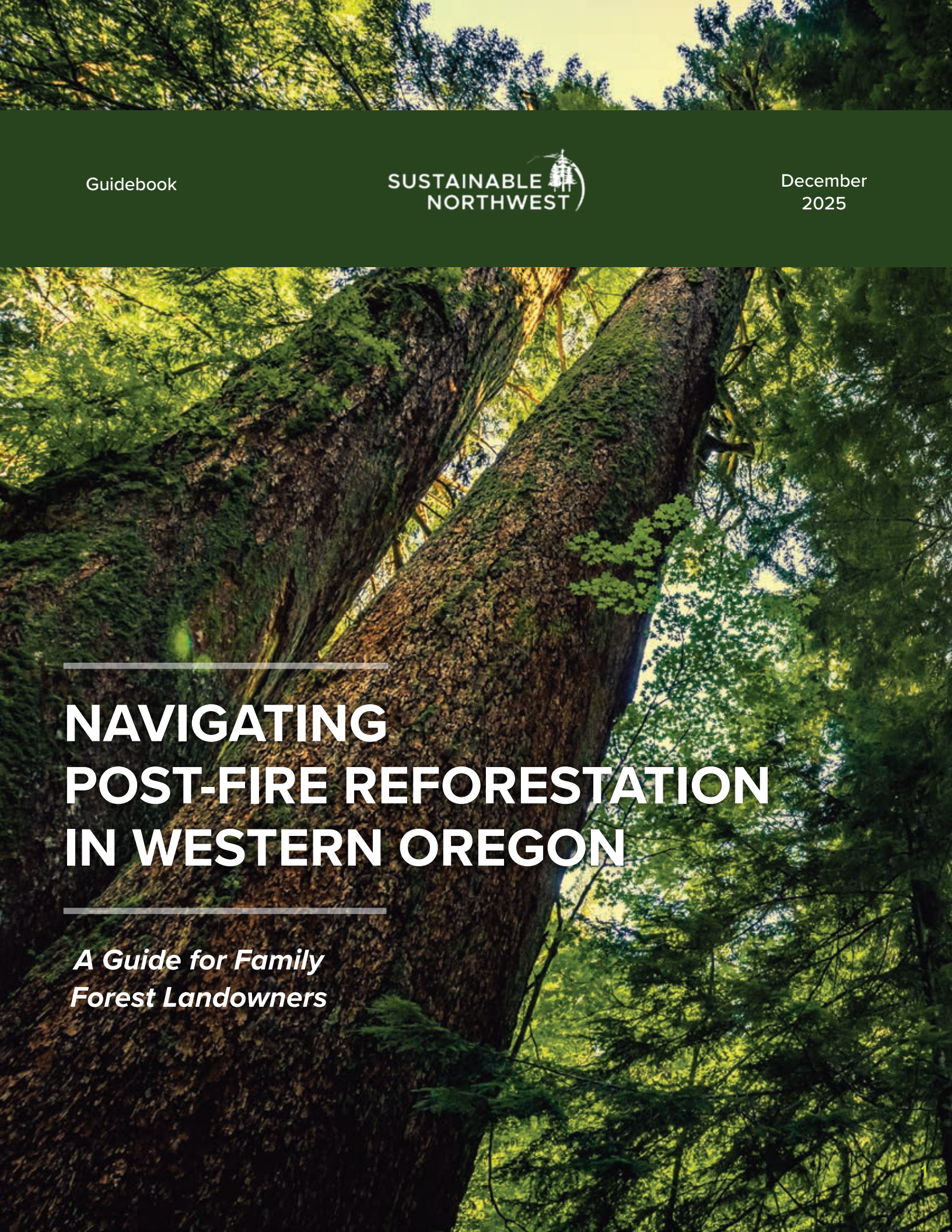


Guidebook

SUSTAINABLE NORTHWEST

December 2025

NAVIGATING POST-FIRE REFORESTATION IN WESTERN OREGON

A Guide for Family Forest Landowners

Authors

Greg Houle, Director of Private Forestlands
Becca Shively, Senior Wildfire Program Manager
Kailyn Klotz, Forest Program Manager

Acknowledgements

This guidebook was developed alongside a complementary resource for eastern Washington landowners (visit www.afterthefirewa.org for more information). We thank the many experts who contributed to that product and, by extension, to the development of this Oregon-focused guidebook. We also thank the reviewers who gave extensive advice and feedback on this version:

- Zander Evans, Chanda Littlefield, and Riley Allbee - Forest Stewards Guild
- James Johnston and Heidi Huber-Stearns - University of Oregon
- Mike Thompson - Oregon Department of Forestry
- Glenn Ahrens and Kara Baylog - Oregon State University Extension
- Jenne Reische - Clackamas Soil and Water Conservation District
- Lily Leiterman - Upper Willamette Soil and Water Conservation District
- Meghan Montgomery - Jackson Soil and Water Conservation District
- Julie Woodward - Oregon Forest Resources Institute

About Sustainable Northwest

We partner with communities throughout the Northwest on projects that promote smart water use, clean energy, and healthy forests, farms, and ranches. Our solutions are as unique as the problems we solve and include entrepreneurship, policy, market innovations, public and private investment, collaboration, and technical assistance – but the ultimate success of our work is based on relationships, trust, and inclusion. Sustainable Northwest was founded in 1994 to forge collaborative solutions for conserving forest and community health. Today, our challenges have multiplied with climate change, catastrophic wildfires, and persistent drought harming our region. Yet we remain optimistic that nature, people, and local economies can thrive together.

Funding

This guidebook was supported by funding from the Ecosystem Workforce Program at the University of Oregon from the Joint Fire Science Program (Project ID: 22-2-01-14) as part of the project, “Grow Back Better: Social and ecological factors that shape wildfire recovery on nonindustrial private forestlands.”

Layout & Design

Guide Design & Layout: Casey Davis, Sola Design LLC
Infographic Design: Josie Paik, University of Oregon (pgs. 19, 37, 39, 44)
Timeline Design: Maker and Made, LLC (pg. 20)



JASON HOUSTON

Contents

Introduction 4

1 / Technical and Financial Assistance 5
- 1.1 Partners in Restoration
- 1.2 Technical Assistance
- 1.3 Financial Assistance

2 / Landscape Assessment and Reforestation Considerations 10
- 2.1 Post-Fire Assessment and Site Visit
- 2.2 Restoration and Reforestation Considerations

3 / Creating a Restoration Plan 17
- 3.1 Plan to Your Property’s Strengths
- 3.2 Forest Management Planning Assistance

Timeline 20

4 / Preparing for Implementation 24
- 4.1 Determine Species Mix
- 4.2 Procuring Seedlings
- 4.3 Implementation Methods
- 4.4 Assistance for Finding a Contractor

5 / Implementing Land Management Activities 32
- 5.1 Pre-Planting and Site Preparation
- 5.2 Planting

6 / Implementing Land Management Activities 41
- 6.1 Post-Planting Vegetation Control
- 6.2 The Importance of Monitoring

Final Thoughts 45

Directory – Partners in Restoration 46

Appendix – Resources 48

INTRODUCTION

The historic Labor Day Fires of 2020 had a significant impact on private forests, particularly in western Oregon. According to the Oregon Department of Forestry, nearly 6,000 family forest owners were severely impacted, most of whom own small parcels of 5 acres or less. In many fire-impacted regions, family forest landowners are struggling to navigate the complex, technical, and financial challenges of post-fire recovery. Recognizing this challenge, we created this guide for family forest owners in western Oregon – however, we hope that much of the information is useful to other regions in Oregon as well.

We begin by outlining the technical and financial assistance available to support the restoration of your forested property, which we recommend you explore early in your process. From there, the guide follows a general sequence of reforestation activities: assessing post-fire conditions, developing a restoration plan, securing seedlings, preparing the site, planting, and post-planting care.

A Timeline of key activities and decisions is provided on page 20 to help you stay organized and plan ahead. Shared throughout the guide, you'll find references to relevant programs and resources. A comprehensive Directory and Appendix with all referenced materials can be found at the end.

It's important to note that this guide focuses on reforestation and is just one important component of restoring your property after wildfire. We encourage you to seek out other resources and guidance beyond this scope to understand and address your other restoration needs. Visit the state's Wildfire Response and Recovery[1] website for more information on wildfire recovery.

Wherever you are in your restoration process, *we hope this resource equips you to work towards your goals in partnership with a trained forester or technical assistance provider. Their guidance and support will be key. Although your property will surely look different than its pre-fire condition, it is often possible to re-establish a healthy, climate resilient forest with thoughtful planning and care.*



1 Technical and Financial Assistance

Post-fire restoration *can be long and complex, but you don't have to navigate it alone. A variety of organizations and funding programs are available to support and help you make informed decisions along the way.*

This section provides an overview of key resources available to family forest landowners in Oregon by various partners and agencies. It is organized into two categories: *technical assistance and financial assistance.*

- ***Technical and educational assistance*** refers to expert advice, education, or planning support provided by professionals such as foresters, conservation specialists, and other land management experts. This can include site assessments, reforestation planning, and general guidance.
- ***Financial assistance*** includes funding programs, cost-share opportunities, and grants that help offset the costs of restoration and forest management activities. We've chosen to highlight organizations and programs that have consistently supported family forest landowners. However, resources and program offerings may change over time, and new organizations may emerge. To ensure you have the most up-to-date information, consult with a technical service provider such as an Oregon Department of Forestry (ODF) Forester, Oregon State University (OSU) Extension Forester, or your local conservation district. Staying connected with these professionals throughout your project will help you navigate changing information and make the most of the resources available during your restoration process.

1.1 Partners in Restoration

The primary organizations providing technical, educational and financial assistance in Oregon are listed here. *(For partner contact information, see the Directory on page 46.)*

Oregon Department of Forestry (ODF)
ODF has district offices throughout the state with stewardship foresters who offer consultations, technical assistance, and financial support to forest landowners. They are best positioned to advise you on state regulatory requirements and ensure compliance with Oregon Forest Practices Act standards. You can use ODF's online maps to locate and connect with your local ODF office[2] or a local stewardship forester[3]. In addition, ODF's Small Forest Landowner Office[4] offers both regulatory guidance and financial assistance programs designed to support the health, productivity, and long-term economic viability of small forestlands. ODF also hosts a Help after a Wildfire[5] website.

Soil and Water Conservation Districts (SWCDs)
SWCDs are local units of government known as Special Districts and are established through state legislation to provide technical assistance, grants, educational outreach, and other conservation services to landowners, land managers, and the public. Closely connected with state and federal partners, SWCDs are well positioned to help you identify and access funding opportunities specific to your region. They are also an excellent resource for referrals to funding programs offered by multiple organizations. The programs and support available vary by county. To find your local SWCD, visit the Oregon Association of Conservation District's list of district offices on their Regions and Directory of Districts[6] webpage. Most, though not all, offer their services at a county level and free of charge to landowners.

Oregon State University Extension (OSU Ext.) OSU Ext. agents are located in offices throughout the state and provide locally relevant information that is easily

accessible through one-on-one support, trainings, workshops, webinars, and publications. Staff in the Forestry and Natural Resources Extension Program[7] often have a high level of technical knowledge about forestry and reforestation.

Extension agents work closely with funding agencies and may be aware of the funding opportunities available in your area. They also play a key role in post-natural disaster response, developing educational programming and resources to support community recovery. Connecting with your region's extension forester early in the process can provide valuable insight and guidance for your post-fire restoration efforts. To find your local extension forestry agent, visit OSU Extension in your Community[8].

USDA Natural Resources Conservation Service (USDA NRCS)
NRCS, a federal agency within the United States Department of Agriculture, supports agricultural and forestland owners/operators through county-level 'district offices'. The agency promotes voluntary conservation on private lands by offering technical support, such as development of forest management plans, and financial assistance programs to help landowners improve natural resources and meet their land management goals. For more information, visit the Oregon State NRCS office[9] webpage.

Farm Service Agency (FSA)
FSA is a federal agency within the United States Department of Agriculture. The agency offers a range of services to agricultural and forestland owners/operators through its county-level 'service centers'. Those services include farm commodity and loan programs, and disaster programs like the Emergency Forest Restoration Program[10] (typically the first forestry-specific restoration funding available following a wildfire). FSA also maintains landowner business profiles and conducts eligibility verification for various funding programs at USDA. If you apply for an FSA or NRCS program, it is likely you will be directed to make an appointment with an FSA team member to establish or update your USDA records. For more information, visit the USDA Service Center locator[11] webtool.

Watershed Councils
Watershed Councils are nonprofit organizations with a special status established by state legislation. Supported by funding from Oregon's Watershed Enhancement Board, they provide technical and financial assistance to landowners, land managers, and the general public at the watershed-scale. They are particularly helpful in cases where a wildfire impacts important streams, habitat or drinking water sources. To find your local watershed council, visit the Network of Oregon Watershed Councils' Interactive Online Council Mapping Tool.[12]

Nonprofits and Long-Term Recovery Groups
In addition to government agencies, a range of nonprofit organizations and long-term recovery groups provide support to landowners at the community, regional, and state levels. These organizations may offer education and technical assistance, funding opportunities, or help coordinate restoration efforts.[6]

1.2 Technical and Educational Assistance

Many of the entities listed above provide a range of technical assistance services to family forest landowners. These include ODF foresters, SWCDs, consulting foresters available for hire, and federal, state and local organizations that offer services free of charge as capacity allows. This support can benefit every stage of your post-fire restoration process, including:

- Conducting property assessments
- Determining your priorities and needs
- Learning key steps in the reforestation process
- Developing a forest management plan, replanting or restoration plan, and other planning materials
- Identifying funding or in-kind support for your restoration work
- Connecting with forestry contractors, mills, seed banks, and tree nurseries
- Discussing forest operations and understanding the requirements of the Oregon Forest Practices Act and Rules [13]



These entities tailor their services to your specific goals and property conditions. They are also essential to preparing you to apply for and receive funding support from financial assistance programs, which often require a landowner to have a current forest management plan that reflects post-fire conditions.

1.3 Financial Assistance

Financial assistance is available in various forms, including disaster relief programs, cost-share opportunities, small grants, and low-interest loans. In some cases, programs may even coordinate and pay contractors directly on your behalf.

Program Type	Description	Example
In-kind assistance	In-kind support for post-fire restoration can include free tree seedlings and on-the-ground work that is paid for by partner organizations at no-cost to landowners.	Opportunities may vary and can be time-limited. Work with your local technical assistance partners (ODF, OSU Ext., SWCDs and Watershed Councils) to identify opportunities in your area and specific to your wildfire.
Emergency or disaster assistance programs	These funding opportunities are triggered by emergencies or disaster declarations and are often one-time opportunities. They tend to be deployed rapidly after a wildfire event and are often the first to be available for forest restoration. They may focus on site stabilization, debris removal, and hazard tree removal, but can also cover replanting activities. These programs often require a landowner's contribution to the project's costs.	FSA's Emergency Forest Restoration Program (EFRP)[10] is activated following a USDA disaster declaration and is often the first funding source available to forest landowners after a wildfire or other natural disaster. It provides financial assistance for debris removal and replanting to help restore non-industrial private forestland. FSA administers the program, while ODF foresters provide technical assistance throughout the process.
Cost-share program	Many programs provide partial funding for the costs of a restoration project, but generally require a landowner contribution of cash or in-kind labor. These percentages vary by program and by year. Ask your conservation district if they have funding opportunities to help mitigate the cost-share requirement of a state or federal program.	Through NRCS' Environmental Quality Incentives Program (EQIP)[14], landowners can receive direct financial assistance from NRCS for post-fire restoration activities. This cost-share program accepts applications year-round, with participant selection occurring at designated ranking dates. Special enrollment periods may also be offered following major wildfire events. Inquire with your local SWCD about any cost-share programs they may offer.
Loan programs	Emergency or conservation loans may be useful tools to help a landowner pay upfront for treatments in a reimbursement-based program or to cover landowner cost-share. These are typically low-interest products and may require you to first seek traditional lending options.	FSA's Emergency Loan Program[15] is available to those who cannot secure financing elsewhere. Loans of up to $500,000 are offered, with repayment terms of 1 to 7 years and capped interest rates. Inquire with your local SWCD about any loan programs they may offer.
Carbon financing	*(See Carbon Financing Spotlight on page 9.)*	

Each financial assistance program is structured differently. Regardless of the entity offering the program, these are common features and key considerations you should discuss with the funder and your technical assistance provider(s) before committing to a project:

- **Reimbursement-based.** Many financial assistance programs require landowners to pay up-front costs before being reimbursed by the funding organization. If this presents a hardship to landowners, loan services from an SWCD or FSA may be available.

