REFORESTATION

APPLICABLE OREGON FOREST PRACTICES RULES

Planning forest operations

629-605-0140: Notification to the state forester — types of operations 629-605-0173: Plans for an alternate practice

Forest practices reforestation rules

629-610-0000: Forest practices reforestation rules
629-610-0010: Forestlands suitable for reforestation
629-610-0020: Reforestation stocking standards
629-610-0030: Natural reforestation methods
629-610-0040: Time allowed for reforestation
629-610-0050: Acceptable species for reforestation and residual stand stocking
629-610-0060: Use of non-native tree species
629-610-0070: Suspension of the reforestation rules
629-610-0080: Revegetation when reforestation is not required
629-610-0090: Exemption from reforestation for land uses not compatible with forest tree cover
629-610-0100: Exemption from reforestation for wildlife food plots

The purpose of the reforestation rules is to establish standards to ensure timely replacement and maintenance of tree cover following forest operations.

CHAPTER INDEX

| Reforestation is the law | 169 |
|--|-------|
| Required reforestation | 170 |
| Reforestation is not always required | 170 |
| Required trees per acre | 171 |
| Reforestation for partial cuts | 172 |
| Equivalent calculation formula | 172 |
| Reforestation standards for larger trees left on the unit | 173 |
| Wildlife trees may count toward reforestation requirements | 174 |
| Trees in retention areas such as riparian management areas | 174 |
| Reforestation timeline | 175 |
| Natural reforestation | 176 |
| Reforestation extensions | 176 |
| Reforestation failure | 176 |
| Acceptable tree species for reforestation | 176 |
| Non-native tree species | 177 |
| Reforestation waivers | 177 |
| Exemption from reforestation requirements | 177 |
| Land use changes | 177 |
| Penalties for inadequate reforestation | 177 |
| Understanding basal area | 178 |
| To calculate basal area | 178 |
| Measuring tree diameter at breast height (DBH) | 178 |
| Trees per acre and basal area are not the same thing | . 179 |
| Calculating the basal area of your harvest unit | 179 |
| Afforestation incentive | 180 |
| Wildlife food plots | 181 |

REFORESTATION IS THE LAW

Each year, millions of new seedlings are planted in Oregon to replace harvested trees. Harvest areas that require reforestation must be replanted within two years once logging is completed. Within six years, those seedlings must be "free-to-grow" and "welldistributed." The law is clear: It is the responsibility of the landowner to establish the next generation of trees after a harvest.

"Free-to-grow" and "well-distributed"

Reforestation involves more than just planting seedlings or saving seedlings, saplings or poles on the harvest unit. To meet the requirements at the end of six years, the harvest unit must be a stand of freely growing, well-distributed trees, of acceptable species and form, with a good chance of becoming healthy and taller than neighboring, competing grass and brush.

An effort must be made to reforest the entire harvest unit. However, the unit will be considered adequately stocked and the trees welldistributed if 80% or more of the harvest unit has at least the minimum required per-acre tree stocking. No more than 10% may contain less than one-half of the minimum per-acre tree stocking required for the site class.

These allowances are not loopholes in the reforestation standards, but rather reflect the variable results that may occur even when initial plantings are well-distributed. It's usually a good idea to plant extra trees to account for those that may die or not reach free-to-grow status after six years.



Above: These ponderosa pine are free-to-grow. Right: This Douglas-fir is not free-to-grow.

Planning for reforestation goes hand in hand with timber harvest planning. The harvest activity often triggers both the need and the time limits for reforestation. Harvest machines and activities can be used in ways that promote successful reforestation. Some income from the harvest usually is budgeted for purchasing seedlings and paying for other reforestation-related expenses.

Landowners should order seedlings one to two years before they need them. The Oregon Department of Forestry (ODF) has helpful information on ordering and purchasing seedlings (see PDF at **KnowYourForest.org/ manual-links**). Reforestation and seedling information is also available on **KnowYourForest.org**.

Required reforestation

Timely reforestation of forestland is essential following operations that reduce the number of trees below Oregon's established tree-stocking standards, to ensure continuous growth and harvesting of forest trees.

Reforestation is required any time tree stocking after harvest is below the minimum standards, even if harvest occurs in a riparian area. This applies regardless of what the tree stocking was before the harvest.

