

FOREST RESEARCH NURSERY

PLANT YOUR SEEDLINGS RIGHT



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and Yvonne Carree Barkley

Handle Gently

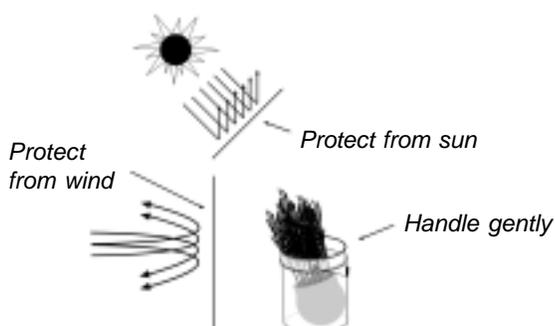
Handle your seedlings gently and as little as possible. Seedling survival and growth depends on new root growth. Root growth can be reduced by dropping your box of seedlings on the floor or tossing the box into the back of the pick-up.

Keep Them Cool

Warm seedlings use stored energy that could be used for growth after planting. If you can't plant your seedlings immediately, store them (even for a day or two) as cool as possible in the packaging material they arrived in. If you must store your seedlings for a week or more, keep them as close to 35 °F as possible. Your seedlings will keep for a couple of weeks at this temperature. Check them frequently.

Only remove from refrigerated storage the seedlings you expect to plant that day. If your storage area is close to your planting site, it's even better to remove the seedlings in batches, allowing seedlings planted later in the day to stay cool as long as possible. At the end of the day, place any remaining seedlings back into refrigerated storage.

During storage and planting, keep bundles of seedlings out of direct sun, but be careful how you shade them. Seedlings will be warmer in a box covered with a canvas or plastic tarp than if placed directly in the sun. The best place for your seedlings is in heavy shade under existing trees. If you use a canvas or tarp, hang it at least 3 feet above the box to provide shade but still allow cool air to move between the tarp and box.



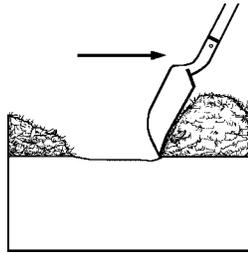
Plant Immediately and Permanently

We recommend you plant your seedlings as early as possible to take advantage of spring moisture before our usual summer drought. Your seedlings are cold hardy—they've been stored at the nursery at near-freezing temperatures and can stand an occasional frost after planting. However, you have little to gain and much to lose from planting in excessively cold or wet soils. In Idaho, and in general, forest soils are ready for spring planting soon after snow melts. For other plantings, make sure the soil is moist, friable, not sticky, and doesn't look shiny when you work it. For best results, plant your seedlings in their permanent locations.

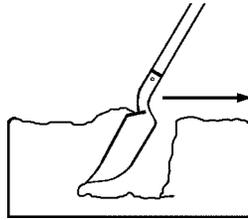
10 Planting Tips for Success

1. Protect seedlings from sunlight, wind, and high temperatures. A planting bag or 5-gallon bucket is a good way to move seedlings around the planting site.
2. On forest lands, plant on the north or east sides of stumps and logs if possible. Forest floor litter should be scraped (scalped) away to expose mineral soil, but replaced around the seedling after planting. At any planting site, scalp dense weedy vegetation. Scalps should be at least 30 inches square and expose mineral soil. Seedling survival and growth will be better if you treat the planting spot with a contact herbicide to kill competing vegetation.
3. Dig a hole deep enough for the root plug. We don't recommend dibbles. Spades, shovels, and hoe-dads work well. Placing the plug into a slit made by rocking a spade or shovel is not recommended because rocking may compact the soil and hamper root growth.

