



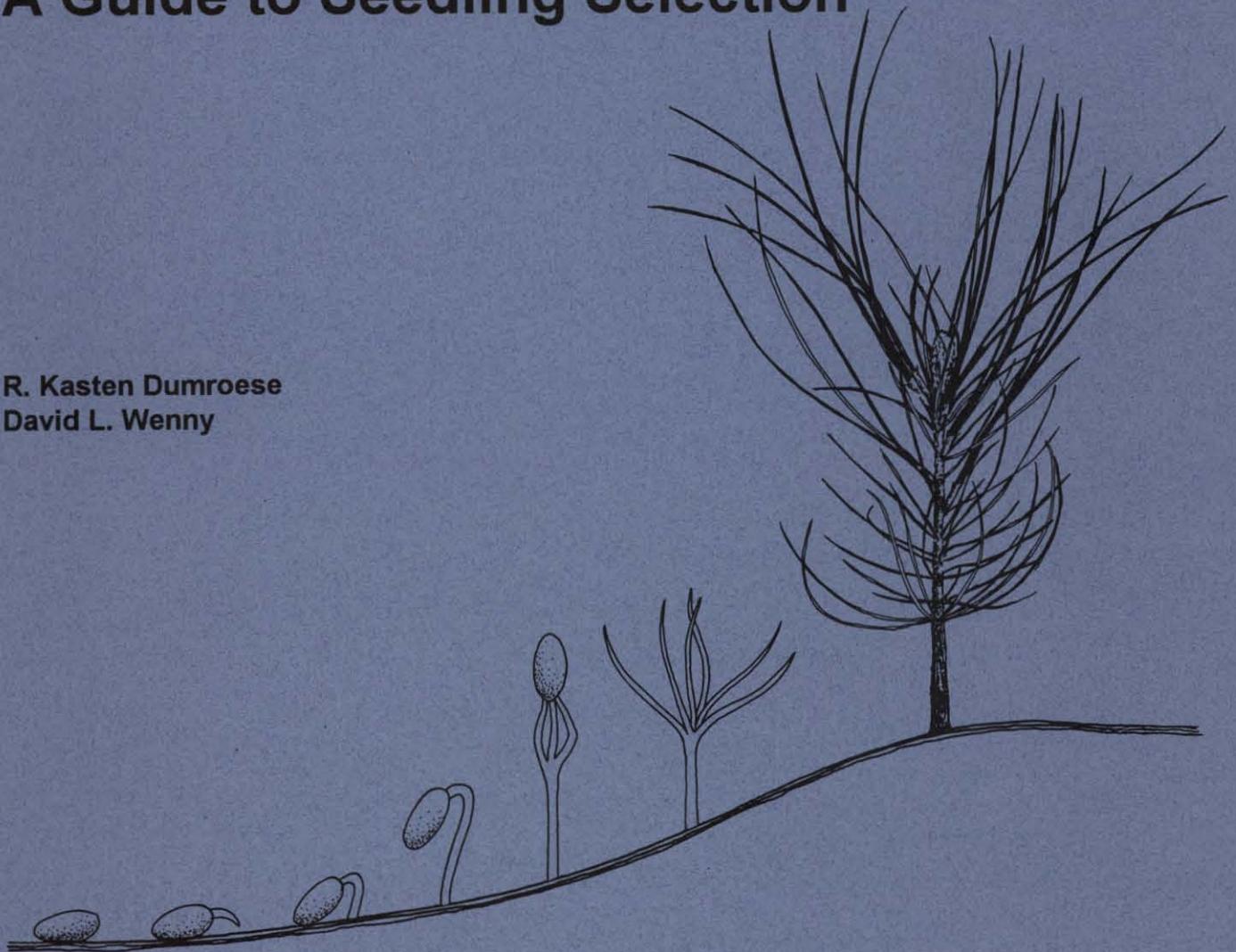
September 1998

Miscellaneous Publication No. 18

University of Idaho College of Forestry, Wildlife and Range Sciences

A Guide to Seedling Selection

R. Kasten Dumroese
David L. Wenny



IDAHO FOREST, WILDLIFE AND RANGE EXPERIMENT STATION

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 University of Idaho

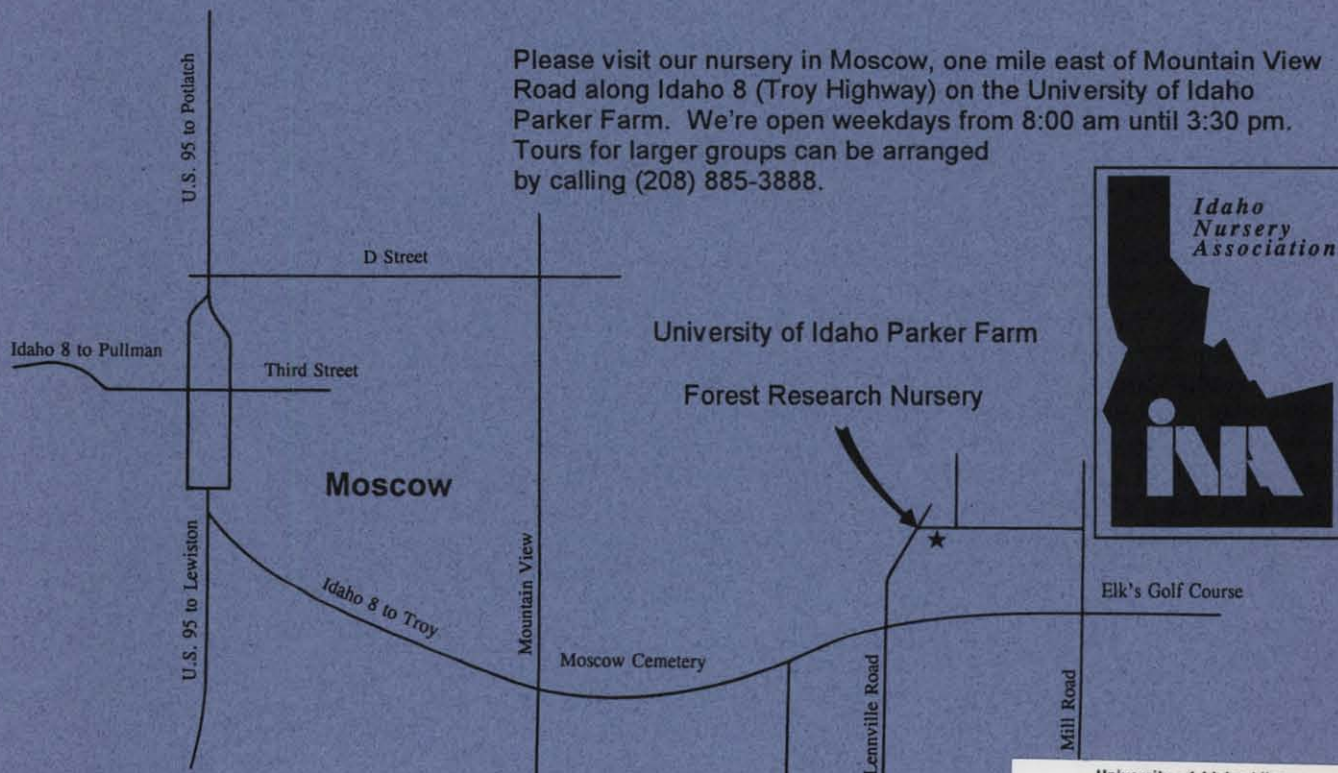


Eagerly serving Idahoans, the Forest Research Nursery staff (L to R): Kas Dumroese, Kenneth Quick, Annette Brusven, Sue Morrison and Dave Wenny.

About Us ...

When the Forest Research Nursery was first established in 1909, it grew bareroot (field-grown) tree and shrub seedlings for conservation. In 1982, container-grown seedlings (grown in greenhouses) replaced bareroot production. The Forest Research 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 for the state of Idaho, private industry, and the public. Almost all the revenue used to meet these obligations is received through seedling sales and outside grants. The Forest Research Nursery is a proud member of the Idaho Nursery Association and cooperates with Idaho's private nursery owners through an advisory committee, keeping them up-to-date with our research findings.

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 8:00 am until 3:30 pm. Tours for larger groups can be arranged by calling (208) 885-3888.



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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 Consolidated Farm Service Agency. 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, Consolidated Farm Service Agency office, County Extension

office, or Natural Resources Conservation Service office.

Conservation Reserve Program (CRP) and Environmental Quality Incentive Program (EQIP) are administered through the Consolidated Farm Service Agency. CRP pays owners of highly erodible, previously cultivated farm lands to remove them from production, and will cost-share tree and shrub planting. EQIP cost-shares tree and shrub planting onto qualifying land. For more information, contact your nearest Consolidated Farm Service Agency office or Natural Resources 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.

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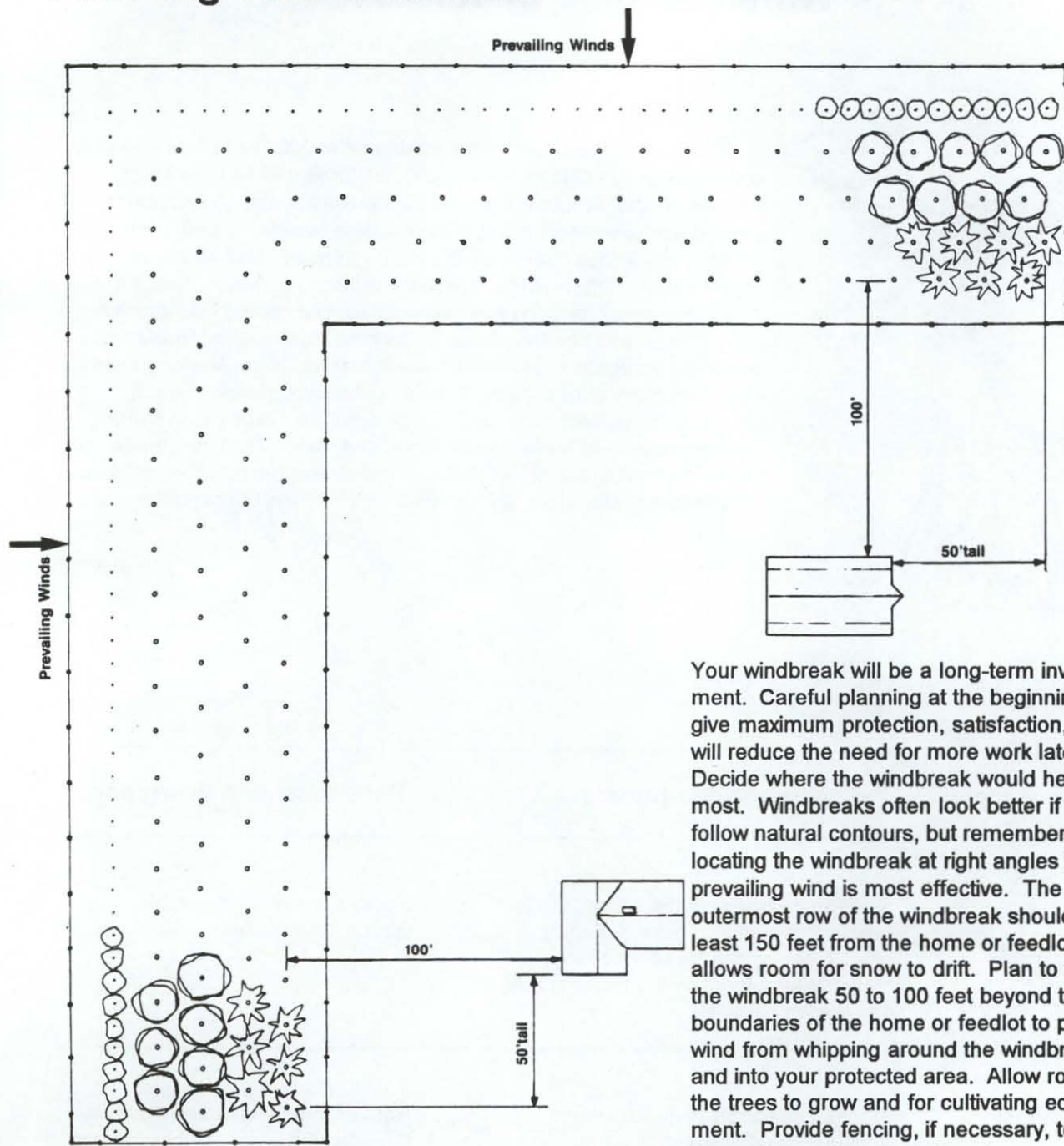
Windbreaks for Winter Wildlife Cover



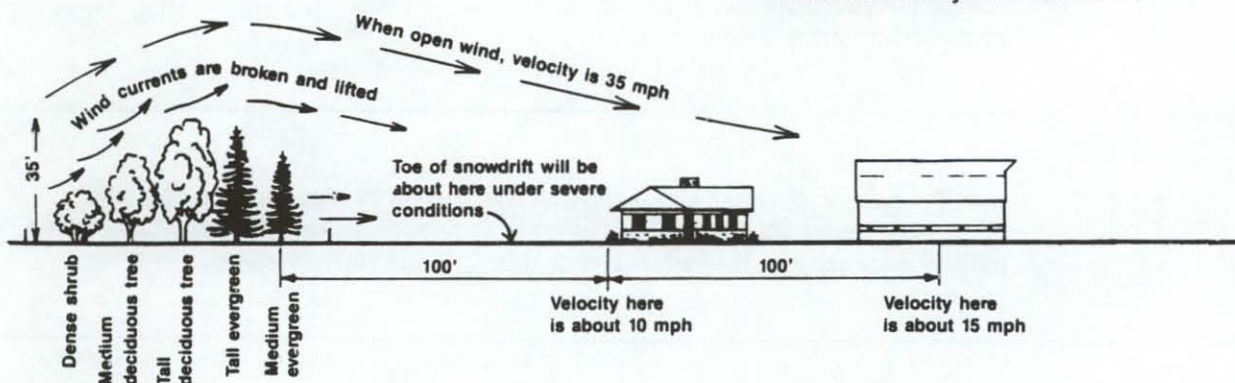
Good wildlife habitat can be created on as little as $\frac{1}{2}$ acre. An ideal arrangement has at least 5 rows, with the three middle rows being evergreen, and the two outer rows deciduous shrubs. Windbreaks planted east to west provide the best wildlife benefit. During winter months, sun shines directly 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, golden currant, cotoneaster, western sand cherry, honeysuckle, skunkbush sumac, native mountain-ash, black hawthorne, and rose. Good evergreens are types that don't grow too tall, but stay dense and bushy. Fine choices include Rocky Mountain juniper, Austrian pine, and blue spruce.

