

SELECTING TREES FOR YOUR NEEDS

Commercial/Timber

Ash, Green & White
Hickory, Shagbark
Maple, Sugar
Oak, Black, Bur, Pin, Red, White, Swamp
White
Pine, Eastern White
Sycamore
Tuliptree (yellow poplar)
Walnut, Black

Wetlands/Wet Sites

Alder, Common & European Black
Ash, Green
Baldcypress
Birch, River
Cranberrybush, American
Dogwood, Gray & Silky
Fir, Balsam
Maple, Red & Silver
Oak, Pin & Swamp White
Serviceberry, Thicket
Sycamore
Willow, Bankers Dwarf & Streamco

Wildlife Enhancement

Alder, Common
Arborvitae
Birch, River
Blackhaw
Buckeye, Ohio
Cherry, Black
Crabapple
Cranberrybush, American
Dogwood, Gray, Silky, & Flowering
Hawthorn, Washington
Hickory, Shagbark
Honeysuckle, Tartarian
Locust, Black & Bristly
Oak, Black, Bur, Gobbler Sawtooth,
Pin, Red, Shumard, Swamp White,
White
Pine, Eastern White
Plum, American
Redbud
Serviceberry, Thicket
Sumac, Smooth
Walnut, Black
Willow, Bankers Dwarf, Streamco

Windbreaks

Alder, European Black
Arborvitae
Baldcypress
Cranberrybush, American
Dogwood, Silky, Flowering, & Gray
Olive, Autumn
Oak, Pin
Pine, Austrian, Eastern White
Red-cedar, Eastern
Spruce, Norway

Poorly Drained Sites

Basswood - *Tilia sp.* - Seeds and bark eaten by cottontail rabbit - prefers moist soils - grows 60-100 feet tall.

European Black Alder - *Alnus glutinosa* - Flowers March-May - prefers moist to wet soils - grows 50-70 feet tall - 1-2 foot diameter.

Green Ash - *Fraxinus pennsylvanica* - Flowers April-May - seeds eaten by wood duck, Bobwhite quail, purplefinch - prefers moist to drought resistant soils - grows 60-70 feet tall - 2-3 foot diameter.

Northern White Cedar (arborvitae) - *Thuja occidentalis* - Foliage, twigs eaten by white-tailed deer; fruit eaten by various birds - prefers neutral to alkaline soils, limestone origin - grows 40-50 feet tall - 2-3 foot diameter.

Bald Cypress - *Taxodium diotichim* - Prefers wet sites, but can be planted on dry sites; wood very resistant to decay; develops "knees" under saturated conditions - grows 80-100 feet tall - 3-4 foot diameter.

Black Gum - *Nyssa sylvatica* - (sour gum) Flowers April-June - fruit eaten by over 30 species of birds including ruffed grouse, prairie chicken, pheasant, and wild turkey - grows 40-60' tall - 1-2 foot diameter - tolerates wetter soils and yards.

Sweetgum - *Liquidambar styraciflua* - Grows 50-120' tall; 2 to 3 feet per year, 3-4 foot diameter - excellent fall color - tolerates wide range of soil conditions - lumber used for interiors, woodenware, boats, toys, boxes, and fuel.

Red Maple - *Acer rubrum* - Grows well on wide range of soil types - fast growing - grows 20-40 feet tall - 1-2 foot diameter.

Bur Oak - *Quercus macrocarpa* (mossycup) - Acorns eaten by turkey, blue jay, grouse and wood duck - prefers dry uplands to moist flood plains - grows 70-80 feet tall - 2-3 foot diameter.

Pin Oak - *Quercus palustris* - Acorn eaten by turkey, wood duck, grouse, and blue jay - tolerates poorly drained, wet sites - grows 70-80 feet tall - 2-3 foot diameter.

