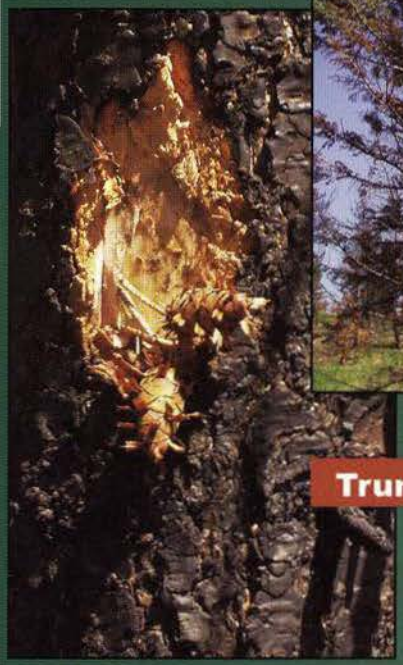
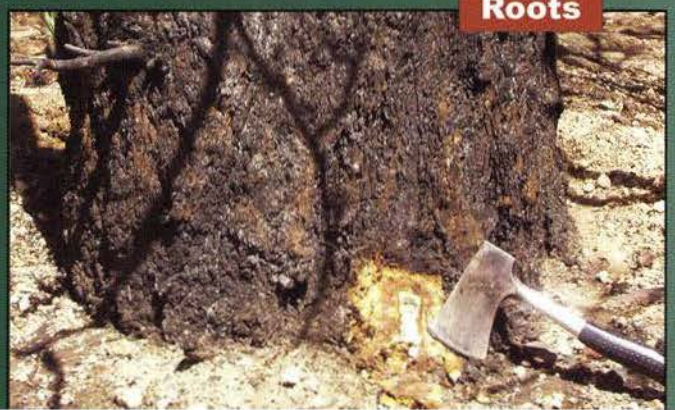
Douglas-Fir Survivability Is Determined By Amount of Damage To:





For More Information:

Additional information may be obtained from the following sources:

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

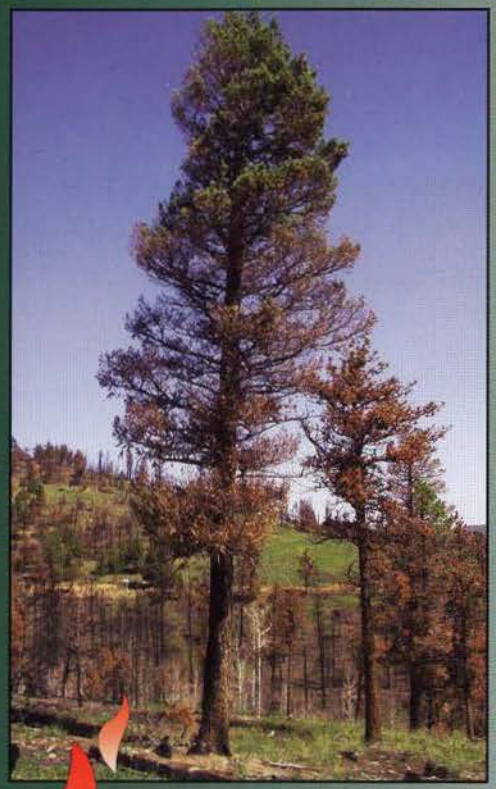
USDA Forest Service
www.fs.fed.us

Colorado Tree Coalition

Colorado State Forest Service

Forest Service U S Department of Agriculture

How to:



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

Douglas-Fir

Douglas-Fir

Douglas-fir predominately grows at elevations of 6,000 to 9,000 feet in Colorado, and is usually mixed with ponderosa pine in many areas. Douglas-fir is often the dominant species on north-facing slopes within this elevation range.

Crown Scorch:

Douglas-fir with more than 50% crown scorch, particularly if developing buds have been destroyed, are less likely to survive.

Trunk Scorch:

Douglas-fir bark, on mature trees, is less readily damaged by fire; but damage depends on the size and vigor of the tree. If inner bark is destroyed on more than 50% of the trunk circumference, survival is unlikely.

Root Damage:

Damage to roots or the root collar, to the extent that inner bark (cambium) is destroyed on more than half of the tree's circumference or half of major lateral roots, will usually result in the tree's death.

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. If more than 50% of the foliage is dead, the tree likely will not survive.

Trunk: Remove a small section of bark (about 1-inch square), near the tree's base, down to the sapwood. Determine color and condition of the 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 the inner bark at more than two of those sites is dead, tree survival is questionable.

Roots/Root Collar: At or below the duff layer, check the condition of the inner bark using the same method as used on the trunk. If the inner bark on more than half of the samples (more than half of the tree's circumference, or more than half of large lateral roots) is brown, tree survival is unlikely. Trees with this amount of damage are often attacked and killed by bark beetles.

Remedial Action:

If more than 50% of the crown is burned and three or more trunk and/or root samples show dead inner bark, the tree will likely die. Fire or beetle-killed trees may become a hazard and should be considered for removal

Protective Action:

If half or more of the tree's inner bark is healthy, it will probably survive fire effects. It may, however, be susceptible to Douglas-fir beetle attacks - especially if early season weather following the fire is unusually warm and dry. Trees may be protected from beetle attacks by applying a water-based insecticidal spray to the tree's trunk

Note:

1. Preventative treatments must be done in early Spring, usually by mid-April, and must be done before the tree is infested. A beetle-infested tree cannot be saved. Treatments may need to be repeated for 1-2 years.

2. Trees which have been attacked by bark beetles (look for reddish-brown boring dust on the tree's lower trunk) should be removed to prevent emerging beetles from attacking nearby healthy trees.

What to Do?