Region of Idaho	Recommended Shrubs	Recommended Evergreens
Northern	Siberian peashrub, rugosa rose, western sand cherry, autumn-olive, American plum, Nanking cherry, serviceberry, cotoneaster, black hawthorne, ninebark, and golden currant	Rocky Mountain juniper, blue spruce, and Austrian pine
Southwestern	Siberian peashrub, American plum, rugosa rose, skunkbush, autumn-olive Russian-olive, chokecherry, serviceberry, cotoneaster, and golden currant	Rocky Mountain juniper, Austrian pine, Scotch pine, and blue spruce
Southeastern	Siberian peashrub, choke cherry, American plum, skunkbush, Nanking cherry, rugosa rose, serviceberry, cotoneaster, and golden currant	Rocky Mountain juniper, blue spruce, Austrian pine, Scotch pine, and Norway spruce

Planning Your Windbreak

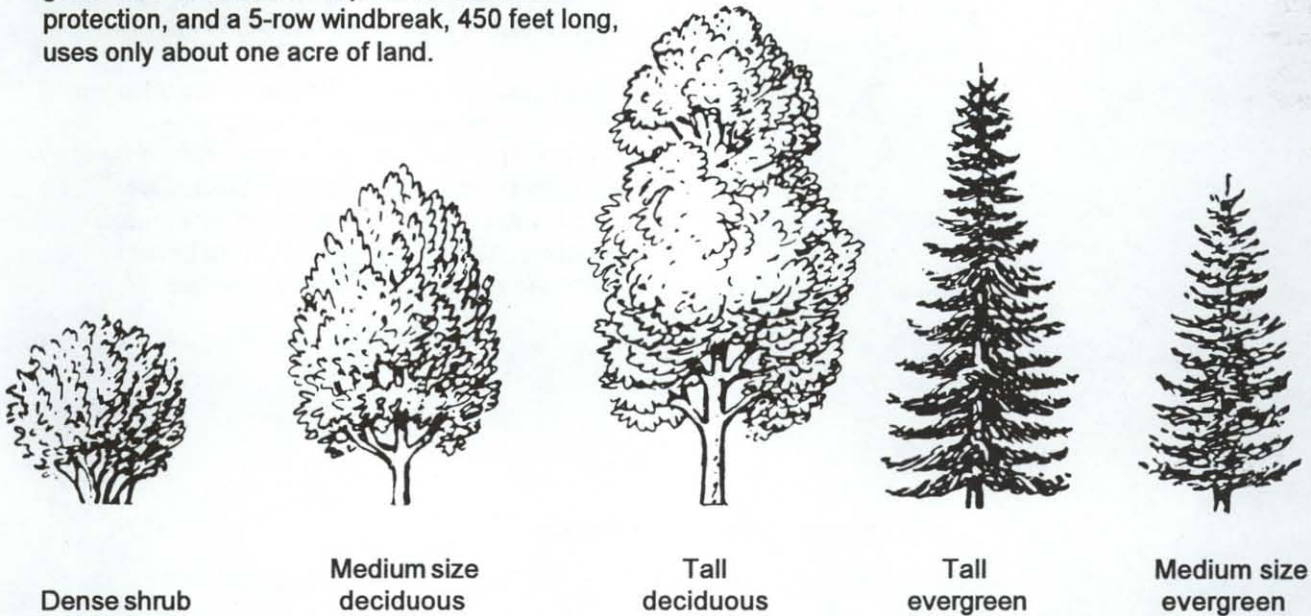


Your windbreak will be a long-term investment. Careful planning at the beginning will give maximum protection, satisfaction, and will reduce the need for more work later. Decide where the windbreak would help the most. Windbreaks often look better if they follow natural contours, but remember that locating 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.



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, and a 5-row windbreak, 450 feet long, uses only about one acre of land.



See page 12 for an index of species.
Species descriptions start on page 14.

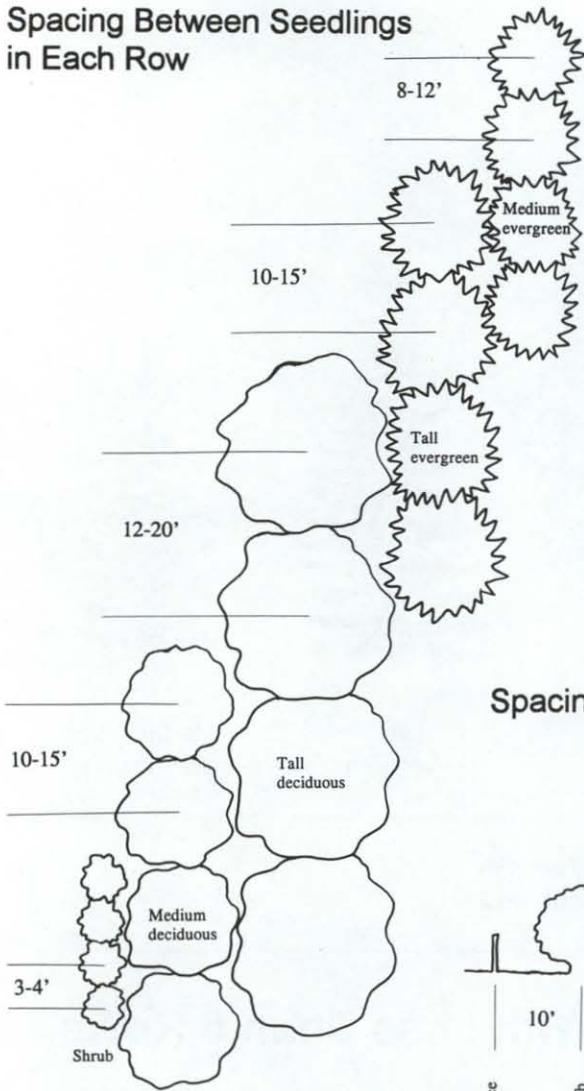
Tree Selections for Windbreaks With Less Than 5 Rows

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

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

How Far Apart Do I Plant?

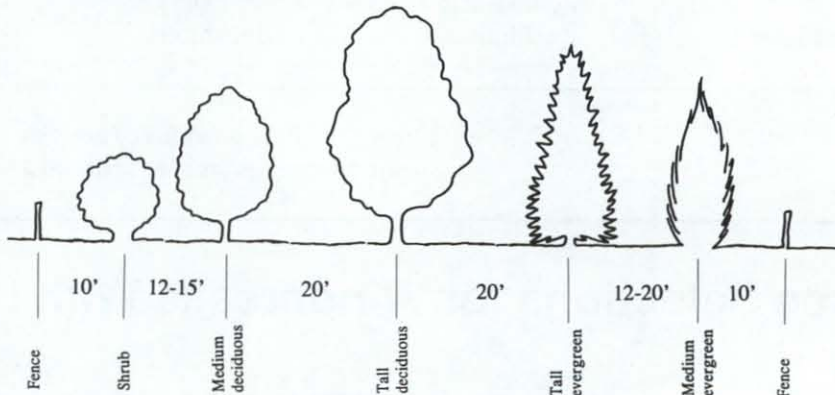
Spacing Between Seedlings in Each Row



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 (see figures to left and below for 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

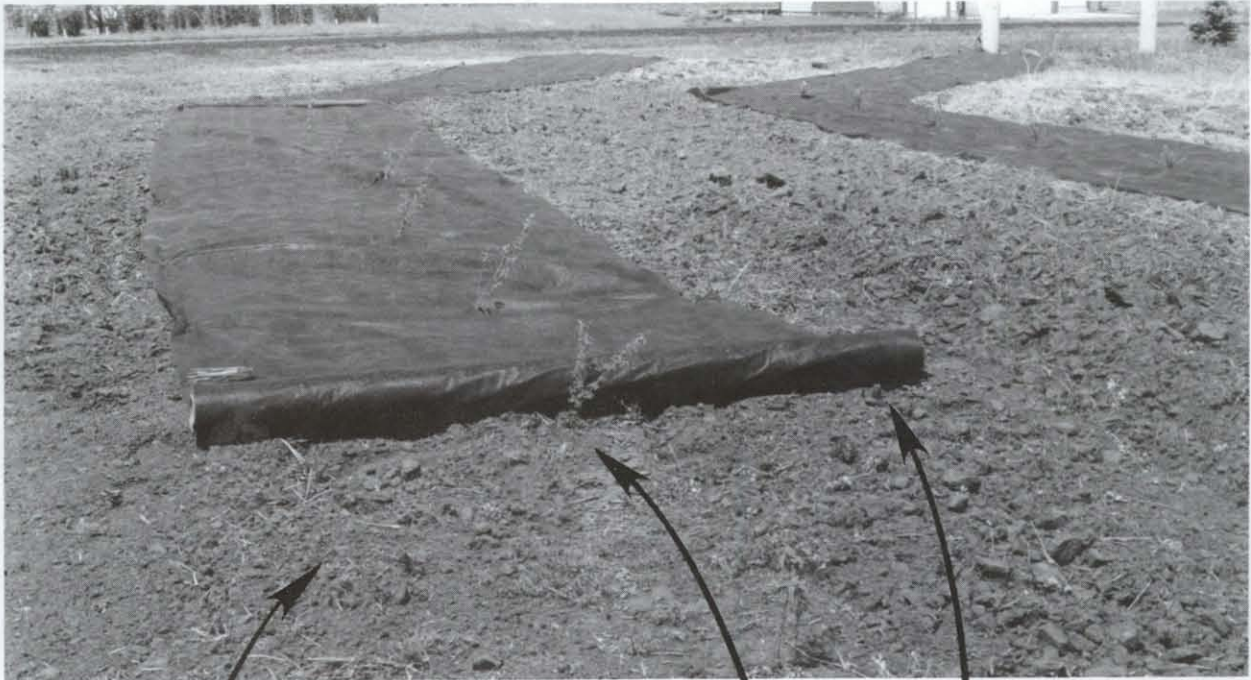


How Many Trees Do I Order?

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 in 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

5 Planting Steps to Give Your Windbreak the Best Start



1. Weed competition is the number one cause of seedling death. If weeds aren't much of a problem, clean cultivate the planting area **BEFORE** your seedlings arrive. If weeds are a problem, especially perennial weeds such as thistle or bindweed, herbicide applications may be necessary. Please consult your county agent before using herbicides as carryover effects may damage your seedlings.

2. Plant your seedlings according to the instructions we ship with your order. Plan to have a shovel or hoedad ready to use when your seedlings arrive. We do not recommend dibble planting as dibles often severely damage the soil and reduce seedling survival and growth.

3. Use a weed barrier such as Typar that allows water and air to pass through it but prevents weed establishment. Shown here is a 6-foot-wide strip, the minimum we recommend.

4. Cover the weed barrier with a mulch of wood chips or decorative rock. This will increase the life of the weed barrier, make the barrier more effective, and preserve soil moisture.



5. Use a pre-emergent herbicide such as Surflan or Casoron to keep weeds from sprouting on the mulch. Always dress appropriately when applying chemicals and follow all label directions. If you don't like chemicals, the weed barrier will keep weed roots from reaching the soil so they'll pull out of the mulch with little effort.

Weeds vs. Seedlings



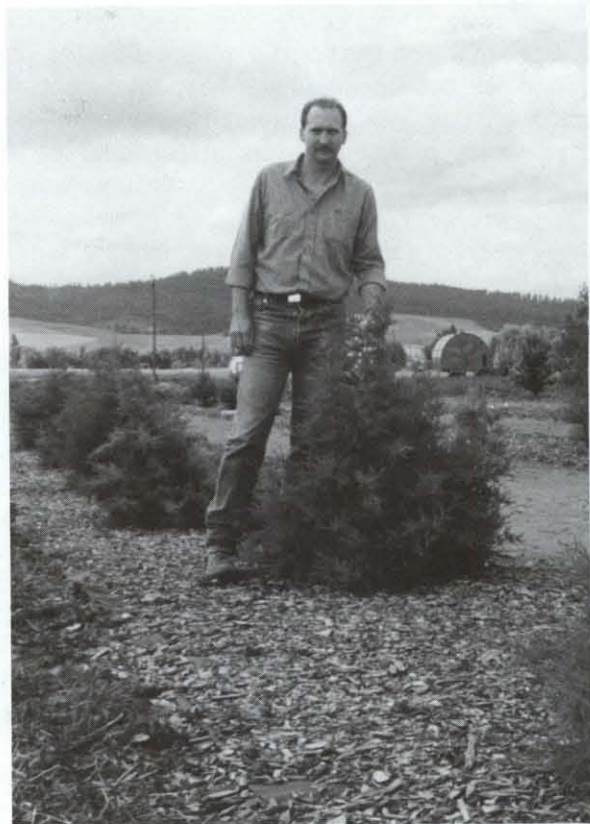
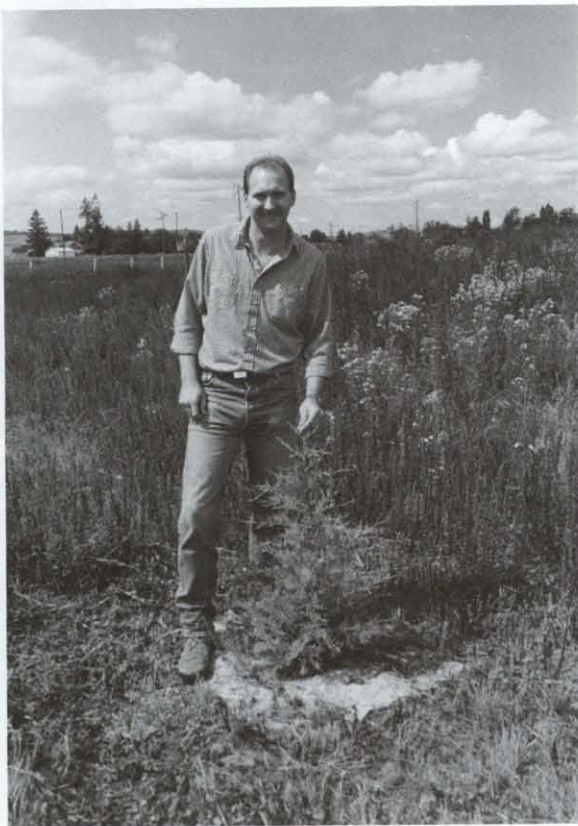
You'll get larger, healthier trees and shrubs faster if you control weeds and grass. Weeds and grass growing next to seedlings reduce growth and are the number one cause of seedling mortality.

