

# WILDFIRE RECOVERY

Summer 2006

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## WAYS TO MOVE FORWARD

Wildfires make a profound impact in Oregon—on people, land, animals, environment and the economy. As the population continues to increase, homes and communities expand to new rural boundaries, and fires become more a part of the changing landscape, Oregonians are faced with the challenges of preventing, preparing and recovering from wildfires.

The following information will help guide Oregonians in recovering from recent large, intense and uncontrollable wildfires. This publication is intended to help individuals, families, and business as they begin making decisions about their personal well-being, home, and property.

Beginning recovery from wild-



fires calls forth human emotions that intertwine with what has to be done today, tomorrow, and next month. Trying to grasp all of these decisions at once is a part of human nature and often overwhelming.

This guide will focus on how to support children through these tough times, ways to address household damage, and methods to protect property, forage, and landscape from further damage.

## Good Connections:

- <http://extension.oregonstate.edu/deschutes>
- <http://www.fema.gov/kids/>
- <http://www.redcross.org>
- <http://www.mountainriver.redcross.org/>

## DISASTERS AREN'T NECESSARILY DISASTROUS TO THE WELL-BEING OF YOUTH

Wildfires scare adults and children. They often hit without warning. This type of disaster scares children more because they lack the life skills and experience of adults. They don't know what is happening, what to do, or how to calm themselves.

Children often think things are worse than they really are. Ask them what would make them feel better. Children feel powerful when they can solve their own problems.

Learning how to handle their fears now will help them all their lives. Here are some other ideas:

**Treasure Bags**—Have children fill a cloth grocery bag with “treasures” that remind them they are safe and loved. Visit with them about the treasures.

**Stories**—Retell stories that you know comfort. Check out books that tell how other children faced solving problems. **Connect**—Call and/or visit loved ones. Friends and rela-

tives can help children feel better.

**Exercise**— Let children work off worries physically. In addition... connect with the 4-H program. 4-H is able to mobilize its volunteers to assist in evacuation and care of large and small animals. 4-H can also help youth through FEMA's Disaster Connection: Kids to Kids. Stories, poems, artwork, and essays about wildfires can be submitted to the 4-H program for submission to FEMA.

## WHAT ABOUT FOOD THAT HAS BEEN IN A FIRE?

Three factors can affect food that has been exposed to fire—the heat, smoke and chemicals used to put out the fire.

The heat of the fire can activate high-temperature food spoilage bacteria in commercial or home canned food.



These bacteria do not affect canned food under normal circumstances, but after a fire they can make the food inedible. High temperatures from fire may cause jar lids of home-canned food to come unsealed allowing bacteria to get into the food. The jar lids may “seal” again when the air temperature drops.

Toxic fumes released from burning materials can contaminate food, tableware, and cookware, as can toxic components from the chemical (retardant) used to fight fire. Use the following guidelines to insure the safety of food after a fire:

- Throw away food stored in permeable packaging such as cardboard, plastic wrap, home-canned food, and screw top jars.

- Discard raw foods that were stored outside the refrigerator.

- Discard food if power failure has occurred causing refrigerator temperature to rise above 40°F. If freezer temperature rises above 0°F check for ice crystals in the food. If crystals are present refreeze immediately. If food is thawed discard.

- Discard commercially-canned goods which smell or look spoiled.

### ABOUT FIRE RETARDANT

One of the most effective tools firefighters have to work with to suppress wildfires are the fire retardant chemicals. These retardant chemicals have gone through extensive testing for fire control ability and animal and environmental impacts.

Fire retardants are comprised of ammonia phosphate blend with a surfactant and a color dye included. Ammonia phosphate is basically a concentrated agricultural fertilizer. It binds oxygen, which retards the fire and it aids in vegetation regrowth; the dye allows pilots and ground crews to see where they have already treated.

## WHERE DO WE BEGIN WHEN REPLACING FOOD?

Planning can help relieve stress, save time and money, and contribute to serving healthy meals.

- Decide how much money you have to spend on food.
- Plan a menu one day at a time, then move to planning for one week. Use the Food

Guide Pyramid (contact Extension Service) to create balanced meals.

- Make a grocery list by organizing in the following categories—fresh fruits and vegetables, breads and cereals, meats, beverages, canned goods, refrigerator items, frozen foods, staples, and non-food items.

