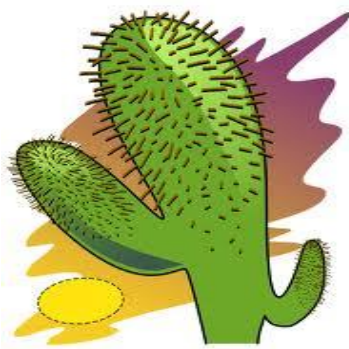


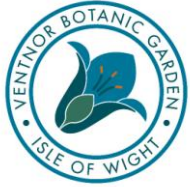


AWESOME ADAPTATIONS

How do plants adapt to their environment?

TEACHER'S NOTES





Awesome Adaptations

Teacher's Notes on Adaptations:

Desert

Mediterranean

Rainforest

List of useful websites for adaptations

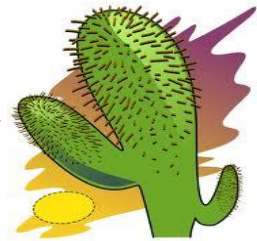
(SEE SEPARATE NOTES FOR EACH GARDEN.)

How Do Plants Adapt to Their Environment?

In the Desert.

Plants adapt to their environment from necessity. Plants may also adapt by growing lower and closer to the ground to shield themselves from wind and cold.

Desert environments may have some of the following adaptations, these help the plant to conserve food, energy and water and still be able to reproduce effectively.



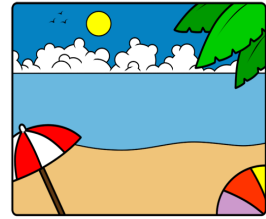
1. Thick fleshy leaves to store water.
2. Thick waxy cuticle (a protective layer on the surface of stem and leaves) to prevent dehydration e.g. Cacti
3. Shallow root system to collect small amounts of moisture.
4. Extremely deep root systems to tap into underground water.
5. Light coloured leaves or small reflective hairs to reflect excessive light, normally grey or silver.
6. Reduce leaf size or complete transformation of the leaves e.g. thorns or spikes reduce transpiration(loss of water through the plant, mainly the stomata[pore]) and offer protection.
7. Production of thorns /spikes to ward off predators e.g. cacti
8. Plants like euphorbia have toxic sap to deter insects.
9. Flower infrequently and produce large amounts of seed e.g. cacti .
10. Flowers are light coloured and have no pigment, plants produce nectar as most pollination is at night.

<http://www.bbc.co.uk/learningzone/clips/adaptations-of-plants-and-animals/5304.html>

How do Plants Adapt to their Environment?

In the Mediterranean

Plants adapt to survive. In the Mediterranean they cope with long hot, dry summers and short cool wet winters. The conditions can be stressful and plants must be hardy and drought resistant. Similar to desert plants adaptations, these help the plant to conserve food, energy and water and still be able to reproduce effectively.



Plants in the Mediterranean are characteristically short dense scrubby vegetation that are drought resistant.

1. Leaves thick waxy to avoid dehydration e.g. Euphorbias.
2. Fragrant with oils e.g. olive, rosemary, lavender.
3. Small, silvery or light coloured to reflect excessive light e.g. olive, rosemary, lavender, broom, teucrium, cistus.
4. Hairy leaves to deflect sun .
5. Change the position of leaves to avoid exposing whole surfaces to the sun.

How Do Plants Adapt to Their Environment?

In the Rainforest

Plants have an extra struggle to survive as they seek the sun through layers of vegetation, with extreme heat and humidity.



1. Bark. In drier, temperate deciduous forests a thick bark helps to limit moisture evaporation from the tree's trunk. Since this is not a concern in the high humidity of tropical rainforests, most trees have a thin, smooth bark. The smoothness of the bark may also make it difficult for other plants to grow on their surface.

2. Lianas are climbing woody vines that drape rainforest trees. They have adapted to life in the rainforest by having their roots in the ground and climbing high into the tree canopy to reach available sunlight.

3. Drip Tips. The leaves of forest trees have adapted to cope with exceptionally high rainfall. It is thought that these drip tips enable rain drops to run off quickly. Plants need to shed water to avoid growth of fungus and bacteria in the warm, wet tropical rainforest.

4. Buttresses. Many large trees have massive ridges near the base that can rise 30 feet high before blending into the trunk. Buttress roots provide extra stability.

5. Prop and Stilt Roots help give support and are characteristic of tropical palms growing in shallow, wet soils.

6. Epiphytes are plants that live on the surface of other plants, especially the trunk and branches. They grow on trees to take advantage of the sunlight in the canopy. Most are orchids, bromeliads, ferns, and Philodendron relatives.
7. Bromeliads are found mostly in the Americas. Some grow in the ground, like pineapple, but most species grow on the branches of trees. Their leaves form a vase or tank that holds water. The tanks support a thriving eco-system of bacteria, mosquito and dragonfly larvae, tadpoles, birds, salamanders and frogs.
8. Mangroves .On tropical deltas and along ocean edges and river estuaries, trees have adapted to living in wet, marshy conditions. These trees, called mangroves, have wide-spreading stilt roots that support the trees in the tidal mud and trap nutritious organic matter.
9. Nepenthes. Pitcher plant vines have leaves that form a pitcher, complete with a lid. Sweet or foul-smelling nectar in the pitcher attracts insects, especially ants and flies, that lose their grip on the slick sides and fall into the liquid. Downward-pointing hairs inside the pitcher prevent the insects' escape. The insects are digested by the plants and provide nutrients. Pitcher plants are not epiphytes but climbers rooted in the soil.

List of useful websites to reference for:

ADAPTATION TO ENVIRONMENT.

Ponds

www.uksafari.com/pondskaters.htm

www.naturegrid.org.uk/pondexplorer/pondexplorer.html

www.enchantedlearning.com/biomes/pond/pondlife.shtml

Desert

www.enchantedlearning.com/biomes/desert/desert.shtml

<http://library.thinkquest.org/11922/habitats/desert.htm>

www.woodlands-junior.kent.sch.uk/Homework/habitats.html
[ature/animals/wildbritain/habitats/urban/](http://www.nature.com/animals/wildbritain/habitats/urban/)

Forest

www.woodlands-junior.kent.sch.uk/Homework/habitats.html

www.enchantedlearning.com/biomes/tempdecid/tempdecid.shtml

<http://library.thinkquest.org/11922/habitats/forest.htm>