The two rows of Siberian peashrub shown in these 1993 photos were both planted in spring 1989 near the nursery. They clearly demonstrate the importance of weed and grass control. In the top photo, former Secretary Linda Geer poses by a row of peashrub where the lawn grass was allowed to grow within the row. The owners have had a difficult time keeping the row looking neat and the peashrub growth has been slow. In the bottom photo, the peashrub were protected by a 6-foot-wide weed barrier covered with wood chips.



More Weeds vs. Seedlings

Need some more proof that weed control improves seedling growth? Compare these three photos (taken in 1993) of Rocky Mt. juniper planted in spring 1990. In the right photo, Research Associate Kas Dumroese kneels next to a seedling growing in a jungle of grass. Without any form of weed control, this juniper has struggled to about 14 inches in height. In the lower left photo, the juniper looks much better, having benefitted from twice-yearly cutting of the grass and weeds in a 6-foot-diameter circle around it. This tree also had a 3-foot-square weed barrier placed around it at the time of planting. The best looking juniper is in the lower right photo. The combination of a 6-foot-wide weed barrier covered with wood chips and a 3-foot-wide tilled strip on either side of that has allowed this juniper to achieve maximum 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. You can protect seedlings with mechanical barriers or by using chemical browse inhibitors.

Mechanical barriers - A 6- to 8-foot-tall fence is an option for keeping big game from your seedlings (see pub below). Another option is tree tubes, but they work well only for deciduous trees (see photo on page 11). Made of photodegradable plastic, tubes come in various lengths; a tube at least 6 feet tall is necessary to prevent deer and elk browsing. Trees grow taller and faster inside tubes. Soon they are above the browse line, and eventually the tube disintegrates. If you'd like more information on tubes, please contact the Research Nursery.

Chemical inhibitors - Your local Idaho Department of Fish and Game officer will have information on chemical inhibitors you spray on seedlings. Some folks have had success keeping big game from browsing by simply stringing a bar of Lifebuoy soap on trees and shrubs.

Rodents

Voles - Common throughout Idaho, voles attack the base of seedlings and 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. 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. Voles don't like to cross bare soil so a weed-free zone around your trees will help discourage feeding. Plowing or tilling a 6-foot-wide strip on either side of the row helps keep the pests away. This also improves seedling growth 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, or a 8-12 inch tree tube placed around new 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 usually gnaw off the roots, often leaving the above-ground portion of the seedling or tree standing. Sometimes gophers eat seedlings entirely. They are extremely difficult to eradicate from an area. Clean cultivation, as described for voles, will greatly reduce gopher feeding. Trapping can be effective if you are persistent.

Ordering useful publications

Ag Communications at the University of Idaho has several helpful publications, including information on Christmas tree production, landscaping, fertilization, insects and disease problems, etc. Write them for a catalog at: Ag Publications Building, University of Idaho, Moscow, ID 83844-2240 (telephone 208-885-7982). Their catalog and ordering information can be viewed on the Internet at: <http://info.ag.uidaho.edu>.

Some of the best information we've come across for controlling vole, gopher, mole, and ground squirrel damage is available through Oregon State University. Write them for their Educational Materials List (catalog) at Publication Orders, Extension and Station Communications, Oregon State University, 422 Kerr Administration, Corvallis, OR 97331-2119 (telephone 541-737-2513 or fax 541-737-0817). Their catalog can be viewed, and many publications down-loaded, over the Internet at: <http://www.agcomm.ads.orst.edu/AgComWebFile/EdMat/EdMatIndex.html>.

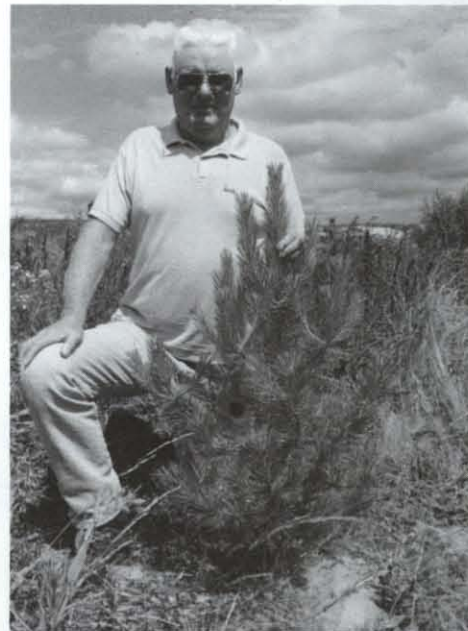
For information on fences, order *Hardwood Plantations for the Inland Northwest* from Editor, Idaho Forest, Wildlife & Range Experiment Station, University of Idaho, Moscow, ID 83844-1130 (include \$3.00 for shipping/handling) or view on the Internet at <http://www.uidaho.edu/cfwr>

If you've any questions or suspect an insect, disease, or planting site problem, contact your local county extension agent, Idaho Department of Lands woodland forester, or give us a call.

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.

Why Buy SuperStock?



Retired, (but just can't stay away from the Nursery), Kenneth Quick knows why you should buy SuperStock seedlings. Both of these photos (taken in 1993) show Ken with Austrian pine seedlings planted in spring 1990. On the left he's kneeling by one grown in a 4-cubic-inch container. Compare that with the 20-cubic-inch SuperStock shown in the right photo.



Nursery Manager and Professor of Silviculture, Dr. David Wenny proudly holds a 20-cubic-inch SuperStock blue spruce (left) and a 4-cubic-inch blue spruce.



Nursery Technician Sue Morrison likes the growth of this SuperStock Russian-olive, planted in spring 1992 and photographed in 1993. It's growing in a 2-foot-tall plastic tree tube to protect it from rabbit and vole gnawing. Besides providing protection from rodent damage, tree tubes can also protect seedlings from herbicide applications and grass trimming.

Species	Size	Idaho Native	Seedling ht (in)	Mature ht (ft)	pg	Zone	Drought hardy	Uses	Birds	Showy flowers
HARDWOOD TREES & SHRUBS										
American plum	M		12-18	20-30	14	4		W, S	C, F	x
Amur honeysuckle	S		6-12	10-15	14	2	x	W, S	C, F	x
Arctic blue willow	S		10-18	10-15	14	3		R, W, S	C	
Autumn-olive	S		6-12	10	14	3	x	W	F	
Black cherry	M		10-16	40-60	16	3		W	F	x
Black hawthorne	M	x	12-16	20	i*	4		R, W, S	C, F	
Black locust	T		12-18	40-76	16	3	x	W	C	x
Black walnut	T		14-20	50-75	i*	4		W		
Bur oak	T		6-12	60-76	16	2	x		F	
Chokecherry	M	x	8-12	10-25	16	2		W, S	F	x
Common wild apple	M		8-12	25-30	16	3			C, F	x
Coyote willow	M	x	14-18	20-25	i*	5		R, S	C	
Douglas spirea	S	x	10-12	3-6	i*	4		R, S	C	x
Drummond willow	S	x	14-18	9	i*	5		R, S	C	
English oak	T		10-18	75-90	16	4	x		F	
Gambel's oak	M		5-8	15-30	16	4	x	W	F	
Golden currant	S	x	8-12	3-6	17	2	x	W, S	C, F	
Golden willow	M		14-18	40-50	17	2		R, W	C	
Green ash	M		8-12	36	17	3	x	W	C, F	
Honeylocust	T		12-14	40-70	17	4	x	W	C	x
Idaho hybrid poplar	T		14-18	60-80	18	3		R, W	C	
Kinnikinnick	G	x	6-10	1	i*	2	x	S	F	
Laurel willow	M		14-18	20-40	i*	4		R, W, S	C	
Lemmons willow	S		14-18	20	i*	5		R, W, S	C	
Lilac-purple & white	S		6-12	10-16	18	3	x	W, S	C	x
Mackenzie willow	S	x	14-18	10-12	i*	5		R, S	C	
Mtn big sagebrush	S	x	5-8	3-6	18	4	x	W	C	
Nanking cherry	S		12-18	6-10	19	2	x	W, S	F	x
Native mtn ash	M	x	3-8	6-20	19	3		R	C, F	x
Ninebark	S	x	10-12	5-7	i*	2	x	W, S	C	
Ocean-spray	S	x	6-10	5-10	19	3	x	W, S		x
Paper birch	T	x	12-18	80	19	2		R	F	
Peking cotoneaster	S		5-8	6	20	2		S	C, F	x
Quaking aspen	M	x	6-12	40	20	2		R	C	
Redosier dogwood	S	x	12-14	6-16	20	2		R, S	C, F	x
River birch	T		12-18	50-60	20	4		R, W	F	
Rugosa rose	S		10-14	4-6	21	2	x	W, S	C, F	x
Russet buffaloberry	S	x	5-8	8	21	2	x	W, S	F	
Russian-olive	M		10-12	20-30	22	2	x	W, S	C, F	
Sawtooth oak	M		8-14	35-46	i*	5			C, F	
Serviceberry	M	x	12-16	20	22	2	x	W	C, F	x
Siberian peashrub	S		10-14	10-16	22	2	x	W, S	C, F	x
Sitka alder	M	x	10-12	10-16	23	4		R, S	C, F	
Skunkbush sumac	S	x	10-12	3-4	23	3	x	W, S	C, F	
Sugar maple	T		8-14	60-70	23	3				
Western sand cherry	S		14-18	3-6	23	3	x	W, S	F	x
Western syringa	S	x	8-12	6-9	23	4	x	W, S	F	x

Species	Size	Idaho Native	Seedling ht (in)	Mature ht (ft)	pg	Zone	Drought hardy	Uses	Birds	Showy flowers
CONIFERS										
Austrian pine	M		4-8	40-60	24	3		W	C, F	
Blue spruce	M	x	6-10	50-60	24	2		C, W	C	
Concolor fir	T	x	4-10	>100	†	3		C, W	C, F	
Douglas-fir	T	x	8-12	60-100	24	4		C, F, W	C, F	
Norway spruce	T		8-14	60-80	25	2		C, W	C	
Ponderosa pine	T	x	6-12	60-100	25	3	x	F, W	C, F	
Rocky Mtn juniper	M	x	8-12	20-30	25	3	x	W	C, F	
Scotch pine	T		4-10	40-70	26	2		C, W	F	
Western larch	T	x	7-12	>100	26	3		F		
Western redcedar	T	x	10-18	>100	26	5		F	C	
Western white pine	T	x	4-8	>100	26	3		F	C, F	

* = catalog insert

KEY		
Size	Uses	Birds
S = Shrub	C = Christmas trees	C = Cover
M = Medium-sized tree	F = Reforestation	F = Food
T = Tall tree	R = Riparian	
G = Ground cover	W = Windbreak	
	S = Soil Stabilization	

USDA Hardiness Zones for Idaho County Seats and Selected Cities in MT, WA, OR & UT

American Falls	5	Malad	4	Missoula, MT	5
Arco	4	Marsing	6	Libby	5
Blackfoot	5	Moscow	6	Hamilton	4-5
Boise	6	Mountain Home	6	Dillon	4
Bonnars Ferry	6	Nezperce	5-6	Spokane, WA	5-6
Burley	5-6	Orofino	6	Walla Walla	6
Caldwell	6	Paris	4	Pullman	6
Cascade	4	Payette	5-6	Kettle Falls	5
Challis	4	Pocatello	4		
Coeur d'Alene	6	Preston	4	Pendleton, OR	6
Council	5	Rexberg	4	LaGrande	5-6
Driggs	4	Rigby	4	Burns	5
Dubois	4	Rupert	5	Ontario	6
Emmett	6	Salmon	4		
Fairfield	4	Sandpoint	6	Logan, UT	4
Gooding	6	Shoshone	5	Ogden	5
Grangeville	6	St. Anthony	4	Salt Lake City	5-6
Hailey	4	St. Maries	5	Portersville	5
Idaho City	5	Soda Springs	3-4		
Idaho Falls	4	Twin Falls	6		
Jerome	6	Wallace	5		
Lewiston	6	Weiser	5		

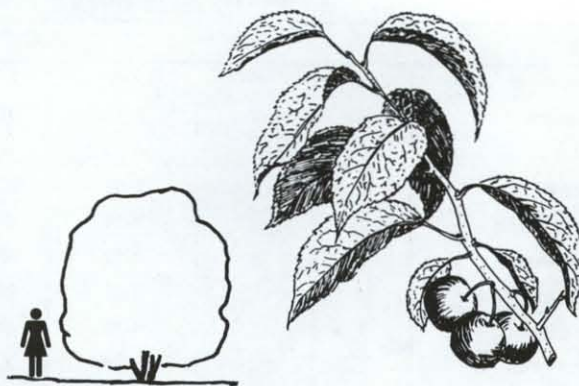
Average Annual Minimum Temperature for each zone	
Zone 2	-50° to -40°F
Zone 3	-40° to -30°
Zone 4	-30° to -20°
Zone 5	-20° to -10°
Zone 6	-10° to 0°

These zones are based on average minimum temperatures. We recommend planting trees and shrubs that are cold hardy to 2 zones below what is indicated above. For example, in Moscow we suggest planting zone 4 species, even though Moscow is shown to be zone 6. This is to compensate for below average temperatures that we sometimes get in the winter. Extreme minimum temperatures indicate most of Idaho is a zone 3.

