University of Idaho Extension

Forest Management No. 46

UI Extension Forestry Information Series

Moisture Stress: What Does That Mean for Trees?

Yvonne C. Barkley

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, loosing 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 tears, 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