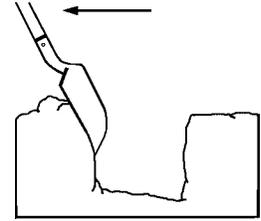
Forest Planting



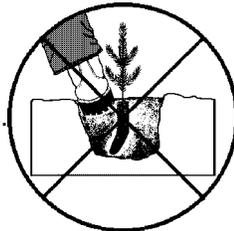
Push forest litter aside



Dig hole



4. Keep foreign matter (leaves, sticks, duff, rocks, snow, and so on) out of the hole.
5. If you add fertilizer to the planting hole, place it deeper than, or to the side of, the root plug so the roots are not in immediate contact. Allow roots to grow to the fertilizer.
6. After the hole is ready, remove only 1 seedling from the bundle. This prevents unnecessary exposure of the roots. If you find a dry plug, dip it in a bucket of cool water for a couple of seconds to saturate the soil around the roots.
7. Place your seedling near the center of the hole, with the tip of the root plug about 0.5 to 1 inch below the soil line. Planting too deep is better than too shallow as long as you don't bury any foliage.
8. As you fill the hole, gently firm the soil around the roots. Leave no air spaces. Be sure to use moist soil to fill the hole, but don't use heavy pressure that will compact the soil.
9. Avoid the "Death Stomp."
10. Control weeds for at least 3 years.



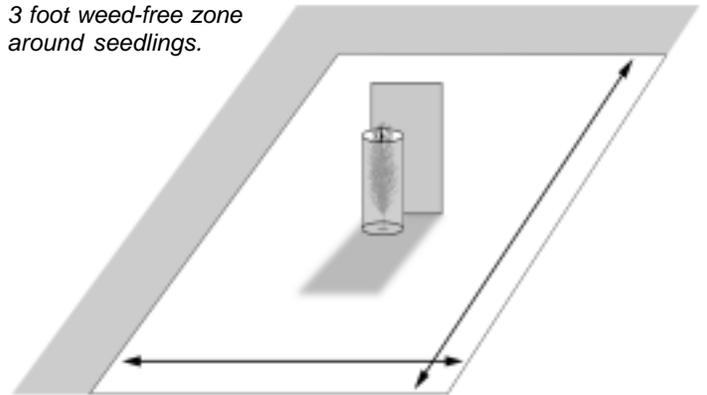
Care After Planting

Weeds

Weeds are your number one enemy. Control weeds for at least 3 years—the longer, the better. Weeds rob seedlings of moisture and nutrients. Weed control often makes the difference between life and death for your plants. Weeds can be controlled 3 ways: cultivation, herbicides, and

mulches. Mechanical weed control (cultivation) works well if you are persistent because some species sprout from their roots. Using a hoe is the basic approach, but pulling a disc behind a tractor or using a rototiller may be easier. Avoid rototilling deeper than about 2 inches.

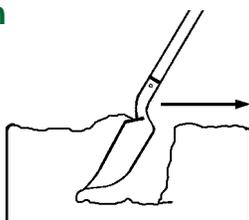
Maintain a 3 foot by 3 foot weed-free zone around seedlings.



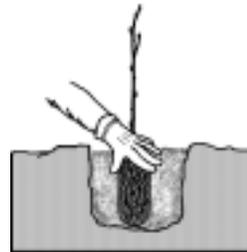
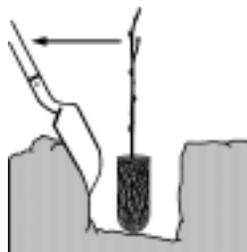
If you use herbicides, a piece of lightweight plastic pipe or a five-gallon bucket attached to a broom stick can be used to shield your seedlings during spraying. Please consult your county extension educator before spraying for current herbicide recommendations and rates.

Mulch inhibits weed growth and also improves seedling survival and growth by reducing evaporation from soil and lowering soil temperatures. Mulch effectiveness can be improved by first laying down a weed barrier or landscape mat that allows water and air to penetrate to the soil. Often, mats can be used by themselves but they will last longer if covered with some type of mulch. Good mulches include wood chips or washed rock.

