



VF Law

ANDREW H. STAMP

(503) 684-4111

Andrew.Stamp@vf-law.com

*Admitted to Practice in
Oregon*

November 6, 2025

VIA EMAIL

Yamhill County Board of Commissioners
c/o Dept. of Planning & Development
525 NE 4th Street
McMinnville, OR 97128



RECEIVED

NOV 06 2025

**YAMHILL COUNTY
PLANNING DEPARTMENT**

P30512-001

E: woods1@yamhillcounty.gov; fridayk@yamhillcounty.gov

*RE: Appeal of Docket Number C-01-25
Home Occupation / Javier Ceja
Subject Property: 10431 NE Equestrian Drive, McMinnville, OR 97128
Tax Lot 4401-02300
First Open Record Submittal*

Dear Honorable Members of the Board,

I. Introduction

As you know from the hearing held October 30, 2025, this office represents Larry and Heidi Goodroe, who oppose Mr. Ceja's application for a home occupation to run a 24/7 "Loss Mitigation Business." This letter and accompanying exhibits represent the Goodroe family's first evidentiary submittal. We respectfully request that the Board of Commissioners deny this application because it is not authorized in the EFU zone.

In the alternative, we have certain conditions of approval, as set forth below, that would largely mitigate the effect of this home occupation. Chief among these conditions is the requirement to pave a 12-foot-wide and 680-foot-long portion of NE Equestrian Dr. for dust and noise suppression. This is a reasonable condition insomuch as the applicant is proposing a 24/7 business model, which is a highly unusual request in the context of a home occupation permit.

In our Notice of Appeal, we raised numerous issues that have not been addressed to date. Among other things, we pointed out that the applicant:

- (i) Has not demonstrated that its stormwater will not impair the character of the surrounding area or unreasonably interfere with, and be compatible with, neighboring properties.
- (ii) Has not conducted a noise study to demonstrate that loading and unloading of

503.684.4111 | www.vf-law.com
6000 Meadows Road, Suite 500 | Lake Oswego, OR 97035



equipment and other on-site activity complies with the DEQ Noise Standards set forth in OAR 43340-035-0035 and VCC 4.25.

- (iii) Has not conducted a traffic study to document trips entering and existing the property. In this regard, Heidi Goodroe noted that she observed and recorded up to 37 trips per day during daylight hours.

In our Notice of Appeal, we also pointed out that the applicant has not demonstrated compliance with ORS 215.448 and OAR 660-033-0130(14) in four particulars. In this letter, we expound on one of those four issues and provide new evidence regarding the same. We preemptively object to any evidence being submitted in the Second Open Record Period that goes beyond the scope of the evidence being submitted during the First Open Record Period.

II. Facts

The primary dwelling located on the subject property is 1400 sf. Plans show the “accessory” building, in which the home occupation is to be conducted, having dimensions of 108 ft by 60 ft, for a total of 6,480 sf. Thus, the “accessory” building is more than three times the size of the residence.

According to county building permit records, the job value of this “accessory” building is \$415,951.20, which far exceeds the value of the residence. Exhibit 1. The “accessory” building features an office, two bathrooms, a mechanical area with hub drain, mop sink, and water heater, and a break room with sink. See Permit 979-25-001076-PLM. Exhibits 1-2.

According to the Oregon State University Extension Service, a Christmas tree operation of this size would only need a 20 ft by 25 ft shed to house a single tractor, fertilizer spreader, an airblast sprayer, a pickup, a backpack sprayer, an elevator and tree baler. See James W, Julian et al., *Christmas Tree Economics: Establishing and Producing Noble Fir Christmas Trees in Western Oregon*, OREGON STATE UNIVERSITY EXTENSION SERVICE Sept. 2009, at p. 3. Exhibit 8.

The site plan submitted with the application is inaccurate because it shows the building in the wrong location on the property. Larry Goodroe submitted aerial photographs to correct the record and provide an accurate depiction of the site. Exhibit 3.

III. Applicable Regulations – State Statutes and Administrative Rules

A. Overview of Applicable Law: ORS 215.283(2), ORS 215.448 and OAR 660-033-0130(14)

In the various EFU zones, a home occupation business is considered a “non-farm use” and requires a conditional use permit. By virtue of its “conditional” status, the county does not have to approve all applications for a CUP. Rather, the county has the discretion to determine that a proposed use is not appropriate at the particular site. *Adler v. City of Portland*, 24 Or LUBA 1 (1991) (a local government has no legal obligation to impose conditions of approval in lieu of denying an application for conditional use approval).

In addition, the provision of non-farm uses should be interpreted narrowly in the EFU zones. *See, e.g., Friends of Yamhill County v. Yamhill County*, 80 Or LUBA 135 (2019) (LUBA No. 2018-144 Aug 2, 2019); *Warburton v. Harney County*, 174 Or App 322 (2001). LUBA and the courts typically interpret statutes and administrative rules governing resource land narrowly to carry out legislative policy favoring the preservation of resource lands for resource uses. ORS 215.243. As the Court of Appeals explained in *Hopper v. Clackamas County*, 87 Or App 167, 172, 741 P2d 921 (1987), *rev den*, 304 Or 680 748 P2d 142 (1988), “there is an overriding statutory and regulatory policy to prevent agricultural land from being diverted to non-agricultural use.”

Home occupations proposed in the EFU zones are regulated by ORS 215.283(2)(i):

(2) The following nonfarm uses may be established, subject to the approval of the governing body or its designee in any area zoned for exclusive farm use subject to ORS 215.296:

(i) Home occupations as provided in ORS 215.448.

As we discussed at the hearing, ORS 215.448 provides certain minimum standards for home occupations, including limits on the number of employees, requirements related to the types of buildings which can be used for a home occupation, and an “unreasonable interference” standard with regard to other uses permitted in the zone:

215.448 Home occupations; parking; where allowed; conditions.

(1) The governing body of a county or its designate may allow, subject to the approval of the governing body or its designate, the establishment of a home occupation and the parking of vehicles in any zone. However, in an exclusive farm use zone, forest zone or a mixed farm and forest zone that allows residential uses, the following standards apply to the home occupation:

(a) It shall be operated by a resident or employee of a resident of the property on which the business is located;

(b) It shall employ on the site no more than five full-time or part-time persons;

(c) It shall be operated substantially in:

(A) The dwelling; or

(B) Other buildings normally associated with uses permitted in the zone in which the property is located; and

(d) It shall not unreasonably interfere with other uses permitted in the zone in which the property is located.

(2) The governing body of the county or its designate may establish additional reasonable conditions of approval for the establishment of a home occupation under subsection (1) of this section.

(3) Nothing in this section authorizes the governing body or its designate to permit construction of any structure that would not otherwise be allowed in the zone in which the home occupation is to be established.

(4) The existence of home occupations shall not be used as justification for a zone change. [1983 c.743 §2; 1995 c.465 §1]

LCDC has adopted administrative rules to implement ORS 215.283(2) and ORS 215.448. *See* OAR 660-033-0130(14). Until 2024, these rules were largely redundant of the statute. However, LCDC amended its rules in 2024 to add a new subsection, subsection (c), that affects home occupations on EFU land. Among other things, OAR 660-033-0130(14)(c) brings back the “accessory use” test, which requires the home occupation to be “incidental and subordinate to the primary residential use of a dwelling on the property.”

As currently written, OAR 660-033-0130(14) provides:

(14) Home occupations and the parking of vehicles may be authorized.

(a) Home occupations shall be operated substantially in the dwelling or other buildings normally associated with uses permitted in the zone in which the property is located.

(b) A home occupation shall be operated by a resident or employee of a resident of the property on which the business is located, and shall employ on the site no more than five full-time or part-time persons.

(c) A governing body may only approve a use provided in OAR 660-033-0120 as a home occupation if:

(A) The scale and intensity of the use is no more intensive than the limitations and conditions otherwise specified for the use in OAR 660-033-0120, and

(B) The use is accessory, incidental and subordinate to the primary residential use of a dwelling on the property.

As relevant to these laws, this case raises two issues:

- (1) Does the applicant seek to conduct a home occupation in a structure that qualifies as a “dwelling” or “other building normally associated with uses permitted in the zone

in which the property is located,” and

- (2) Does the applicant seek to conduct a home occupation use that is “is accessory, incidental and subordinate to the primary residential use of a dwelling on the property.”

B. The proposed Home Occupation is not operated substantially in either “the dwelling” or “other buildings normally associated with uses permitted in the zone in which the property is located.”

To qualify for a home occupation permit on EFU land, the applicant must demonstrate that the home occupation is operated substantially in either “a dwelling” or “other buildings normally associated with uses permitted in the zone in which the property is located.” ORS 215.448(1)(c). In this case, the applicant is proposing to operate in a structure that constitutes neither of these two things.

Recent case law from the Oregon Supreme Court provides guidance to counties tasked with regulating such uses. The Board is undoubtedly familiar with *Friends of Yamhill County v. Yamhill County*, 373 Or 790, 572 P3d 278 (2025), so we won’t rehash those details. See Mateusz Perkoski, *Oregon Supreme Court: Bed and Breakfast Permit Requires Farm Operator*, CAPITAL PRESS, July 3, 2025 (Exhibit 10).

As relevant here, the key holding is a dwelling used for a home occupation must satisfy the land use requirements for structures that are normally allowed in the EFU zone. The Oregon Supreme Court stated “[w]hen, as here, the purported category of dwelling is a ‘primary dwelling’ on EFU land, those requirements include that the structure will be the home for a farm operator.” The “farm operator” test applies not only at the time of the actual construction of the house, but also at the time the applicant seeks a home occupation. As part of this task, the building in which the home occupation will be carried on must be evaluated to confirm that it is the type of building that is allowed in the EFU zone.

In this case, the subject property does not feature a “primary farm dwelling.” In order to constitute a primary farm dwelling, the “tract [i.e. contiguous parcels of land in the same ownership] must currently employed for the farm use,” as defined in ORS 215.203, and must have produced at least \$80,000 in gross annual income from the sale of farm products in the last two years or three of the last five years. ORS 215.283(1). The subject property only recently was planted with 4,500 Christmas trees, and there is no evidence in the record that the small acreage that the applicant devoted to such use could ever satisfy the income test. To the contrary, even with average wholesale prices for Christmas trees hovering at a record \$37 per tree¹ and generating \$8-10 in profit per tree,² would take approximately 17,500 Christmas trees to generate the required annual income, assuming an 8-year rotation of trees.³ Thus, the existing residence is not a

¹ See Mike Rogoway, *Oregon Christmas Tree Prices have Been Soaring, but they May be Near a Peak*. THE OREGONIAN, Dec 3, 2024. (Exhibit 4).

² See Zachary Crockett, *The Economics of Christmas Trees*, THE HUSTLE, March 21, 2024, at p 6. (Exhibit 5).

³ Oregon Christmas trees are typically harvested after 6 to 8 years of growth, though the exact time can vary depending on the species and desired size. Douglas firs often take 6 to 8 years, while Noble firs may need 10 to 12 years to reach

“dwelling” within the meaning of ORS 215.448(1)(c), as interpreted by *Friends of Yamhill County v. Yamhill County*, 373 Or 790, 572 P3d 278 (2025). Rather, the existing residence is at best a nonconforming use: an unqualified “non-farm dwelling” that existed prior to modern zoning regulation.

Apart from primary farm dwellings, ORS 215.283(1)(e) also permits “other buildings customarily provided in conjunction with farm use.” However, the applicant does not have such a building on the property because the property does not serve a farm use that requires a 6,480 sf building.

In *Craven v. Jackson County*, 308 Or 281, 779 P2d 1011 (1989), the Oregon Supreme created a size limit on “other buildings customarily provided in conjunction with farm use.” The *Craven* court stated: “* * * if ORS 215.213(1)(f) [and ORS 215.283(1)(e)] is to provide authority for building on EFU land, the structure’s size and capacity must be proportional or commensurate to the existing level of dedication of land in that immediate area to the crop for which the structure is suited.

In this case, a small Christmas tree operation does not require a 108 ft by 60 ft building. To the contrary, a typical Christmas tree operation only needs a 20 ft by 25 ft shed to house a single tractor, a fertilizer spreader, an airblast sprayer, a pickup, a backpack sprayer, an elevator and tree baler. See James W. Julian et al., *Christmas Tree Economics: Establishing and Producing Noble Fir Christmas Trees in Western Oregon*, OREGON STATE UNIVERSITY EXTENSION SERVICE Sept. 2009, at p. 3. Exhibit 9. According to the County files, the 6,480 sf utility building has a “job value” of \$415,951.20. Exhibit 1. With only 4,500 Christmas trees planted, it would take the applicant over 30-40 years to recover the cost of the building from the profit in Christmas tree sales.

Moreover, it is also important to recognize that the dwelling or building must be one that is “customarily provided in conjunction with farm use.” ORS 215.283(1)(e). A county may not assume that *any* building proposed for a parcel actually in “farm use” necessarily qualifies as a building “customarily provided” in conjunction with that farm use. As the Court of Appeals explained in *Doughton v. Douglas County*, 82 Or App 444, 449, 728 P2d 887 (1986):

“[F]or a dwelling on EFU land to be a customary adjunct of farm use, there must be a factual demonstration that the land is used as well as zoned for farm purposes, and there must be a showing that the ‘type of farm use is customarily combined with a residence.’” (Footnote omitted.)

See also *Elliott v. Jackson County*, 23 Or LUBA 257, 261 (1992) (citing *Newcomer v. Clackamas County*, 92 Or App 174, 185–186, 758 P2d 369, *modified*, 94 Or App 33 (1988)). Thus, the applicant has the burden of showing that farms of a similar size and type of crop will typically have a dwelling on site and a 108 ft by 60 ft accessory building. It is not sufficient to show that the applicant has a “need” for a farm dwelling. *Ramsay v. Linn County*, 30 Or LUBA 283, 290–291

maturity. It can take up to 10 years or more for trees to grow to the size suitable for harvest, with the average growing time being around 7 years. See James W. Julian et al., *Christmas Tree Economics: Establishing and Producing Noble Fir Christmas Trees in Western Oregon*, OREGON STATE UNIVERSITY EXTENSION SERVICE Sept. 2009. Exhibit 9.

(1996). Furthermore, the “customarily provided” standard must be applied in a manner that is consistent with the state’s agricultural land use policy, stated in ORS 215.243, of protecting farmland. *Ramsay*, 30 Or LUBA at 291. The legislature’s policy for dwellings on farm and forest lands, set out in another statute, similarly seeks to “[l]imit the future division of and the siting of dwellings upon the state’s more productive resource land.” ORS 215.700.

Under *Friends of Yamhill County*, it is important that the applicant seeking the home occupation is an actual “farm operator.” The term “farm operator” is not defined in ORS chapter 215. OAR 660-033-0130(9)(a) defines the term “farm operator” in the related context of a relative farm help dwelling, as follows:

A farm operator is a person who operates a farm, doing the work and making the day-to-day decisions about such things as planting, harvesting, feeding and marketing.

In this case, the property does not have a “farm operator” who “does the work” on the farm. The landowner, Javier Ceja, is not a “farm operator” because he has admitted that his primary employment is his work as owner and CEO of J&S Restoration, Inc.

C. The Proposed Home Occupation Use is not “Accessory, Incidental and Subordinate” to a 1400 sf “Primary Residential Use of a Dwelling on the Property.”

As mentioned, *supra*, OAR 660-033-0130(14)(c)(B) requires the home occupation to be “accessory, incidental and subordinate to the primary residential use of a dwelling on the property.” The inquiry is whether an overall assessment of the property leads to the conclusion that the primary use is residential in nature (as opposed to being commercial in nature). *See generally Ruhnke v. Cantrell*, 280 Or 297, 300-01, 570 P2d 652, 654 (1977)(excavating business storage consisting of bulldozer, loader, and backhoe held not to be valid home occupation because it was not “customarily incidental” to a residence.); *Lee v. Marion County*, 79 Or LUBA 199 (2019)(bed and breakfast is not an accessory use to a residence because it is not “subordinate to the residence.”); *Jacobs v. Clackamas County*, 73 Or LUBA 262, 283-84 (2016)(secondary processing of wood products in a barn structure is not secondary or subordinate to a residence). If the commercial aspects of the property “dwarf” the residential aspects in scale or intensity, the commercial use cannot be deemed to be “accessory.” *McCormick v. City of Baker*, 46 Or LUBA 50 (2007).

The ordinary meanings of the terms “incidental” and “subordinate” are well understood. The word “incidental” ordinarily means “subordinate, nonessential, or attendant in position or significance * * *: occurring as a minor concomitant * * *: being likely to ensue as a chance or minor consequence.” Webster’s Third New Int’l Dictionary (unabridged ed. 2002) at 1142. “Subordinate,” in turn, ordinarily means “placed in a lower order, class, or rank : holding a lower or inferior position.” *Id.* at 2277. *See also Central Oregon Landwatch v. Deschutes County*, 52 Or LUBA 582, 597-98 (2006) (reviewing a county’s determination that “any use is allowable in the F-1 zone as an accessory use, as long as it meets the code definition of accessory use, *i.e.*, a use incidental and subordinate to a permitted use of the property that is its main use”)

Treatises and legal dictionaries frequently use the terms “incidental” and “subordinate” to define the concept of “accessory” use in zoning laws. For instance, the American Law of Zoning defines an “accessory building” as one whose “use is subordinate to or customarily incidental to an existing permitted principal building located on the same lot.” Patricia E. Salkin, 4 Am. Law Zoning, Glossary of Terms, § 41:16 (5th ed.) (May 2019 update) (emphasis added); accord Black’s Law Dictionary 1681-82 (9th ed. 2009) (defining “incidental use” as “[I]and use that is dependent on or affiliated with the land’s primary use,” and an “accessory use” as “[a] use that is dependent on or pertains to a main use”); Zoning: What Constitutes “Incidental” or “Accessory” Use of Property Zoned, and Primarily Used, For Residential Purposes, 54 A.L.R. 4th 1034 (1987).

The 6,480 s.f. building cannot be considered an “accessory structure” to a 1,400 sf residence. Here, the commercial aspect of the use is not “subordinate, nonessential, or attendant in position or significance * * *: occurring as a minor concomitant * * *: being likely to ensue as a chance or minor consequence.” Rather, the commercial use “dwarfs” the residential use” in size, scale and intensity. In part, this is due to the size of the accessory structure in relation to the dwelling, but also due to the fact that the applicant proposes “24/7” business operations on a year-round basis. In contrast, typical farm-related impacts in the neighborhood are seasonal in nature, which makes them more tolerable.

The number of trips far exceeds the typical 10 trips-per-day associated with a residence. There are at least three marked vehicles associated with the business that stage from the subject property, two of which we have captured on security cameras. Exhibit 9. The applicant has not disclosed how many other vehicles are associated with the property.

The business will also create more dust, noise and fumes than a typical rural residence. This has been cited as a primary reason to deny a home occupation. *Ruhnke v. Cantrell*, 280 Or 297, 300-01, 570 P2d 652, 655 (1977).

The business use also creates more than triple the amount of stormwater than the residence, and it is unclear from the record where that water is being routed.

And the visual effect of the commercial structure is not incidental and subordinate to the residence. In sum, the overall scale and intensity of the 6,480 sf building is too great to be considered “accessory” to the residence.

Although LUBA has acknowledged that the relative size of the buildings is not solely determinative, it is an important factor. *Compare Kaplowitz v. Lane County*, 74 Or LUBA 386 (2016), *aff’d*, 285 Or App 764, 398 P3d 478 (2017) (5,000 s.f. horse barn/arena deemed to accessory to a 3,600 s.f. residence), with *Kamps-Hughs v. City of Eugene*, 79 Or LUBA 500 (2019), *aff’d*, 305 Or App 224 (2020)(proposed second 800 s.f. residence is not “accessory” to 1680 s.f. primary residence when the second unit is proposed for rental use).

LUBA has also held that four grass tennis courts, support structures and ancillary parking was not “accessory” to a residential use in a city residential zone. *McCormick v. City of Baker*, 46 Or LUBA 50 (2007). LUBA discussed the scale of the *McCormick* activity in *Kaplowitz*:

The 1,988 square-foot house in McCormick had an attached garage. The approved accessory use included two sets of dual tennis courts (a total of four courts) with bleachers and a “cabana-like clubhouse” between them surrounded by a ten-foot-high wall/screen. The clubhouse had showers and a restroom. Parts of the property had been leveled for car and recreational vehicle parking and tent camping. The property hosted five tennis tournaments between June and early September with 18 to 48 entrants and 22 to 27 tournament days. The tennis courts included lighting to allow nighttime tennis matches. The property owners did not charge a fee to use the courts. 46 Or LUBA at 51-53.

Kaplowitz, 74 Or LUBA at 397. Note that the uses at issue in *McCormick* were only used on a seasonal basis, but even that fact did not deter LUBA from finding that the use was not “accessory” to a residence.

Here, the vast size differential between the primary and secondary use combined with the spectre of 24/7 operations tips the balance in favor of a findings that the 6,480 sf commercial building is not accessory to the residence, at least in the absence of significant mitigation.

IV. Recommended Conditions of Approval

If the County is inclined to approve the CUP, we recommend the following conditions of approval in addition to the conditions set forth in the staff decision. In particular, the applicant should be required to pave a 12-foot-wide section of NE Equestrian Drive:

1. The applicant and/or landowner shall pave 12-foot-wide portion of NE Equestrian Drive, beginning at the south property line of the subject property and ending south at NE Matthey Lane, for a distance of approximately 680 feet.
2. Hours of operations shall be limited from 7:00 am to 6:00 pm, with the exception of emergency dispatch which shall be allowed on a 24/7 basis once Condition of Approval No. 1 is fulfilled.
3. The applicant and/or landowner shall provide a sight-obscuring fence or vegetative screening along the subject property’s south and west property lines.
4. The home occupation shall not feature the outdoor storage of vehicles or equipment.
5. The site of the home occupation shall not be used as a meeting location for patrons or clients, instead being limited to use by employees of the home occupation business.

6. Outdoor sound in conjunction with the proposed use that exceeds the limits set forth in YCC 4.25 or DEQ's Noise rules, set forth at OAR 340-035-0035, shall be prohibited. Loading and unloading of equipment shall occur inside a building.

V. Conclusion

Thank you for considering the information set forth herein. The Ceja application should be DENIED for all of the reasons we set forth in the Notice of Appeal and supplemented in this letter, as well as the arguments presented verbally at the hearing.

Sincerely,

VF LAW

/s/ Andrew H. Stamp

Andrew H. Stamp
Of Counsel

ASTA:krhi
cc: Client

EXHIBIT LIST

1. County Building Permit Record, Permit No. 979-24-004198-STR (5 Pg);
2. Tax Assessor Records: Floor Plan and Improvement Data (3 pg).
3. Exhibits 3(A) – 3(M) Aerial Photos;
4. Article: Oregon Christmas Tree Prices have been Soaring, Oregonian Dec. 3, 2024;
5. Article: The Economics of Christmas Trees. They Hustle, Dec. 5, 2020;
6. Article: How Much Money Does a Christmas Tree Farm Make, GroCycle, (Undated).
7. Publication: Developing Quality Christmas Trees, OSU Extension Service, PNW 684;
8. Publication: Christmas Tree Economics OSU Extension Service, AEB0002;
9. Vehicle Photos (2ea);
10. Article: Oregon Supreme Court Bed-and-Breakfast Permit, Capital Press, July 3, 2025;
11. Sketch Report showing roof dimensions of subject property.
12. Septic Site Evaluation July 21, 2025; and
13. Ceja Building Plans.

Yamhill County Fire Agencies

Fire Apparatus Access and Water Supply Residential and Commercial Driveway Inspection Form

Bring this form to your local fire department to arrange a final driveway inspection for approval.

Address/location of proposed development: 14250 SE Foster Rd., Dayton, OR 97114
 Name: Arthur Palacios Phone: 971-237-3596 Email: m.d.pal80@gmail.com
 Type of construction: **Residential / Commercial** Building occupancy use: shed 10'x12' (Backyard)
 Total square footage of structure including attached garage and basement: 120 Building height: 10' Building type: shed 120 sq ft.
 Reliable water source: **Yes / No** Existing water source gallons: N/A Water source type: N/A
 Approved fire department connection from water source: **Yes / No**

Yamhill County Public Works Department Requirements

New access (driveways) and improvements to existing accesses must have a permit and conform to the current requirements of the Yamhill County Public Works. This form must be signed by an authorized employee of Public Works in addition to the permit process. The Yamhill County Public Works Office is located at 2060 Lafayette Avenue. Phone 503-434-7370.

Public Works Signature: _____ **Date:** _____ **Permit #:** _____

Oregon Fire Code requires access and firefighting water supply for all structures per ORS476.

- Road width: Residential:** Fire access roads shall have an unobstructed driving surface width not less than 12 feet for 1-2 family dwelling serving 5 homes or less (OFC D102.1.1). **Commercial:** Fire access roads shall have an unobstructed driving surface width not less than 20 feet (Diagram 1) (OFC 503.2.1).
- Vertical clearance:** An unobstructed vertical clearance not less than 13 feet 6 inches, including tree and brush obstructions (Diagram 1) (OFC 503.2.1).
- Surface and load capacities:** Fire access roads shall be of an all-weather surface with asphalt, concrete, or other approved driving surface capable of supporting the imposed load of a fire apparatus weighing at least 75,000 pounds (OFC D102.1). Gravel roads require 6 inches of base rock and 2 inches of surface rock. Proper drainage shall be provided and maintained to prevent run off damage (OFC D103.3.1).
- Grade:** Fire access road grade shall not exceed 10%, and no grade shall exceed 15%. A maximum of 200 feet of 15% grade may be allowed (OFC D103.2) (Diagram 2). For sites that exceed the maximum grade contact the local fire official to discuss possible options.
- Turns:** Maximum curve centerline shall not be less than 35 feet (Diagram 5).
- Distance from structure(s):** Fire access roads shall be within 150 feet of all portions of the exterior walls of the structure as measured from the approved fire access road (OFC 503.1.1).
- Dead end roads, turnarounds, and turnouts:** An approved turnaround is required if the dead-end fire access road is greater than 150 feet (Diagram 3) (OFC D103.4. Fire access roads more than 400 feet require turnouts every 400 feet or other fire official approved method (Diagram 4) (OFC 503.1, D103.1).
- Bridges:** Bridge shall be constructed and maintained in accordance with AASHTO HB-17. Bridges shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges (OFC 503.2.6).
- Gates:** Gates securing fire access roads shall comply with all the following: Minimum unobstructed width shall be 20 feet without a center post or island. Gates shall be of the swinging or sliding type operated by one person. Knox Box Rapid Access System or other unlocking method shall be submitted for approval by the fire code official on all locking or coded gates. Electric gates (listed per UL 325) and automatic operated gates (listed per ASTM F2200) shall be equipped with a means of opening the gate by fire department personnel with approved emergency opening devices (OFC 503.5, D103.5).
- Address Sign:** A permanent address sign must be installed plainly visible and legible from the street or road fronting the property. Numbers shall be at least 4" in height and contrast with the background (OFC 505.1).
- Water Supply:** An approved water supply capable of supplying the required fire flow for fire protection shall be provided to premises upon which facilities, buildings, or portions of buildings are hereafter constructed or moved into the jurisdiction (OFC 507.1, NFPA 4442).

I certify the construction of fire access and water supply for this development is completed per required fire code standards and will be maintained.

Owner/Builder Signature: [Signature] **Date:** 11/10/25

This section to be completed by Fire Official.

Conditional Approval: Fire access to the proposed development site is temporarily suitable for access by fire service equipment, however deficiencies exist and are required to be corrected prior to fire service approval. **REINSPECTION IS REQUIRED - SITE NOT APPROVED.**

Deficiencies: Width Vertical Clearance Imposed Weight Load Support Grade Turnaround Turnouts Gate Address Sign
Water Supply Base Rock Surface Rock Other _____

Final Approval: Water Supply and Fire Access to the proposed development site are satisfactory for access by fire department equipment.

Fire Official: [Signature] **Fire Department:** Dayton Fire Dist **Date:** 11/10/25
 White - Fire Department Canary - Planning Pink - Applicant Goldenrod - Public Works Revised 02/2022

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YAMHILL COUNTY
PLANNING DEPARTMENT



Yamhill County Building Department
400 NE Baker Street
McMinnville, OR 97128
503-434-7516
Fax: 503-434-7544
planning@yamhillcounty.gov
Website:
<https://www.yamhillcounty.gov/283/Planning-Development>

Building Permit

Commercial Structural

Permit Number: 979-24-004198-STR

Permit Issued: February 27, 2025
Project: Javier Ceja

Application Date: December 27, 2024

TYPE OF WORK

Structural Specialty Code Edition: 2022

Category of Construction: Commercial

Type of Work: New

Calculated Job Value: \$415,951.20

Description of Work: Storage building for special equipment used for mitigation (Shell Only, new application and plans will be needed for TI.)

JOB SITE INFORMATION

Worksite Address

10431 NE EQUESTRIAN DR
MCMINNVILLE OR 97128

Parcel

R4401 02300

Owner:

CEJA ISIDRO J

Address:

10431 NE EQUESTRIAN DR
MCMINNVILLE, OR 97128

Owner:

CONTRERAS SARA H

Address:

10431 NE EQUESTRIAN DR
MCMINNVILLE, OR 97128

LICENSED PROFESSIONAL INFORMATION

Business Name

M & H OREGON CONSTRUCTION
LLC - Primary

License

CCB

License Number

236562

Phone

503-857-5224

PENDING INSPECTIONS

Inspection	Inspection Group	Inspection Status
1999 Final Building	Struct Com	Pending
1400 Perimeter Slab Insulation	Struct Com	Pending
1430 Insulation Wall	Struct Com	Pending
1440 Insulation Ceiling	Struct Com	Pending
1260 Framing	Struct Com	Pending

SCHEDULING INSPECTIONS

Various inspections are minimally required on each project and often dependent on the scope of work. Contact the issuing jurisdiction indicated on the permit to determine required inspections for this project.

Permits expire if work is not started within 180 Days of issuance or if work is suspended for 180 Days or longer depending on the issuing agency's policy.

Per R105.7 and R 106.3.1, a copy of the building permit and one set of approved construction documents shall be available for review at the work site.

All provisions of laws and ordinances governing this type of work will be complied with whether specified herein or not. Granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local law regulating construction or the performance of construction.

ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0010 through OAR 952-001-0090. You may obtain copies of the rules by calling the Center at (503) 232-1987.

All persons or entities performing work under this permit are required to be licensed unless exempted by ORS 701.010 (Structural/Mechanical), ORS 479.540 (Electrical), and ORS 693.010-020 (Plumbing).

Ways to Schedule Inspections

Oregon ePermitting App

Search the iOS or Android app store for 'epermitting' or by scanning the QR code below to get instant inspection results.



Oregon ePermitting Website

Schedule or track inspections online at BuildingPermits.Oregon.gov.



Easy Scheduling Website

Start by visiting BuildingPermits.Oregon.gov > click on Schedule > click on Easy Inspection Scheduling or by scanning the QR code below.



For agencies that offer same-day inspection scheduling, the cut off is 7:00 AM.

PERMIT FEES

Fee Description	Quantity	Fee Amount
Agency Review - County Only	1	\$98.00
Fire life safety plan review		\$808.78
Structural plan review fee		\$1,314.27
Structural building permit fee		\$2,021.95
State of Oregon Surcharge - Bldg (12% of applicable fees)		\$242.63
CET - MCMINNVILLE SD 40 - Admin Fee - Com Use		\$202.18
CET - MCMINNVILLE SD 40 - Com Use		\$4,852.22
Total Fees:		\$9,540.03

Note: This may not include all the fees required for this project.

