



September 1992

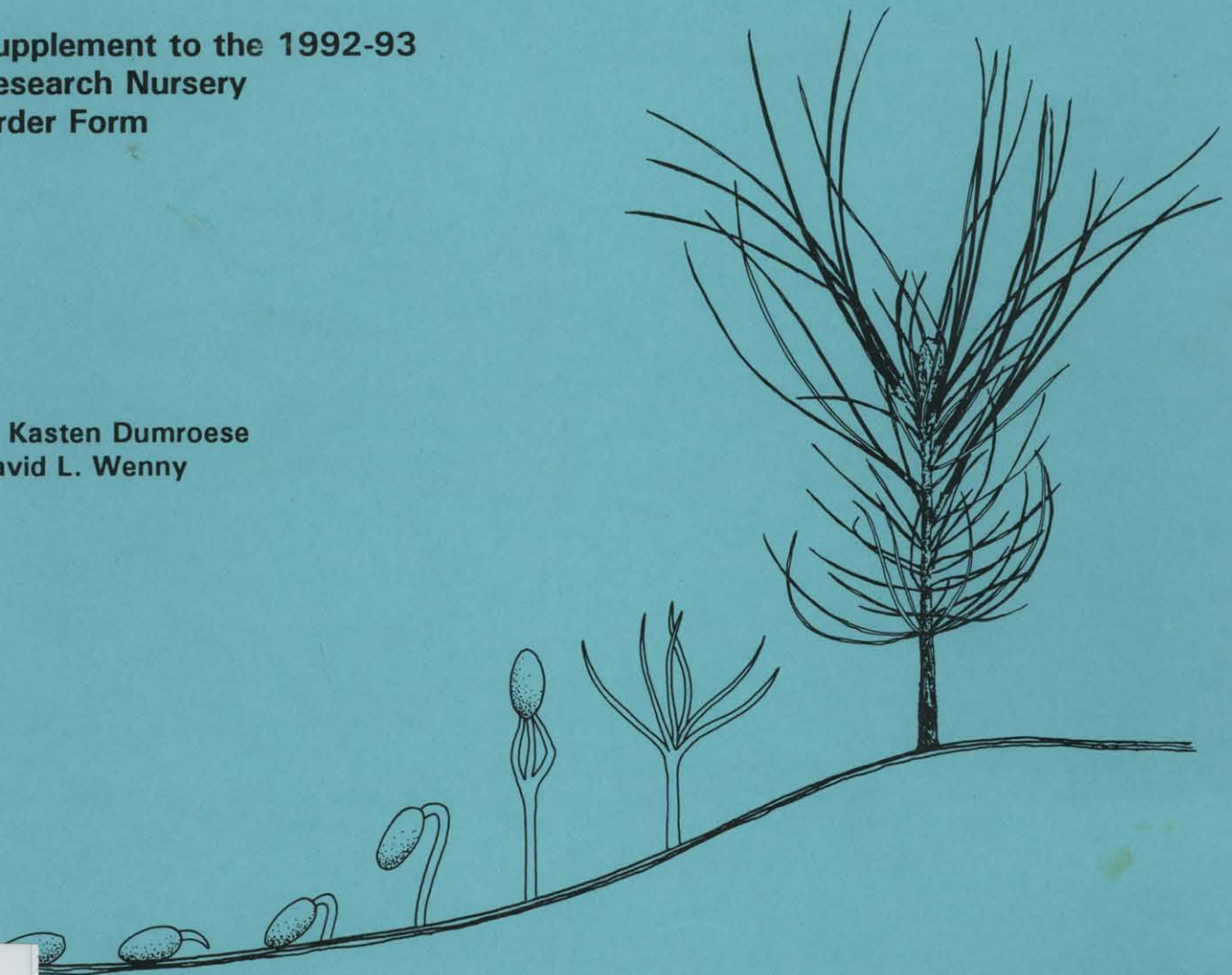
Miscellaneous Publication No. 18

University of Idaho College of Forestry, Wildlife and Range Sciences

A Guide to Seedling Selection

Supplement to the 1992-93
Research Nursery
Order Form

R. Kasten Dumroese
David L. Wenny



QH
76.5
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no. 18

COLLEGE OF FORESTRY, WILDLIFE AND RANGE EXPERIMENT STATION

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Graphics by Lorraine Ashland
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University of Idaho
College of Forestry, Wildlife
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Moscow, Idaho 83843

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Seedling

Order Form

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with your check or money order to:**

Seedlings

**College of Forestry, Wildlife
and Range Sciences
University of Idaho
Moscow, ID 83843**

Questions? Call 885-6444

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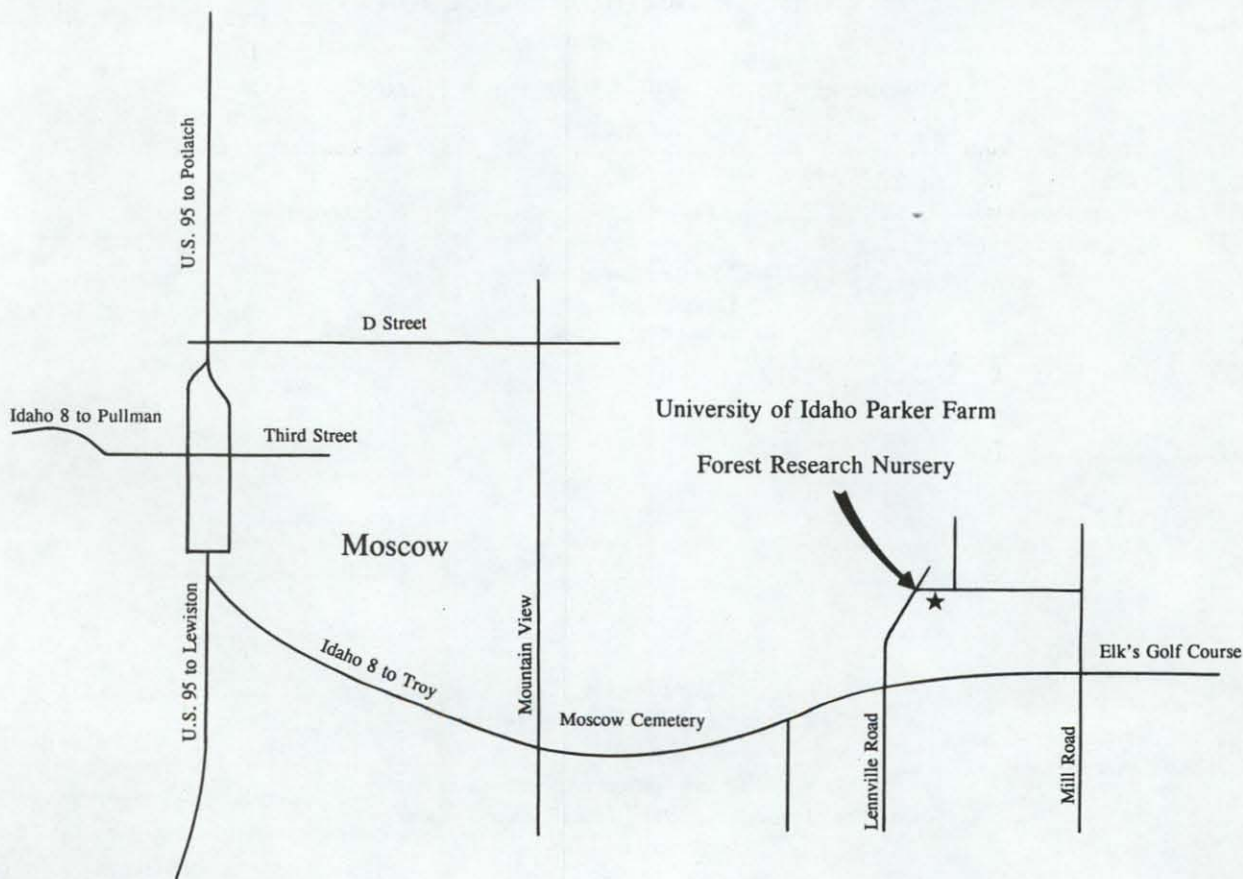
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Please consult your county extension agent, Idaho Department of Lands woodland forester, Soil Conservation Service officer, or a professional forester, and read this booklet before purchasing seedlings.

If you have any questions regarding ordering, species availability, or prices, please call Linda Geer at the Research Nursery. Her telephone number is (208) 885-6444. You may write us at: Forest Research Nursery, University of Idaho, Moscow, Idaho 83843.

ORDER FORMS will be accepted by the nursery until the final shipping date stated on the order form. The nursery fills orders on a first-received-with-full-payment, first-reserved basis, regardless of the delivery date you select.



About Us ...

Established in 1909, the College of Forestry, Wildlife and Range Sciences, Forest Research Nursery grew bareroot (field-grown) tree and shrub seedlings for conservation. In 1982, container-grown seedlings (grown in greenhouses) replaced bareroot production. The nursery emphasizes teaching, research and service. We teach students about forest planting, conduct research to improve seedling quality and subsequent survival and growth, and grow seedlings each year for the state of Idaho, private industry, and the public. The nursery cooperates with Idaho's private nursery owners through an advisory committee, keeping them up-to-date with research completed at the nursery.

Please visit our nursery in Moscow, one mile east of Mountain View Road along Idaho 8 (Troy Highway) on the University of Idaho Parker Farm. We're open weekdays from 7:30 am until 3:30 pm. Tours for larger groups can be arranged by calling us at (208) 885-6444.

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Get Paid to Plant Seedlings!

Cost-sharing is available for tree planting in Idaho through both state and federal programs. Generally aimed toward rural situations, these programs help cover the costs of site preparation, seedlings, and planting. Often, small acreages are acceptable, so we encourage anyone planning to plant seedlings to check these programs for possible financial assistance.

Habitat Improvement Program (HIP) targets improvements for upland game birds and waterfowl habitat on privately owned lands. Idaho Department of Fish and Game (IDFG) administers this program. Call your nearest IDFG office and an IDFG HIP biologist will help you assess the potential of your land, plan projects to develop your land to benefit wildlife, and share the costs of buying and planting trees and shrubs.

Stewardship Incentive Program (SIP) is a joint program of the USDA Forest Service, State of Idaho woodland foresters, and the Agricultural Stabilization and Conservation Service. SIP provides cost-sharing for a variety of tree planting projects, including forest plantings, windbreaks, riparian enhancement, and wildlife habitat. For more information, contact your nearest Idaho Department of Lands woodland forester, Agricultural

Stabilization and Conservation Service office, County Extension office, or Soil Conservation Service office.

Conservation Reserve Program (CRP) and Agricultural Conservation Practices (ACP) are administered through the Agricultural Stabilization and Conservation Service. CRP pays owners of highly erodible, previously cultivated farm lands to remove them from production. ACP cost-shares tree and shrub planting onto CRP and other qualifying land. For more information, contact your nearest Agricultural Stabilization and Conservation Service office or Soil Conservation Service office.