- Plan to eat together. Emergencies and crisis can provide opportunities for coming together. Mealtimes can be a time to re-establish routine and stability. Eating together can provide more nutritious and healthy meals and save money. Communication in families can improve and traditions can be created around food and meals.

## WHAT CAN I DO TO ADDRESS DAMAGE TO OUR HOME, BUILDINGS, AND CONTENTS?

Damage to structures and contents can vary from smoke, fire, water, and/or chemicals. The first step is to assess what kind of damage has occurred and to what extent. Work closely with your insurance company making sure to document the damage.

Use water and detergent to wash the structure exteriors as soon as possible if fire retardant has been used.

Smoke damage can infiltrate textiles and other surfaces. Follow cleaning instructions recommended by manufacture. Washable textiles will benefit with use of 1-2 cups of white vinegar with each load of wash realizing clothes may need to be washed 3 to 5 times.

Commercial cleaning of carpets, drapes, upholstery and other furnishings is common. Keep a record of all cleaning

contracts, expenses incurred in cleaning, and other damage (for insurance purposes).

Water damage can produce mildew and off odors sometime following the fire. Commercial enzyme cleaners are available at janitorial supply companies that reduce bacteria and odors.

Computers can be impacted by heat, smoke, water, and fumes. Check with the manufacture before operating.

# LIVESTOCK AND PASTURE MANAGEMENT RECOVERY

When the fire is over, is it safe to take livestock and other animals back? What are the short and long term impacts of fire on livestock and pastures?

## Impacts of Retardant on Livestock and Water Quality

Studies indicate little if any negative impacts to livestock or wildlife due to the use of retardants. However, it is not recommended for fire crews to place retardant in areas where it could enter waterways. The surfactant in the retardant has negative impacts on the gills of fish and limits their abilities to absorb oxygen from the water, causing suffocation. Also depending on surface area and flow of the waterway, nitrogen in the surfactant has the potential to negatively impact water quality.

Upon returning home, livestock owners should examine pastures, fences, and water sources. If property was not damaged and fences are intact, returning livestock should not be a problem. However, significant fire damage to pastures call for re-vegetation, such as replanting and deferment of grazing. A cool grass fire will not kill grass, however, typically it will not regrow until next spring when sufficient moisture and temperatures are present.

Livestock should not be returned to a burned pasture. Further vegetation damage can occur due to hoof action and trampling. Consult the Extension Service or Natural Resources Conservation Service (NRCS) for further recommendations. If retardant was used in a pasture, it is recommended to rinse the product off as soon as possible. On irrigated pastures, it may be as simple as irrigating a day or two to dilute and disperse the product. On non-irrigated

land, any biological absorbent material may be used (soil, sand, sawdust etc. .

If less than 25% of pasture land is covered with retardant and sufficient vegetation remains, it is safe to return livestock. If greater than 25% of pasture was covered with retardant, steps must be taken to reduce the amount of retardant on the ground.

Also check for obstacles that may be harmful to animals. Returning livestock to a pasture that has been sprayed with retardant poses a risk of these animals having a toxic reaction to nitrate. This occurs when excess nitrogen is absorbed into the blood system of animals, binding to hemoglobin and reducing the amount of oxygen that is circulated throughout the body. Animals that die from nitrate toxicity often suffocate due to lack of oxygen being delivered from the circulatory system. Nitrate toxicity does occur and often causes abortion of fetuses of cattle and horses.

Pond or stock water holding areas contaminated by retardant should be flushed if possible. However, caution should be taken not to contaminate water down stream with contaminated pond water. Water samples can be taken to Coffee Laboratories in Redmond for nitrate analysis.

## Animal Management After Fire

Evacuated animals require alternative pasture or boarding facilities. Horses do very well on pasture but if necessary they can be boarded in corrals or stalls until others options become available. Cattle only require pasture but can also be held in corrals until other options are made available. When dry-lotting animals, always

ensure sufficient quantity and quality of fresh water, and ensure there are no obstacles present they can harm themselves on.

Horses and cows at maintenance require approximately 15 to 20 percent of their body weight in dry matter consumption. A 1,000 lb horse at maintenance requires 15 to 20 lbs of good quality hay. A 1,000 lb cow requires the same. For more detailed nutrient requirements contact a Veterinarian or the Extension Service.

## Final thoughts

One thing to be aware of is the potential for the encroachment of noxious weeds onto these disturbed sites. Keep an eye out for noxious weeds and consult the Extension Service for management practices.

