

Winter

Living trees contain water. Why don't they burst open in winter, since water expands when it freezes? The water inside cells contains lots of dissolved substances. These lower the freezing temperature. Insides of cells also lack structures that water needs to start freezing.

As the temperature drops, water in between the tree's cells freezes first. This draws water out of the cells, which became more permeable during the process of hardening in the fall. The concentration of dissolved substances in the water inside the cells increases, lowering its freezing point even further.

COLD ADAPTATIONS

Different trees can survive different temperatures. After they have gone through hardening, red oaks can survive temperatures of -40°F . Spruces, balsam fir, quaking aspen, and other trees found in the far north can survive temperatures below -100°F !

Because they keep their leaves, coniferous trees can photosynthesize in winter and early spring. Some deciduous trees, such as aspen and cottonwood, can photosynthesize even without leaves because they have chlorophyll in their bark. This allows the trees to make sugar for themselves year-round.

EIGHT TIPS TO HELP TREES IN WINTER

1. Plant only native trees.
2. Water coniferous trees thoroughly in autumn.
3. Stop using nitrogen fertilizer near trees in late summer.
4. Wrap young smooth-barked trees with kraft paper secured with masking tape to prevent alternating freezing and thawing from damaging bark.
5. Surround the lower trunk with hardware cloth to protect from gnawing animals.
6. Screen coniferous trees with burlap on the south and west to prevent winter "browning."
7. Don't shake snow or ice from trees in winter.
8. Staple a folded index card over the top bud of young white pines to discourage deer from nibbling them.