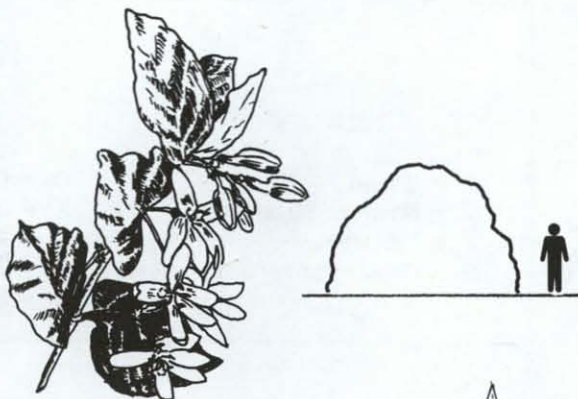
Species Descriptions

Hardwood Trees & Shrubs

American Plum (*Prunus americana*), a large shrub or small tree (20-30 feet tall), is best adapted to moist soils. It has rapid growth with wide-spreading branches and grows well in outer rows of multi-row windbreaks. This plum flowers profusely in late spring, making it an attractive addition to any planting. Plums 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.



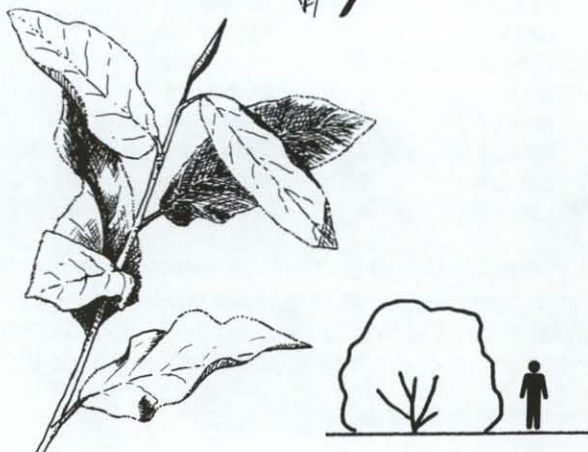
Amur Honeysuckle (*Lonicera maackii*) is a small, dense shrub ideal for screens around buildings or driveways. Honeysuckle's moderate to fast growth and 10- to 15-foot mature height make it an ideal candidate for single-row plantings or exterior portions of multi-row windbreaks. It bears many white flowers 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.



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 exterior rows of multi-row windbreaks. Arctic blue willow has a moderate growth rate, prefers moist soils, and reaches a mature height of 10-15 feet. **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 winter.

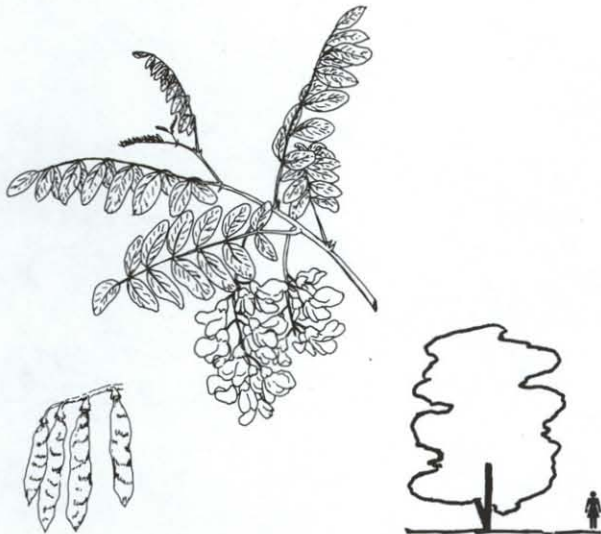


Autumn-olive (*Elaeagnus umbellata*) is a dense shrub that tolerates heat and wind, and once established, also tolerates drought. It grows about 10 feet tall, making it suitable for exterior rows of multi-row windbreaks and excellent for single-row hedges or screens. The foliage adds a silvery gray-green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

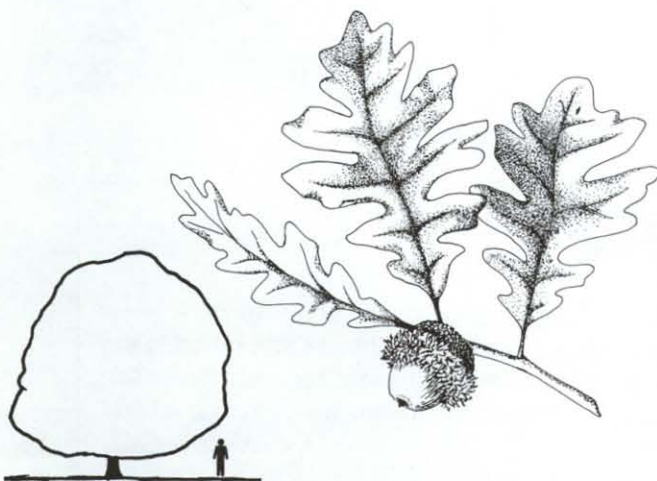




Black Cherry (*Prunus serotina*), most commonly known for its use in fine furnishings, is a medium-sized tree (40-50 feet tall). Growing best in deep, well-drained soils, it has proven to be very hardy in Idaho, easily withstanding late spring and early fall frosts. This species is moderately drought resistant, but may need supplemental water for establishment. Black cherry is one of our most handsome domestic woods, long sought for its excellent quality and high value. With a reddish-brown color and high luster when properly finished, this wood has excellent working qualities, low shrinkage, and freedom from checking and warping, making it a favorite material of cabinetmakers. These wood qualities, combined with its hardness, high wildlife value, and the relative scarcity of this species, make it an ideal tree for planting in plantation and conservation settings. **Wildlife benefit:** Produces abundant, red fruits eaten during the fall by robins, waxwings, finches, towhees, and grosbeaks.

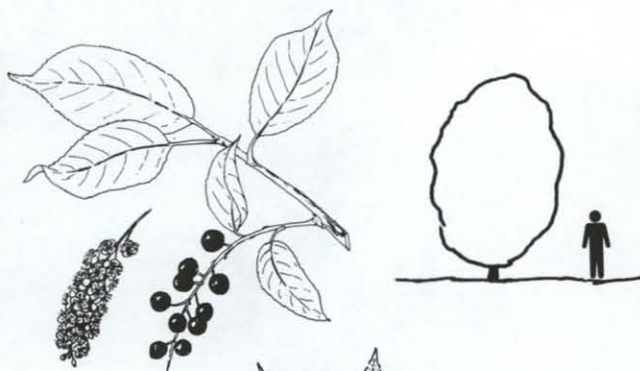


Black Locust (*Robinia pseudoacacia*) is a rapidly growing tree adapted to a wide range of soils. It does well in hot, dry areas and is very drought tolerant. Black locust's wide-spreading root system is useful in controlling erosion. The roots have nitrogen-fixing nodules that actually release nitrogen into the soil. This "fertilizing" characteristic is very beneficial on disturbed or sterile soils. Nitrogen released into the soil may stimulate growth of neighboring plants in multi-row plantings. Black locust is a long-lived tree that, at maturity, will be 40-75 feet tall. This tree grows best in center portions of windbreaks. Black locust has very dense wood and therefore is excellent for fence posts or firewood. Wood borers are killing this tree in some areas of southern Idaho; check with your county agent to see if borers are a problem in your area. **Wildlife benefit:** Good roosting and nesting tree for hawks and owls. Bees actively visit the white flowers in spring.



Bur Oak (*Quercus macrocarpa*), rugged and tolerant of adverse conditions, this lovely oak ranges westward into the Great Plains. It will grow about 60-75 feet tall with a 30-foot spread. Its leaves are large (8-10 inches) with deep lobes. We grow seedlings from acorns collected near Pocatello, Idaho. Like other oaks, it should be watered during the first 2-3 dry seasons. **Wildlife benefit:** Squirrels, chipmunks, deer, birds, and turkeys eat the acorns.

Chokecherry (*Prunus virginiana*) is a very hardy, large shrub or small tree, growing fast to a mature height of 10-25 feet. This Idaho native 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 growth form, chokecherry is an excellent choice for outer rows of multi-row windbreaks. **Wildlife benefit:** The fruits are a prime source of food for chipmunks and many songbirds in the fall.



Common Wild Apple (*Malus pumila*), introduced from Europe and Asia, is now commonly naturalized throughout Idaho. Given full sun and moderate moisture, it grows about 25-30 feet tall with a nearly equal spread. Small edible apples follow fragrant white flowers.

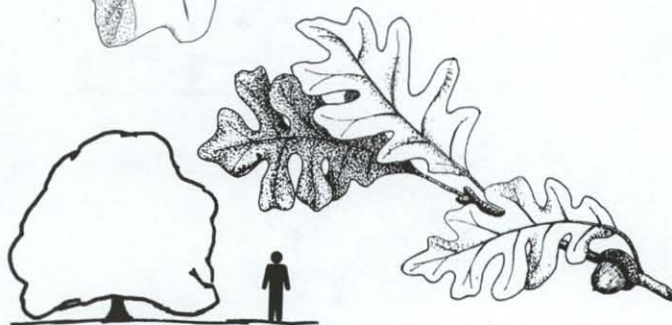
Wildlife benefit: The small apples provide food for bears, chipmunks, robins, woodpeckers, waxwings, pheasants, and deer. If left unpruned, the drooping lower branches provide winter cover for upland game birds.



English Oak (*Quercus robur*) grows, in a moderately short period of time, into a wide-spreading tree with a short trunk. It may grow as tall as 75-90 feet and has leaves with rounded lobes that persist into late fall. It's suited only 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 (*USDA Hardiness zones 5 or 6*). This oak withstands drought but should be watered during the first 2-3 dry seasons. **Wildlife benefit:** Squirrels, chipmunks, deer, birds, and turkeys eat the acorns.



Gambel's Oak (*Quercus gambellii*) is native to the central Rocky Mountains, although not to Idaho. Grows slowly to 15-30 feet. The trunk is usually light-gray to whitish and leaves are light green before turning yellow, orange, or red in fall. Tolerates most soil conditions and once established is very drought tolerant. **Wildlife benefit:** Acorns are eaten by deer, squirrels, bear, and turkey.



How to Get Your Oaks to Grow Faster

According to the *Sunset Western Garden Book* published by Lane Publishing Company of Menlo Park, California, oaks planted in your yard should grow vigorously (1½ - 4 feet per year). The authors go on to say, "By nature, many young oaks grow twiggy. Growth is divided among so many twigs that none elongates fast. To promote faster vertical growth, pinch off the tips of unwanted small branches, meanwhile retaining all leaf surface possible in order to sustain maximum growth."

September 1998 to June 1999

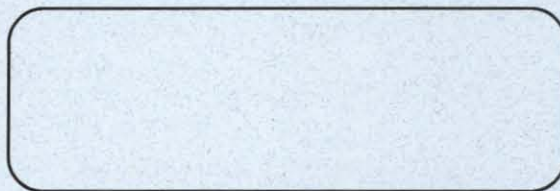
Seedling Order Form

Please remove this center section and fill it out completely. Keep this first page for your records and return the following page with your check or money order to:

***Seedlings
College of Forestry, Wildlife and Range Sciences
University of Idaho
Moscow, ID 83844-1137***

**Questions? Call (208) 885-3888 or E-mail abrusven@uidaho.edu
Visit us on the web! www.uidaho.edu/cfwr/forres/nursery/seedlings.htm**

**GDY011
University Of Idaho Research Nursery
Department of Forest Resources
University of Idaho
Moscow, ID 83844-1137**



Customer Record

****Please retain this for your records****

Selected shipping or pickup date _____

- Shipped seedlings should arrive 2-4 days after this date.
- Seedlings to be picked up are available on or anytime following the pickup date.

Seedlings purchased:

#	Species	#	Species
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
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_____	_____	_____	_____

Your cancelled check is your seedling order confirmation. Please call if you need further confirmation of your order. No refunds for orders cancelled after March 1, 1999. All cancelled orders are subject to a 20% restocking charge.

Remember...

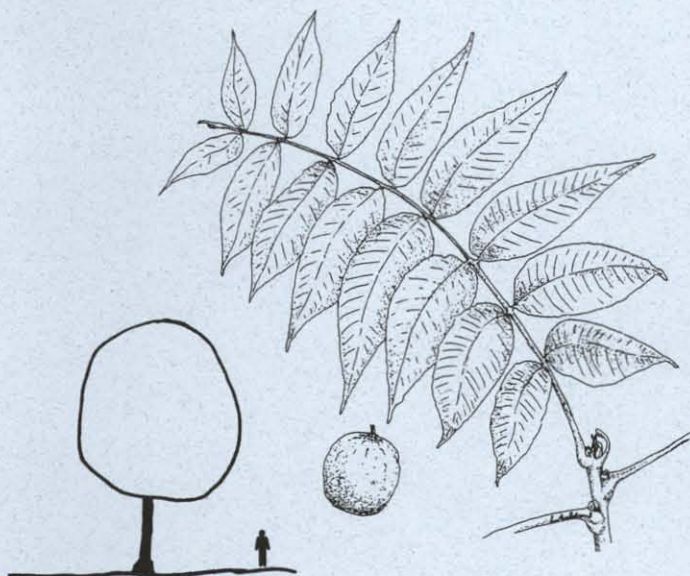
Your pickup or delivery date can be changed with just a phone call. We realize unexpected things can happen and the date you select on your order form may not always work out. You may also find that more than one pickup or delivery date is necessary. Please call us at (208) 885-3888. We are here to help you in any way we can!

You get what you pay for ... dormant, cold-hardy seedlings with the ability to grow new roots, conveniently delivered to your doorstep just in time for planting.