VALUATION INFORMATION

Construction Type	Occupancy Type	Unit Amount	Unit	Unit Cost	Job Value
VB	U Utility, misc.	6,480.00	Sq Ft	\$64.19	\$415,951.20
Total Job Value:					\$415,951.20

Record Number	Record Type	Project Name	Description	Number	Dir	Street Name	Street Type	Parcel #	Status	Opened
979-25-000881-PLNG	Planning Tracking	C-01-25 Appeal	Appeal of C-01-25 Commercial home occupation	10431	NE	EQUESTRIAN	DR	R4401 02300	App Submitted	9/29/2025
979-25-002744-MECH	Commercial Mechanical	Shop Gas line	Run a new main gas line from gas tank to shop building	10431	NE	EQUESTRIAN	DR	R4401 02300	Permit Issued	9/9/2025
979-25-002382-ELEC	Commercial Electrical	Wire shop	Storage building for special equipment used for mitigation (Shell Only, new application and plans will be needed for TL.) Goes with structural permit 979-24-004198-STR.	10431	NE	EQUESTRIAN	DR	R4401 02300	Permit Issued	8/8/2025
979-25-000050-PRMT	Onsite Permit	R4401-2300 Ceja	New standard system for hardship	10431	NE	EQUESTRIAN	DR	R4401 02300	Finald	7/23/2025
979-25-000050-EVAL	Onsite Site Evaluation	R4401-2300 Ceja	Site evaluation for future hardship and commercial use for business	10431	NE	EQUESTRIAN	DR	R4401 02300	Site Evaluation Approved	7/3/2025
979-25-001411-STR	Residential Structural	Javier Ceja	Conversion of accessory building to studio/Rec room for hardship with 1 full bath and kitchen.	10435	NE	EQUESTRIAN	DR	R4401 02300	Permit Issued	5/14/2025
979-25-001411-PLM-01	Residential Plumbing	Javier Ceja	Conversion of accessory building to studio/Rec room for hardship with 1 full bath and kitchen.	10435	NE	EQUESTRIAN	DR	R4401 02300	Permit Issued	5/14/2025
979-25-001411-MECH-01	Residential Mechanical	Javier Ceja	Conversion of accessory building to studio/Rec room for hardship with 1 full bath and kitchen.	10435	NE	EQUESTRIAN	DR	R4401 02300	Permit Issued	5/14/2025
979-25-001076-PLM	Commercial Plumbing	Javier Shop	UNDERSLAB PERMIT ONLY. Adding two bathrooms, a laundry area with sink, a mechanical area with hub drain, mop sink, and water heater, and a breakroom with sink. Adding 3 hose bibs.	10431	NE	EQUESTRIAN	DR	R4401 02300	Permit Issued	4/17/2025
979-25-000631-ELEC	Residential Electrical		Retired house and main service to feed commercial building.	10431	NE	EQUESTRIAN	DR	R4401 02300	Permit Issued	3/5/2025

RECEIVED

NOV 04 2025

MANHATTAN COUNTY
PLANNING DEPARTMENT

979-25-000125-PLNG	Planning Tracking	C-01-25	Home occupation for commercial	10431	NE	EQUESTRIAN	DR	R4401 02300	Decision/Permit Issued	1/24/2025
979-25-000050-AUTH	Onsite Authorization	Javier Cjia	Authorization for hardship and commercial use for business	10431	NE	EQUESTRIAN	DR	R4401 02300	Denied	1/24/2025
979-25-000048-PLNG	Planning Tracking	CTS-01-25	CEJA TEMPORARY HARDSHIP	10431	NE	EQUESTRIAN	DR	R4401 02300	Decision/Permit Issued	1/9/2025
979-24-004198-STR	Commercial Structural	Javier Cjia	Storage building for special equipment used for mitigation (Shell Only, new application and plans will be needed for T1.)	10431	NE	EQUESTRIAN	DR	R4401 02300	Under Insp/Revisions Needed	12/27/2024
979-24-004081-ELEC	Residential Electrical		Remodel - Existing necessary building being converted to Hardship	10435	NE	EQUESTRIAN	DR	R4401 02300	Permit Issued	12/16/2024

RECEIVED

NOV 04 2025

YAVAPAI COUNTY
PLANNING DEPARTMENT



Smith
Barn 1,980sqft estimate

03100

03200

Goodroc
2025 3,600sqft

03300

Bruck
Old Barn 3,422 sqft estimate

02400

Ceja
2024 6,480sqft

02300

Winkelman
1983? 2,000sqft estimate

03400

03500

121816 IMPROV NT DATA

Property Class: 551
1043' SQUESTRIAN DR

Construction Base Area Floor Area Sq Ft Value
24 Wood - Double F 1400 1.0 1400 101520

PHYSICAL CHARACTERISTICS

Style: 1 Story
Occupancy: Single family
Story Height: 1400
Finished Area: None
Basement: None

ROOFING
Material: Comp Shingle medium arch
Type: Gable
Framing: Std for class
Pitch: Not available

FLOORING
16 OM/plywd sub 1.0
Carpet 1.0

EXTERIOR COVER
Plywood sheathing 1.0

INTERIOR FINISH
Drywall 1.0

ACCOMMODATIONS
Bedrooms 3
Fireplaces: 1

HEATING AND AIR CONDITIONING

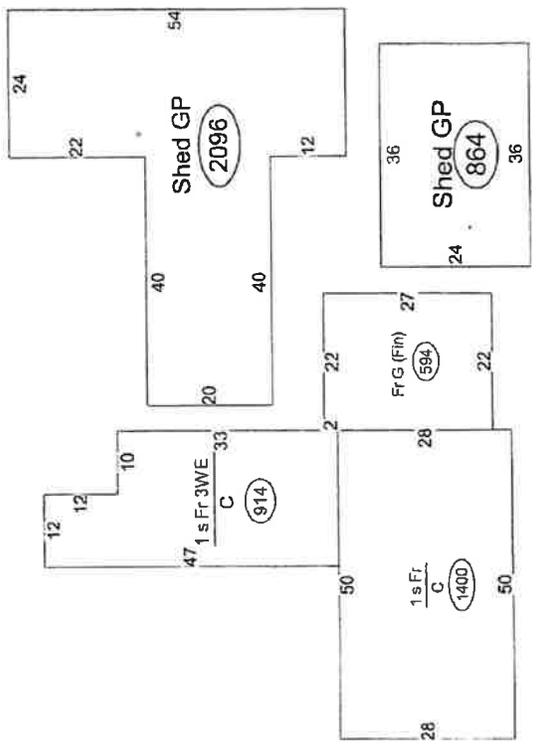
Primary Heat: Heat pump
Lower Full Part
/Bant 1 Upper Upper
Air Cond 0 1400 0 0

PLUMBING

3 Fixt. Baths 2 6
Kit Sink 1 1
Water Heat 1 1
TOTAL 8

REMODELING AND MODERNIZATION

Amount Date



1400 Crawl --- 0

TOTAL BASE 101520
Row Type Adjustment 1.00%
SUB-TOTAL 101520

0 Interior Finish
0 Ext Lvg Units
0 Basement Finish
Fireplace(s) 3580
Heating 4970
Air Condition 0
Frame/Siding/Roof 0
Plumbing Fixt: 8 4050
Other Features 1520

Sub-TOTAL ONE UNIT 115940
Sub-TOTAL 0 UNITS 115940

Exterior Features Description Value
Garages 0
Integral 0
594 Att Garage 29190
0 Att Carports 0
0 Bsmt Garage 0
Ext Features 0

Sub-TOTAL 145130
Quality Class/Grade 4
GRADE ADJUSTED VALUE 145130

(LCM: 100.00)

SUMMARY OF IMPROVEMENTS

ID	Description	Use	Story	Const	Year	Eff	Base	Feat-	Adj	Size or	Computed	Phys	Obsol	Market	%	Value
			Hgt	Type	Grade	Const	Year	Cond	Rate	Area	Value	Depr	Adj	Comp	Value	
D	:COOKTOP										1400	145130	32	0	186	0
	CTFORM		1.00			1971	1969	AV	0.00	Y	49.14	2x 22	25190	0	0	100
	DISHWSHR		0.00	1		2019	2019	AV	0.00	N	914	49630	4	0	186	100
	KCHRWD		12.00			1993	1993	AV	13.38	Y	14.21	24x 54	32180	31	0	186
	MAS		12.00			1993	1993	AV	15.59	N	16.73	23x 36	14460	31	0	186
	OVEN															100
	08 :BXSTL10															100
																18563

SPECIAL FEATURES

Description	Value
D :COOKTOP	470
CTFORM	0
DISHWSHR	480
KCHRWD	0
MAS	3580
OVEN	870
08 :IF2	3
08 :BXSTL10	2400

Neighborhood Neigh 51604040 AV
Appraiser/Date missie 02/12/2021
Data Collector/Date missie 02/12/2021
Supplemental Cards
TOTAL IMPROVEMENT VALUE 332047

ADMINISTRATIVE INFORMATION

PARCEL NUMBER 121816
Parent Parcel Number
Property Address 10431 NE EQUESTRIAN DR
Neighborhood 51604040 Rural McMinnville
Property Class 551 551 Farm EFU Receiving FUV/Imp
TAXING DISTRICT INFORMATION
Jurisdiction 36
Area 001
District 40.2
Section & Plat R44-5
Routing Number 1

OWNERSHIP

CEJA ISIDRO J
CONTRERAS SARAH H
10431 NE EQUESTRIAN DR
MCMINNVILLE, OR 97128 USA
See Metes & Bounds
07/10/2024 FORSEY NICHOLAS & DOREEN
04/30/2019 WOLL JEAN R (NEA JEAN R BRANCH)
12/03/2003 KARSTEN DONALD W & R

10431 N' EQUESTRIAN DR
Tax and R4401 02300
TRANSFER OF OWNERSHIP
Printed 10/15/2025 card No. 1 of 1

AGRICULTURAL

VALUATION RECORD

Table with columns: Assessment Year, Ratio, Aprsl Updt, Ratio, Aprsl Updt, Ratio, Aprsl Updt. Rows include VALUATION, MARKET VALUE, VALUATION, LAND USE.

LAND DATA AND CALCULATIONS

Table with columns: Rating, Measured Soil ID, Actual Frontage, Effective Frontage, Table Area, Effective Depth, Depth Factor, Square Feet, Base Rate, Adjusted Rate, Extended Value, Influence Factor, Value.

PM18: Permit Complete for 1-1-2018
12/6/2017 left card on locked gate. 3 dogs on site. Per owner called and staged the electric permit was for 50amp for motorhome parked in the garage. NVC. removed conv adj from land and imp. Inform owner of farm deferral in past hay and cattle. SD
PM21: Permit Complete for 1-1-2021
2/12/21 CHG % complete to 100. MA
RA23: 5/25/22 UTC, no changes from last inspection. NO
Reappraisal 2023
RA21: Recheck for 2021
1/21/2020 TT OWNER Add addit 90% desk complete 21. MA
RA26: Recheck for 2026
1/10/25 - New storage building planned for construction during 2025 by W&H Construction at projected cost of \$12,000. JH

Supplemental Cards 5.5000
MEASURED ACREAGE
Supplemental Cards 611895
TRUE TAX VALUE
Supplemental Cards 120380
TOTAL LAND VALUE

<https://www.oregonlive.com/business/2024/12/oregon-christmas-tree-prices-have-been-soaring-but-they-may-be-near-a-peak.html>

Oregon Christmas tree prices have been soaring – but they may be near a peak

Updated: Dec. 03, 2024, 9:12 p.m.

Published: Dec. 01, 2024, 7:07 a.m.

The Oregonian **Oregon Insight**



Wholesale Christmas tree prices have more than doubled since 2015. But Oregon farmers are now planting more trees than they're selling.
Sean Meagher/The Oregonian

By

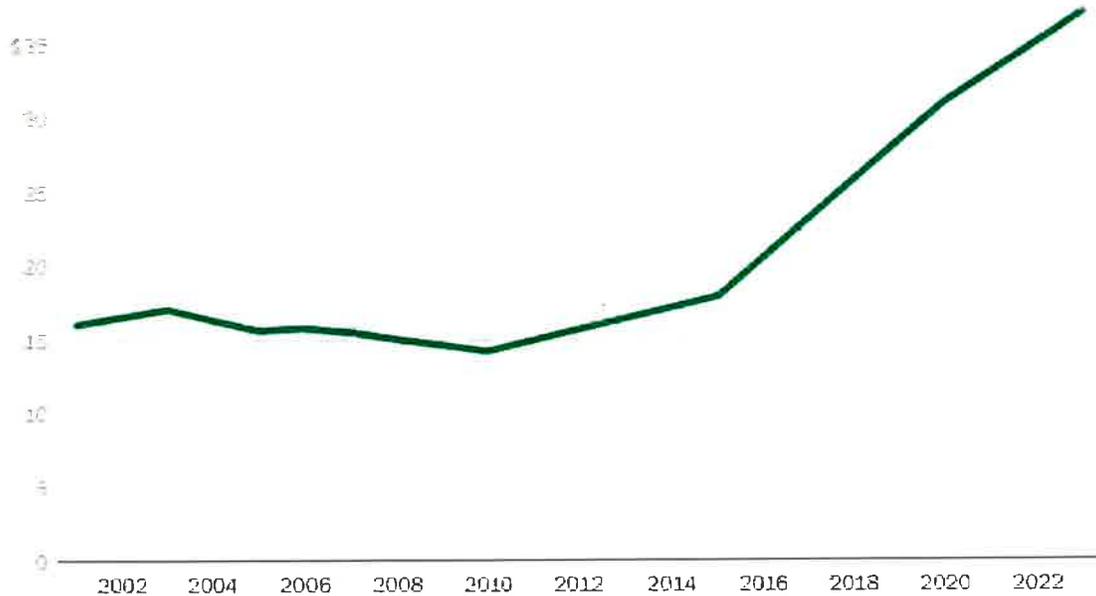
[Mike Rogoway | The Oregonian/OregonLive](#)

Oregon's Christmas tree farmers are anticipating another merry holiday this year, with prices on a decade-long upswing for one of the state's major crops.

Farmers received an average of more than \$37 per tree last year, according to the most recent survey from the U.S. Department of Agriculture. That figure includes wholesale prices and prices farmers charge at U-cut farms. Shoppers buying at tree lots or big box stores pay considerably more — an average of \$75 per tree, [according to the National Christmas Tree Association](#).

Average wholesale price per Oregon Christmas tree

Prices farmers receive are up 131% since 2001 (or 72%, after adjusting for inflation).



Average wholesale price and price received for trees sold on the farm (U-cuts, typically.)

Source: USDA National Agricultural Statistics Service, Northwest Region Office • [Get the data](#)



Wholesale prices have more than doubled since 2015 and they're still climbing — though maybe not as fast as they have been in recent years.

"It's been good for growers over the last five-plus years," said Casey Grogan of Silver Bells Tree Farm, a 500-acre farm near Silverton. "We feel like maybe supply's catching up and that prices might potentially level out some."

Oregon provides roughly a third of the nation's real Christmas trees, according to the state Department of Agriculture. The trees are the state's 11th-largest crop by dollar value.

Prices are rising because the number of trees harvested each year is down by more than half over the past 15 years. A glut of Christmas trees around the time of the Great Recession chased many Oregon farmers out of the business, taking 30,000 acres out of production.

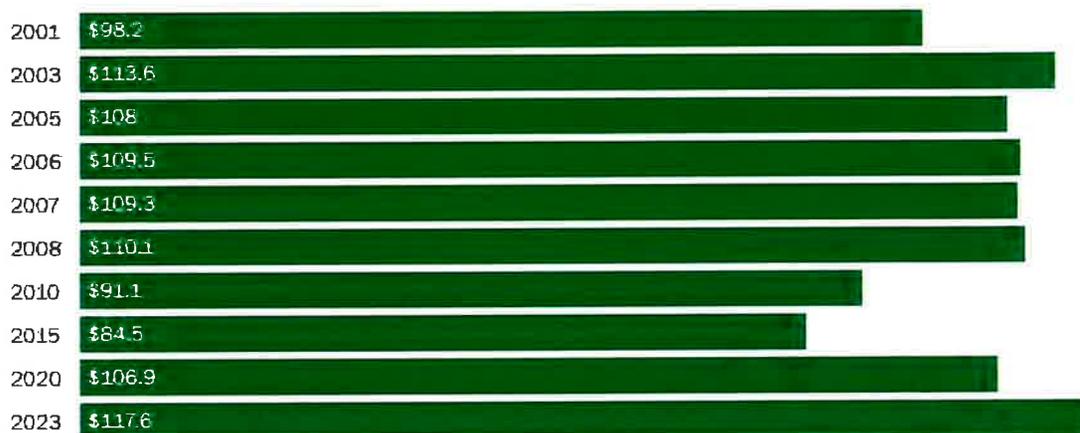
“There was a lot of consolidation in the industry. People just didn’t plant,” said Tom Norby, who owns Trout Creek Tree Farm in Corbett.

Farmers who remained in the field profited as the number of available trees fell sharply. Americans still wanted real Christmas trees, especially during the gloomy years around the pandemic.

“That’s kind of what Christmas trees represented,” Norby said, “is life in the middle of winter.”

Oregon Christmas tree sales

In millions of dollars



Source: USDA National Agricultural Statistics Service Northwest Region Office • [Get the data](#)



Oregon farmers sold about \$118 million worth of Christmas trees last year, the highest total on record, even though they sold 4 million fewer trees than they did in 2008. That reflects the higher prices.

There are signs the tree shortage may be coming to an end. Oregon farmers have planted an average of 5.8 million trees annually over the past four years. Not all of those trees will reach maturity but since farmers sold just over 3 million trees last year, the number of plantings suggests supply may catch up to — or perhaps exceed — demand over the next several years.

“There’s a lot of growers that are very nervous about an oversupply coming again, and maybe prices even coming down,” Norby said. That would be painful, he said, because the cost of fuel, fertilizer and labor keeps rising.

And then there's the prospect of another trade war.

Many of Oregon's trees are exported, especially to Canada and Mexico. President-elect Donald Trump threatened Monday to [impose a 25% tariff](#) on products made in those countries.

It stands to reason that those countries will impose reciprocal tariffs on goods made or grown in the United States, said Grogan, whose tree farm sells to customers in both Canada and Mexico. He said there's a very good chance that customers in those countries won't want to pay a premium for Oregon trees.

"So far," Grogan said, "I don't really like the writing on the wall."

Correction: Christmas tree retail pricing was reported by the National Christmas Tree Association, not the American Christmas Tree Association.



Mike Rogoway

Mike Rogoway reports on the intersection of community and technology, from the science of semiconductors to the impact of billion-dollar data centers in Oregon's small towns. Mike has worked in communities throughout the Northwest, from Oregon to Alaska, and his reporting has been recognized by many journalism organizations. He has an MBA from the University of Washington's Foster School of Business.

The economics of Christmas trees

In America, Christmas trees are a multibillion-dollar business. But who's making the money?



Zachary Crockett

Published: December 05, 2020

Updated: March 21, 2024

On a frosty day in November, Beth Ann Bossio walks through the brilliant green rows of Douglas firs at Quarter Pine Farm in Smithfield, Pennsylvania, and marks hundreds of trees with price tags.

As the family farm's head of sales, Bossio has followed the journey of these trees for nearly a decade, from seedlings to 7-foot-tall evergreens.

Now, at long last, they're ready to be sold as Christmas trees.

Quarter Pine is one of thousands of Christmas tree farms in America. Collectively, these farms sell **25m-30m** real Christmas trees to independent lots, big-box retailers, and garden centers every year.

At an average retail price of **\$75 a pop**, these trees make up a **\$2B+-per-year** business.

But what are the economics behind that price tag? Who gets the lion's share of the profit? And how have Christmas tree producers fared with the growing popularity of artificial trees?

To find out, *The Hustle* spoke with Christmas tree farm owners, ecologists, and representatives from both the real and artificial tree markets.

From farm to market

Today, **98%** of all real Christmas trees on the market come from tree farms.

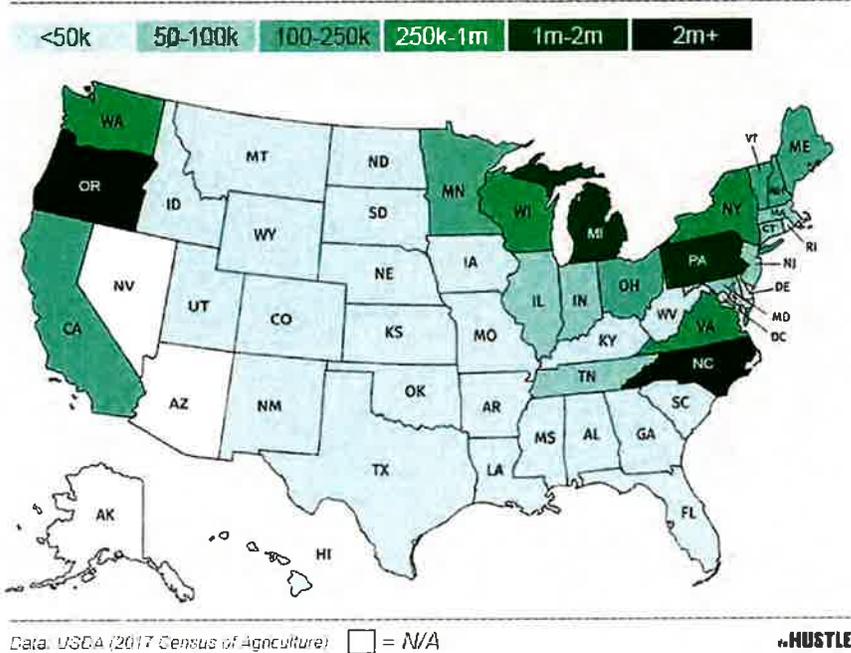
According to the **USDA**, there are **15k** of these farms in the US, ranging in size from 2 acres to 9k acres. Though the market is largely stratified, the 434 largest farms control ~75% of the total supply.

At any given time, there are **350m** Christmas trees growing on these farms in various stages of development — and in a typical year, **~25m** will be harvested for sale.

Roughly **2 out of every 3** of them come from just 4 states: Oregon, North Carolina, Michigan, and Pennsylvania.

Where do Christmas trees come from?

of Christmas trees harvested by state (2017)



In Oregon, Christmas trees outnumber people 12 to 1 (Zachary Crockett / The Hustle)

There are at least **15** different varieties of Christmas trees — ranging from the ever-popular Fraser fir to the Eastern red cedar — but most of them follow the same general production cycle.

A Christmas tree begins its life as a seedling, which is typically purchased from a timber firm like **Weyerhaeuser** for **\$0.50 to \$1**.

When the tree is around 2 years old, it graduates from the nursery to the “big leagues” and gets its own 6`x6` plot of land out in the field. Most Christmas tree farmers aim to plant **~1.2k trees per acre** of land.

What makes a Christmas tree an unusual crop is its extremely long production cycle: one tree takes **8-10 years** to mature to 6 feet.

During that time, it’s a financial black hole.

“A lot of blood, sweat, and tears goes into growing a Christmas tree,” said **Bert Cregg**, a horticulture professor at Michigan State University. “You’ve got the cost of land, road

construction, tractors, herbicide, fertilizers — and then all the labor it takes to plant and shear the tree.”

Bossio, of Quarter Pine Farm, calls Christmas trees a game of “patience and unpredictability.”

“It takes so long to make a profit in this business and anything can happen in that time,” she said. “This year, we had a late frost that damaged a good chunk of our Douglas firs; I know farms that had no rain and lost 100% of their trees.”



A man shears a tree at Friendly Acres Farm, a family-owned Christmas tree farm in Cohecton, NY (The Farmhouse Project)

But even if all goes well, Christmas tree farmers still have to forecast what the market is going to look like 10 years out: Planting too many trees could flood the market; planting too few could cause a shortage.

History has shown that the industry is a case study in supply and demand:

- In the 1990s, farmers planted **too many** Christmas trees. The glut resulted in rock-bottom prices throughout the early 2000s and put many farms out of business.
- During the recession in 2008, ailing farmers planted **too few** trees. As a result, prices have been much higher since 2016.

When trees are finally ready to be sold, they're graded with colored tags based on height and quality. Then, they're off to market.

From market to consumer

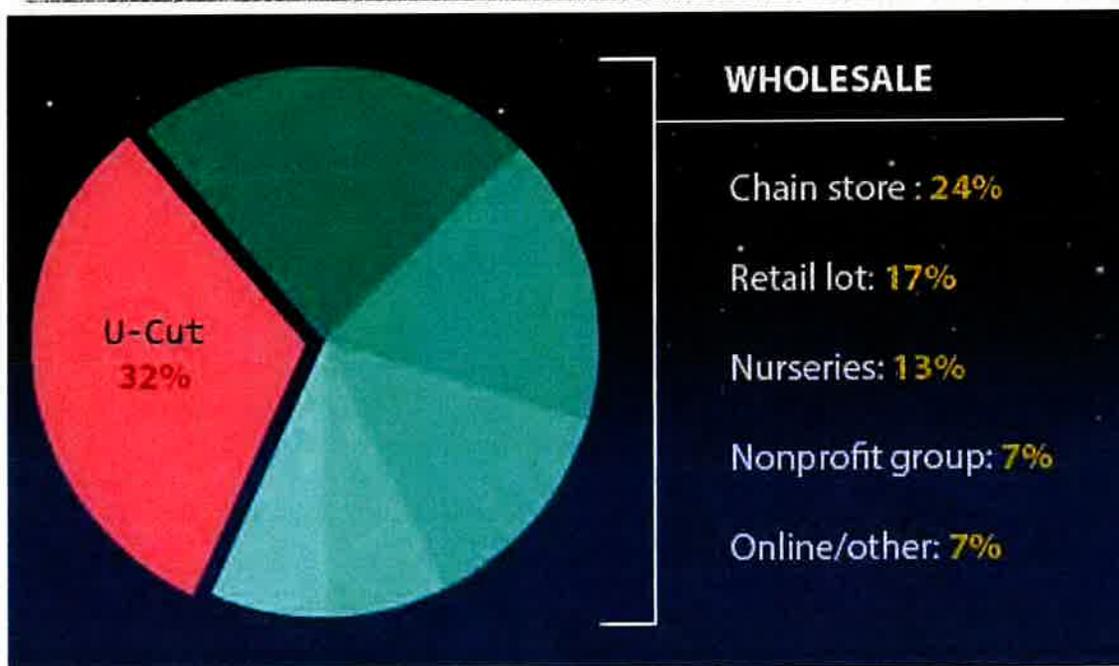
Christmas tree farms have 2 major sales channels:

1. **U-Cut:** They allow the public to cut down their own trees.
2. **Wholesale:** The farms cut, ship, and sell their trees in bulk to lots, retailers, and distributors.

About 1/3 of Christmas tree sales are via U-Cut, while wholesale makes up the majority of the market.

Where do people buy Christmas trees?

% of customers who purchased a tree at the following locations



Data: The National Christmas Tree Association / Graphic: Zachary Crockett

HUSTLE

Via the National Christmas Tree Association; Nielsen/Harris Poll on behalf of NCTA January 28-30, 2020 among 1962 adults ages 18 and older (Zachary Crockett)

U-Cut operations tend to be more popular with smaller farms like Quarter Pine, where families come for the experience. In recent years, the broader agritourism market has tripled in size and become a billion-dollar industry.

In general, U-Cut also a more profitable option for a farm: it can sell a 6'-7' tree at market rate (\$60-\$80) and pocket a larger cut of the profit.

Wholesale — a game of volume — is largely dominated by the titans of Christmas tree farming, like [Holiday Tree Farms](#).

Established in Corvallis, Oregon, in 1955, Holiday Tree Farms is one of the world's largest producers of real Christmas trees. Each season, the farm harvests more than **1m trees** in less than 30 days.

Owner Mark Arkills enlists **7 helicopters** which run in a continuous cycle from sunup to sundown, loading **1k trees/hour each** into tractor-trailers destined for big-box retailers.

From cut to delivery, it only takes Arkills **3-4 days** to get a tree to a West Coast location of The Home Depot.



Workers preparing trees for shipment at Oregon's Holiday Tree Farms (Justin Sullivan/Getty Images)

What do farmers make from deals like this?

The Hustle surveyed 8 wholesale Christmas tree farms in PA, NC, WI, OR, and MI, and found that the **average 6'-7' tree wholesales for \$35** cut, baled, and loaded.

But after factoring in expenses over the 8- to 10-year growing cycle, profit margins are considerably lower: Farmers typically make out with a **~25% to 30% profit margin** — or **\$8 to \$10 per tree**.

Even so, a deal with a large retailer like The Home Depot — which might order 250k+ trees — could net an outlet like Holiday Tree Farm 7-figures.

Once a retailer has the trees, it will typically mark them up by **100% or more** to cover freight, storage, labor, and operating costs.

According to the **National Christmas Tree Association** (NCTA), an organization that represents tree farmers, the average retail price of a tree in 2019 was **\$75**.

“The farmers, for what they put in, make less than the retailer on a Christmas tree,” Doug Hundley, an NCTA spokesperson, told *The Hustle*.

The average price of a real Christmas tree

In recent years, the market rate has gone up — a result of less growth during the 2007 financial crisis



Data: The National Christmas Tree Association / Graphic: Zachary Crockett

HUSTLE

Christmas trees saw a jump in price in 2016 due to a smaller production 8 years earlier during the financial crisis (Zachary Crockett / The Hustle)

Regardless of profits, the Christmas tree farming ecosystem is experiencing the rumblings of a small exodus.

James Farmer, an Indiana State University professor who has **studied** Christmas tree farmers, says that an aging farmer population, coupled with climate change and shifting consumer preferences, has threatened to crimp the industry.

But the biggest threat to tree farmers may be the steady, incessant rise of their arch-nemesis: the artificial tree.

A tale of 2 Christmas trees

Modern artificial trees got their start in the 1930s when the UK-based Addis Brush Co. — a maker of [toilet scrubbing brushes](#) — saw an opportunity to market convenience during a time when real trees were hard to get ahold of.

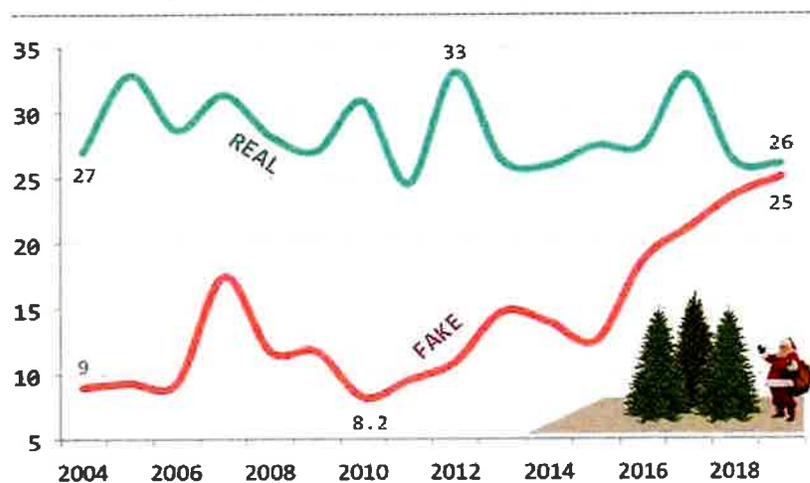
Today, [81%](#) of the **96m** Christmas trees Americans display each year are artificial. Only 19% are real.

While roughly the same number of real (26m) and fake (25m) trees were sold last year, the cumulative purchasing of fake trees has encroached on real trees' market share.

“If it weren't for the fake trees, we'd be selling twice as many real trees,” said Hundley. “But we're selling the same number of trees as we were 15 years ago.”

Real vs. fake Christmas trees: Annual units sold

In millions of units, 2004-2019



Data: NCTA, ACTA / Graphic: Zachary Crockett

THE HUSTLE

Zachary Crockett / The Hustle

The supply chain of fake trees is quite different from that of real trees.

According to the US Department of Commerce, [85%](#) of fake trees are manufactured in China — particularly in the city of Yiwu.

Often called “Santa’s *Real* Workshop,” Yiwu is home to 600+ factories that churn out the vast majority of the world’s Christmas decorations, including millions of polyvinyl chloride trees from the industry’s top manufacturers.

As *Vice* reports, employees at these factories work in 12-hour shifts, feeding PVC strands into machines and fashioning synthetic branches onto steel poles. For their labor, they earn the equivalent of ~\$600/month.

While a real tree takes 8-10 years to get to market, a fake tree can be produced in a few minutes. At full steam, a factory can pump out **1.5k trees in a 2-day cycle**.

On the retail market, the average artificial tree goes for **\$107** — about \$30 more than a real tree. Wholesale, they can be had for as little as \$15.

Many Christmas tree farmers say they can’t compete with these higher margins and lighting-fast production cycles. And for some, the increasingly split market is an omen of larger geopolitical trends.