Why Plant a Windbreak?

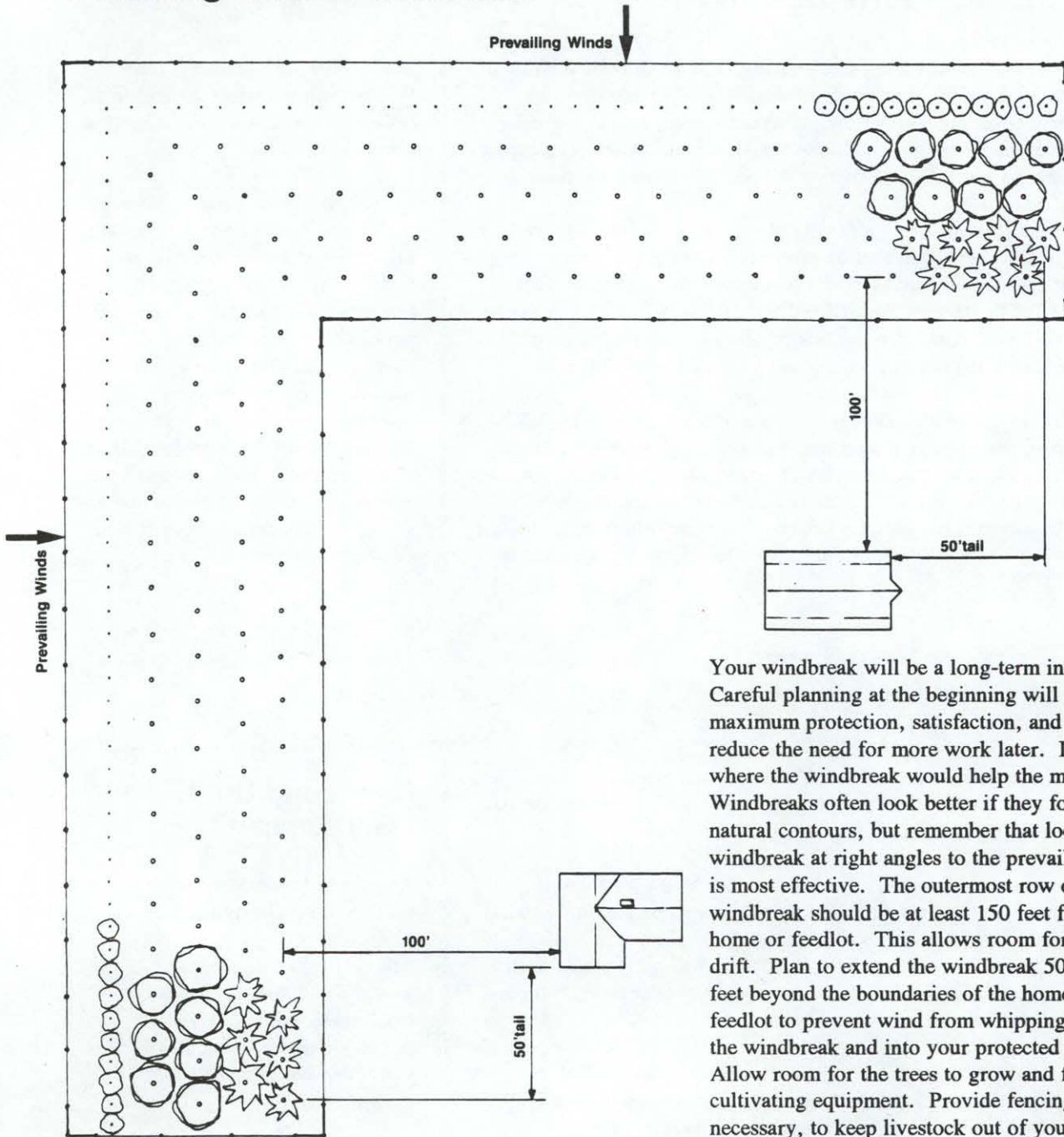
Windbreaks are for . . .

- home energy conservation. Windbreaks can decrease winter heating costs 10 to 40 percent and reduce cold air infiltration into your home by 75 percent.
- improved crop yields. Yields are higher on the lee sides of windbreaks--anywhere from 5 to 44 percent--because lower wind speeds evaporate less moisture from the soil and plants. True, the first few rows next to the windbreak will not grow as well, but the area of best soil and crop protection extends to 10 times the height of the windbreak.
- reduced soil erosion. A windbreak will decrease wind speed close to the ground up to 50 percent, lessening the wind's ability to blow away your topsoil and productivity.
- better livestock performance. The energy requirements for beef cows increases 13 percent for each 10° F drop in windchill temperature below 30° F. That means when it's 10° F and the wind is blowing 25 miles per hour (-29° F windchill), cows use 77 percent more energy, standing outside, just to stay warm. A windbreak would reduce that consumption by more than half.
- snow drift control. A properly placed windbreak will keep snow from drifting across your driveway, farm lane, or access roads--a big advantage when it's time to plow.
- wildlife habitat. Wildlife will use windbreaks for cover, food and reproduction. Studies have shown 50-80 bird nests per mile of windbreak! Don't forget, birds are important predators of insects and rodents too.
- increased home value. Healthy trees around your home add value to your property.

How Long Until I Get Results?

An irrigated, weed-free windbreak will provide noticeable protection within 3 to 4 years and will give effective protection within 7 to 8 years. Dryland windbreaks will give effective protection within about 7 to 12 years, depending on soil and precipitation.

Planning Your Windbreak



Your windbreak will be a long-term investment. Careful planning at the beginning will give maximum protection, satisfaction, and will reduce the need for more work later. Decide where the windbreak would help the most. Windbreaks often look better if they follow natural contours, but remember that locating the windbreak at right angles to the prevailing wind is most effective. The outermost row of the windbreak should be at least 150 feet from the home or feedlot. This allows room for snow to drift. Plan to extend the windbreak 50 to 100 feet beyond the boundaries of the home or feedlot to prevent wind from whipping around the windbreak and into your protected area. Allow room for the trees to grow and for cultivating equipment. Provide fencing, if necessary, to keep livestock out of your windbreak (Figure 1).

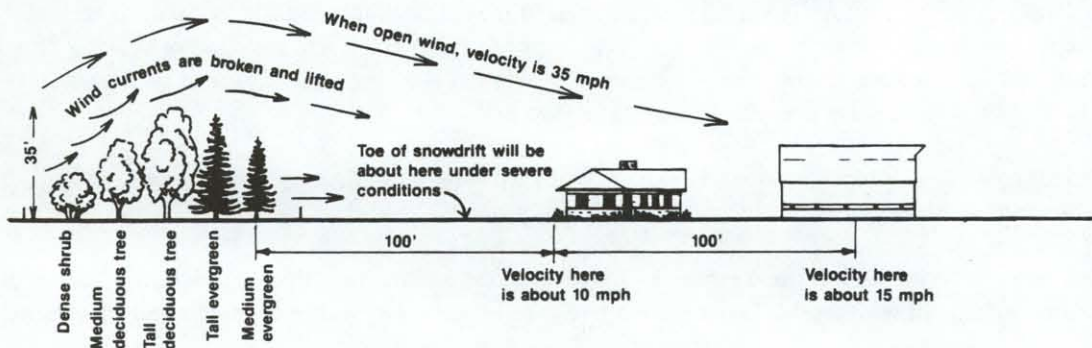


Figure 1. A properly located 5-row windbreak gives optimum protection.

How Many Rows Do I Need?

Plan your windbreak to fit the space you have available. Keep in mind that protection increases with the number of rows planted if the trees have room to grow. A 5-row windbreak provides the most protection (Figure 2), and a 5-row windbreak, 450 feet long, uses only about one acre of land.

Table 1. Tree selections for windbreaks with less than five rows.

If you have room for only	First Choice	Or	Second Choice
4 rows	Dense shrub Medium height evergreen Tall evergreen Medium height evergreen		Dense shrub Medium height evergreen Tall evergreen Medium height evergreen
3 rows	Dense shrub Tall evergreen Medium height evergreen		Dense shrub Tall deciduous Medium height evergreen
2 rows	Medium height evergreen Tall evergreen		Dense shrub Tall evergreen
1 row	Medium height evergreen		Tall evergreen

If limited space prevents planting a 5-row windbreak, use fewer rows rather than crowding the trees (see Table 1). Crowded trees grow more slowly, stop growing at an earlier age, and are more susceptible to insect and disease problems.