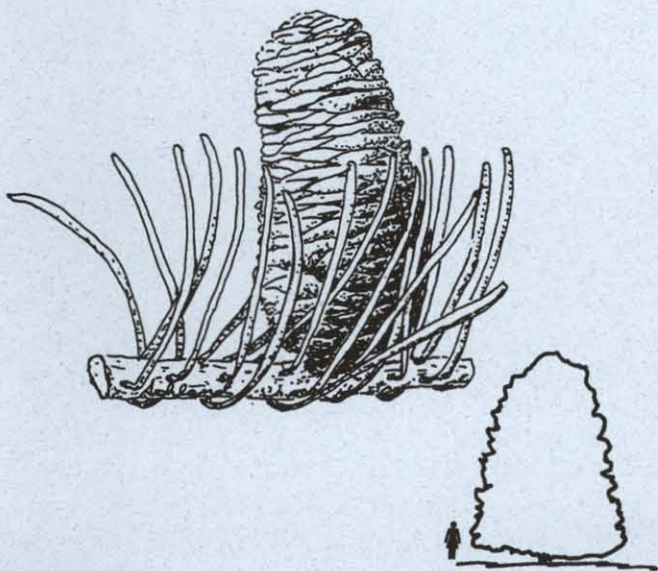
Check Out What's New For This Year!



Black Hawthorne (*Crataegus douglasii*), or Douglas Hawthorne, is a slow-growing large shrub or small tree reaching 20 feet at maturity. This Idaho native forms dense, thorny thickets that provide excellent soil and streambank stabilization, as well as cover and nesting sites for Black-billed Magpies and thrushes. We think this species would also do well in the outer rows of multi-row windbreaks. Black Hawthorne is browsed heavily by big game when young, but much less as the plant ages and grows larger. The black lustrous fruit provides food for Blue and Sharp-tailed Grouse and other small animals.



Black Walnut (*Juglans nigra*) has one of the most valued woods in the country. It's used in cabinet making, gunstocks and furniture. There is a tremendous call for walnut veneer. This tree is medium to fast growing with a single, long smooth trunk, reaching 50-75 feet in height, although it can get as high as 150 feet under optimum conditions. It does well in the interior rows of multi-row windbreaks. Black Walnut prefers deep, well-drained neutral soils but will tolerate drier sites. The walnuts are used as food by humans and harvested commercially. Nut production may be increased by interplanting with alder and Russian-olive, as these species will increase the available nitrogen in the soil.



Concolor Fir (*Abies concolor*), or White Fir, is an Idaho native tree with nice symmetry and beautiful blue-grey needles. It's a large tree, reaching over 125 feet at maturity, and may live for 250-300 years. Concolor Fir is found on higher elevation, cool, dry northern exposures but is adaptable to a wide range of soil types and moisture, making it useful in a windbreak. This fir is used extensively in the Christmas tree industry not only because of its beauty but because the needles on the cut trees stay green and fresh and last far into Spring. In the wild, the needles are an important part of the Blue Grouse diet, and chickadees, Red Crossbills, and Clark's Nutcracker feed on the seeds.

Coyote Willow (*Salix exigua*) is an Idaho native shrub that is probably found in every county in the state. It reaches 22 feet at maturity and spreads by underground roots, forming colonies. It grows in moist sands and gravel and requires a minimum of 20 to 25 inches annual precipitation if not on a perennial stream. This willow is used in conservation plantings for streambank stabilization, riparian site restoration, and wildlife habitat. We grow the USDA NRCS release "Silver."



Douglas Spirea (*Spiraea douglasii*) is a spreading deciduous shrub growing to 3-6 feet tall with beautiful pinkish-purple flower plumes in mid-July. This Idaho native grows best on moist to semiwet soils with good drainage, but will tolerate water-logged soils and widely fluctuating water tables. Douglas Spirea form dense colonies which make it ideal for riparian revegetation programs.



Drummond Willow (*Salix drummondiana*) is an Idaho native shrub reaching 9 feet at maturity with a canopy width of 15 feet. It is commonly found in montane portions of Idaho, especially on steep, stony-lined streams. This willow has yellow to yellow-orange stems making it a striking ornamental. The leaves are green on top with a silvery velvet underside. It grows in moist sands and gravel and requires a minimum of 20-25 inches annual precipitation if not on a perennial stream. Drummond willow is recommended for erosion control, riparian site restoration and wildlife habitat. The willow pollen is an important food source in the spring for honeybees. We grow the USDA NRCS release "Curlew."



Kinnikinnick (*Arctostaphylos uva-ursi*), also known as Bearberry, is a beautiful, spreading, evergreen ground cover. The whitish-pink, bell-shaped flowers are followed in fall by red berries that persist into winter, making the branches useful for Fall and Christmas decorating. This Idaho native has a moderate growth rate, likes the sun, and is excellent for erosion control since it does well on a variety of sites ranging from moist to dry. The fruits are eaten by songbirds, gamebirds, including grouse and Wild Turkey, deer, elk and small mammals. Hummingbirds have been known to take nectar from the flowers.





Laurel Willow (*Salix pentandra*), also referred to as Bay Willow, comes by its name because of the similarity of the leaf to that of the Bay Laurel tree. It's a small to medium tree (20-40 ft) with a dense round top and lustrous dark green leaves. Laurel Willow is tolerant of very cold weather and adapted for use in all of the Intermountain West, although it requires deep moist soils or supplemental irrigation. Although stated as a zone 4 plant, Laurel Willow has been spotted growing in Sun Valley, Aberdeen, and Red Rocks Lake on the Montana border. This willow is recommended for use in interior rows of multiple-row windbreaks, for landscaping, and to provide nesting and roosting habitat for birds. It's not intended for natural riparian restoration since it is an introduced plant from Europe.



Lemmons Willow (*Salix lemmonii*) is a shrub reaching 20 feet at maturity. It requires less water than other willows, and in the wild inhabits the drier, higher elevation sites in a riparian zone. This attribute makes it suitable for use in outer rows of multi-row windbreaks. Lemmons Willow prefers a well-drained gravelly or sandy soil, as compared to the wet, fine-textured soils near the water table where other native willows are found. It's used in erosion control, riparian site restoration and wildlife habitat. We grow USDA NRCS release "Palouse."



Mackenzie Willow (*Salix prolixa*, previously known as *Salix rigida* var. *mackenzieana* and *S. eriocephala* ssp. *mackenzieana*) grows rapidly to a mature height of 10-12 feet. This Idaho native is found in moist sands and gravel and requires a minimum of 20-25 inches of annual precipitation. It is used in conservation plantings for streambank stabilization, riparian site restoration, landscaping, wildlife habitat, and shelterbelts. We grow the USDA NRCS release "Rivar."



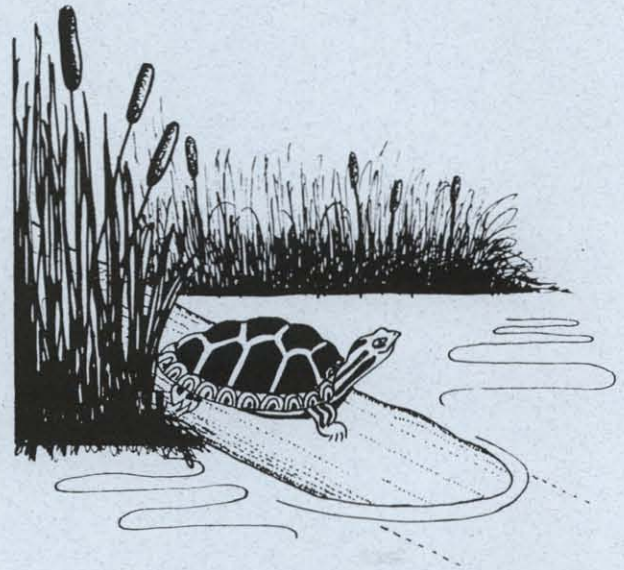
Ninebark (*Physocarpus malvaceus*) is a hardy Idaho native shrub with rounded clusters of white flowers and peeling bark. It can reach 7 feet at maturity, forming dense thickets that provide good cover for many animals from small birds to large mammals. The thick growth also makes it a possibility for the outer rows of multi-row windbreaks. This drought tolerant shrub provides brownish-red fall color.

Sawtooth Oak (*Quercus acutissima*) has a medium rate of growth reaching 35-45 feet tall in 15-20 years. It's quite adaptable to a wide range of soil types but prefers an acidic, well drained soil. This oak has dark green leaves in summer, changing to yellow in late Fall. The leaves open to golden yellow in Spring. It's a nice, wide spreading shade or lawn tree that often bears heavy nut crops at an early age (5-10 years). Great food source for Wild Turkeys. This oak is only recommended for the warmer areas of Idaho including the Snake, Clearwater, Coeur d'Alene, and Kootenai river valleys.

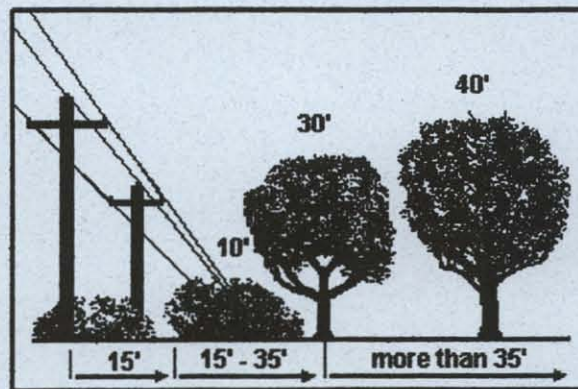


Riparian Package

Some scientists estimate that 90% of the pre-settlement, western US riparian zones (zones along streams, river, and lakes) have vanished due to development, grazing, dams, and other human-influenced activities. Healthy riparian zones are important for native fisheries, neotropical songbirds, sediment and flood control, winter browse for big game and recreational activities. We now offer the Riparian Package suitable for planting along perennial streams and waterways, and along intermittent waterways where annual natural precipitation exceeds 20 inches. Each package contains 5 each of the following: Redoiser Dogwood, Douglas Hawthorne, Coyote Willow, Drummond Willow, Lemmons Willow, Mackenzie Willow, Quaking Aspen, Serviceberry, Paper Birch, and Sitka Alder.



Look Up Before You Plant!!



Recommended spacing for trees and shrubs planted near utility lines (taken from *Landscaping and Utilities: Problems, Prevention, and Plant Selection*, written by T.L. Finnerty and others, University of Idaho, College of Agriculture, Cooperative Extension System, Agricultural Experiment Station CIS 991. See page 10 of this catalog for ordering information.)

Please Provide:

Name _____ Date _____
Mailing Address _____ Street _____ City _____ State _____ Zip _____
E-mail address _____ Telephone (day) _____

Orders that are picked up:

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

Pickup or shipping date selection:

Circle a pickup or delivery week and **MARK THIS WEEK ON THE PRECEDING PAGE AND 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 16	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 25
	March 29		

Please remember to indicate substitutions when you send in an order! We sell out of some species very quickly and cannot always send your first choice. You may call us or check our website for availability <www.uidaho.edu/cfwr/forres/nursery/seedlings.htm>

Order Identification Label

This is your U.P.S. shipping label – please print clearly. Rural route addresses **MUST INCLUDE A TELEPHONE NUMBER.** Packages cannot be delivered to a post office box.

Name _____
Shipping Address _____
City/State/Zip _____
Telephone (day) _____

Remember to order early! Orders are accepted on a first-received-with-payment, first-reserved basis. For assistance with species selection or availability, call (208) 885-3888 or E-mail abrusven@uidaho.edu.

SuperStock Hardwoods

- Quantity (multiples of 5 only) \$1.75 per seedling
- _____ American Plum
 - _____ Amur Honeysuckle
 - _____ Artic Blue Willow
 - _____ Autumn-olive
 - _____ Black Cherry
 - _____ Black Hawthorne
 - _____ Black Locust
 - _____ Black Walnut
 - _____ Bur Oak
 - _____ Chokecherry
 - _____ Common Wild Apple
 - _____ Coyote Willow
 - _____ Douglas Spirea
 - _____ Drummond Willow
 - _____ English Oak
 - _____ Gambel's Oak
 - _____ Golden Currant
 - _____ Golden Willow
 - _____ Green Ash
 - _____ Honeylocust
 - _____ Idaho Hybrid Poplar
 - _____ Kinnikinnick
 - _____ Laurel Willow
 - _____ Lemmons Willow
 - _____ Lilac - Purple
 - _____ Lilac - White
 - _____ Mackenzie Willow
 - _____ Mtn. Big Sagebrush
 - _____ Nanking Cherry
 - _____ Native Mountain-ash
 - _____ Ninebark
 - _____ Ocean-spray
 - _____ Paper Birch
 - _____ Peking Cotoneaster
 - _____ Quaking Aspen
 - _____ Redosier Dogwood
 - _____ River Birch
 - _____ Rugosa Rose
 - _____ Russet Buffaloberry
 - _____ Russian-olive
 - _____ Sawtooth Oak
 - _____ Serviceberry
 - _____ Siberian Peashrub
 - _____ Sitka Alder
 - _____ Skunkbush Sumac
 - _____ Sugar Maple
 - _____ Western Sand Cherry
 - _____ Western Syringa

TOTAL ORDERED X \$1.75 = TOTAL COST

SuperStock Conifers

- Quantity (multiples of 5 only) \$1.75 per seedling
- _____ Austrian Pine
 - _____ Blue Spruce
 - _____ Concolor Fir
 - _____ Douglas Fir
 - _____ Norway Spruce
 - _____ Ponderosa Pine
 - _____ Rocky Mtn. Juniper
 - _____ Scotch Pine
 - _____ Western Larch
 - _____ Western Redcedar
 - _____ Western White Pine

TOTAL ORDERED X \$1.75 = TOTAL COST

Substitutions

Conifers

Quantity (multiples of 20 only)	Cost per Seedling 20 - 480	500+ of the same species	Cost
_____	Blue Spruce .40	.28	_____
_____	Douglas-fir .40	.28	_____
_____	Ponderosa Pine .40	.28	_____
_____	Western Larch .40	.28	_____
_____	Western White Pine .40	.28	_____

TOTAL ORDERED TOTAL COST \$ _____

Substitutions: _____ No Substitutions

Special Packages

Quantity	Cost per Package	Cost
_____	State of Idaho Pkg 30.00	_____
_____	Wildlife Lover's Pkg 75.00	_____
_____	Mini Wildlife Lover's Pkg 40.00	_____
_____	Riparian Package 75.00	_____

TOTAL ORDERED TOTAL COST \$ _____

Total SuperStock Hardwood Cost		
Total SuperStock Conifer Cost		
Total Conifer Cost		
Total Special Package Cost		
Subtotal		
Do you want next year's order form? yes <input type="checkbox"/> no <input type="checkbox"/>		
Will you need another catalog? yes <input type="checkbox"/> no <input type="checkbox"/>		
Shipments to, or pickups in, Idaho must add 5% sales tax or give tax exempt number		
Shipping and handling cost		
\$0 - \$100 send \$9.00	\$301 - \$400 send \$30.00	
\$101 - \$200 send \$15.00	\$401 - \$500 send \$35.00	
\$201 - \$300 send \$23.00	\$500+ please call for quote	
Total		

Make your check or money order payable to:

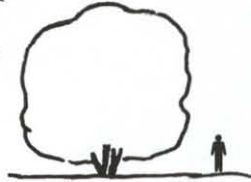
RESEARCH NURSERY - UNIVERSITY OF IDAHO. Do not send cash.