Livestock owners need to realize that short term renting of alternative pasture for their livestock can have a long-term positive impact on their disturbed pastures. Investigate all alternatives before immediately returning livestock to burnt and damaged pastures.



# HOW DO I MINIMIZE SOIL EROSION?



## Good Resources:

### Farm Services Agency

Deschutes County Farm Service Agency  
625 SE Salmon Ave. Bldg A  
Redmond, OR 97756-8695  
Phone: (541) 923-4358  
Fax: (541) 923-4713  
<http://www.fsa.usda.gov/pas/default.asp>

For information on:  
financial assistance with soil stabilization and range improvement

### Natural Resource Conservation District

Redmond Service Center  
Jefferson Soil and Water Conservation District  
Deschutes Soil and Water Conservation District  
625 SE Salmon Avenue,  
Redmond, Oregon 97756-9580  
Phone: (541) 923-4358  
Fax: (541) 923-4713  
<http://www.nrcs.usda.gov/>

For information on:  
financial assistance with reforestation, soil stabilization, range improvement

### Oregon Department of Fish and Wildlife

Deschutes Watershed District  
Office (Regional Office)  
61374 Parrell Road  
Bend, OR 97702  
Phone: (541) 388-6363  
Fax: (541) 388-6281  
<http://www.dfw.state.or.us/>

For information on:  
soil stabilization – grass seeding; wildlife habitat – forage, snags, down logs, financial assistance

Soil erosion following wildfire is a concern for many forest owners. In many instances the site will recover on its own with minimal erosion. In other places, where the fire burned more severely, some erosion-control treatments may be needed.

The potential for significant erosion is related to the severity of the burn, slope steepness, soil type, and the amount and duration of rainfall following the fire.

Wildfires burn at different intensity and can have varying effects on trees, plants, and soil. Three fire-severity classes include:

**Low Severity** Most trees survive with scorch evidence. Most organic matter on soil top is intact and little consumption or charring of twigs and down logs is evident.

**Moderate Severity** Most trees have been killed or are severely scorched and retain most of their needles. Some organic matter on soil top is consumed. Twigs may be consumed and downed logs are deeply charred.

**High Severity** Nearly all trees are killed and have no needles. Nearly all organic matter, twigs, and logs have been consumed and soil may be damaged or altered.

Forest soils are prone to erosion following severe wildfires. The tree canopy and protective organic layer covering the soil have been consumed, which help dampen and adsorb intense rainfall events. Severe heating can make the upper few inches of the soil “hydrophobic” reducing infiltration and ability to

adsorb rainfall. Instead of infiltrating, water moves across the soil surface displacing and transporting soil. The steeper the slope and the more intense the rainfall event, the greater the potential for significant soil movement and debris flows.

Survey your property and determine the amount of light, moderate, or high severity areas. Some areas may need some type of erosion-control treatment, particularly if streams, roads, or buildings are directly down slope from the burned area. Potential erosion controls:

**Seeding Grasses** Seeding of exotic annual and perennial grasses has been used in the past, however seeding provides little erosion control the first year. Effectiveness generally increases as the plants become established. Seeding for erosion control is a marginal erosion-control practice, and is generally not recommended on forest sites. Seeding of exotic grasses suppresses establishment of native plants, competes with planted tree seedlings, and can increase fire hazard as grasses cure and dry out.

When seeding, be aware seed may often wash down slope after heavy rains before it has had a chance to germinate and establish. Protective cover, such as mulch or some type of biodegradable fabric, may be needed to hold seed in place. High damage areas where there is little regrowth of native plants, seeding of native grasses and plants may be desirable. Finding sufficient amounts of native grass seed from suppliers is difficult and the seed is expensive.

**Mulching** Straw mulch applied at 1 to 2 tons per acre across the soil surface can protect soil from raindrop impact and may significantly

reduce erosion. Straw mulch may contain weed seeds, however, that can germinate and may require future control. Rice straw, free of weed seed, is preferred.

**Silt Fences** They are constructed of landscape fabric held in place with wire and stakes. They need to be anchored and sealed to the ground to be effective. Placed in small swales, ephemeral drainages, or along hill slopes they provide temporary sediment storage. They work best on gentle slopes and where runoff and sediment is less concentrated.

### Straw Bale Check Dams

These are placed in small swales and drainages to reduce sediment in streams during the first winter or rainy season. Bales need to be in full contact with soil, curved up and keyed into the banks, and adequately staked. Their effectiveness decreases as they fill in after the first few storm events and usefulness is short lived. They can blow out in large storms. Bales can contain noxious weed seeds, so monitoring and weed control may be necessary.