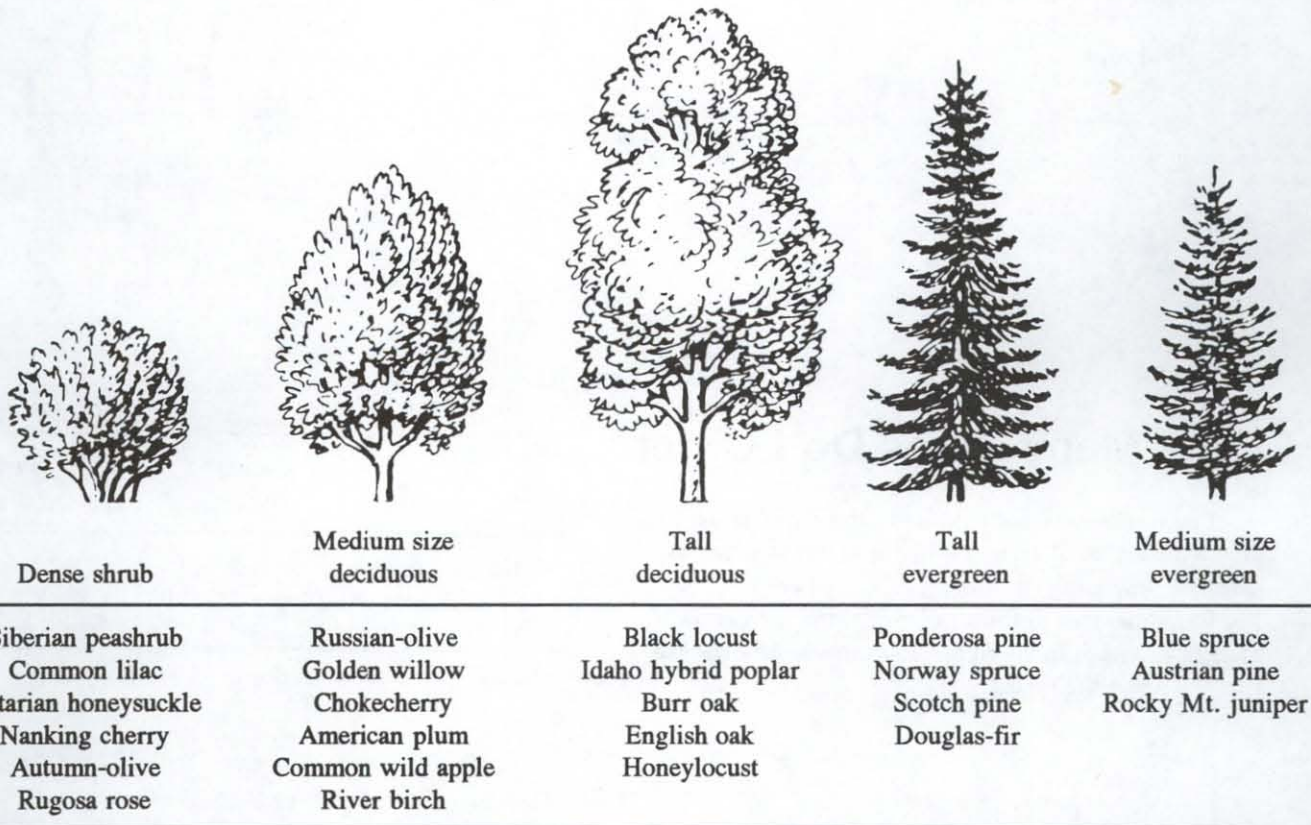
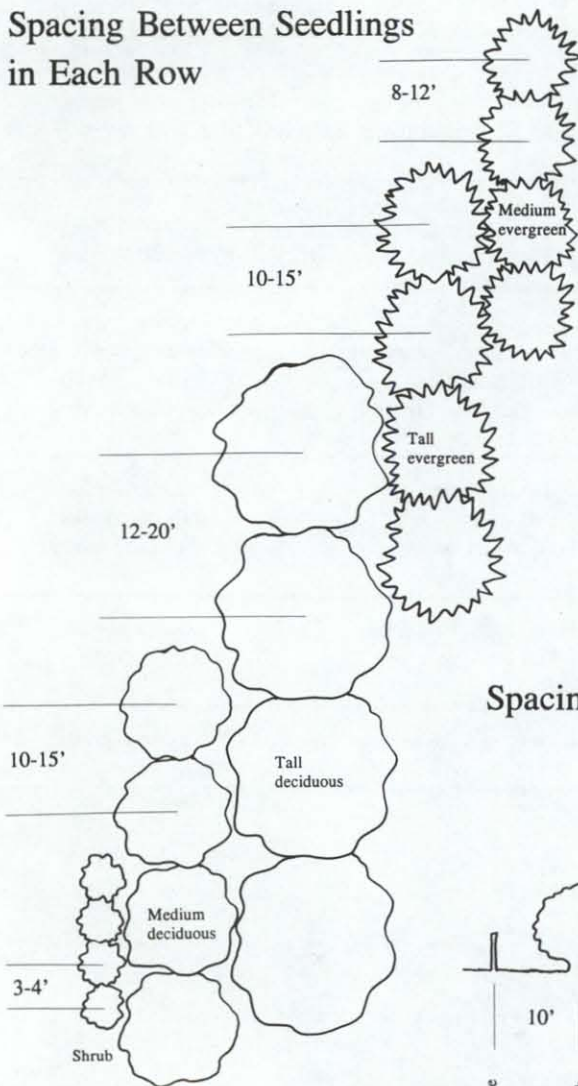


Figure 2. Recommended windbreak species.

How Far Apart Do I Plant?

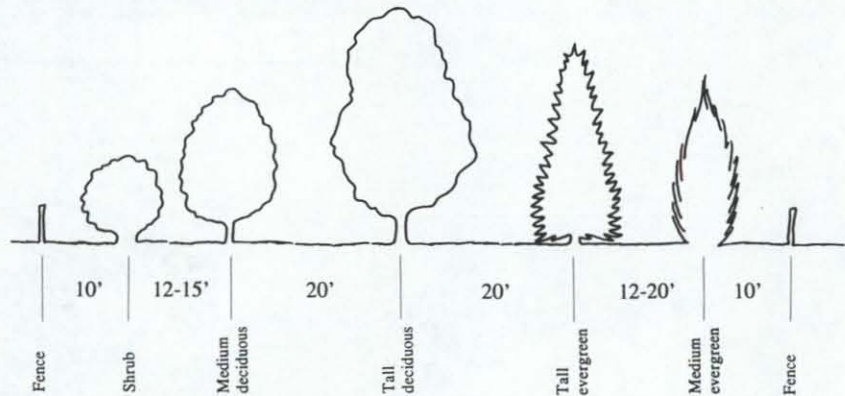
Spacing Between Seedlings in Each Row



Adequate growing space assures a longer, more useful life for your windbreak. The recommended spacings look quite large when planting small seedlings, but the trees will grow rapidly to fill the areas. Figure 3 gives recommended spacings between rows, and between seedlings within the row.

Use wider spacings in areas with lower precipitation. Row spacing should be at least 4 feet wider than cultivation equipment. Tall deciduous trees should be at least 20 feet from shrubs and evergreen trees. Use close spacings in the windward row and in windbreaks with only two rows. Wider spacings will work better in the interior and lee rows of multi-row windbreaks.

Spacing Between Rows



How Many Trees Do I Order?

For windbreaks and wildlife winter cover areas, divide the length of each row by the in-row spacing to calculate how many seedlings you'll need per row. For Christmas tree or timber planting, use the general guidelines shown to the right. Remember, the drier the site, the wider the spacing.

	Spacing (feet)	Trees per acre
Christmas trees	5 x 5	1,742
	6 x 6	1,210
Timber	9 x 9	538
	10 x 10	436
	12 x 12	303

Windbreaks for Winter Wildlife Cover



Good wildlife habitat can be created on as little as ½ acre. An ideal arrangement would have at least 5 rows, with the three middle rows being evergreen, and the two outer rows deciduous shrubs. Windbreaks planted east to west provide the best wildlife benefit. During winter months, sun shines directly on the southern rows. This allows birds and animals to "sun" themselves where the wind protection is often the greatest, thereby lowering their metabolism and putting less stress on them. Plant food-bearing shrubs in the outer rows. Good food-producing shrubs include russian-olive, autumn-olive, Nanking cherry, American plum, chokecherry, Siberian peashrub, honeysuckle, cotoneaster, skunkbush sumac, native mountain-ash, and rose. Good evergreens are types that don't grow too tall, but stay dense and bushy. Fine choices include Rocky Mountain juniper, eastern redcedar, Austrian pine, and blue spruce.

This type of planting may be eligible for cost-sharing through the Idaho Department of Fish and Game Habitat Improvement Program. See the "Get Paid to Plant Seedlings" section on page 2 for details.

Habitat Improvement Program Recommendations

Region of Idaho	Minimum rows eligible for cost-sharing	Recommended shrubs	Recommended evergreens
Northern	8	Siberian peashrub, Washington hawthorne, rose, redosier dogwood, blackberry, ninebark, Peking cotoneaster, Nanking cherry, matrimony vine	Rocky Mountain juniper, blue spruce, Austrian pine, Engelmann spruce, blue pfitzer juniper
Southwestern	5	<i>Low elevations:</i> Siberian peashrub, silverberry, silver buffaloberry, American plum, rose, skunkbush, autumn-olive, russian-olive <i>High elevations:</i> chokecherry and serviceberry	Rocky Mountain juniper is best. Austrian and Scotch pine
Southeastern	5	Chokecherry, Peking cotoneaster, American plum, skunkbush, Nanking cherry, rose	Rocky Mountain juniper, Scotch pine and blue spruce

Future Care of Windbreak Plantings

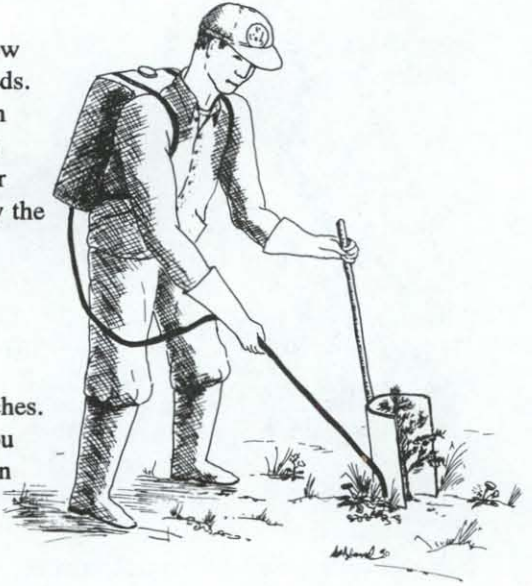
Your windbreak will need care after you've finished planting. Weed competition and inadequate moisture are the cause of most seedling mortality.

Watering, Shading, Weeding, and Fertilizing

The planting guide you receive with your seedling order will explain how you can improve seedling growth by watering, shading, and controlling weeds. The guide also discusses fertilization. Water soluble fertilizers work well on seedlings, allowing you to water and fertilize at the same time. When using water soluble fertilizers, follow the instructions on the package. Some water soluble fertilizers are specially formulated for evergreens. They help acidify the soil and make evergreens grow better. Remember to stop fertilizing in late summer so seedlings can begin changing for winter conditions.

Pruning

Avoid pruning your windbreak except to remove dead or diseased branches. Remember to sterilize your pruners with rubbing alcohol between cuts so you don't spread disease to healthy trees. Maintain lower branches, especially on evergreens, since these greatly increase the effectiveness of your windbreak.



Planting Tips for Seedling Survival

Soil Preparation

The planting area should be prepared BEFORE your trees arrive. If weeds are not a problem, areas should be shallow-disked or harrowed just before planting. If weeds are a problem, herbicide applications may be necessary to rid the areas of weeds. Weed competition is the number one cause of seedling death. Please consult your county agent before using herbicides, as carry-over effects may damage your seedlings.

Proper Planting Methods

With your seedling order you will receive an excellent guide for planting seedlings. It shows, step by step, the best way to plant your seedlings for maximum survival. You may wish to have a shovel or hoedad ready to use when your seedlings arrive. We recommend against dibble planting as dibles often severely damage the soil and reduce seedling survival and growth.



Animal Damage

Seedlings can be damaged by livestock, deer and elk, rodents, or other small animals. Broadleaf species are especially vulnerable to browsing. Here are a few hints to help you protect seedlings from animal damage.

Big Game

Deer and elk can inflict serious damage to seedlings, especially deciduous trees and shrubs, although evergreens also can be browsed. You can protect seedlings with mechanical barriers or by using chemical browse inhibitors.

Mechanical barriers - Fencing is an option but can be expensive to construct since the fence will need to be at least 6 - 8 feet tall. Another option is tree tubes, but they only work for deciduous trees. These tubes, made of photodegradable plastic, come in various lengths; a tube at least 6 feet tall is necessary to prevent deer and elk browsing. The trees grow taller and faster inside these tubes. Soon they are above the browse line, and eventually the tube disintegrates. If you would like more information on these tubes, please contact the research nursery.