- **Cost-share requirement.** Many programs provide partial funding for the costs of a restoration project, but generally require a landowner contribution of cash or in-kind labor. These percentages vary by program and by year. Ask your conservation district if they have funding opportunities to help mitigate the cost-share requirement of a state or federal program.

- **Maximum award limits.** Financial assistance programs may have a maximum dollar figure that a landowner can receive per contract.

- **Maintenance requirements and duplicative payments.** Most financial assistance programs require landowners to maintain the conditions achieved by the funded treatment(s) through the length of the "treatment lifespan." Thus, you may find it difficult to secure funding to redo a practice that failed due to a lack of maintenance. Many financial assistance programs do not allow "duplicative payments" and will not repeat the same investment on the same property during the original practice's lifespan.

- **USDA requirements.** Several important restoration programs for forest landowners are administered by USDA agencies, including NRCS and FSA. These agencies have specific requirements that may differ from other funders. For instance, first-time clients will need to establish a business profile with FSA, and they will need to fill out forms to facilitate an environmental assessment of their property to comply with federal law. Landowners cannot exceed a maximum adjusted gross income (AGI) for most USDA funding programs. Check with your local FSA office to determine adjusted gross income limits or AGI waiver opportunities.

- **Historically underserved.** Many programs are more accessible for landowners who qualify as "historically underserved," "socially disadvantaged," or "beginning farmers or ranchers." This may include a greater likelihood of being selected for funding or a lower cost-share requirement. The USDA resource, Get Started! A Guide to USDA Resources for Historically Underserved Farmers and Ranchers[16] describes opportunities for historically underserved landowners, as well as helpful agency definitions of related terms.

- **Taxable income.** Financial assistance for post-fire restoration work may be considered taxable income. Consult with your funding partner and your tax specialist, and refer to resources such as the Forest Landowners Guide to the Federal Income Tax[17] and OSU Extension's Tax Considerations for those impacted by wildfire or other natural disasters[18] recorded webinar for more information.



JASON HOUSTON

SPOTLIGHT **CARBON FINANCING**

As trees grow, they capture carbon dioxide from the atmosphere. "Carbon projects" measure this stored carbon and create "carbon credits" that companies purchase to offset their emissions. Each credit represents one ton of carbon dioxide removed. As a landowner, participating in forest carbon projects may offer a way to generate income from your trees beyond traditional timber sales, and can help pay for reforestation. However, there are many cautions and risks to be aware of.

HOW IT WORKS

Not all properties qualify for carbon projects. They must comply with specific rules set by standards bodies like Verra, American Carbon Registry, and Climate Action Reserve. Project developers evaluate your land to ensure it meets scientific and ethical requirements.

High-quality reforestation carbon projects must meet **three key criteria:**

- **Additionality.** The forest growth and carbon capture would not have happened without the financing from the carbon project.
- **Permanence.** The carbon must stay stored long-term (typically 40-100+ years), which restricts the amount of timber harvesting allowed during that period.
- **No double-counting.** Each ton of stored carbon generated by a project can only be claimed once to maintain project integrity.

Carbon project developers use different models to develop and fund their projects. It is important to understand what the project offers you as the landowner, how it aligns with your land use objectives, and the length and terms of the project agreement.

FOR MORE INFORMATION

Oregon State University's Introduction to Forest Carbon, Offsets and Markets[19], which explains forest carbon markets and how you might incorporate carbon financing into your forest management planning.

The Natural Capital Program Consideration Pocket Guide[20] provides suggested questions to ask when considering a funding program.

KEY CONSIDERATIONS & RISKS

- **Feasibility assessment fees.** Developers will need to assess whether your property is suitable for carbon financing. This usually involves several conversations and at least one site visit. Be aware that some developers charge substantial fees for a full feasibility assessment, while others offer it at no cost. We do not recommend that you pay up-front for development or feasibility costs.

- **Responsibility, revenue, risk.** Developers may use different business models. Clarify who handles project setup and long-term maintenance, how the project generates income, and what conditions may cause the landowner to garner additional income or incur additional costs.

- **Long-term management restrictions.** Carbon projects require "permanence," meaning your trees must be allowed to grow for 40-100+ years. This could impact the amount of timber harvesting and other activities permitted during the project lifespan. In addition to following state forestry laws, some developers will work with you to design plantings that consider local ecology and forest health, as long as the project still makes financial sense. Since restrictions vary significantly between developers, discuss exactly what you can and can't do on your land before signing any agreement.

- **Contract terms.** Reforestation projects typically come with long-term binding agreements. Before signing, understand how the contract affects your ability to sell your property and what obligations transfer to future owners. Consult with an attorney and tax specialist to review any agreement before committing.

- **General considerations.** The carbon market is still evolving after more than 30 years, which carries inherent risks. Most US forest carbon projects currently focus on improved management of existing forests (such as extending harvest rotations), but reforestation projects are becoming more common due to increasing wildfire recovery needs. OSU Extension and other University Extension Services offer additional resources to help you understand carbon markets and evaluate opportunities for your property.

- **Seek out landowner referrals.** Carbon project developers should be able to refer you to landowners who can share their personal experiences as forest carbon clients.

Note: We recommend having a third party consultant review any carbon offset agreement and/or assessment to fully understand the requirements and risks.

2 Landscape Assessment and Reforestation Considerations

2.1 Post-Fire Assessment and Site Visit

The first step in planning for landscape restoration is understanding the post-fire condition of your land. A forestry professional, such as an ODF forester, an OSU ext. agent or a SWCD forester, can conduct an initial assessment to evaluate wildfire impacts and help determine what your land needs to recover. This assessment will identify immediate risks, clarify your goals as a landowner, and outline potential treatment options. It also helps define next steps and available resources, including seedling needs, a restoration timeline, and whether developing a formal reforestation plan is appropriate.

Assessments typically cover:

Pre-Fire Conditions

What types of trees and plants dominated your landscape before the fire? Were trees experiencing drought stress or disease? Understanding the pre-fire forest structure and health of your land can provide insight into your post-fire restoration management options.

Post-Fire Conditions and Assessment of Burn Severity

Understanding burn severity is the first step in identifying both immediate and long-term treatment needs. This should begin with mapping and describing how fire severity varied across your property. Differences in severity will directly influence restoration potential and soil stability. The assessment will evaluate immediate tree mortality and potential survivability of trees and vegetation, identify erosion potential, and assess the post-fire establishment of native and non-native species. It is important to note that conditions can range widely based on the timing of your assessment.

In addition to vegetation impacts, burn severity assessments should include evaluations of overstory tree mortality and stress, as these factors can elevate the risk of post-fire insect outbreaks. High tree stress and partial crown scorch can make surviving trees especially vulnerable to bark beetle infestations, which can cause additional delayed mortality. In some cases, burn assessments on private lands may have already been conducted by interagency teams, led by the NRCS. In the absence of specific assessments on private land, there may be in-depth assessments on neighboring federal land that apply to private land conditions and can help you understand the burn severity of your site. If one of these assessments was done on your property you may have received a mailer. If not, reach out to your local ODF or NRCS office to inquire.

Understanding how much of the soil's surface organic layer was consumed is critical. Organic soil layers protect against erosion, hold moisture, and support soil and vegetation life. When consumed by fire, these areas are more vulnerable to:

- **Erosion:** Soil runoff transported through sheet, rilling, and scour
- **Hydrophobicity:** Water repellency that increases runoff
- **Compaction:** Reduced water infiltration and difficult root establishment and growth
- **Mass Wasting:** Debris flows to landslides

Assessments should also consider terrain and physical hazards, particularly on steep slopes where the potential for debris flows and landslides is heightened. Post-fire conditions may destabilize soils and root structures, increasing the risk of slope failure during subsequent storm events.

Finally, it is critical to monitor post-fire weather patterns, including rainfall intensity, high winds, and freeze-thaw cycles, which can exacerbate erosion, increase tree fall hazards, and influence the trajectory of vegetation recovery. Integrating this information into your post-fire response planning will support more adaptive and effective restoration actions.

Overstory Assessment

Trees with more than 50% crown scorch (leaf or needle loss) typically have low survival rates, though this varies by species. Identifying which trees are likely to survive will help you decide where to focus natural regeneration efforts, remove hazard trees, or consider salvage logging.

Standing dead trees (snags) provide valuable habitat for birds, small mammals, and insects. Retain snags where they are safe and beneficial, but remove those that pose hazards to people, infrastructure, or work areas. *(For more information, see Spotlight on Salvage Logging on page 15.)*

There are several useful resources on tree mortality and removal, including ODF's Post-Fire Tree Mortality[21] publication and the following publications from OSU Extension: Will my tree live? Assessing Post-Fire Survivability[22], To salvage or not to salvage after wildfire?[23], and Learn to recognize hazard trees after a fire[24].

Soil and Understory Vegetation

Assessing burn severity, particularly in terms of soil conditions and understory vegetation, will help you understand the immediate risks of erosion and the establishment of invasive plant species. When fire burns deep into the soil's organic layer, it can destroy beneficial microorganisms, reduce the soil's ability to retain moisture, and increase vulnerability to erosion, especially on slopes or during heavy rain. The post-fire soil conditions will determine immediate remediation needs such as seeding for erosion mitigation, control of invasive vegetation, and selection of tree species for reforestation. An assessment of the establishment of invasive grasses, shrubs, or trees that could outcompete native species will be needed to develop a vegetation management plan to control and mitigate their spread.

Post-fire vegetation conditions can range widely depending on the timing of your assessment. For instance, if one or more growing seasons have passed before you are able to conduct an initial assessment, the area will have already established new vegetation. Areas regenerating with desired native species should be identified and marked for exclusion from treatment. These areas can save you time and money. Conversely, areas colonized by invasive species will need to be prioritized for removal treatments and the planting of native species. *(For more information, see Spotlight on Common Types of Invasive Plant Species on page 12.)*

Surviving Trees

When a wildfire leaves live trees within its footprint, these surviving trees can serve as a valuable seed source for the natural regeneration of new trees. To support this process, it's important to first identify and protect these surviving trees. Healthy, mature trees with full crowns are especially valuable, as they tend to produce more viable seed. *(For more information, see Natural Regeneration on page 37.)*

To foster natural regeneration from surviving trees, maintain tree health by:

1) avoiding unnecessary stressors such as overgrazing or mechanical damage, and

2) minimizing ground disturbance to preserve seedbeds.

Keep in mind that surviving live trees may still experience mortality - even years after a wildfire - due to initial damages experienced during the fire and/or from external stressors experienced following the disturbance.



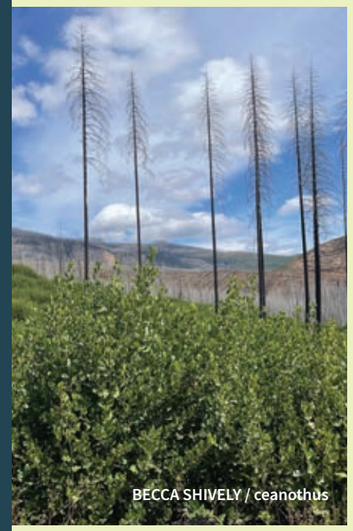
SCOTT EDEN

SPOTLIGHT

COMMON INVASIVE PLANT SPECIES IN WESTERN OREGON



SCOTT EDEN / scotch broom



BECCA SHIVELY / ceanothus

The following species are common early colonizers of fire-impacted sites. Removing these plants prior to replanting tree seedlings may be essential for the success of your restoration project.

ANNUAL GRASSES:
Species like cheatgrass *(Bromus tectorum)* and red brome *(Bromus rubens)* are highly flammable and rapidly invade fire-disturbed areas, increasing fire frequency and intensity. Their dense growth prevents the regeneration of native plants.

KNAPWEEDS:
Species including diffuse knapweed *(Centaurea diffusa)*, spotted knapweed *(Centaurea stoebe)*, meadow knapweed *(Centaurea pratensis)*, and Russian knapweed *(Rhaponticum repens)* can rapidly take over burned areas and outcompete native plants. This can reduce food and cover resources for wildlife and increase the potential for reburn. Additionally, knapweed spines can cause injuries to livestock, and Russian knapweed is toxic to horses.

THISTLE:
Yellow *(Centaurea solstitialis)* and purple starthistle *(Centaurea calcitrapa)* as well as Canada thistle *(Cirsium arvense)* and Scotch thistle *(Onopordum acanthium)* are aggressive colonizers that spread rapidly and displace native vegetation.

WOODY SHRUBS:
Plants like blackberries *(Rubus fruticosus)*, scotch broom *(Cytisus scoparius)*, European gorse *(Ulex europaeus)*, butterfly bush *(Buddleja davidii)*, woodland ragwort *(Senecio sylvaticus)*, and other nonnative shrubs often thrive after fire due to their ability to quickly regenerate and spread through seed or root systems. These species can outcompete native shrubs and trees, reducing biodiversity and altering habitats.

TREE SPECIES:
Certain nonnative trees may be introduced to fire-affected areas, such as tree-of-heaven *(Ailanthus altissima)*, English holly *(Ilex aquifolium)*, and Chinese tallow *(Triadica sebifera)*. These trees can dominate ecosystems, crowding out native vegetation.

FOR MORE INFORMATION

Oregon Noxious Weeds[25]

OSU Invasive Trees & Shrubs[26]

A NATIVE SHRUB TO LOOK OUT FOR

Although Ceanothus (commonly referred to as buckbrush, California lilac, or blue blossom) is a native evergreen shrub, it is an aggressive colonizer following disturbances like wildfire. It grows in dense patches, making it difficult for seedlings and other vegetation to establish. Additionally, the oils and resins from this shrub make it extremely flammable and result in extreme fire behavior in the event of wildfire.

2.2 Restoration and Reforestation Considerations

As a landowner, one of the key decisions you'll face is whether to reforest all or part of your fire-affected land, and if so, how to go about it. This decision depends on a variety of factors, including legal requirements, financial implications, your land management goals, and the long-term ecological capacity and resilience of your forest in a changing climate. Your initial assessment will help inform how you address these factors. If you think that reforesting may help meet your land management objectives, the following considerations are important to review and discuss with a forestry professional.