“It’s an issue of supporting American growers or overseas manufacturers,” said Bossio.



Scenes from an artificial Christmas tree factory in Yiwu, China, in 2016 (Photo: JOHANNES EISELE/AFP via Getty Images)

Today’s artificial tree market is worth an estimated **\$1.2B**.

One of the industry’s biggest players, Balsam Hill — which sells high-end fake trees that run up to \$3k — posted ~\$150m in revenue in 2018, far more than the largest Christmas tree farms.

The company's CEO, Thomas Harman, is also the founder and president of the **American Christmas Tree Association (ACTA)**, a trade group that many tree farmers consider to be an adversary.

Jami Warner, ACTA's executive director, said that the organization represents "all types of trees," whether artificial or real.

But in a call, she also cited ACTA-sponsored studies that found fake trees were more cost-effective and environmentally friendly than real trees.

"A high-quality artificial tree can last up to 10 years," she said. "And when you consider that, the cost of replacing a real Christmas tree every year is about 3x the cost of purchasing a single fake tree."

Hundley, the NCTA spokesperson, doesn't buy it.

A one-time Christmas tree farmer himself, he believes the value of a perfectly sheared fir supersedes convenience and price.

"What do you think my wife would say if I came home on Valentine's Day with plastic roses?" he said. "You just can't beat the real thing."

<https://grocycle.com/how-much-money-does-a-christmas-tree-farm-make/>

How Much Money Does a Christmas Tree Farm Make? A Breakdown

/ Homesteading / By Adam Sayner



Are you looking to make some extra money this holiday season?

A Christmas tree farm may be the perfect option for you—especially if you have some agricultural experience and access to a couple of acres of land.



How Much Money Can You Make Selling Christmas Trees?

Like any new business undertaking, Christmas tree farming has startup costs. But once your farm is established, you can make a decent profit.

Depending on which state you live in and the type of trees you sell, you can expect to make anywhere from \$20 to more than \$100 per tree, depending on its size.

Additionally, farmers can make even more money by selling pre-cut trees and wreaths during the holiday season.

These larger items often sell for higher prices than the live trees themselves.

The amount of money you stand to make will vary greatly depending on your location, the size of your farm, whether your customers cut down their own trees and other factors.

That said, many farmers typically max out their profits at around \$15,000 – \$20,000 (£12,918 – £17,224) per season.



Start-Up Costs for a Christmas Tree Farm

As the old adage goes, “it takes money to make money,” so you’ll need to have some cash stored away to launch your Christmas Tree farm.

Starting costs to [run a small farm](#) are relatively minimal, especially if you already own the land or can obtain it cheaply through a lease or purchase.

However, start-up costs for a larger operation may be substantial. You will need heavy machinery such as a tractor and loader to prepare the land for planting and harvesting.

Here are a few costs to consider:

- **Purchasing land.** Many folks prefer to have 10 – 20 acres on which to grow their trees.
- **The cost of seedlings.** Costs will vary depending on your location and the type of seedlings you purchase, but you can typically purchase 100 seedlings for just under \$100.

- **Growing supplies.** You'll need soil, fertilizer, mulch and more to grow and maintain your Christmas trees.
- **A tractor to prepare the soil.** Or, the cost of labor for someone else to do it.
- The ongoing cost of maintaining the land. This includes, among other things, watering, mowing and weeding.
- **Tools and equipment for tending to the trees as they grow.** Trees will need regular pruning.
- **The costs of any labor you hire.**
- **Marketing costs.** Typically, the cost of marketing for a Christmas Tree farm is relatively low. You'll likely need to purchase signage and may also wish to take out ads online, in your local newspaper, etc.
- **Insurance and permits required to run a farm in your area.** This can run you several thousand dollars in the early stages of your business.

As your business grows, you may also want to purchase additional land for expansion. Many Christmas tree farmers start out by leasing small plots of land that can easily be tilled.

As their operation grows, however, they will need to expand their operations by purchasing additional land.



Are You a Good Candidate for Growing Christmas Trees?

If you're [new to farming or growing plants](#), we don't recommend starting with a Christmas Tree farm.

It's a large undertaking that's best approached with some previous agricultural knowledge.

That said, if you have some farming experience under your belt — and especially if you already have land — Christmas Trees can be an excellent way to bolster your income.

Here are a few factors that will make you an excellent Christmas Tree farmer:

You Live in a Warm, Moist Environment

You'll do best growing Christmas Trees if you live in an environment where the temperature hovers between 40° F and 70° F and there is consistent moisture.

Trees that are grown in these conditions will rapidly develop a strong root system that provides them with support while they are growing.

These trees also tend to be disease resistant and grow much faster than trees that are grown in less ideal conditions.

In addition, they are more adaptable to changing weather conditions than trees that are planted in colder regions.

If you live in an area that experiences mild winters, you may be able to grow your own Christmas trees indoors.

Keeping them in a warmer environment is beneficial until they have grown enough to adapt to cooler temperatures outdoors.

In most places, you will need to wait until spring to plant your trees so that they can mature and start producing cones before the first frost hits in the fall.

Other factors that lead to thriving Christmas Trees include:

- Well-drained, nutrient-dense soil with a pH of 5.1 to 6.5
- Soil that is at least 18 inches deep to allow room for rooting
- Adequate, safe roads for customers (or harvest services) to access your Christmas tree farm



You Have Ample Time to Dedicate to Farming

It generally takes at least two years from the time you plant a tree until it can be harvested and sold.

Some trees will be ready to harvest sooner and some will take longer depending on the weather and the conditions under which they are grown.

The time you'll need to dedicate to maintaining your trees grows as your trees do. Large trees require more upkeep and shearing them alone can take a full day at a time.

You Have Enough Space to Dedicate to Growing Christmas Trees

The amount of space you need to grow your Christmas Trees depends on your plans.

If you plan to grow only a small number of trees or you want to sell just a few trees each year, you may be able to [set up a farm on a relatively small plot of land](#).

However, if you plan to grow a larger number of trees, you will either need a larger piece of land or to find a smaller parcel of land that you can use in conjunction with another farm to raise all of your trees.

You can grow about 1,500 Christmas trees on one acre of land.



Pros and Cons of Selling Christmas Trees

Simply put, Christmas tree growing is a joyful business! You get to [earn profits](#) while helping other people enjoy the holiday season.

It can also serve as a part-time business that can help you supplement your income during the off-season when your other businesses might not be as busy.

That said, starting a Christmas tree farm is a lot of work.

It will require a lot of your time and you will be on call for your trees throughout the year to make sure that they stay healthy and are not harmed by the weather conditions in your area.

You will also need to invest some money upfront into supplies and permits before you can get started.

You're also growing your trees under a "deadline," as they obviously need to be ready to go by the holiday season.

It takes some specialized knowledge to grow healthy trees and it can be difficult to make a profit if you are growing a large number of trees.

And finally, you'll likely need to deal with some red tape when you start your farm. There are rules and regulations you'll need to follow, along with permits you'll need to obtain.

If you're new to growing plants for profit, this can get overwhelming, so we recommend working with a qualified professional to help you makes sure all of your ducks are in a row.



How to Market Your Christmas Trees

Unlike the of-the-moment holiday toy that requires a million-dollar marketing campaign, Christmas trees don't need much advertising. Everyone already wants to buy them!

The goal is simply to let your surrounding community know your trees are available for purchase. You might do this through:

- Bulletin boards at local stores
- Facebook posts
- Flyers
- Craigslist
- Local newspaper ads

You can also set up a website for your trees. Be sure to include the details about each one along with the price, photos and contact information.

Final Thoughts

A Christmas tree farm is likely not a good “first” project for a new farmer.

However, if you have some agricultural experience, it can be a fun (and lucrative) way to supplement your income during the holidays.

Before investing in a Christmas tree farm, make sure you can afford the cost to maintain it and have the time to allow your trees to grow to their full potential.

Budget time to market your trees so customers know where to find you, and you’ll enjoy being one of the most enjoyable parts of your community’s holiday season!

Yamhill County

DEPARTMENT OF PLANNING AND DEVELOPMENT

400 NE BAKER STREET • McMinnville, Oregon 97128

Phone: 503-434-7516 • Fax: 503-434-7544 • TTY: 800-735-2900 • Internet Address:

<http://yamhillcounty.gov/283/Planning-Development>

Winery and Tasting Room Questionnaire

To Be Completed by the Winery Owner/Operator

Property owner name: Ground 113, Frank Foti

Winery name: The Ground

Property address: 16440 NW Red Shot Lane, Carlton, OR 97111

Maximum # of employees per 8-hour shift (typical): 1

Maximum # of employees per shift during harvest: 20

Will portable toilets be brought in for worker use during harvest? Yes: No: NA:

Taster seating capacity (indoor): NA

Taster seating capacity (outdoor – typical operation): NA

Number of events larger than above seating capacity: 18 events per week /month /year

Peak guest capacity during large special events: 75-100

Will portable toilets be brought in for guest use during large events? Yes: No: NA:

Food Preparation (check all that apply):

No foods/only commercially pre-packaged as individual servings items served:

Catered events with all prep and dishwashing off-site:

Catered events with some prep and dishwashing on-site:

Other food prep on-site ("chef experiences", cooking classes, etc.):

Full catering service done at facility:

Full restaurant-style menu: Meals offered: Breakfast Lunch Dinner

I understand that all production wastes, production equipment, and floor drains may not be plumbed to the septic system and must be disposed of using a method/permit as mandated by the Department of Environmental Quality (DEQ). Initial: mk

The information provided will be used to determine the design requirements of the septic system serving this facility. Deviation from the above information may result in early failure of the septic system. All septic systems must be maintained/operated in compliance with all permit conditions and applicable requirements and must not create a public health hazard or pollute public waters. All repairs/replacements are ultimately the responsibility of the property owner.

By signing I confirm that the above information is correct to the best of my ability:

Signed 

Name McKenzie Rosenberry Title Director of Operations Date 11/10/25

Developing Quality Christmas Trees in the Pacific Northwest

Chal Landgren



A Pacific Northwest Extension Publication
Oregon State University • Washington State University • University of Idaho
PNW 684

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Chal Landgren, Extension Christmas tree specialist and professor, Oregon State University.

Introduction

Christmas trees are a major horticultural crop in the Pacific Northwest (PNW). As with any crop, success in growing Christmas trees requires hard work, timely attention to detail, extensive knowledge of cultural practices, and an understanding of your intended market.

This publication outlines how trees grow and the culturing practices necessary to develop their size, shape, and density so that they are marketable. The first section of the publication gives an overview of four culturing practices that producers use (side shearing, leader pruning, basal pruning, and seed source selection), and the second section discusses these practices as they relate to specific tree species commonly grown in the PNW.

The successful sale of your Christmas tree crop depends on your ability to develop top quality trees and effectively market them. While it may seem a bit strange to think about tree markets that are 5 to 12 years in the future, many of the culturing and tree spacing decisions you make about your young trees are based on the type of trees you eventually want to sell. For example, if you are growing noble fir, do you want to end up with dense 7-foot trees or open

6-foot ones? Your answer will affect your culturing practices in the years leading up to harvest.

This publication explains intermediate-level techniques for culturing trees commonly grown in the PNW. It is one in a series of publications, videos, and websites to assist prospective, new, and longtime Christmas tree growers. See Additional Resources (page 30) for topics not covered here, such as diseases, pests, and disorders; best management practices (BMPs); and nutrient and weed management. It is important to understand the interactions of all of these factors to grasp the complexity of growing Christmas trees. Newer growers interested in a broad overview of Christmas tree production should first read *Growing Christmas Trees in the Pacific Northwest* (PNW 6).

Tree culturing: an overview

Culturing refers to the practices growers use to guide the shape, height, and density of their trees. These practices include cutting and trimming side branches (often described as “shearing”), top or leader trimming, basal pruning, and seed source selection. Before discussing how to perform these tasks, it is important to define some terms and to understand a bit of tree physiology (Figure 1).

Images and illustrations of noble and Douglas-fir are used throughout this publication because these species make up the bulk of the PNW harvest.

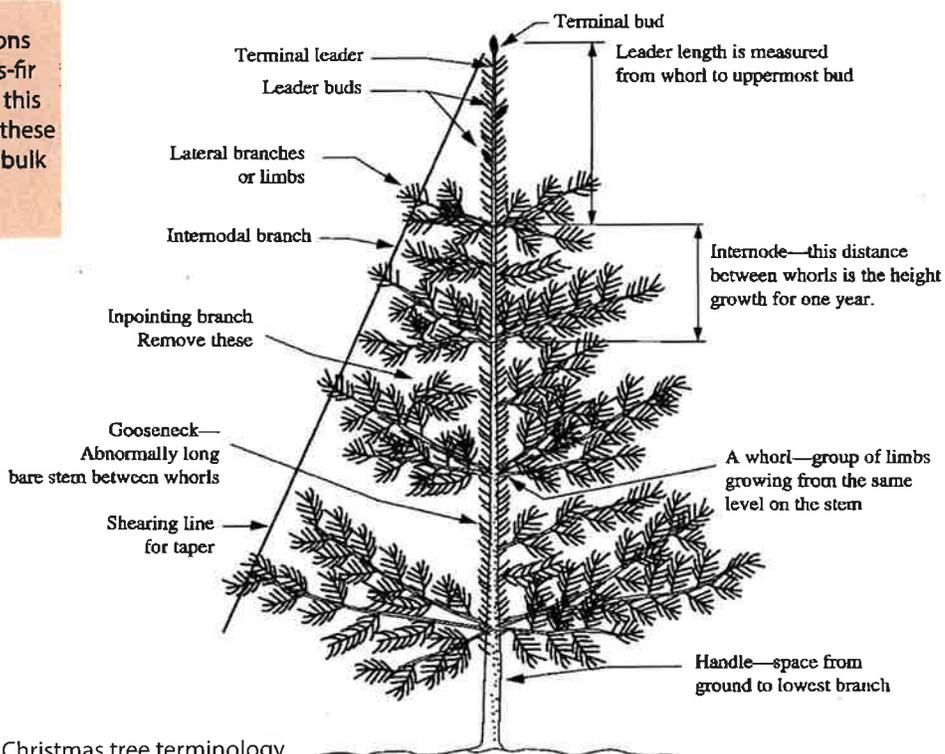


Figure 1. Christmas tree terminology

Each year a tree will initiate growth from buds developed the prior season. By examining the growth patterns of leaders and branches, you can determine the age of that portion of the tree. These patterns may be easy to see on noble fir and less distinct on Douglas-fir. Each year of growth produces a new age-class of needles and branches, new leaders, and a ring of wood on the outside of the stem. Understanding these aspects of tree growth is critical to successful culturing and effective evaluation of diseases, disorders, and other types of damage.

The growth year for a tree (Figure 2) can best be understood by starting at bud break.

- Bud break (late April to June): Bud break varies with each tree, site, and species. Changes in yearly weather patterns will influence timing, but bud break typically occurs between late April and early June.
- Branch and leader growth (June to August): Early branch and leader growth is very tender and limp. Growth progresses outward and upward, and becomes more firm and woody with time. Buds are difficult to see at first but become well defined and differentiated later in the season. Bud picking and plucking should happen while new growth is still elongating and is easily “snapped.”
- Culturing work (July to September): This is the “shearing season,” when leader control and side trimming are typically performed. On some species and in some years, buds may break and produce a second flush of growth mid- to late summer. This is called lammas growth; it is like two growth years in one. It is important to recognize and manage this extra growth, as it tends to be more vigorous than non-lammas growth.
- Maturation and dormancy (October to February): Branches become progressively stiffer and woody. Buds also become stiffer and tighter as winter progresses. Shearing may be ongoing, but it is a bit more difficult.
- Bud swell (March to April): Buds begin to enlarge with the warming weather, and sap starts to flow. Bud break will occur soon. This is the last chance to finish cultural work before the tree begins another growth year.

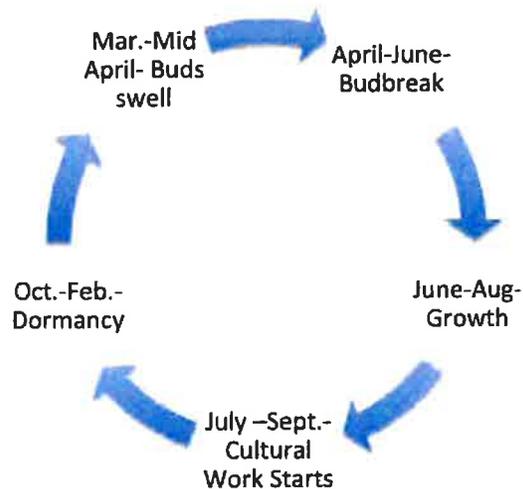


Figure 2. Yearly growth cycle

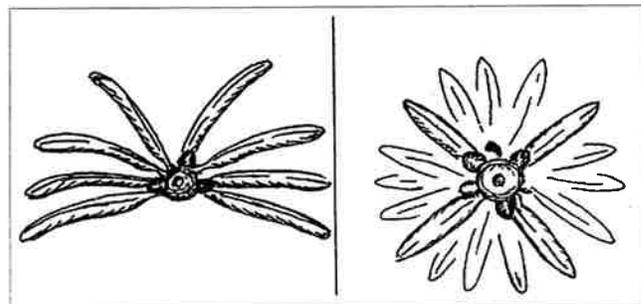


Image: Jeff Owen

Figure 3. Branch structure (L); leader structure (R)

It is important to know the difference between branches and leaders, especially as this relates to growth habit (Figure 3). Branches grow outward in a horizontal plane and buds develop along the branch. Leaders, on the other hand, grow upward and buds surround the leaders in circle. The buds between the prior year’s terminal node and the current year’s terminal bud(s) are called internodal buds. The internodal buds will become next season’s branches, and the terminal bud will become next year’s leader, if all goes well. An array of hormones and plant growth regulators determine how and where buds develop in different parts of a tree. In culturing a tree, these distinctions become important when leaders die or are trimmed. Keep in mind: Branches make poor tops and leaders make poor branches, especially on true firs.

The best culturing system combines an understanding of tree growth and culturing techniques

with clear knowledge of the final product your buyers want. Your culturing system can create trees that are dense or open, wide or narrow, short or tall. The final value of a tree typically is based on the tree's height and its quality assessment (often called grade). Understanding how your culturing practices influence both are key considerations.

Tree culturing: the basics

Tree culturing is difficult work; it is both art and science. Although many growers hire skilled contractors to do tree culturing, it is still important to know what is involved.

Each tree in a row can be as different as individuals in a family—they are different but have similar characteristics. If you cultured one hundred trees in the exact same way, you would end up with a range of trees of different grades and heights. The art of culturing comes from knowing how to evaluate each tree and develop it into a saleable product. Before beginning your cultural work, determine the type of tree you eventually want to harvest. The culturing methods used to produce a dense 7-foot noble are different from those needed to develop an open noble of the same height, and each tree may react differently to your culturing methods.

Culturing tips and tools of the trade

Protection and safety

- Wear leg and shoe guards for protection from the shearing knife (Figure 4).
- Keep first aid kits handy; include wasp and bee sting care, bandages, and wraps.
- Wear proper clothes for working in fields.
- Know where and how to get help, if needed.



Figure 4.
Leg guards

Clippers and saws

- Use a quality pair of clippers that fit your grip (Figure 5).
- Keep clippers sharp and lubricated.
- Keep extra blades, springs, and other parts on hand.
- Have a sharp pruning saw; it is useful in branch removal.



Figure 5. Hand clippers (L); shearing knife (R)

Shearing knife

- Get a shearing knife with a quality blade; keep it sharp and clean. Note: Shearing knives come in many shapes and makes (Figure 5).
- Keep rivets secure.

Cleaners and disinfectants

- Use pitch cleaner on saws, knives, and clippers; tools will need frequent cleaning to remove sap.
- Disinfect tools frequently to avoid spreading diseases. Commonly used disinfectants are quaternary ammonium (e.g., Green shield, Physan), hydrogen dioxide (e.g., OxiDate, ZeroTol) and Clorox bleach (10%). For a review of products see: http://www.ct.gov/caes/lib/caes/documents/special_features/boxwood_blight/list_of_sanitizers_for_cps_02-03-14.pdf

Sharpening

- Learn how to sharpen your tools or take them to a professional. Remember: A sharp tool will make any job easier.

Pullers and straighteners

- Have enough long straight sticks (e.g., bamboo or split cedar) on hand to use as top straighteners. Make sure they are sturdy enough to tie up stiff, bent leaders without bending themselves (Figure 6).



Figure 6. Sturdy top-straightening sticks

- A variety of homemade or purchased pullers can help move branches to fill in blank spots that might otherwise make a tree unsaleable (Figure 7).



Figure 7. Plastic tape (top) and plastic pullers (bottom) can help train branches to fill holes.

Stilts and ladders

- Use stilts (Figure 8), ladders, or some other type of lift once the trees are taller than you can reach.



Figure 8. Worker on stilts

Power equipment

- For shearing, there are various handheld machines, and a even a few tractor-based types (Figure 9).



Figure 9. Tree shearing with machines

Basal pruning

Basal pruning is often the first cultural practice needed during a rotation. Basal pruning removes branches between the ground line and a set height on the stem. It is a similar process for all species. The pruned stem or “handle” provides a straight, branchless area of at least 1.25 inches per foot of tree height, per United States Department of Agriculture (USDA) Guidelines (1992). Most buyers require this amount of clear stem so consumers can insert trees into their water stands.

The best time during a rotation to start basal pruning is when a leader develops about 12 inches in length above two good lower whorls. This stage

of development frequently occurs after two to four growing seasons, depending on the species. Be aware that removing more than 30 percent of the foliage at one time may hinder next year's growth. Basal pruning can be conducted over multiple growing years.

If you basal prune when the tree is too small, the pruning may shock the tree and stunt leader growth for another year. If you postpone it too long, the thicker bottom branches are time-consuming and difficult to remove.

You can basal prune at any time of year, but be extra careful to avoid breaking tender new growth on branches above the base during the early stages of tree growth (May to June). Some growers basal prune in October and November to take advantage of bough markets or downtime for harvest labor crews. Be sure to check with bough market buyers before cutting and shipping. Most markets will not accept branches that have been sheared, and juvenile foliage may not have traits desired in boughs.

Basal prune the stem high enough to avoid serious defects, such as incomplete bottom whorls and crooked stems. Most growers try to keep about 10 inches between the bottom whorl and the ground for a typical 6- to 7-foot tree (Figure 10). This allows enough space to prevent the shearing knife from hitting the ground during trimming and an open area for the chain saw when you fell the trees at harvest. Consumers also appreciate a sufficient handle to easily fit the tree base into a water stand.



Figure 10. Basal pruning removes all lower branches

Trim branches flush with the stem to avoid stubs and heavy scars. Avoid trimming into the main stem as this may attract boring insects or diseases. Use hand pruners or short saws for basal pruning. Attempt to remove all live buds and branches.

Basal pruning provides several benefits besides conforming to USDA grade requirements. It defines the usable portion of the crown and helps facilitate mowing, cultivating, spraying, fertilizing, and harvesting. Additionally, the practice increases air circulation around the trees, which may help reduce some foliar diseases. Adequate handle length also improves tree shaking at harvest by allowing the tree base to slip into the shaker cone.

When evaluating the early growth of your trees, another key decision is determining if an individual will ever become a marketable tree, or should you cut your losses and remove it. Poorly formed, slow growing trees rarely improve with age, and you need to assess the worth of trying to correct deficiencies year after year.

Leader control

The leader or terminal of a tree is physiologically different than a branch. Leader trimming is used to manage tree height and density. The leader trimming practices outlined in this section apply to most Christmas tree species; species-specific leader trimming is covered later.

There is no one formula for trimming leaders. General suggestions for leader control are to:

- Maintain one dominant leader.
- Pay close attention to the number and distribution of buds along the leader; they determine future branch position and tree quality.
- Remove competing leaders when they develop.
- Delay top trimming as long as possible into a rotation. Once you begin trimming leaders, it will become a yearly and often time-consuming task.

The goal for your final product and the growth habits of individual trees will influence where and how you trim the leader. For example, growers looking for a more open tree might be content to leave leaders in the 16- to 18-inch range when the trees are small. Growers looking for a very dense tree may never allow a leader to grow longer than 12 inches.

Bud spacing and density along the leader is also variable and will influence where you trim a tree. What is the take-home message? It is important to develop your technique for your site, your seed source, and your market. Experiment with a few trees and record progress as you try different leader trimming techniques—this way, you can learn what works best for your site and market.

Generally, July through September is the time of year for trimming leaders. This is the early succulent period, when the new top growth is finishing and you can clearly see the buds on the leaders. Trimming during this window of time produces a higher percentage of erect leader growth the following season. Species-specific exceptions to this rule are discussed later.

The answer to the question “When to start?” will depend on the goal for your final product. If you are growing compact tabletop trees (3 to 5 feet), you might begin leader trimming when leaders first exceed 8 to 12 inches. With more typical 6- to 7-foot trees, you might start leader control when trees reach around 4.5 feet. For taller or more open trees, leader trimming will depend on the bud distribution along the leader and the height of the marketable tree.

Top tying

Top tying is required when leaders die or fail to develop vertically. Side branches are trained to become leaders. Top tying is one of the most time-consuming (and therefore, expensive) practices of leader control. The most common method is to affix a sturdy stick to the tree with flagging tape, twist or cables ties, and then carefully pull up the leader and train it to remain straight (Figure 11). Alternative



Figure 11. Top tying

methods for individual species are discussed later. The sticks and fasteners need to be removed by March of the following season to prevent fasteners from cutting the stem and damaging the tree.

Shearing

Shearing establishes the tree's taper (ratio of tree height to width) by trimming branches to limit their outward expansion (Figure 12). Most shearing in the PNW is done by hand using a shearing knife. A few growers use mechanical, hedge-type pruners or rotary trimming heads. Some also pick buds or succulent growth, particularly on noble and Nordmann

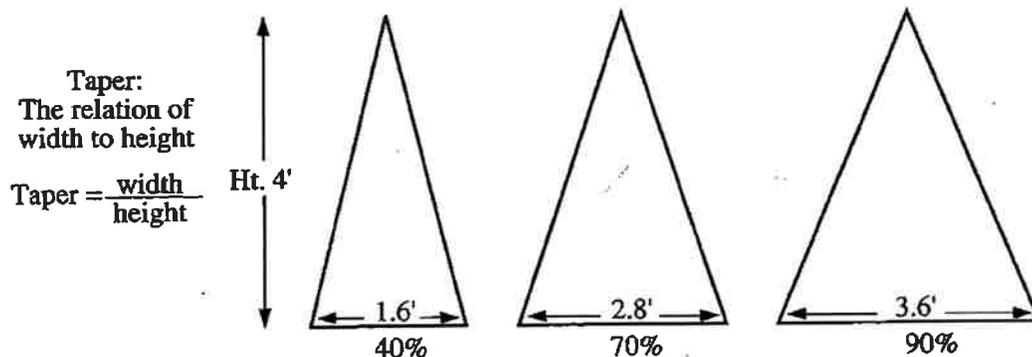


Figure 12. Taper establishes the width-to-height ratio (Image: USDA)

fir. All of these methods have the same purpose: controlling width and taper. Generally, shearing is best limited to trimming the branches that grew that season. Trimming branches from the second- or third-year growing season may be necessary, but it severely slows future branch expansion.

There are many tools and techniques growers use to shear trees. Some of the advantages and disadvantages of these tools and methods are described below.

1. **Hand snipping**, or bud or branch picking (Figure 13)—When growth is succulent (late June to early July), new growth can be broken off by hand or with a small carving knife. Some skill is needed to know how long or short to leave the remaining branch because it is still elongating.

Advantages: Produces the most natural look without the shearing lines produced by knife cutting.

If performed early in branch elongation, additional buds may form at the cut ends in some species.

Disadvantages: Time-consuming; the succulent season when it works best is short (2 to 3 weeks). Because of the time involved, some growers will use this technique only in harvest years.



Figure 13. Bud picking on Nordmann fir

2. **Hand pruning**—After new growth has elongated (July), prune with hand clippers to desired taper.

Advantages: A more natural looking tree and a longer shearing window compared to bud or branch picking.

Disadvantages: As with bud picking, it is time-consuming, and workers may be too close to trees to visualize overall taper.

3. **Knife shearing**—The shearing knife is the most common shearing tool and is used after new growth has elongated. Side shearing is best done before new growth becomes “woody” and harder to shear.

Advantages: Less expensive than other hand techniques. A knife-sheared tree can appear uniformly cut in-line or the knife can be used more selectively to cut individual branches that project outside the desired taper.

Disadvantages: Aesthetics; some buyers dislike the cut lines on needles that are produced by the knife.

4. **Machine shearing**—More common on Douglas-fir than with the true firs. Hedge-type trimmers, rotary trimming blades, and tractor-based units are available.

Advantages: Fast and fairly easy to establish the tree taper.

Disadvantage: May leave some “chattering” where branches are not cleanly cut by the blade. High initial equipment cost. Noise.

Some trees will develop blank sections, or “goose-necks,” no matter how good your shearing skills or the tool used. Lack of buds, bud mortality, and deer rubbing are common causes of open sections. Large holes become defects in grade. A number of inventive options may help fill these areas. For example, branches near a blank section can be coaxed to move up, down, or sideways. Care is needed to avoid creating another hole elsewhere. In many situations, holes may appear more pronounced if tree density is not uniform throughout the tree.

Lammas growth

Lammas growth is a late summer regrowth that occurs on some species (Douglas-fir and noble, in particular). Lammas growth is especially common

with summer rains. In essence, the buds rebreak and grow a shortened version of next year's growth (Figure 14). It is sometimes accentuated on lower-elevation plantings.



Figure 14. One whorl bud shows lammas growth (R); multiple buds show lammas growth (L).

Lammas growth has advantages and disadvantages, which arise from the fact that this growth tends to be more vigorous than non-lammas growth the following growth season. If the lammas growth is not symmetrical, it may produce a lopsided tree. Species-specific solutions for dealing with lammas growth are discussed later.

Frequently, only a few of the buds will break and produce lammas growth. In this case, try to maintain the symmetry of the tree and prevent competing tops. Your options may involve using this vigorous growth (e.g., to become a new top or trimming it back to fill blank areas).

Tree grades and standards

Height class and grade typically determine tree value. Both measures are open to misinterpretation and can become points of disagreement between a buyer and seller. The *USDA Christmas Trees Market and Shipping Point Inspection Instructions* (1992) outlines a number of height and grade definitions with illustrations that growers and buyers can review; however, this document is somewhat dated and not used by everyone. It is important that buyers and growers agree on how height and grade are measured, and that they include this information in a written understanding. For example, how

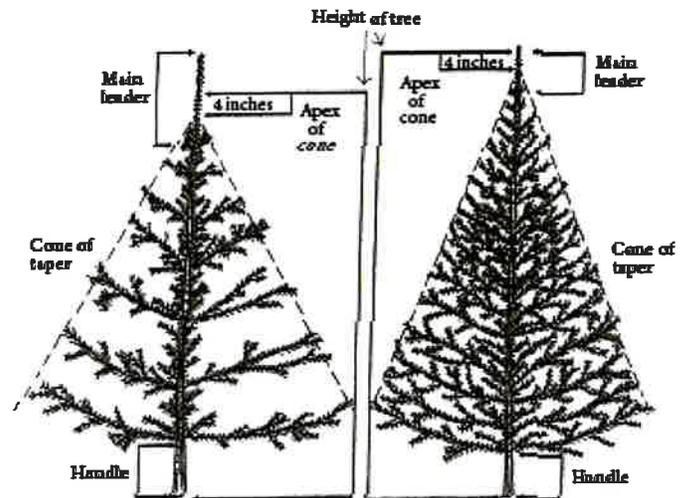


Figure 15. USDA Guidelines to measure tree height (Image: USDA)

do you determine tree height? It seems like a simple question, but there are many methods. The USDA guidelines (Figure 15) say that tree heights should be stated in 1-foot increments, but that actual heights should be recorded in ½-foot increments. So, trees from 6 feet to 6 feet 2 inches are listed as 6-foot; trees from 6 feet 3 inches to 6 feet 8 inches are listed as 6.5 foot; and trees from 6 feet 9 inches to 7 feet are recorded as 7-foot. In reality, most growers will sell trees in 1-foot increments. The tree height is frequently measured from the cut base to the point where the top whorls intersect the leader if held vertically, often called the “fold.” Some growers measure the tree height from the base to the top of a properly cut leader, while others measure the height to the fold plus 4 inches. Thus, it is important that everyone understands how height is measured prior to trimming, shipping, and billing.

