

Plant Adaptations

Name: _____ Date: _____ Core: _____

LT: I can gather and summarize information on plant adaptations.

Directions: Watch BBC Documentary – Life 9 of 10 – Plants and answer the questions.

1. Like animals, plants need food and water to survive. What additional need do plants have?

Plants also need light. They need light in order to survive.

2. Why is the forest floor the hardest place for young plants to thrive?

There is no light to help them grow.

3. Plants such as ivy, the cat's claw and the passion flower have adapted to accessing sunlight in dense forests. Describe three examples of adaptations that allow plants to access the sunlight in dense growth.

- adhesive pads
- sharp claws/tendrils
- tendrils coiling around the support

4. Air plants are able to survive on the branches of tall trees. They never actually touch the ground. How have these plants adapted to absorbing water and nutrients?

The roots absorb every drop of water (like blotting paper). Roots trap falling leaves that give them nutrients.

5. Bogs are wetlands with very little nitrogen available for plants. Explain how each of these plants has overcome this problem and have adapted to get nutrients.

- a. Sundew – leaves covered in sweet smelling tentacles attract insects. The tentacles are sticky and catch misquotes that then drown and break down.
- b. Venus Flytrap – has nectar that attracts insects; hairs inside the plant that if touched twice, trigger an electrical impulse that causes the jaws of the plant to close trapping the insect inside

6. Flowers are an effective way of attracting insect pollinators, but they are very delicate. How has the Richea honeybush adapted to protect its stamens from the cold?

The flower petals fuse together to protect the stamen. During sunny days, nectar attracts birds which rip the cases apart allowing pollination.

7. The sandhill milkweed has almost an adversarial relationship with monarch butterflies, yet the butterflies are necessary for the survival of the plant. Explain this relationship between the plant and the butterflies and why it is important to both species.

Monarch butterflies lay their eggs on the plant. This is the only plants the caterpillar (of the butterfly) can eat. The milkweed ejects latex which cause most of the caterpillars to caught which provides nutrients to the plant. Only 1/3 of the caterpillars survive. These caterpillars eat the plant, but this also allows pollination to occur.

8. Heliconia has modified leaves that protects the nectar of its flowers deep inside. What animal can access the nectar? How does adaptation help Heliconia to propagate (reproduce)?

The hummingbird can access the nectar. The rationed nectar is very addictive and causes the hummingbird to return several times, this allows the pollen to be spread widely.

9. The purpose of seeds is to send the plant offspring as far away from the parent as possible, so that any competition is avoided. Describe how each of these species accomplishes this:
- Brunsvigia – cartwheeling of dead plants which disperses the seeds
 - Alsomitra – seeds with wings; The seeds work like gliders that can travel far.
 - Saguaro Cactus – Attracts a lot of different animals. Nectar feeding bats move from plant to plant. Seeds are covered with flesh that birds eat and then spread the seeds in their droppings. Ants and tortoises also carry the seeds.
10. The Dragon's Blood Tree lives in an extremely dry climate. How has its shape adapted to help it survive in this inhospitable climate?
- The morning mist condenses on the tree's waxy leaves. The droplets run down the branches to the roots. The shape of the tree shades the dirt that allows the water droplets to be absorbed into the soil.
11. The desert rose is also well adapted to dry climates. Describe one of its adaptations.
- It jettisons its leaves during the hottest times to conserve water. It also has a bulbous trunk that stores water like a barrel all year long.
12. Mangrove trees endure a regular flooding of salt water. What adaptation is present in their roots and how does it help them survive?
- Mangrove trees have warty growths which take in O₂ when they are above water. The paws allow water in but filter out 99% of the salt. Any excess salt is pumped into a few leaves which are sacrificed and die.
13. What happens to broadleaf trees in temperate climates as winter approaches that helps the trees survive the winter temperatures?
- All water and nutrients in the leaves back into the trunk and made a sugary antifreeze. The chlorophyll disappears, leaves die and fall and the tree basically hybinates.
14. How are evergreen trees able to keep their leaves throughout the year, even during a cold, dry winter?
- The leaves have antifreeze in them. Also there is a waxy coating on the leaves.
15. Bristlecone pines live in one of the most inhospitable places in the world for plants – they experience bitter, freezing winds most of the year. Describe how they are different than other plants and able to survive here.
- The bristlecone pine only grows for 6 weeks of the year, they don't shed their needles and they grow very slowly.
16. What is the most successful flowering plant?
- The most successful flowering plant is grass. It makes up 20% or all plants.
17. What two types of grasses are extremely important in feeding human civilization?
- Rice and wheat are the two grasses that are extremely important in feeding human civilization.
18. One of the last statements made in this documentary is that "plants fuel the diversity of life on Earth." Explain how adaptations have led to so many different types of plants.
- Answers will vary