The landowner is responsible for reforestation, regardless of who cuts the trees. When the land is sold, that obligation transfers to the buyer if the reforestation requirements are not completed. By law, the seller must inform the buyer in writing of any remaining reforestation requirement. Know your legal obligations whether you're a land buyer or seller.

Any forestland of Site Class VI or lower is subject to the requirements of the reforestation rules. See the Planning chapter.

Reforestation is not always required

Reforestation is not required on these portions of the harvest area:

- where adequate free-to-grow tree stocking remains after logging is complete (Type 2 and Type 4 harvests)
- sites that are not disturbed by logging operations
- sites lower than Site Class VI
- where an approved plan for alternative action has been established (e.g., a wildlife food plot)



This harvest unit includes portions that don't require reforestation. For example, you are not required to plant areas that were not disturbed where young conifer reproduction and hardwoods are growing; areas with very shallow soils that don't support trees; and areas that are lower than Site Class VI.

Required trees per acre

Use Table 6-1 to determine the minimum stocking requirements for high-, mediumor low-elevation site class harvest units. You can meet the requirements by either planting seedlings (Column 2), leaving adequate saplings or poles (Column 3), leaving adequate basal area in trees 11 inches and larger (Column 4), or a combination of the three. Combinations are determined by using the "equivalent calculation." All these choices can and should be made when you plan your timber harvest. To learn more about calculating basal area, see page 178 at the end of this chapter.

| Table 6-1 Reforestation requirements for high, medium and low site classes | | | | | |
|--|------------------|---|--------------------------------------|--|--|
| Site class Site class Site class (less than 1 inch DBH) or → | | Saplings & poles (1-10 inches DBH) or → | Trees 11 inches and larger | | |
| High (Site Classes I, II and III) | 200 per acre, or | 120 trees per acre, or | 80 square ft. of basal area per acre | | |
| Medium (Site Classes IV and V) | 125 per acre, or | 75 trees per acre, or | 50 square ft. of basal area per acre | | |
| Low (Site Class VI) | 100 per acre, or | 60 trees per acre, or | 40 square ft. of basal area per acre | | |

Note that these are the minimum numbers of free-to-grow trees required. As reforestation plans are developed, it's important to consider local conditions and whether all planted and residual trees can be expected to grow and thrive. In addition, the minimum stocking levels may not meet your management objectives.

Seedlings are live trees of acceptable species of good form and vigor less than 1 inch in diameter at breast height (DBH). Saplings and poles are live trees of acceptable species of good form and vigor, with a DBH of 1 to 10 inches.

| Table 6-2 Tree number and equivalent tree spacing | | | |
|---|---------------------------|--|--|
| Trees per acre | Average spacing (feet) | | |
| 435 | 10 | | |
| 300 | 12 | | |
| 200 | 15 | | |
| 125 | 19 | | |
| 120 | 19 | | |
| 100 | 21 | | |
| 75 | 24 | | |
| 60 | 27 | | |

Table 6-2 converts the number of trees per acre to average spacing. For example, if the average spacing between remaining saplings and poles on your Site Class IV harvest unit is approximately 19 feet, you have more than the required 75 trees per acre (saplings or poles, not seedlings).

Between 300 and 435 trees per acre are included in Table 6-2 because higher planting densities are often used on better sites, as well as to account for factors that affect how many trees make it to the free-to-grow stage, such as animal damage, brush competition and mortality. The first few years after harvest are critical for seedling survival and growth. Promptly planting suitable seedling stock, controlling competing brush and other measures can help ensure reforestation success. Seek out technical assistance and local expertise, if needed.

Reforestation for partial cuts

The equivalent calculation is useful if you're planning a timber harvest in which some areas of seedlings, saplings and poles, as well as healthy larger trees, will be left. Such a harvest could reduce the need for handplanting new seedlings, but you need to determine their equivalent value. Use the calculation described here.

Note: Regardless of the site class, the following are equal to one another:

100 seedlings

- = 60 saplings and poles
- = 40 square feet of basal area of 11-inch DBH and larger trees.

Equivalent calculation formula

NEW TREES = RULE STANDARD - [# SEEDLINGS + (# SAPLINGS AND POLES ÷ 0.6) + (BASAL AREA ÷ 0.4)]

New trees are the minimum number of additional freeto-grow seedlings that must be established per acre to meet the Table 6-1 standard.

