



Adapting a garden to climate change:

Design a plant superhero that can adapt to global climate change

Objective:

To explore concepts of plant adaptation, as they relate to gardening in a changing climate.

Overview:

Youth will learn how plants are affected by the climate and how they adapt to climatic changes. They will then design and create a “Plant Superhero” that has all of the characteristics of an adaptable plant for the local region. They will design, illustrate, name, and describe it.

Time: 1 hour

Materials:

- Flipchart and marker
- Art supplies (construction paper, markers, glue, scissors, and any else that could be used in designing and creating a plant)
- Updated garden zone map from the National Arbor Day Foundation (available at <http://www.arborday.org/media/zones.cfm> - it can be printed or viewed online).

Preparation:

Print garden zone map or locate the map online. The online version may be preferable since it shows the transition of zones from 1990 to 2006. This transition of colors will help to illustrate the phenomenon of global warming to the youth.

Instructions:

Explore background concepts with youth such as what a plant needs to survive and how climate zones are shifting:

- Use a flipchart and markers to brainstorm with the students the types of needs that a plant has: sun, water, soil nutrients, pollinators, etc... If they can't think of a lot, ask them what they need as human beings, and then suggest that plants need a lot of the same things!
- Talk about how just like animals and humans, different plants have adapted to different climates. Some thrive without summer rain, while others need to be constantly replenished with water. Still others are especially adaptable to a range

of conditions. In this way, plants are very similar to humans. Some of us love the hot weather and full sun; some of us prefer cooler weather and rain. Some of us could live in the hot Sahara desert and others in the freezing cold Arctic. We have adapted to our local climates, just like plants.

- Show the updated garden zone map to youth and talk about the implications of changing zones on plants and gardens. Explain that as global warming increases, these zones will shift even more. Talk about the implications of this shift. Engage them in a discussion by prompting them with questions such as: can palm trees grow here? Why not? What would happen if our current garden zone became warmer, like that of Florida? Could we grow palm trees then? If those palm trees grew here, what other plant species would those trees replace? Provide some examples of plants that thrive in both cooler and warmer climates and talk about the threat of invasive species encroachment with the rise in global temperatures. Also explain that the cycle of plants is connected to the cycle of animals and especially to the cycle of insects, which are accustomed to pollinate the plants at a certain time of year. Discuss what would happen to the insects if the plants life cycle changes (i.e. flowers bloom earlier, shift in zones is inhospitable to certain native species, etc).

Ask the youth to each design their own Plant Superhero that would have important qualities and characteristics that help it adapt to a changing climate.

- For example, the superhero plant might have a special protecting shield (like an umbrella!) for heavy rain spells. Or it might have a special inner storage unit (like camels!) to store extra water for weeks, in case of a heavy drought. Or it might have an extra thick lining (like a sweater!) to put on if there was a spontaneous frost in early summer.
- Get them to think creatively... the key here is for them to understand how plants are affected by the climate and how certain plants have developed qualities that help them to withstand spontaneous or erratic climatic changes.
- Ask them to illustrate their plant superheroes with the art supplies provided and then to name it. After they are done illustrating their superhero, give each child a chance to show and describe their superhero to the group.

Resources:

<http://www.arboday.org/media/zones.cfm>

Take it further:

Go visit a local garden nursery, or ask a Master Gardener to bring in some examples of plants with different growing requirements and different adaptable traits. Discuss planting a garden full of plants that could adapt to a changing climate. Which plants would you plant in the garden and why?