Tree grade is another area where buyers and sellers need to have a clear understanding of terms. The USDA guide lists the grades as Premium, #1, and #2. To determine the tree grade, each tree is divided into vertical quarter sections called “faces.” Each face is examined for foliage density, uniformity, condition, and quality. In practice, growers will sell trees in various grade combinations; they will also develop new grades. For example, some growers add a Utility Grade between a #2 and a cull (no value). Other growers will combine Premiums and #1s into one price grouping or have a mix of #1s and #2s with a price. Still others may simply sell a particular field “as is.”

Culturing techniques have a direct impact on grade. Below are descriptions of common (but not universal) grade classes for noble fir.

- **Premium:** These are the perfect, prize-winning trees. Foliage is dark green and healthy. The tree density is usually heavy and uniform all the way to the top. None of the faces have any holes. Even in the best fields, Premium trees are rare.
- **#1:** You can have one hole (larger than a grapefruit) on one face and slightly lighter density on the top. Otherwise the tree looks like a Premium.
- **#2:** You can have two holes on two faces. Otherwise the tree is healthy, with nice color and a straight top.
- **Utility** (not a USDA Grade): A tree you would not mind in your house, if the price were low enough.
- **Cull** (no value): May actually have a cost for removal.

Seed sources: the basics

Given a choice, it is far easier to develop a quality tree with suitable genetic traits than to spend time and money correcting inherited problems. Good prospects for Christmas trees generally show dark green color, plentiful buds, upright branching, ample but not excessive growth, good form, and resistance to diseases and insects. All of these characteristics are based on traits that are at least partially inherited. That, in a nutshell, is why seed source considerations are so important. Keep in mind that seed source refers to where the seed originally was collected, not the nursery where the seedlings are grown.

The look of your final product will depend on the interaction of genetic and environmental factors that influence growth. First, select the species that will be the best fit for your site. Next, consider seed sources within that species that may have traits that best fit your needs. Genetic traits such as color, growth rate, upright branching, and bud count each have a range of heritability. These traits, the characteristics of your site, and your cultural and management practices will help determine the development of your trees.

The identification of the better seed sources within a species typically involves testing the seed

sources on multiple fields for a rotation and evaluating their performance. Outside groups (such as university researchers, Christmas tree association members, or seed orchard or nursery owners) typically do this work rather than individual growers. As a grower, your options usually will rely on someone else collecting the seed, and growing and selling the seedling. With that in mind, the list below outlines some possible options for seed and seedling selection:

- **Clones** (exact copies of the parent) are produced by grafting, planting rooted cuttings from the parent source, or replicating seed embryos. Clones are more common in the horticulture industry than in Christmas tree production, although a few Christmas tree growers plant grafted sources.
- **Full-sib cross** are controlled crosses, where both the female (cone) and male (pollen source) are known. This may be occasionally available for noble and Douglas-fir; typically, a seed orchard is part of the system.
- **Half-sib cross** are when a grower knows the source of the cones but not the pollen. This seed source can be an option with noble and Douglas-fir, but rarely with other species (Figure 16).



Figure 16. Harvesting noble fir cones at a seed orchard

- **A collection area or provenance** is the most common method for identifying, collecting, and selling seed and seedlings to growers. The size of a collection area can range from a

small stand of trees to a seed zone to a national forest, state, or country. With some collections, the elevation of the collection may also be noted.

- **Species** is when all you know is the species and nothing about where the seed was collected.

With native trees in the PNW, the most common collection designations are seed zones. These are set areas established in 1966 by foresters and other individuals in Oregon, Washington, and California. Seed zones are usually many thousands of acres in size and were established for forest seed collections as a guide for seed transfer and adaptability under forest conditions. They were replaced with species-specific collection areas for Oregon (Randall 1996) and Washington (Randall and Berrang 2002). Seed zone maps for both systems can be viewed at <http://www.forestseedlingnetwork.com/resources/seed-zone-maps.aspx>.

In Idaho, the most common designations for collections are national forests or specific collection areas, often with additional information on elevations. Grand fir and some pine species may have other breeding zones used by the U.S. Forest Service (USFS).

Christmas tree seed may come from around the globe, and different countries or regions will have their own ways of identifying collection sites. Denmark has a well-established protocol for identification and registration of collected seed. Turkey has a seed zone map similar to Oregon and Washington. Other countries or collectors often rely on naming the seed sources after a nearby city or region, and within those areas they may add a collection unit number.

Why is this important for growers? It is about determining what seed source will perform well on your farm and identifying ways to repeat success (or avoid a second failure). Consider, for example, growers west of the Cascades Mountains who wanted to try Douglas-fir seed sources imported from the east side of the Cascades. Although the trees looked fine at first, as they grew larger it was apparent that many sources were prone to a needle cast disease (*Rhobdocline*) and needed repeated fungicide applications before being sold. West side sources, however, did not show these problems. The fact that these same east-side sources performed well in

Idaho and eastern Oregon highlights the importance of understanding the interactions of site and seed source.

As a general rule, the more specifically you can describe the seed collection area, the more repeatable and consistent the growth characteristics of your future trees. Because trees will exchange most of their pollen over a small area, important inherited growth characteristics may be found only in seed collected from trees in that area.

One advantage of membership in a Christmas tree grower association is the opportunity to purchase seed or seedlings of improved sources from special group collections or orchards. Also, by talking with other growers and looking at their trees and sites, you can get an idea about what may work best for you.

When considering your seedling options from various nurseries, carefully read any description provided. For example, you may find a nursery listing “Improved or Superior Douglas-fir.” If the source was improved for timber growth, it may not be a good Christmas tree option without further testing (or asking the right questions). For example, the rapid growth valued for Douglas-fir used for timber might be too fast for Christmas trees, and a source improved for timber might lack internodal buds. Investigate each source before purchase. Many nursery catalogs will also list a USDA Plant Hardiness Zone to assist in matching species with planting regions. These are broadly useful in planning.

In conclusion:

- The species you select is critically important. If you do not match the site to an appropriate species you may be fighting diseases and other problems throughout a long rotation. Do your homework and spend time getting to know your planting site (e.g., wet areas, poor soils) and how your species selection matches with the site.
- Once you have selected the species, order early. Many nurseries are reluctant to plant trees based on the speculation that Christmas tree growers will buy them years in the future. The better sources and stock types are the first to be sold, so you should plan years ahead.

Culturing true fir

True firs are defined botanically as all species of the genus *Abies*. Douglas-fir is not a true fir, which is why its name is hyphenated. About 50 true fir species are scattered around the world. Six are native to the Pacific Northwest, and one, noble fir, comprises the bulk of the commercial true fir Christmas tree harvest in the region.

True firs comprise over half of the Christmas tree harvest in Oregon, Washington, and Idaho. Among these, noble, grand, Nordmann, and Turkish fir are the most common and are discussed in detail below. Fraser, subalpine, corkbark, Shasta, Trojan, Caanan, white, and Korean are also briefly considered.

Noble fir

Noble firs (*Abies procera*) have excellent needle retention and attractive foliage; they account for over half of the Christmas tree production in the PNW (Figure 17). Noble fir is a native of high-elevation sites in the Oregon and Washington Cascade Mountains and the coast range, from Oregon through southwest Washington. Its northern range limit is near Stevens Pass in the north-central Washington Cascades. Its southern range limit is around latitude 44° north, in southern Oregon, where noble fir hybridizes with Shasta and red fir.



Figure 17. Top examples of noble fir

Branch and needle structure are stiff and strong enough to withstand heavy snows in their natural habitat. They have characteristic, well-branched whorls with short internodal branches. Without culturing, there are open internodal spaces between whorls.

Sites where noble fir can be successfully grown are scarce. Ample rainfall (more than 45 inches annually), excellent drainage, and cooler summer temperatures are key site characteristics but are hardly a guarantee of success.

Seed sources

This important species has a long history of progeny and provenance testing, and growers continue to test new sources. There are five broad collection areas for noble fir:

- Coastal mountains in Oregon
- Willapa Hills in southwest Washington
- Cascade Mountains in Oregon
- Cascade Mountains in Washington
- Southern Oregon Cascades

Generally, the Oregon Cascade sources tend to be slower growing, bluer in color, and more layered, which sometimes translates into fewer internodal buds. The coastal sources from the mid-Oregon coast to the Willapa Hills in southwest Washington tend to grow more vigorously, have more internodal buds, and appear greener. The faster-growing coastal sources are the preferred option for most Christmas tree growers. Sources from the Washington Cascades can be fast growing but may lack internodal buds. Sources from the southern Oregon Cascades can be slow-growing and share traits with Shasta fir.

Growers have seed source options that range from individual families, orchards, stands, seed zones, or countries. Names of collection areas such as Siletz, Riley-Fanno, 053, 251, Mary's Peak, and Baw Faw Peak are well known. Growers with a long history of growing noble fir will have favorites. To review more specific progeny and provenance test results, visit the website for the Christmas tree program at the North Willamette Research and Extension Center (<http://oregonstate.edu/dept/NWREC/programs/christmas-trees>). The website includes information on testing and rankings of commonly grown PNW species.

Locating specific seed sources can be difficult, so knowing where to look is important. Nursery catalogs are obvious options. Some nurseries cater to Christmas tree growers, others to timber producers, and some to both. Another source is the PNW Christmas Tree Growers Association, which maintains seed orchards, and sells seed and seedlings as

a service to members. In nursery catalogs, noble fir will typically be listed by seed zone and elevation (in Oregon and Washington), by country where collected (in Denmark), or by referencing some of the tested source names such as RF10 (Riley Fanno tree #10). If buying seedlings, you might also encounter a reference such as “PNWCTA Orchard Run.” This simply refers to a general collection of mixed families from a seed orchard run by the PNW Christmas Tree Association.

When purchasing seed or seedlings from nurseries, ask what makes the selections “improved,” “beautiful,” or “selected.” For example, noble fir seed from Danish seed stands and orchards is often available. Keep in mind that these collections were developed from seed collected in the Cascade Mountains and transported to Denmark where landraces were developed and selected for bough production, not Christmas trees. These trees typically are quite blue, layered, and slow-growing. Bough growers might like these options, but Christmas tree producers might not.

Leader control

The correctly trimmed noble fir leader length is often age-, site-, market-, and tree-specific. The proper length will depend on your answers to these questions and the options the leader itself provides:

- What tree density and height do you or your buyers desire?
- What is the bud arrangement on the leader?
- How full is the existing tree?
- Are there any defects you need to fix or fill?
- What is the current tree height and how long until harvest?

A first task with leader control is to make sure the tree has one dominant leader. During the first years after planting, double tops or suckering branches are common. Remove these, leaving only one leader. Do this as early as possible on young trees by cutting out the competing tops flush with the stem. Considerations for selecting the best leader are length, vigor, erectness, central position, and completeness of terminal bud set. For example, if one leader has six terminal branch buds and another has only four, save the six-budded leader to ensure a balanced, six-branched top whorl the following



Figure 18. Six whorl buds on a leader

year (Figure 18). Removing multiple leaders is usually the only type of leader control required during the first 2 or 3 years after you establish a plantation. Postponing this job may cause crowding, suppression of lateral branches, and development of crooked stems because multiple leaders tend to lean away from each other.

Before describing when to begin leader control, we need to first review the common types of buds that occur along a noble fir leader. There are two general types and many shapes and sizes in between. The first type is the bubble bud (Figure 19) and the second is a standing, or petioled, bud (Figure 20). The bubble bud is smaller and usually does not have needles surrounding it. The standing bud typically has needles that surround it and can be relatively large.

Remember, the current year’s buds become next year’s branches and leaders. Unlike pines and some spruces, additional buds do not develop when



Figure 19. Bubble bud beneath clipper on noble fir



Figure 20. A standing or petioled bud on noble fir

trimming noble fir leaders. So you need to visualize the tree's development as you consider where and how to trim. The ideal situation for leader pruning is to locate a uniformly spaced internodal bud cluster (these buds will be next year's "false whorl" branches) just below a single bubble bud at 12 to 16 inches above last year's top (Figure 21). Cut just above the bud (Figure 22).

This textbook approach, however, will not always be available, so you may need to find the next best solution. It is important to keep in mind your goal in leader trimming: to create a natural looking top. A natural top is one with a single erect leader surrounded below by a symmetrical whorl of four to six branches. In leader pruning, you are also trying to increase tree density by slowing the tree's upward growth.

Growers have various opinions about the proper length to cut leaders, partly because of differences in the type of final product desired and partly because of the wide range of sites where trees are grown. For example, growers looking for a more open tree might be content to leave leaders in the 16- to 18-inch range when the trees are small. Growers looking for a very dense tree may never allow a leader longer than 12 inches. Likewise, growers targeting an 8- to 12-foot final tree can allow for longer leaders during this early development period.

What is the take-home message? It is important to develop your technique for your site and market. Experiment with a few trees and record progress as you try different shearing techniques; this way you can learn during the first rotation. Also, keep in mind that each tree will have a different distribution of buds along a leader, which will influence the final leader length for cutting. Poorly budded leaders will need to be kept shorter. Leaders with ample, well-distributed buds give growers more trimming options.

Method and time of year

A number of trials with noble fir have reviewed the ideal time for trimming leaders. Timing can vary by site, but trimming generally works consistently well from July to August, when new leader growth has just completed and you can clearly see the buds. Trimming during these summer months produces a higher percentage of erect leaders the following year. The longer you delay leader pruning, the more



Figure 21. A nice set up for next year's top

Figure 22. The proper trimming method

leaders you will have to tie up the following growing season—and the more branchlike they will appear. It is still critical to perform leader trimming even if you miss this window, but expect to tie up more of the leaders. Make the cut above the selected bud with the trimming angle leading away from the bud (Figure 22). This keeps the pitch from covering the bud. At the same time, remove any additional buds within 1 to 2 inches of the bud you select as the new top. This reduces the number of potential competing leaders the following growth season. Keep in mind what is happening from the tree's perspective: You have just trimmed off the intended terminal bud set. Like all conifer trees, noble fir has rapid height growth, and a terminal bud set assists that process. By isolating a single bud early in the growing season, the tree can make the physiological and hormonal changes needed to create a new terminal from the selected bud. In using this method and timing, you are increasing the likelihood that the bud you selected will be the new top. It may not be perfectly straight, but it has a good chance.

Often, buds are not in a perfect position or well distributed. Trimming options generally occur within a 4-inch space along a leader; you make decisions on bud selection within that space.

Replacing lost leaders

Abortion of the center bud on the tip of the leader is a frequent and troublesome problem on noble fir. Also, during the succulent growth stage (May to July), birds or equipment can break off existing leaders. Whenever a leader is broken off near its base

or fails to develop, serious deformity problems result unless you take prompt remedial action. There are several solutions, depending on tree age and other situations.

Nonharvest year. There are two methods for replacing lost leaders on younger trees: bud forcing or encouraging a branch to become the leader. No solution is perfect, but timely remedial action can mean the difference between a saleable tree and a cull.

Bud forcing develops the most natural top but is the slowest method of reforming a top, and sometimes new tops do not develop. Bud forcing works well if small buds or sprouts are beginning to show where the top leader bud aborted or broke off. To force a new leader, trim back each branch on the top whorl to about 50 percent of its length. When trimming, make sure at least one or two buds remain on each branch stub to keep it alive and balanced. This trimming will stimulate the growth of the leader buds; often multiple leaders will sprout. Retain the best leader and trim out all others at the base (Figure 23).



Figure 23. Forcing a terminal bud

Tying up a branch to become the leader is a second method of reforming a top. If one branch has moved into a more vertical position and appears to be forming a terminal bud cluster, you can select it as the new top and secure it with a splint to force the branch into the new upright position (Figure 24). Trimming the outermost buds on the branches that do not turn up further promotes the branch to act like a new leader. When none of the branches seem



Figure 24. Reposition the leader to be straight



Figure 25. Creating a new leader

to “want” to form a new leader, you can force a branch into the leader position. One method is to select two branches that are directly opposite each other. Draw them together into the vertical position. Bind them tightly together near their bases and their tops with wraps of plastic flagging (Figure 25). After several months, when they have set in a vertical position, remove the flagging, select the best leader, and remove the other. The leader formed by an upturned branch tends to produce a two-sided, branchlike internode the following year, so keep the new leader a bit shorter than you might otherwise. Encouraging a nodal or internodal branch to become the leader often produces an asymmetrical top.

Harvest year. Most buyers will demand a single erect leader cut to a proper length. In the harvest year, there is no time to force a new leader from a latent bud, as you would with younger trees. Also, it is not important that the new leader have good bud set since the tree is being harvested. Therefore, in the harvest year, a branch from the top whorl can be turned up and forced to replace a missing leader. Select the whorl branch that would cause the least disruption to the shape of the tree. This will become the new top. Next, turn up and secure the branch. It is important to use a firm splint to force the new leader into place. Accomplishing this task while the branches are pliable (June to mid-September) will minimize the difficulty in achieving a straight leader.

Secure the new leader at three places along the splint: bottom, middle, and top. Unless you do this,

Table 1. Yearly noble fir cultural guide

Tree age (years)	Tree height (average)	Leader length (average)	Taper (%)	Culturing goals/activities
1-2	10"-1.5'	uncut	50	Establish single leader
3	1.5-2.5'	uncut	50	Side shear/basal prune
4	2.5-3.5'	14"	50-60	Build structure/basal prune
5	3.5-4.5'	14"	60	Build density
6	4-5.5'	12"	60	Build density
7	6.5'	10-12"	60	Market shear/harvest
8	7.5'	10-12"	60	Market shear/harvest
9	8'	10-12"	60	Market shear/harvest

the branch will continue to behave like a branch. Occasionally, you may need to move this top branch in two steps to avoid breaking it. The splint should remain in place for about 2 months.

For yearly cultural targets for a typical 6- to 7-foot noble fir, see Table 1.

Shearing

Shearing is often conducted a year or two before most leaders needs trimming. This will keep noble fir from becoming overly wide.

As trees reach about 3 feet in height, strive for 50 to 55 percent taper. In some trees shearing can begin 2 years following planting. Once a tree has been sheared, it will likely need it each year. As a general consideration, it is much easier to allow a narrow tree to widen out than to take an overly wide tree and try and reduce the taper.

In nonharvest years, most growers shear trees with a knife. The shearing angle and taper will be determined from the top of the leader to the base. Some growers like to set the terminal length first and then shear following the taper. Others will make an informed guess about where the top of the tree will be and trim accordingly. A shearing knife is not the only tool. Growers looking for a more "natural" tree will use bud picking or plucking techniques, or use hand-trimming tools. Be aware that bud picking has a narrow time window of perhaps only 2 weeks when the growth is quite succulent. In progressive shearing years, the tree taper can gradually widen to resemble the one desired at harvest.

During the harvest year, shearing and leader trimming should be conducted differently. For example, in leader pruning, only straightness and

length are important. So if the existing leader is straight but too long, cut the leader to provide proportion for the desired taper.

Here is a rough rule of thumb: Cut the top slightly above the apex of the cone formed by the crown of the tree. Before you cut, ask your buyers what leader length and taper they might prefer.

Shearing or bud picking is also best done early to allow branch ends time to heal and darken. Some growers are careful in the harvest year to produce a more natural looking branch structure. Bud picking or very light knife shearing can be used to produce this lighter touch.

Lammas growth

Lammas growth is common on noble fir. Buds on the top, sides, or both can regrow. How you deal with lammas growth depends on the situation.

A common situation is when two to three of the five terminal branch buds break and elongate. If these branches grow strongly vertical and appear to form competing leaders, one solution is to nip back these lammas branches by removing their outer bud(s). If left untrimmed, the lammas buds likely will overtake the terminal bud during the next growing season, creating an unbalanced, multi-topped tree. If the lammas branches do not grow vertically, they likely will remain branches next season and can remain untrimmed.

Another situation is when all the nodal buds and the terminal bud become lammas. In this case, you can leave these to grow next season, as long as the tree still looks in proportion. Some growers have found it best to work with lammas growth in the dormant season (January to March). Since

lammas growth is so vigorous, it becomes a predictable option in reestablishing a leader. Leaving the lammas bud uncut and gently tying it into a vertical position (Figure 26) will predictably form your new leader. In cutting lammas growth, try to identify the small buds on the lammas branch. Try to leave at least two buds along the growth, otherwise you may



Figure 26. Lammas growth positioned to become a new leader

end up with a branch without any buds to form new branches.

Grand fir

Grand fir (*Abies grandis*) grows naturally in western and eastern Oregon and Washington, and northern Idaho. It is also found in southern British Columbia, northwestern California, and western Montana.

Grand fir, like Douglas-fir, has many racial variations over its wide geographic range. Heritable differences include growth rate, disease resistance, needle retention, needle form, needle color, and other characteristics important to Christmas tree growers. Some experts divide the species into a coastal variety (*var. grandis*) west of the Cascades Mountains and an interior variety (*var. idahoensis*) east of the Cascade Mountains. In the southern portion of the coastal variety's range, grand fir also hybridizes with concolor (white) fir; the resulting progeny is called grandicolor. The westside varieties usually have needles arranged in two single, flat rows on the twig. Some interior varieties have two double rows on each twig, and the needles spread upward slightly, like a noble fir.



Figure 27. Grand fir

Although grand firs from suitable seed origins make beautiful Christmas trees (Figure 27), broad market demand has declined in western Oregon and Washington. For many Idaho and eastern Oregon producers, it is the most commonly grown tree.

Seed sources

Despite many decades of growing grand fir, there are very few provenance tests to guide selection of seed sources. The last detailed test from 1979 evaluated 22 seed collection areas on four sites. Those tests (Douglas 1984) developed the following rankings based on equally ranked scores for vigor, branch form, disease resistance, color, needle form, aphid damage, and late flushing:

1. Seed sources from the Clearwater River drainage east of Grangerville, Idaho
2. Seed sources from western Montana, near Missoula and Hamilton
3. Seed sources from north of the Blue Mountains in southeast Washington, near Pomeray
4. Seed sources from the Mid-Columbia area, near White Salmon Washington and Mosier in Oregon

There are no Christmas tree seed orchards of tested grand fir, though the Inland Empire Christmas Tree Association (see Additional Resources, page 30) will occasionally offer seedlings from a seed stand in Sand Point, Idaho. Many nursery listings will show the seed zone number or a collection region such as Clearwater, Idaho.

Leader control

Grand fir is a vigorous grower and often will produce multiple leaders once you begin to cut tops. Grand fir is better than noble in replacing missing leaders and frequently develops many new tops on its own. Buds along the leaders tend to be ample and not as differentiated as noble. Because of this growth habit, some growers prefer to delay trimming grand fir tops until the fall following side shearing. Here the process is to shear trees while leaving the leaders intact. This delay avoids creating multiple tops that develop with earlier leader cutting. In either system, it is useful to remove the tips of competing leaders early to avoid trimming out competing leaders later.

To develop the typical-sized harvest trees, growers begin leader pruning as trees exceed 4 feet in height, cutting the leader to around 14 inches. Consider this a maximum length. If the tree is sparsely budded or has holes without branches, a shorter leader is preferred. In successive years, trim the leader to 11 to 14 inches. Grand fir can be cultured like noble (Table 1, page 15) or Douglas-fir (Table 5, page 24), depending on the desired “look.” Grand develops approximately 2 years sooner than noble.

When you cut tops, cut the top so that a specific bud is isolated to become a new top, as with noble fir. With grand fir, it usually is not necessary to pick a bud cluster to form a top whorl; ample buds are usually present along leaders.

There are additional techniques to help improve tree quality. One is to reduce the leader length to 7 to 10 inches in the year before harvest. This reduces the amount of open area near the top of the tree. In the harvest year, cut the leader to a length conforming to the general taper of the tree.

Shearing

Side shearing grand fir often begins early in the yearly growing season, as it tends to harden off before noble and is not prone to a second flush of lammis growth. The first part of July is generally when shearing starts in the Willamette Valley. In eastern Washington and Idaho, shearing typically begins in late July and the first part of August. Later or dormant shearing is also acceptable with grand fir, but the job is slightly more difficult after the new wood begins to harden. Many producers find that grand fir can easily become too wide. One solution

is to maintain the tree in a narrow profile early in a rotation and gradually let it widen. It is difficult to slim down an overly wide grand fir late in a rotation, so it is best to keep the taper narrow from the beginning.

Grand fir can look like Douglas-fir or noble, depending on how it is cultured. The important difference will be determined by how much branch definition is allowed and how long the leader remains. Typically, growers try for some sort of intermediate appearance, with a density similar to Douglas-fir.

Grand fir side shearing often begins in the second year after planting, and it may precede leader pruning by a year or two. Many growers begin side shearing after the trees width exceeds a 50 percent taper. Once you begin side shearing, continue it every year. Maintain a taper of around 50 percent until a year or two before harvest. At that point, you can allow the tree to fill out toward the final 60 to 70 percent taper that most consumers prefer. Consult potential buyers before shearing, if possible.

Turkish fir

Turkish fir (*Abies bornmuelleriana*) grows in native stands in Turkey (Figure 28, page 18). Other common names used for Turkish fir include Bornmullers or Uludag fir. Turkish fir seed for Christmas tree production has been imported into Oregon since 1966. Landscape and specimen trees in arboretum sites have been in the U.S. for much longer. It is a newer species in the marketplace, and acceptance of it is increasing.

Among botanists, there is some debate regarding the botanical relationship of Turkish, Nordmann, and Trojan fir. For purposes of this publication they are treated as separate species.

Generally, Turkish fir grows at about the same rate as noble fir, but there can be large differences in growth rates among the range of sites where the two might be grown. The needle form of Turkish fir tends to be finer and more like a bottlebrush relative to Nordmann. Turkish fir also has a small waxy stripe on the upward tip of the needle. Despite these differences, it can still be difficult to tell Turkish and Nordmann fir apart. Both deer and rabbits will seek out Turkish and Nordmann fir to browse and rub (deer), and chew and cut off stems and branches



Figure 28. Natural distribution of *Abies* sp.—Trojan fir (purple), Turkish fir (green), and Nordmann fir (blue)

(rabbits). Keepability is excellent if the tree is displayed in water-filled stands, though a few individual trees have shown rapid needle drop.

Seed sources

Seed is primarily imported from wild stands in Turkey. Currently there is one small seed orchard in Springfield, Oregon, a producing orchard in Denmark (Kongsoe FP 267), along with a few seed collection sites scattered around the U.S. Testing of seed sources is ongoing. Turkish provenances or collection regions that have performed well in the PNW include Bolu and Adapazari. The Turkish Forest Service has numbered collection areas for wild stands, similar to our seed zones in the PNW. Stands that have been included in provenance tests include 216, 218, 219, 221, and 225. (For more information, see <http://oregonstate.edu/dept/NWREC/programs/christmas-trees>.) Studies of these collections suggest that stands 218, 219, and 221 perform well. Remember that this testing is just beginning and not all stands have been part of a test. Provenance and progeny tests suggest the species generally breaks bud earlier than noble fir and Nordmann, so beware of planting in frost-prone sites.

Leader control and shearing

See Nordmann fir.

Nordmann fir

The natural distribution of Nordmann fir (*Abies nordmanniana*) is shown in Figure 28. This species is the common Christmas tree of Europe, where Denmark and Germany are the major producing countries and have a long history of testing and seed production. Some nursery catalogs will use the common name as Caucasian fir. Producers often lump Nordmann and Turkish fir together (usually as Nordmann) because the two species can be difficult to tell apart. As a general rule, the foliage on Nordmann fir is held a bit flatter on the branch; its needle tips are also flatter compared to Turkish fir. In the PNW, Nordmann grows more slowly than noble, by a year or two. Its growth rate is notably slow for the first two years following planting. As with Turkish fir, deer and rabbits seem to be attracted to Nordmann fir. Tree keepability after harvest is high overall with some poor individual trees. It is a newer species in the U.S. marketplace, and acceptance for it is increasing (Figure 29, page 19).

Photo: Judy Kowalski



Figure 29. Nordmann fir is the common Christmas tree of Europe and its acceptance in the U.S. is increasing.

Seed sources

The wild stands for this species run along the Caucasus Mountains on the east side of the Black Sea, from Turkey to southern Russia and through Georgia. Denmark has been growing the species for many decades and now has some landrace seed stands and seed orchards where collections are made. The best-known provenance sources are from Georgia in the Borshomi and Ambrolauri/Tlugi regions. Provenance and progeny testing is ongoing. Sources from the Savsat region of Turkey have performed poorly in two PNW trials.

Seed orchards are just beginning in the PNW, with a small site in Dallas, Oregon and others just established in the Willamette Valley.

Leader control

Both Turkish and Nordmann fir are good at developing new or replacing damaged tops with little help from the grower (Figure 30, right; Figure 31, page 20); many growers simply wait for the tree to produce new tops on its own. Given the tendency of both species to provide a leader, many of the upper whorl branches turn up if a leader is damaged,

resulting in competing leaders and upturned branches. In some cases, these whorl branches will turn up even without trimming the top. Some growers will lightly nip the end buds to minimize these upturning branches. New leaders often form near the old terminal or from lower branches. On occasion, sticks are used to straighten crooked tops or tie up new leaders.

Both Turkish and Nordmann fir tend to grow slowly for the first few years and then begin rapid leader growth. This makes it challenging to achieve uniform density from top to bottom, especially in the area of the top two or three whorls. One solution for filling in this crown area is to trim the top leader very short (approximately 8 inches) a year ahead of harvest. This allows more time for the top to fill in.

When growers start leader pruning, they generally follow the strategy for leader control for noble fir. That is, they cut the leader at an isolated bud at the proper height. Buds on Turkish and Nordmann are seldom as differentiated as with noble, and lammas growth is quite rare.

Over the past decade, many trials using plant growth regulators applied to elongating leaders have



Figure 30. Arrows indicate two competing leaders on a Nordmann fir



Figure 31. Keeping the best leader on a Nordmann fir

been conducted on both Nordmann and Turkish fir. At the proper rates and timing, growth regulators can reduce leader growth by 30 percent and forestall trimming of leaders that become too long. NAA (Ethyl 1-naphthaleneacetate) has been the preferred product for this purpose, but product registration has been slow to develop.

Shearing

Since Turkish and Nordmann fir tend to grow slowly the first few years following planting, trees can appear overly dense and wide in the lower portion of the tree. Growers have experimented with side shearing with a knife as soon the tree starts vigorous growth (years 2 to 3) and keeping the young trees at a 50 percent taper (or less) during the preharvest years, with gradual widening closer to harvest. Thus, side shearing often precedes leader control by 1 to 2 years. In-pointing branches frequently develop and need hand trimming (Figure 32). Unlike grand and noble fir, Nordmann and Turkish fir have a high percentage of buds that form on the



Figure 32. Removing in-pointing branches

outer 50 percent of the branch rather than being equally distributed along the branch. Given this trait, it is important to begin side shearing early in a rotation and not allow trees to become too wide too early. If shearing involves trimming into older branches, it will take time for these areas to fill from existing interior buds. Turkish and Nordmann fir may also be sheared early in the shearing season, even before grand fir.

In Denmark, and with some PNW growers, bud picking is the preferred cultural practice. A typical strategy is to allow the trees to grow freely until they reach 3 to 4 feet tall. Then, the year they reach that height, bud pick all the center buds and growth tips in the whorl branches from the top to the base when the new growth is still elongating. In subsequent growth years, bud pick the top whorls only (unless others become too wide).

Fraser fir

Fraser fir (*Abies fraseri*) from the southern Appalachian Mountains is a popular and attractive Christmas tree of the eastern United States. It grows well in the Appalachian Mountains and is accustomed to summer rainfall. In the PNW it is frequently prone to damage by the balsam woolly adelgid, and (for better production) it often requires summer irrigation or cultivation on sites with mild summer temperatures and high rainfall.

Seed sources

No progeny test of sources have been conducted in the PNW to determine which sources may (or

may not) be better adapted to local conditions. Extensive testing in North Carolina has shown large family differences, yet there is little to suggest that any of these families would perform well in the PNW. Interestingly, in North Carolina, the Roan Mountain source is the provenance most commonly collected, yet other provenances (e.g., Balsam Mountain and Black Mountain) have better height growth and bud set. Collection areas and opportunities for wild collections are limited.