Rule standard is the site class seedling standard listed in Table 6-1 (200, 125 or 100 seedlings per acre, depending on site class).

seedlings means the number of free-to-grow seedlings per acre that were left after harvest.

saplings and poles means the number of free-togrow saplings and poles per acre that were left after harvest. This is divided by the equivalent factor (0.6). This includes wildlife trees and trees left in patches.

Basal area means basal area per acre of free-to-grow trees greater than or equal to 11 inches DBH that were left after harvest. This is divided by the equivalent factor (0.4).

HERE'S AN EXAMPLE:

This Site Class IV, Type 3 harvest has the following trees remaining after the harvest.

Average seedlings per acre = 35Average number of saplings and poles per acre = 8Average basal area per acre of trees equal or greater than 11 inches DBH = 15

Use the equivalent calculation formula to determine seedling equivalents:

8 saplings and poles per acre \div 0.6 = 13 seedling equivalents

15 square feet of basal area per acre \div 0.4 = 38 seedling equivalents

35 + 13 + 38 = 86 seedling equivalents

Site Class IV reforestation requirements (Table 6-1) call for a minimum of 125 seedlings per acre, or equivalent larger trees. The equivalent calculation shows that stocking is not adequate. An additional 39 seedlings per acre must be planted, as shown in the calculation below.

FROM THE EQUIVALENT CALCULATION FORMULA:

125 tree standard -(35 + 13 + 38)= 39 new seedlings to be planted per acre.

| Table 6-3 Equivalent reforestation standards for trees of varying diameters | | | | | | | |
|---|------------------------------|--|---------------------------------------|--|---------------------------------------|--|---------------------------------------|
| Avg. DBH of trees 11" or greater | Basal area (ft²) per tree | # Trees equal to 80 ft ² BA per acre | Avg. space between trees (feet) | # Trees equal to 50 ft ² BA per acre | Avg. space between trees (feet) | # Trees equal to 40 ft ² BA per acre | Avg. space between trees (feet) |
| 11 | 0.66 | 122 | 19 | 76 | 23 | 61 | 26 |
| 12 | 0.79 | 102 | 21 | 64 | 26 | 51 | 29 |
| 14 | 1.07 | 75 | 24 | 47 | 31 | 37 | 34 |
| 16 | 1.40 | 58 | 27 | 36 | 35 | 29 | 39 |
| 18 | 1.77 | 46 | 31 | 28 | 39 | 22 | 44 |
| 20 | 2.20 | 37 | 34 | 23 | 44 | 18 | 49 |
| 22 | 2.60 | 31 | 37 | 19 | 48 | 15 | 54 |
| 24 | 3.14 | 26 | 41 | 16 | 52 | 13 | 58 |
| 26 | 3.69 | 22 | 44 | 14 | 56 | 11 | 63 |
| 28 | 4.28 | 19 | 48 | 12 | 60 | 10 | 68 |
| 30 | 4.90 | 17 | 51 | 11 | 63 | 8 | 73 |
| 32 | 5.58 | 15 | 54 | 9 | 69 | 7 | 78 |

Reforestation standards for larger trees left on the unit

When planning a harvest in which trees 11 inches in diameter or larger will be left, the basal area of these trees determines whether the reforestation standards (Table 6-1) will be met. Table 6-3 shows the basal area (Column 2) for individual trees with diameters ranging from 11 to 32 inches DBH. For a given average tree diameter, the other columns show the number of trees per acre that equal the reforestation standards of 80, 50 or 40 square feet of basal area, and the average spacing between those trees. This helps in assessing and planning for reforestation needs.

FOR EXAMPLE:

Let's say you're planning to harvest on a Site Class III. You know from Table 6-1 that at least 80 square feet of basal area per acre of 11 inch or greater DBH trees must be left to meet the reforestation standards.

According to Table 6-3, 80 square feet of basal area could be 122, 11-inch trees with average spacing of 19 feet, or it could be 15, 32-inch trees with average spacing of 54 feet, or some other combination of average diameter and spacing for the trees you must leave.

Note the importance of site quality: Another harvest is planned on a Site Class VI area, which has a reforestation requirement of 40 square feet of basal area per acre. You would need to leave 61, 11-inch trees with an average spacing of 26 feet, or seven 32-inch trees with an average spacing of 78 feet.