Desired Future Conditions

Establishing clear objectives for the future of your land is essential, as these goals will shape decisions around forest restoration, species selection, and long-term management practices. Objectives may include a range of goals reflecting your values, such as wildlife habitat, timber production, recreation, or conservation. It's important to clearly define and communicate these desired future conditions to your local forestry professional.

Equally important is discussing what is feasible for you in terms of time, effort, and budget. Forest management is an ongoing process that extends beyond initial reforestation. Future activities such as maintenance, additional tree planting, thinning, or invasive species control can involve additional costs and time commitments. Being upfront about your financial capacity will help your forestry professional recommend realistic strategies that align with both your goals and your resources. Since forest management often spans generations, it's also important to consider succession planning as part of the process. Will others in your life eventually take over the management of your forest? If so, involving them early in the planning can help ensure that the future forest reflects shared goals and supports long-term stewardship.

Some common forest management objectives include:

- Generating revenue from timber and other forest products
- Enhancing, preserving, or creating wildlife habitat
- Supporting woodland pasture and livestock grazing
- Promoting species diversity
- Facilitating the development of unique habitat structures
- Increasing resilience to climate change and wildfires
- Managing for carbon stocks
- Improving drought tolerance and water retention
- Retaining privacy and/or property aesthetics
- Successful reforestation with trees that are free to grow
- Managing for non-timber forest products



ASHLAN BONNELL

Legal Considerations: Are You Required to Replant?

In the wake of a wildfire, you may wonder whether you are legally required to replant your forest. For landowners in Oregon, there are several laws and regulations to consider.

Oregon Forest Practices Act. The state of Oregon has rules and regulations that regulate timber harvests, road construction, and reforestation activities to protect natural resources such as soil stability, wildlife habitat, and water quality. While these rules apply to all private forestland owners, non-industrial private landowners may encounter specific requirements related to replanting after a harvest or wildfire. Review Oregon's Forest Practices Act and Rules[13] and consult with an ODF stewardship forester to ensure that your planned treatment activities and management boundaries comply with state and federal rules and regulations. Deviations from OFPA rules may require that you submit a "plan of alternative practice" for ODF approval. *(For more information, see Determine Species Mix on page 24.)*

Salvage logging. Salvage logging, or "post-fire harvest" is the removal of dead or dying trees with existing commercial value. In some cases, this may be a beneficial option for landowners as it removes hazardous trees and allows them to potentially earn revenue from the sale of timber. However, it is essential to be aware of restocking requirements under Oregon's Forest Practices Act. These rules outline specific guidelines for establishing a forest following a logging operation, including replanting deadlines, species requirements, and restocking thresholds. Failing to meet these requirements could result in fines or other legal consequences, so staying informed is important. Contact an ODF stewardship forester[3], who can provide educational resources on your reforestation requirements following a wildfire. *(For more information, see Spotlight on Salvage Logging on page 15.)*

Tax deferral. If your property is in tax deferral, Oregon law requires you to replant to restore the land's value to what it was before the fire. Landowners must actively manage and reforest post-wildfire, unless soil or terrain changes make replanting unfeasible. Failing to replant within a reasonable amount of time could result in losing tax deferral status, leading to requirements to pay deferred taxes, penalties, and interest. Contact your county tax assessor to understand your legal requirements and timelines to avoid a potential tax arrearage. Consult a local forester or ODF for guidance and resources.



SPOTLIGHT **SALVAGE LOGGING**

Salvage logging *is the harvesting of trees after disturbances, such as wildfire, with the goal of recovering economic value or reducing the risk of subsequent disturbances.*



JORDAN DELAWDER

Deciding whether to salvage log is one of the first decisions you will have to make as a landowner whose forestland has been impacted by wildfire. Salvage logging can be an appealing option for some, as it provides the opportunity to remove hazardous trees (which is necessary to prepare your site for replanting) while also generating revenue from the sale of timber. However, it requires careful consideration of the legal, financial, and environmental factors involved.

1. Timing.
Timing is a critical factor in salvage logging because burned trees deteriorate quickly due to insects, fungi, and weather exposure, reducing their market value. Standing timber is typically salvageable for up to two-to-three years following a fire (this will vary by tree species, elevation, and fire severity), and prompt action also helps mitigate safety risks from falling trees. Since salvage logging decisions affect both economic returns and long-term forest health, landowners should evaluate their options as soon as possible after a wildfire.

2. Finding the right logging operator.
It can be a major challenge to find a logging contractor who can do a good job for a fair price while leaving your land in good condition. It is important to be fully informed about the logging process and how to choose a logging operator. In some cases, it is advantageous to hire a consulting forester to handle both the logging and reforestation process.

3. Markets and mill capacity.
Market conditions, mill capacity, and property access are critical factors that can determine whether a salvage logging operation is financially viable. Following large fire seasons, such as in 2020, markets may become saturated, depressing log values and limiting opportunities for sale. At the same time, nearby mills may be at full capacity, forcing landowners to haul logs greater distances at increased transportation costs. In some cases, road damage from the fire can also require significant investment before logs can be moved, further tipping a potentially profitable operation into an unprofitable one.

4. Restocking requirement.
While potentially lucrative, salvage logging often triggers a legal requirement to replant after harvest. This is especially true under the Oregon Forest Practices Act[13], which mandates that landowners restock harvested areas to maintain sustainable forests. While salvage logging can help clear fire-damaged trees, you'll need to plan for replanting or other restoration efforts to meet these restocking requirements.

5. Ineligibility for funding resources.
In some cases, landowners who engage in salvage logging may find themselves ineligible for certain financial resources. You'll need to weigh the financial benefits of harvesting against the potential loss of funding opportunities for replanting.

6. Environmental concerns & soil health.
Salvage logging can raise significant environmental concerns, especially related to soil health. The degree of soil disturbance – and resulting impacts such as erosion and changes to site hydrology – can vary based on factors like the type of logging operation (e.g., ground-based yarding or cut-to-length systems), the use of heavy equipment, and the timing of operations (particularly whether soils are dry or frozen). These conditions can hinder both natural regeneration and successful replanting efforts. Because of these potential long-term effects, it's essential to consult with a forestry professional before beginning salvage logging to evaluate the ecological trade-offs and plan accordingly.

FOR MORE INFORMATION

ODF's Timber Salvage after Wildfires[27] and OSU Extension's To salvage or not to salvage after wildfire?[23] are great resources as you weigh these considerations. If you do decide to harvest your land post-fire, you may have questions about notification requirements, forest practices regulations, and assistance finding a reliable contractor.

For more information, refer to resources such as:

- ODF's district offices[2] about notification requirements and forest practices regulations.
- Oregon State University's Oregon Forest Industry Directory[28], which lists contractors specializing in forestry work.

Financial Considerations

Forest restoration can be expensive, and many landowners face significant financial challenges after a wildfire. Restoration costs can be highly variable based on the size of the affected area, the pre-fire conditions, desired outcomes, and the material and treatments needed. For this reason, it's important to be in touch with a forestry professional who can help you understand your needs, create a restoration or reforestation plan, and get connected with available resources to reduce costs. If and when you replant will also affect costs. If your property has enough surviving trees, natural regeneration may help save money and can be an ecologically sound option. If you decide that replanting is the best way to achieve desired conditions, then planting early may reduce the need for heavy site prep, which can be costly. *(For more information, see Natural Regeneration and Timing on page 22.)*

A list of financial programs and supplemental resource tools can be found in Section 1.3 of this guide.

Adapting to a Changing Climate

As western Oregon faces increasing temperatures and changing precipitation patterns, it is important to be mindful of the effects a changing climate may have on your forestland and what that means for the decisions you make today. Seedling and tree mortality can result from various factors including drought, high temperatures, competing vegetation, rodents, disease, or even repeat fires – which are exacerbated by a warming climate. In southwest Oregon's Mediterranean climate, your forestland may be especially vulnerable to these stressors. The following tools can help you understand your land, inform your reforestation decisions, and ensure you are asking the right questions.



RESOURCES AND TOOLS TO HELP YOU PLAN FOR THE FUTURE OF YOUR FOREST

- **Forestry professionals.** Consulting with a local forester or professional forestry consultant can provide valuable insight into how climate trends may impact your specific site. They can help you integrate climate-adaptive strategies into your reforestation and management plans.
- **Nursery and seed suppliers.** When purchasing seeds or seedlings, it's important to ask suppliers about the climate adaptability of the species. Choosing plant stock suited to future climate conditions can increase seedling survival and support long-term forest resilience. Nursery staff can provide detailed guidance on selecting the most appropriate species and seedling stock for your site and long-term management goals. *(See page 24 for more information on species mix and stock.)*
- **Seed Lot Selection Tool**[29]**.** In addition to guidance from your nursery or seed supplier, the Seed Lot Selection Tool is a GIS-based application that helps match seed lots to appropriate planting sites by factoring in changing climate conditions.
- **Climate Change Projections for Western Forests**[30]**.** If you are scientifically minded, this resource may help you to understand the region's latest climate research and how trends could affect your land.

Alternatives to Reforestation

You may determine that reforestation, whether through planting or natural regeneration, is not feasible on your site or does not align with your land management goals. Depending on factors like your location, fire severity, drought conditions, and other site characteristics, it might be more suitable to convert your forest property to a new or different forest type or a non-forest cover type, such as grassland, meadow, or even cover crop. When considering alternatives, it is important to evaluate the ecological, economic, and tax implications of your decision. Working with a technical assistance provider, you can consider a range of post-wildfire restoration treatments that re-establish healthy, long-term ecological conditions on your wildfire-impacted property.



3 Creating a Plan for Reforestation

Every piece of land is unique. *Subtle differences in slope, soil, sunlight, and water, together known as microtopography, can dramatically affect how trees grow on your property. Recognizing and working with these natural features is key to selecting the right species, planting in the right places, and anticipating potential challenges.*

This section guides you through the essential elements of creating a successful reforestation plan tailored to your land and available resources. Whether you're working with professionals or taking a DIY approach, starting with a clear plan helps you make smart, informed decisions and avoid costly mistakes down the road. Use this section as a practical starting point for developing a strategy that fits your land, goals, and resources.

3.1 Plan to your Property's Strengths

Climate and Weather

Climate and weather patterns at your project site influence several critical reforestation decisions and considerations:

- **When to plant.** Determine the optimal time of year for tree establishment on your property. *(See Time of Year section on page 34.)*
- **Slope, aspect, and grade.** Ensure selected species and their stock types are well-suited to current and future conditions. *(See Seed Procurement section on page 28.)*
- **How much to plant.** Balance competition, growth rates, and resource availability such as sun, moisture, and nutrients. Keep in mind any legal stocking requirements, such as those that apply after salvage logging or those needed to maintain the property's tax-deferral status. *(See Spacing and Species section on page 36.)*
- **Long-term viability.** Assess and plan for changing climate conditions. *(See Adapting to a Changing Climate section on page 16.)*

Both current and projected climate conditions will determine which species can thrive over time. Key factors to consider include:

- **Temperature.** Evaluate average temperatures, the length of the growing season, frost dates, and potential temperature extremes that may stress seedlings.
- **Precipitation.** Assess annual rainfall and seasonal distribution. Some species tolerate drought, while others require consistent moisture.
- **Wind exposure.** Strong winds can increase water loss and damage young trees. Identifying wind-prone areas can help determine the need for windbreaks or strategic planting techniques.
- **Condition of existing species on and around property.** With climate change impacts already evident, significant mortality of existing species can indicate low likelihood of long-term resilience. However, thriving tree species, such as those in hotter, drier conditions or in nearby lower elevations, may indicate ideal species for future conditions.

By integrating climate data into your planning process, you can improve seedling survival rates, enhance forest resilience, and ensure long-term success. *(For more information, see Adapting to a Changing Climate section on page 16 for resources on climate adaptation.)*

Site Characteristics and Microtopography

Assessing site geography and local topography allows you to leverage favorable conditions while avoiding areas that may be difficult to manage or unlikely to support successful tree establishment. Key factors to evaluate include:

- **Slope, aspect, and grade.** Sun exposure and moisture retention vary by slope position, influencing species selection. On steeper slopes, erosion control measures may need to be implemented before planting. South and west aspects are typically the hottest and driest aspects.
- **High, dry, wind-exposed, well-draining soils.** These areas are best suited for drought-tolerant species such as ponderosa pine, arid-adapted shrubs, or native grasses.
- **Lowland depressions with poor drainage.** These areas support moisture-adapted species like western red cedar or hardwoods such as red alder, black cottonwood, and Oregon ash.
- **Shaded areas.** Shade-tolerant species like grand fir, western hemlock, and western redcedar can thrive with limited sunlight. Stumps and logs can provide essential shade for seedlings, which helps reduce their exposure to sunlight and wind.
- **Sun exposure.** Consider the variance of sunlight exposure within the site, as most tree species require ample sunlight to grow, but too much can cause seedlings to dry out. Plant drought-resistant species such as ponderosa pine in warm, dry, sunny areas.
- **Soil texture type.** Different tree species thrive in different soil types. For example, conifers such as pines often thrive in sandy or well-drained soils, while hardwood species like oaks prefer loamy or clay-rich soils. Understanding your soil composition will help guide your decisions on which species to plant in specific areas. Tools such as the NRCS Web Soil Survey Tool[34] can help you determine your soil type as well as various other characteristics of your property.

SPOTLIGHT **FOREST MANAGEMENT PLANS** (FMPs)

Creating a plan for your reforestation efforts is an important step in successful land management. You may have heard of this referred to as a Forest Management Plan (FMP), which is a formal document that outlines goals, strategies, and actions for managing your forestland.

Different agencies use different names and templates for planning. One of the most commonly used is the Oregon Forest Management Plan Template[31], which was created by various partners in Oregon including the U.S. Forest Service, OSU Extension, ODF, and the Certified Tree Farm Program to bring consistency across programs.

Do You Need a Formal Plan?

A formal FMP is a valuable tool, but it can also be time-consuming and costly to develop. For landowners pursuing financial assistance through federal or state programs, an up-to-date FMP is often a requirement. This means that if you already have an FMP, it will most likely need to be updated to reflect your property's post-fire conditions and your new management goals. In some cases, funding may be available to help cover the cost of developing one.

