done.

What kind of apples will the grafted branches produce? \_\_\_\_\_

## OTHER WAYS OF PROPAGATING PLANTS

Runners, rhizomes [RY-zohmz], and layering are three more ways that plants reproduce naturally without seeds.

**RUNNERS** The main stem of a plant grows straight up. It gives the plant support. Some plants have other kinds of stems, too. They are special reproductive stems called runners. Runners grow outward from the plants and close to the ground (Figure I).

Each runner has a bud. The bud touches the earth and starts a new plant. Strawberry plants, for example, reproduce by runners.

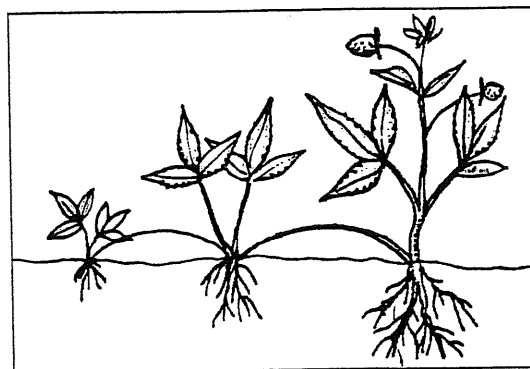


Figure I A strawberry plant reproduces by runners.

**RHIZOMES** A rhizome is a thick, underground stem (Figure J). It contains stored food. Rhizomes grow outward from a plant.

Rhizomes have swellings called nodes. Nodes develop buds that start new plants. Irises and many ferns are plants that reproduce by rhizomes.

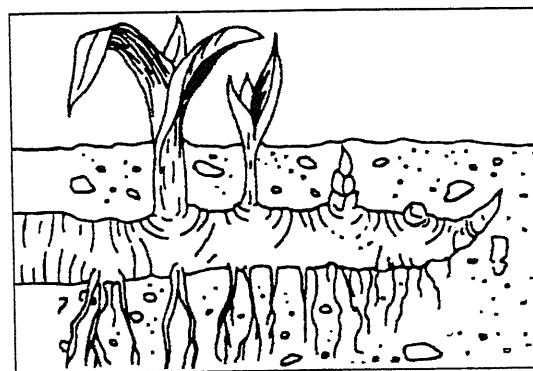


Figure J A fern reproduces by rhizomes.

**LAYERING** The upright stems of certain plants are not very stiff. They droop. If a drooped part touches the earth, roots develop and a new plant grows (Figure K).

Layering happens in nature. It can also be done artificially. Rose, raspberry, and blackberry plants are examples of plants that reproduce by layering.

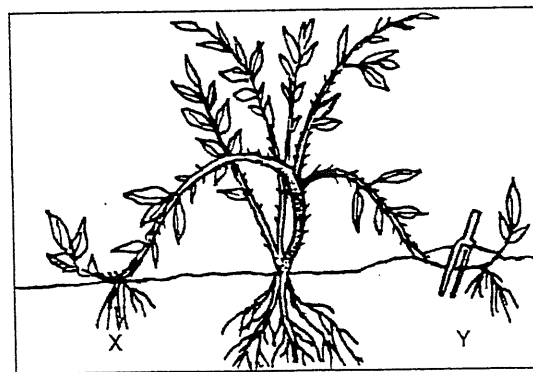


Figure K A berry plant reproduces by layering. Reproduction by layering can be natural or artificial.

## WHAT DO THE PICTURES SHOW?

Look at Figures I, J, and K and answer the questions about each.

1. How many runners do you see in Figure I? \_\_\_\_\_
2. In Figure I, the oldest plant is on the \_\_\_\_\_  
right, left
3. The youngest plant is on the \_\_\_\_\_  
right, left
4. Runners grow \_\_\_\_\_ the ground.  
above, under
5. A runner is a special kind of \_\_\_\_\_.  
root, stem, leaf
6. What type of plants reproduce by rhizomes?  
\_\_\_\_\_
7. A rhizome is a special kind of underground \_\_\_\_\_.  
root, stem, leaf
8. In Figure K, which side do you think shows natural layering? \_\_\_\_\_  
X, Y
9. Which side shows artificial layering? \_\_\_\_\_  
X, Y
10. A berry plant has \_\_\_\_\_ stems.  
stiff, droopy

## DO THIS AT HOME

Vegetative propagation is the asexual reproduction of a whole plant from a plant part. Grow your own whole plants from plant parts. Use Figure L as a guide. It shows you what to do. Be patient—your new plants will take time to grow.

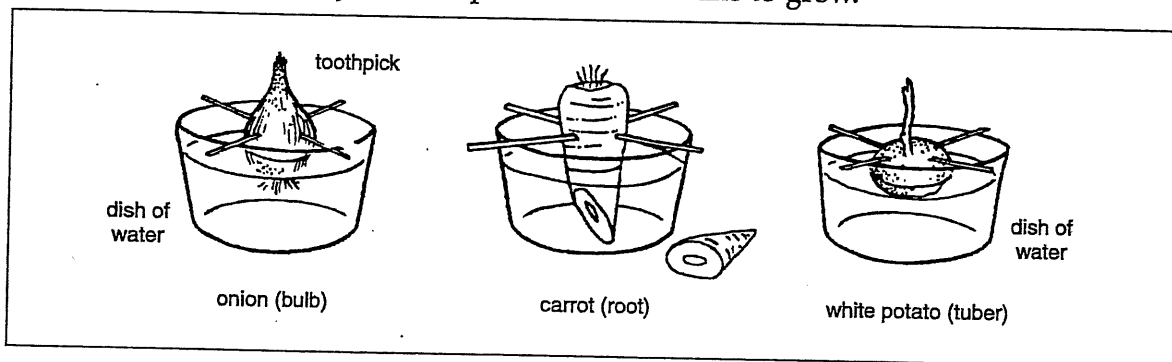


Figure L

## FILL IN THE BLANK

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Complete each statement using a term or terms from the list below. Write your answers in the spaces provided. Some words may be used more than once.

nodes  
vegetative propagation  
related

moist  
eyes  
colorless leaves

underground stem  
layering  
outward

1. Asexual reproduction in plants is called \_\_\_\_\_.
2. Rhizomes have swellings called \_\_\_\_\_.
3. A bulb is a short \_\_\_\_\_.
4. A bulb is surrounded by thick \_\_\_\_\_.
5. Runners grow \_\_\_\_\_ from a plant.
6. Drooping plant stems may cause a plant to reproduce by \_\_\_\_\_.
7. Cuttings must be kept \_\_\_\_\_.
8. A tuber is a thick \_\_\_\_\_.
9. New plants grow from the \_\_\_\_\_ of a parent tuber.
10. Grafting is done only with \_\_\_\_\_ plants.

## TRUE OR FALSE

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In the space provided, write "true" if the sentence is true. Write "false" if the sentence is false.

- \_\_\_\_\_ 1. Plants reproduce asexually from runners and rhizomes.
- \_\_\_\_\_ 2. A potato is a bulb.
- \_\_\_\_\_ 3. Rhizomes grow under the ground.
- \_\_\_\_\_ 4. A tuber is a short underground flower.
- \_\_\_\_\_ 5. All stems grow upward.
- \_\_\_\_\_ 6. Stiff plants reproduce by layering.
- \_\_\_\_\_ 7. Cuttings and grafting are artificial means of reproducing plants.
- \_\_\_\_\_ 8. A cutting may be a stem or a leaf.
- \_\_\_\_\_ 9. A stem or leaf cutting should be kept dry.
- \_\_\_\_\_ 10. All kinds of plants can be grafted together.