Chemical inhibitors - Several chemical inhibitors are available. Your local Idaho Department of Fish and Game officer will have information on these products. Some folks have had success keeping elk and deer from browsing by simply stringing a bar of Lifebuoy soap on seedlings and trees.

Livestock

Your windbreak will grow best if you keep livestock out of it. Livestock trample and eat small seedlings. Once the trees are bigger, livestock can cause damage by rubbing off or eating the bark, and browsing on lower branches. Removal of lower branches by browsing reduces the effectiveness of your windbreak. Fencing is the easiest way to keep livestock away from your windbreak.

Rodents

In Idaho, mice, voles, and gophers can inflict serious damage to seedlings and older trees, especially during winter. Mice and voles injure and kill seedlings by gnawing off the bark around the base of seedlings or small trees. If the tree is not completely girdled by gnawing, it may be left in such a weakened state that summer stress will kill it. Gophers usually gnaw off the roots, often leaving the above-ground portion of the seedling or tree standing. Sometimes gophers eat seedlings entirely.

Mice and voles - Common throughout Idaho, these rodents attack the base of seedlings and small trees. Trees can be protected in several ways: clean cultivation, barriers, poisons and traps. Clean cultivation is a simple way to keep these pests from your seedlings. Neither mice nor voles like to cross bare soil so a weed-free zone around your trees will help discourage feeding. Plowing or rototilling a 6-foot wide strip on either side of the row should keep the pests away. This also improves the growth of your seedlings by reducing competition for water and nutrients by weeds. A piece of 4-inch PVC pipe or plastic drain tile, about 8 to 10 inches long, placed around newly planted seedlings, will help keep the rodents away. Wooden stakes may be needed to keep the pipe from blowing over. At the research nursery, we also have good success in reducing gnawing damage by hanging chemical browse inhibitors on individual seedlings. Finally, poisoning voles may be necessary when populations are very high. These pesticides often require a pesticide license to buy and apply.

Gophers - Pocket gophers can be a terrible problem. They are extremely difficult to eradicate from an area, and their feeding on small seedlings is usually fatal for the seedlings. Clean cultivation, as described for mice and voles, will greatly reduce gopher feeding. Trapping can be effective if you are persistent. Stop by your local University of Idaho Extension office and ask for a copy of EC 1255: *Controlling Pocket Gopher Damage to Conifer Seedlings*. Contact the Research Nursery if you need more information.



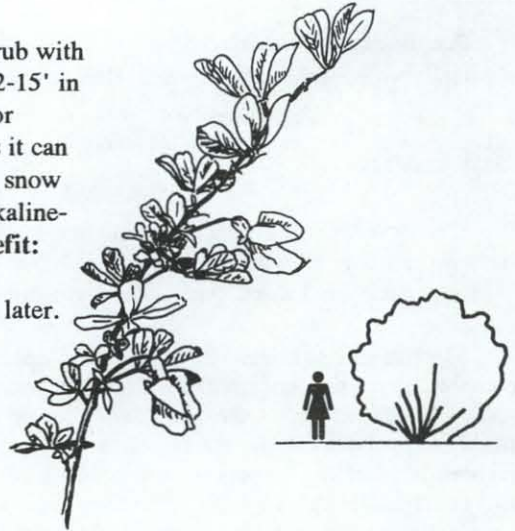
Other Problems

If you have any questions, or suspect an insect, disease or planting site problem, contact your local County Extension agent or Idaho Department of Lands woodland forester.

Species Descriptions

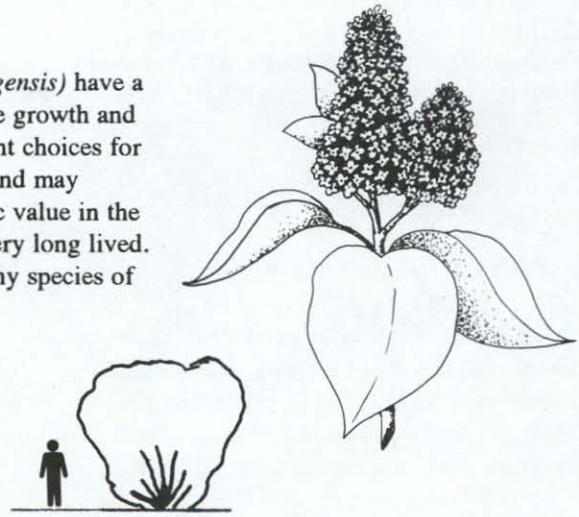
Siberian Peashrub (*Caragana arborescens*) is a dense, short shrub with multiple branches and thick foliage. It will reach mature heights of 12-15' in 5 to 7 years on irrigated land, 10 to 12 years on dryland. It is ideal for planting in the outer rows of windbreaks, or for single-row hedges, as it can be trimmed easily. Its foliage extends to the ground making it a good snow and sound barrier. Siberian pea is probably the most frost/drought/alkaline-soil resistant shrub suited to Idaho growing conditions. **Wildlife benefit:** The yellow, pea-like flowers are a favorite of hummingbirds. Birds, including pheasant, quail, juncos, and chukar eat the "peas" that form later.

Super Stock seedlings are 10-14" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each



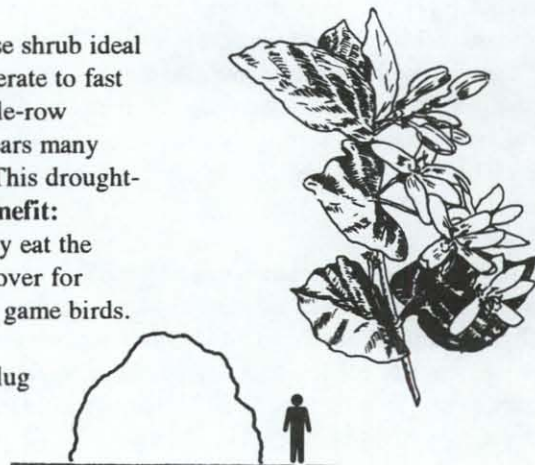
Purple and White Lilacs (*Syringa vulgaris* and *S. pekingensis*) have a moderate growth rate and reach 10 to 15' in height. Their dense growth and adaptability to a wide range of environments make them excellent choices for the outer rows of windbreaks. Lilacs do well on alkaline soils and may bloom 3 years after planting. Their large blossoms add aesthetic value in the spring. They are highly resistant to drought and cold and are very long lived. **Wildlife benefit:** Lilac provides cover and nesting sites for many species of birds.

Seedlings are 6-12" tall with a 6 cubic inch root plug
Purchase in multiples of 20: 20-480 for \$.35 each
500+ for \$.25 each



Tatarian Honeysuckle (*Lonicera tatarica*) is a small, dense shrub ideal for a screen around buildings or driveways. Honeysuckle's moderate to fast growth and 12' mature height make it an ideal candidate for single-row plantings or the exterior portions of multi-row windbreaks. It bears many white or pink flowers followed by red fruit that hold until fall. This drought-hardy shrub is also an effective living snow barrier. **Wildlife benefit:** Robins, waxwings, finches, woodpeckers, and other birds quickly eat the fruits as they ripen. The dense growth of this species provides cover for small animals, nesting sites for many birds, and winter cover for game birds.

Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each





Nanking Cherry (*Prunus tomentosa*) is an attractive, upright shrub that produces abundant, edible fruit good for making jelly. Its fast growth and 6-10' height make it a good choice for the exterior row of multi-row windbreaks. Nanking cherry withstands heat, drought, cold and wind and may bloom 2-3 years after planting. **Wildlife benefit:** Produces abundant, red fruit eaten during the fall by robins, finches, waxwings, pine siskins, towhees, and catbirds.

Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each



Arctic Blue Willow (*Salix purpurea*) grows into a very dense mound, making it a superb living snow fence. It's also ideal for planting as a single-row windbreak or in the exterior rows of multi-row windbreaks. Arctic blue willow has a moderate rate of growth, prefers moist soils, and reaches a mature height of 10-15'. **Wildlife benefit:** This dense plant is a fine source of cover for rabbits and birds. In Moscow, the pheasant, quail, and partridge roost and scratch under them during the winter.

Rooted cuttings are 8-14" tall with a 6 cubic inch root plug
Purchase in multiples of 20: 20-480 \$.35 each
500+ \$.25 each

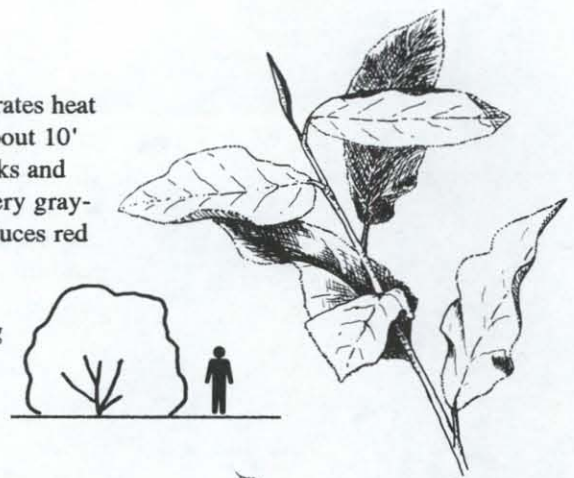


Rugosa Rose (*Rosa rugosa*) is an extremely hardy rose, withstanding hard freezes, wind and drought, while still showing off good fall color. This rose grows 4-6' tall, making it good for single-row hedges or the exterior rows of multi-row windbreaks. Deep purple to pink to white flowers, up to 3" in diameter, give way to large red fruits (hips). They may flower the same year planted! **Wildlife benefit:** Birds, chipmunks and deer eat the hips. Deer and elk also will browse the foliage.

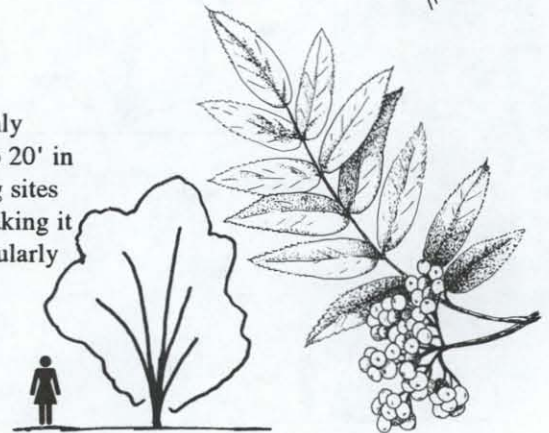
Super Stock seedlings are 6-12" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each

Autumn-olive (*Elaeagnus umbellata*) is a dense shrub that tolerates heat and wind, and once established, also tolerates drought. It grows about 10' tall, making it suitable for the exterior rows of multi-row windbreaks and excellent for single-row hedges or screens. The foliage adds a silvery gray-green accent to any planting. **Wildlife benefit:** It abundantly produces red fruits in the fall highly sought by birds, including pheasants.

Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each



Dwarf Mountain-ash (*Sorbus scopulina*), an Idaho native, is only available in the Wildlife Lover's Package. This shrubby tree grows to 20' in height in the mountains of Idaho, and provides good cover and nesting sites for birds. Its bright orange berries hang on into the winter months making it a wildlife favorite. Robins, waxwings and grosbeaks find them particularly tasty.



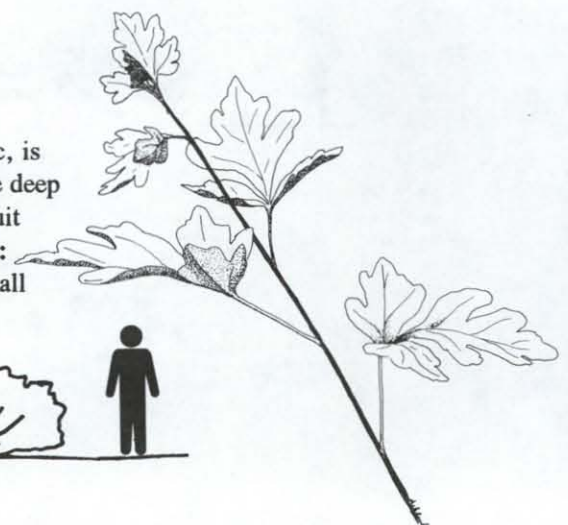
Mountain Big Sagebrush (*Artemisia tridentata ssp. vaseyana*), an Idaho native, is an evergreen shrub that grows 3-6' tall. Sage prefers deep, well-drained soils and around 14 inches of annual precipitation. The aromatic, evergreen nature of this plant makes it useful for low maintenance landscaping in the drier regions of Idaho and the outer rows of multi-row windbreaks. **Wildlife benefit:** We grow the Hobble Creek cultivar released by the USDA Soil Conservation Service. This cultivar is preferred winter browse by mule deer and domestic sheep, and provides winter forage for sage grouse. It also provides good cover for small animals, sage thrashers, and sage sparrows.

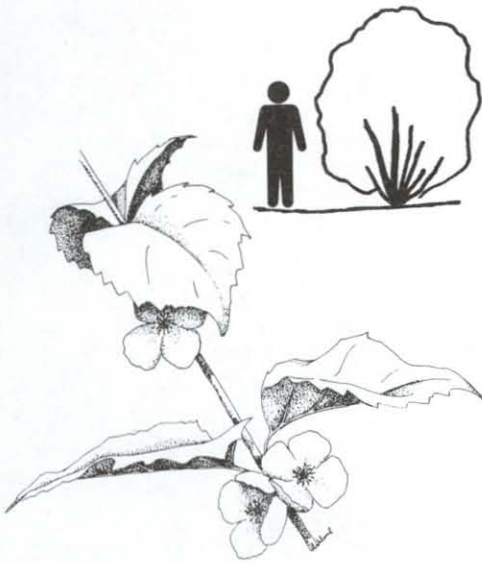
Seedlings are 6-10" tall with a 6 cubic inch root plug
Purchase in multiples of 20: 20-480 \$.35 each
500+ \$.25 each



Skunkbush Sumac (*Rhus trilobata*), also known as Oakleaf Sumac, is very drought tolerant. Only growing 3-4' tall, it will form clumps. The deep green summer foliage changes to bronzy-red in fall, and spikes of red fruit develop in late summer. It prefers a well-drained soil. **Wildlife benefit:** The shrubby growth habit provides cover for upland game birds, and small animals and songbirds eat the fruits.

Seedlings are 6-12" tall with a 6 cubic inch root plug
Purchase in multiples of 20: 20-480 \$.35 each
500+ \$.25 each





Western Syringa or Mockorange (*Philadelphus lewisii*), an Idaho native and the state flower, grows 6-9' tall. In early summer, delicate and fragrant white flowers cover this shrub. It's very drought tolerant, often growing on rocky hillsides and in cracks in basalt fields. Syringa could probably be used in the outer rows of multi-row windbreaks. **Wildlife benefit:** Chipmunks and birds eat the seeds.

Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each



Russian-olive (*Elaeagnus angustifolia*) is a dense, large shrub or small tree (20-30' tall) native to Europe and Asia. Early settlers were aware of its hardiness, and it's been planted for over 150 years. Russian-olive grows very well on droughty sites, alkaline soils, and very windy areas. Experts consider it one of the best species for dryland plantings. It has a rapid growth rate, and does especially well on good soil with ample moisture. Russian-olive is suitable for both single and multi-row plantings. The silvery green leaves and deeply furrowed bark make Russian-olive a very attractive tree for any use. It will spread by seed if moisture is adequate and has naturalized itself extensively in the Boise Valley, along the Snake river and its tributaries from Weiser to Pocatello, the lower Clearwater River, and from Salmon to Challis on the Salmon River. New trees, growing from seed spread by birds, may interfere with farming operations in fields and pastures and may block irrigation canals. There is also concern that Russian-olive may displace native stream-side vegetation. Once established, it is nearly impossible to eradicate. **Wildlife benefit:** The dense growth provides fine cover for small animals and nesting sites for birds. Ripening in fall, fruits are a delicacy for songbirds, including chickadees, juncos, finches, towhees, and grosbeaks.

Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each

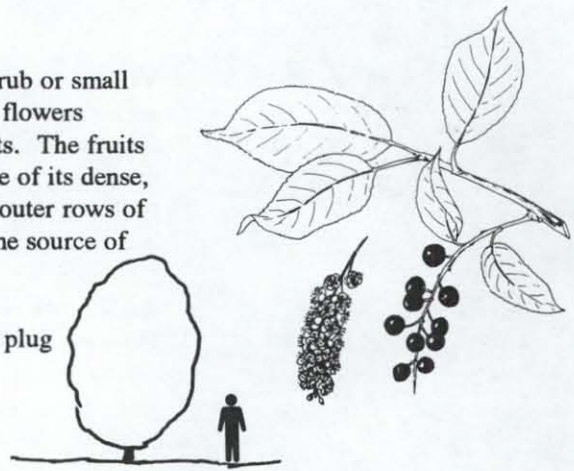


Golden Willow (*Salix alba var. vitellina*) is a medium-sized, fast-growing tree that attains heights of 40-50' at maturity. This willow grows well on the Palouse and on moist sites but has a wide adaptability to soil and moisture conditions. It should be watered if used in dryland plantings. It may be used for single-row plantings or for the central portions of multi-row windbreaks. Golden willow has bright yellow foliage in the fall and reddish-orange bark in the winter. **Wildlife benefit:** Perching sites for hawks and owls.

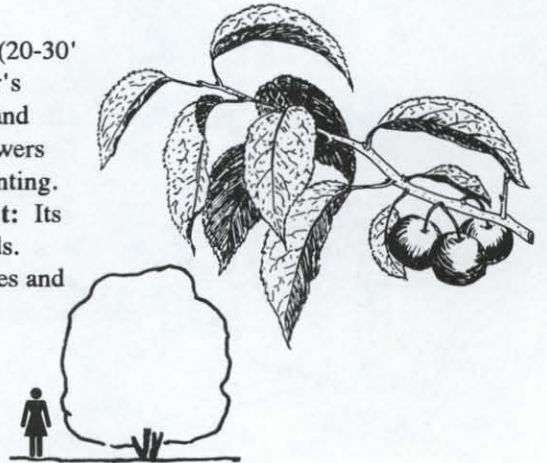
Rooted cuttings are 12-16" tall with a 6 cubic inch root plug
Purchase in multiples of 20: 20-480 \$.35 each
500+ \$.25 each

Chokecherry (*Prunus virginiana*) is a very hardy, large shrub or small tree, growing fast to a mature height of 10-25'. It bears white flowers clustered in hanging spikes that later produce dark, purple fruits. The fruits are a wildlife favorite, and make good jellies and pies. Because of its dense, bushy growth form, chokecherry is an excellent choice for the outer rows of multi-row windbreaks. **Wildlife benefit:** The fruits are a prime source of food for chipmunks and many songbirds during the fall.

Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each

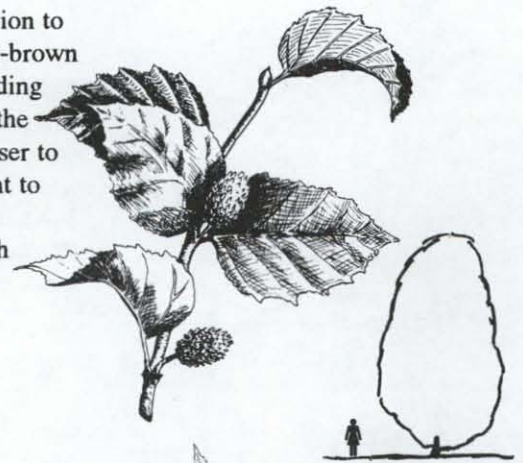


American Plum (*Prunus americana*), a large shrub or small tree (20-30' tall) best adapted to moist soils, is only available in the Wildlife Lover's Package this year. It has rapid growth with wide-spreading branches and grows well in the outer rows of multi-row windbreaks. This plum flowers profusely in the late spring, making it an attractive addition to any planting. The plum can be used to make jams, jellies, and pies. **Wildlife benefit:** Its dense growth provides cover and nesting sites for many species of birds. Bears and songbirds, including robins, woodpeckers, grosbeaks, finches and waxwings, eat the fruits.



River Birch (*Betula nigra*), a medium-sized tree, is a graceful addition to plantings. Young bark is smooth and flaking, curling off in cinnamon-brown sheets as the tree matures. River birch enjoys ample moisture, responding with fast growth to a mature height of 50-60'. This tree will work in the outer rows of multi-row windbreaks or for sun and wind reduction closer to home where their beauty can be enjoyed. This species is more resistant to wood borers than many other birches. **Wildlife benefit:** Songbirds, especially juncos, pine siskins and redpolls eat the scale-like seeds each winter.

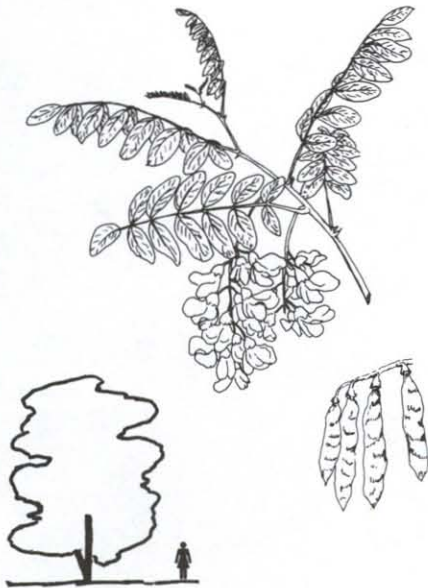
Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each



Common Wild Apple (*Malus pumila*), introduced from Europe and Asia, is now commonly naturalized throughout Idaho. Given full sun and moderate moisture, it will grow about 25-30' tall with a nearly equal spread. Small edible apples follow fragrant white flowers. **Wildlife benefit:** The small apples provide food for bears, chipmunks, robins, woodpeckers, waxwings, pheasants and deer. If left unpruned, the drooping lower branches provide winter cover for upland game birds.

