

Plant Growth & Responses

I. Seed Development

1. What is a fruit? Ripened ovary that contains seeds
2. Circle the letter of each sentence that is true about fruits.
- ☒ a. As seeds mature, the ovary walls thicken to form a fruit.
 - ☒ b. Fruits can carry one seed or several seeds.
 - ☒ c. A fruit is a ripened ovary that encloses a seed or seeds.
 - ☐ d. The inner wall of the ovary never touches the seed.
3. A seed coat is the outer layer of the seed that protects the embryo and its food supply.
4. Circle the letter of why seeds dispersed by animals are covered with tough coverings.
- ☐ a. The seeds need to be able to float on water.
 - ☒ b. The coating enable the seeds to pass through an animal unharmed. (Corn Pcop)
 - ☐ c. The seeds need to be digested by the animal that eats them.
 - ☐ d. The coatings prevent the seeds from being eaten by animals.
5. What is dormancy? Period in which the plant embryo is alive but not growing
6. What are two environmental factors that can cause a seed to end dormancy?
1. Temperature (winter) 2. Moisture
7. What are two purposes served by seed dormancy?
- 1. Allow for long-distance dispersal (coconuts)
 - 2. Allow seeds to germinate under ideal conditions
8. Some pine tree seeds remain dormant until the high temperatures generated by a forest fire cause cones to open and release the seeds.

Circle One : True False

II. Plant Growth

1. Define the term hormone.

Hormone - substance that is produced in one part of an organism and affects another part of the same individual
(similar to animals)

2. What are two ways in which plant hormones control plant growth?

- 1. Control pattern of growth + development
- 2. Control responses to environmental conditions

3. How does the hormone auxin affect plant cells? Stimulate cell elongation

4. Circle the letter of each sentence that is true about auxins.

- ☒ a. Auxins cause roots to grow downward.
- ☒ b. Auxins regulate cell division in meristems.
- ☒ c. Snipping off the tip of a plant removes the source of auxins. (Side branches grow more rapidly)
- ☐ d. In roots, auxins stimulate cell elongation.
inhibit

Tomato
Botanical
Vs.
Horticultural

Squirrels
= Nuts

5. Define the term cytokinins.

Cytokinins - plant hormones that are produced in growing roots + in developing roots + seeds

6. Circle the letter of each sentence that is true about cytokinins.

- a. They delay the aging of leaves.
 b. They ~~stop~~ cell division and the growth of lateral buds.
 c. They often produce effects opposite to those of auxins.
 d. They cause dormant seeds to sprout.

7. What does each plant hormone cause fruits to do?

Gibberellin: Dramatic increases in size ("Jib-A-Rel-In")

Ethylene: Causes fruit to ripen

III. Plant Responses**1. What are tropisms?** Responses of plants to external stimuli**2. Match each tropism with the correct definition.**

- | | |
|----------------------------|--|
| 1. <u>B.</u> Gravitropism | A. The response of a plant to light. |
| 2. <u>A.</u> Phototropism | B. The response of a plant to gravity. |
| 3. <u>C.</u> Thigmotropism | C. The response of a plant to touch. |

3. Circle the letter of each sentence that is true about the effects of thigmotropism.

- a. The tendrils of a grapevine wrap tightly around any object they encounter.
 b. A plant that is touched regularly may be stunted in growth.
 c. The stems of climbing plants do not grow straight up.
 d. When the tip of a vine encounters an object, it breaks off.

Yellow-Touch-Me-Not
"Jewel weed"

4. Define the term photoperiodism.

Photoperiodism - response of plants to periods of light + darkness

5. What is photoperiodism in plants responsible for? Timing of seasonal activities such as flowering + growth**6. Why are plants such as chrysanthemums and poinsettias called short-day plants?**

They flower when days are short

7. What are long-day plants? Plants that flower when days are long (Iris, tulip, orchids)**8. Define the term winter dormancy.**

Winter Dormancy - period during which an organism's growth + activity decrease or stop

9. How do shorter days and lower temperatures affect photosynthesis?

Gradually reduces efficiency of photosynthesis

10. As cold weather approaches, what happens to deciduous plants? Turn off

photosynthetic pathways (transport minerals to roots; shed off leaves)

11. Why doesn't a tree's sap freeze during a hard, cold winter? Xylem + phloem tissues pumped full of ions (acts like anti-freeze in cars)

Grocery Store

- Treated with gibberellins + ethylene

(Good color, best taste)

Ragweed,
Goldenrod,
Queen Anne's
Lace