Swamp White Oak - *Quercus bicolor* - Acorns eaten by turkey, blue jay, and ruffed grouse - grows well in wet, poorly drained soils - grows 60-70 feet tall - 2-3 foot diameter.

Russian Olive - *Elaeagnus angustifolia* - Flowers June-July - fruit eaten by cedar waxwing, robin, grosbeak, and pheasant - can grow on moist to dry soils - grows 20-30 feet tall.

American Sycamore - *Platanus occidentalis* - Seed eaten by purple finch - prefers moist bottomland soils; tolerates poorly drained soils - grows 50-130 feet tall - 3-8 foot diameter - wood used for boxes, barrels, cabinets, furniture, and canoes.

Black Willow - *Salix nigra* - Prefers wet soils - grows 10-40 feet tall - 2-24 inch diameter.

Common Elderberry - *Sambucus canadensis* - White flowers June-July - fruit eaten by birds, squirrels, man - prefers rich, moist lowlands - grows 3-13 feet tall.

Amur Privet - *Ligustrum amurense* - Density provides cover for wildlife - prefers moist soils - grows 12 feet tall; 6 feet wide.

Purpleosier Willow - *Salix purpurea* - Fair wildlife value - tolerates poorly drained soils - good shade tolerance; poor drought tolerance - grows 10-20 feet tall.

Common Winterberry Holly - *Ilex verticillata* - found in swamp thickets and swamp forests - a woody shrub to small tree - has bright red fruit - loses its leaves in fall flowers June-August - red fruits Sept.-Oct.- height to 15 foot.

Moderately well-drained to well drained sites

White Ash - *Fraxinus americana* - Flowers April-June - strong durable wood for furniture, flooring, interior decorating, musical instruments - ranks with oak and hickory as fuel - grows 70-80 feet tall - 2-3 foot diameter.

American Beech - *Fagus grandifolia* - Flowers April-May - fruit eaten by ruffed grouse, wild turkey, bobwhite, pheasant, deer, rabbits, squirrels, porcupine, and opossum - grows 60-80 feet tall - 2-3 foot diameter - important timber species for cheap furniture - makes good fuel.

Ohio Buckeye - *Aesculus glabra* - Beautiful white flowers April-May - fruit can be toxic to livestock - grows up to 40 feet tall - diameter to 2 feet.

Eastern Red Cedar - *Juniperus virginiana* - One of the best conifers for wildlife habitat - grows 40-50 feet tall - 1-2 foot diameter.

Horse Chestnut - *Aeculus hippocastanum* - White flowers in May - fruit can be toxic to livestock - grows 60-75 feet tall - 1-2 foot diameter.

Black Cherry - *Prunus serotina* - White flowers May-June - food for humans and wildlife - lumber good for furniture and paneling. - grows 60-80 feet tall - 2-3 foot diameter - wilted leaves can kill livestock/horses if ingested.

American Crabapple - *Pyrus coronaria* - Fragrant pink or white flowers March-May - fruit eaten by deer, pheasant, wild turkey and other birds - prefers moist to dry soils - needs full sun - grows 15-20 feet tall - 6-14 inch diameter.

Leland Cypress - *Cupressocyparis leylandii* - Used as Christmas trees, hedgerows, windbreaks and landscaping - adapted to wide range of soil textures- prefers moist, well drained soils - grows 60-70 feet tall.

Eastern Hemlock - *Tsuga canadensis* - Seeds and needles eaten by grouse; twigs browsed by deer, red squirrel and rabbits - as fuel, throws sparks - grows 60-70 feet tall - 2-3 foot diameter.

Hybrid Poplar - *Populus sp.*- grows very fast, upright - not as spreading as cottonwoods - disease resistant - crossbred specifically for fast growth in windbreaks.

Black Locust - *Robinia pseudoacacia* - Flowers May-June - seeds eaten by bobwhite quail and squirrel - prefers moist to dry soils - has thorns, not usually long-lived - grown for fenceposts - grows 40-80 feet tall with 3-2 foot diameter.

