

## Follow-up Activities

- Collect a varied assortment of seeds for children to inspect. Explain that seeds have adaptations that allow them to be scattered by wind, water, birds and furry mammals. Provide magnifying lenses and encourage students to examine and handle the seeds in order to predict the seed's method of travel.
- Bring in a number of edible roots, tubers, fruits, seeds and stems. Ask students to identify the different plant parts and make predictions about the plant's natural environment.
- Explain that pollination is a process that may involve animals spreading pollen from plant to plant in order for new seeds to develop, and that plants have special adaptations to attract pollinators. As a group, look at some different flowers and make predictions about the animal pollinators that frequent each flower. Ask students to find a way to see if their predictions are correct.

## Suggested Internet Resources

Periodically, Internet Resources are updated on our Web site at [www.libraryvideo.com](http://www.libraryvideo.com)

- [www.desertusa.com/du\\_plantsurv.html](http://www.desertusa.com/du_plantsurv.html)  
This site explains the many interesting adaptations that allow desert plants to live in such a hot, dry climate.
- [www.ars.usda.gov/is/kids/plants/plantsintro.htm](http://www.ars.usda.gov/is/kids/plants/plantsintro.htm)  
This USDA Web site illustrates some of the ways that plants defend themselves against hungry animals and how important they are to people.
- [www.nybg.org/chil\\_edu/materials.html](http://www.nybg.org/chil_edu/materials.html)  
The New York Botanical Garden has been a living museum of plants since the end of the 19th century. These pages list teacher guides and student activity booklets, which are downloadable and easily adapted to classroom use.

## Suggested Print Resources

- Burns, Diane. *Cranberries: Fruit of the Bogs*. Carolrhoda Books, New York, NY; 1998.
- Halfman, Janet. *Plant Tricksters*. Franklin Watts, New York, NY; 2003.
- Glover, David. *How Do Things Grow?* DK Publishing, New York, NY; 2001.
- Llewellyn, Claire. *Some Plants Grow in Midair*. Copper Beech Books, Brookfield, CT; 1998.
- Pirotta, Savior. *Trees and Plants of the Rainforest*. Raintree Steck-Vaughn, Austin, TX; 1998.
- Royston, Angela. *Strange Plants*. Heinemann Library, Oxford, England; 1999.
- Souza, D.M. *Endangered Plants*. Franklin Watts, New York, NY; 2003.

### TEACHER'S GUIDE

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### TITLES

- ALL ABOUT CARING FOR PLANTS
- ALL ABOUT PLANT POLLINATION: FRUIT, FLOWERS & SEEDS
- ALL ABOUT PLANT & ANIMAL INTERDEPENDENCY
- ALL ABOUT PLANT STRUCTURE & GROWTH
- ALL ABOUT PLANT ADAPTATION

Teacher's Guides Included  
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# All About Plant Adaptation

Grades K-4

This guide is a supplement, designed for educators to use when presenting this program in an instructional setting.

**Before Viewing:** Research in learning suggests that it is important for the teacher to discover what the students know — or think they know — about a topic, at the start of a new unit, so that their accurate conceptions can be validated and reinforced, and their misconceptions identified and corrected. Therefore, after reviewing the pre-viewing discussion questions provided for your class, create a “Everything We Know About...” list. Preview key vocabulary words and have students raise additional questions they hope will be answered by this program. Most importantly, students should be told that as “science detectives” they must listen closely, so that after viewing the program, they will be able to tell whether or not the facts/beliefs they put on their list were scientifically accurate.

**After Viewing:** After a brief discussion about the program, challenge your “science detectives” to prove or disprove the accuracy of the facts they put on their “Everything We Know About...” list. Discuss what else they learned and use the follow-up questions and activities to inspire further discussion. Encourage students to research the topic further with the Internet and reading resources provided.



## Program Summary

What makes a plant grow healthy and strong? Dusty thinks he knows — sunlight, water and room to grow. Dusty is the founder of a club called M.A.P.L.E., the Marvelous Association of Plant Loving Enthusiasts. Along with Dusty's neighbor, Dahlia, club members from all over the country try to help Dusty uncover the mystery illness of Venus, his favorite plant. Dahlia assures him that learning about his plant's special adaptations will make it easy to care for his plant. Adaptations are changes that happen to plants over many generations in response to their habitat. Slight variations are passed down over thousands of years until plants are perfectly suited for their environment. Dusty and his friends learn the basic needs of all plants — sunlight, water and nutrients from the soil. Dusty and his friends discover that although all plants have the same needs, different plants need different amounts of light, water and nutrients.