In either case, if the minimum basal area can't be maintained with the expected harvest removals, you need to plan for tree planting to meet the reforestation requirements.



Above: Wildlife trees in upslope areas should be in groups of at least 15 trees. Right: One of the best places to leave wildlife trees is adjacent to riparian areas.

Wildlife trees may count toward reforestation requirements

Live trees left standing to provide wildlife habitat that meet Oregon's wildlife tree standards may be counted toward reforestation stocking requirements if they are free-to-grow. Live conifer trees 11 inches DBH and larger left standing in harvested areas to meet the wildlife tree and snag requirements will be counted toward reforestation stocking standards if the trees are free-to-grow.

To meet both reforestation and wildlife tree requirements, trees must be conifers at least 11 inches DBH, 30 feet tall and free-to-grow. The law allows these conifers to be doublecounted. This is an incentive for landowners to retain free-to-grow



conifers, rather than hardwoods, as wildlife trees. In general, conifers live and last longer and are used by more wildlife species.

The best place to leave these trees is adjacent to riparian areas or in upslope areas in groups of at least 15 trees. These trees can also be left to anchor important features such as seeps, springs or headwater areas.

Trees in retention areas such as riparian management areas

Tree stocking in riparian management areas (RMAs) within an operation area are considered separately from stocking in the rest of the operation area, in determining compliance with the tree stocking requirements of the reforestation rules. Since the purpose of an RMA is water protection, it's important that RMAs are planted after harvest. You're not allowed to leave understocked openings in the RMA where harvesting has occurred. Landowners are expected to do site preparation and planting inside RMAs, and make goodfaith efforts to reforest streamside areas. ODF determines if a reasonable effort has been made. However, a slightly lower level of stocking in an RMA is preferable to repeated chemical or mechanical methods to achieve full stocking.

Free-to-grow trees left in the undisturbed parts of the RMA cannot be counted toward the required stocking of the disturbed area. Similarly, reforestation is not required in understocked parts of the RMA if they were not disturbed by the operation.

Reforestation timeline

The time period begins at the completion of the harvest operation or 12 months after tree stocking has been reduced, whichever comes first.

Completing the operation means the timber harvest has been completed and the harvest unit will not be disturbed again. Usually when the yarding process ends, the harvest is considered completed. To prevent delays in reforestation, the compliance schedule begins no later than 12 months after tree stocking is reduced, meaning 12 months after felling begins.

If the harvesting activity extends for a long time, reforestation may be required to begin on a finished portion of a harvest unit even though other parts are not completed. Whether you intend to depend on natural reforestation, hand-plant seedlings or plant seed, once the clock starts, you have 12 months to start reforestation activities such as planting site preparation and ordering tree seedlings. For example, if yarding ends on May 1, you should begin site preparation and order seedlings in the next 12 months. Planting could occur during the coming winter or spring if site prep is completed and seedlings are available. Site preparation is often tied to slash treatment.

If you intend to hand-plant seedlings or plant seed, this must be done within 24 months of when logging was completed unless ODF has approved a written plan for natural reforestation. Remember, reforestation timing is critical if your timber harvest is completed in the fall. For example, if the harvest ends Oct. 1, site preparation activities such as slash burning or herbicide spraying may not be possible due to weather. The first planting season (December to April) could be lost. In this case, site preparation would have to be completed before the second planting season, so that planting could be done during that season.

An adequately stocked, free-to-grow stand must be established by Dec. 31 of the sixth year after the reforestation compliance period has started. For example, all operations completed in 2024 that depend on hand-planting seedlings or planting seed must have a free-to-grow stand established before the end of 2030. Six full calendar years are allowed to establish the next generation of trees.

Completion of harvest.

First year – reforestation begins; second year – planting completed. Control brush and grass competition. Chemical herbicides are one method.

Within six years – free-to-grow stand is established.



Using natural reforestation can be less costly than hand-planting, but its reliability varies. A written plan is required for natural reforestation.

Natural reforestation

Natural reforestation relies on natural processes to reforest a harvest unit. It is acceptable with a written plan approved by ODF. On Site Class VI or other harvest units with poor soils or harsh climates, natural reforestation may be the best way to reforest. In the case of wetlands with high-water tables, competing vegetation and limited accessibility, natural reforestation may have greater success than hand planting.