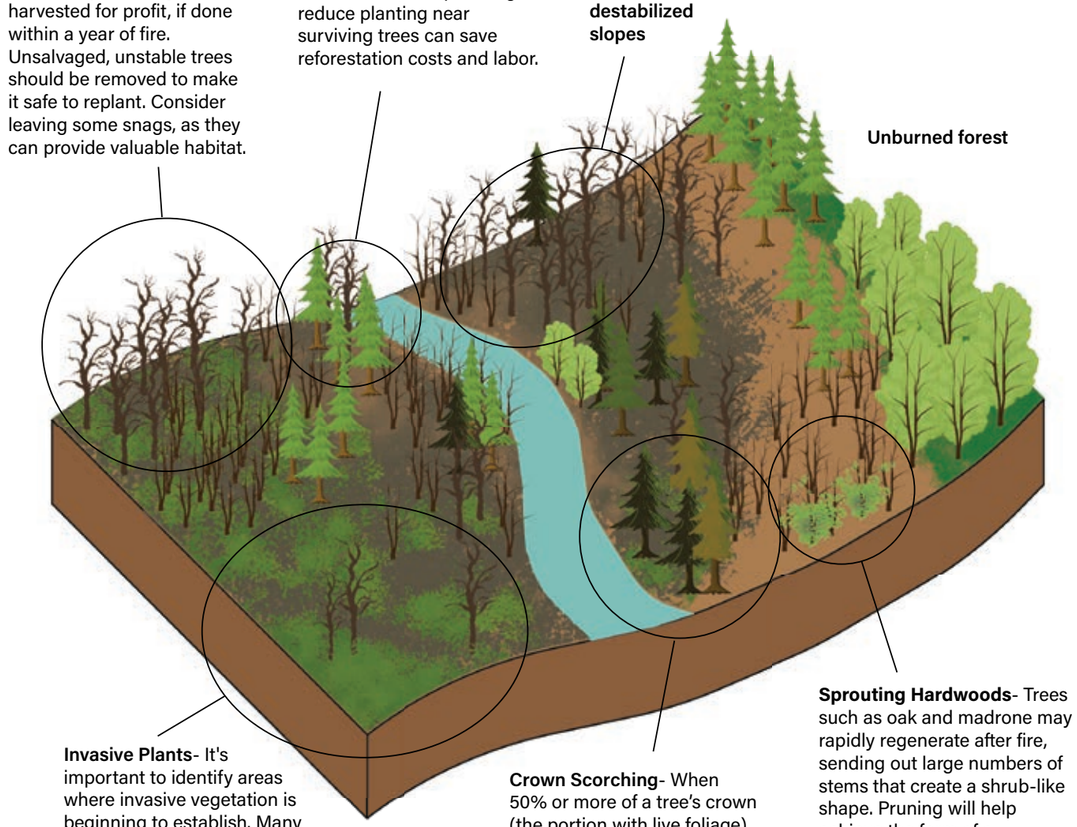
However, you don't always need a formal FMP, especially if you're financing the project yourself or managing it on a smaller scale. What's most important is that you have some kind of clear, thoughtful plan in place to help you prioritize where and what you want to do and keep you on track to meet your goals.

Where to Start

Even if you're not creating a formal FMP, the Oregon Forest Management Planning[32] website is an excellent reference for best practices. It offers a comprehensive approach to planning your forest management activities. OSU Extension Forestry offers Forest Management Planning Courses to help forest owners develop their own plans using this template with the support of professional foresters. The Tree School Online Library[33] has a trove of webinars on various topics relating to forest management and planning.

This section - "Creating a Plan for Reforestation" - focuses on the key elements of a successful plan. Use it as a practical starting point for developing a strategy that fits your land, goals, and resources.

Tailoring your Plan to your Property's Characteristics



Initial Burn Event

Anytime after burn/when you're ready

- Site assessment
- Create reforestation plan (after assessment)
- Debris removal and mulching

1-3 months after burn

- Salvage log (if applicable)
- Erosion control & native grass seeding
- Hazard tree removal

1-2 years before planting

- Option A: Procure seed & nursery space for custom seedling production
- Option B: Purchase already-grown seedlings

3-6 months in advance of work

- Arrange agreements for contracted work (i.e., site prep, planting, etc.)

Season prior to planting

- Site preparation (late winter / early spring or late summer / early fall)

Planting

- Spring or Fall – depends on species and planting site

1-2 years post-planting

- Annually, vegetation management "Spring Release"

1-5 years post-planting

- Annually, monitoring & survival survey

3-5 years post-planting

- Free to grow (no more veg management required)

Every 1-2 years

- Continued monitoring

10-12 years post-planting

- Precommercial thinning (PCT) assessment



Natural Regeneration

In areas where desirable vegetation is naturally regenerating, fostering this growth can be cost-effective and ecologically beneficial. The best approach will depend on the species present and their natural regeneration strategies.

Most native conifers in Oregon, such as Douglas-fir, ponderosa pine, and western larch regenerate only from seed. If these trees suffer mortality from the fire, they can only re-establish if seed arrives from adjacent surviving trees, from seed cached in the soil or by wildlife before the fire, or through replanting. In contrast, many hardwood species, including most riparian hardwoods such as willows, red alder, and cottonwoods, can resprout from roots or stems after fire. Many upland hardwoods like maples, oaks and madrone also regenerate this way, which can be especially valuable since hardwood seedlings are often harder to source from nurseries.

Because of these differences, post-fire management should be tailored to the desired species mix. For hardwoods, supporting natural resprouting can accelerate recovery and reduce planting costs. For conifers, successful regeneration often depends on proximity to live seed trees. Areas closest to surviving conifers typically regenerate more densely, while areas farther away may have fewer seedlings.

When managing mixed stands, consider spacing and competition. If planting conifers near naturally regenerating hardwood clusters, allow a reasonable buffer to maintain a balanced composition and reduce the risk of future crown competition or damage *(See Conifer and Hardwood Mixing section on page 37.)* If uniform tree spacing is desired, supplemental planting may be necessary in areas with low natural regeneration, and early thinning may be required near seed trees to create and maintain desired densities. *(See Consider Natural Regeneration section on page 37.)*


BECCA SHIVELY

Timing

The timing of reforestation after wildfire is an important consideration that can influence both the ecological and financial success of recovery efforts. While conventional wisdom has long emphasized replanting as soon as possible after a fire, emerging field observation suggests that waiting one to several years before replanting can sometimes improve outcomes, particularly following high-severity fires that deplete soil organic matter, elevate surface temperatures, and leave sites more water-limited. Allowing time for soil conditions to stabilize and early vegetation to establish can increase seedling survival and help indicate which areas and microsites are best suited for certain species. Keep in mind, this approach is highly site-dependent and should consider local climate, soil type, slope, and burn severity. During the waiting period, active vegetation management, especially the control of invasive weeds or aggressive early colonizers, becomes the most important action to maintain future planting potential. On the contrary, delaying reforestation can also increase costs if additional vegetation management becomes necessary due to dense vegetation growth. A professional forester can help evaluate these tradeoffs and determine whether postponing replanting is likely to benefit your site or whether timely reforestation should be a higher priority. These factors are essential for landowners to consider when developing a post-fire restoration plan.

3.2 Forest Management Planning Assistance

Organization	Assistance offered
USDA Natural Resources Conservation Service	Through the NRCS Environmental Quality Incentives Program (EQIP)[14], landowners may receive funding for the development of a Forest Management Plan by a qualified forester. By having an FMP, you may then be eligible to receive EQIP financial assistance for implementing practices within your plan. Supplemental resource • Healthy Woods Start with a Plan factsheet[35]
Oregon Department of Forestry	Following qualifying disaster events, ODF supports the implementation of FSA's Emergency Forest Restoration Program (EFRP)[11] by providing technical assistance to participating landowners, and preparing forest planning documents required by that program.
SWCDs	Some, but not all, SWCDs will have the capacity to write full FMPs for landowners. It's always good to check with your conservation district to explore the assistance they have available.
Consulting Foresters	Many landowners work directly with private consulting foresters to develop a Forest Management Plan. Be sure to consult with the forester about the funding sources you intend to pursue to ensure their qualifications and the FMP template they utilize will meet program requirements.
Do-It-Yourself	There are many resources available to help landowners understand the forest management planning process and draft their own plan. OSU Extension offers its Land Steward Program[36], Annual Tree School[37], and Master Woodland Manager Program[38] on an ongoing basis. It may also offer workshops for landowners to work through the forest planning process together during times of high need, such as following a wildfire. • Know Your Forest - Maps and management plans[39] • OSU Extension - Tree School Online Library[33] • Partnership for Forestry Education - Oregon Forest Management Planning[40] • American Tree Farm System - Management Plan Template[41]


JASON HOUSTON

4 Preparing for Implementation

***Once you have a reforestation plan**, the next steps include procuring seedlings and deciding how the work will be done (i.e., whether you plan to do it yourself or hire a contractor). This section emphasizes the importance of early planning and provides guidance on different methods for accomplishing each of these stages.*

Sections 4.1 and 4.2 focus on species mix selection and seedling procurement, often a complex task for those new to the process. Be sure to utilize forestry professionals and resources such as ODF's annual publication of Sources of Native Nursery Forest Seedlings (2025)[42] and Oregon Forests Resource Institute's Establishing and Managing Forests in Western Oregon[43] . Additionally the Reforestation, Nurseries, and Genetic Resources (RNGR)[44] website, is a growing information base of reforestation research publications and contains a business directory plus more.

4.1 Determine Species Mix

Regardless of how you obtain your seedlings, which will be described in the next section, you will need to select the appropriate mix of species. Several factors need to be prioritized and considered.

Seed Zone and Local Adaptation

Seed zones are geographic areas where tree, shrub, and other plant species are adapted to specific climatic and ecological conditions. Choosing species with the right genetic adaptation to your planting site will increase the chances of survival. To avoid planting trees that may not be suitable for your location, consider the following:

- **Seed zone and local genotypes.** Seed zones refer to geographical regions where specific tree species thrive most effectively. Most forest management agencies and nurseries classify seeds according to these zones to promote optimal growth. Ensure you choose species that are locally adapted to the site and that the genetic traits are suited to the planting location. Seeds from local sources are adapted to the regional climate, soil types, and pest pressures, enhancing their likelihood of success. However, one strategy to enhance climate resilience is to plant trees with genetics from more southerly or low-elevation seed zones in anticipation that they will be better adapted to the future climate of that area. This is referred to as assisted migration.

The Seedlot Selection Tool[29] is a helpful resource in choosing which seed zone to source from. This is a highly technical resource, so be sure to consult with a local forester and always adhere to seed zone guidelines for the species you intend to cultivate.

- **Native Species.** Prioritize planting native species, which will be adapted to your local climate, soil, and ecological conditions. Native trees are more resilient to local pests, diseases, and climate conditions, and they provide critical habitat for wildlife.
- **Species diversity.** Aim for a mix of species that complement one another. For example, a combination of fast-growing pioneer species (like alder) and slower-growing climax species (such as western redcedar) can help create a more diverse and resilient forest structure. This mix will also allow for different layers of canopy and undergrowth, which will improve habitat complexity.
- **Fire-resilient species.** After a wildfire, planting species that are fire-resilient (such as certain conifers like Willamette Valley pine, ponderosa pine, incense cedar, or drought-tolerant hardwoods such as Oregon white oak *(see Spotlight on Fire-Resilient Trees of Oregon on the next page))* can improve the long-term stability of your forest. Consider including species with thicker bark, deep root systems, or those that are naturally adapted to fire-prone areas.
- **Insects and disease.** Consider the vulnerability of the species you intend to plant to local pest pressures, as well as non-native pests that are likely to establish in the region. Planting a mix of species will safeguard you from significant pest damage in the future.

SPOTLIGHT

FIRE-RESILIENT NATIVE TREES OF WESTERN OREGON

In fire-prone landscapes of the western US, some native tree species are better adapted to survive and recover after wildfire. With fire-adapted traits such as thick bark, high canopies, and the ability to resprout, these species may be an excellent option for reforesting.



Ponderosa pine

PONDEROSA PINE *(Pinus ponderosa)*:
One of the most fire-resilient conifers due to its thick bark and self-pruning branches. Mature trees often survive low-to-moderate intensity fire. Widely planted in eastern Washington and Oregon for its drought tolerance and ability to stabilize dry sites. Widespread across eastern Washington, eastern Oregon, and southern Oregon especially in low-to-mid elevation dry forests and foothills.

WILLAMETTE VALLEY PINE *(Pinus ponderosa var. willamettensis)*:
A subspecies of Ponderosa pine that is native to the Willamette Valley in Oregon. It has similar traits and characteristics to the common Ponderosa pine of the eastern Cascades and southwest Oregon but is adapted to western Oregon's wet winters and dry summers.



Incense cedar

INCENSE CEDAR *(Calocedrus decurrens)*:
This versatile tree is drought tolerant and can survive in dry sites as well as moist lowlands. When mature, its thick bark protects it from low-severity fires, and it is able to regenerate and re-establish quickly after a wildfire.

WESTERN LARCH *(Larix occidentalis)*:
A deciduous conifer that tolerates fire thanks to its thick bark and sparse lower limbs. It grows quickly and is well suited for cold, dry climates. Regenerates well from seed in burned areas. Native to higher-elevation forests of the eastern Cascades, it can grow in the western Cascades but needs ample sun exposure as it is not shade tolerant.



Black cottonwood

DOUGLAS-FIR *(Pseudotsuga menziesii)*:
Younger trees are vulnerable to fire, but older trees are highly resistant to wildfire as bark thickens over time. In most of western Oregon, Douglas-firs tend to dominate the landscape. In Southwest Oregon, approach replanting this species with caution as it may not persist as a dominant component of our forests in the near term.

OREGON WHITE OAK AND CALIFORNIA BLACK OAK *(Quercus garryana and Quercus kellogii)*:
A fire-adapted broadleaf tree that resprouts vigorously from the base after fire. Oregon white oak supports a wide range of wildlife and is highly drought tolerant. It is a native tree species within the Willamette Valley's oak savannah ecosystem. This ecosystem has been greatly reduced by the encroachment of conifers. Oregon white oak is not shade tolerant and is easily dominated by neighboring fir and pines. To promote oak woodland habitat, remove encroaching conifers within these ecosystems. For more information and resources for stewarding this ecosystem, turn to the Willamette Valley Oaks Project[37].



Oregon ash

BLACK COTTONWOOD *(Populus trichocarpa)*:
Not highly fire-resistant, but regenerates aggressively in wetlands and along rivers and streams. It is useful for stabilizing streambanks and re-establishing vegetative cover after fire in wetter microsites.

OREGON ASH *(Fraxinus latifolia)*:
Less common but notable for its ability to resprout following fire. Typically found in wetter areas or along streams, where it contributes to habitat diversity and post-disturbance recovery. Note that this species, as well as other ash species, has a high risk of mortality due to potential loss from Emerald Ash Borer (EAB). Given the mortality risk, it is best not to rely on this species as the dominant species within your planned species mix. If you see signs of EAB, report sightings to the Oregon Invasive Species Hotline at 1-866-INVADER.

Stock Type

Stock type refers to seedling root characteristics. Seedling stock comes in various forms; each suited for different reforestation goals. Select the appropriate stock type and seedling size based on your planting site conditions, budget, and reforestation objectives.

The two main categories are:



- **Bare-root seedlings.** Young trees are grown in a nursery and sold, typically at one to two years old, without soil around their roots. They require careful handling to avoid root desiccation and damage, but because they are typically older, they can mature faster than containerized seedlings. Bare-root seedlings require precise care and planting techniques. Due to their fragility and handling needs, these seedlings should be managed and planted by experienced professionals. Since bare-root seedlings lack soil in their root structure at delivery, they are best suited for locations with organic soil material and a deep mineral soil layer to avoid rooting issues.



- **Containerized seedlings.** Grown in plastic pots, Styrofoam trays or paper containers, these seedlings typically take one year to produce, have a more compact root system, and are more resistant to root damage during planting. Container seedlings are commonly referred to as "plugs" or as "Styro"-types, the latter denoting the size of the container where the seedlings are cultivated. Because container seedlings have a developed root system that includes soil as part of the plug, they are an excellent choice for shallow, dry soils with low organic matter and primarily mineral soil.

ROOT AND SHOOT SIZE

Regardless of the stock type, the ratio between the dimensions of the root system below ground and the stem with foliage above ground ***is important***. Recent research indicates that seedlings exhibiting a 1:1 root-to-shoot ratio tend to have a higher survival rate and are more resilient in adverse conditions compared to those with larger stems relative to their roots. While more developed seedlings with larger stems and abundant foliage may outwardly appear more viable for establishment, they face greater risks from sun and wind exposure, which can lead to water loss through their leaves or needles.