**Contour Log Placement** This involves cutting burned trees and placing them along the contour of the slope to create an area behind the log for soil to settle. Logs 6 to 10 inches in diameter and 10 to 30 feet in length are typically used. Logs need to be in full contact with the slope so that water and sediment do not run out beneath the log. This treatment is expensive, so target areas most prone to erosion.

**Straw Wattles** - Straw wattles are long flexible tubes of straw, excelsior or other material held together with plastic netting. Apply in same manner as contour log placement. For advice and assistance, refer to agencies listed in the left hand margin.

## RECOVERING THE LANDSCAPE

### How does fire retardant affect my landscape?

A major component in retardants is fertilizer. This fertilizer is higher in ammonia than what is sold at garden centers, and may cause leaf burn or phytotoxicity to the plant. In most cases, the retardant only affects the above ground foliage of a plant and not its branches, trunk, or roots. Occasionally, more sensitive plants may die.

- Rinse all plant materials with water to avoid fertilizer burn.
- Check to see if the plant is still alive by looking for viable buds or scratching the cambium on a stem to see if it is still alive (green). Plant foliages affected by the retardant showing a “burned” appearance can be removed and discarded. New foliage will grow back later in the season or the following spring depending upon the time of year when the wildfire occurs. Be sure and wear gloves when removing any retardant covered plant material to avoid skin irritation.
- Rinse all turf grass areas. • Rinse all fruits and vegetables thoroughly before eating.

**Oregon Department of Forestry**  
3501 E. Third Street, Prineville,  
OR 97754

Phone:  
P 541/447-5658 F 541/447-1469  
<http://www.odf.state.or.us/>  
For information on:  
reforestation - salvage logging, tree planting, financial assistance; soil stabilization – mechanical barriers

**Oregon State University Extension Service** See page 6  
For information on:  
educational materials on reforestation, fire-resistant plants, forestry land management, food safety, home care.

**Oregon Watershed Enhancement Board**  
6574 NW Larch Drive  
Redmond, OR 97756  
Phone: (541) 923-7353  
Fax: 541-923-7353  
For information on:  
financial assistance – soil stabilization

**Soil and Water Conservation District**  
Deschutes Soil and Water Conservation District  
625 SE Salmon Avenue, Suite 4  
Redmond, Oregon 97756-9580  
Phone: (541) 923-4358  
Fax: (541) 923-4713  
For information on:  
financial assistance:  
reforestation, soil stabilization – grass seeding

**Watershed Councils**  
700 NW Hill Street  
Bend, OR 97701  
Phone: 541-382-6102  
Fax: 541-382-4078  
<http://www.deschuteswatersheds.org/links.html>  
For information on:

## CONTROLLING NOXIOUS WEEDS

After a fire, weeds are among the first plants to recolonize. It is important to monitor and manage these weeds, especially those that are considered “noxious” for the area.

Noxious weeds are a group of plants that are aggressive and abundant, often choking out more desirable vegetation. Following a wildfire, their abundance threatens to exclude native and desirable plants from reestablishing. These weeds are more difficult and expensive to control once established. Examples of noxious weeds include cheat grass and spotted knapweed.

- Monitor soils for noxious weeds, particularly areas disturbed by fire suppression efforts or salvage removal.
- Control weeds using an integrated plant management approach including cultural, biological, mechanical, and chemical control. The key to effective weed control is a sustained, continuous effort over time. Cultural control includes planting or seeding desirable grasses and forbs in a burned area, if necessary. Mechanical control includes cutting off flower heads and disposing of them, before they go to seed. Be cautious of using broad spectrum herbicides (e.g. Roundup) in burn areas to avoid spraying desirable plant species.



## HOW DOES WILDFIRE AFFECT THE SOIL?

High intensity fires can create soil conditions that are water-repellant (hydrophobic), making it difficult for seeds to receive moisture necessary for germination.

- To test and see if water repellent soil exist, scrape away any remaining surface organic matter and place a drop of water on top of the soil and wait a few minutes to see if the water is absorbed. If

the water remains in a droplet, gently break up the soil with a seed rake or harrow in larger areas.

