



UI Extension Forestry Information Series

Moisture Stress: What Does That Mean for Trees?

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With below average precipitation over several seasons, trees across Idaho, whether they are in your yard or out in the woods, are moisture stressed. Trees vary in their ability to tolerate moisture stress, with native trees having much more tolerance than planted trees and shrubs. Moisture stressed trees are much more susceptible to diseases, insect attacks, and injury by severe weather. Basically, moisture stress occurs when the amount of water going out of a tree is greater than the amount going in. All plants transpire, losing water through the foliage to help cool the plant and also help move water from the roots to the leaves. When there is a shortage of water within the plant, foliage wilts. As moisture stress continues, symptoms such as browning of leaf margins and tips of leaves and needles occurs. Deciduous trees and shrubs will drop some or all of their leaves. If a severe shortage occurs over a period of several years, branch and crown dieback, and eventually death of the entire plant will occur.

Moisture stress continues to happen over the winter, most notably in evergreen trees and shrubs, when water evaporates from leaves and stems when the soil is cold or frozen. Roots extract little moisture from cold soils and none from frozen soils and cannot replace moisture lost. Trees and shrubs subjected to winter moisture stress will show browned needles and may even die over the winter. This is commonly referred to as winter death.

Moisture stress related to dry soil can be alleviated by proper watering practices. Moisture stress is the primary cause of death for newly planted trees and shrubs, which need supplemental water every 7-10 days if there is not adequate rainfall. For all practical purposes, watering established trees and shrubs in times of drought will usually be restricted to those plants that are within distance of your longest hose.

It is very important that trees and shrubs receive enough water before the soil freezes. Most of a tree's roots are located in the top two feet of soil. When

watering, you want to soak the soil to a depth of at least 12 inches. Short, frequent watering usually does not penetrate much beyond the sod and organic matter layer of the soil profile.

There are several methods of deep watering your trees. The easiest way is to spiral a soaker hose around your trees and shrubs let the hose run slowly for at least four hours. Move the hose around the entire drip line of larger trees to ensure that all of the roots receive water.

Mulch is another way to conserve moisture around your trees and shrubs. Mulch is any material placed on the soil to cover and protect it. Common mulches are bark, wood chips, ornamental gravel, and landscape matting. Mulching will also help with weed and grass control and protect the lower portions of your trees and shrubs from mechanical injuries.

You can lessen the effects of drought on your forest trees by thinning both the trees and shrubs so you have less plant material per acre, leaving more moisture, light, and nutrients for those that you leave.

When all else fails, and you lose a tree or shrub to drought stress, take the time to replace the planting with a more suitably drought tolerant species. If you lost a birch to drought stress, do not replace it with another birch! Drought tolerant species include bur oak, Gamble oak, blue oak, black and honey locust, Rocky Mountain juniper, Austrian pine, and ponderosa pine. Drought intolerant species include birches, cottonwoods, poplars, spruces, and firs.

Remember the old adage "an ounce of prevention is worth a pound of cure"? In the case of deep watering your trees and shrubs before winter it proves only too true.

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