Landowners may submit plans for alternate practices such as natural reforestation that do not conform to the reforestation stocking standards. A plan for alternate practices may be approved if ODF determines there is a high probability that the purpose of the reforestation rules will be achieved.

Landowners must submit a written plan to ODF for an alternate reforestation practice within 12 months of tree stocking reduction. The plan should describe how reforestation will be accomplished, and should include the following:

- seed sources to be used
- site preparation methods
- vegetation competition control methods

- time estimate to obtain a free-togrow stand
- how progress will be evaluated
- what will be done if reforestation does not progress as planned

Time limits for natural reforestation may differ.

When natural reforestation is planned, the time limits for evidence of successful germination and for establishing a free-to-grow stand of trees that meets or exceeds the minimum stocking level required for the site shall be established in the approved written plan required for such methods.

A natural reforestation plan must provide specific time limits for site preparation, evidence of reforestation success, and establishment of a freeto-grow stand. The deadlines should not be shorter than six years and rarely longer than 10 years.

Reforestation extensions

Extensions are granted when reforestation cannot be accomplished within six years due to circumstances beyond the landowner's control. Those circumstances are determined by ODF and may include:

- tree nursery failure
- inadequate availability of seedlings after salvage harvesting
- · extreme drought
- insect infestations
- smoke management restrictions on slash burning
- wildfire or disease damage
- severe wildlife damage that could not be reasonably anticipated or controlled

You must submit a written request for an extension to ODF as soon as you realize your reforestation effort may not meet the deadline. Extensions are granted based on evidence documenting reasonable attempts to comply. An extension will still require you to achieve stocking within a prescribed time using recognized methods.

Reforestation failure

There are several situations where reforestation failure would be considered the fault of the landowner. These include:

- failure of hand-planting success when inappropriate seedlings or seed sources are used
- natural reforestation failures due to poor natural seed crops in the years immediately following a harvest
- failures on harsh sites due to harvest unit design or competing vegetation
- wildlife damage, such as by mountain beaver, that could be reasonably expected and controlled

Reforestation is required, and reforestation failures can result in penalties. See the section on penalties described on the next page.

Acceptable tree species for reforestation

ODF determines the tree species acceptable for artificial and natural reforestation, as well as residual seedling, sapling and pole, or larger tree stocking, based on all the following criteria:

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

In nearly all cases, native species are considered acceptable and are preferred for reforestation. One exception could be white fir that has moved into a ponderosa pine or Douglas-fir site due to fire exclusion. On Site Classes IV, V and VI, landowners are encouraged to favor ponderosa pine and Douglas-fir to white fir.

A conifer or hardwood species that has any commercial value (even commercial firewood) will meet the second requirement above. A hardwood or mixed hardwood and conifer stand is as much a forest as a stand of pure conifers.

Tree species that are not currently marketable – or not marketable in the foreseeable future – cannot be used for tree stocking. Generally, juniper is not considered acceptable, but it often grows on poor sites (lower than Site Class VI) where reforestation is not required anyway.

Hardwood trees remaining after a harvest can meet up to 20% of the required stocking levels if they meet the three criteria above. With a plan approved by ODF, hardwoods may supply all the required stocking.

When appropriate, you can reforest with a mixture of acceptable tree species to reduce the risk of insect and disease losses, and to promote stand diversity.

Hand-planted seedlings or seeds should be genetically adapted to the site where they're planted.

Non-native tree species

Landowners wishing to use non-native tree species must submit written plans for approval by ODF. The plans are required within 12 months of tree stocking reduction, and must include:

- tree species to be used
- evidence that the species is ecologically suited to the site where it will be planted
- evidence that the species is capable of producing commercial forest products
- research or field tests that show success in similar sites

Reforestation waivers

Stand improvement harvests, e.g., pre-commerical thinning, commercial thinning, overstory removal or other partial-cut harvest, are intended to increase long-term tree growth and value if done correctly. Additional reforestation may not be required. In some cases, stand improvement harvests result in stocking slightly below the stocking standard rules. If that happens, ODF must decide if freeto-grow tree stocking will occupy the site in the long term. If so, reforestation will not be necessary.

Exemption from reforestation requirements

- Landowners may request a suspension of the reforestation rules when salvaging or converting low-value forest stands to establish forest stands that are adequately stocked and free-to-grow. There must be evidence that the landowner qualifies for incentive funding and that the harvest costs will exceed revenues.
- Where reforestation is not required, landowners must protect soil productivity and stabilization within 12 months of the operation with suitable trees, shrubs, grasses or forbs.