In their attempt to save Venus, Dusty and his friends find out how plants in the hot, dry desert survive, how plants facing a cold snap or a dry spell can become dormant, and how some jungle plants have adapted to live high atop the trees! After a hint from one club member who remembered seeing plants like Venus in a bog, the children begin a hands-on experiment suitable for the classroom. Because its natural environment is an acid-filled bog, the Venus flytrap has a special adaptation that enables it to get nutrients from passing insects! They find that the nutrients in the water that Dusty was giving his plant cannot be used by the plant and in fact were harming it. Once he began giving Venus mineral-free water and offering it an occasional fly to eat, Venus was on its way to recovery.

## Vocabulary

The following words are included for teacher reference or for use with students. They are listed in the order in which they appear in the show.

**adaptation** — Changes in a plant's structure occurring over long periods of time that make the plant more fit for living in its environment.

**generation** — A group of plants of a particular species that are of the same age.

**climate** — An environment's average weather conditions including temperature and rainfall.

**habitat** — The area where a plant or animal lives.

**ecosystem** — A place where living things interact with each other and with nonliving components, such as soil and water. A desert and a forest are two examples of ecosystems.

**dormant** — In a resting or non-growing state.

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**desert** — An area with an extremely dry climate.

**bog** — An extremely wet area with acidic soil and specialized plants.

**canopy** — The tent-like ceiling created by the leaves of trees in a forest.

**epiphyte** — A plant that does not grow in soil but is often found growing high above the ground on another plant. Also called an air plant.

**nutrients** — Substances needed by organism to live and grow.

**roots** — Plant structures usually underground and not seen that help to hold the plant up and bring in nutrients and water.

**Venus flytrap** — A carnivorous plant found in the moist bogs of the Southeastern United States that has adapted to enable it to get nutrients from insects.

**pollination** — The transfer of pollen from the male part of a plant to the female part of a plant.

**minerals** — Nutrients found in the soil and needed by plants and animals in small amounts in order to grow.

**humidity** — Moisture in the air.

## Pre-viewing Discussion

Before students generate their list of "Everything We Know About..." this topic, stimulate and focus their thinking by raising these questions so that their list will better reflect the key ideas in this show:

- How many types of plants are found on the Earth?
- What do all plants have in common? What are some ways that they are different?

After the class has completed their "Everything We Know About..." list, and before watching the show, ask them what other questions they have that they hope will be answered during this program. Have students listen closely to learn if everything on their class list is accurate and to hear if any of their own questions are answered.

## Focus Questions

You may wish to ask your class the following questions to assess their comprehension of key points presented in the program:

1. What is an adaptation?
2. How do plants change to suit their environment?
3. What factors influence the climate?
4. What happens when a plant becomes dormant?

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5. How do plants grow in the freezing Arctic?
6. How have plants adapted to life in the desert?
7. Why do some plants have spines?
8. Was Dusty's plant adapted to live in the desert? Why or why not?
9. Was Dusty's plant adapted to live in the rainforest? How do you know?
10. What do all plants need to survive?
11. How do epiphytes (air plants) survive?
12. What special adaptations do orchids have?
13. What special root adaptation does a dandelion have?
14. What are some adaptations that plants have to defend themselves against animals?
15. Why are plants different colors?
16. What are pollinators?
17. How have plants adapted to attract pollinators?
18. What is the Venus flytrap's special adaptation?
19. What is wrong with the soil in bogs?

## Follow-up Discussion

The most important part of this segment is to examine both the facts and beliefs generated by the class in their "Everything We Know About..." list. Research indicates that students will retain their previous misconceptions — in preference to the new information — until they actively recognize and correct their own errors. Because of this, it is important to lead students to the correct ideas while identifying and correcting any misconceptions from the class list. After reviewing the list, encourage students to share the answers they got to the questions raised before viewing the program.

Raising a thought-provoking question is a good way to assess the overall depth of understanding. A couple of suggestions are listed below:

- Discuss the adaptations of a carnivorous plant like the Venus flytrap.
- If a tropical rainforest is considered a paradise for plants, discuss why a cactus plant would die if it was transplanted there.