Honey Locust - *Gleditsia triacanthos* - Sweetish pulp edible for humans, cattle, deer, rabbits, squirrels - good yard tree - native trees have thorns and heavy fruit - grows 70-80 feet tall - 2-3' diameter.

Austrian Pine - *Pinus nigra* - Prefers dry, drought resistant soils - grows 75-100 feet tall.

Eastern White Pine - *Pinus strobus* - Prefers sandy-loam soils - avoid clay-wet soils - needles are a soft blue green - grows 80-110 feet tall; growth rate is 3 to 5 feet per year - diameter 2-3 foot.

Serviceberry (Juneberry) - Shrub or small tree - fruit good for jam and jelly - eaten by songbirds, wild turkey, grouse, bobwhite, morning dove, striped skunk, red fox, raccoon, red and gray squirrels, and chipmunks.

Bur Oak - *Quercus macrocarpa*. (mossycup oak) - Acorns eaten by turkey, blue jay, grouse and wood duck - prefers dry uplands to moist flood-plains- will grow 70-80 feet tall - 2-3 foot diameter.

Red Oak - *Quercus rubra*- Acorns eaten by turkey, blue jay, and ruffed grouse - prefers moist, well-drained and dry uplands - will grow to 70'-80' - 3-4 foot diameter.

White Oak - *Quercus alba* - Acorns eaten by squirrel, turkey, blue jay, and ruffed grouse - prefers moist, well drained and dry upland soils - will grow to 60- 80 feet tall - 2-3 foot diameter.

****NOTE:** Both red and white oak will do okay in moist, well drained upland soils - white oak usually gets outgrown by red oak here unless crop tree thinning is done - on dry uplands ie. gravelly Chili-Oshtemo, white oak can compete a bit better. Crop management is necessary along with weed control to ensure establishment.

Colorado Blue Spruce - *Picea pungens* - Winter cover for wildlife - prefers upland dry soils - if too wet or dry, can be susceptible to canker -grows 75-100 feet tall.

Norway Spruce - *Picea abies* - Foliage, twigs eaten by white tailed deer; needles eaten by grouse - winter cover for many species - prefers moist soils - grows 60-90 feet tall - 1-3 foot diameter - a good windbreak tree.

White Spruce - *Picea glauca* - same as Norway Spruce - prefers moist, sandy loam soils- grows 50-60 feet tall; 1 to 3 feet per year - 1-2 foot diameter.

Golden Willow - *Salix alba var. vitellina* - Rapid growth rate with no suckering - good winter density for a deciduous hardwood - tolerates wide range of soils - grows up to 60 feet tall.

Purpleosier Willow - *Salix purpurea* - Fair wildlife value - tolerates poorly drained soils - good shade tolerance - grows 10-20 feet tall.

Silver Buffaloberry - *Shepherdia agrentea* - Flowers April-June - Fruit eaten by chipmunks and brown thrasher -grows well on dry, well drained or moist sites - will tolerate alkaline soils- grows up to 10 feet tall; 8 feet wide.

Nanking Cherry - *Prunus tomentosa* - Fruit eaten by woodpecker, blue jay, cat bird, brown thrasher, robin, cedar waxwing and cardinal - grows 8 feet tall; 8 feet wide.

Common Chokecherry - *Prunus virginiana* - White flowers April-July - Fruit eaten by many birds and mammals - grows up to 30 feet tall; 20 feet wide.

Hedge Cotoneaster - *Cotoneaster lucida* - Good density - provides cover to several species of birds and mammals - tolerates poor soils - prefers cool, moist site.

American Crabapple - *Pyrus coronaria* - Fragrant flowers March-May - fruit eaten by deer, pheasant, turkey, and other birds - prefers moist to dry soils - grows 15-20 feet tall - 6'-14' diameter.