Mail your check and order form to:

SEEDLINGS, College of Forestry, Wildlife and Range Sciences, University of Idaho, Moscow, ID 83844-1137.



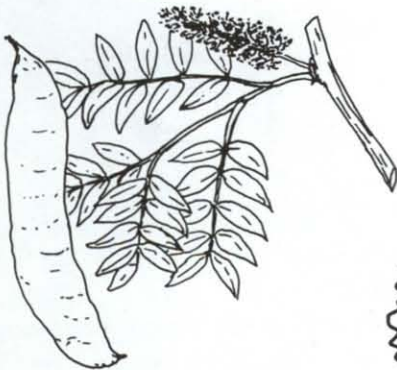
Golden Currant (*Ribes aureum*) is an Idaho native shrub. This deciduous plant has many desirable characteristics: attractive form, height growth of 3-6 feet, yellow flowers early in spring, edible fruits, no thorns, drought tolerant, works well as a natural hedge, good wildlife browse, and is excellent for soil stabilization. This plant would look good in the yard or would be a valuable addition to outer rows of multi-row windbreaks. Grows best with moderate summer watering. **Wildlife benefit:** Provides good cover for upland game birds and the edible fruits are eaten by an assortment of songbirds and small animals. Also browsed by big game.



Golden Willow (*Salix alba* var. *vitellina*) is a medium-sized, fast-growing tree that attains heights of 40-50 feet 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 central portions of multi-row windbreaks. Golden willow has bright yellow foliage in fall and reddish-orange bark in winter. **Wildlife benefit:** Perching sites for hawks and owls.

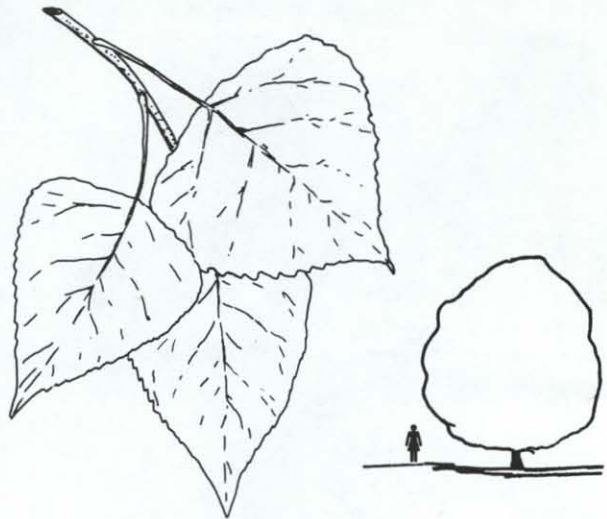


Green Ash (*Fraxinus pennsylvanica*) is a native to the eastern U.S. It grows moderately fast to 35 feet with an oval, compact, dense, twiggy crown. Leaves are nearly 12 inches long, made up of five to nine 5-inch-long leaflets. A tough tree, it will take wet soil and bitter cold and is drought tolerant once established. Leaves will burn in hot, dry winds so regular watering is necessary. Would make a good tree for outer rows of multi-row windbreaks and riparian rehabilitation. **Wildlife benefit:** Songbirds love to nest in these trees and seeds are eaten by birds and small animals.

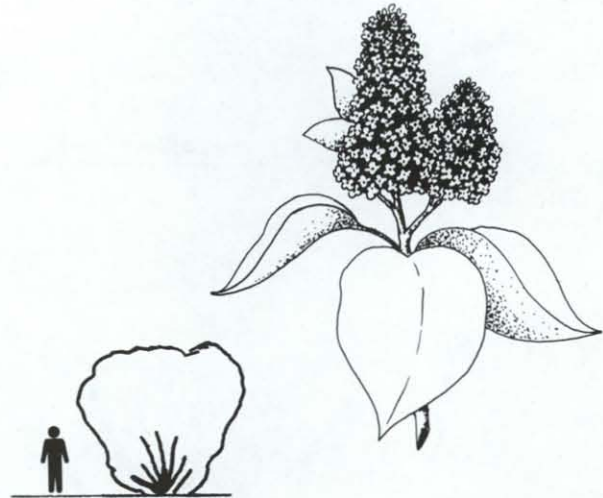


Honeylocust (*Gleditsia triacanthos* var. *inermis*) will grow under a variety of moisture and soil conditions and does well on hot, dry sites. We recommend it for center portions of multi-row windbreaks. It's hardy up to 5000 feet in southern Idaho and 3500 feet in northern counties. Honeylocust is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

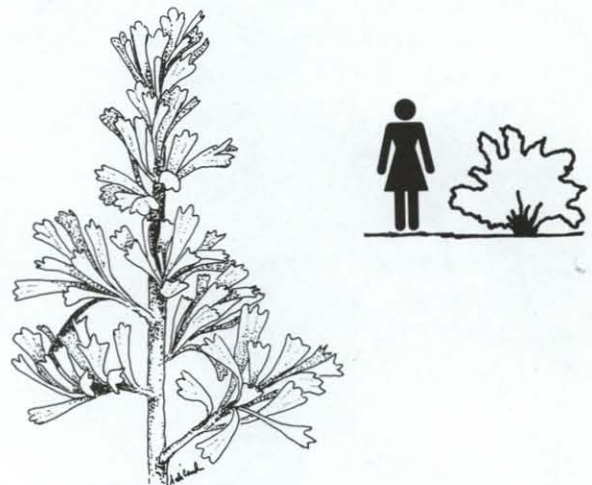
Idaho Hybrid Poplar (*Populus spp.*) grows rapidly, as much as 6-10 feet a year under irrigated conditions. Discovered approximately 40 years ago, this variety is especially well adapted to the climate, soil, and growing conditions encountered in Idaho. If properly cultivated, this hybrid will offer 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 is reduced. Controlling weeds in your plantation allows 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.



Lilac - Purple and White (*Syringa vulgaris* and *S. pekinensis*) have a moderate growth rate and reach 10-15 feet in height. Their dense growth and adaptability to a wide range of environments make them excellent choices for outer rows of windbreaks. Lilacs do well on alkaline soils and may bloom 1-3 years after planting. Their large blossoms add aesthetic value in 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.



Mountain Big Sagebrush (*Artemisia tridentata* ssp. *vaseyana*), an Idaho native, is an evergreen shrub that grows 3-6 feet 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 outer rows of multi-row windbreaks. **Wildlife benefit:** We grow the Hobble Creek cultivar released by the USDA Natural Resources 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.

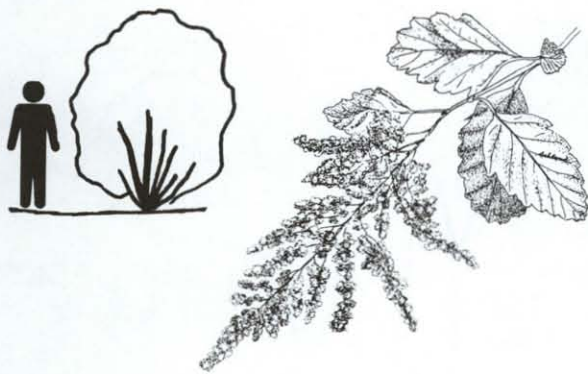




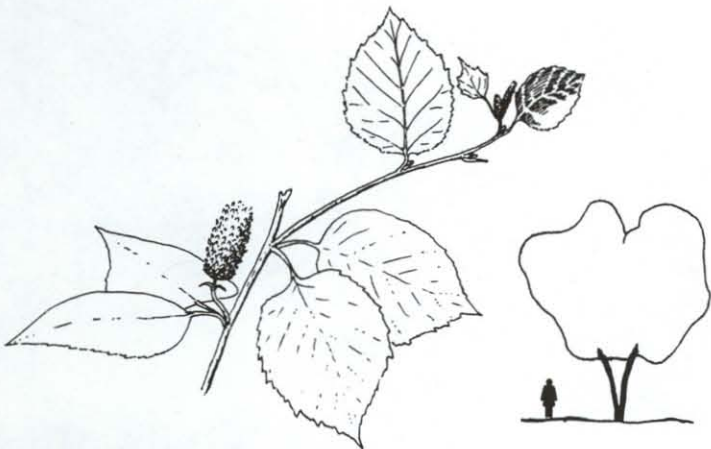
Nanking Cherry (*Prunus tomentosa*) is an attractive, upright shrub that produces abundant, edible fruit good for making jelly. Its fast growth and 6- to 10-foot height make it a good choice for the exterior row of multi-row windbreaks. Nanking cherry withstands heat, drought, cold, and wind and may 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.



Native Mountain-ash (*Sorbus scopulina*) grows 6-20 feet tall in the mountains of Idaho. These shrubby trees provide good cover and nesting sites for birds, but it's the bright orange berries that hang into the winter that make this a wildlife favorite. Robins, waxwings and grosbeaks find them particularly tasty.

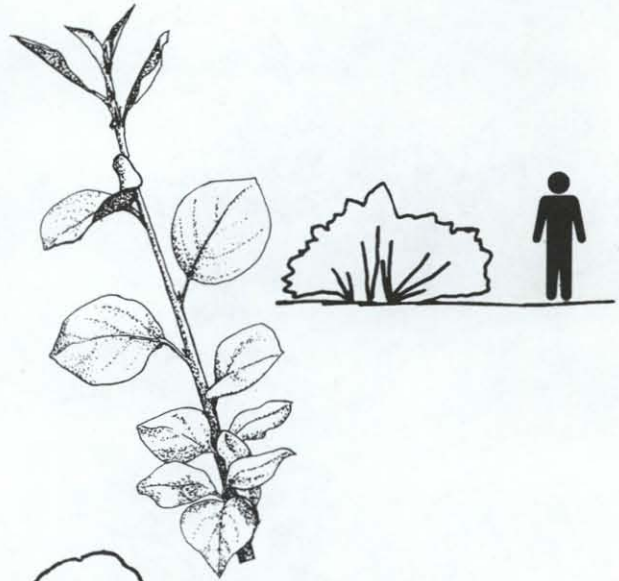


Ocean-spray (*Holodiscus discolor*) is an erect, usually multi-stemmed, Idaho native shrub that grows 5-10 feet tall. In late June and into July, when you see the tiny, cream-colored flowers packed into a large, dense, drooping plume at the end of each branch, you'll know why it's called ocean-spray. Faded flowers persist into winter, giving the plant a shaggy appearance. Native Americans ate the seeds. A nice ornamental.

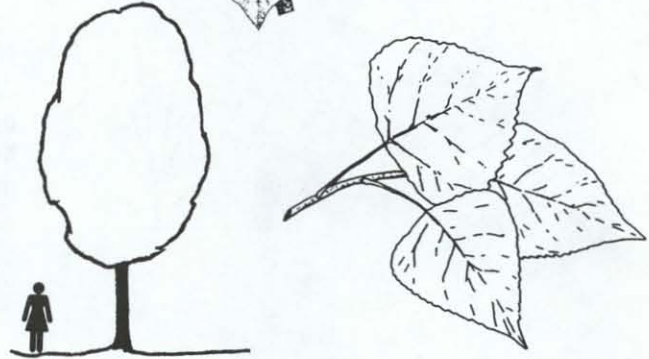


Paper Birch (*Betula papyrifera*) is native in northern Idaho and may grow to 80 feet. Its crown, more open than on other birches, is rounded or pyramid-shaped with leaves sometimes 4 inches long. The bark turns white and peels in long, narrow, papery, horizontal strips. It is hardy throughout Idaho and not too particular about soil as long as the soil is moist. Lack of moisture during the growing season will make this tree susceptible to borers. **Wildlife benefit:** Songbirds, especially juncos, pine siskins, and redpolls eat the scale-like seeds each winter.

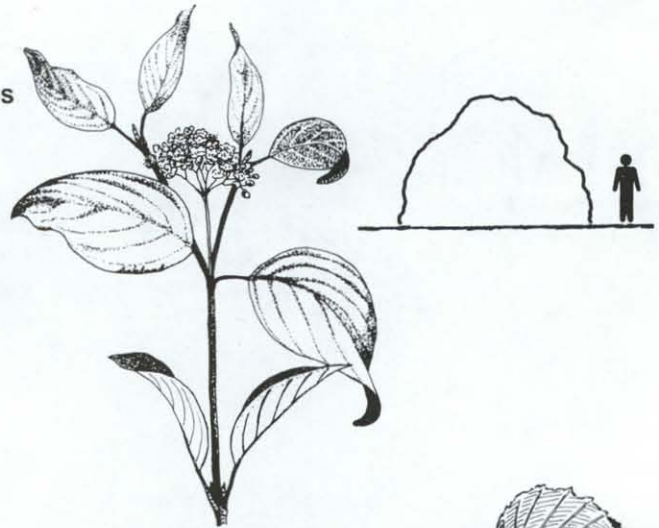
Peking Cotoneaster (*Cotoneaster acutifolia*) will grow throughout Idaho. Cotoneaster? How's that? According to the *Sunset Western Garden Book*, the most-often-used way to say Cotoneaster is koe-toe-nee-AS-tuhr. This deciduous shrub will grow to 10 feet tall with a similar spread. Branches are stiff with dark green leaves set closely together. Orange-red fall color. Small white flowers are replaced with black fruits. Works well as an informal, sheared hedge or ground cover on banks. **Wildlife benefit:** Fruits eaten by songbirds, game birds, and small animals. Provides good cover and nesting sites for many species of birds.