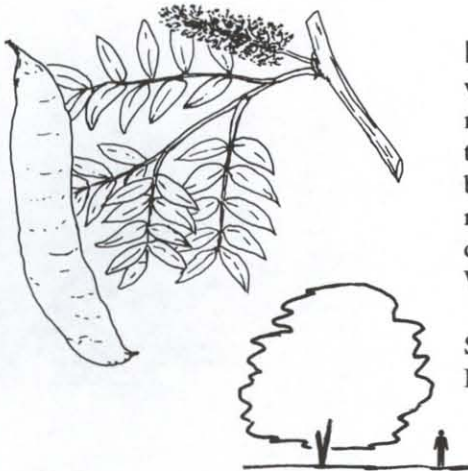
Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each





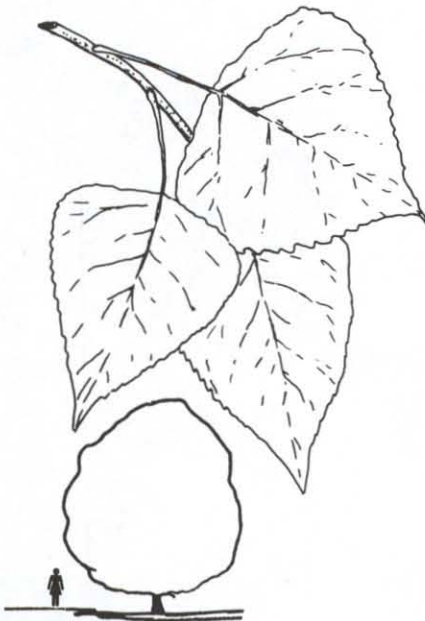
Black Locust (*Robinia pseudoacacia*) is a rapidly growing tree adapted to a wide range of soils. It does well in hot, dry areas and is very drought tolerant. Black locust's wide-spreading root system is useful in controlling erosion. The roots have nitrogen-fixing nodules that actually release nitrogen into the soil. This "fertilizing" characteristic is very beneficial on disturbed or sterile soils. The nitrogen released into the soil by the system may stimulate growth of neighboring plants in multi-row plantings. Black locust is a long-lived tree that, at maturity, will be 40-60' tall. This tree grows best in the center portions of windbreaks. Black locust has very dense wood and therefore is excellent for fence posts or firewood. Check with your county agent if borers are a problem in your area; wood borers are killing this tree in some areas of southern Idaho. **Wildlife benefit:** Good roosting and nesting tree for hawks and owls. Bees actively visit the white flowers in spring.

Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each



Honeylocust (*Gleditsia triacanthos var. inermis*) will grow under a variety of moisture and soil conditions and does well on hot, dry sites. We recommend it for the center portions of multi-row windbreaks. It's hardy up to 5000' in southern Idaho and 3500' in northern counties. Honeylocust is becoming popular as an ornamental due to its wide-spreading crown and relative freedom from insect and disease problems. The variety *inermis* doesn't produce the 2-4" long thorns found on other varieties of honeylocust. **Wildlife benefit:** Good roosting and nesting tree for hawks and owls.

Super Stock seedlings are 10-16" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each

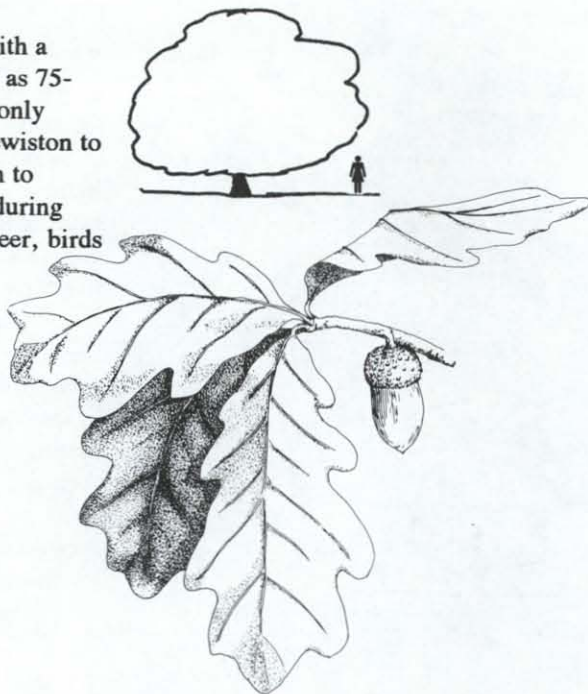


Idaho Hybrid Poplar (*Populus spp.*) grows rapidly, as much as 6-10' a year under irrigated conditions. Discovered approximately 40 years ago, this variety is especially well adapted to the climate, soil, and growing conditions encountered in Idaho. If properly cultivated, this hybrid will offer quick wind protection or screening. In 5-7 years this tree will be large enough to harvest as firewood. Hybrid poplar burns more quickly than many conventional firewood sources. The two most important aspects of planting poplars are 1) the soil and 2) weed control. Poplars grow best on well-drained soils with high water and nutrient availability. They will grow on just about any type of soil, but as available water and nutrient levels decrease, or drainage becomes limited, growth will be reduced. Controlling weeds in your plantation allow all the available nutrients and moisture to be used by the trees, thus improving their growth. **Wildlife benefit:** Good roosting and nesting tree for hawks and owls, and nesting by many species of birds.

Rooted cuttings are 12-16" tall with a 6 cubic inch root plug
Purchase in multiples of 20: 20-480 \$.35 each
500+ \$.25 each

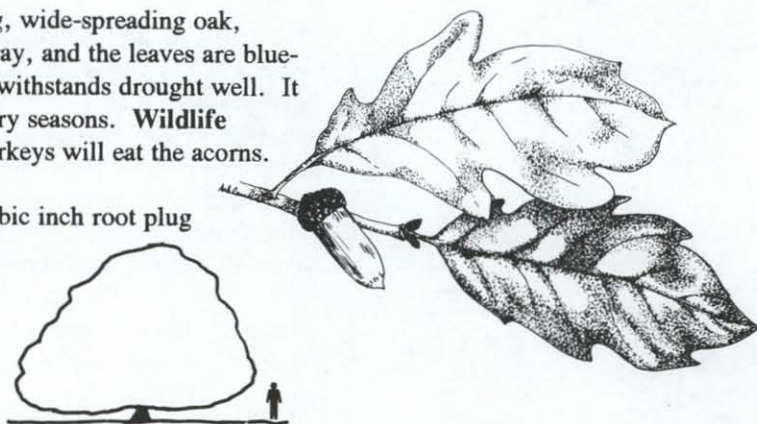
English Oak (*Quercus robur*) grows into a wide-spreading tree with a short trunk in a moderately short period of time. It may grow as tall as 75-90' and has leaves with rounded lobes that persist into late fall. It's only suited for areas along the Snake River, the Clearwater River from Lewiston to Orofino, Moscow vicinity, and the valleys from Coeur d'Alene north to Bonners Ferry. This oak withstands drought but should be watered during the first 2-3 dry seasons. **Wildlife benefit:** Squirrels, chipmunks, deer, birds and turkeys will eat the acorns.

Super Stock seedlings are 10-14" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each



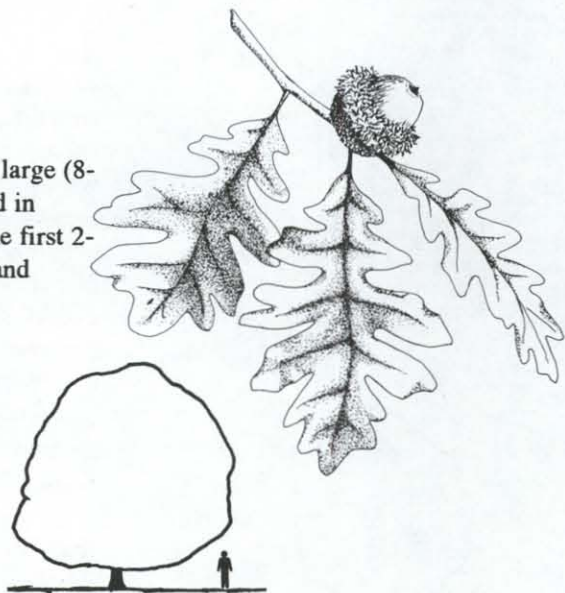
Blue Oak (*Quercus douglasii*), a low-branching, wide-spreading oak, grows to about 50' in height. The bark is light-gray, and the leaves are blue-green. It does well in hot, dry environments and withstands drought well. It should, however, be watered during its first 2-3 dry seasons. **Wildlife benefit:** Squirrels, chipmunks, deer, birds and turkeys will eat the acorns.

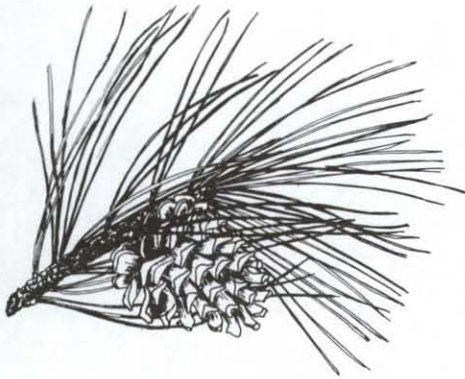
Super Stock seedlings are 10-14" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each



Burr Oak (*Quercus macrocarpa*), rugged and tolerant of adverse conditions, will grow about 60' tall with a 30' spread. Its leaves are large (8-10 inches) with deep lobes. We grow seedlings from acorns collected in Pocatello, Idaho. Like the other oaks, it should be watered during the first 2-3 dry seasons. **Wildlife benefit:** Squirrels, chipmunks, deer, birds and turkeys will eat the acorns.

Super Stock seedlings are 10-18" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each





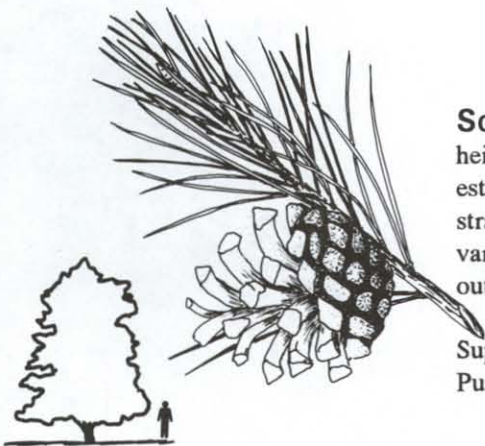
Ponderosa Pine (*Pinus ponderosa*), an Idaho native, has a fast growth rate (18 to 24" a year once established) and attains a mature height of 60-80' in windbreaks. It withstands hot, dry sites well, and adapts well to a variety of soil conditions but must have good drainage and full sunlight. Many consider this pine to be the most reliable evergreen for windbreaks. **Wildlife benefit:** Ponderosa pine provides excellent cover and nesting sites for many birds. Chipmunks, ground squirrels and birds, including grosbeaks, chickadees, finches, siskins, crossbills, nuthatches, and turkeys will eat the seeds.