Highbush Cranberry - *Viburnum trilobum* - Flowers May-July - fruit eaten by birds - grows on well drained, moist soils - grows 6-15 feet tall.

Golden Currant - *Ribes aureum* - Flowers April-June - edible fruit - Excellent ornamental - tolerates wide range of soil conditions - grows up to 10 feet tall.

Gray Dogwood - *Cornus racemosa* - Flowers May - Fruit eaten by ring-necked pheasant, ruffed and sharp-tailed grouse - grows well in poor soil conditions - grows 8 feet tall; 5 feet wide.

Red-osier Dogwood - *Cornus stolonifera* - Flowers May - fruit eaten by cardinal, ruffed and sharp-tailed grouse - prefers sandy to clay soils - does well on moderately wet soils - grows 7-10 feet tall; 6 to 8 feet wide.

Concolor Fir - *Abies concolor* - Provides winter cover for wildlife - prefers dry to moist soils - grows 75-100 feet tall.

American Common Hackberry - *Celtis occidentalis* - Flowers April - fruit eaten by robin, yellow-bellied sapsucker, and cedar waxwing - can grow on moist to dry soils; tolerates high pH - grows 20-70 feet tall - 1-3 foot diameter.

American Hazelnut - *Corylus americana* - Flowers April-May - fruit readily eaten by squirrels, chipmunks, jays, grouse, quail, and pheasant - grows to 20 feet tall.

Deciduous Holly - *Ilex decidua* - Flowers April-May - fruit eaten by opossum, raccoon, other mammals, songbirds, and gamebirds - grows 10-20 feet tall and has a spreading crown.

Amur Honeysuckle - *Lonicera maackii* - Flowers May-June - fruit eaten by many birds - dense foliage used as cover by animals - grows well in a variety of soils - can grow to 10 feet tall.

Common Lilac - *Syringa vulgaris* - Flowers May - good density provides cover for many birds and mammals - best on moist to dry soils - needs full sunlight - grows to 10 feet tall; 15 feet wide.

Silver Maple - Seeds used by songbirds and small mammals - prefers moist to moderately drained soils - grows 40-60 feet tall - 1 to 3 feet per year - 1-3 foot diameter. Considered by some to be a dirty tree.

Red Maple - *Acer rubrum* - grows well on a wide range of soil types - fast growing - grows 2- to 40 feet tall.

Scotch Pine - *Pinus sylvestris* - Prefers sandy to loam soils - grows 60-90 feet tall - 1-2 foot diameter - good forest or Christmas tree planting tree.

American Plum - *Prunus americana* - Flowers April - fruit eaten by catbirds, brown thrasher, robins and cardinals - grows 15-30 feet tall; 15 feet wide.

Well-drained sites only

RedBud - *Cercis canadensis* - Flowers May and sometimes eaten in salads - seeds eaten by bobwhite and a few other songbirds - blossoms, not buds, reddish - grows 15-30 feet tall - prefers some shade but will not flower well in dense shade - red roots yield a dye.

Flowering Dogwood - *Cornus florida* - Flowers in May-June - fruit provides food for song and gamebirds, skunks, deer, rabbits, and squirrels - Grows 10-40 feet tall - excellent ornamental but very site specific requiring rich well drained soil, morning sun, afternoon shade, low Ph soil, much. - won't flower in dense shade.

Douglas Fir - *Pseudotsuga menziesii* - Winter cover for wildlife - needs well drained sites, loamy soils - grows 80-200 feet tall.

Persimmon - *Diospyros virginiana* - Flowers May-June - fruit edible by humans when fully ripe - also eaten by nearly all birds and mammals, from songbirds to turkeys and from dogs to deer - wood is strong, heavy, close-grained and used as shoe lasts and shuttles - grows 30-50 feet tall.

Black Walnut - *Juglans nigra* - Nuts eaten by squirrels, red and gray fox, humans - needs deep, moist, well drained soils for best growth and form - grows 70-100 feet tall.

