

## Orchard Tree Dormancy: Helping Our Trees Survive the Winter

<b>Grade(s): 2-8</b>	<b>Topic: dormancy, buds, animal behavior, preparing for winter</b>	<b>Season: Winter</b>
<b>Timing:</b> 45 minutes, including 5 minute RPK, 5 minute introduction, 15 minutes outdoor stewardship activity winterizing the orchard, 15 minute animal adaptation activity, and 5 minute conclusion		
<b>Objectives:</b> <ul style="list-style-type: none"><li>• Students can explain that deciduous trees are dormant during the winter, which means they enter a sleep-like state</li><li>• Students can distinguish between a dead branch and a still-living branch and can identify buds and explain that leaves and flowers emerge from the buds in spring</li><li>• Students bond with orchard trees through active stewardship, learning how they can help the trees survive the winter</li><li>• Students can demonstrate different coping mechanisms animals employ in the winter in order to survive, similar to the way that trees enter dormancy to survive</li></ul>		
<b>Materials:</b> <ul style="list-style-type: none"><li>• Twine/string</li><li>• Garden staples (optional)</li><li>• Mulch – Contact a local landscaper, arborist, or parks department for a referral</li><li>• Rodent guards – Contact a local orchardist, arborist, or landscaper for a referral</li><li>• <i>Why Leaves Really Fall off Trees</i> article</li><li>• <i>When Built-In Antifreeze Beats a Winter Coat</i> article</li><li>• Tissue paper or collected leaves (optional)</li></ul>		
<b>Degree of need for extra teacher or parent helper?</b> High		
<b>Journal Prompt:</b> How do plants, animals, and people survive in winter? Are they similar ways or different?		
<b>Lesson Sequence</b> <b>Reactivate Prior Knowledge (5 minutes)</b> Pass around a pine needle and a dead, dried deciduous tree leaf. What is similar about these two objects? (They are both leaves.) What is different? (Pine needles stay on a tree in winter, while deciduous trees fall off.) Leaves vary widely and have diverse qualities that make them helpful or harmful if they stay on a tree in winter (qualities include cuticle, resin, surface area, and shape, among others).  <b>Introduction (5 minutes)</b> “Look at the trees now; are they alive or dead? How can you tell?” Tell students about dormancy, a sleep-like state (if some students are Spanish speakers, you can explain that ‘dormant’ is similar to the verb ‘dormir,’ which means ‘to sleep’) that <b>deciduous</b> trees assume in the winter. Deciduous trees go dormant in the winter because there is not enough sunlight for them to make enough energy to stay active and the cold temperatures can cause the water in the leaves to freeze.  In the spring, when temperatures rise and daylight hours grow long again, the trees begin to		

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wake up. Just like you might be hungry when you wake up in the morning, trees are hungry, too, and need to start making their own food again.

**Winterize the Orchard and Garden (15 minutes outside)**

Once outside, stand by a tree and ask the students if the tree is alive or dead and how they can tell. Explain that we can help the trees survive the cold winter and last through their dormant period and wake up healthy in the spring.

*This consists of two parts:*

**First**, make sure that all the trees have tree guards. These can be either rubber or a malleable metal that wraps around the base of the tree (reaching 8 – 12 inches from the ground). Tree guards usually have a lattice or polka dot pattern (not completely solid).

Help the children bend the tree guards to fit around the base of the tree, putting the rubberized surface on the inside. Tie the guard with string or clamp with a garden staple. The guard will protect the tree weed whackers and lawn mowers as well as from mice and other small animals that might chew on the tree’s bark.

**Second**, mulch the trees. This helps them to retain water, protect them from the cold, suppress weed growth and, if the mulch contains compost, will give the trees nutrients. First, clear the area under the tree of all debris in a 3 - 4 foot radius; or to the extent of the branches. Next, have the children spread a nice 1 – 2 inch layer (depending on the type) of mulch around the tree, beginning 6 inches from the base of the trunk. This ‘donut’ shape around the tree, leaving a space right next to the trunk, is important. Rather than making the shape of a volcano with the mulch right up next to the trunk (which can lead to rot and hurt the tree) make sure the shape is a bit concave and is slightly lower at the base of the tree, so that water will reach the roots, rather than just run off.

**Animal Winter Coping Mechanisms (15 minutes)**

Now that students know more about how trees survive the winter, as a class, brainstorm a list of things that animals do to survive winter. Start with animals that students might have an idea about. Possibilities are hibernating, building a shelter, having a warmer coat, losing leaves and going dormant, staying underground. Ask students to think about how **they** cope with winter as well

Turn this into a game, by telling the students that when you name a particular plant or animal (or type of plant/animal) they are to act out what that organism does.

<b>Plant/Animal</b>	<b>Behavior</b>	<b>Activity</b>
Bear	Hibernate	Feign sleep
Deciduous tree (maple)	Loses leaves and goes dormant	Grab and drop tissue paper “leaves” or real leaves, stand still and silent
Mole	Nest underground	Hide under table or something else
Snow Rabbit	Grow extra furry coat	Put on jacket

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Tomato	Makes a seed that lies dormant through winter	Curl up into a ball on the floor or ground
Storage Organ (carrot, potato, tulip bulb)	Stock pile energy underground	Hide under a pillow, blanket, or jacket on the floor

**Conclusion (5 minutes)**

Reiterate vocabulary and what students have learned about dormancy, buds and branches, and winter coping mechanisms.

**Vocabulary**

Bud  
Branch  
Deciduous  
Dormancy / dormant  
Hibernation  
Mulch

**Vocabulario**

Caduco  
Capullo  
Durmiente  
Hibernación  
Mantillo  
Rama

**Extensions / Homework Ideas:**