Land use changes

Sometimes timber harvesting is done in preparation for a land use different from forestry. For example, trees often are removed when an area is developed for home sites. Such harvesting is still a forest operation subject to ODF oversight, but requirements by other state and local agencies also will require attention:

- An operations notification to ODF is required, and the form includes a place to note a land-use change.
- If you need or want to remove trees that otherwise would be required to stay or be replaced, you must submit a written plan for approval by ODF. The plan must show that local land-use agencies (city and county, usually) have approved the land-use change and will issue the needed permits, and that the change complies with regulations of other state agencies (e.g., Oregon Department of Environmental Quality and Oregon Department of Agriculture).



Replanting after a forest fire

Penalties for inadequate reforestation

Landowners can be ordered to comply with reforestation requirements, and may be fined up to \$5,000 per violation. The landowner's property tax status could also adversely change for failure to reforest or complete a conversion of forestland to a nonforest use.

UNDERSTANDING BASAL AREA

Basal area is the cross-sectional area of a tree stem at 4.5 feet above the ground. The basal area of a tree is calculated by measuring its diameter (see diagram). Tree diameter is measured at 4.5 feet above the ground on the uphill size and is referred to as the DBH (diameter at breast height). Why 4.5 feet? It provides a convenient and consistent point for measuring tree diameter.



To calculate basal area:

BASAL AREA = TREE DIAMETER² X .005454.

If you know the diameter of a tree, you can calculate its basal area. It's the same formula used to calculate the area of a circle. This tree is 9.5 inches at DBH. Its basal area is 0.5 square feet. Therefore, in our example:

Basal area = 9.5" x 9.5" x .005454 = 0.5 sq. ft.



Imagine this to be one acre. The cross-section, at DBH, of each tree is indicated.

Basal area is an important measurement. When combined with the average diameter of the trees, basal area gives people involved with a timber harvest a mental picture of the forest. If you know basal area, you can calculate the number of trees per acre, which is another part of the picture.

Basal area is usually calculated on a per-acre basis. That's because we're interested in knowing how much surface area (square feet) the tree stems are occupying on each acre. Add the individual basal area of every tree on an acre and you have the basal area per acre.

Basal area is expressed in square feet per acre. Here's a simple example: 250 trees on an acre, all with diameters of 9.5 inches DBH - 0.5 square feet each - would total 125 square feet of basal area (0.5 x 250 = 125).

Measuring tree diameter at breast height (DBH)

Obtain a diameter tape or a normal household tape to measure the DBH.

A diameter tape is convenient because it measures the tree's circumference, but its scale directly converts this amount and shows the diameter in inches.

A normal tape measure can be used to determine the circumference of a tree. The circumference is converted to diameter by the formula:

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DBH = CIRCUMFERENCE (INCHES) ÷ 3.14
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Trees per acre and basal area are not the same thing

Two separate acres can have the same basal area but a different number of trees. Tree diameters are an important influence on basal area.

FOR EXAMPLE:

These two acres have the same basal area but a different number of trees. Here's the interesting part: If you know the basal area per acre of a stand of trees and the average diameter of the trees, you can figure out the number of trees per acre.



This acre has a BA of 78.5.

If Acre 1 has 24-inch trees and 78.5 square feet of basal area, you would need 25 trees to equal 78.5 square feet per acre.

Basal area = 24" x 24" x .005454 = 3.1

78.5 sq. ft. per acre \div 3.1 = 25 trees per acre (41-foot spacing)



This acre has a BA of 78.5.

If Acre 2 has 6-inch trees and a basal area of 78.5, you would need 392 trees to equal 78.5 square feet per acre.