STEPHEN CALKINS

4.2 Procuring Seedlings

There are two primary approaches to obtaining seedlings for reforestation:

A) growing your own from seed in a reserved nursery space, or
B) purchasing seedlings directly.

Option A. Seed Purchase & Seedling Production

This option requires more planning and coordination but provides the greatest control over seedling quality. It involves acquiring seed of the appropriate species and genetic source, and securing nursery space to grow seedlings tailored to your site's conditions. While more time- and resource-intensive, this method ensures that the species mix, seed zone, and stock type are well suited to your planting site, increasing the likelihood of successful establishment and long-term forest resilience.

If you choose to grow seedlings from seed, review the following considerations regarding seed sourcing and reserving nursery space, and be sure to discuss them with your service providers.

SEED PROCUREMENT: SOURCING THE RIGHT GENETIC MATERIAL

When sourcing seeds and reserving nursery space, it's best to coordinate with both the seed supplier and the nursery at the same time. Nurseries require key details – such as seed germination rates and the number of seeds per pound – to calculate how much seed is needed to produce the desired number of seedlings. Clear and timely communication during this phase helps ensure accurate seed procurement and smooth seedling production, keeping your project aligned with its timeline.

State seed banks, such as ODF's J. E. Schroeder Seed Orchard[46] , nurseries, and other seed suppliers can assist you or your reforestation professional in sourcing the appropriate genetic seed stock and seed zone for each tree species planned for the project area. By providing basic site details – such as county, site elevation, and desired species mix – seed suppliers can match your project with the correct genetic material for nursery propagation. Supplying additional information, such as the legal land description (Township, Range, and Section), can further improve seed selection to ensure better site adaptability and long-term forest health. *(Refer to the Directory at the end of this guide for a list of nurseries that serve family forest landowners.)*

INFORMATION TO PROVIDE YOUR SEED SUPPLIER:

- **Site details:** State, county, site elevation, and legal land description (Township, Range, Section), if available
- **Species and quantities:** Desired species mix and the number of seedlings needed per species
- **Stock preferences:** Whether you want bare-root or containerized seedlings
- **Project timeline:** Date when nursery will need the seed to ensure enough time for seed treatment and seedling production before planting

QUESTIONS TO ASK YOUR SEED SUPPLIER:

- **At a minimum, reputable seed suppliers will provide:**
  - Germination percentage and when testing was done
  - Number of seeds per pound
  - Seed zone/coordinates of where seed was collected
  - Seed age
- **Some seed suppliers may also provide:**
  - *Seed fill:* the proportion of filled seeds
  - *Purity:* the proportion of actual seed versus all materials (including empty seeds and other debris)
  - *Seed storage information:* this can be helpful for nursery growers to consider when they prepare for sowing

Option A, continued.

Purchasing and Timing

- **Order early.** Seed availability varies significantly by species, seed zone, and season. Some native tree species only produce good seed crops every few years, and supplies can become scarce in certain regions after major wildfire years when demand spikes. Start sourcing seeds several months (and up to a year) before the nursery needs to start seedling production to ensure availability and avoid project delays. Sometimes, when seed is not available, targeted collections are needed, which may add months or years to the project timeline. This is why early planning is essential. *(Refer to the Timeline on page 20 for more information.)*
- **Quality check.** Work with credible suppliers who provide seeds of known origin from appropriate seed zones for your location. Understand your seed lot quality, including seeds per pound as well as germination, purity, and fill rates. When seed supplies are limited, you may have fewer seed lot options to choose from. An experienced nursery can use this seed quality information to calculate exactly how much seed is needed to produce your target number of seedlings.
- **Consult experts.** Check with local forestry experts, nurseries, or key partners about species selection, seed zones, or sourcing locations for recommendations based on your regional climate, soil, and restoration goals.

Acquire Nursery Space: Preparing for Seedling Growth

Locate a local nursery to germinate and grow the sourced seeds. It is crucial to find a nursery that can meet your seedling development needs. Some nurseries have minimum order requirements that must be met. It is also ideal to locate a nursery within a reasonable distance to your project area. This helps reduce travel time and cost, but more importantly, helps the seedlings develop in climate conditions similar to where they will be planted. Often, nurseries can help identify potential seed sources during the seed procurement process. *(See list of nurseries in the Directory.)*

CHOOSING A NURSERY:

- **Commercial Nurseries:** Many private landowners work with commercial nurseries for growing their seedlings. Ensure that the nursery is reputable and experienced in growing the species you are planting. Confirm that the nursery can provide the required stock type (e.g., bare-root or containerized seedlings) and that they are knowledgeable about best practices for growing climate-resilient, fire-adapted species.


ASHLAN BONNELL

- **Public Nurseries:** Landowners may also be able to grow seedlings at Washington Department of Natural Resource's Webster Nursery[47] (despite being out-of-state, this nursery is still a great resource for Oregon landowners). Public nurseries are also a valuable resource for information on stock types, seedling storage, handling and care, and planting instructions.

NURSERY PLANNING CONSIDERATIONS:

- **Minimum order requirements.** Find a nursery that can meet your order quantity. If your need is relatively small, you may need to work with a nursery that will accept smaller orders. In 2024, a regional survey identified a list of nurseries in Washington and Oregon that would accept orders as small as 500 trees. *(See Directory for a list of nurseries and their contact information.)*
- **Nursery location.** If feasible, find a local nursery near the project site. This can reduce transportation requirements for the seedlings and decrease the need for tree coolers when transportation time is brief.
- **Determine seedling stock and type.** Bare-root and container seedlings have different development timelines. Typically, container seedlings are ready for planting after only one year of growth, while bare-root seedlings are ready for planting at two years old. The timing of when the seedlings are ready for planting will establish the schedule for the site preparation treatment and the post-planting vegetation management treatments. *(For more information, see the Post-Planting Vegetation Control section on page 41.)* Determine your planting season and seedling type to develop a treatment timeline for reforestation.

Option B. Direct seedling purchase

This option involves buying ready-to-plant seedlings from a nursery or a seedling distribution program. This option is less labor intensive and can accelerate the reforestation timeline, especially if seedlings are available shortly after a wildfire. Planting sooner can reduce site preparation and vegetation management costs. However, availability is often limited, and you may not receive the ideal species, genetic source, or stock type for your specific site conditions. For instance, purchasing bare-root seedlings instead of containerized seedlings for a dry, low-organic soil site may lead to low survival rates, especially if the area experiences a prolonged drought or other disturbances. If you can acquire appropriate seedlings directly, you should take advantage of this as receiving grown seedlings will help reduce the additional planning steps involved with ordering seed and procuring nursery space.


ASHLAN BONNELL

Securing seedlings for your property following a major wildfire can be challenging due to high demand. This challenge can be even greater for small-acre family forest landowners because some nurseries require large-scale orders and work mainly with large industrial or government land managers. However, there are many options for sourcing seedlings if you know where to look.

- **Seedling programs offered by technical assistance providers.** Several organizations may be able to help landowners secure seedlings for wildfire restoration. Following past wildfire events, OSU Extension, ODF and private consulting foresters have helped groups of landowners place bulk seedling orders. Other organizations like watershed councils have sourced free seedlings for landowners through donations from One Tree Planted and the Arbor Day Foundation, or from surplus stock provided by the Washington DNR's Webster Nursery or industrial timber companies. These opportunities can change year-to-year so be sure to check in with your technical assistance provider about current opportunities.

  As described in Section 4.1, successful seedling establishment relies on matching your seedlings to your site. Planting 'bargain seedlings' or free seedlings from a different seed zone (called "off-site") are unlikely to thrive or even survive.

- **Native plant sales.** Some entities – including SWCDs and Oregon Small Woodlands Association (OSWA) chapters – offer annual or biannual seedling or native plant sales sourced by local nurseries. If your reforestation project is small, or you're interested in a diversity of native tree and shrub species, this may be a good option to pursue. Reach out to the hosting organization to understand your ordering options, the appropriateness of the available seed stock, and to ensure you are prepared to plant as soon as you receive your order.

4.3 Implementation Methods

Landowners typically have two main options for carrying out their reforestation plan, particularly in regard to the site preparation and tree planting phases. You can hire contractors to do the work or take a Do-It-Yourself (DIY) approach. Each option has its trade-offs. The right choice depends on your experience, time, and the complexity of the project. While hiring a contractor may be more expensive, it often allows for faster and more efficient completion, especially for large-scale or technically demanding work, thanks to their specialized equipment and expertise. Contractors often bring years of experience and can handle work more efficiently than individuals who may be learning new techniques as they go. On the other hand, completing treatments yourself can reduce costs, but will generally take more time and effort. Be sure to explore locally available financial assistance options before making a decision, as they may pay for some or all contractor implementation costs.

Do-It-Yourself

DIY approaches are best suited to smaller-scale projects or less complex activities such as limited interplanting or when treating a smaller acreage. This is a particularly good option for landowners who enjoy hands-on involvement or have support from family and friends. Landowners should consult their local ODF district office and the Forest Practices Act[7] to ensure they comply with all forest practice laws and regulations. ODF is a useful resource for understanding reforestation standards and Forest Practices Act requirements, how to use the Forest Activity Electronic Reporting and Notification System (FERNS)[48], and legal considerations for timberland management.

While this guidebook is not designed to teach landowners how to complete reforestation projects entirely on their own, it does provide a clear overview of the steps involved. *(For more technical guidance, refer to Section 1, which includes additional planning resources and references.)*

Keep in mind that reforestation is a complex and labor-intensive process. Mistakes can be costly, sometimes more so than hiring expert help, so weigh the benefits and risks carefully before going the DIY route.

Hiring Contractors

Landowners aiming to simplify the reforestation process should consider hiring skilled professionals for optimal outcomes. Start by identifying which parts of the process – such as site preparation, planting, post-planting vegetation management, etc. – will be carried out by contractors, and secure those services well in advance. For instance, once you've arranged for seed and nursery space, you'll receive a seedling delivery date. This date will help you schedule the necessary treatments, each with its own timeline. Using these projected treatment dates, begin connecting with potential contractors. In general, it's recommended to finalize contracts 3-6 months ahead of each treatment. In periods of high demand, even more lead time may be necessary. Contact service providers early to ensure their availability and align your contract timeline with your overall reforestation plan. Local resources such as stewardship foresters, conservation districts, and NRCS district offices may have a list of contractors in your area that can help with your treatment needs.

WHEN SELECTING A CONTRACTOR, LANDOWNERS SHOULD:

1. **Research experience and past projects.** Ask for references and examples of previous related work.
2. **Verify proper licensing and certifications.** Ensure that contractors handling herbicide applications hold the necessary certifications for chemical use and comply with state regulations.
3. **Obtain multiple bids and detailed contracts.** A clear agreement outlining the scope of work, timeline, and expectations helps prevent misunderstandings.

Special Considerations for Herbicide Application

If vegetation control involves herbicide application, it is critical to hire a contractor with the proper herbicide applicator certification. This ensures compliance with state regulations and helps prevent environmental risks. For instance, state law requires applicators to submit a notification through FERNS prior to herbicide use. Landowners can check with OR State's Department of Agriculture[49] for a list of certified applicators.

4.4 Assistance for Finding a Contractor

Local resources such as stewardship forests, conservations districts, and NRCS district offices may have a list of contractors in your area that can help with your treatment needs.

Type of Assistance	Resources
Online databases	The following organizations maintain databases of contractors: • Oregon Bureau of Labor and Industries[50] - lists registered reforestation contractors • Oregon State University's Oregon Forest Industry Directory[28] - lists contractors specializing in forestry work • Association of Oregon Loggers' Professional Loggers Directory[51] - lists contractors with OPL qualifications • Association of Consulting Foresters "Find a Forester" tool[3]
Referrals	Many NRCS district offices, SWCDs, and extension agents maintain their own lists of local contractors. Seek out personal referrals from those who have worked directly with forestry contractors, such as neighbors, SWCDs and watershed councils.
Educational Publications	There are many publications that can provide guidance on how to choose a contractor, including from OSU Extension, such as: • Choosing the right tree-planting contractor for your family forest[52] • Choosing the Right Forestry Services Contractor: Practical, Ethical and Environmental Considerations[53] • Choosing the Right Service Provider: Chemical Applicator[54] • Choosing the Right Logging Contractor[55] • Choosing the Right Service Provider: Consulting Forester[56] • Contracts for Woodland Owners[57]



JASON HOUSTON

5 Implementing Land Management Activities

Once your plant materials are secured and your implementation plan is in place, *it's time to begin on-the-ground work. This section guides you through the various land management activities to prepare your site for planting, along with important planting considerations and techniques to help ensure successful tree establishment.*

5.1 Pre-Planting and Site Preparation

Certain land management activities are essential to preparing your land for planting trees. These treatments address hazardous post-fire conditions, stabilize soils to prevent erosion, prevent or address the incursion of unwanted vegetation, and generally create favorable conditions for tree establishment and survival.

Site Stabilization

If your site is on a slope or in an erosion-prone area, it's wise to implement erosion control measures like silt fences, erosion control blankets, and/or seeding with native grasses, wildflowers, and shrubs to stabilize the soil. Keep in mind that native seedings may be affected by subsequent site preparation and may require re-establishment after tree planting. However, establishing native grasses, flowers, and shrubs early on can help mitigate erosion before reforestation efforts commence. Erosion has the potential to wash away topsoil, which is crucial for the survival of seedlings. Erosion control measures should be implemented as soon as possible, as wildfire-affected sites are most vulnerable during peak precipitation events in the fall, winter, and spring that typically follow the fire season.

Debris Removal

After a wildfire, your land may be covered with fire-related debris such as standing dead trees, fallen logs, and scorched vegetation. It's important to remove large debris and downed trees that could hinder planting efforts or increase future wildfire risk. At the same time, consider leaving smaller organic materials such as logs, snags, and large-diameter woody material in place, as they can provide valuable habitat, support soil health, and promote biodiversity. Regardless of whether or not you re-plant, debris and standing dead removal will reduce the future risk of wildfire within your site. Refer to resources such as the Learn to recognize hazard trees after a fire[24] webpage for information on removing hazards and standing dead trees.

Removal of Standing Dead Trees

You will need to address dead standing trees on your property if you do not opt to conduct salvage logging or a post-fire harvest. These snags may present a falling hazard and risk the safety of people or property. They may also increase your property's on-site fuels and wildfire danger in the event of a future wildfire. Selective cutting can preserve living, healthy trees and target the most hazardous dead standing trees - while leaving non-hazardous snags for wildlife habitat.

Vegetation Management

The presence of invasive or non-native species may hinder reforestation efforts. Wildfires frequently enable invasive species to thrive, especially aggressive grasses and shrubs that outcompete young trees for water, light, and nutrients. Timely management of these invasive species is essential. Herbicides, mechanical removal, or controlled burning (when safe and suitable) can be used to curb their spread. Regular monitoring is vital to mitigate any new invasions.

Typically, competing vegetation is treated before planting, as part of site preparation, and one and two years after planting, known as a "spring release" treatment *(See Spring Release section on page 41 for more information.)* This is to ensure tree seedlings have optimal conditions to reach the "free-to-grow" size *(as discussed in Section 5.1),* when trees are 5 feet or taller in height. The number of treatments and the intensity level will depend on the site and the duration between disturbance and initial treatment. The more established the vegetation, the more intensive the treatment will need to be.