Leader control

Fraser fir, like grand fir, tends to have good bud development along the leaders. Extensive culturing trials in North Carolina have identified conventional and accelerated culturing options. In the conventional approach, leaders typically remain uncut until the third growth season (unless they exceed 12 inches). In the third growth year, leader height is maintained between 8 to 12 inches. In a more tree-specific, accelerated program, leader length starts out longer but progressively declines as harvest approaches (Table 2).

Table 2. Accelerated leader control program for Fraser fir (Owen, 2009)

Tree age (in years)	Leader length (in inches)
3–4	14–18
5–6	12–14
7 to harvest	10–12

As with other true firs, you should delay leader trimming as long as possible in the rotation. Once you start, you likely will need to cut tops annually as well as remove competing leaders.

Delaying leader trimming until late August reduces the incidence of upturned branches and multiple leader formation. In bud selection, isolating an individual bud in summer works well. As with noble fir, removing buds within an inch or so below the selected bud will help minimize competing leaders. If bud selection is delayed into fall, the larger buds develop better leaders the next season than the smaller buds. Bud response is also improved with irrigation or adequate rainfall.

Shearing

Following the conventional culturing option described above, lateral shearing maintains the

growth between 4 to 6 inches yearly through harvest. Under the accelerated approach, laterals are cut progressively shorter as harvest approaches (Table 3). The preferred shearing times are summer and spring (prior to bud break). Try to avoid fall and winter shearing as this causes reduced growth the following season.

Table 3. Accelerated lateral shearing program for Fraser fir

Tree age (in years)	Lateral length (in inches)
1–2	laterals are not cut
3–4	7–9
5–6 to harvest	6–7
7 to harvest	5–6

PNW Fraser fir growers have found it harder to adjust the width of the trees, so growers tend to let them maintain a wider taper throughout the rotation.

Subalpine and corkbark

Subalpine fir (*Abies lasiocarpa*) have been grown for years in small quantities. These are generally considered the same species, with corkbark listed as a variety. Subalpine is widely distributed, ranging from Arizona and New Mexico to the Yukon, Alaska, and the higher elevations of the Cascades and Olympic Mountains. Corkbark is native to southern Colorado, New Mexico, and Arizona. Norway is likely the largest current producer of subalpine and corkbark Christmas trees, and both are gaining in popularity with Idaho producers. Irrigation may be needed to increase growth if growing on dryer sites.

The corkbark variety (var. *arizonica*) often has a unique gray-blue color (Figure 33, page 22). Both subalpine and corkbark are prone to frost damage and multiple top formation, especially if grown in the Willamette Valley. Growers in colder areas in northern Idaho and northeast Oregon have better success with this species.

Seed sources

Subalpine from the Kaibab, Uncompahgre, Dixie, and Cibola National Forests are a suggested source for Idaho. Recommended sources of corkbark are from the Apache, Coconino, and Gila National Forests. For more information see *Growing Corkbark*



Figure 33. Small corkbark fir

fir and Subalpine Fir for Nursery Production (PNW 645).

Leader control

A common issue with both subalpine and cork-bark are multiple or absent tops. Most plantation sites tend to be much warmer than native, high-elevation locations. When temperatures turn warm, this species may start leader growth, but trees are then damaged when low temperatures return. With multiple tops, hand prune and select the best leader while removing others. If the terminal fails to grow, select a branch that appears to want to become a new leader and tie it upright using a splint, or force new buds to develop.

Shearing

This species seems to grow narrow naturally, so bud picking or light hand-clipper pruning is often preferred over knife shearing. Fungal damage to new shoots possibly caused by *Delphinella* sp. has been a problem in some locations.

Shasta fir

Shasta fir (*Abies magnifica* and var. *shastensis*) is a native of high elevation sites in the Cascades and Siskiyou Mountains of southern Oregon and northern California. It is a transition species between

noble fir and California red fir. Shasta fir hybridizes with noble fir and California red fir where their ranges overlap near the McKenzie River in Oregon. Needles of noble fir are generally considered more durable than those of Shasta fir. Shasta fir develops a narrower, more self-shaping crown than noble fir, often with distinct whorls.

Seed sources

There has been limited testing of Shasta fir. In one test, the best Shasta fir seed origin among those tested were from the Siskiyou Mountains south and west of Grants Pass, Oregon (Douglass 1983). Shasta is resistant to current season needle necrosis but prone to needle loss if fumigated prior to shipping.

Culturing

Leader control and shearing follow noble fir strategies.

Trojan fir

Trojan fir (*Abies equi-trojani*) is native to Turkey (Figure 28, page 18) in dryer lower elevation sites near the Aegean Sea. It is sometimes referred to as Kazdagi fir. Little is known about Trojan fir prospects in the PNW. The foliage is quite densely layered, and in a few trials the species grew faster than Turkish fir. In a progeny test established in 2013, some Trojan fir families tended to break bud prior to Turkish fir.

Canaan fir

There are debates about the taxonomy of Fraser, balsam, and Canaan fir (*Abies balsamea* var. *phanerolepis*). Suffice it to say that this variety has traits of both the Fraser and balsam, and grows naturally in isolated pockets in Virginia and West Virginia. The tree takes its common name from the Canaan Valley of West Virginia and is also referred to as West Virginia balsam.

Seed sources

While there are seed orchards with improved sources for post harvest quality, production of this species in the PNW has been spotty due to low demand and concerns over needle shedding in early production trials. The attraction of this species for some growers has been the trees' ability to tolerate wetter soils than other true firs.

Culturing

Typically, growers follow the model for Fraser fir when growing this variety. However, individual trees may exhibit traits of Fraser or balsam fir. Fraser fir tends to have short needles and horizontal branches. Balsam has longer needles and near-vertical branching near the top. With the Fraser-like trees, vertical branches near the top are removed. In the balsam types, only the most vigorous and vertical branches are completely removed, while most will have their terminal buds trimmed.

White fir

White fir (*Abies concolor*) has a wide distribution, and variation between locations can be large. For that reason the species is subdivided into two geographic varieties that separate the California and PNW types (var. *lowinana*) and Rocky Mountain (var. *concolor*) types. The species generally has a lovely gray-blue color, long needles, and a pleasant citrus smell. Grower experience in the Willamette Valley suggests the species tends to be a magnet for disease problems such as branch cankers. The species is popular in Idaho and in eastern Oregon and Washington.

Seed sources

There has been limited testing of White fir, but provenance tests in Idaho (White) provide a broad ranking of collections from national forests in New Mexico and Arizona (Table 4).

Table 4. Seed source ranking for white fir (White)

Most recommended	Rio Grande (NM)
	Sante Fe (NM)
	Cibola (NM)
	Kaibab (AZ)
Least recommended	Lincoln (NM)

In separate needle retention trials in Pennsylvania (Bates 2004), the Sante Fe and Rio Grande were best, Lincoln was intermediate, and Apache was poor. There are also a number of horticultural varieties of white fir used in landscape plantings.

Culturing

The challenge on many sites is frost injury to leaders causing either dead leader buds or multiple

short replacement leaders. Shearing and leader control is similar to that described for grand fir, its close relative.

Korean fir

Korean fir (*Abies koreana*), as the name suggests, is native to the Korean peninsula. It is a minor species in the PNW, with attractive, short-needled foliage. It tends to grow wide early and may have premature cones. There are a number of horticultural varieties, and interest in hybrid crosses with species like Fraser and subalpine fir is growing, but the establishment of this species is far from operational (Cregg, 2013).

Seed sources and culturing

Little is known about specific seed source or cultural techniques.

Other true fir species

A number of other fir species have been grown in the PNW in addition to the ones described above. There is a certain attraction to being the first to grow a new species, but proceed cautiously. Most new introductions are unsuccessful, and it is likely someone has tried it before. Keep in mind that even if you successfully grow a new species, you also need to sell them. Growing the trees and finding a market for them are both challenging steps. If you try a new species, be sure to collect as much information as possible about the seed source (e.g., collection area and elevation) and the common and scientific names of everything you plant so you can repeat success (or avoid a second failure).

Culturing Douglas-fir

Douglas-fir (*Pseudotsuga manziesii*) accounts for about half of the Christmas tree production in the PNW. Before 1960, virtually the entire harvest of Douglas-fir was from unsharpened stands on sites where trees grew slowly. This slow growth resulted in generally well-proportioned “natural” trees.

During the 1960s and 1970s, growers learned how to culture Douglas-fir, and production began in plantations across the PNW. By trimming back the leaders and lateral branch tips, growers controlled and directed tree growth to improve tree shape, taper, and density.

Table 5. Yearly Douglas-fir cultural guide

Tree age (years)	Tree height (average)	Leader length (average)	Taper (%)	Culturing goals/activities
1–2	1–2 ft	uncut	50	Establish single leader
3	3–5 ft	cut at 4.5 ft	50	Build structure/basal prune
4	5.5 ft	12 in	50–60	Build density
5	6.5 ft	8–12 in	60	Build density
6	7.5 ft	8–12 in	60	Market shear/harvest
7	7.5–8 ft	8–12 in	60	Market shear/harvest

In native stands, the species is widely distributed and often broken into two varieties: coastal (var. *menziesii*) and Rocky Mountain (var. *glauca*). The Cascades and the Rocky Mountains generally separate the two varieties. Douglas-fir is grown in many locations in the United States and accounts for about 20 percent of the national harvest.

Seed sources

Tests have been ongoing over many years on this important Christmas tree (and timber) species. Seed and seedling purchasers often have a wide variety of options.

One seed collection consideration suggests that PNW growers on the westside of the Cascades should only purchase seed originating from west of the Cascades (var. *menziesii*). Many of the sources from east of the Cascades have shown high susceptibility to foliage disease problems such as Rhabdocline needle cast. Growers in Idaho and eastern Oregon generally can select either variety.

There are two Douglas-fir seed orchards in the PNW that have a Christmas tree focus. As with noble, growers have a wide range of preferences about seed source selection. Christmas tree growers have options ranging from individual families, orchards, and collection areas. Collection areas that have been popular with Christmas tree growers include sites in the Willamette Valley (coastal foothills), Washington (Lake Cushman), and British Columbia (Texada Island and Powell River).

As with noble fir, progeny testing is ongoing. The latest selections can be found on the North Willamette Research and Extension Center website (<http://oregonstate.edu/dept/NWREC/programs/christmas-trees>) or by talking with nursery owners.

When ordering trees through nursery catalogs, be careful to note that in many cases Douglas-fir may be listed as improved for timber growing (i.e., rapid growth). Rapid growth often (but not always) will not be a good choice for Christmas tree purposes. Important traits for Christmas trees include high branch and bud numbers, dark green color, moderate growth, and upright branching. Prior to ordering, carefully investigate your options. Nursery catalogs typically list seed zones and elevations (in Oregon and Washington) or collection areas in British Columbia (e.g., Powell River, Texada Island). If the seed originates from a Christmas tree seed orchard, it may have a family name such as Ramsby, Val 3, Texada 138, 135, or Orchard Run (Figure 34). Orchard Run typically indicates a seed mix of all cone-producing families in the collection year mixed together. Christmas tree orchards for the Rocky Mountain varieties are in the establishment stages.



Figure 34. Progeny test examples Val 3 (center) and Texada 138 (right)

Leader control

Unlike true firs, one of the challenges with Douglas-fir is minimizing the formation of multiple leaders. Douglas-fir is the fastest growing of the species commonly grown in the PNW, and leader control and shearing often are done concurrently. Side shearing typically begins a year or two before leaders are trimmed. The proper year to begin either leader control or shearing is determined by tree growth, not tree age. Some trees are likely to be ready to start leader pruning the same year that you begin side shearing. However, most trees will not be ready for leader control until the following year.

Growers have devised numerous techniques for developing sheared trees. The standard method (Table 5, page 24) and the progressive method will be discussed here.

In the standard method, trim the leader back to around 4.5 feet in the year when growth exceeds this height. Where you cut will depend on where buds are located on the leader. Generally, trim back to a single bud on a single leader. Exactly where you trim the leader will depend on your site and the density and position of buds along the leader. With ample buds, leaders can remain longer.

If you want trees either taller or shorter than the 6.5- to 7.5-foot average, plan a corresponding increase or decrease in sheared tree height after the first year's shearing. After the first year's leader pruning, maintain an annual pruned leader length of about 12 inches each year until harvest.

Another shearing method, called progressive shearing, shortens the leader progressively in the following way:

1. Defer leader pruning until leader length first exceeds 20 inches.
2. Prune the leader back to about 20 inches.
3. Every year thereafter, shorten the leader by about 4 inches to a minimum leader length of 12 inches.

Thus, the leader is progressively shortened each year from 20 inches the first year, to 16 inches the third year, and to 12 inches every year thereafter, until the tree is ready to harvest.

The principle of both the progressive and standard method of leader shearing is to maintain



Photo: Barney Douglas

Figure 35. Multiple leaders on Douglas-fir

relatively wide internodal spacing near the base of the tree, where you can anticipate several years of growth to fill in the open spaces. At the same time, maintain progressively shorter spacing toward the top to develop uniform density from top to bottom.

Multiple leaders

Multiple leaders develop as the tree becomes larger and more vigorous (Figure 35). Typically, the first and second leader pruning is a simple operation because it merely shortens a single, natural leader. The third and fourth leader pruning, however, often involves problems and difficult choices where multiple leaders and possibly some heavy suckers have developed. When selecting the leader to keep, the best one to save is normally the lowest one on the stem. Completely removing its competitors higher on the stem prevents short, heavy, upright stubs. It also gives the top of the tree a more natural appearance.

You can minimize multiple leaders in one of three ways:



Figure 36. The gap between buds minimizes multiple leaders.

1. Leave a gap of an inch or two between a lone bud on the leader and the next bud below it. This will encourage a single upright leader to form the next season, or at least minimize the number of competing tops (Figure 36).
2. Trim the leader during its late succulent stage, about mid-July. The retained bud near the top of the leader stub will gradually develop a more upright position during the course of the growing season. This encourages more upright growth of the new leader and improves its resistance to bird and wind breakage while succulent.
3. Shear the top portion of the tree, except the desired leader, during the late succulent stage in July. This encourages dominance and upright growth of the single retained leader. Shorten the leader to the desired length once it has assumed a normal vertical form later in the summer.

Suckers sometimes form from unsheared, internodal branches below the main leader, and they may be more vigorous than the leader you select. Merely shortening their tips, instead of completely removing them, forms a heavy unattractive stub. Solutions will depend on the situation. Often, these suckers should be removed completely. In some instances, a sucker may be more upright and centrally located than the true leader. In this case, you can trim off the true leader and use the sucker as the new top.

Leader straightening

Next year's leader, arising from the top bud of a pruned leader, does not always grow erect at first. It may have a noticeable offset, called a dogleg, where the top bud turns upward to form a new leader. This condition should not cause alarm before the harvest year. Bent or crooked leaders usually either straighten themselves or are hidden by new growth.

Doglegs, however, may cause noticeable top defects on trees ready for harvest, unless you take corrective action when the trees receive their final shearing. You can often deal with doglegs by tying them tightly with plastic ribbon against a splint to straighten the leader. Sometimes a doglegged leader is too rigid to straighten. In this case, cut it off and tie a flexible internodal branch below it to a vertical position by the same method. You can also use this procedure to replace a leader too high on the tree for good proportion and density, or to replace a leader broken by birds or wind.

Replacing undesirable leaders

Some Douglas-fir trees develop unusually coarse and vigorous leaders a year or two before they attain harvest size. These are sometimes abnormally large in diameter and very sparsely budded for a foot or more above their bases. Trimming them back in the usual manner to a 12-inch leader results in too few buds to fill in the top of the tree with branches. This scarcity of buds causes an open hole in the upper crown of the tree.

Another serious problem is that the few buds that do occur on this heavy leader stub grow too much and develop, in turn, into large, coarse, doglegged multiple leaders. This problem, once it starts, tends to continue until you correct it.

Correct the problem by removing the large leaders. Then, bend upward a flexible internodal branch and, using a splint, bind it firmly with plastic ribbon. Finally, trim the upturned internodal branch back to proper length (about 12 inches) to form a new leader. Unlike the leader that you removed, this new leader is usually well-budded and small enough not to grow excessively the following growing season. Trimming back the large natural leader actually enhances the tree's development by directing growth into the lower portion of the crown. Do not forget to remove the stub and plastic ribbon after the tied leader has become set in a vertical position.

Shearing

Douglas-fir has a long shearing season. It begins in the middle of July when the branches are fully elongated and buds on the new growth become fully visible, and extends until the buds start to open the following spring. With passing time, branches become more woody and stiff, and shearing takes more effort. With this in mind, many growers prefer shearing between late July and September, especially in harvest years.

Douglas-fir is prone to lammas growth, especially when summer rains occur. The resulting irregular, excessively long branch tips may require a touch-up shearing to restore good proportion. Alternatively, shearing can be postponed until after this growth has occurred.

Lammas growth on the leader tends to be more vigorous than non-lammas growth. If lammas growth develops within 4 inches of the top, it likely will overtake the leader in the next growth year. To correct this, remove the tip bud(s) on the lammas growth within 3 to 4 inches of the top. Or if a new top is desired, tie the lammas growth in an upright direction, prior to next year's growth. This can utilize the lammas growth to your advantage.

Adjusting tree density

There is a wide range of preferences in tree density. Producing a denser tree requires earlier leader shortening and, therefore, more years to grow to a given height. Douglas-fir growers will tend to keep the tree taper narrow (40 to 50 percent) on younger trees. For a typical 6- to 7-foot harvest tree, taper will gradually increase until the harvest year, when

the final taper is around 60 percent. Again, know the type of tree (density, taper, and height) your market desires and adjust your practices accordingly.

Bare or blank spots in a tree

Dealing with Douglas-fir bare or blank spots requires considerable judgment. First, it is important to determine if there are enough buds and branches to fill the hole from the side. If there are, it may be possible to slow height growth so that bare spots can fill with time. It is also possible to pull adjacent branches from either side to assist with filling. Flagging tape is often used to hold the branches in place until they stay put. Be careful to avoid creating additional holes with this remedy. Again, you may need to keep the leader shorter so the hole has time to fill. If the bare area is pronounced, you may need to cut off the top of the tree above the bare area and tie up a lower branch to form a new top. Or, you can evaluate the time and expense needed to create a marketable tree and make a decision about removing the tree as a cull.

Culturing pine

Many consumers refer to all conifer trees or all Christmas trees as "pines." They are partly correct. All the true firs, spruces, and Douglas-firs are in the pine family. For our more specific interests here, we will discuss the genus *Pinus*. Though not grown in large numbers, there are a wide number of species grown for Christmas trees. Some common species are Western and Eastern white, ponderosa, bristlecone, Scotch, and lodgepole/shore pines. All pines have needles held together in a fascicle bundle at their base. The white pines have four to five individual needles per bundle; lodgepole and Scotch pine usually have two. The market for pine in the PNW has declined. Prior to growing pine, be sure you have a market to sell them. Become familiar with many of the needle diseases common to pine. A few growers have decided not to grow pine due to foliage disease problems. Because of insect pests such as European pine shoot moth and cereal leaf beetle, you may need additional phytosanitary certifications, depending on where the trees are shipped to or pass through. Before planting, investigate export regulations with your state agricultural department (see Additional Resources, page 30).

Scotch pine seed sources

There has been little seed source testing for Scotch pine Christmas trees in the PNW. The species has a wide distribution where it grows naturally, and seed has been imported for many years. Scotch pine has had a number of progeny testing programs in the Midwest. Some of the most widely utilized sources are those from central Spain (Guadarrama and Gedros), French sources (D'Auvergne), Scottish Highlands, and crosses (PennSpanish). If you are interested in growing any of these pine species, follow these guidelines:

- Start small. Only plant a few trees and try, if possible, to utilize multiple seed sources for each new species. This limits your losses and also helps determine whether a species has possibilities from a particular seed source. If one source is poor, maybe another is good.
- Keep careful records and mark the trees well. Our memories fade during the rotation. If a source does well (or poorly), you need to know what the source was and where it came from (both the nursery and seed source) if you hope to grow it again.
- Ask around. Perhaps someone in the area has experience with the species you are interested in.

Seed sources for other pine species

Little effort has been devoted to testing various pine sources in the PNW region. With that in mind, recall the three cautions mentioned above.

Culturing pines

These species have a growth habit different from fir and spruce, and this influences the culturing process. Pines tend to have few internodal buds (Figure 37), and branch buds are clustered at the ends of branches. The new growth on pines will emerge from the buds at the ends of branches and leaders and develop “candles,” which are the new leaders and branches. As the candles elongate, the new needles can be seen developing along the length of the candle. The shearing period for most pines is limited. For the common species mentioned above, the effective shearing window occurs at the growth point where the candles have elongated and the emerging needles are about 50 percent as long as their final length. If you wait much past this growth



Photo: Cathy Blumig

Figure 37. Pine internodal spacing

stage, dormant buds have less time to develop, and fewer and weaker branches will emerge the following season. White pine in particular will show little bud development if leader and branch trimming is delayed. A few pine species like Virginia and Monterey can have multiple growth periods in a season, and have a wider and more frequent window for shearing.

Many growers will let pines begin with a wide (60 to 70 percent) taper and let the top growth begin to balance the bottom so that the final taper ends up in the 50 to 60 percent range. This is the opposite strategy used in fir and spruce culture. The reason for this is that the lower pine branches, once sheared, tend to be less vigorous than, for example, grand fir. Shearing pine species too tightly early in a rotation may create trees that are too narrow at harvest.

Leader trimming follows the same progressive trimming as with fir. Leave the tree alone as long as possible, then begin to shorten the leaders each year.

Many pine growers suggest trimming the leader at a 45 degree angle. This may encourage a terminal bud to form, rather than having multiple leader buds beginning at the top of a flat straight cut.

Culturing spruce

A wide range of spruce species are grown in the PNW, though total production of spruce is quite small. Spruce can broadly be defined as any species falling into the *Picea* genus. Common variety names are blue, Colorado blue, green, black, white, Black Hills, Myers, Serbian, Siberian, Sitka, Norway, and Engelmann spruce. Common traits include needles that are on raised wooden “pegs” and tend to be stout and pointed. Selected spruce species will often be used for potted and living Christmas trees, as they tend to grow in pots better than other species. One detriment to growing spruce can be attacks from the white pine weevil. The weevil will damage tops on Christmas trees, causing dead tops and multiple leaders. On the positive side, a number of spruce species tolerate wetter soils and colder climates better than many other species. Spruce may be found on many tree farms in eastern Washington and Oregon, and northern Idaho.

Seed Sources

Spruce is commonly grown in the horticulture industry, and hundreds of unique varieties with names such as “Fat Albert” or “Hoopsi” are sold as grafted plants. Colorado blue spruce (*Picea pungens* var. *glauca*) is prized for its blue foliage color (Figure 38). Seed sources for Christmas trees may list a national forest collection area, specific collection locations, or unique specimen sources. In many wild collections of Colorado blue spruce expect that only some fraction of the trees will exhibit the prized blue-gray coloration.

Culturing

Growth form and development are similar to noble fir. Some spruce species will have latent buds that emerge after trimming to help fill the tree.

Consumer needs and concluding ideas

Always be mindful that growing your trees is only a step in a process; continued consumer satisfaction is also critical. The postharvest quality of trees varies



Photo: Barney Douglas

Figure 38. Blue spruce

among the commonly grown PNW species (Table 6, page 30). It is important that consumers know that the trees too have a “shelf-life” and will exhibit differing postharvest characteristics even when displayed properly in water-filled stands. Growers, buyers, shippers, recyclers, and end-consumers each have important tasks after trees are harvested. Many of the references and web sites at the end of this publication lead to sources that can help make the Christmas tree experience satisfying for all involved in the process.

Successful Christmas tree growing is a constant learning process. It starts with being selective about your growing site. Next in importance are your species and seed source selections. As your trees move through a rotation, expenses and the complexity of your cultural choices rapidly increase. The idea that you simply plant trees and come back in 7 years to harvest beautiful trees is a fairytale. And while it may sound backwards, growers always need to be

Table 6. Postharvest quality ratings for PNW species in water display

Species	Rating ¹
California red fir	E
Canaan fir	G/E
Corkbark fir	E
Fraser fir	P/E²
Grand fir	G/E
Korean fir	G/E
Noble fir	E
Nordmann fir	E
Turkish fir	E
Shasta fir	F/G
Douglas-fir (var. coastal)	G
Douglas-fir (var. interior)	G/E
Scotch pine	G
W. White pine	G/E
Colorado blue spruce	G
White spruce	G

¹ (E) Excellent potential to last for 4-6 weeks under typical household conditions, (G) Good can last 3-4 weeks, (F) Fair can last 10 days to 3 weeks. All trees assumed to be cold hardened at testing.

² Results are variable among seed sources

Adapted from: Hinesley, E., Chastagner, G. 2004. Christmas trees in Agricultural Handbook 66 The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks.

mindful about the type of tree they want to grow and sell. Within certain limits, trees can be cultured to produce a variety of shapes—from narrow, dense, wide, or layered—but your program of leader trimming and shearing needs to be tailored to meet the demands of the intended customers. Successful operations are both capable of producing quality trees and skilled in marketing.

On the following pages, a number of additional resources are listed to assist in growing Christmas trees. These resources will fill in some of the gaps not covered in this publication. Website addresses for the various PNW Christmas tree grower associations are listed to provide more opportunities for learning and meeting with other growers.

Additional resources

Many of the publications and links listed below can be found on the North Willamette Research and Extension Center website (<http://oregonstate.edu/dept/>

[NWREC/programs/christmas-trees](http://nwrec/programs/christmas-trees)). Check this website for regularly updated information.

OSU Extension publications

The following publications are available in the Oregon State University Extension catalog at <https://catalog.extension.oregonstate.edu>

Culturing

- *Growing Christmas Trees in the Pacific Northwest* (PNW 6) <https://catalog.extension.oregonstate.edu/pnw6>
- *Growing Corkbark fir and Subalpine Fir for Nursery Production* (PNW 645) <https://catalog.extension.oregonstate.edu/pnw645>

Insects/diseases/disorders

- *Pacific Northwest Insect Management Handbook* <https://catalog.extension.oregonstate.edu/insect>
- *Pacific Northwest Plant Disease Management Handbook* <https://catalog.extension.oregonstate.edu/plant>
- *Identifying and Managing Christmas Tree Diseases, Pests and Other Problems—in English and Spanish* (PNW 659) <https://catalog.extension.oregonstate.edu/pnw659>
- *Best Management Practices for Christmas Tree Export* (EM 9093)—in English and Spanish <https://catalog.extension.oregonstate.edu/em9093>

Weed management

- *Pacific Northwest Weed Management Handbook* <https://catalog.extension.oregonstate.edu/weed>
- *Weed and Vegetation Management in Christmas Trees* (PNW 625) <https://catalog.extension.oregonstate.edu/pnw625>

Videos

- *Shearing and Culturing Christmas Trees* (EM9044) <https://catalog.extension.oregonstate.edu/em9044>
- *Esquilar y Cultivar Arboles de Navidad* (EM9044-S) <https://catalog.extension.oregonstate.edu/em9044s>

Nutrient management

- *Christmas Tree Nutrient Management Guide for Western Oregon and Washington* (EM8856) <https://catalog.extension.oregonstate.edu/em8856>

Other publications and resources

Culturing

- Hilliker, D. 1993. *Basics of Growing Christmas Trees*. Treehaven Evergreen Nursery
- *USDA Christmas Tree Market and Shipping Point Inspection Instructions* https://www.ams.usda.gov/sites/default/files/media/Christmas_Tree_Inspection_Instructions%5B1%5D.pdf

Insects/diseases/disorders

- *Christmas Tree Diseases, Insects, and Disorders In The Pacific Northwest: Identification and Management* 1997. WSU Extension Publication MISC0186. <http://ppo.puyallup.wsu.edu/ct/publications>
- *Pest Management Strategic Plan for Christmas Trees. Oregon, Washington and Idaho* <http://www.ipmcenters.org/pmsp/pdf/or-wa-idchristmas-treespmsp.pdf>

Economics

- *Christmas Tree Economics: Establishing and Producing Noble Fir Christmas Trees in Western Oregon* (AEB 002) <http://arec.oregonstate.edu/oaeb/files/pdf/AEB0002.pdf>
- *Christmas Tree Economics: Establishing and Producing Douglas-fir Christmas Trees in Western Oregon* (AEB001) <http://arec.oregonstate.edu/oaeb/files/pdf/AEB0001.pdf>

PNW associations and Co-ops

- Inland Empire Christmas Tree Association <http://www.iecta.org/>
- National Christmas Tree Association <http://www.realchristmastrees.org/dnn/Home.aspx>
- Pacific Northwest Christmas Tree Growers Association <http://www.pnwcta.org/>
- Puget Sound Christmas Tree Association <http://www.pscta.org/>

- Oregon Christmas Tree Growers Association <http://www.christmastrees-or.com>

PNW State Departments of Agriculture

- Idaho Department of Agriculture <http://www.agri.state.id.us/>
- Oregon Department of Agriculture <http://www.oregon.gov/ODA/PLANT/NURSERY>
- Washington State Department of Agriculture <http://agr.wa.gov/PlantsInsects/ChristmasTreeLicense/ChristmasTree.aspx>

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White, D. *Concolor fir trial reveals some of the best seed sources for nursery and Christmas tree production*. University of Idaho, Forestry Extension, Alt. For Enterprises No.1.