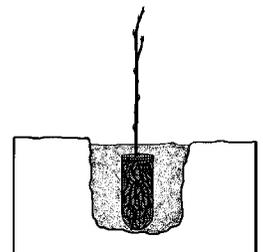
Conservation Planting



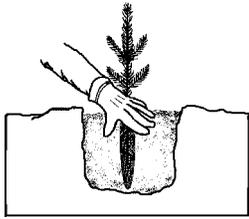
Dig hole



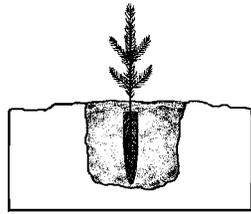
Gently press soil



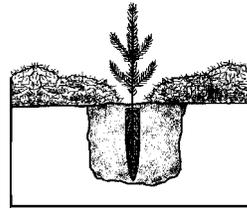
Correctly planted



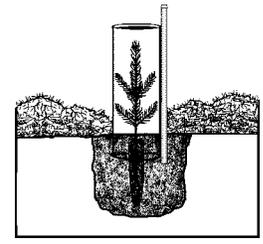
Gently press soil



Correctly planted



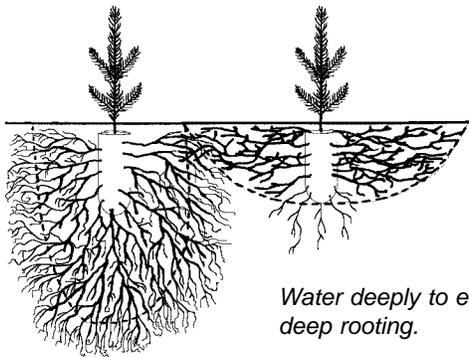
Return forest litter



Add tube to reduce animal damage

Watering

On forest land, if you plant early in spring supplemental water probably isn't necessary or feasible. For windbreak, other conservation plantings, and specialty hardwood plantations regular watering will improve survival and growth. If you decide to water, do so about once a week during hot weather, but remember that how often you need to water will depend on the soil and weather. Sandy soils don't retain moisture well so you'll have to water more often. On the other hand, clay soils hold moisture very well so you may not need to water for 2 or 3 weeks after a thorough watering. Water long enough to thoroughly moisten the root zone and encourage deep rooting. A drip irrigation line is the most efficient way to water your seedlings because it delivers moisture directly to each tree in a controlled and consistent manner—less water is wasted to run-off or evaporation. Stop watering about 1 month before the first frost. After a couple of killing frosts, water evergreens well.



Water deeply to encourage deep rooting.

Shading

Shading can sometimes increase seedling survival. Broad shingles or commercially-available plastic cards placed on the south and southwest sides of seedlings do 3 things: 1) keep seedlings cooler during the heat of the day; 2) reduce moisture loss from soil; and 3) benefit evergreens in winter by reducing desiccation.

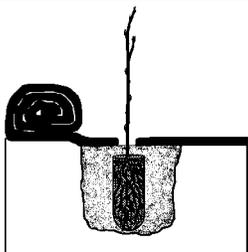
Fertilization

Generally, seedlings don't need to be fertilized during the first year. Thereafter, fertilizer should be applied in spring as soon as soil is frost-free. Many fertilizer formulations work fine. Nitrogen usually gives trees the greatest growth response. Application rates vary by local soils and climate. In general for 1,000 square feet of area, apply 1 to 2 pounds of nitrogen in dryland plantations and 3 pounds of nitrogen for irrigated trees and specialty hardwood crops.

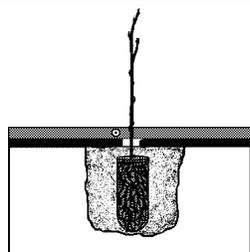
A common problem of trees in southern Idaho is iron chlorosis. Trees whose leaves develop a yellow or light yellow-green color, especially between darker green leaf veins, are probably suffering from a shortage of available iron and will benefit from applications of a chelated iron-rich fertilizer.

Protection

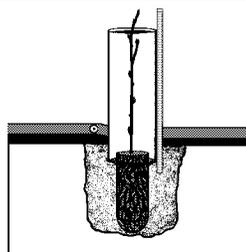
Seedlings can be damaged by livestock, deer, elk, rodents, other small animals, lawn mowers, string trimmers, and herbicides. On forest sites, seedlings will generally be fine without protective devices. If the resident deer and elk population is high, mesh-type tubing may be necessary for seedling establishment. A variety of spray-on repellents are available—they generally reduce, but don't eliminate, browsing. For best results, they should be reapplied



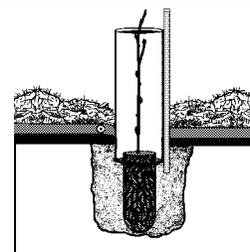
Add weed barrier



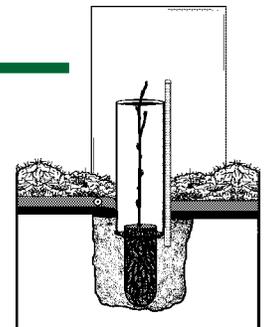
Add drip irrigation



Add tube to reduce animal damage



Add mulch



Add shade

frequently and it often helps to use several different products in a rotation.