MASTICATION, BRUSHING, AND MULCHING

Mechanical treatments such as mastication, brushing, grubbing, and mulching may be necessary before planting to manage reemerging woody shrubs and dense vegetation. These methods help clear planting sites and produce mulch that can remain on-site to retain moisture, suppress weeds, and protect soil structure, especially beneficial during the early stages of seedling establishment. In some cases, pre-treatment with herbicides may be needed to effectively manage persistent woody or non-woody species. Applying herbicide before mechanical treatment can increase its efficacy by allowing time for absorption and translocation within the target plants.

For landowners seeking to minimize chemical use, manual methods such as hand-pulling can serve as a localized spring release technique. However, these approaches are labor-intensive, costly, and may be difficult to contract. Additionally, both mechanical and manual methods carry a risk of soil compaction or unintentional damage to young seedlings if not carefully timed and implemented. Thoughtful integration of these tools can enhance vegetation control and support successful reforestation outcomes.

HERBICIDE

Chemical applications are an effective and affordable method of vegetation control, but may not be appropriate for all species or desired outcomes. For initial site preparation, when an abundance of non-tree vegetation is present, a broadcast application may work well during the spring or summer before planting the following fall or spring. *(Refer to the Timeline on page 20.)* For spring or summer release treatments, spot or point application can effectively address reemerging vegetation and minimize damage to seedlings. Some herbicides may be applied as a broadcast over seedlings prior to "bud break" (i.e., first new growth after dormancy) while other herbicides can be applied after bud break.

Consult your reforestation expert to create an herbicide treatment plan specific to your site's requirements. Various herbicides are suited for different application situations and timing. For sites where dense unwanted vegetation is present, a broadcast application of a broad-action herbicide will work well. Depending on the species present, there are a suite of herbicides which cover different species of plants. In other sites where application timing is prior to vegetation emergence, a pre-emergent herbicide will work well to control unwanted vegetation before it can grow. A forestry professional can help determine the most suitable herbicide, the correct chemical mixture, and the appropriate application strategy based on your vegetation management goals. OSU's Extension's Choosing the Right Service Provider: Chemical Applicator[54] is a helpful resource with further guidance. And, for information regarding treatment for specific weed species, consult the Pacific Northwest Weed Management Handbook[58].

Reminder: Work with a licensed herbicide application professional and follow Oregon Forest Practices Rules when applying herbicide treatments.

BROADCAST AND PILE BURNING

Controlled burning, whether in the form of broadcast or pile burning, can act as an effective site prep method. Controlled burns, which are planned low-severity fires, effectively manage competing vegetation and enhance soil nutrients. In reforestation planning, controlled burns are best conducted during the fall burn season before planting the following spring. However, fall burns can be more challenging to execute due to narrower burn windows affected by seasonal drought, wildfire season, burn bans, and smoke regulations. In some areas, fall burning may not be permitted.

If you can source the correct seedlings for your site immediately following a wildfire, this can help reduce the need for site preparation as the fire has effectively prepped the site. The site will likely require some form of vegetation control during the first one to two years after planting. This is often managed through spring release treatments using chemical or manual spot applications to reduce competing vegetation.

Check with your ODF forester and local fire district for information on county and state burn requirements and permits. Local Prescribed Burn Associations (PBAs) are an excellent resource for controlled burn information and planning, and Certified Burn Managers[59] can help develop a burn plan for your site. Find your local PBA on the Oregon PBAs webpage[60].


EMILY RICHARDSON

Slash Removal

Slash generated from both your dead tree removal and vegetation management will require treatment. Large-diameter woody debris may be left as-is for decomposition or can be lopped and scattered to minimize wildfire risk and fuel loading. Keep in mind that decomposition will be prolonged in drier climates. In these cases, mechanical or burning treatments are better for reducing debris where decomposition will be too slow and presents an inherent risk in the event of a future wildfire. Managing Logging Slash Piles in Northwest Oregon[61] is a useful resource for pile burning best practices. Large-diameter woody debris may serve as a good micro-site for seedlings. Fine woody material can be left on the forest floor for decomposition if it does not present a fire hazard, while excess material is often hand piled, cured and then burned. About one pile per acre, property constructed, may be left for wildlife habitat. Avoid using pine slash for wildlife pile construction as to not attract or create a habitat for pine engravers, commonly known as pine ips. Because of this pine bark beetle, it is best practice to cut pine into small pieces and lop and scatter if you choose not to burn or chip this material. Additionally, avoid cutting pine when these beetles are active, typically the warm months of spring and summer.

5.2 Planting

Once your property is prepared and ready to receive seedlings, it's finally time to plant! This section covers day-of logistics, planting techniques, spatial patterns and seedling protection. For further guidance and best practices, be sure to consult additional resources such as OSU Extension's Selecting and Buying Quality Tree Seedlings publication[62].

Time of Year

Source seedlings for your site and determine the planting season and year based on the seedling type and growing time. In western Oregon, it has been common practice to plant in the spring. However, warmer summer months starting earlier in the year due to climate changes have increased the risk of drought, which can have detrimental effects on your seedlings. Planting during the late fall and winter can give the seedlings more time to establish before the dry season. This is effective in lower elevation sites where seasonal snow and deep-freezing soil is less common. Ultimately, it's best to consult with your seed and seedling provider or a forestry professional to determine the best planting season for your species and seed type.

When to Plant - Seasonal Considerations

Season	Pros	Cons
Winter	• Best for sites that are low elevation and do not experience frequent below freezing temperatures. • Ample water supply • Prolonged period for root development before the dry season	• Susceptible to frost heave events • Not suitable for cold climates that experience frequent snow and freeze-thaw events • Can cause mortality from frost heave
Spring	• Aligns with nursery schedules and seedling availability • Well-established practices among contractors and foresters • Easier to schedule and coordinate labor and logistics • Typically ample moisture availability from snowmelt or spring rain	• The spring planting window is narrowing due to increasingly early transitions from cold and wet to hot and dry conditions • Higher risk of moisture stress and shock if planting is delayed or unseasonal drought conditions occur • Root establishment may be limited before the onset of summer drought • Less flexibility with timing and inventory if seedling supply is tight
Fall	• Cooler temperatures and increasing soil moisture create ideal root growth conditions • Gives seedlings a head start before spring, potentially increasing survival • Reduces pressure on limited spring planting windows and labor availability	• Nursery practices that induce early hardening or dormancy are important for fall planting of seedlings. • Fewer nurseries grow seedlings for fall planting and thus requires advance planning and communication • Frost heave is a potential risk in exposed, freeze-thaw-prone soils (seen most often in colder regions or higher elevations) • Labor availability and site access may be limited in fall due to hunting seasons, wet roads, or early snowfall • Potentially narrow planting window between onset of fall rains and arrival of temperatures too cold for ideal planting conditions


ASHLAN BONNELL

Seedling Transportation

Careful transportation of seedlings can ensure they remain in good condition before planting. If you're moving seedlings from a nursery to the planting site, take care to minimize stress.

- **Minimize exposure.** During transport, keep seedlings cool and protected from direct sunlight and wind. Cover them with a tarp if necessary.
- **Protect roots.** For bare-root seedlings, ensure that the roots are kept moist and are not exposed to air for extended periods during transportation. Pack roots in damp burlap or other moisture-retaining materials.
- **Short transportation time.** Minimize transportation time as much as possible. Seedlings should be planted or stored in a cool, shaded area immediately upon arrival at the site.

Seedling Storage

If you are unable to plant seedlings immediately upon receiving them, proper storage is essential to maintaining their viability until planting.

- **Cooler storage, temperature and humidity.** Store seedlings in a cooler or refrigerated area with controlled humidity. The ideal temperature range is between 34°F and 40°F (1°C to 4°C), and humidity should be high to prevent the roots from drying out.
- **Root protection and moisture.** For bare-root seedlings, wrap the roots in moist burlap or other protective material to prevent them from drying out. Seedlings should be kept in the box or bag they arrived in to minimize disturbance to the roots and soil. For container seedlings, soaking the plugs in water before planting can help the seedling establish and increase survival rates.



ASHLAN BONNELL

Spacing and Species

Spacing and species mix, as well as distribution, will depend on the desired outcomes and landowner objectives. This will influence the structure of your landscape and the interaction it will have with the surrounding environment. Be clear in communicating your future goals for your landscape when working with your technical service providers and forestry professionals.

If you are managing for future timber products, your planting mix may have lower species diversity and higher densities. This will require intensive management throughout the life of the stand and will incur frequent treatment costs. Be sure to develop a long-term forest management plan that identifies the future required treatments and their inherent timing to understand the future treatment needs and associated costs.

Although dense tree plantations can be good at yielding a high commercial value at stand maturity, know that this type of forest structure may be at a higher risk of pests, disease, and future wildfire. In the event of wildfire, it is more likely to exhibit severe fire behavior due to the high density of trees and the homogeneous structure of the species composition and tree spacing. Consider integrating fuel breaks into the planting design to help mitigate the risk of losing the re-established trees to a potential future wildfire. Additionally, high density structures are more susceptible to severe drought events and at higher risk of pest and disease infestation, which can lead to mortality.

Diversity and heterogeneity are essential for creating a resilient and ecologically balanced forest. A diverse mix of species can enhance biodiversity, improve ecosystem services, and increase resilience to pests, diseases, and climate stressors. Disrupting the continuity of the forest structure and density can reduce the risk of severe fire behavior and may help to minimize or even stop the spread of wildfires. Furthermore, clusters and gaps in vegetation communities provide valuable habitat benefits for wildlife.

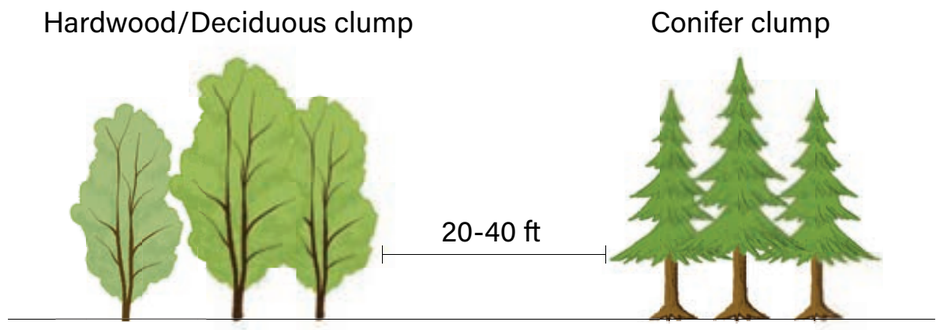
Note: For landowners who are required to reforest after a wildfire, the Oregon Forest Practices Act has certain restocking thresholds and species requirements that must be legally met. (For more information, see Spotlight on Plans for Alternate Practices on page 38.)

- **Optimal spacing.** When trees are too close together, they compete for water, nutrients, and light, which can result in stunted growth or increased mortality rates. The appropriate spacing depends on your desired future outcomes for the property, future management activities, and the mix of species. A common practice is to space trees a specific distance apart from each other, depending on the desired average number of trees per acre (TPA). For instance, if you aim for an average of 300 TPA, seedlings should be spaced 12 by 12 feet apart. Uniform spacing promotes a uniform structure, which is beneficial for timber production, but it often decreases diversity and the ecological advantages offered by a heterogeneous structure. When planning to incorporate a heterogeneous structure, arrange the planting spacing into different areas according to species characteristics and site microclimates.
- **Clusters and clumps.** Planting in clusters or clumps can effectively mimic natural regeneration in areas where it may not occur due to conditions after a wildfire. If feasible, encourage natural regeneration that shows this pattern, interplanting within clusters as needed. Designing with a mix of clusters, clumps, and gaps tailored to the site's characteristics will leverage the site's strengths and promote diversity and future resilience, providing additional benefits for wildlife. Depressions in the microtopography where temperatures are cooler and water will be more abundant are good sites for clumps or clusters. Hills, ridges, or rocky or shallow soils are great spots for gaps or avoiding planting at high densities.
- **Conifer and hardwood mixing.** When incorporating hardwood species into your mix, consider the future canopy structure. Hardwoods generally have broad crowns, in contrast to conifers that feature a uniform taper and a wider drip line at the base of their crown. If you plant conifers and hardwoods at a standard spacing, the mature trees may end up interlocking their limbs within the canopy, potentially damaging both species and leading to product loss or tree mortality. When planting hardwoods, it's beneficial to group them in clumps while maintaining sufficient spacing between adjacent conifer seedlings. This spacing helps prevent crown encroachment from either species. Typically, hardwoods regenerate naturally in clusters, so leveraging these natural groupings of hardwoods can help lower reforestation expenses. Pay attention to the growth rates of various species; while some, such as grand fir and red alder, grow quickly, others like red cedar and white oak establish themselves more slowly. Be mindful of competition when planting a mix of species, as they may impede the growth of neighboring seedlings.
- **Target spacing for diversity.** When planting a mix of species, adjust the spacing slightly according to each species' growth habits. Fast-growing varieties may require additional space to prevent overshadowing their slower-growing counterparts. Leverage the strengths of both the species and the planting environment. Position drought-tolerant species in arid uplands, while placing drought-intolerant varieties in the wetter lowland areas.

Natural Regeneration

- **Natural regeneration potential.** After a wildfire, sites may naturally regenerate through seed banks or by reseeding through the surviving legacy trees within and adjacent to the site. However, this is influenced by the severity of the wildfire. In general, the more severe the wildfire, the longer and more difficult it will be for the area to re-establish trees through natural regeneration. During the initial assessment following the wildfire, note the tree mortality and determine the number of surviving trees, as well as their location and distribution throughout the area.

The typical rule of thumb for legacy reseeding is that you can expect the surviving trees to reseed the general area within two times the height of the surviving tree. Prevailing winds, slope, and microtopography can influence the density and distribution of natural reseeding.



- **Timing.** Avoid planting in areas where natural regeneration is likely to occur, as this could create competition between newly planted seedlings and naturally regrowing plants. By allowing natural regeneration in these areas, you can save on planting costs while fostering the ecological restoration of the site. Monitor the site annually to determine where areas are successfully establishing seedlings naturally. Assess the competing vegetation to determine vegetation management needs to foster the successful growth of seedlings.
- **Inter-planting.** In areas where natural regeneration is sparse or absent, inter-planting (introducing planted seedlings among existing vegetation) may be necessary to ensure that the desired species species diversity, and/or density are re-established. Planting may also be required in areas where the overstory has been largely lost and cannot provide sufficient seed sources for natural regeneration.
- **Legal Considerations.** *See Spotlight on Plans for Alternate Practices.*

SPOTLIGHT **PLANS FOR ALTERNATIVE PRACTICES**

If it has been determined that you are required to reforest following a wildfire *(see Legal Considerations under Section 2.2 of this guide),* you must comply with the Oregon Forest Practices Act (OFPA) rules and regulations.

If you plan to meet reforestation requirements through methods other than those specifically outlined in the OFPA, you may need to submit a plan for alternate practice for approval. This plan must demonstrate that the proposed alternative methods will meet or exceed the reforestation standards and performance thresholds required by the OFPA.

For example, **up to 20% of the required stocking may consist of hardwoods,** provided they meet the OFPA's criteria for acceptable tree species.

Acceptable tree species criteria includes:

- Species must be ecologically suited to the planting site.
- Species must be capable of producing logs, fiber or other wood products for lumber, sheeting, pulp or other commercial forest products.
- Species must be marketable in the foreseeable future

If you'd like to integrate more than the maximum amount of hardwoods or plant species that do not meet the acceptable tree species criteria, you will need to submit an alternative practices plan for approval.