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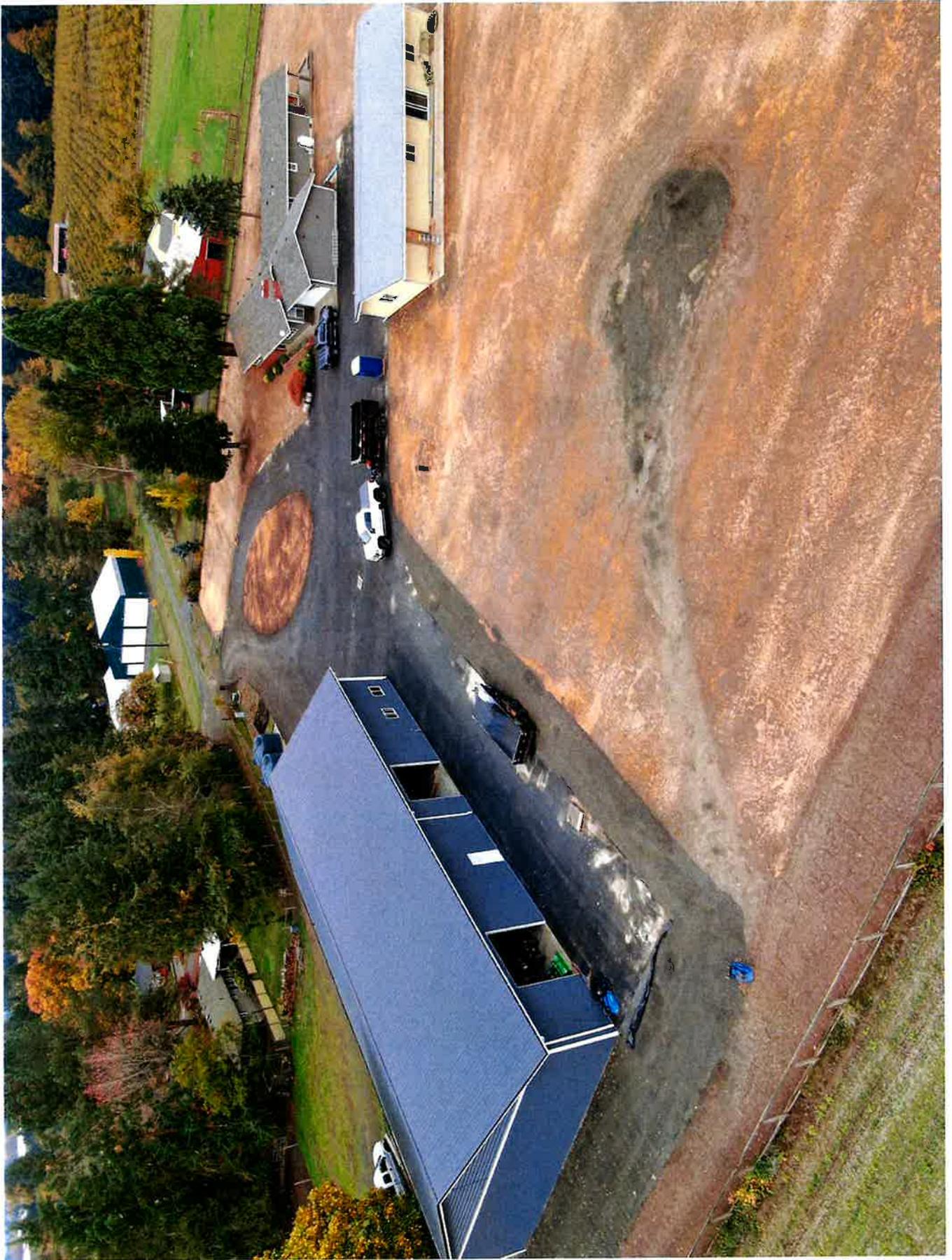


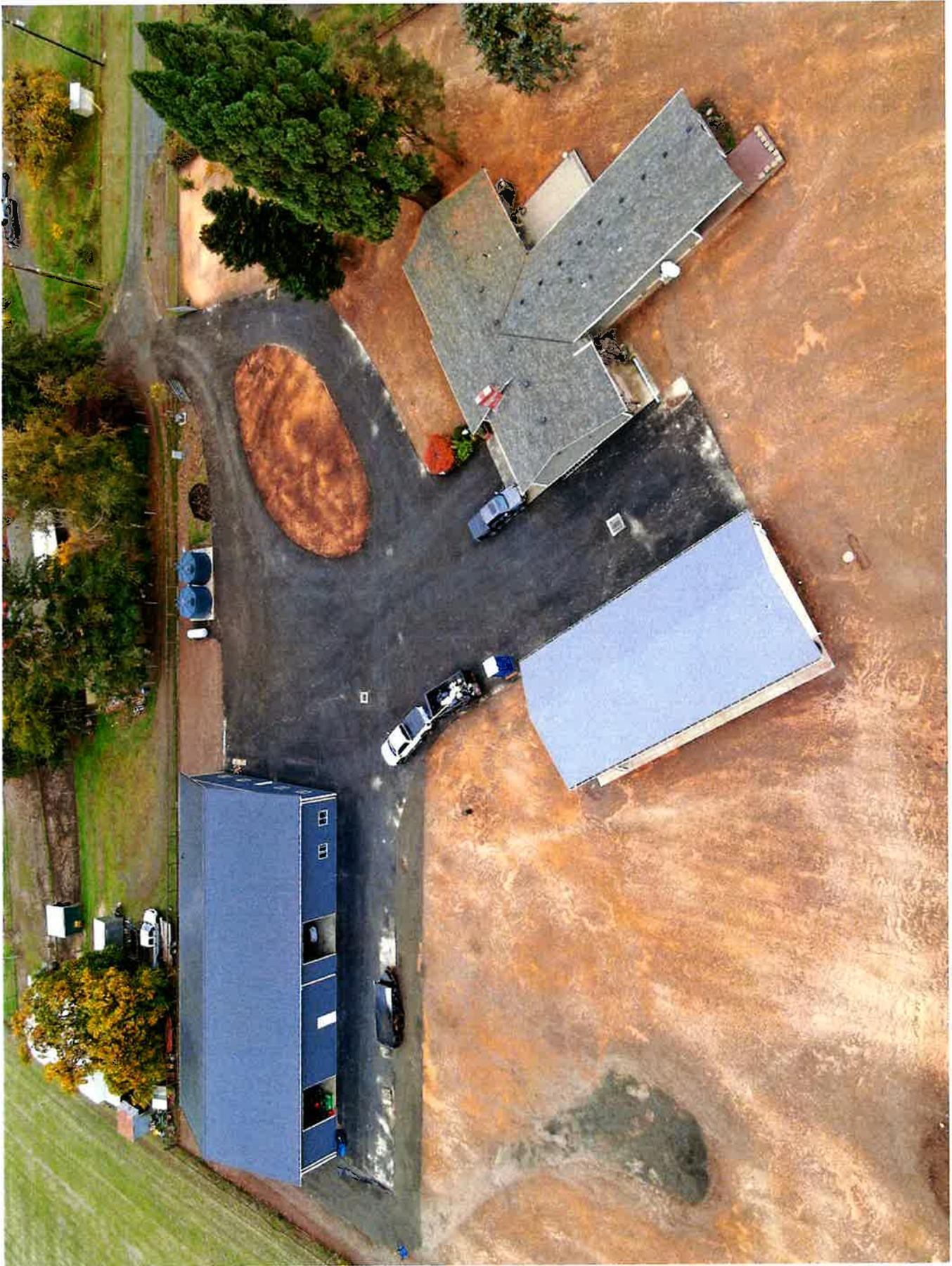


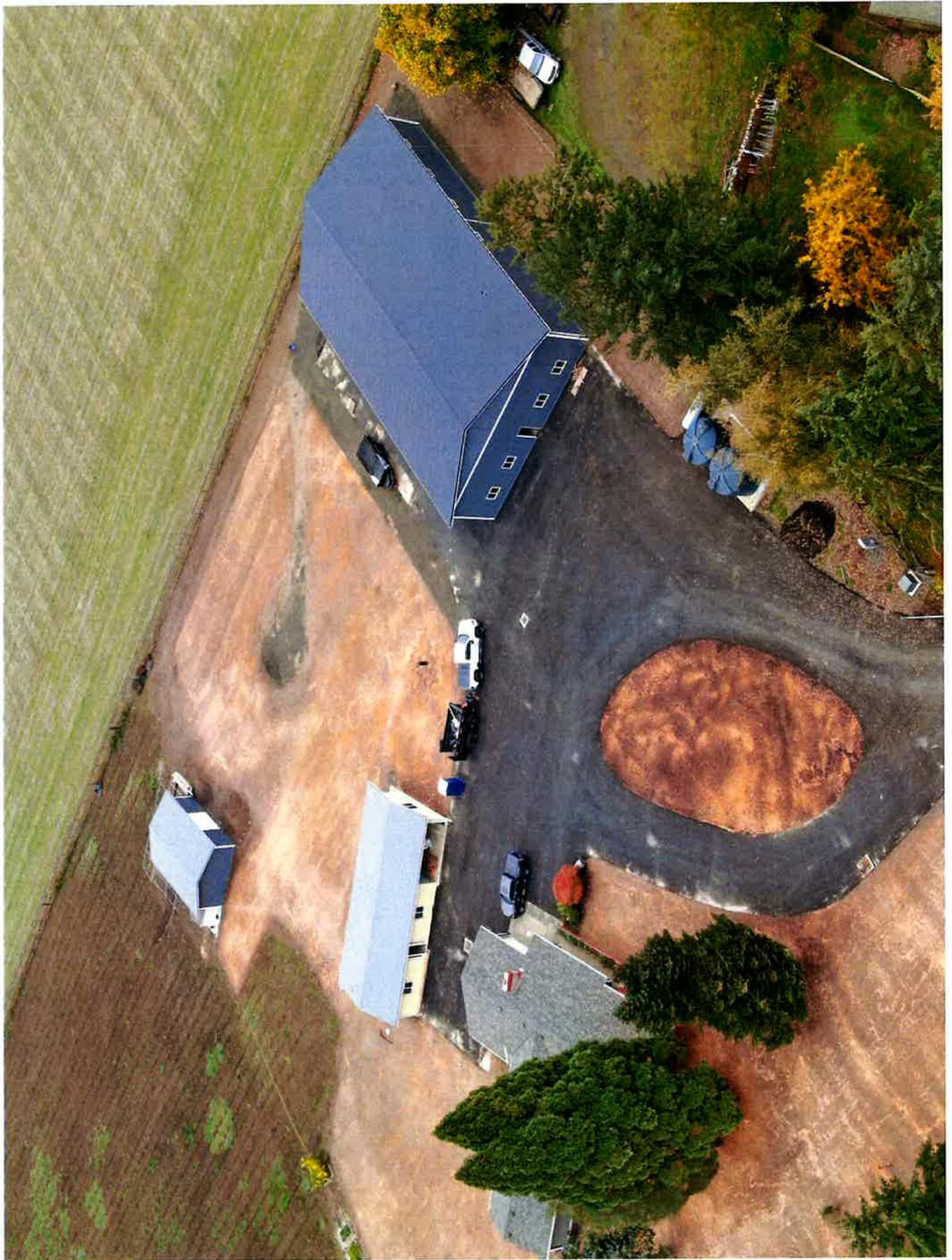


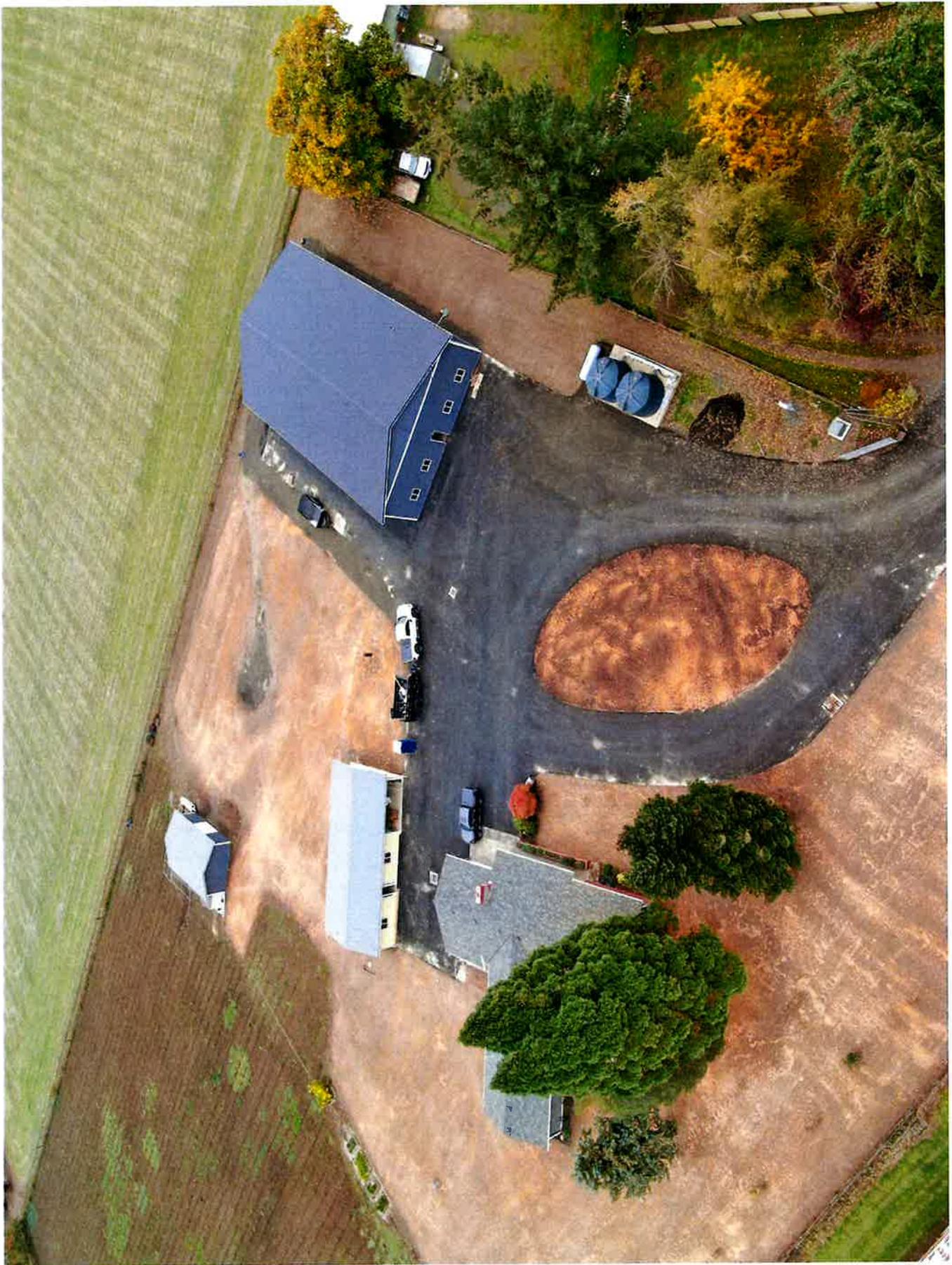














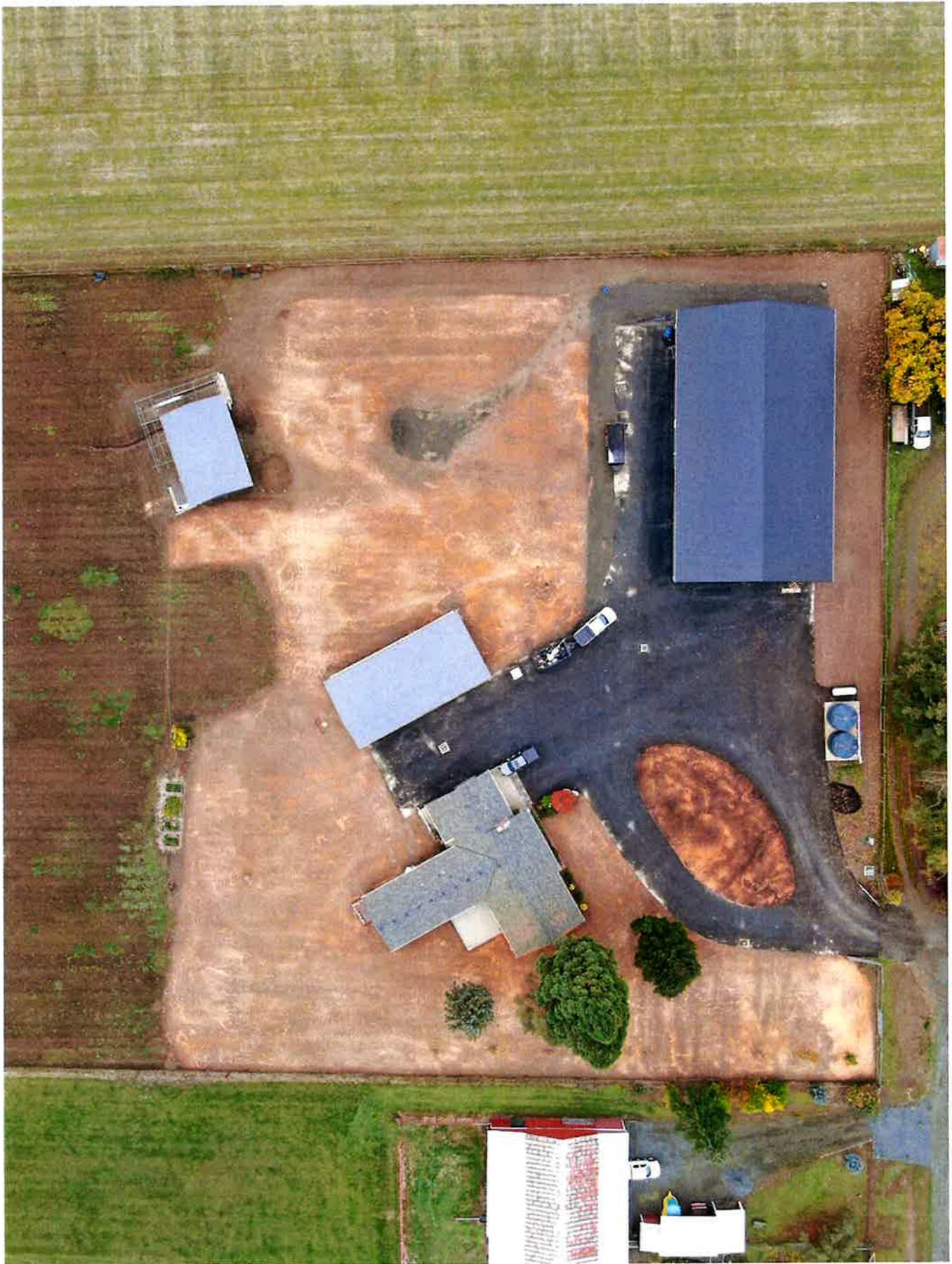


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Page 1 of 1



Premium

CAPTURE DATE:

09/16/25

1 Credit(s)

[REDEEM CREDIT](#)



Yamhill County Building Department

400 NE Baker Street
McMinnville, OR 97128
503-434-7516

Fax: 503-434-7544
planning@yamhillcounty.gov

Website:

<https://www.yamhillcounty.gov/283/Planning-Development>

Transaction Receipt
Record ID: 979-25-002424-STR
Receipt Number: 939378
Receipt Date: 11/12/25

Worksite address: 23645 NE HIGHWAY 240, NEWBERG, OR 97132

Parcel: R3313 01600

Fees Paid					
Transaction date	Units	Description	Account code	Fee amount	Paid amount
11/12/25	1.00 Ea	Structural building permit fee	110-3010020-32210-F07 7-000-00000	\$2,230.76	\$2,230.76
11/12/25	1.00 Ea	Local Administrative Fee - Yamhill Co.	110-3010020-34516-000 0-000-00000	\$30.84	\$30.84
11/12/25	1.00 Ea	Agency Review - County Only	110-3010020-34116-PL6 6-000-00000	\$100.74	\$100.74
11/12/25	1.00 Ea	Structural plan review fee	110-3010020-34504-F07 7-000-00000	\$1,449.99	\$1,449.99
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11/12/25	1.00 Automatic	Local Technology Fee - Yamhill Co.	110-3010020-34199-PL6 6-000-00000	\$190.62	\$190.62
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Payment Method: Check number: 7198	Payer: LONE OAK BUILDERS LLC	Payment Amount: \$8,470.64
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Cashier: Stephanie Curran

Receipt Total: \$8,470.64

AEB 0002
September 2009

Christmas Tree Economics: Establishing and Producing Noble Fir Christmas Trees in Western Oregon

*James W. Julian, Chal Landgren, Michael C. Bondi, and
Clark F. Seavert*



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Christmas Tree Economics: Establishing and Producing Noble Fir Christmas Trees in Western Oregon

James W. Julian, Chal Landgren, Michael C. Bondi and, Clark F. Seavert¹

Introduction

Nationwide, Christmas tree growers harvested 17.4 million trees in 2007, down from 20.8 million in 2002 (USDA Census of Agriculture, 2007). Oregon's share was 6.9 million trees in 2007, up from 6.5 million trees in 2002. Oregon led the nation in Christmas tree production accounting for 39 percent of the 2007 volume up from 31 percent from 2002.

In 2007 Oregon's Christmas tree production and sales were as follows: acres in Christmas tree production 61,850; number of trees harvested – 6.9 million; and value of sales - \$109 million. Trees are grown in several Oregon Counties, but four; Clackamas, Marion, Polk and Benton counties produce over 80% of the states total.

Two tree species, Douglas-fir and noble fir, account for over 90% of the tree sales among the various species grown. In 2007, as over the past three decades Douglas-fir accounted for the largest percentage of trees sold. In 2008, noble fir is expected to occupy that position for the first time. Noble fir is a popular Christmas tree commanding a higher market price. Over the last 10 years, noble fir planted acres have increased and recently, surpassed Douglas-fir and are beginning to be harvested.

Noble fir has a more restricted growing area than Douglas-fir. While most sites that grow noble well can also grow Douglas-fir, the reverse is not true. Good noble fir sites tend to be upland areas with 40-90 inches of rain yearly. In addition to high rainfall, the best sites are well-drained deep soils not prone to high summer temperatures. This is not to say that noble can not be grown in valley bottoms, but there tend to be more problems associated with growing this species in lowland sites.

Noble fir has excellent needle "keepability" and can ship well into other climate areas. The species is more challenging to grow than Douglas-fir and has a longer harvest rotation length. Also, generally speaking, noble has a higher planting mortality and fewer trees per acre will make the top grades as compared to Douglas-fir. Rotation lengths vary widely depending on the site, seed source used at planting, and desired market tree height and density. Major problems encountered in growing noble fir are root rots, aphids, mites and current season needle necrosis.

¹ James W. Julian, Faculty Research Assistant NWREC, Aurora; Chal Landgren, Christmas Tree Specialist NWREC, Aurora; Michael C. Bondi Forestry and Christmas tree Extension faculty Clackamas Co. Oregon; Clark F. Seavert, Extension Economist NWREC, Aurora. The assistance provided by Christmas tree producers, field representatives, farm suppliers, and researchers in developing this budget is greatly appreciated.

This cost of production study provides growers with a tool for financial management and decision making. It was conducted in cooperation with growers, field representatives, researchers, and farm suppliers and provides typical costs and returns to a well managed noble fir

Christmas tree farm in the Willamette Valley of Oregon. Growers are encouraged to substitute their own costs to get an accurate accounting of their costs.

Assumptions

In the preparation of this publication, the following assumptions were made to provide a basis for Christmas tree production analysis.

1. Typical acreage for Christmas tree production in Oregon is 10 acres of non-irrigated land.
2. 1,500 trees are transplanted per acre (5.5' x 5.5' spacing)
3. Prices for 6 to 7 ft noble fir Christmas trees are \$20 for Grade #1 and \$15 for Grade #2 per tree. Prices based upon 2005 to 2007 average per tree prices listed by USDA National Agricultural Statistic Service (http://www.nass.usda.gov/Statistics_by_State/Oregon/Publications/Horticulture/09_12xt.pdf; (Table 2) accessed 9/09). Price per tree for study derived from listed average price by assuming average tree is 7ft. The price of Grade 2 trees are 25% of Grade 1 trees.
4. Noble fir Christmas tree harvest begins in year 7 and continues through year 10 with 90 percent of planted trees harvestable.
5. All labor is hired at a rate of \$14.00 per hour, which includes worker's compensation, unemployment insurance, and other labor overhead expenses, or is paid a piece rate for some operations.
6. The machinery and equipment used in the budget reflects the typical machinery complement of a 10 acre noble fir Christmas tree farm. A detailed breakdown of machinery values is shown in Table 1. Table 2 provides estimated machinery costs from the American Society of Agricultural Engineers. Table 3 lists the estimated cost of each operation.
7. Gasoline and diesel costs per gallon are \$2.00 and \$2.50, respectively.
8. The interest rate on operating funds is 8.5 percent and treated as a cash expense. One-half of the cash expenses are borrowed for a six-month period.
9. Machinery and land are owned by the operator and assessed 8.5 and 8 percent interest rates, respectively, as opportunity costs (a non-cash cost for the use of the asset). Land is valued at \$5,000 per acre.
10. Previous year's establishment costs are funded by the operator at a charge of 10 percent interest and are considered an opportunity cost.
11. Additional assumptions are listed for variable, fixed cash, and fixed non-cash costs in Table 4.
12. Price inflation for the time period of this study is ignored.
13. Owner management, family living, State and Federal income tax consequences are also ignored for this study

Table 1. Machinery Cost Assumptions, Noble Fir Christmas Tree Production

Machine	Size	Market Value	Hours or Miles of Annual Use	Expected Life (yrs)	Salvage Value
Tractor	2 WD 35hp, Older	\$12,000	300	20	\$1,540
Fertilizer Spreader	40' Broadcast	1,500	4	15	144
Airblast Sprayer	300 gal	15,000	100	15	1,440
Pickup*	3/4 Ton 4X4	8,000	4,000	10	3,025
Backpack Sprayer		150	N/A	7	0
Elevator		2,000	N/A	15	192
Tree Baler		3,000	N/A	15	288
Shop/Shed	25' x 50'	25,000	N/A	35	0

* Pickup for Christmas tree production is 1/3 of total cost.

Table 2. Machinery Cost Calculations, Noble Fir Christmas Tree Production

Machine	Size	---- Variable Costs ----		---- Fixed Costs ----		Total Cost
		Fuel & Lube	Repairs & Maint.	Depr. & Interest	Insurance	
----- Costs per Hour -----						
Tractor	2 WD 35hp, Older	\$14.38	\$0.50	\$3.66	\$0.20	\$18.74
Fertilizer Spreader	40' Broadcast	0.00	0.26	40.07	1.23	41.56
Airblast Sprayer	300 gal	0.00	6.95	16.03	0.49	23.47
----- Costs per Mile -----						
Pickup*	3/4 Ton 4X4	\$0.19	\$0.15	\$0.24	\$0.08	\$0.66
----- Costs per Acre -----						
Backpack Sprayer		\$0.00	\$2.14	\$2.78	\$0.00	\$4.92
Elevator		0.00	12.05	21.83	0.00	33.89
Tree Baler		0.00	18.08	32.75	0.00	50.83
Shop/Shed	25' x 50'	0.00	71.43	177.68	0.00	249.11

* Pickup for Christmas tree production is 1/3 of total cost.

Table 3. Estimated Cost of Each Operation with Power-Unit, Noble Fir Christmas Tree Production

Operation	Tractor	----- Machine Costs -----					
		Miles per Hr	Acres per Hr	Labor Cost per Acre	Variable Cost per Acre	Fixed Cost per Acre	Total Cost per Acre
Fertilizer Spreader	2WD 35hp	6.0	3.00	\$4.67	\$5.05	\$15.05	\$24.77
Airblast Sprayer	2WD 35hp	6.0	3.00	\$4.67	\$7.27	\$6.79	\$18.73

Table 4. Noble Fir Christmas Tree Production Input Assumptions for Variable, Harvest, and Fixed Costs.

	Year 1	Year 2	Year 3	Year 4	Year 5
Prices per 6-7' Grade #1 Tree, (\$/Tree)	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00
Prices per 6-7' Grade #2 Tree, (\$/Tree)	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Trees Harvested (Grade #1), per Acre	0.00	0.00	0.00	0.00	0.00
Trees Harvested (Grade #2), per Acre	0.00	0.00	0.00	0.00	0.00
Cost of Labor, per Hour	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00
Cost to Plant Trees, per Tree	\$0.40	\$0.60	\$0.00	\$0.00	\$0.00
Cost of Foliar Testing	\$0.00	\$0.00	\$0.00	\$5.00	\$5.00
Cost of Culturing/Top Working, per Tree	\$0.00	\$0.00	\$0.00	\$0.25	\$0.30
Cost of Basal Pruning, per Tree	\$0.00	\$0.00	\$0.25	\$0.25	\$0.00
Cost of Fertilizer, per Acre	\$0.00	\$0.00	\$0.00	\$0.00	\$200.00
Cost of Insecticide, per Acre	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost of Fungicide, per Acre	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost of Herbicide, per Acre	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Cost for Tagging Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost for Shagging, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost for Shake & Baling Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost for Loading Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost to Cutting Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Time for IPM Scouting, Hours	0.50	0.50	0.50	0.50	0.50
Time to Fertilize, Hand Appl., Hours	0.00	0.00	0.00	0.00	0.00
Time for Spot Herbicide Sprays, Hours	1.60	1.60	1.60	1.60	1.60
	----- Fixed Input Costs -----				
Property Taxes	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Property Insurance	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Land Values	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Tree Cost	\$0.50	\$0.50	\$0.00	\$0.00	\$0.00
Gasoline Price	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Diesel Fuel Price	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50
Operating Interest Rate	8.50%	8.50%	8.50%	8.50%	8.50%
Machinery Interest Rate	8.50%	8.50%	8.50%	8.50%	8.50%
Land Interest Rate	8.00%	8.00%	8.00%	8.00%	8.00%
Establishment Interest Rate	10.00%	10.00%	10.00%	10.00%	10.00%
Overhead Charge	8.00%	8.00%	8.00%	8.00%	8.00%
% of Operating Capital Borrowed	50.00%	50.00%	50.00%	50.00%	50.00%
Months to Borrow Operating Capital	6.0	6.0	6.0	6.0	6.0
Planted Trees	1,500	225	0	0	0

Table 4. Noble Fir Christmas Tree Production Input Assumptions for Variable, Harvest, and Fixed Costs, (cont).

	<u>Year 6</u>	<u>Year 7</u>	<u>Year 8</u>	<u>Year 9</u>	<u>Year 10</u>
Prices per 6-7' Grade #1 Tree, (\$/Tree)	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00
Prices per 6-7' Grade #2 Tree, (\$/Tree)	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Trees Harvested (Grade #1), per Acre	0.00	60.00	420.00	190.00	80.00
Trees Harvested (Grade #2), per Acre	0.00	40.00	280.00	135.00	70.00
Cost of Labor, per Hour	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00
Cost to Plant Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost of Foliar Testing	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00
Cost of Culturing/Top Working, per Tree	\$0.35	\$0.40	\$0.45	\$0.50	\$0.55
Cost of Basal Pruning, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost of Fertilizer, per Acre	\$200.00	\$200.00	\$200.00	\$100.00	\$50.00
Cost of Insecticide, per Acre	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00
Cost of Fungicide, per Acre	\$25.00	\$25.00	\$25.00	\$25.00	\$0.00
Cost of Herbicide, per Acre	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Cost for Tagging Trees, per Tree	\$0.00	\$0.30	\$0.30	\$0.30	\$0.30
Cost for Shagging, per Tree	\$0.00	\$0.90	\$0.90	\$0.90	\$0.90
Cost for Shake & Baling Trees, per Tree	\$0.00	\$0.85	\$0.85	\$0.85	\$0.85
Cost for Loading Trees, per Tree	\$0.00	\$0.65	\$0.65	\$0.65	\$0.65
Cost to Cutting Trees, per Tree	\$0.00	\$0.40	\$0.40	\$0.40	\$0.40
Time for IPM Scouting, Hours	0.50	0.50	0.50	0.50	0.50
Time to Fertilize, Hand Appl., Hours	0.00	0.00	2.00	1.50	1.00
Time for Spot Herbicide Sprays, Hours	1.60	1.60	1.60	1.60	1.60
	----- Fixed Input Costs -----				
Property taxes	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Property insurance	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Land values	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Tree cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Gasoline price	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Diesel fuel price	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50
Operating interest rate	8.50%	8.50%	8.50%	8.50%	8.50%
Machinery interest rate	8.50%	8.50%	8.50%	8.50%	8.50%
Land interest rate	8.00%	8.00%	8.00%	8.00%	8.00%
Establishment interest rate	10.00%	10.00%	10.00%	10.00%	10.00%
Overhead charge	8.00%	8.00%	8.00%	8.00%	8.00%
% of Operating capital borrowed	50.00%	50.00%	50.00%	50.00%	50.00%
Months to borrow operating capital	6.0	6.0	6.0	6.0	6.0
Planted trees	0	0	0	0	0

Results of establishing and producing Noble Fir Christmas trees in Western Oregon

Cash flow analysis

Table 5 contains a cash flow analysis for a 10 acre noble fir Christmas tree farm. A cash flow analysis shows the cash costs required to produce noble fir Christmas trees. Cash costs include labor, trees, fertilizer, chemicals, machinery repairs, fuel, lube, and oil, operating (short-term) interest, machinery and property taxes. The income, variable costs and cash fixed costs are shown for each of the four establishment years and at full production. Harvest begins in year 7 with 100 trees (60 Grade 1 and 40 Grade 2) and increases to 750 trees (420 Grade 1 and 280 Grade 2) in year 8. In year 9, 325 trees (190 Grade 1 and 135 Grade 2) are harvested with a final harvest of 150 trees (80 Grade 1 and 70 Grade 2) in year 10. Total variable costs are \$2,154 in the first year with an additional \$47 of cash fixed costs for a total cash cost of \$2,201 per acre.

The farm projects a positive cash flow beginning in year 7 with gross income exceeding total cash costs by \$60 per acre. In year 8, the farm returns sufficient gross income to pay all previous years' cash costs with a surplus \$2,281 over prior costs.

Figure 1 shows the major cost components in relation to total cash costs. Hired labor costs are the largest cash expense representing 29 percent of the total cash costs followed by harvest costs with 26 percent. Machine costs, which include fuel, oil, and repairs, are next with 11 percent. Fertilizer and chemicals, overhead expenses and Christmas trees accounted for 9, 7 and 6 percent for total cash costs respectively. The remaining cost items account for 12 percent of the total cash costs.

Economic costs and returns

Table 6 details the economic costs and returns for a Christmas tree farm. Economic costs include all the cash costs listed in Table 5. The ownership costs that are either an opportunity cost to the owner or dollars borrowed from a financial institution are also included in Table 6. These ownership costs include the principal and interest payments or a return on investment to the grower, or both, for machinery, and land, and funds to pay for previous year's costs.