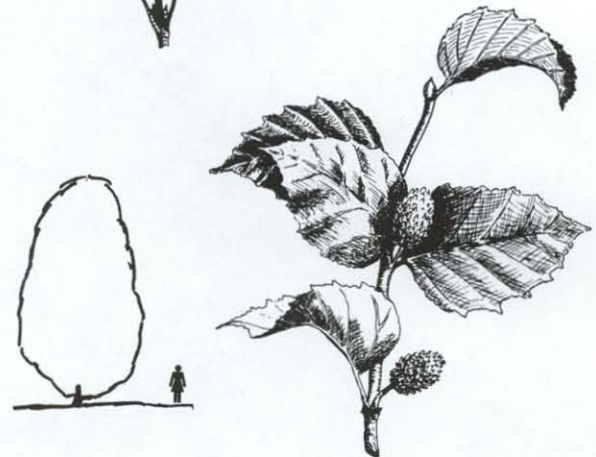
Quaking Aspen (*Populus tremuloides*) is an Idaho native which quickly grows to about 40 feet. The limbs and trunk are smooth, white to light-green to gray in color. Its leaves are round and "quake" or flutter in even a slight breeze and turn a splendid golden color in fall. Hardy throughout Idaho and not too particular about soil as long as the soil is moist. **Wildlife benefit:** A valuable browse species for big game, a favorite of beaver, and often drilled for sap by Red-naped Sapsuckers.



Redosier or Redtwig Dogwood (*Cornus stolonifera* or *C. sericea*), an Idaho native, is a deciduous shrub that grows 6-15 feet tall. It thrives in our coldest areas. Its new stems are bright red and bear 2- to 3-inch-wide clusters of small, white flowers in spring. Brilliant red foliage in fall. Prefers moist, rich soils in either sun or shade. **Wildlife benefit:** Small whitish to bluish berries are eaten by a variety of birds and small animals, and the multi-stem growth habit provides ideal nesting sites for birds.



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 feet. This tree will work in outer rows of multi-row windbreaks or for sun and wind reduction closer to home where its 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.





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 feet tall, making it good for single-row hedges or exterior rows of multi-row windbreaks. Deep purple to pink to white flowers, up to 3 inches 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.

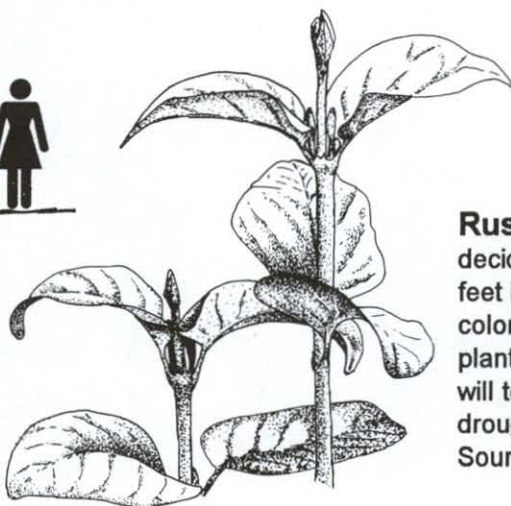
According to Jean Gordon, author of *The Art of Cooking with Roses* (The Noonday Press, A division of Farrar, Straus and Giroux, New York), "There are innumerable recipes for rose sauces, jellies and marmalade. Sauce Saracen is made of rose hips and almonds pounded together and cooked in wine sweetened to taste. A tart marmalade for deer and venison is favored by French chefs, while the English use a seasoning for these same dishes by soaking dried rose hips, then mashing and blending them with salt, pepper and marjoram. Rose wine or rose hips added to gravies in the cooking of rabbit and other small game provide a delicate flavor which often disguises the objectionable 'gamey' taste." Here's one recipe that will tempt your taste buds!

ROSE HIP JAM

2 pounds rose hips and seeds
4 tart apples

2½ pounds sugar
1/3 cup lemon juice

Boil rose hips and seeds in 2 pints of water and cook until tender. Rub through a fine sieve, making a puree. Peel and core the apples, and cook in very little water until tender. Rub through a sieve. Combine rose hip puree with the apple puree, the sugar and lemon juice. Boil 15 minutes after reaching the boiling stage. Put in sterilized jars and seal. *Reprinted by permission of Walker & Co., all rights reserved.*



Russet Buffaloberry (*Shepherdia canadensis*) is a deciduous shrub and an Idaho native. It will grow to 8 feet in height. Branches are covered with cinnamon-colored fuzz. Since this plant is dioecious, only female plants will produce yellow or orange fruit. Buffaloberry will tolerate poor soils, withstands cold and wind, and is drought tolerant once established. **Wildlife benefit:** Sour fruits are eaten by birds.

Russian-olive (*Elaeagnus angustifolia*) is a dense, large shrub or small tree (20-30 feet 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.

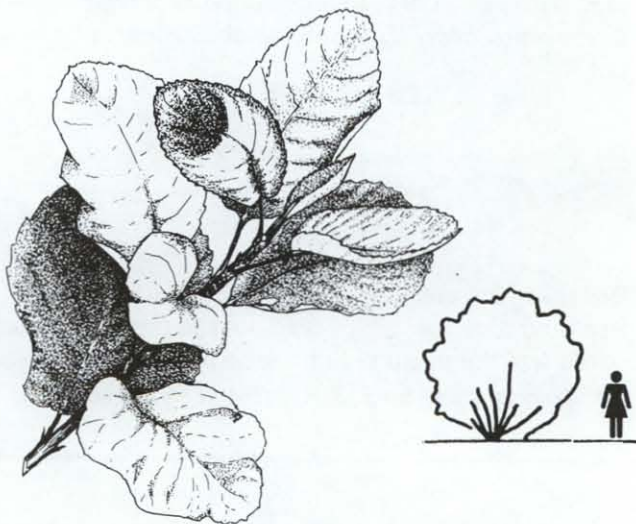
Russian-olive is suitable for both single and multi-row plantings. The silvery green leaves and deeply furrowed bark make Russian-olive a very attractive tree for any use. It will spread by seed if moisture is adequate and has naturalized itself extensively in the Boise Valley, along the Snake River and its tributaries from Weiser to Pocatello, along 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 streamside 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.

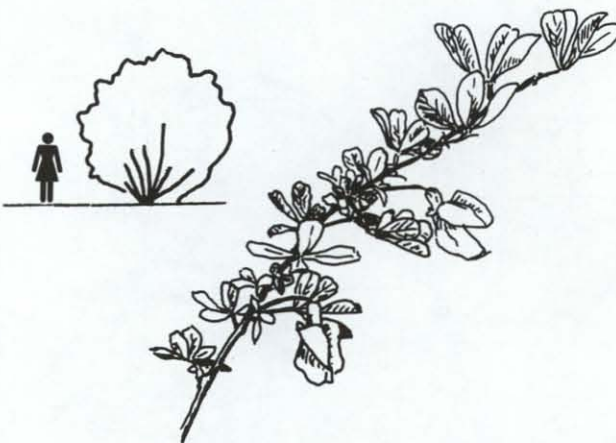


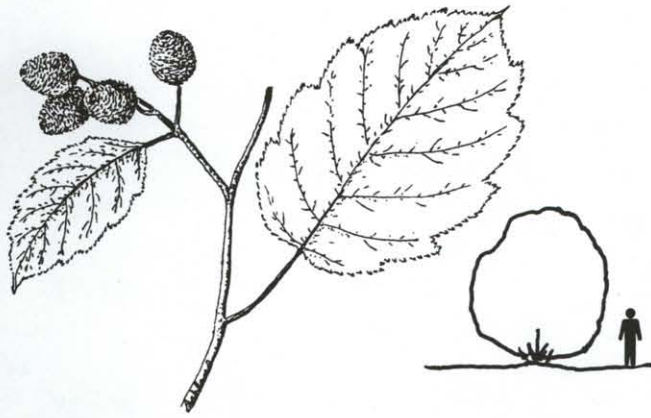
Serviceberry (*Amelanchier alnifolia*) is an Idaho native called many things: Juneberry, shadblow, serviceberry, sarvisberry, Saskatoon, Saskatoon serviceberry, Amelanchier. Serviceberry is a deciduous shrub or small tree, growing to about 20 feet. In spring, it has drooping white or pinkish flowers that fade rapidly, replaced with pinkish fruits that turn purple when ripe. New foliage is purplish – fall color is red. Extremely cold-hardy and drought resistant once established.

Wildlife benefit: The fruits are prized by birds – often eaten by grosbeaks and orioles before they even have a chance to ripen! Fruits also eaten by bears and chipmunks. Foliage is browsed by deer, moose, and elk.

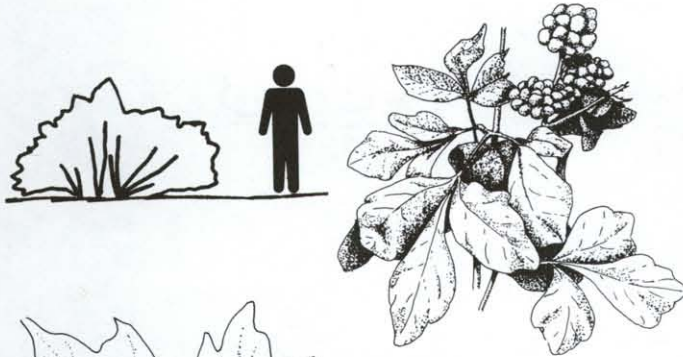


Siberian Peashrub (*Caragana arborescens*) is a dense, short shrub with multiple branches and thick foliage. It will reach mature heights of 12-15 feet in 5-7 years on irrigated land, 10-12 years on dryland. It is ideal for planting in outer rows of windbreaks, or for single-row hedges as it can be trimmed 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 chukars, eat the "peas" that form later.





Sitka Alder (*Alnus sinuata*), an Idaho native, matures into a 10- to 15-foot-tall shrub, growing at elevations up to timberline. It prefers moist slopes and streamsides where it will form thickets. Bacteria on Sitka alder roots remove nitrogen from the air which the shrub then uses for growth. It's a good choice for erosion control, planting on disturbed sites, and riparian zone enhancement. **Wildlife benefit:** Seeds are relished by songbirds, including Pine Siskins, American Goldfinches and Common Redpolls, while the dense growth provides good nesting habitat. Also used by beaver and browsed by deer and elk.



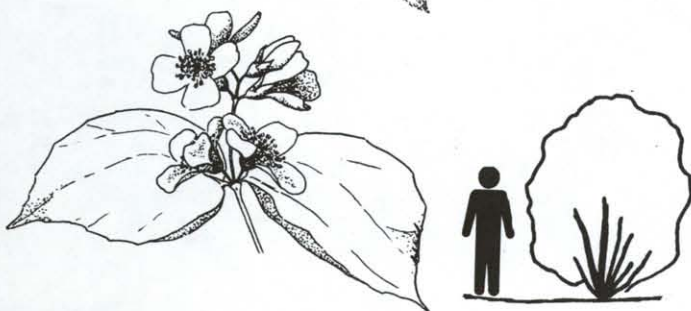
Skunkbush Sumac (*Rhus trilobata*), or oakleaf sumac, is very drought tolerant. Growing 3-6 feet tall, it forms clumps and is suited to the outer rows of multi-row windbreaks. The deep green summer foliage changes to bronzy red in fall, and clusters of red fruit develop in late summer. It prefers a well-drained soil. **Wildlife benefit:** The shrubby growth provides cover for upland game birds, and small animals and songbirds eat the fruits.



Sugar Maple (*Acer saccharum*) is a large deciduous tree native to the northeastern U.S. A source of maple sugar, it grows moderately fast to about 60-70 feet or more. Good fall color of yellows, oranges and reds. Plant where it has access to plenty of water — deep watering and periodic fertilizing will help keep roots down below the soil surface.



Western Sand Cherry (*Prunus besseyi*) is a very hardy shrub that grows 3-6 feet tall. This cherry withstands heat, cold, wind, and drought. Spring-blooming white flowers are replaced with large, purplish, sweet cherries good for jams, jellies, and pies. Glossy foliage make it a nice ornamental. We think this species will do well in the outer rows of multi-row windbreaks. **Wildlife benefit:** The cherries provide a great food source for many species of birds.

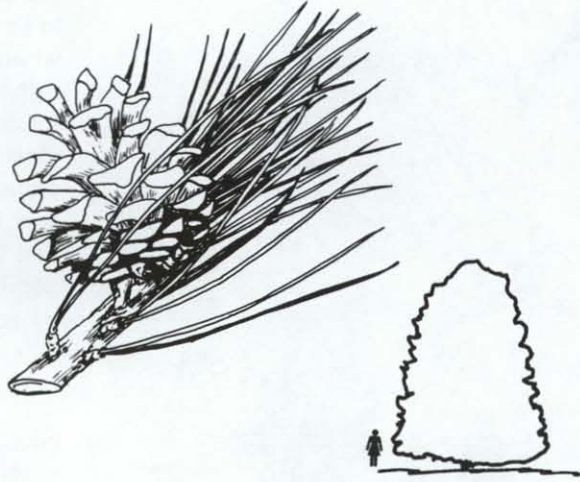


Western Syringa or Mockorange (*Philadelphus lewisii*), an Idaho native and the state flower, grows 6-9 feet tall. In early summer, delicate and fragrant white flowers cover this shrub. It's very drought tolerant, often growing on rocky hillsides and in cracks in basalt fields. Syringa could probably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

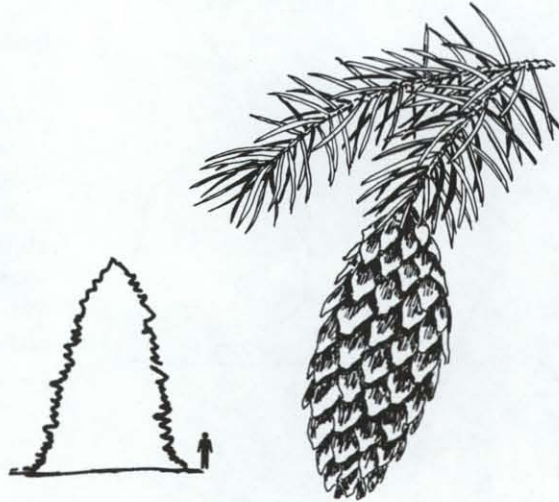
Conifers (Evergreens)

Austrian Pine (*Pinus nigra*) has a fast rate of growth, growing 18-24 inches a year once established, eventually achieving heights of 40-60 feet. It has a dense, dark green crown. It holds its lower branches very well, and is an excellent tree with irrigation. If planted without supplemental watering in localities with less than 20 inches of annual precipitation, it needs a deep, fertile soil with good moisture-holding capacity.