FOR MORE INFORMATION

To ensure you are in compliance, consult with your local forester and review helpful resources such as Oregon's Forest Protection Laws; An Illustrated Manual (2025)[13].

Similarly, landowners interested in using **natural regeneration** for reforestation must also submit a plan of alternative practice. Because natural regeneration often takes longer, reforestation timelines may not align with OFPA requirements. The alternate plan should set the required time limits for germination and establishment of a free-to-grow stand that meets minimum stocking standards.

The plan must outline:

- Seed sources and/or species to be used
- Site preparation methods
- Vegetation competition control methods
- Estimated time to achieve a free-to-grow stand
- How progress will be monitored
- Contingency actions if reforestation does not succeed

Landowners with a reforestation requirement should consult with their ODF stewardship forester and submit a written plan for alternate practices within 12 months of the wildfire even to comply with the OFPA rules and regulations.

Planting Technique

Proper planting technique ensures that your seedlings are well established and have the best chance of growing into healthy, mature trees.



Dig a hole slightly bigger than root system, gently place sapling with root collar below soil line, refill hole, and firm soil down



Planting error: J-rooting (root system gets bent sideways)



Planting error: air pockets (soil not firmed down)

BARE-ROOT PLANTING

- **Digging the hole.** Use a planting shovel to create a hole deep and wide enough to accommodate the seedling's roots without bending them. The hole should be slightly wider than the root system to allow for good root spread.
- **Placing the seedling.** Gently place the seedling into the hole, ensuring that the root collar is level with or slightly below the soil line. Fill the hole with soil, firming it gently around the roots to eliminate air pockets. Ensure the seedling is not J-rooted, where the root is bent horizontally during placement.

CONTAINERIZED PLANTING

- **Remove from the container.** If planting containerized seedlings, gently remove the seedling from the container, taking care not to disturb the root plug. If possible, soak the plugs in water to increase the soil moisture within the plug prior to planting.
- **Placing the seedling.** Follow similar steps as bare-root planting, ensuring the top of the root plug is one centimeter below the surface of the surrounding soil.

Seedling Protection

Preventing seedling mortality is a top priority during the early stages of reforestation. Seedlings are most vulnerable during their first few years of growth, and mortality can be caused by various environmental stressors. Here's how you can prevent seedling loss:

WATER STRESS

- **Signs of water stress.** Yellowing or browning needles or leaves, wilting, crown loss, and stunted growth are all signs that seedlings may not be receiving enough water.
- **Prevention.** Regularly monitor the moisture levels in the soil, especially during dry periods. Ensure that seedlings are watered deeply and consistently, particularly during the first year after planting. Using mulch around the base of seedlings can help retain soil moisture and protect young roots. Shade cards help protect against intense, direct sunlight. Browse tubes can help mitigate pest damage and also protect against wind desiccation.
- **Irrigation systems.** If natural rainfall is insufficient, consider setting up an irrigation system or providing supplemental watering during critical dry spells. Drip irrigation systems can be particularly effective for young trees, providing consistent water directly to the root zone.

COMPETITION FROM INVASIVE AND AGGRESSIVE VEGETATION

- **Weed and invasive species growth.** Invasive plants and aggressive grasses can outcompete young trees for vital resources, leading to poor growth and seedling death. Look for areas where vegetation is crowding around your trees and observe if seedlings are showing signs of stunted growth or dieback.
- **Prevention.** Implement a consistent vegetation management plan to remove or control competing species, especially in the early stages of reforestation. This could include hand-weeding, mowing, herbicide applications, or mulching. Invasive species should be closely monitored, as they can quickly take over if left unchecked.

PESTS AND DISEASE

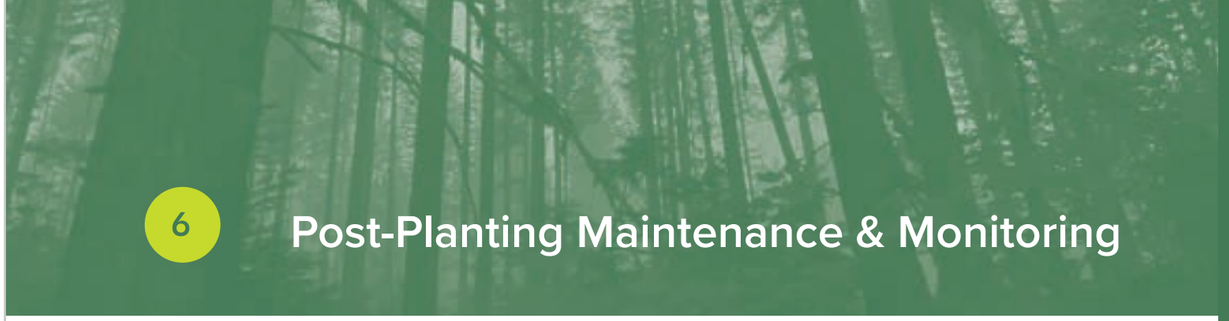
- **Signs of pest infestation.** Yellowing leaves, holes in leaves or bark, or visible pests like caterpillars, beetles, or aphids can indicate an infestation. Additionally, damaged bark or discoloration could be signs of fungal infections or other diseases.
- **Prevention.** Reducing tree density and increasing species diversity is a great first step in attempting to reduce damage and mortality caused by pests and disease. However you design your treatment it is best practice to regularly inspect your seedlings for pests or diseases. Use integrated pest management (IPM) techniques, which combine biological, mechanical, and chemical control methods. If you notice pests or pathogens, take immediate action to prevent them from spreading and impacting a larger portion of your planting. Refer to the Pacific Northwest Pest Management Handbooks [63] for more information.
- **Healthy planting practices.** Ensure that seedlings are properly spaced to allow for good airflow and reduce the risk of fungal or mold growth. Keeping the planting area clear of excess vegetation can also help reduce the likelihood of pest and disease outbreaks.

ANIMAL DAMAGE

- **Signs of damage.** Animal browsing by deer, rabbits, or rodents can cause visible damage to seedlings, including chewed bark, needles, or broken branches. This risk is particularly high in early spring when animals seek new growth. To reduce animal damage you can utilize tools such as tree tubes or bud caps.
- **Prevention.** Install fencing or tree protectors to shield seedlings from animal damage. Additionally, using repellents or planting species that are less attractive to animals may help reduce browsing pressure. Bud caps are a relatively inexpensive and effective method for protecting seedlings from deer browse.



BECCA SHIVELY



6 Post-Planting Maintenance & Monitoring

Monitoring plays a crucial role in effective reforestation, *especially after a wildfire. Consistently checking your planted seedlings, evaluating their health, following up with needed vegetation controls, and recognizing potential threats can help keep your reforestation efforts on track. Taking early action when problems emerge can prevent long-term harm and enhance the chances of your forest flourishing. This section provides guidance on effectively monitoring the progress of your reforestation project, with particular emphasis on preventing seedling mortality.*

6.1 Post-Planting Vegetation Control

- **Spring release.** The timing of the follow-up vegetation treatments, known as "spring release", is typically one and two years after planting, and they are usually performed during the spring and early summer months. Determine whether these will be spot or broadcast treatments, and select your herbicide accordingly based on the application type. Special care and consideration is required to avoid damaging tree seedlings with herbicide treatments. If you intend to hand-weed the site, be sure to schedule well in advance to allow ample time to find a contractor and secure potential financial assistance, as this method can be quite costly and challenging to source the necessary workforce to complete the task.
- **Free-to-grow.** This stage is characterized by seedlings large enough to outcompete reemerging understory vegetation and tall enough to avoid animal browsing on the terminal bud. It is typically reached when trees are 5 feet or taller in height.



SCOTT EDEN



6.2 The Importance of Monitoring

Reforestation is an ongoing, long-term process, and monitoring offers vital insights into the health and growth of your seedlings. By observing the condition of your newly planted trees, you can make informed choices about necessary actions to keep the project on track. Monitoring is key to identifying issues like water stress, pest infestations, disease outbreaks, and competition from invasive species before they result in serious harm. Regular monitoring ensures that you stay proactive, not reactive, in managing your forest restoration.

- **Catch problems early.** Early detection of issues like disease, drought stress, or pest damage allows you to intervene quickly before they lead to seedling mortality or long-term damage.
- **Track growth and success.** Monitoring provides a clear picture of how well your seedlings are adapting to the site and progressing toward the desired reforestation goals.
- **Adjust management practices.** By monitoring, you can determine whether your vegetation management practices are effective, need adjustment, or require follow-up interplanting of additional seedlings.

Monitoring Techniques

Effective monitoring involves a combination of site visits, data collection, and consistent observation over time. It is not necessary to monitor every tree, but portions of the replanting area can be sampled to track patterns within the stand. See "Data Collection" for more information on how to sample. Here's how you can track the progress of your reforestation project:

SITE VISITS

- **Frequency.** Within the first 3 to 5 years after planting, conduct visits at least 2 to 4 times a year, ideally once each season (spring, summer, fall, winter), to assess tree health and environmental conditions. *(For more information, see the Monitoring Guidance for Each Season table on page 43.)*

- **Key Factors to Monitor:**
  - ***Tree growth.*** Measure tree height, stem diameter, and general vigor. These metrics can provide an indication of how well the seedlings are growing in relation to their species and environmental conditions.
  - ***Tree condition.*** Look for signs of stress, such as discoloration, wilting, or early needle cast or leaf drop, which could indicate water stress, pest damage, or disease.
  - ***Root condition.*** Carefully dig up selected seedlings to examine roots for damage, mold, or signs of pests.
  - ***Tree count and stand structure.*** Assess the number of live and dead trees per acre. Note the average across the site and any areas experiencing significant die-off or increased stem density. Be sure to include any natural regeneration within the site.
  - ***Competing vegetation.*** Observe the surrounding vegetation growth to assess if the seedlings are affected by competition from herbaceous and woody plant communities.

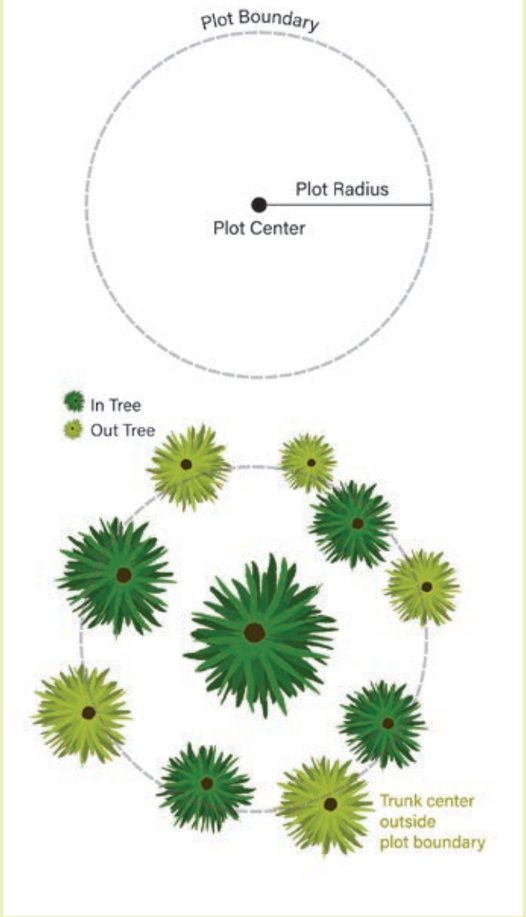
Monitoring Guidance for Each Season

Spring	Summer	Fall	Winter
Check for Frost Damage: New growth can be sensitive to late frosts. Assess whether seedlings have experienced frost damage and consider additional protection methods (e.g., frost covers, mulch).	**Monitor Water Stress:** During hot months, ensure seedlings are receiving adequate water. High summer temperatures can rapidly deplete soil moisture, so consider supplementary watering if possible.	**Prepare for Winter:** Assess seedling health and provide any necessary winterization, such as adding mulch around the base to insulate roots and protect against frost.	**Assess Soil Moisture:** In the winter, check soil moisture levels to ensure that the trees are not desiccated. Ensure that mulch is intact and protects the roots. Check for events of frost heave and note areas impacted.
Assess Competing Vegetation: Observe establishing vegetation communities to determine vegetation management needs.	**Spring Release:** Conduct a spring release to control early-season weed growth and ensure seedlings are not competing for water and nutrients. For effective treatments, conduct spring release treatments after unwanted vegetation has reached full leaf out.	**Final Weed Control:** Remove any persistent weeds that might hinder seedling growth over the winter months.	
	Monitor Pest and Disease: Summer is a peak time for many pests. Check for signs of damage from insects or disease and take action immediately.	**Protect From Animal Browse:** Hungry deer and elk will seek out seedlings in the winter when forage options are limited. Apply a chemical deterrent or a physical barrier in the fall to prevent browse. Bud caps or tree tubes can be used to reduce browse pressure.	

DATA COLLECTION

- **Record Keeping.** Maintain detailed records of your monitoring visits, noting key observations and any changes in tree health or growth patterns. Records may be in the form of photographs, measurements, or written logs.
- **Linear sampling.** Sample seedling survival using linear plots placed randomly along each planted tree row. At each selected plot, assess tree seedlings or planting spaces to determine the number of live seedlings. A minimum of three randomly distributed plots per row is required to ensure representative sampling. This technique provides percent survival by row, helping inform technical recommendations to ensure the long-term function and integrity of the planting design. Sampled trees can be marked with flags or stakes to be re-measured over the monitoring period to track growth and damage over time.
- **Plot sampling.** Conduct random plot sampling by using a sample plot radius to collect trees per acre (TPA), seedling survival, and seedling mortality within the site. A few larger plots are effective for monitoring homogenous stands while several smaller plot sizes may be useful when the replanting area has significant species, topographical or climate diversity. These plots can be monumented for resampling with a permanent or semi-permanent plot center marker, as well as marking with a GPS point. *(See Spotlight on Fixed Radius Plot Guide on page 44 for more information.)*

SPOTLIGHT **FIXED RADIUS PLOT GUIDE**



EXAMPLE:

A 1/100-acre fixed plot has a radius of 11.8 feet.

1. From the plot center, measure the 11.8-foot radius and spin a full circle, walking the outer circumference of the plot.
2. Count the number of seedlings/trees within the plot.
3. Sample multiple plots within the site to then average the number across the sample plots and multiply by the plot size (100 in this example) to get the average number of seedlings/trees within the site.
4. Note the dead and surviving seedlings to understand the mortality rate within the site. When sampling on a slope, use a slope correction factor based on the percent of slope.

SUPPLEMENTAL RESOURCES:

Linear Plot Guide (technical note)[64]

- **Track seedling survival rates.** Record the number of seedlings that survive each season. If survival rates are lower than expected, investigate potential causes such as competition, drought, disease, or poor planting techniques.
- **Growth rates.** Measure the seedling height and stem diameter at regular intervals (e.g., once a season). Tracking these parameters over time will help you understand how well the seedlings are adapting to the site and when seedlings have reached the free-to-grow stage.
- **Stand density.** As part of collecting data on the live and dead seedlings within your reforestation project, record the structure of the stem density across the site. As time passes and the seedlings grow, future treatments will likely be needed to manage the stand to maturity and ensure a healthy composition. Treatments to alter stand density and structure following reforestation typically occur 10 to 15 years post-planting. This is referred to as precommercial thinning (PCT) and consists of reducing TPA across the site by removing the nondominant or less healthy trees to increase the spacing between trees that have been left.