Gross income exceeds variable and fixed costs in Year 8 with a \$6,473 per acre return to the grower. Gross income also exceeds costs in years 9 and 10 by \$2,054 and \$71 respectively. However, this Christmas tree farm does not generate enough revenue to cover cumulative production costs and at the end of the production cycle has a deficit of \$7,320 per acre.

Figure 2 shows the cost components in relation to total economic costs. When all economic costs are included, interest costs are the largest component at 27 percent of total costs. Hired labor costs are the next largest item at 15 percent of total costs. This is followed by harvest and land costs, each accounting for 13 percent of the total. Machine costs (fuel, oil, repairs, depreciation, and interest charges) and Chemical and fertilizer costs represent 9 and 5 percent of the total costs, respectively. The remaining cost items account for 18 percent of the total economic costs.

The net projected economic returns for a 10 acre noble fir Christmas tree farm are shown in Figure 3. Both the cumulative cash and economic cost and returns are represented. The projected returns for this Christmas tree farm will cover all cash costs of establishment in 8 years. With the assumptions in this study, this farm will not, however, generate sufficient gross income to

cover all economic costs. However, if the owner is willing to accept a 5.4% rate of return on invested capital, this farm breaks even at the end of the production cycle, covering all previous costs (Figure 4). A sensitivity analysis of the change in price necessary to make this Christmas tree farm a

prudent business investment indicates profitability, under assumed interest rates, could be achieved by increasing the Christmas tree prices by 28 percent from \$20.00 and \$15.00 to \$25.60 and \$19.20 for grade 1 and 2 trees, respectfully (Figure 4).

Table 5. Cash Flow Analysis for Producing Noble Fir Christmas Trees in Western Oregon

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Income:										
Trees Harvested (Grade #1), per Acre	0.00	0.00	0.00	0.00	0.00	0.00	60.00	420.00	190.00	80.00
Trees Harvested (Grade #2), per Acre	0.00	0.00	0.00	0.00	0.00	0.00	40.00	280.00	135.00	70.00
Prices per 6-7' Grade #1 Tree, (\$/Tree)	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00	20.00	20.00
Prices per 6-7' Grade #2 Tree, (\$/Tree)	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	0.00	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>
Gross Income(\$ per Acre)	0.00	0.00	0.00	0.00	0.00	0.00	1800.00	12600.00	5825.00	2650.00
Variable Costs:										
Field Preparation	352.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trees	750.00	112.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	8.25	8.25	8.25	8.25	8.25	53.25	103.25	103.25	103.25	8.25
Fertilizer	0.00	0.00	0.00	0.00	200.00	200.00	200.00	200.00	100.00	50.00
Hired Labor (non-harvest)	643.40	164.40	216.90	591.90	484.07	568.40	643.40	696.73	409.73	242.65
Harvest Cost	0.00	0.00	0.00	0.00	0.00	0.00	310.00	2170.00	1007.50	465.00
Equipment	138.81	138.81	138.81	138.81	143.86	158.40	202.13	197.08	197.08	168.94
Shop	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43
Miscellaneous and Overhead	145.11	39.63	34.83	70.23	78.01	89.52	127.82	280.48	156.52	85.90
Interest: Operating Capital	<u>44.82</u>	<u>11.37</u>	<u>9.99</u>	<u>18.71</u>	<u>20.94</u>	<u>24.25</u>	<u>35.23</u>	<u>79.03</u>	<u>43.47</u>	<u>23.21</u>
Total Variable Costs	2153.82	546.39	480.21	899.33	1006.55	1165.25	1693.25	3798.00	2088.98	1115.38
Gross Income minus VC	(2153.82)	(546.39)	(480.21)	(899.33)	(1006.55)	(1165.25)	106.75	8802.00	3736.02	1534.62
Fixed Cash Costs										
Insurance	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97
Property Taxes	<u>15.00</u>									
Total Fixed Cash Costs	46.97	46.97	46.97	46.97	46.97	46.97	46.97	46.97	46.97	46.97
Total Cash Cost	2200.79	593.36	527.18	946.31	1053.53	1212.22	1740.23	3844.97	2135.95	1162.35
Annual Cash Flow	(2200.79)	(593.36)	(527.18)	(946.31)	(1053.53)	(1212.22)	59.77	8755.03	3689.05	1487.65
Cumulative Cash Flow	(2200.79)	(2794.15)	(3321.33)	(4267.64)	(5321.17)	(6533.39)	(6473.61)	2281.42	5970.47	7458.11

Table 6. Economic Costs and Returns of Producing Noble Fir Christmas Trees in Western Oregon

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Income:										
Trees Harvested (Grade #1), per Acre	0.00	0.00	0.00	0.00	0.00	0.00	60.00	420.00	190.00	80.00
Trees Harvested (Grade #2), per Acre	0.00	0.00	0.00	0.00	0.00	0.00	40.00	280.00	135.00	70.00
Prices per 6-7' Grade #1 Tree, (\$/Tree)	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00	20.00	20.00
Prices per 6-7' Grade #2 Tree, (\$/Tree)	0.00	0.00	0.00	0.00	0.00	0.00	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>
Gross Income(\$ per Acre)	0.00	0.00	0.00	0.00	0.00	0.00	1,800.00	12,600.00	5,825.00	2,650.00
Variable Costs:										
Field Preparation	352.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trees	750.00	112.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	8.25	8.25	8.25	8.25	8.25	53.25	103.25	103.25	103.25	8.25
Fertilizer	0.00	0.00	0.00	0.00	200.00	200.00	200.00	200.00	100.00	50.00
Hired Labor (non-harvest)	643.40	164.40	216.90	591.90	484.07	568.40	643.40	696.73	409.73	242.65
Harvest Cost	0.00	0.00	0.00	0.00	0.00	0.00	310.00	2,170.00	1,007.50	465.00
Equipment	138.81	138.81	138.81	138.81	143.86	158.40	202.13	197.08	197.08	168.94
Shop	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43
Miscellaneous and Overhead	145.11	39.63	34.83	70.23	78.01	89.52	127.82	280.48	156.52	85.90
Interest: Operating Capital	<u>44.82</u>	<u>11.37</u>	<u>9.99</u>	<u>18.71</u>	<u>20.94</u>	<u>24.25</u>	<u>35.23</u>	<u>79.03</u>	<u>43.47</u>	<u>23.21</u>
Total Variable Costs	2,153.82	546.39	480.21	899.33	1,006.55	1,165.25	1,693.25	3,798.00	2,088.98	1,115.38
Gross Income minus VC	(2,153.82)	(546.39)	(480.21)	(899.33)	(1,006.55)	(1,165.25)	106.75	8,802.00	3,736.02	1,534.62
Fixed Costs:										
Insurance	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97
Property Taxes	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Machine Costs	99.39	99.39	99.39	99.39	99.39	128.03	128.03	112.97	112.97	99.39
Shop	177.68	177.68	177.68	177.68	177.68	177.68	177.68	177.68	177.68	177.68
Land Interest Cost	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00
Interest on Estab. Costs	<u>0.00</u>	<u>287.79</u>	<u>443.61</u>	<u>608.39</u>	<u>831.57</u>	<u>1,087.78</u>	<u>1,388.35</u>	<u>1,591.78</u>	<u>944.52</u>	<u>739.14</u>
Total Fixed Cost	724.04	1,011.82	1,167.64	1,332.43	1,555.60	1,840.46	2,141.03	2,329.41	1,682.15	1,463.17
Total Cost	2,877.85	1,558.21	1,647.85	2,231.76	2,562.16	3,005.71	3,834.28	6,127.40	3,771.12	2,578.55
Net Projected Returns	(2,877.85)	(1,558.21)	(1,647.85)	(2,231.76)	(2,562.16)	(3,005.71)	(2,034.28)	6,472.60	2,053.88	71.45
Cumulative Returns	(2,877.85)	(4,436.06)	(6,083.92)	(8,315.68)	(10,877.84)	(13,883.55)	(15,917.83)	(9,445.23)	(7,391.36)	(7,319.91)

Figure 1. Cash Costs per Acre to Produce Noble Fir Christmas Trees in Western Oregon, by Percent.

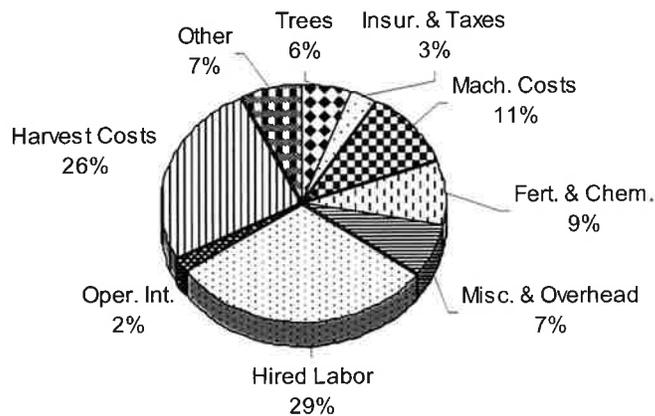


Figure 2. Economic Costs per Acre to Produce Noble Fir Christmas Trees in Western Oregon, by Percent.

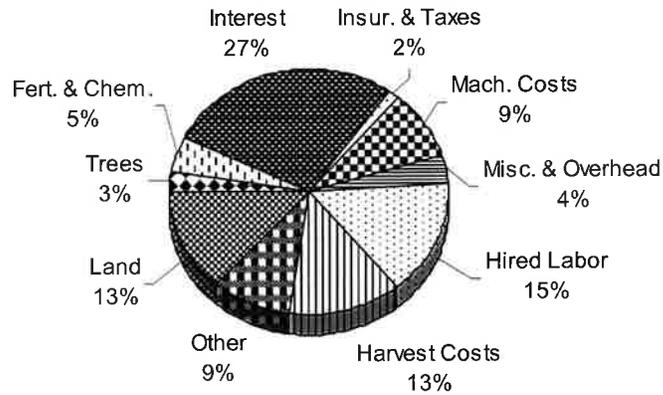
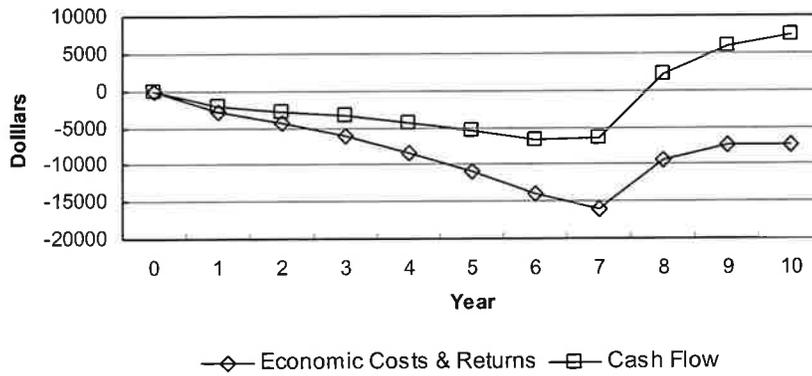
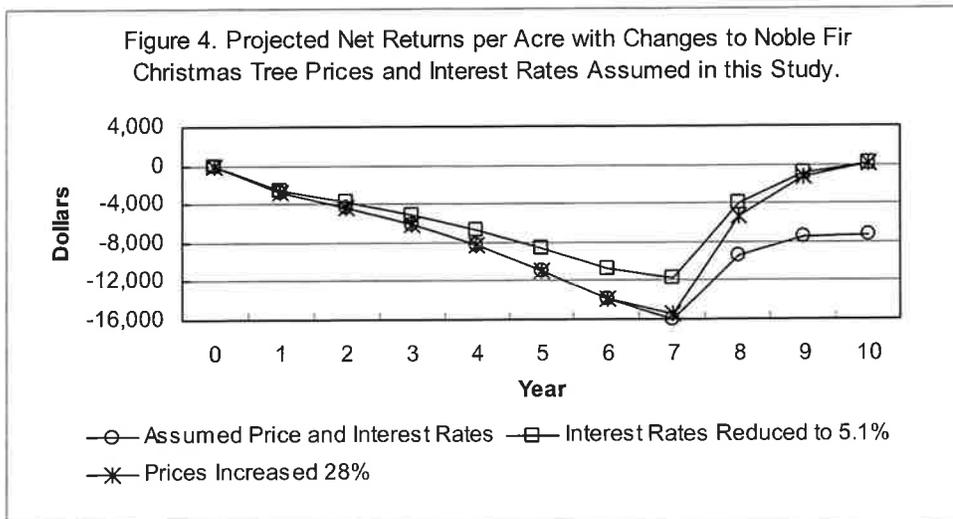


Figure 3. Comparing Cash and Economic Net Returns per Acre to Produce Noble Fir Christmas Trees in Western Oregon





Discussion

The Christmas tree markets tend to move through wide cycles in production and supply that influence price and demand for trees. Grower planting surveys may help better inform perspective growers about these cycles and adjust planting to meet the static or declining product demand.

Since the majority of Christmas trees produced in Oregon are destined for markets outside the state, regulations and restrictions can influence potential market size. For example, restrictions on pests in certain domestic and international markets require producers to carefully monitor their fields and submit to inspections which can cause disruptions. However, without these procedures growers would lose access to important markets.

During the time required to grow a noble fir, there are inevitably a number of unplanned and unknown events that will come along. These can have significant impacts on the planned costs and returns of your enterprise. New diseases, a severe

frost event, export restrictions and so on can influence your production plans through no fault of your own. No doubt growers can and will make a number of “mistakes” during a production cycle that may not be reflected in this cost budget.

Many agricultural products have a value added component which increases profitability to the producer. If Christmas tree growers are able to share in the value-added processes such as U-Cut production or sales of ancillary products or services they may be more likely to profit financially.

This cost of establishment study is meant to provide useful information to Christmas tree producers and investors who are considering planting Christmas trees. However, as with all enterprise budgets, putting your own current costs in the budget will make it more meaningful. Many tools are available to assist in budgeting such as templates from university farm management specialists and computer software programs such as “*Agricultures Profitability*”

Tool" (*AgProfit*TM). This program is free for download at the *Agtools*TM website www.agtools.org. Talk with your local Extension agent to find the latest in Christmas tree production tools and budget information.

Growers must not forget the importance that a particular enterprise such as a Christmas tree farm can have in the overall financial stability of the farm business. Financial managers can recommend planting Christmas trees to improve profitability, but

the financial requirements to complete the planting could jeopardize cash flows, increase the debt-to-asset ratio and diminish the solvency of the farm. There are many economic and financial considerations to review before such decisions are made. Seeking advice from university Extension and research faculty, industry representatives, or consultants can help in those decisions and keep your farm profitable.

APPENDIX A

Enterprise Budgets for Noble Fir Christmas Tree Production in Western Oregon

Table 7. Nobel Fir Christmas Tree Production, Year 1, Economic Costs and Returns, \$/Acre

<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
Field Preparation, Custom		0.00	0.00	150.00	150.00
Stump Removal, Custom		0.00	0.00	200.00	200.00
Soil Test		0.00	0.00	2.00	2.00
Field Layout	1.0 hour	14.00	0.00	0.00	14.00
Plant Trees		600.00	0.00	750.00	1,350.00
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79
Pickup		0.00	136.67	0.00	136.67
Shop		0.00	0.00	71.43	71.43
Miscellaneous and Overhead		0.00	0.00	145.11	145.11
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>44.82</u>	<u>44.82</u>
Total VARIABLE COSTS		643.40	138.81	1,371.61	2,153.82
<u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Pickup Insurance				acre	31.97
Property Taxes				acre	<u>15.00</u>
Total CASH Fixed Costs					46.97
NON-CASH Costs					
Machinery and Equip - Dep., Int., & Ins.				acre	2.78
Pickup - Depreciation & Interest				acre	96.60
Shop				acre	177.68
Land Interest Charge				acre	400.00
Interest on Establishment Costs				acre	<u>0.00</u>
Total NON-CASH Fixed Costs					677.06
Total FIXED COSTS					724.04
Total of All Costs Per Acre					<u>(2,877.85)</u>

Table 8. Nobel Fir Christmas Tree Production, Year 2, Economic Costs and Returns, \$/Acre

<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
Replant Trees		135.00	0.00	112.50	247.50
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79
Pickup		0.00	136.67	0.00	136.67
Shop		0.00	0.00	71.43	71.43
Miscellaneous and Overhead		0.00	0.00	39.63	39.63
Interest: Operating Capital	6.0 mons	0.00	0.00	11.37	11.37
Total VARIABLE COSTS		164.40	138.81	243.18	546.39
 <u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Pickup Insurance				acre	31.97
Property Taxes				acre	15.00
Total CASH Fixed Costs					46.97
NON-CASH Costs					
Machinery and Equip - Dep., Int., & Ins.				acre	2.78
Pickup - Depreciation & Interest				acre	96.60
Shop				acre	177.68
Land Interest Charge				acre	400.00
Interest on Establishment Costs				acre	287.79
Total NON-CASH Fixed Costs					964.85
Total FIXED COSTS					1,011.82
Total of All Costs Per Acre					(1,558.21)

Table 9. Nobel Fir Christmas Tree Production, Year 3, Economic Costs and Returns, \$/Acre

<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79
Basal Pruning		187.50	0.00	0.00	187.50
Pickup		0.00	136.67	0.00	136.67
Shop		0.00	0.00	71.43	71.43
Miscellaneous and Overhead		0.00	0.00	34.83	34.83
Interest: Operating Capital	6.0 mons	0.00	0.00	9.99	9.99
Total VARIABLE COSTS		216.90	138.81	124.50	480.21
 <u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Pickup Insurance				acre	31.97
Property Taxes				acre	15.00
Total CASH Fixed Costs					46.97
 NON-CASH Costs					
Machinery and Equip - Dep., Int., & Ins.				acre	2.78
Pickup - Depreciation & Interest				acre	96.60
Shop				acre	177.68
Land Interest Charge				acre	400.00
Interest on Establishment Costs				acre	443.61
Total NON-CASH Fixed Costs					1,120.67
 Total FIXED COSTS					 1,167.64
 Total of All Costs Per Acre					 (1,647.85)

Table 10. Nobel Fir Christmas Tree Production, Year 4, Economic Costs and Returns, \$/Acre

<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00
Foliar Testing		0.00	0.00	5.00	5.00
Basal Pruning		187.50	0.00	0.00	187.50
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79
Culturing & Top Working		375.00	0.00	0.00	375.00
Pickup		0.00	136.67	0.00	136.67
Shop		0.00	0.00	71.43	71.43
Miscellaneous and Overhead		0.00	0.00	65.23	65.23
Interest: Operating Capital	6.0 mons	0.00	0.00	18.71	18.71
Total VARIABLE COSTS		591.90	138.81	168.62	899.33
<u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Pickup Insurance				acre	31.97
Property Taxes				acre	15.00
Total CASH Fixed Costs					46.97
NON-CASH Costs					
Machinery and Equip - Dep., Int., & Ins.				acre	2.78
Pickup - Depreciation & Interest				acre	96.60
Shop				acre	177.68
Land Interest Charge				acre	400.00
Interest on Establishment Costs				acre	608.39
Total NON-CASH Fixed Costs					1,285.46
Total FIXED COSTS					1,332.43
Total of All Costs Per Acre					(2,231.76)

Table 11. Nobel Fir Christmas Tree Production, Year 5, Economic Costs and Returns, \$/Acre

<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00
Foliar Testing		0.00	0.00	5.00	5.00
Fertilize with Spreader	1.0 appl.	4.67	5.05	200.00	209.71
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79
Culturing & Top Working		450.00	0.00	0.00	450.00
Pickup		0.00	136.67	0.00	136.67
Shop		0.00	0.00	71.43	71.43
Miscellaneous and Overhead		0.00	0.00	73.01	73.01
Interest: Operating Capital	6.0 mons	0.00	0.00	20.94	20.94
Total VARIABLE COSTS		484.07	143.86	378.63	1,006.55
<u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Pickup Insurance				acre	31.97
Property Taxes				acre	15.00
Total CASH Fixed Costs					46.97
NON-CASH Costs					
Machinery and Equip - Dep., Int., & Ins.				acre	2.78
Pickup - Depreciation & Interest				acre	96.60
Shop				acre	177.68
Land Interest Charge				acre	400.00
Interest on Establishment Costs				acre	831.57
Total NON-CASH Fixed Costs					1,508.63
Total FIXED COSTS					1,555.60
Total of all costs per acre					(2,562.16)

Table 12. Nobel Fir Christmas Tree Production, Year 6, Economic Costs and Returns, \$/Acre

<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00
Foliar Testing		0.00	0.00	5.00	5.00
Fertilize with Spreader	1.0 appl.	4.67	5.05	200.00	209.71
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79
Spray, Fungicide	1.0 appl.	4.67	7.27	\$25.00	36.94
Spray, Insecticide	1.0 appl.	4.67	7.27	\$20.00	31.94
Culturing & Top Working		525.00	0.00	0.00	525.00
Pickup		0.00	136.67	0.00	136.67
Shop		0.00	0.00	71.43	71.43
Miscellaneous and Overhead		0.00	0.00	84.52	84.52
Interest: Operating Capital	6.0 mons	0.00	0.00	24.25	24.25
Total VARIABLE COSTS		568.40	158.40	438.44	1,165.25
<u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Pickup Insurance				acre	31.97
Property Taxes				acre	15.00
Total CASH Fixed Costs					46.97
NON-CASH Costs					
Machinery and Equip - Dep., Int., & Ins.				acre	\$31.42
Pickup - Depreciation & Interest				acre	96.60
Shop				acre	177.68
Land Interest Charge				acre	400.00
Interest on Establishment Costs				acre	1,087.78
Total NON-CASH Fixed Costs					1,793.49
Total FIXED COSTS					1,840.46
Total of All Costs Per Acre					(3,005.71)

Table 13. Nobel Fir Christmas Tree Production, Year 7, Economic Costs and Returns, \$/Acre

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Tree*</u>
Nobel-fir Christmas trees, Grade #1		60	Trees	\$20.00	1,200.00	20.00
Nobel-fir Christmas trees, Grade #2		40	Trees	\$15.00	600.00	15.00
Total GROSS Income		100			1,800.00	18.00
<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Tree*</u>
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00	0.07
Foliar Testing		0.00	0.00	5.00	5.00	0.05
Fertilize with Spreader	1.0 appl.	4.67	5.05	200.00	209.71	2.10
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79	0.33
Spray, Fungicide	1.0 Appl.	4.67	14.07	\$45.00	63.73	0.64
Spray, Insecticide	1.0 Appl.	4.67	14.07	\$50.00	68.73	0.69
Culturing & Top Working		600.00	0.00	0.00	600.00	6.00
Tagging		30.00	0.00	0.00	30.00	0.30
Cut Trees		40.00	0.00	0.00	40.00	0.40
Shagging		90.00	0.00	0.00	90.00	0.90
Baling		85.00	12.05	0.00	97.05	0.97
Loading		65.00	18.08	0.00	83.08	0.83
Pickup		0.00	136.67	0.00	136.67	1.37
Shop		0.00	0.00	71.43	71.43	0.71
Miscellaneous and Overhead		0.00	0.00	122.82	122.82	1.23
Interest: Operating Capital	6.0 mons	0.00	0.00	35.23	35.23	0.35
Total VARIABLE COSTS		953.40	202.13	537.73	1,693.25	16.93
<u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Tree*</u>
CASH Costs						
Pickup Insurance				acre	31.97	0.32
Property Taxes				acre	15.00	0.15
Total CASH Fixed Costs					46.97	0.47
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					59.77	0.60
NON-CASH Costs						
Machinery and Equip - Dep., Int., & Ins.				acre	\$31.42	0.31
Pickup - Depreciation & Interest				acre	96.60	0.97
Shop				acre	177.68	1.78
Land Interest Charge				acre	400.00	4.00
Interest on Establishment Costs				acre	1,388.35	13.88
Total NON-CASH Fixed Costs					2,094.06	20.94
Total FIXED COSTS					2,141.03	21.41
Total of All Costs Per Acre					3,834.28	38.34
Net Projected Returns					(2,034.28)	(20.34)

Table 14. Nobel Fir Christmas Tree Production, Year 8, Economic Costs and Returns, \$/Acre

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Tree*</u>	
Nobel-fir Christmas trees, Grade #1		420	Trees	\$20.00	8,400.00	20.00	
Nobel-fir Christmas trees, Grade #2		280	Trees	\$15.00	4,200.00	15.00	
Total GROSS Income		700			12,600.00	18.00	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Tree*</u>
IPM Scouting		0.5 hours	7.00	0.00	0.00	7.00	0.01
Foliar Testing			0.00	0.00	5.00	5.00	0.01
Fertilizer, Hand Application		2.0 hours	28.00	0.00	200.00	228.00	0.33
Spot Spraying, Herbicide, 1/3 Acre		1.6 hour	22.40	2.14	8.25	32.79	0.05
Spray, Fungicide		1.0 Appl.	4.67	14.07	\$45.00	63.73	0.09
Spray, Insecticide		1.0 Appl.	4.67	14.07	\$50.00	68.73	0.10
Culturing & Top Working			630.00	0.00	0.00	630.00	0.90
Tagging			210.00	0.00	0.00	210.00	0.30
Cut Trees			280.00	0.00	0.00	280.00	0.40
Shagging			630.00	0.00	0.00	630.00	0.90
Baling			595.00	12.05	0.00	607.05	0.87
Loading			455.00	18.08	0.00	473.08	0.68
Pickup			0.00	136.67	0.00	136.67	0.20
Shop			0.00	0.00	71.43	71.43	0.10
Miscellaneous and Overhead			0.00	0.00	275.48	275.48	0.39
Interest: Operating Capital		6.0 mons	0.00	0.00	79.03	79.03	0.11
Total VARIABLE COSTS			2,866.73	197.08	734.19	3,798.00	5.43
<u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Tree*</u>	
CASH Costs							
Pickup Insurance				acre	31.97	0.05	
Property Taxes				acre	15.00	0.02	
Total CASH Fixed Costs					46.97	0.07	
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					8,755.03	12.51	
NON-CASH Costs							
Machinery and Equip - Dep., Int., & Ins.				acre	\$16.37	0.02	
Pickup - Depreciation & Interest				acre	96.60	0.14	
Shop				acre	177.68	0.25	
Land Interest Charge				acre	400.00	0.57	
Interest on Establishment Costs				acre	1,591.78	2.27	
Total NON-CASH Fixed Costs					2,282.43	3.26	
Total FIXED COSTS					2,329.41	3.33	
Total of All Costs Per Acre					6,127.40	8.75	
Net Projected Returns					6,472.60	9.25	

* Based on trees harvested

Table 15. Nobel Fir Christmas Tree Production, Year 9, Economic Costs and Returns, \$/Acre

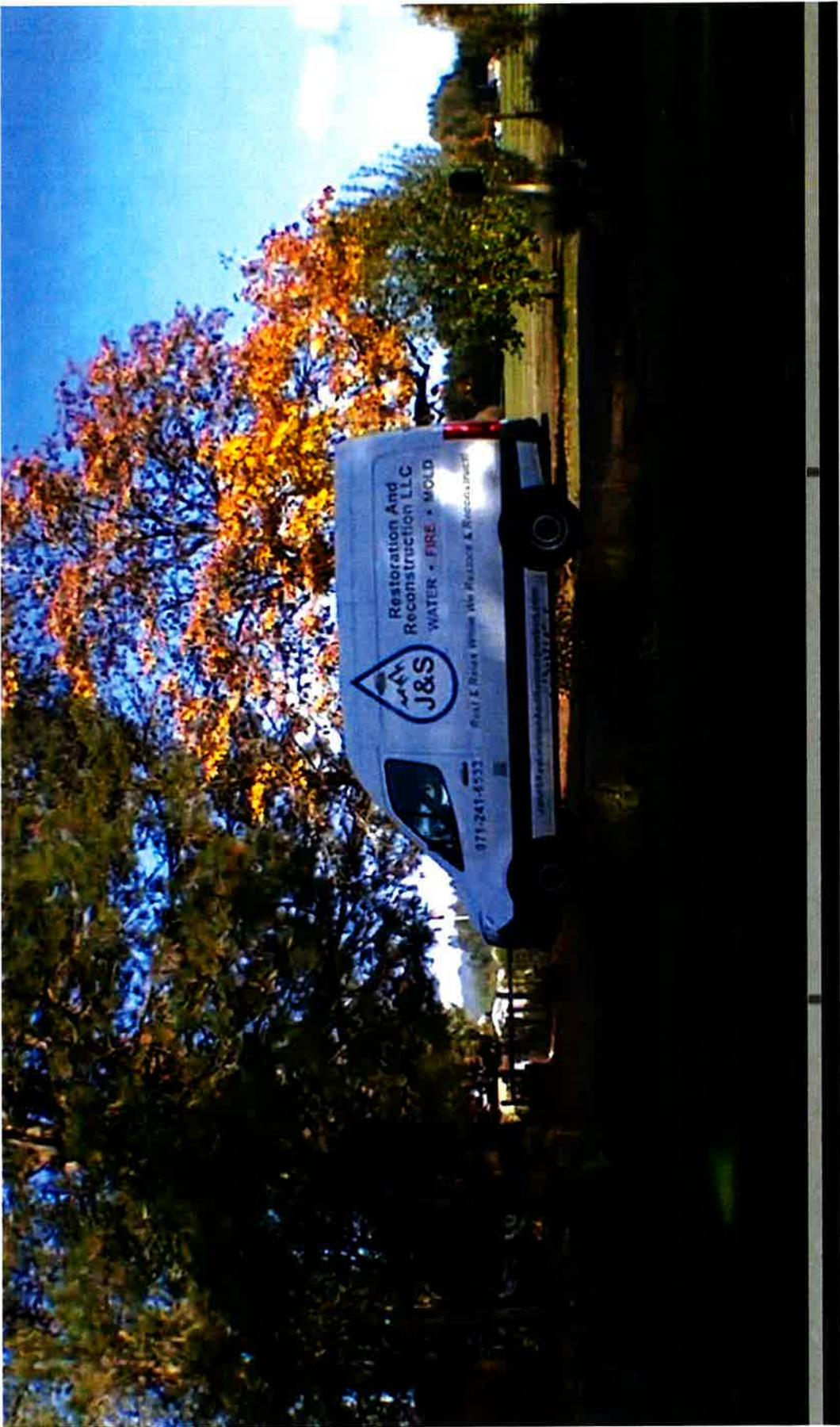
<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Tree*</u>
Nobel-fir Christmas trees, Grade #1		190	Trees	\$20.00	3,800.00	20.00
Nobel-fir Christmas trees, Grade #2		135	Trees	\$15.00	2,025.00	15.00
Total GROSS Income		325			5,825.00	17.92
<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Tree*</u>
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00	0.02
Foliar Testing		0.00	0.00	5.00	5.00	0.02
Fertilizer, Hand Application	1.5 hours	21.00	0.00	100.00	121.00	0.37
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79	0.10
Spray, Fungicide	1.0 Appl.	4.67	14.07	\$45.00	63.73	0.20
Spray, Insecticide	1.0 Appl.	4.67	14.07	\$50.00	68.73	0.21
Culturing & Top Working		350.00	0.00	0.00	350.00	1.08
Tagging		97.50	0.00	0.00	97.50	0.30
Cut Trees		130.00	0.00	0.00	130.00	0.40
Shagging		292.50	0.00	0.00	292.50	0.90
Baling		276.25	12.05	0.00	288.30	0.89
Loading		211.25	18.08	0.00	229.33	0.71
Pickup		0.00	136.67	0.00	136.67	0.42
Shop		0.00	0.00	71.43	71.43	0.22
Miscellaneous and Overhead		0.00	0.00	151.52	151.52	0.47
Interest: Operating Capital	6.0 mons	0.00	0.00	43.47	43.47	0.13
Total VARIABLE COSTS		1,417.23	197.08	474.66	2,088.98	6.43
<u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Tree*</u>
CASH Costs						
Pickup Insurance				acre	31.97	0.10
Property Taxes				acre	15.00	0.05
Total CASH Fixed Costs					46.97	0.14
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					3,689.05	11.35
NON-CASH Costs						
Machinery and Equip - Dep., Int., & Ins.				acre	\$16.37	0.05
Pickup - Depreciation & Interest				acre	96.60	0.30
Shop				acre	177.68	0.55
Land Interest Charge				acre	400.00	1.23
Interest on Establishment Costs				acre	944.52	2.91
Total NON-CASH Fixed Costs					1,635.18	5.03
Total FIXED COSTS					1,682.15	5.18
Total of All Costs Per Acre					3,771.12	11.60
Net Projected Returns					2,053.88	6.32

* Based on trees harvested

Table 16. Nobel Fir Christmas Tree Production, Year 10, Economic Costs and Returns, \$/Acre

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Tree*</u>	
Nobel-fir Christmas trees, Grade #1		80	Trees	20.00	1,600.00	20.00	
Nobel-fir Christmas trees, Grade #2		70	Trees	15.00	1,050.00	15.00	
Total GROSS Income		150			2,650.00	17.67	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Tree*</u>
Culturing & top working			206.25	0.00	0.00	206.25	1.38
Foliar Testing			0.00	0.00	5.00	5.00	0.03
Fertilizer, Hand Application	1.0 hours		14.00	0.00	50.00	64.00	0.43
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour		22.40	2.14	8.25	32.79	0.22
Tagging			45.00	0.00	0.00	45.00	0.30
Cut trees			60.00	0.00	0.00	60.00	0.40
Shagging			135.00	0.00	0.00	135.00	0.90
Baling			127.50	12.05	0.00	139.55	0.93
Loading			97.50	18.08	0.00	115.58	0.77
Pickup			0.00	136.67	0.00	136.67	0.91
Shop			0.00	0.00	71.43	71.43	0.48
Miscellaneous and Overhead			0.00	0.00	80.90	80.90	0.54
Interest: Operating Capital	6.0 mons		0.00	0.00	23.21	23.21	0.15
Total VARIABLE COSTS			707.65	168.94	238.79	1,115.38	7.44
<u>FIXED COSTS</u>					<u>Unit</u>	<u>Total</u>	<u>Cost/Tree*</u>
CASH Costs							
Pickup Insurance					acre	31.97	0.21
Property Taxes					acre	15.00	0.10
Total CASH Fixed Costs						46.97	0.31
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS						1,487.65	9.92
NON-CASH Costs							
Machinery and Equip - Dep., Int., & Ins.					acre	\$2.78	0.02
Pickup - Depreciation & Interest					acre	96.60	0.64
Shop					acre	177.68	1.18
Land Interest Charge					acre	400.00	2.67
Interest on Establishment Costs					acre	739.14	4.93
Total NON-CASH Fixed Costs						1,416.20	9.44
Total FIXED COSTS						1,463.17	9.75
Total of all costs per acre						2,578.55	17.19
Net Projected Returns						71.45	0.48

* Based on trees harvested





Oregon Supreme Court: Bed-and-breakfast permit requires farm operator

Published 8:14 pm Thursday, July 3, 2025 By Mateusz Perkowski



Farm dwellings in agricultural zones can't serve as "bed-and-breakfasts" under home business permits unless inhabited by farm operators, according to the Oregon Supreme Court.

