

Quaking Aspen Survivability Is Determined By Amount of Damage To:

Crown



Trunk



Roots



For More Information:

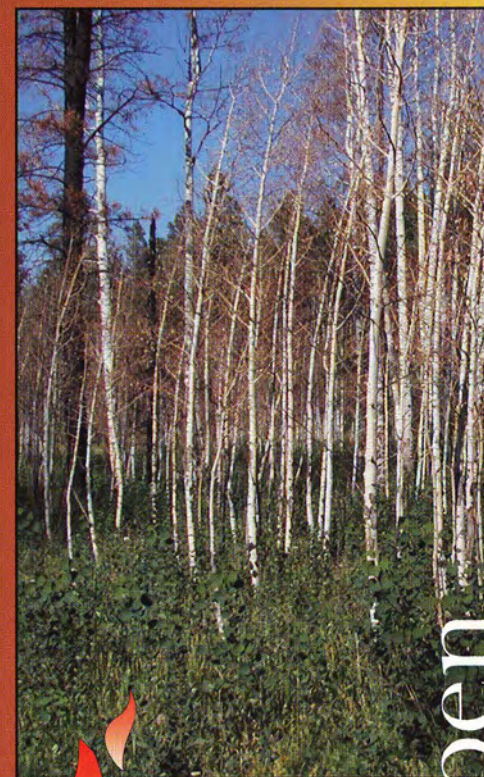
Additional information may be obtained from the following sources:

Colorado State Forest Service
www.colostate.edu/Depts/CSFS

USDA Forest Service
www.fs.fed.us



How to:



- Identify quaking aspen which will survive fire damage
- Determine amount of fire injury which will kill a quaking aspen
- Make management decisions regarding quaking aspen after fire

Quaking Aspen

Quaking Aspen

Quaking aspen is the most widely distributed tree species in North America and can be found growing throughout Colorado's mountains at elevations of 7,000 to 10,000 feet.

Crown Scorch:

Quaking aspen can survive crown scorch, however, mortality does not always occur immediately after fire. Sometimes buds in the crown will survive and leaf out prior to the death of the tree. Quaking aspen trees may take up to four years to die following fires, though most trees succumb by the second postfire year.

Trunk Scorch:

Small-diameter quaking aspen is usually top-killed by low-severity surface fire. The thin bark has little heat resistance. As diameter increases beyond 6 inches, quaking aspen becomes increasingly resistant to fire mortality. Large quaking aspen may survive low-severity surface fire, but usually shows fire damage. Moderate-severity surface fire top-kills most quaking aspen, although large-stemmed trees may survive. Severe fire top-kills quaking aspen of all size classes.

Root Damage:

Quaking aspen trees have wide-spreading, shallow root systems that can be damaged by fire, but also respond to fire by sending up new sprouts. Root systems of top-killed stems send up a profusion of sprouts for several years after fire. Moderate-severity fire does not damage quaking aspen roots insulated by soil. Severe fire may kill roots near the soil surface or damage root tissue on shallow roots so that they cannot sprout. Deeper roots are not damaged by severe fire and retain the ability to sucker.



Assessing Damage

Crown: Look for brown, dried, or burned foliage and twigs. Be sure to look at all sides of the tree. Look at bud development and condition; check the tissue beneath the buds and under the bark of the twigs; if the tissue is brown it is dead, if it is green it may still be alive and viable.

Trunk: Remove a small section of bark (about 1-inch square), near the tree's base, down to the sapwood. Determine the color and condition of inner bark. If it is pale green and moist, it is still alive and healthy. If it is brown and dry, it has been killed. Check at four sites around the tree's circumference. If inner bark at more than two of those sites is dead, tree survival is questionable.

Roots/Root Collar: At ground level, check condition of inner bark using the same method as used on the trunk. If inner bark on more than half of the samples (more than half of tree's circumference, or more than half of large lateral roots) is brown, tree survival is unlikely. Trees with this amount of damage can become unstable and highly susceptible to failure.

Management Considerations:

Even when quaking aspen is not killed outright by fire, the trunk may be sufficiently damaged to permit the entrance of wood-rotting fungi. Basal scars which lead to destructive heart rot can be made on even good-sized aspen by the least severe of fires. Basal fire scars may also permit entry of borers and other insects which can further weaken the tree. Quaking aspen, being in the poplar family, is naturally weak-wooded; adding stress such as fire scars, wood-rotting fungi and insect borers can make these trees extremely dangerous if left standing near valuable target areas.

Sprouting:

Quaking aspen generally sprouts vigorously after fire. Long-term growth and survival of quaking aspen sprouts depends on a variety of factors including prefire carbohydrate levels in roots, sprouting ability of the clone(s), fire severity, and season of fire. Moderate-severity fire generally results in dense sprouting. Fewer sprouts may be produced after severe fire. Since quaking aspen is self-thinning, however, sprouting densities are generally similar several years after moderate and severe fire. A low-severity surface fire may leave standing live trees that locally suppress sprouting, resulting in an uneven-aged stand. Quaking aspen burned in spring generally sprouts later in the growing season and again the following year. Fires in mid-growing season generally result in late-season sprouting. Quaking aspen burned in late summer or fall usually sprouts the next spring.



What to Do?