Teacher's Page

Surviving Winter • The Advantages of Being a Conifer

1. Most conifers are evergreen, meaning that they keep most of their leaves year-round. How might this help them survive?
Having green leaves year-round allows evergreens to photosynthesize whenever the weather is warm enough.
This allows them to take advantage of warm spells in spring and fall (or, in warmer climates like the Pacific Northwest, throughout the winter).

2. Conifer leaves are shaped like needles (or sometimes are like tiny scales, as for cedars and junipers).
How might this help them survive?
Having small, needle- or scale-shaped leaves allows conifers to conserve water, which helps them survive summer and winter drought.

3. Conifer needles remain on the tree for several years before falling off. How does this help them survive, particularly on sites with poor soil?
Growing a new set of leaves each year takes a huge amount of energy and resources. By keeping their needles for several years, conifers save energy and nutrients and can live in poor soil that many deciduous trees, which need a great amount of nutrients to grow their annual crop of leave, could not survive in.

4. Conifer needles are shiny and waxy. How might this help them survive?
The smooth, shiny surface encourages snow to slide off, helping to prevent snow build-up and branch breakage.
A waxy coating helps conserve water in the leaves.

5. Conifers have very small pores in their leaves, compared with the pores in deciduous leaves, and these pores close more tightly than those on deciduous trees. How might this help them survive?
Small, tightly closing pores help conifer needles conserve water.

6. In winter, water flows out of conifer cells and into the spaces in between the cells. How does this help them survive below-freezing temperatures?
When cells freeze, they can rupture and die. But in a conifer there are many small, empty spaces around the plant cells. But sending fluid from within the cells out into these extracellular spaces, the cells themselves avoid freezing. The extracellular spaces can freeze without damaging the cells.

7. Most young conifers and many mature conifers are conical in shape. How might this help them survive?
The conical shape helps conifers shed snow easily and allows each branch to receive direct sunlight.

8. The branches of many conifers attach to the trunk at an obtuse angle (meaning they point toward the ground.
How might this help them survive the winter?
Many conifers grow in areas that receive a lot of snow in winter. If the branches slope downwards, they are more likely to shed the snow easily without breaking.

9. Conifer wood is very flexible and is made up of longer fibers than deciduous wood.
How might this help them survive the winter?
Flexible wood is well-adapted to withstand the heavy weight of snow and ice.

10. Many conifers produce a distinctly scented resin, secreted when the tree is wounded. How does this help a conifer survive?
When insects bore holes into a conifer or a branch breaks off during a storm, the tree secretes a gummy resin that fills hole or creates a coating over the ragged break. This scab-like resin helps protect the tree against further damage.