Basal area = $6" \times 6" \times .005454 = .2$

78.5 sq. ft. per acre \div .2 = 392 trees per acre (10.5-foot spacing)

| Table 6-4 | | Table 6-5 | |
|-----------------|-------------------------|-----------------|-------------------------|
| DBH (inches) | Basal area (sq. ft.) | DBH (inches) | Basal area (sq. ft.) |
| 6 to 10 | 0.3 | 6 | 0.2 |
| 11 to 15 | 0.9 | 8 | 0.35 |
| 16 to 20 | 1.8 | 10 | 0.55 |
| 21 to 25 | 2.9 | 12 | 0.79 |
| 26 to 30 | 4.3 | 14 | 1.07 |
| 31 to 35 | 5.9 | 16 | 1.4 |
| 36 to 40 | 7.9 | 18 | 1.77 |
| | | 20 | 2.2 |
| | | 22 | 2.6 |
| | | 24 | 3.14 |
| | | 26 | 3.69 |
| | | 28 | 4.28 |
| | | 30 | 4.9 |
| | | 32 | 5.58 |
| | | 34 | 6.3 |

Calculating the basal area of your harvest unit

The simplest way to determine the basal area of your harvest unit is to sample the stand with plots. Space plots evenly across the unit along compass lines. On each plot, measure the diameter and calculate the basal area of each tree. Circular, one-fifth-acre plots are commonly used.

To calculate the basal area of each tree on the plot, it's easiest to use Table 6-4. Or you may find it to your advantage to use Table 6-5, which has the basal areas for tree diameters listed in 2-inch increments. A third option is to calculate the basal area for 1-inch intervals using the basal area formula on the previous page. These added options provide greater accuracy in determining basal area. However, in meeting legal requirements you must be consistent - you can't switch back and forth between the tables and the formula.

7.07

36

As an example, the illustration below shows a 20-acre site with 12 one-fifth-acre plots. First record the basal area of each plot. Then calculate the total basal area for all plots and determine the average basal area per plot by dividing the total basal area by 12. Then expand the average basal area per plot to an entire acre by multiplying by five. Now you know the average basal area per acre for the 20-acre harvest unit.



AFFORESTATION INCENTIVE

There are afforestation incentive rules, administered by ODF, that encourage landowners to convert parcels of idle, non-forested land suitable for forest cover to commercial forest use. The incentive is a one-time exemption from most tree retention requirements under the Oregon Forest Practices Act, which applies to the entire first rotation following afforestation of a parcel. This single, specially exempted rotation can be of any length, determined by the landowner's choice of when to harvest.

The trees exempted from most retention rules include those that are planted and those that naturally regenerated within 10 years before or after the area is certified by ODF as afforested. Harvesting these trees otherwise must follow all applicable forest practice requirements, and all trees within 20 feet of most streams also must be retained.

To qualify for the incentive, tracts must be at least five contiguous acres and determined by ODF to have been idle or exclusively in non-forest uses, or in an understocked condition, since July 1, 1972. Other understocked forestland also may qualify for the incentive if the stocking was reduced or limited by causes other than a forest operation after July 1972. However, the afforestation incentive cannot be applied to any acre with 25 square feet or more of basal area.

WILDLIFE FOOD PLOTS

A landowner must have more than 10 acres but less than 5,000 acres, the area to be used for a food plot must currently be in forest use, and the food plot would otherwise be subject to reforestation rules.

A wildlife food plot is a small forestland area that is planted with vegetation capable of substantially contributing to wildlife nutrition instead of being used for growing and harvesting forest tree species.

Landowners may establish wildlife food plots within the boundaries of their land if they meet these requirements:

- cannot exceed 2.5% of the small forestland, if the small forestland is 500 acres or less in size;
- cannot exceed 2% of the small forestland, if the small forestland is more than 500 acres but not more than 1,000 acres in size; or
- cannot exceed 1% of the small forestland, if the small forestland is more than 1,000 acres in size.

A written plan is required for establishing a food plot, and any changes to the food plot or forest management, including reforestation, requires notification to ODF. Written plans must include:

- landowner contact information
- acreage of the small forestland where the wildlife food plot will be installed, including a map showing the location of proposed and existing wildlife food plots
- a narrative that describes the target wildlife, forage expected to substantially contribute to the nutritional requirements of the target species, and activities required to maintain the wildlife food plot, along with a timeline
- a strategy for monitoring and managing plant and animal species that may make establishing the food plot difficult

Source plants for the food plot need to avoid introducing invasive species. Plants may not be on the Oregon Department of Agriculture's noxious weed list.

If a wildlife food plot is discontinued, then the landowner will be required to reforest the food plot.



Left: establishing a wildlife food plot can provide valuable nutrition for wildlife. Right: white-tailed deer have eaten much of the available forage in this plot.

REFORESTATION