The state's highest court has decided a farmland dwelling in Yamhill County was improperly granted a home occupation permit for a bed-and-breakfast regardless of whether the farm operator lived there.

The ruling pertains to a 10-room bed-and-breakfast in an 8,200-square-foot home proposed by Grange Hill, the owner of an 18-acre vineyard property in an "exclusive farm use" zone.

To qualify for such a home occupation permit, a dwelling must satisfy the land use requirements for structures that are normally allowed in the EFU zone, the Oregon Supreme Court said.

"When, as here, the purported category of dwelling is a 'primary dwelling' on EFU land, those requirements include that the structure will be the home for a farm operator," the state's highest court said.

The owner's home permit occupation was approved by Yamhill County and affirmed by the state's Land Use Board of Appeals, but later overturned by the Oregon Court of Appeals.

While using a different legal analysis than the appellate court, the Oregon Supreme Court has now agreed the permit wasn't properly authorized and sent the case back to LUBA for reconsideration.

LUBA wrongly dismissed as “irrelevant” the requirement for the dwelling to be inhabited by a farm operator, incorrectly deciding that it only applies to the actual construction of the house but doesn’t continue to govern whether it can serve as a bed-and-breakfast, the ruling said.

The Oregon Supreme Court decision favors farmland preservation advocates who opposed the bed-and-breakfast, Friends of Yamhill County and 1000 Friends of Oregon, who worry that “home occupation” permits are justifying the development of lodging facilities on farmland.

Farmland preservation advocates claim that allowing lodging facilities and similar businesses to operate in agricultural zones can disrupt farming practices and inflate the value of such properties, rendering them too expensive for growers to afford.

“Friends of Yamhill County is pleased that the Supreme Court has again affirmed that farmland is for farming and farmers, and not for luxury hotels,” said Rob Hallyburton, the group’s representative.

Representatives of Grange Hill were not available for comment on the ruling as of press time.

According to the overturned LUBA’s decision, the Grange Hill property continued to meet the “design standards” of a dwelling, which means it was eligible for a home occupation permit even if it was inhabited by an innkeeper rather than the farm operator.

The Oregon Court of Appeals said that LUBA erred in affirming the county’s permit because the structure was primarily a “motel” and not a dwelling, foreclosing its use as a bed-and-breakfast home occupation.

The Oregon Supreme Court has now agreed the permit’s approval was “unlawful in substance,” though it disagreed with the appellate court’s interpretation that the structure didn’t qualify as a dwelling.

Just because a structure has “some characteristics of a motel” does not mean it’s no longer a dwelling, as the Legislature did not intend to preclude home occupation permits for structures with large portions devoted to “commercial purposes,” the ruling said.

Based on the legislative history of home business regulations, it is more relevant whether a dwelling is allowed outright in the farmland zone, which in this case requires it to be occupied by a farm operator, the Oregon Supreme Court said. “In other words, it is not enough that the structure will be occupied by ‘a person as their household,’” such as an innkeeper, the ruling said.

Inn the Ground, another bed-and-breakfast involved in a similar land use dispute, believes the ruling should dispose of the case in its favor, said Mark Hoyt, its attorney.

The Supreme Court has ruled that a home occupation must be conducted in a structure approved as of right in the EFU zone, which in this case was a farm dwelling but will include others as well, he said.

In the case of Inn the Ground, the structure is approved outright as a replacement dwelling, which should allow the proposal to proceed, though opponents may disagree, Hoyt said.

“The real impact of the decision is the requirement that when a home occupation permit is sought, the applicant must show that the structure in which the home occupation will be conducted is a structure allowed as of right in an EFU zone,” he said. “If that standard is met, the design of the structure itself is of limited relevance, and the other factors applied to approval of home occupations come into play.”



SKETCH REPORT

Goodroe Neighbor

Property address

10450 NE Equestrian Dr
McMinnville, OR

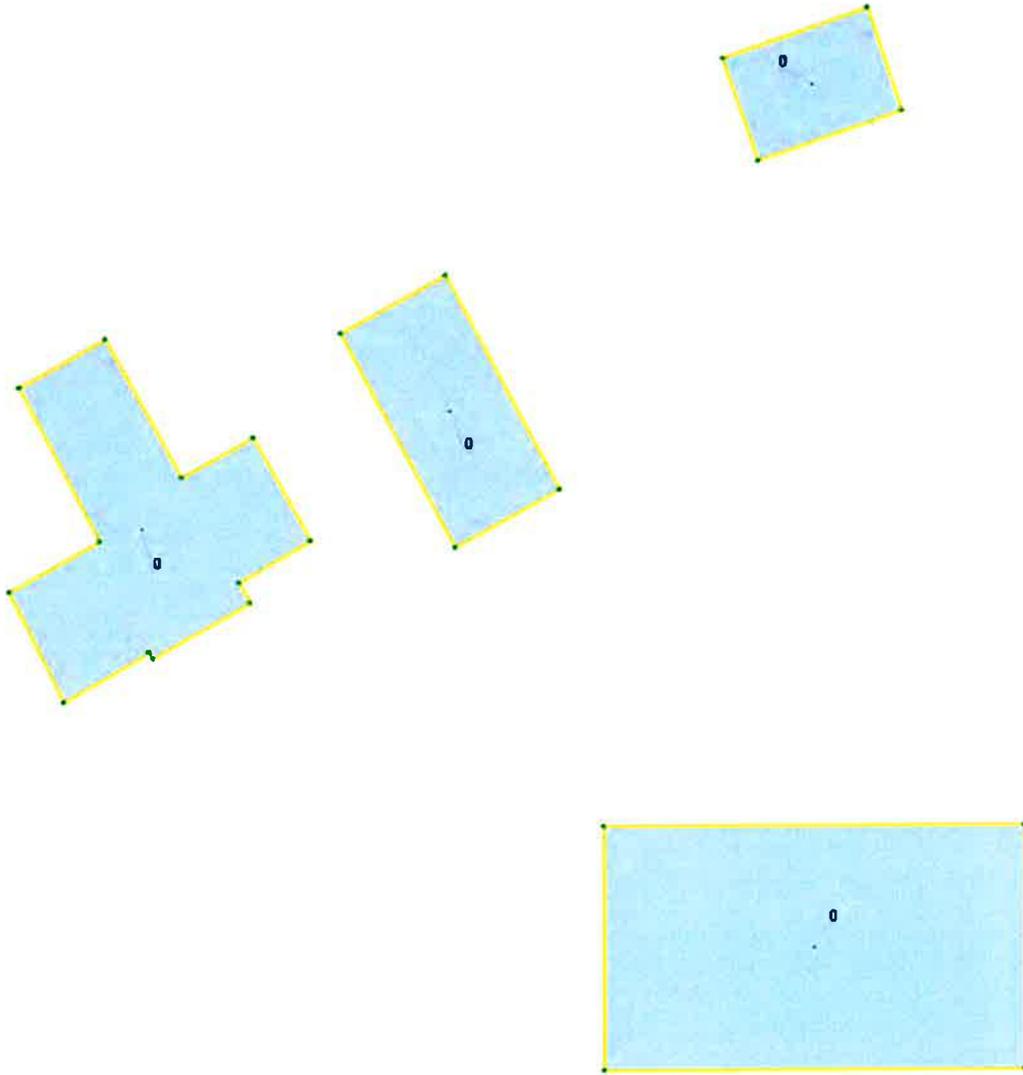
Prepared by

Chris Ekerson
Your Address Here

5036849123
sales@reroofnow.com



SKETCH REPORT | PITCH DIAGRAM



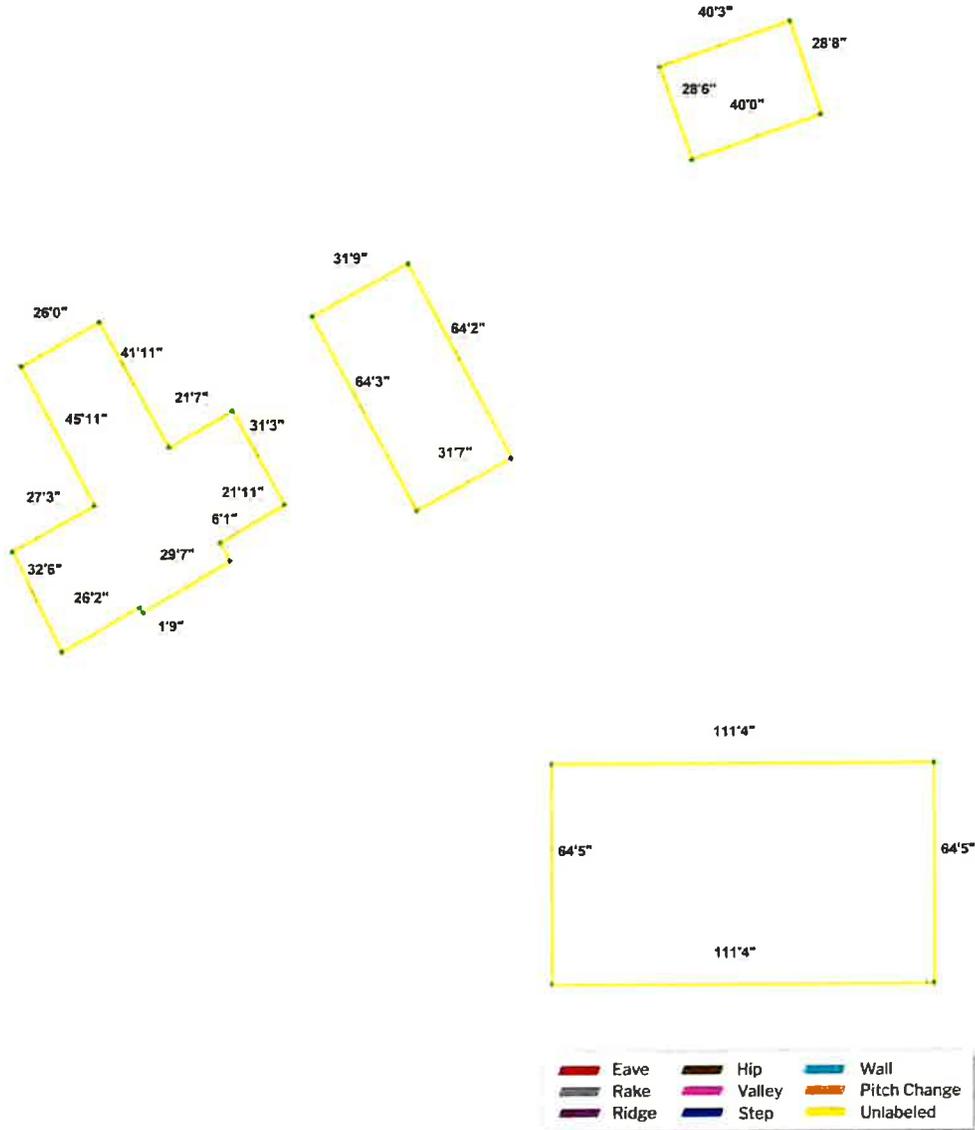
Goodroe Neighbor
October 28, 2025

Property address
10450 NE Equestrian Dr
McMinnville, OR

Prepared by
Chris Ekerson
Your Address Here

5036849123
sales@reroofnow.com

SKETCH REPORT | MEASUREMENTS DIAGRAM



Goodroe Neighbor
October 28, 2025

Property address
10450 NE Equestrian Dr
McMinnville, OR

Prepared by
Chris Ekerson
Your Address Here

5036849123
sales@reroofnow.com

SKETCH REPORT | MEASUREMENTS

Waste calculation

	Actual	+5%	+10%	+15%	+20%	+25%
Squares	140.89	147.93	154.98	162.02	169.07	176.11
Area	14,089 ft. ²	14,793 ft. ²	15,498 ft. ²	16,202 ft. ²	16,907 ft. ²	17,611 ft. ²

Line measurements

Eaves	0 ft.
Rakes	0 ft.
Ridges	0 ft.
Hips	0 ft.
Valleys	0 ft.
Step	0 ft.
Wall	0 ft.
Pitch change	0 ft.

Category measurements

Ice & water shield	0 ft.
Ridge vent	0 ft.
Rake edge	0 ft.
Eave edge	0 ft.
Step flashing	0 ft.
Apron flashing	0 ft.
Gutters	0 ft.
Gutter toppers	0 ft.
Down spouts	0 ft.

Pitch measurements

0/12	140.89 sqs.
-------------	-------------

Goodroe Neighbor

October 28, 2025

Property address

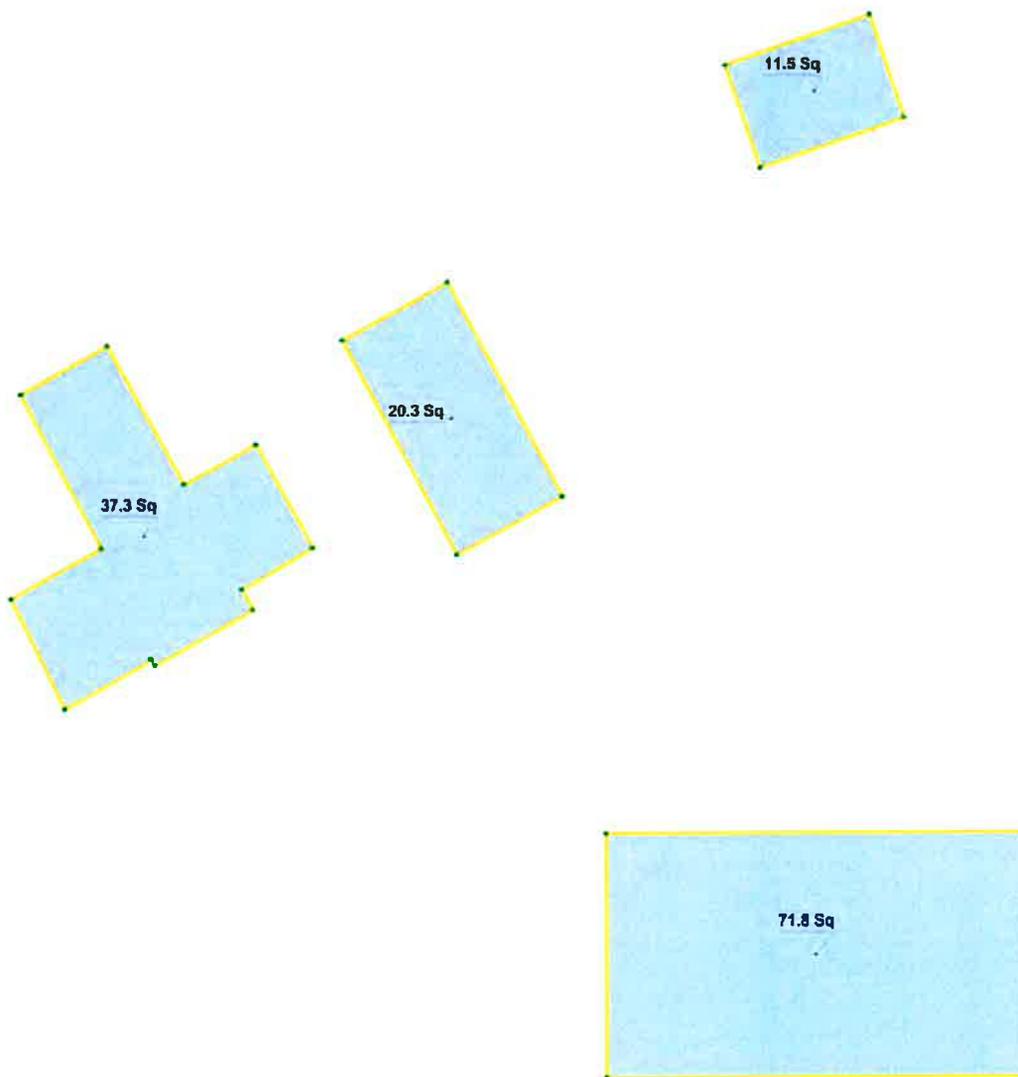
10450 NE Equestrian Dr
McMinnville, OR

Prepared by

Chris Ekerson
Your Address Here

5036849123
sales@reroofnow.com

SKETCH REPORT | AREA DIAGRAM



Goodroe Neighbor

October 28, 2025

Property address

10450 NE Equestrian Dr
McMinnville, OR

Prepared by

Chris Ekerson
Your Address Here

5036849123
sales@reroofnow.com



Septic Site Evaluation Approval

979-25-000050-EVAL

Website: <https://www.co.yamhill.or.us/planning>

Date issued: 07/21/2025
Application status: Site Evaluation Approved
Work description: Site evaluation for future hardship and commercial use for business

Applicant: M & H OREGON CONSTRUCTION LLC
Address: 1524 SE ESSEX ST
MCMINNVILLE OR 97128
Phone: 5038575224
Email: sales@mhoregon.com

Primary contractor: M & H OREGON CONSTRUCTION LLC
CCB: 236562
Address: 1524 SE ESSEX ST
MCMINNVILLE OR 97128
Phone: 5038575224
Email: sales@mhoregon.com

Owner: CONTRERAS SARA H

Property address: 10431 NE Equestrian Dr,
Mcminville, OR 97128

Address: 10431 NE EQUESTRIAN DR
MCMINNVILLE OR 97128

Owner: CEJA ISIDRO J

Address: 10431 NE EQUESTRIAN DR
MCMINNVILLE OR 97128

Parcel: R4401 02300 - Primary Township: 4S Range: 4W Section: 1

Lot size: 5.5 Water supply: Well
Zoning: N/A City/County/UGB: N/A
Accessory Dwelling Unit: No

Proposed use of structure: FUTURE HARDSHIP HOME AND COMMERCIAL BUSINESS
Category of construction: Commercial

General Specifications

Max peak design flow: 375 gpd. Proposed gallons per day: N/A
Min septic tank volume: 1000 gal. Min dosing tank volume: N/A

System Specifications

System type: Standard Replacement Area: Standard
System distribution type: Equal Replacement Area: Equal
Distribution method: Equal Replacement Area: Equal

Trench Specifications

Trench linear feet: 375 linear ft. Replacement Area: 375 linear ft.

CALL BEFORE YOU DIG...IT'S THE LAW

ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth by Oregon Administration Rules. You may obtain copies of the rules by calling the center. (Note: The telephone number for the Oregon Utility Notification Center is 1-800-332-2344.)

Date issued: 07/21/2025
Application status: Site Evaluation Approved
Work description: Site evaluation for future hardship and commercial use for business

Max depth:	24 in.	24 in.
Min depth:	18 in.	18 in.
Special Requirements	Initial System	Replacement Area
Stakeout required:	Yes	Yes
Groundwater type:	Temporary	Temporary
Groundwater depth:	24 in.	24 in.
Drainfield type:	Standard	Standard
Drainfield sizing:	150 linear ft/150 gal.	150 linear ft/150 gal.

THIS IS NOT YOUR PERMIT. A Construction/Installation permit is required before you construct your system. Please contact this office when you are ready to apply for a construction/installation permit. We cannot sign off on any Building Codes forms until we issue your permit.

This site approval runs with the land and will automatically benefit subsequent owners. This site approval is valid until the approved system is constructed under a DEQ construction permit or unless the site is altered without approval from this office. Alterations/excavations/lot line adjustments made to the site, or placement of wells or utilities, etc., may invalidate this approval.

If you disagree with the decision of this report, you may apply for a site evaluation report review. The application for a site evaluation report review must be submitted to DEQ in writing within 60 days after the site evaluation report issue date and must include the site evaluation review fee in OAR 340-071-0140 Table 9A. A senior DEQ staff person will be assigned the site evaluation report review application.

You may apply for a variance to the onsite wastewater treatment system rules. The variance application must include a copy of the site evaluation report, plans and specifications for the proposed system, specify the rule(s) to which a variance is being requested, demonstrate the variance is warranted, and include the variance fee in OAR 340-071-140 Table 9C. A variance may only be granted if the variance officer determines that strict compliance with a rule is inappropriate or special physical conditions render strict compliance unreasonable, burdensome or impractical. A senior DEQ variance officer will be assigned the variance application.



Suzan Richardson

Sanitarian

7/21/25

CALL BEFORE YOU DIG...IT'S THE LAW

ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth by Oregon Administration Rules. You may obtain copies of the rules by calling the center. (Note: The telephone number for the Oregon Utility Notification Center is 1-800-332-2344.)



Site Evaluation

R4401 02300 Csla - shop and hardship dwelling
 NE Equestrian Dr, McMinnville
 July 2025



Jul 21, 2025

Prepared by
 Yamhill County Planning, sr

SOIL NOTES FORM

Date: 7/18/2025 Tax Lot # R4401 02300 Lot # _____ Parcel Size: 5.5 acres EF-40

Applicant Ceja/Schroeder Evaluator Richardson

Pit # 1 Latitude 45 14.822 Longitude -123 07.7956

	Depth	Texture	Color	Roots	Structure	Redox	Notes
Horizon 1	<u>0 - 7</u>	<u>L</u>	<u>7.5 YR 4/2</u>	<u>2 vff</u>	<u>2 SBK F</u>		
Horizon 2	<u>7 - 24</u>	<u>SiC</u>	<u>7.5 YR 4/2</u>	<u>1 vff</u>	<u>2 SBK M</u>		
Horizon 3	<u>24 - 43</u>	<u>SiC</u>	<u>7.5 YR 6/3</u>	<u>1 vff</u>	<u>2 ABK C</u>	<u>yes</u>	<u>7.5 YR 7/1 Fe depletions, distinct</u>
Horizon 4							
Additional							

Pit # 2 Latitude 45 14.8304 Longitude -123 07.8071

	Depth	Texture	Color	Roots	Structure	Redox	Notes
Horizon 1							<u>like pit #1 except massive structure at 40"</u>
Horizon 2							
Horizon 3							
Horizon 4							
Additional							

Slope %: 0 - 3 Aspect: flat field, somewhat disturbed on surface Groundwater: Temporary Permanent

Initial System: Design Flow 300 gallons per day Replacement System: Design Flow 300 gallons per day

Type: standard - equal Type: standard - equal

Field Size: 300 linear feet Field Size: 300 linear feet

System Sizing 150 per 150 gallons System Sizing: 150 per 150 gallons

Depth Min 18 Max 24 Depth Min 18 Max 24

Notes: Area has been somewhat disturbed by vehicle traffic. Do not drive over, fill, or grade septic installation area.

SOIL NOTES FORM

Date: 7/18/2025 Tax Lot # R4401 02300 Lot # _____ Parcel Size: 5.5 acres EF-40

Applicant Ceja/Schroeder Evaluator Richardson

Pit # 1 Latitude 45 14.822 Longitude -123 07.7956

	Depth	Texture	Color	Roots	Structure	Redox	Notes
Horizon 1	<u>0 - 7</u>	<u>L</u>	<u>7.5 YR 4/2</u>	<u>2 vff</u>	<u>2 SBK F</u>		
Horizon 2	<u>7 - 24</u>	<u>SiC</u>	<u>7.5 YR 4/2</u>	<u>1 vff</u>	<u>2 SBK M</u>		
Horizon 3	<u>24 - 43</u>	<u>SiC</u>	<u>7.5 YR 6/3</u>	<u>1 vff</u>	<u>2 ABK C</u>	<u>yes</u>	<u>7.5 YR 7/1 Fe depletions, distinct</u>
Horizon 4							
Additional							

Pit # 2 Latitude 45 14.8304 Longitude -123 07.8071

	Depth	Texture	Color	Roots	Structure	Redox	Notes
Horizon 1							<u>like pit #1 except massive structure at 40"</u>
Horizon 2							
Horizon 3							
Horizon 4							
Additional							

Slope %: 0 - 3 Aspect: flat field, somewhat disturbed on surface Groundwater: Temporary Permanent

Initial System: Design Flow 375 gallons per day Replacement System: Design Flow 375 gallons per day

Type: standard - equal Type: standard - equal

Field Size: 375 linear feet Field Size: 375 linear feet

System Sizing 150 per 150 gallons System Sizing: 150 per 150 gallons

Depth Min 18 Max 24 Depth Min 18 Max 24

Notes: Area has been somewhat disturbed by vehicle traffic. Do not drive over, fill, or grade septic installation area.

SOIL NOTES FORM

Date: 7/18/2025 Tax Lot # R4401 02300 Lot # _____ Parcel Size: 5.5 acres EF-40

Applicant Ceja/Schroeder Evaluator Richardson

Pit # 1 Latitude 45 14.822 Longitude -123 07.7956

	Depth	Texture	Color	Roots	Structure	Redox	Notes
Horizon 1	<u>0 - 7</u>	<u>L</u>	<u>7.5 YR 4/2</u>	<u>2 vff</u>	<u>2 SBK F</u>		
Horizon 2	<u>7 - 24</u>	<u>SiC</u>	<u>7.5 YR 4/2</u>	<u>1 vff</u>	<u>2 SBK M</u>		
Horizon 3	<u>24 - 43</u>	<u>SiC</u>	<u>7.5 YR 6/3</u>	<u>1 vff</u>	<u>2 ABK C</u>	<u>yes</u>	<u>7.5 YR 7/1 Fe depletions, distinct</u>
Horizon 4							
Additional							

Pit # 2 Latitude 45 14.8304 Longitude -123 07.8071

	Depth	Texture	Color	Roots	Structure	Redox	Notes
Horizon 1							<u>like pit #1 except massive structure at 40"</u>
Horizon 2							
Horizon 3							
Horizon 4							
Additional							

Slope %: 0 - 3 Aspect: flat field, somewhat disturbed on surface Groundwater: Temporary Permanent

Initial System: Design Flow 375 gallons per day Replacement System: Design Flow 375 gallons per day

Type: standard - equal Type: standard - equal

Field Size: 375 linear feet Field Size: 375 linear feet

System Sizing 150 per 150 gallons System Sizing: 150 per 150 gallons

Depth Min 18 Max 24 Depth Min 18 Max 24

Notes: Area has been somewhat disturbed by vehicle traffic. Do not drive over, fill, or grade septic installation area.

Yamhill County

DEPARTMENT OF PLANNING AND DEVELOPMENT

400 NE BAKER STREET - McMinnville, Oregon 97128

Phone: (503) 434-7516 - Fax: (503) 434-7544 - Internet Address: <https://www.co.yamhill.or.us/283/Planning-Development>

Application # 979-25-000050-Eval Application Date: 7-3-25

PLEASE PRINT

Applicant's Name & Address:

JAMER CEJA

10431 NE EQUESTRIAN DR

McMINNVILLE, OR 97128

Telephone: 971 241 6533

Water Supply: Well Community System Other _____

Email Address: JCEJA8227@YAHOO.COM

Tax Lot Number (PIN) 4401-2300

Lot Size (acreage/dimension): _____

Owner's Name & Address: (if different than applicant)

Telephone: SAME

Site Address: _____

Email Address: _____

Subdivision/Lot#: _____

SITE EVALUATION	
<input type="checkbox"/> Proposed Facility or <input type="checkbox"/> Existing Facility	
<input checked="" type="checkbox"/> Single Family Dwelling Indicate # of bedrooms, if known _____	
<input type="checkbox"/> Accessory Building Describe Usage: _____	
<input checked="" type="checkbox"/> Commercial Describe Usage: <u>WATER DAMAGE RESTORATION</u>	
Maximum # of employees: <u>5</u> Maximum # of patrons: _____	
<input type="checkbox"/> Showers <input type="checkbox"/> Food Preparation	
<input type="checkbox"/> Bathroom Addition <input type="checkbox"/> # of Fixtures _____	
<input type="checkbox"/> Other _____	
<input type="checkbox"/> Other _____	

CHECK LIST
Required Attachments: <input type="checkbox"/> Signed Owner Authorization form: <input type="checkbox"/> N/A <input type="checkbox"/> Tax Lot Map <input type="checkbox"/> Vicinity Map - (show entry point onto property & access to test pit site) <input type="checkbox"/> Preliminary Site Development Map - a minimum of (2) test holes with distances of 75-100 feet apart. - all wells identified within 200ft of the test holes (including neighboring properties) - any property lines within 150ft of test holes - Identify proposed house/outbuilding locations - Identify proposed driveway location - Identify all temporary and permanent water run-off areas (i.e., ponds, ditches, streams, swales, etc.) Site Ready for Inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No If not, when? _____

This site evaluation application is valid for one year from the date of submission.

A renewal application and fee will be required to extend this application for an additional year.

PLANNING
Planner Sign-off <u>Jeff Will</u>
Zoning <u>EF-40</u> Comments: _____ <u>Home Occupation Pending + Holdslup</u>

SIGNATURE
<input type="checkbox"/> Owner <input type="checkbox"/> Authorized Representative
<input type="checkbox"/> Licensed Installer - License # _____
<input checked="" type="checkbox"/> _____ Date <u>7-3-2025</u>

I understand that this site must be prepared according to the instructions in the guidance packet before action can be taken on this application. By my signature, I certify that the information I have furnished is correct, and hereby grant the Department of Environmental Quality and its authorized agent, Yamhill County Department of Planning & Development, permission to enter onto the above-described property for this application.

RECEIPT NBR <u>937331</u>	PAYMENT TYPE <u>check</u>	SEPTIC FEES <u>821.78</u>	ADMIN FEES <u>55.59</u>	TECH S/CHG <u>43.87</u>	AGENCY FEE <u>3084</u>	DEQ S/CHG <u>117</u>	TOTAL PAID <u>1,069.08</u>
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