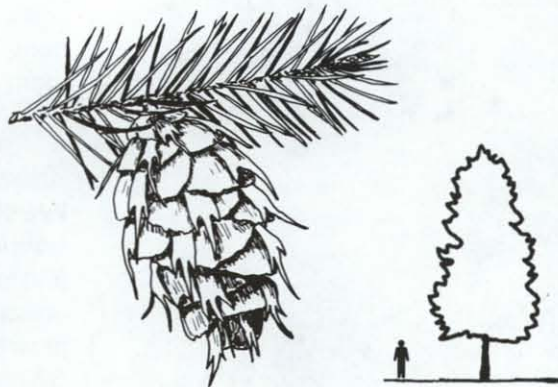
Wildlife benefit: If the lower branches are retained, this tree will provide excellent winter cover for pheasant, quail, and partridge, as well as for small animals and other birds. Songbirds, including nuthatches, crossbills and chickadees, eat the seeds.

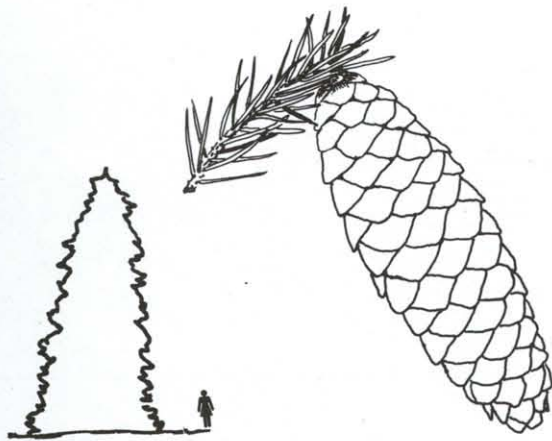


Blue Spruce (*Picea pungens* var. *glauca*) can grow unusually slowly the first 1-3 years after planting, but has a medium growth rate after that. Its crown is very dense with attractive pyramidal form, reaching heights of 50-60 feet. It makes an excellent windbreak species in most regions of the state 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.

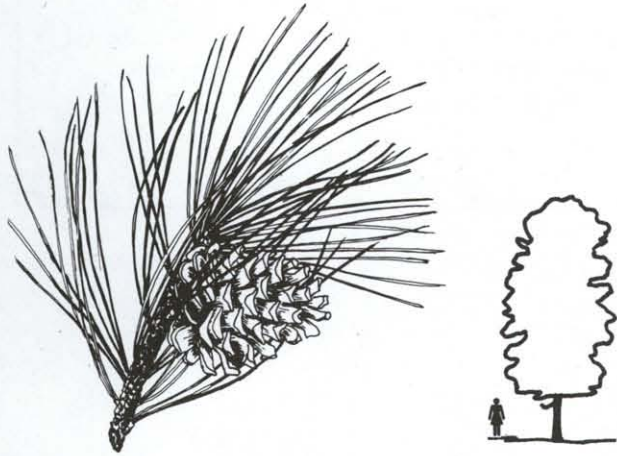


Douglas-fir (*Pseudotsuga menziesii*), otherwise known as red-fir or yellow-fir, is an Idaho native with a medium growth rate. It needs a well-drained soil for best growth and can reach mature heights of 60-80 feet in a windbreak or 100-130 feet in a forest. Douglas-fir is more difficult to establish 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.

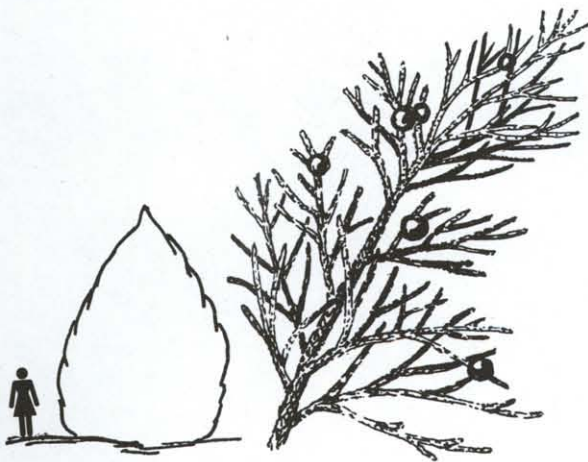




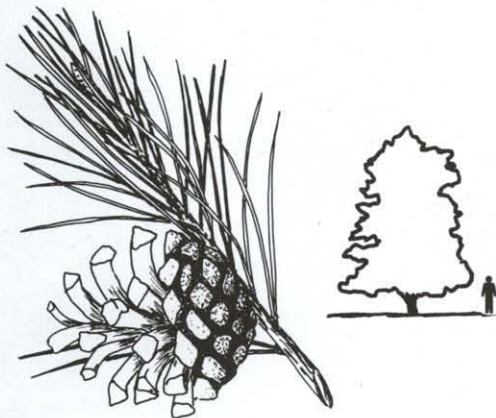
Norway Spruce (*Picea abies*) is a rapid growing tree that attains heights of 60-80 feet. Its crown is dense and extends to the ground unless the base is in heavy shade. Norway spruce has higher moisture and fertility requirements than pines, but it does fairly well in dryland plantings if soil is deep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



Ponderosa Pine (*Pinus ponderosa*), an Idaho native, has a fast growth rate (18-24 inches a year once established) and attains a mature height of 60-80 feet in windbreaks and 150-180 feet in the forest. 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.

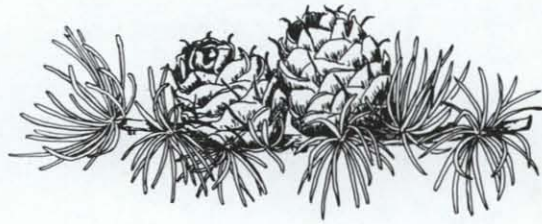


Rocky Mountain Juniper (*Juniperus scopulorum*), an Idaho native, attains heights of 20-30 feet with a medium to rapid growth rate. Although highly drought tolerant, Rocky Mountain juniper grows on a wide range of soils and will tolerate a high water table. It forms a very dense, symmetrical crown and is a superior small tree for windbreaks in this region. In winter it changes color from shades of gray to purple gray. **Wildlife benefit:** This tree provides excellent cover and food for Idaho birds and is also useful for nesting and roosting sites.



Scotch Pine (*Pinus sylvestris*), native to northern Eurasia, has a rapid growth rate, reaching mature heights of 40-70 feet. 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.

Western Larch (*Larix occidentalis*) is an Idaho native recommended primarily 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 8-10 feet in height.

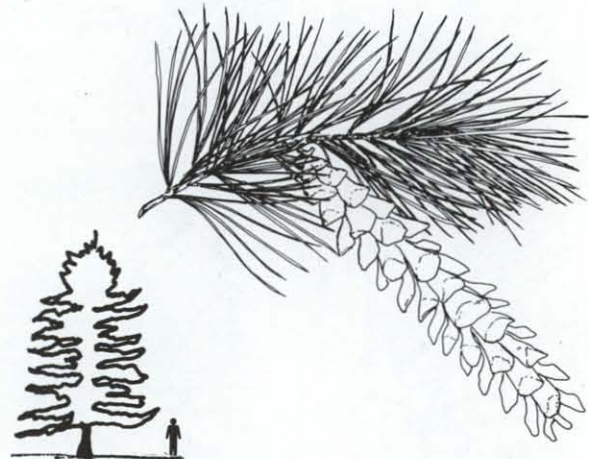


Naked Larch! Western larch is one of very few deciduous conifers, that is, it loses its needles each winter. If you ordered larch seedlings, you'll notice they have very few needles, if any, and the needles are a deep red to maroon. Although the seedlings look dead, don't worry – this spring the buds will open and new, green needles will grow. Next fall the needles will begin their annual ritual of turning yellow and falling to the ground.

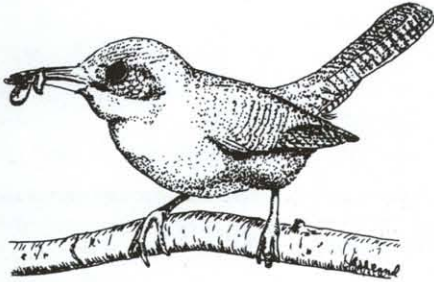
Western Redcedar (*Thuja plicata*) is an Idaho native recommended for reforestation and riparian enhancement. Mature height is 150 feet and 4 feet d.b.h. although in the wild, trees grow to over 18 feet d.b.h. This cedar prefers to grow on moist flats and slopes, and along stream banks and bogs. It's a fast grower, but it must have plenty of water. Western Redcedar also makes a nice hedge if planted close together and sheared yearly.



Western White Pine (*Pinus monticola*) is an Idaho native and the state tree. We recommend it only for reforestation or limited landscape usage in northern portions of the state. 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 blister-rust resistance. It's the same seed source used by the Idaho Department of Lands and private industry.



Special Packages



WILDLIFE LOVER'S PACKAGE

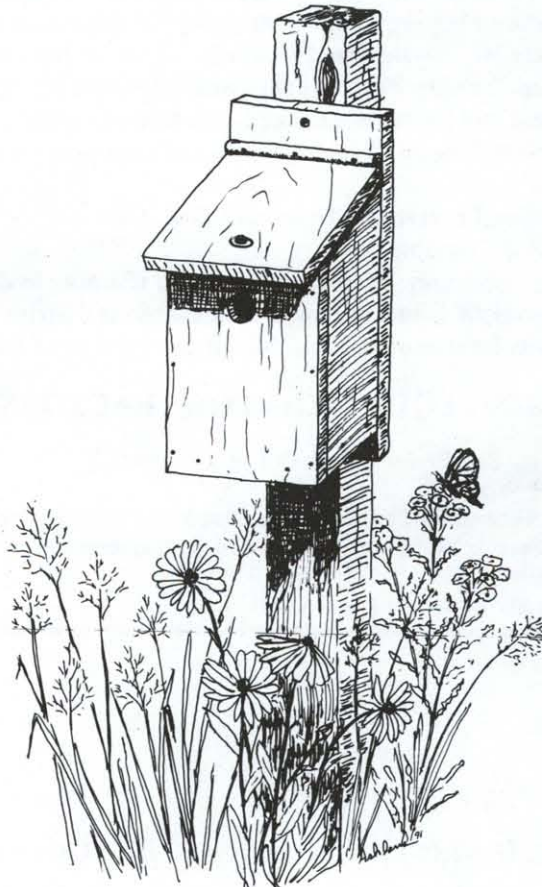
This pre-packaged offer contains 50 seedlings that will grow into prime sources of food or cover for wildlife. Each package contains 10 species, and all species are suitable for both northern and southern Idaho. You will receive American plum, Nanking cherry, choke cherry, western sand cherry, autumn-olive, rugosa rose, wild apple, cotoneaster, blue spruce, and Austrian pine.

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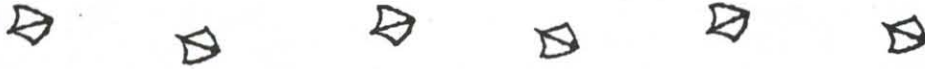
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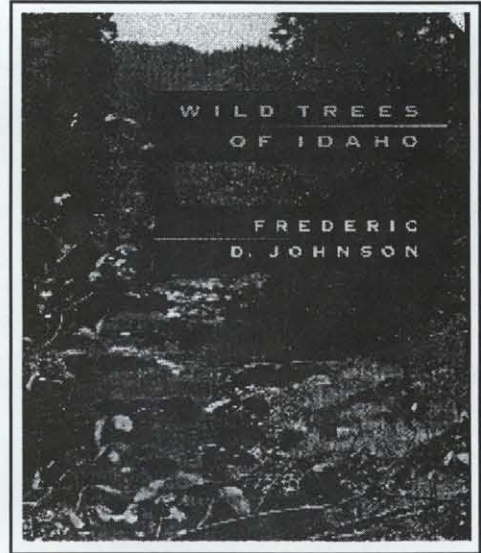
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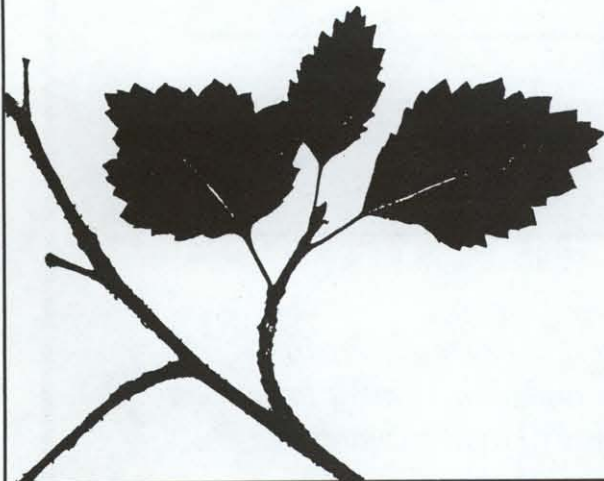
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