Bristly Locust - *Robinia hispida* - Fair wildlife value - excellent drought tolerance; prefers well drained soils; needs full sun - more of a shrub that grows up to 10 feet tall; matures in 3 to 5 years.

American Holly - Fruit eaten by wild turkey, bluebirds, cedar waxwing - prefers moist, well-drained soils - grows 40-70 feet tall.

BEST WOOD FOR BURNING

Softwoods like pine, spruce and fir are easy to ignite and burn rapidly with a hot flame. A fire built entirely of softwoods burns out quickly and requires frequent attention and replenishment.

Hardwoods such as ash, beech, birch, maple, and oak have a long-lasting fire. They burn less vigorously than softwoods and with a shorter flame. Oak gives the most uniform and shortest flames and produces steady, glowing coals.

Aroma is best derived from the woods of fruit trees. The smoke generally resembles the fragrance of the tree's fruit. Wood from fruit and nut trees often sells for more per cord than wood with greater heat value, but they are generally steady producers of flame.

Since woods are of different compositions, they ignite at different temperatures and give off different heat values. By mixing softwoods with hardwoods, you can achieve an easily-ignited and long-lasting fire. Later, by adding some fruit or nut woods, you will capture the nostalgic wood smoke aroma as well. Below is a chart to help in selecting firewood.

RATINGS FOR FIREWOOD

		Relative amount of heat	Easy to burn	Easy to split	Does it have heavy smoke?	Does it pop or throw sparks?	General rating and remarks
HARDWOOD TREES	Ash, red oak, beech, birch, hickory, hard maple, pecan, dogwood.....	High	Yes	Yes	No	No	Excellent.
	Soft maple, cherry, walnut.....	Medium	Yes	Yes	No	No	Good.
	.. Elm, sycamore, gum	Medium	Medium	No	Medium	No	Fair-contains too much water when green.
	Aspen, basswood, cotton, yellow poplar	Low	Yes	Yes	Medium	No	Fair-but good for kindling.
SOFTWOOD TREES	Southern yellow pine, Douglas fir,	High	Yes	Yes	Yes	No	Good but smoky.
	Cypress, redwood	Medium	Medium	Yes	Medium	No	Fair.
	White cedar, western red-cedar, eastern redcedar	Medium	Yes		Medium	Yes	Good-excellent for kindling.
	Eastern white pine, sugar pine, western white pine, ponderosa pine, true firs ...	Low	Medium	Yes	Yes	Medium	Fair-good kindling.
	Tamarack, larch	Medium	Yes	Yes	Medium	Yes	Fair.
	Spruce	Low	Yes		Medium	Medium	Poor-but good for kindling.

USING WOOD FOR BURNING

Some fuels are pollution and health hazards, but wood is much lower in irritating pollutants than most fuels. Most individuals generally consider wood smoke with nostalgia. Wood smoke permeating the air makes our visit to historical villages seem all the more authentic.

Wood has a low ash content. It burns cleanly, leaving only a minimum of waste as ash. The ash that remains can be useful for gardening; applied to the soil it's a valuable fertilizer.

In using wood, you are utilizing a renewable fuel resource. Coal, oil, and gas are limited resources. Once used, they cannot be replaced. But new trees can be grown, so that after a few years, more wood is available. Wood has the advantage of being readily available, easily cut, and relatively inexpensive. Fossil fuels, by contrast, require expensive equipment, plus considerable manpower and energy to locate, extract, and process.

The wood that you use for heating might very well be unusable in any other way. By burning it as firewood, you can help reduce the burdensome piles of wood waste riddling our environment in woodlands, urban dumps, and around wood industries. Reclaiming it for firewood provides a worthwhile environmental alternative.