Reforestation information: Flat Creek, Moscow Mountain, Idaho seed source, 3000' elevation. Yellow pine is not exacting in soil requirements and has great resistance to drought. It grows best on moister sites, but also is a good choice for southerly exposures.



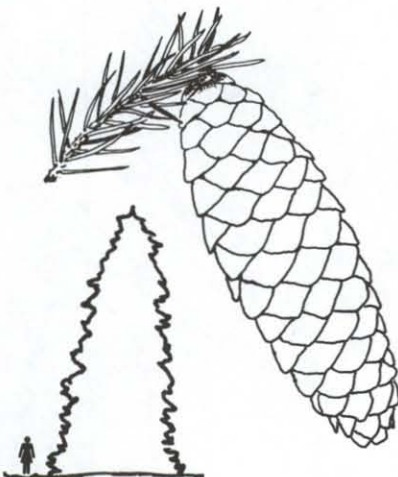
Seedlings are 6" tall with a 4 cubic inch root plug
 Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each

Super Stock seedlings are 8-10" tall with a 20 cubic inch root plug
 Purchase in multiples of 5: \$1.50 each



Scotch Pine (*Pinus sylvestris*) has a rapid growth rate, reaching mature heights of 40-60'. Widely used for windbreaks, this pine is generally easy to establish, adapting well to a variety of soil conditions. There are many strains of Scotch pine, and not all have good form; we sell the Guaderrama variety. It's not suited for desert areas, and the lower branches tend to die out at close spacings. **Wildlife benefit:** Chipmunks and birds eat the seeds.

Super Stock seedlings are 10" tall with a 20 cubic inch root plug
 Purchase in multiples of 5: \$1.50 each



Norway Spruce (*Picea abies*) is a rapid growing tree that attains heights of 60-80'. Its crown is dense and extends to the ground unless the base is in heavy shade. Norway spruce has higher moisture and fertility requirements than the pines, but it does fairly well in dryland plantings if soil is deep and fertile. **Wildlife benefit:** Provides good winter cover for birds and small animals, and it's a good roosting tree for hawks and owls.

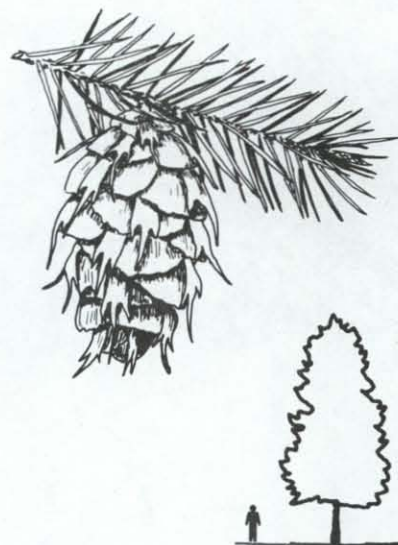
Seedlings are 6" tall with a 4 cubic inch root plug
 Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each

Super Stock seedlings are 10" tall with a 20 cubic inch root plug
 Purchase in multiples of 5: \$1.50 each

Douglas-fir (*Pseudotsuga menziesii*), an Idaho native, has a medium growth rate. It needs a well-drained soil for best growth and can reach mature heights of 60-80' in windbreaks. Douglas-fir is more difficult to establish under irrigation than Scotch pine or Norway spruce. Growth is generally slow without supplemental watering in areas with less than 18 inches of annual precipitation. **Wildlife benefit:** Seeds eaten by many species of birds, including crossbills, nuthatches and chickadees. Hawks and owls use it for roosting.

Reforestation information: Bovill, Idaho seed source, 3200' elevation. Doug-fir, red-fir, or yellow-fir all name this tree that grows to 100-130' with a 2-3' d.b.h. It's most abundant on moist sites, but also with ponderosa pine on drier sites.

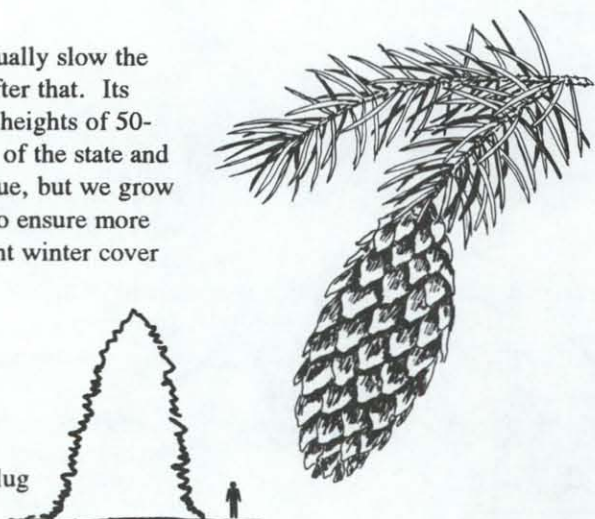
Seedlings are 8" tall with a 4 cubic inch root plug
 Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each



Blue Spruce (*Picea pungens var. glauca*), can grow unusually slow the first 1-3 years after planting, but has a medium growth rate after that. Its crown is very dense with attractive pyramidal form, reaching heights of 50-60'. It makes an excellent windbreak species in most regions of the state and traps and holds snow well. The color varies from green to blue, but we grow seedlings from seed collected on the Kaibab National Forest to ensure more blue foliage. **Wildlife benefit:** Blue spruce provides excellent winter cover for upland game birds and small animals.

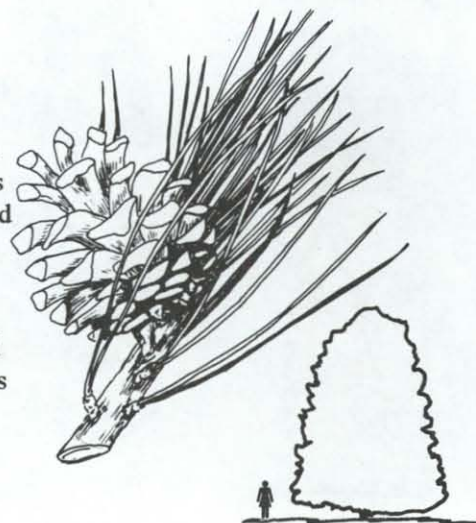
Seedlings are 6" tall with a 4 cubic inch root plug
 Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each

Super Stock seedlings are 10" tall with a 20 cubic inch root plug
 Purchase in multiples of 5: \$1.50 each



Austrian Pine (*Pinus nigra*) has a fast rate of growth, growing 18-24" a year once established, and eventually achieves heights of 40-60'. It holds its lower branches very well, and is an excellent tree under irrigation. If planted without supplemental watering in localities with less than 20-inch annual precipitation, it needs a deep, fertile soil with good moisture-holding capacity. **Wildlife benefit:** By not removing the lower branches, this tree will provide excellent winter cover for pheasant, quail and partridge, as well as small animals and other birds. Songbirds, including nuthatches, crossbills and chickadees eat the seeds.

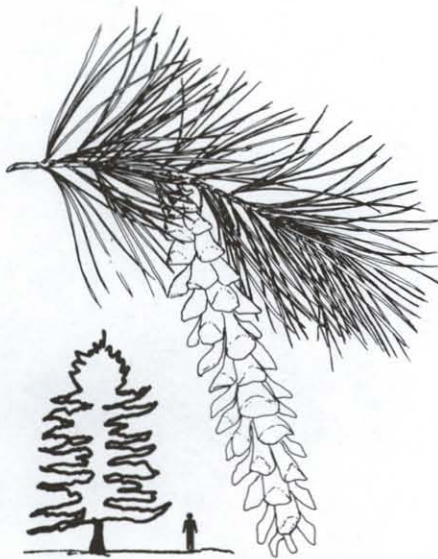
Super Stock seedlings are 6-10" tall with a 20 cubic inch root plug
 Purchase in multiples of 5: \$1.50 each





Rocky Mountain Juniper (*Juniperus scopulorum*), an Idaho native, is only available in the Wildlife Lover's Package this year. It attains heights of 20-30' with a medium to rapid growth rate. Although highly drought tolerant, Rocky Mountain juniper grows on a wide range of soils and will tolerate a high water table. It forms a very dense, symmetrical crown and is a superior small tree for windbreaks in this region. **Wildlife benefit:** This tree provides excellent cover and food for Idaho birds. This juniper is also useful for nesting sites.

Seedlings are 6" tall with a 4 cubic inch root plug
 Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each



Western White Pine (*Pinus monticola*), is an Idaho native and the state tree. We recommend it only for reforestation or limited landscape usage. This rapid growing evergreen with blue-green foliage grows best on rich, porous soils in moist valleys and on middle and upper slopes of northerly exposure. Our seed source, the Moscow Arboretum, offers the highest available blister-rust resistance. It's the same seed source used by the U.S. Forest Service, Idaho Department of Lands, and private industry.

Seedlings are 6" tall with a 4 cubic inch root plug
 Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each



Lodgepole Pine (*Pinus contorta*), is an Idaho native. We recommend it only for reforestation. Although this tree is hardy on many sites, best development will occur on moist, well-drained, sandy or gravelly loam soils. It grows on the driest soils or in frost pockets where other trees cannot but has problems in stagnated stands with bark beetles. Sandpoint, Idaho seed source, 2800' elevation.

Seedlings are 8" tall with a 4 cubic inch root plug
 Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each

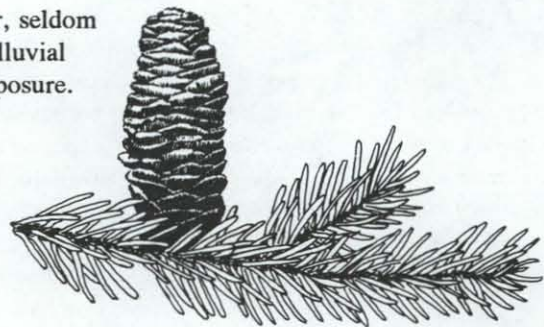
Western Larch (*Larix occidentalis*) is an Idaho native recommended only for reforestation. It attains maximum growth on deep, moist, porous soils in high valleys and on northerly or westerly exposed slopes. Seedling growth is exceptional as 4-year-old plants may exceed 8 to 10 feet in height. Kootenai National Forest seed source, 2700' elevation.