When planting into pastures or former farm fields converted to grass, montane voles (meadow mice) can completely destroy a plantation within days. Solid tree shelters can effectively reduce damage. For evergreens, use short tubes (8 to 12 inches tall). For hardwoods, you may consider buying taller tubes to also protect against browsing. Solid plastic shelters that can be folded around the tree work well and can be removed for maintenance or reused. For best results purchase 5 to 6 foot shelters. Position the bottom of the shelter on or below ground level and secure with a sturdy, weatherproof stake. Tree shelters have the added benefit of protecting seedlings from sun-scald and winter dessication. Check tree shelters several times a year. Straighten shelters and replace broken or weakened stakes. Inspect the nylon mesh “hairnets” provided with your shelters—remove them once your trees begin to grow out of the tops of the shelters. Carefully remove bee or wasp nests.

Specialty Hardwood Crops

In addition to the suggestions provided above, the following are highly recommended if you are growing specialty hardwood crops.

Site Selection

In Idaho, hardwoods do best on sites with deep, well-drained soils with a pH between 5.0 and 7.0. Although many are drought tolerant, north- and east-facing aspects provide moister, cooler environments. Areas of poor drainage or flooding should be avoided, as should frost pockets and cold air drainages.

Pruning

Proper pruning is an art and a science and when done correctly can greatly increase the value of your plantation. Pruning should be accomplished while trees are still dormant in late winter or early spring, just before bud break. Corrective pruning should start the winter after seedlings were planted. If you use tree shelters for protection, temporarily remove them and prune any side branches that have formed. To reduce the number of knots in future logs, remove branches before they reach 1 inch in diameter, usually by age 4 or 5. Remember to prune branches at the branch collar—a flush cut or leaving a stub will interfere with proper wound healing. Wound dressing is unnecessary. Do not remove more than 1/3 of the live crown at a time. Continue annual pruning of side branches until you have a clear bole of at least 9 feet. Some owners continue side pruning their trees until there is as much as 25 feet of clear, straight trunk.

Dumroese RK, Wenny DL, Barkley YC. 2001. *Plant your seedlings right*. Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery. 4 p.

Protection

Animals – Nothing will protect your plantation better than a fence. Though expensive, a high-value hardwood plantation would justify the cost of constructing a permanent barrier. A good fence is 8 feet tall with hot wires at 2 foot intervals and the lowest 2 feet of fence, as well as an additional 2 feet underground, protected with hardware cloth to effectively exclude large mammals and rodents.

Individual tree shelters also protect against animal damage (see above). Repellent product success is measured in the reduction, not elimination, of browse damage and are not recommended for high-value specialty crops.

Sun-scald – Winter and spring sun-scald can be a serious problem for young trees but can be prevented by wrapping trees in fall with 2 layers of paper tree wrap or painting the trunks with full strength, white latex paint. Paint alone will protect against some dessication and spring sun-scald. Wrap alone will protect against winter freezes and desiccation. In Idaho, we recommend you use both methods to provide the best protection. Paint the trunks first and then wrap with 2 layers of paper with the tar side in the middle. Remove the tree wrap in spring at bud break and re-wrap each fall. The paint will continue to provide protection against sun-scald. A tree's resistance to sun-scald increases as it ages.

Problems?

If you have any questions or suspect an insect, disease, or planting site problem, contact your local county extension educator (<http://www.uidaho.edu/ag/extension/>), Idaho Department of Lands woodland forester (<http://www.its.uidaho.edu/extforestIDL.htm>), consulting foresters, or the nursery staff.

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