HOW TO BUY FIREWOOD

The most common measure of firewood volume is the cord. A standard cord can be described as a well-stacked pile of logs, 4 by 4 by 8 feet. Since few people burn wood in 4 or 8 foot lengths, most sales are a "face cord" - that is, a 4 by 8 foot face, cut into desired lengths. A "face cord" of 16-inch long piles is really one third of a standard cord.

To determine the volume of firewood in cords, the wood must first be properly stacked. Then, measure the dimensions of the stack in feet. Multiply the width by the height by the length to obtain the total cubic feet. Then divide this figure by 128, which is the number of cubic feet of wood in a standard cord. For example, if you purchase firewood in 16-inch (1.33-foot) lengths and find that after you stack it tightly, it forms a pile 4 feet and 8 feet long, you have one-third cord: $1.33 \times 4 \times 8 \text{ feet} = 42.6 \text{ cubic feet}$; this, divided by 128 = .333 cord.

Generally speaking, a standard cord of air dry, dense hardwood weighs approximately 2 tons and provides as much heat as 1 ton of coal, or 150-175 gallons of No. 2 fuel oil, or 24,000 cubic feet of natural gas.

Logs are sold in different lengths and thickness. The sizes you buy should depend on the size of your heating unit and the amount of time you want to take to get your fire going. Purchase logs that will fit when laid across your grate. Logs too large to burn readily may be split. Extra heavy logs may be split to more manageable size. Short lengths are generally easier to split than longer logs; straight-grained knot-free wood is easier than crooked-grain. Green or wet wood splits more readily than seasoned wood and softwoods usually split more readily than hardwoods. Elm, blackgum, and locust are so difficult to split that they are rarely used as kindling. When kindling is needed, short lengths of straight-grained cottonwood, aspen, fir, and pine will split readily and prove most satisfactory. Small twigs and branches found in your yard and wood wastes found around sawmills are also good as they often do not have to be split and dried. When you buy wood request a mixture of wood species and diameter sizes. Although the wood should be generally sound, don't worry about small pockets of rotten wood you may find in the logs.

Most wood species will not burn if freshly cut, so the wood you purchase should be reasonably dry, or "seasoned." The surest way of having dry wood is to purchase several months prior to using it. Splitting logs hastens drying. Split logs or small round logs should be stacked outside under a roof for six to ten months before burning.

Gathering fuelwood and cutting or splitting it to the proper size can be a most enjoyable pastime for the entire family. For a number of people, such healthy outdoor exercises as sawing and splitting wood is part of the fun of heating with wood.

SPACING CHART

Treatment Planned after Planting	CONIFERS				HARDWOODS			
	White Pine		Other Conifers		Walnut		Other Hardwoods	
		No. Trees		No. Trees		No. Trees		No. Trees
	Spacing	Per Acre	Spacing	Per Acre	Spacing	Per Acre	Spacing	Per Acre
Good Management	7x7	889	8x8	681	10x10	436	6x12	605
	to	or	to	or	to	or	to	or
	8x8	681	9x9	538	12x12	302	10x10	436
No Management Planned	9x9	533	10x10	436	SEE YOUR SERVICE FORESTER		8x12	454
	to	or	to	or			to	or
	10x10	436	12x12	302			12x12	302
For Erosion ControlPurposes	4x4 to 7x7							

PROPER PLACES FOR TREES AROUND HOMES

Because different trees have different mature heights, special attention must be paid to where you plant each tree. Good landscaping helps frame your home, rather than hiding it, and also incorporates use of plant material compatible with existing facilities. Planting the right tree in the right place will enhance property value and prevent costly maintenance trimming and damage to your home. Good landscaping will also utilize shrubs and low-growing trees compatible with electric utility lines. Low-growing trees will not reach electric lines and, therefore, will not create power outages to you or your neighbors.

Windbreaks - should be evergreens planted on west or north side of house, approximately 50 feet or more from house.

Temperature - Deciduous (leaf dropping) trees should be planted on the south and/or the west side of house to cool in the summer and allow sun to enter the house in the winter.