Seedlings are 8" tall with a 4 cubic inch root plug
Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each

Super Stock seedlings are 18-24" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each

Grand Fir (*Abies grandis*), an Idaho native also known as white fir, seldom exceeds 120' or 3' d.b.h. It occurs most frequently on deep, moist alluvial soils, in gulches, along streams, and on gentle slopes of northerly exposure. We grow the Sears Creek, Idaho seed source as it has better form for Christmas trees.



Seedlings are 6" tall with a 4 cubic inch root plug
Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each

Super Stock seedlings are 10" tall with a 20 cubic inch root plug
Purchase in multiples of 5: \$1.50 each

Western Redcedar (*Thuja plicata*) is an Idaho native recommended for reforestation and riparian enhancement. Mature height is 150' and 4' d.b.h. This cedar prefers to grow on moist flats and slopes, and along stream banks and bogs. It's a fast grower, but it must have plenty of water. Sandpoint, Idaho seed source, 3000' elevation.



Seedlings are 6" tall with a 4 cubic inch root plug
Purchase in multiples of 20: 20-480 \$.35 each
 500+ \$.25 each

Please Provide: Name _____ Date _____

Address _____

Street _____ City _____ State _____ Zip _____

County in Idaho _____ Telephone (day) _____

Orders that are picked up:

DO NOT SHIP. Your seedlings will be packaged Monday or Tuesday of the delivery week you select below and may be picked up between 7:30 a.m. and 3:30 p.m., Monday through Friday at the nursery. See map on page 1 for directions. Orders cannot be held past June 1st.

Orders that are shipped:

Seedlings will be sent U.P.S. on Monday or Tuesday of the week you circle below. In Idaho, you can expect delivery by Friday of the week selected. To change your delivery week, please advise the nursery, by phone or in writing, at least 2 weeks in advance. The nursery is not responsible for undeliverable packages or delivery delays.

Pick up or shipping date selection:

Circle a pick-up or delivery week and **MARK THIS WEEK ON YOUR CALENDAR.** Your order must be received 2 weeks prior to the delivery week you select. Late orders may be shipped the delivery week following the one you select.

February 15	March 1	April 5	May 3
February 22	March 8	April 12	May 10
	March 15	April 19	May 17
	March 22	April 26	May 24

When no date is specified, seedlings may be delivered at the nursery's discretion.

Order Identification Label

The label below will be used for U.P.S. delivery or personal pickup. Rural route addresses **MUST INCLUDE THE TELEPHONE NUMBER** of the receiver for U.P.S. use. Packages cannot be delivered to a post office.

Name _____

Address _____

City/State/Zip _____

Telephone (day) _____

Shipping and Handling

There is no shipping or handling cost for orders picked up at the nursery. For all others, use the shipping and handling chart below to determine your cost.

Amount of Order	UP to \$100.00	101.00 to 200.00	201.00 to 300.00	301.00 to 400.00	401.00 to 500.00	OVER \$501.00
Send this Amount	\$8.50	\$14.00	\$22.00	\$29.00	\$35.00	C.O.D.

Order Total Cost

Total conifer cost		
Total super stock conifer cost		
Total hardwood cost		
Total super stock hardwood cost		
Total special package cost		
Subtotal		
Idaho residents add 5% sales tax (multiply subtotal by .05) or give tax exempt number		
Shipping and handling cost		
Total		

Make your check or money order payable to:

RESEARCH NURSERY - UNIVERSITY OF IDAHO. Do not send cash. No refunds for orders cancelled after March 1, 1993. All cancelled orders are subject to a 20% restocking charge.

Mail your check and order form to:

SEEDLINGS, College of Forestry, Wildlife and Range Sciences, University of Idaho, Moscow, ID 83843.

Conifers

Quantity (multiples of 20 only)	Cost per Seedling 20 - 480	500+ of the same species	Cost	
_____	Western white pine	.35	.25	_____
_____	Ponderosa pine	.35	.25	_____
_____	Lodgepole pine	.35	.25	_____
_____	Douglas-fir	.35	.25	_____
_____	Western larch	.35	.25	_____
_____	Western redcedar	.35	.25	_____
_____	Grand fir	.35	.25	_____
_____	Blue spruce	.35	.25	_____
_____	Norway spruce	.35	.25	_____

TOTAL
ORDERED

TOTAL
COST \$ _____

Substitutions:

No Substitutions

OR _____

Super Stock Hardwoods

Quantity (multiples of 5 only)	Cost per Seedling	Cost	
_____	Honeylocust	1.50	_____
_____	Black locust	1.50	_____
_____	Russian-olive	1.50	_____
_____	Autumn-olive	1.50	_____
_____	Rugosa rose	1.50	_____
_____	Siberian peashrub	1.50	_____
_____	River birch	1.50	_____
_____	Honeysuckle	1.50	_____
_____	Common wild apple	1.50	_____
_____	Nanking cherry	1.50	_____
_____	Chokecherry	1.50	_____
_____	Burr oak	1.50	_____
_____	English oak	1.50	_____
_____	Blue oak	1.50	_____
_____	Western syringa	1.50	_____

TOTAL
ORDERED

TOTAL
COST \$ _____

Substitutions:

No Substitutions

OR _____

Hardwoods

Quantity (multiples of 20 only)	Cost per Seedling 20 - 480	500+ of the same species	Cost	
_____	Idaho hybrid poplar	.35	.25	_____
_____	Arctic willow	.35	.25	_____
_____	Golden willow	.35	.25	_____
_____	Purple lilac	.35	.25	_____
_____	White lilac	.35	.25	_____
_____	Mt. big sagebrush	.35	.25	_____
_____	Skunkbush sumac	.35	.25	_____

TOTAL
ORDERED

TOTAL
COST \$ _____

Substitutions:

No Substitutions

OR _____

Super Stock Conifers

Quantity (multiples of 5 only)	Cost per Seedling	Cost	
_____	Ponderosa pine	1.50	_____
_____	Scotch pine	1.50	_____
_____	Austrian pine	1.50	_____
_____	Blue spruce	1.50	_____
_____	Norway spruce	1.50	_____
_____	Western larch	1.50	_____
_____	Grand fir	1.50	_____

TOTAL
ORDERED

TOTAL
COST \$ _____

Substitutions:

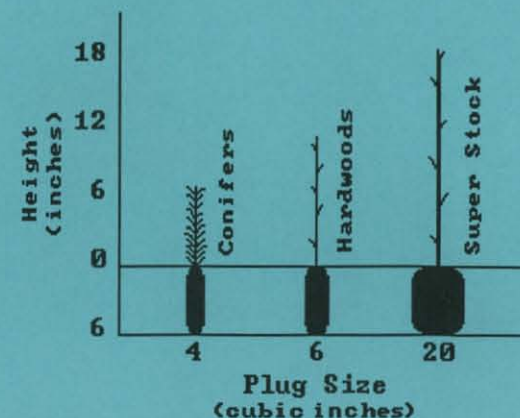
No Substitutions

OR _____

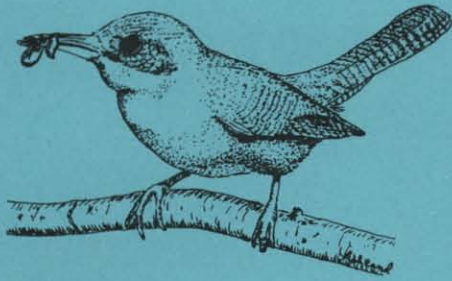
Special Packages

Quantity (only 1 each per customer)	Cost per Package	Cost	
_____	State of Idaho Package	25.00	_____
_____	Wildlife Lover's Package	50.00	_____
_____	TOTAL ORDERED	TOTAL COST \$ _____	

Order early! Orders are accepted on a first-received-with-full-payment, first-filled basis. A minimum order must total 100 seedlings, OR \$35.00 (one of the Special Packages above satisfies the minimum order requirements). For availability or assistance in seedling selection, call (208) 885-6444 8:00 a.m.-5:00 p.m. P.S.T.



This order form was printed on recycled paper



WILDLIFE LOVER'S PACKAGE

This pre-packaged offer contains 50-70 seedlings that will grow into prime sources of food or cover for wildlife. Packages contain any 10 of the following species: 5 super stock American plum, 5 super stock Nanking cherry, 5 super stock chokecherry, 5 super stock Russian-olive, 5 super stock autumn-olive, 5 super stock Siberian peashrub, 5 super stock Arctic blue willow, 5 super stock honeysuckle shrub, 10 regular Rocky Mt. juniper, 5 super stock Austrian pine, 5 super stock rugosa rose, 10 regular dwarf mountain-ash, 5 super stock wild apple, 5 super stock skunkbush sumac, or 5 super stock mountain big sagebrush.

Supplies are limited so we can offer only one to a customer or mailing address.

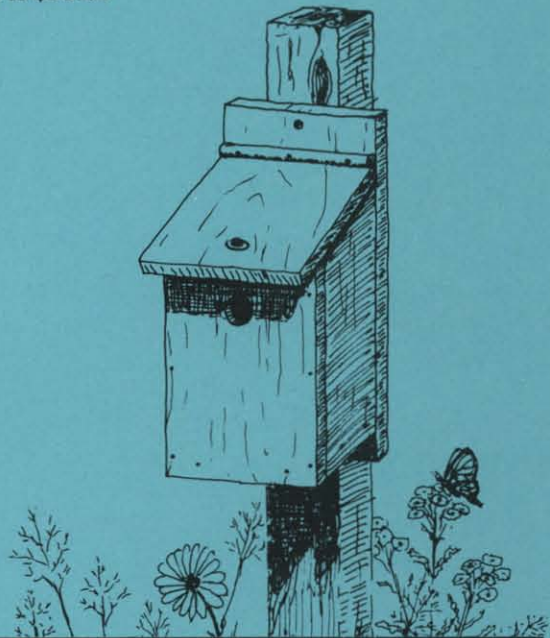
The cost is \$50.00

STATE OF IDAHO PACKAGE

Plant Idaho's state tree and flower and attract the state bird--all in your own yard. We are happy to offer this package that includes a two-year old, 8-12" tall, western white pine, 3 super stock western syringas, and a mountain bluebird nesting box made of Idaho western redcedar for years of enjoyment. We also include natural history and ecological information on these three species.

Supplies are limited, so we can offer only one to a customer or mailing address.

The cost is \$25.00



This section is for your personal records:

Please fill it out, save it, and refer to it should you have any questions regarding your delivery date or the species you ordered. Remember to include what substitutions, if any, were acceptable in case we are out of your first choice items.

	Species	Quantity	Species	Quantity
Date Ordered	_____	_____	_____	_____
Delivery Date	_____	_____	_____	_____
Total Cost	\$ _____	_____	_____	_____
Substitutions:	_____			

688-Y011

University of Idaho

Forest Research Nursery

Department of Forest Resources

University of Idaho

Moscow, ID 83843