- For more information on wildfire affects on soil see the section “Minimizing Erosion of Your Property Following Wildfire”



## Oregon State University Extension Service

Crook County  
498 SE Lynn Blvd  
Prineville, Oregon 97754  
Phone 541-447-6228

Deschutes County  
3893 SW Airport Way  
Redmond, Oregon 97756  
Phone 541-548-6088

Jefferson County  
34 SE D Street  
Madras, Oregon 97741  
Phone 541-475-3808

We are on the Web!  
<http://extension.oregonstate.edu/deschutes>

### Faculty and Staff contributing to this information:

**Teresa Hogue**, Chair  
OSU Extension Service,  
Deschutes County and Family Community Development Agent for Central Oregon

**Cory Parsons**, Livestock Agent, Baker County

**Amy Jo Waldo**, Horticulture Agent for Central Oregon

**Stephen Fitzgerald**, Eastern Oregon Silviculture and Wildland Fire Specialist

**Lynette Patterson**, Oregon Family Nutrition Program Coordinator for Central Oregon

**David J. White**, 4-H Youth Development Agent for Deschutes County

## WILL FIRE DAMAGED TREES SURVIVE?

It depends on the tree species and size, bark thickness, degree of crown and bole scorch, wildfire severity, health of the tree prior to the fire, presence of bark beetles, and other factors.

Trees with the thickest bark and most resistant to fire include ponderosa pine, western larch, and mature Douglas-fir. Species least resistant (thin bark) include grand fir, lodgepole pine, western juniper and other cedars, and Engelmann spruce.

Crown scorch is one of the most important factors determining survival of fire-damaged trees. For ponderosa pine, if trees have less than 10-20 percent of their crown remaining (green), they have a 65-80 percent chance of dying over the next year or two. Ponderosa pine trees with about 30 percent of their crown remaining have a 50 percent chance of surviving. The crown is measured from the very top of the tree to the bottom branch of the tree. The percentage of

tree's crown still green is used to estimate the percent survival.

In addition, if tree trunks are deeply charred killing 50 percent or more of cambium (living tissue underneath the bark), the trees will most likely die. If there are bark beetles pitch tubes, trees will likely die within a year. Removal of beetle-infested trees can prevent the spread of beetles to other surviving trees.

### Should I Salvage-Log Fire Damaged Trees?

The answer depends on the species, tree size and how severely the trees are damaged. In addition, consideration must be given to logging and trucking costs, and whether local mills are buying fire-killed timber. Shop around and ask timber buyers from at least 3 area mills whether they are interested in buying your fire-damaged timber and what they are paying for logs delivered to the mill.

If the value of the burned timber does not pay for the logging and trucking costs to the mill, re-evaluate whether to conduct a salvage harvest. For any logging operation, filing a "notification of operation" with the Oregon Department of Forestry is needed.

If conducting a salvage logging operation, there is a requirement to reforest the land. This is a requirement of Oregon's Forest Practices Act.

Reforestation may cost anywhere from \$200 to \$400 dollars per acre. The Oregon reforestation tax credit program allows a ten percent credit (up to a maximum of \$10,000 per year) for planting and reforestation expenses. This program is administered by the Oregon Department of Forestry.

## WHAT ABOUT REMOVING AND REPLACING TREES AND SHRUBS?

The ability of ornamental trees and shrubs to withstand fire damage is based on the thickness of bark, rooting depth, needle length, bud size, and degree of scorch. (see above). The severity of a fire and how deeply it burned directly impacts which species regenerate or survive. For example, if the main trunk of an aspen is killed the roots will send up suckers.

- Be sure and take photographs of your landscape trees and shrubs prior to any removal. These photographs may be useful in helping to document losses covered by

insurance policies or as a casualty loss on income taxes.

- Contact a consulting arborist who specializes in plant appraisal work in the area. These appraisers use a guide published by the International Society of Arboriculture (ISA) entitled a *Guide for Plant Appraisals*. This guide covers how to assess monetary value of landscape trees and shrubs based on size, location, and species. To find a list of consulting arborists that specialize in plant appraisal in your area check the website ([\[consultants.org/why\\\_how.html\]\(http://consultants.org/why\_how.html\)\)](http://www.asca-</a></li>
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- Hire a certified arborist to safely remove larger trees.
- Create a defensible space around your home using fire-resistant plant materials (see our publication at <http://www.firefree.org/downloads/FireResPlants.pdf>)
- Use adaptable, fire-resistant plant material for your area
- For planting tips on trees, shrubs, and turf grass, contact the OSU Extension Service.