FINAL THOUGHTS

Restoring a forest is a significant undertaking, especially for a landowner who may be navigating post-fire recovery for the first time. We hope this guide has provided assurance that there are tools, resources, and options for restoring the forest conditions you desire on your land. Most importantly, we hope it reminds you that you are not alone in this process.

With care and a long-term vision, *your forest will recover and thrive for generations to come. We commend you for taking meaningful steps toward recovery, for yourself and the landscape you steward.*



JASON HOUSTON

PARTNERS IN RESTORATION

Oregon Department of Forestry (ODF)
To find ODF District Offices in other parts of the Oregon, reference their ODF District Office locator tool[2]

USDA Natural Resources Conservation Service (NRCS)
To find USDA Service Centers in additional counties, reference their NRCS District Office locator tool[9]

USDA Farm Service Agency (FSA)
To locate the FSA Service Center nearest you, reference the USDA Service Center locator tool[11]

Western Oregon Soil and Water Conservation Districts (SWCDs)
To find SWCDs in additional counties, reference the Oregon Department of Agriculture's SWCD directory[6]

Oregon State University Extension
To find OSU Extension offices in additional counties, reference their Extension Service locator tool[8]

LONG-TERM RECOVERY GROUPS

Clackamas County Voluntary Organizations Active in Disaster — **clackcares.org**
PO Box 2752, Oregon City, OR 97045 — Contact form: ccvoad.org/contact

Santiam Canyon Long Term Recovery Group *(Linn and Marion Counties)* — **503-897-0701**
Disaster management center at Anthony Hall:
11758 Sublimity Rd SE, Sublimity, OR — santiamrecovery.org

McKenzie Valley Long Term Recovery Group of Lane County — **541-852-9605**
P.O. Box 200, Blue River, OR 97413 — mckenzievalleyltrg.org

Glide Revitalization Long Term Recovery Group — **541-671-0189**
301 Glide Loop Drive, Glide, OR 97443 — gliderev.com/long-term-recovery

Jackson County Community Long Term Recovery Group — care@jccltrg.org
P.O. Box 680, Talent, OR 97540 — jccltrg.org

OTHER ORGANIZATIONS

Oregon Small Woodlands Association — **503-588-1813**
187 High St. NE Ste 208, Salem, OR 97301 — oswa.org

Oregon Forest Resources Institute — **971-673-2944**
9755 SW Barnes Road, Suite 210, Portland, OR 97225 — oregonforests.org

Oregon Tree Farm System — ortreefarmsystem@gmail.com
4484 Shadow Wood Drive, Eugene, OR 97405 — otfs.org

NURSERIES

This list includes Pacific Northwest nurseries that, based on a regional survey, confirmed they accept tree orders as small as 500 seedlings. While not an exhaustive directory of all nurseries in the region, it serves as a helpful starting point for sourcing planting material.

A complete list of tree seedling nurseries can be found in the ODF publication, Sources of Native Forest Tree Nursery Seedlings [42]

Brooks Tree Farm — **503-393-6300**
9785 Portland Road, Brooks, OR 97305 — office@brookstreefarm.com

Cal Forest Nurseries, Inc — **530-467-5211**
1838 Eastside Road, PO Box 719, Etna, CA 96027 — calforest.com

Coeur d'Alene Nursery *(US Forest Service)* — **208-765-7375**
3600 W Nursery Road, Coeur d'Alene, ID 83815 — fs.usda.gov

CTUIR Native Plant Nursery — **541-278-8525**
(Confederated Tribes of the Umatilla Indian Reservation)
73820 OR-331, Pendleton, OR 97801 — ctuir.org

Drakes Crossing Nursery — **503-873-4932**
19774 Grade Road SE, Silverton, OR 97381 — drakescrossingnursery.com

Fourth Corner Nurseries — **360-592-2250**
5652 Sand Road, Bellingham, WA 98226 — fourthcornernurseries.com

Heritage Seedlings & Liners Inc. — **503-585-9835**
4194 71st Avenue SE, Salem, OR 97317 — heritageseedlings.com

Humble Roots Nursery — **503-449-3694**
1550 Dry Creek Road, Mosier, OR 97040 — humblerootsnursery.com

Lewis River Reforestation — **360-225-6357**
1203 NW Hayes Road, Woodland, WA 98674 — lrrinc.com

Pullman Plant Materials Center — **509-330-5636**
4900 SE Terre View Drive, Pullman, WA 99163 — nrcs.usda.gov

Sylvan Vale Nursery Ltd — **250-337-8487**
2104 Kelland Road, Black Creek, BC V9J 1G4, Canada — svnltd.com

Webster Forest Nursery *(Washington DNR)* — **877-890-2626**
9805 Blomberg Street SW, Olympia, WA 98512 — dnr.wa.gov

APPENDIX – RESOURCES

1. ***Oregon Wildfire Response and Recovery*** | State of Oregon. https://wildfire.oregon.gov/
2. ***Maps of Oregon Department of Forestry Offices and Forest Protections Associations*** | Oregon Department of Forestry. https://www.oregon.gov/odf/aboutodf/pages/mapoffices.aspx
3. ***Find a Forester*** | Oregon Department of Forestry. https://www.oregon.gov/odf/working/pages/findaforester.aspx
4. ***Small Forestlands Owner Office*** | Oregon Department of Forestry. https://www.oregon.gov/odf/working/Pages/sfo.aspx
5. ***Help After Wildfire*** | Oregon Department of Forestry. https://www.oregon.gov/odf/fire/pages/afterafire.aspx
6. ***Regions and Directory of Districts*** | Oregon Association of Conservation Districts. https://www.oacd.org/regions-and-directory-of-districts
7. ***Forestry and Natural Resources Extension*** | Oregon State University. https://www.forestry.oregonstate.edu/forestry-and-natural-resources
8. ***OSU Extension in Your Community*** | Oregon State University Extension. https://extension.oregonstate.edu/find-us
9. ***Oregon State Office*** | Natural Resources Conservation Service. https://www.nrcs.usda.gov/state-offices/oregon
10. ***Emergency Forest Restoration Program (EFRP)*** | Farm Service Agency. https://www.fsa.usda.gov/resources/programs/emergency-forest-restoration-program-efrp
11. ***Find your local Service Center*** | United States Department of Agriculture. https://www.farmers.gov/working-with-us/service-center-locator
12. ***Interactive Online Council Mapping Tool*** | Network of Oregon Watershed Councils. https://www.arcgis.com/home/webmap/viewer.html?webmap=5afcd994636b4076965ea8955eef9f03&extent=-126.7295,40.6358,-110.5027,47.0897
13. ***Oregon Forest Protection Laws: An Illustrated Manual 2025*** | Oregon Forest Resources Institute. https://oregonforests.org/publication-library/oregons-forest-protection-laws-illustrated-manual-2025
14. ***Environmental Quality Incentives Program (EQIP)*** | Natural Resource Conservation Service. https://www.nrcs.usda.gov/programs-initiatives/eqip-environmental-quality-incentives
15. ***Emergency Loan Program | Farm Service Agency.*** https://www.fsa.usda.gov/programs-and-services/farm-loan-programs/emergency-farm-loans
16. ***Get Started! a guide to USDA resources for historically underserved farmers and ranchers*** | United States Department of Agriculture (2022). https://www.nrcs.usda.gov/sites/default/files/2022-10/farmersgov-historically-underserved-factsheet-07-20-2022_0.pdf
17. ***Forest Landowners' Guide to the Federal Income Tax Guide*** | United States Department of Agriculture (2013). https://www.timbertax.org/taxpolicy/FS_Landowners_Tax_Guide.pdf
18. ***Tax considerations for those impacted by wildfire or other natural disasters (Recorded)*** | Oregon State University Extension Service (2020). https://extension.oregonstate.edu/catalog/em-9563-tax-considerations-natural-disasters
19. ***Introduction to forest carbon, offsets and markets.*** | Forestry and Natural Resource Extension, Oregon State University (2024). https://extension.oregonstate.edu/catalog/pub/pnw-775-introduction-forest-carbon-offsets-markets
20. ***Natural Capital Program Consideration Pocket Guide | NCX (2024).*** https://ncx.com/learning-hub/natural-capital-program-consideration-cheat-sheet/
21. ***Post Fire Tree Mortality | Oregon Department of Forestry.*** https://www.oregon.gov/odf/documents/forestbenefits/post-fire-tree-mortality.pdf
22. ***Will my tree live? Assessing postfire survivability*** | Oregon State University Extension. https://extension.oregonstate.edu/catalog/em-9557-will-my-tree-live-assessing-postfire-survivability
23. ***To salvage or not to salvage after wildfire?*** | Oregon State University Extension. https://extension.oregonstate.edu/catalog/em-9553-salvage-or-not-salvage-after-wildfire
24. ***Learn to recognize hazard trees after a fire*** | Oregon State University Extension. https://extension.oregonstate.edu/catalog/em-9558-learn-recognize-hazard-trees-after-fire
25. ***Noxious Weed Control*** | Oregon Department of Agriculture, State of Oregon (n.d.). https://www.oregon.gov/oda/weeds/pages/default.aspx
26. ***Invasive Trees & Shrubs*** / Bushes in the Pacific Northwest | Oregon State University, Solve Pest Problems (n.d.). https://solvepestproblems.oregonstate.edu/weeds/trees-shrubs-bushes
27. ***Timber Salvage After Wildfires*** | Oregon Department of Forestry. https://www.oregon.gov/odf/Documents/workingforests/TimberSalvageAfterWildfires.pdf
28. ***Oregon Forest Industry Directory*** | Oregon State University. https://www.orforestdirectory.com/
29. ***Seedlot Selection Tool*** | United States Department of Agriculture. https://seedlotselectiontool.org/sst/
30. ***Climate Change Projections for Western Forests*** | Dr. Dominique Bachelet, Oregon State University (2020). https://www.forestry.oregonstate.edu/sites/default/files/Bachelet-ForestHealth-2020VF.pdf
31. ***Oregon Forest Management Plan Template*** | Partnership for Forestry Education. https://oregonstate.app.box.com/s/p9zfz0iyo3zri5eqo7i84uy4ntlgagqw
32. ***Oregon Forest Management Planning | Partnership for Forestry Education.*** https://blogs.oregonstate.edu/forestplanning/
33. ***Tree School Online Library*** | Oregon State University Extension. https://extension.oregonstate.edu/tree-school/tree-school-online-library
34. ***Web Soil Survey*** | Natural Resources Conservation Service. https://websoilsurvey.nrcs.usda.gov/app/
35. ***Healthy Woods Start with a Plan*** | Natural Resources Conservation Service. https://www.nrcs.usda.gov/sites/default/files/2022-10/Forest%20Management%20Plans.pdf
36. ***Land Steward Program*** | Oregon State University Extension. https://extension.oregonstate.edu/land-steward
37. ***Tree School*** | Oregon State University Extension. https://extension.oregonstate.edu/tree-school
38. ***Master Woodland Manager*** | Oregon State University Extension. https://extension.oregonstate.edu/mwm
39. ***Maps and Management Plans*** | Know Your Forest https://staging.knowyourforest.org/education/maps-and-management-plans
40. ***Oregon Forest Management Planning*** | Oregon State University. https://blogs.oregonstate.edu/forestplanning/
41. ***Management Plan Template*** | American Tree Farm System. https://www.treefarmsystem.org/tree-farm-management-plan-templates
42. ***Sources of Native Forest Nursery Seedlings*** | Oregon Department of Forestry. https://www.oregon.gov/odf/documents/workingforests/seedling-catalog.pdf
43. ***Establishing and Managing Forest Trees in Western Oregon*** | Oregon Forest Resources Institute. https://oregonforests.org/sites/default/files/2017-07/EMFTWO_establishing.pdf
44. ***Reforestation, Nurseries, and Genetic Resources*** | United States Department of Agriculture. https://rngr.net/

APPENDIX – RESOURCES

APPENDIX – RESOURCES

45. ***Willamette Valley Oaks Project*** | Rivers to Ridges Partnership. https://rivers2ridges.org/willamette-valley-oaks-yesterday-and-today/
46. ***J.E. Schroeder Seed Orchard*** | Oregon Department of Forestry. https://www.oregon.gov/odf/working/pages/seed.aspx
47. ***Webster Forest Nursery*** | Washington Department of Natural Resources. https://www.dnr.wa.gov/programs-and-services/forest-resources/webster-forest-nursery
48. ***Forest Activity Electronic Reporting and Notification System (FERNS)*** | Oregon Department of Forestry. https://ferns.odf.oregon.gov/E-Notification
49. ***Pesticide License Lists*** | Oregon State Department of Agriculture. https://mylicense.oda.state.or.us/ords/f?p=250:9:::NO:9:P9_PROGRAM:80
50. ***Farm/Forest Labor Contractors*** | Oregon Bureau of Labor and Industries. https://www.oregon.gov/boli/employers/Pages/farm-forest-labor-contractors.aspx
51. ***Oregon Professional Loggers Directory*** | Association of Oregon Loggers. https://oregonloggers.org/page/OPLDirectory
52. ***Choosing the right tree-planting contractor for your family forest*** | Oregon State University Extension. https://extension.oregonstate.edu/catalog/em-9201-choosing-right-tree-planting-contractor-your-family-forest
53. ***Choosing the right forestry services contractor: practical, ethical and environmental considerations*** | Oregon State University Extension Service (2022). https://extension.oregonstate.edu/catalog/pub/em-9365-choosing-right-forestry-services-contractor-practical-ethical-environmental
54. ***Choosing the Right Service Provider: Chemical Applicator*** | Oregon State University Extension. https://extension.oregonstate.edu/catalog/em-9171-choosing-right-service-provider-your-family-forest-chemical-applicator
55. ***Choosing the Right Logging Contractor*** | Oregon State University Extension. https://extension.oregonstate.edu/catalog/em-9170-choosing-right-service-provider-your-family-forest-logging-contractor?reference=catalog
56. ***Choosing the Right Service Provider: Consulting Forester*** | Oregon State University Extension. https://extension.oregonstate.edu/catalog/pub/em-9241-choosing-right-service-provider-consulting-forester
57. ***Contracts for Woodland Owners*** | Oregon State University Extension. https://knowyourforest.org/media/2610
58. ***Weed Management Handbook*** | Pacific Northwest Pest Management Handbooks. https://pnwhandbooks.org/weed
59. ***Certified Burner Program*** | Oregon State University, IGNITE Prescribed Fire Trainings. https://blogs.oregonstate.edu/ignite/about-the-certified-burn-manager-program/
60. ***OR PBAs*** | Oregon State University Extension Services. https://extension.oregonstate.edu/fire-program/prescribed-burn-associations
61. ***Managing Logging Slash Piles in Northwest Oregon*** | Oregon Forest Resources Institute. https://oregonforests.org/sites/default/files/2021-03/OFRI_slash-pile-guide_WEB.pdf
62. ***Selecting and Buying Quality Tree Seedlings*** | Oregon State University Extension. https://extension.oregonstate.edu/catalog/pub/ec-1196-selecting-buying-quality-tree-seedlings
63. ***Pest Management Handbooks*** | Pacific Northwest Pest Management Handbooks. https://pnwhandbooks.org
64. ***Linear Plot Guide (technical note)*** | United States Department of Agriculture (2013). https://efotg.sc.egov.usda.gov/references/Public/OK/WOODOK12.pdf

SUSTAINABLE NORTHWEST