

How to Choose Firewood Trees

Cornell University Cooperative Extension and
New York State Department of Environmental Conservation
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Many people who want to obtain firewood from their own woodlots are concerned about the practicality and sustainability of this practice. Common questions are:

- Which trees should I cut?
- When is a good time to cut the trees?
- Should I dry, then split or split it first?
- Will I ruin my woods by cutting out firewood?

This information sheet provides the basics of choosing and cutting trees out of a woodlot for fuel use. Since it is possible to ruin the value of a woodlot and reduce the efficiency of your wood stove by cutting the wrong trees for firewood, these guidelines will help you improve the condition of your forest and get the most fuel heat from your labor.

Is firewood the best fuel for you?

Firewood derived from one's own woodlot might pass the test of economics, but make sure you are considering all the associated costs - \$100+ for safety equipment, \$200+ for a chainsaw, plus more for a storage shed, chimney cleaning services and equipment, and the cost of a stove itself. It is one of the least convenient sources of heat in New York, requiring time and considerable effort to fell and split trees, move wood into dry outdoor storage for at least a year, transport wood indoors, maintain an effective woodstove fire, and keep the system cleaned for safety and efficiency. Nonetheless, it is inexpensive compared to other sources of heat. Once the tools and facilities are paid off, your time becomes the biggest cost.

Selecting trees appropriate for firewood cutting

Before you begin the firewood process, think about all you want from your woods. Firewood cutting is compatible with most owner interests but, for example, some trees might be good choices to cut for firewood, to leave for use by wildlife, or to keep for aesthetic reasons. When you inspect your woodlot for firewood, you might look for trees with evidence of disease, like

cankers, bleeding lesions, and dieback in the crown. Crooked or densely arranged hardwoods often require judicious thinning and make good firewood. The trees selected to remain standing, called crop trees, should be clearly marked as "keepers" to help you monitor your progress as a woodlot manager.

Plan your firewood removal process to maximize chainsaw safety by planning out which trees to cut first, to give room to fell other trees afterward. If you are working with a partner, keep each other in clear communication and visual contact to prevent accidents. Trees with crown dieback may drop major limbs during the cutting process. Perform this work in seasons where you can easily see the dead branches.



Reduce your risk of injury by wearing proper protective gear and planning which trees to cut first.

Species to cut for wood stove firewood

Indoor wood stoves should be operated only with fully seasoned hardwoods like sugar and red maples, hickory, oak, ash, beech, hornbeam, hophornbeam, locust, and apple. Softer trees like birch, aspen, willow, silver maple, pines, and larch should be burned only sparingly, if at all. Thus, your firewood tree scouting efforts should focus only on those species that burn hot and long, to make best use of your labor.

Species to cut for campfire or outdoor wood boiler use

Outdoor wood boilers have much more flexibility because they have thermostats to regulate water flow and air supply. There are no restrictions on which species of trees can be burned in these or as campfire wood. Using fully seasoned wood will reduce the particulate matter and smoke generated by outdoor wood boilers. Avoid fresh wood of any kind, as it will have too much water embedded in the wood to burn effectively.

Minimum size of firewood parcel

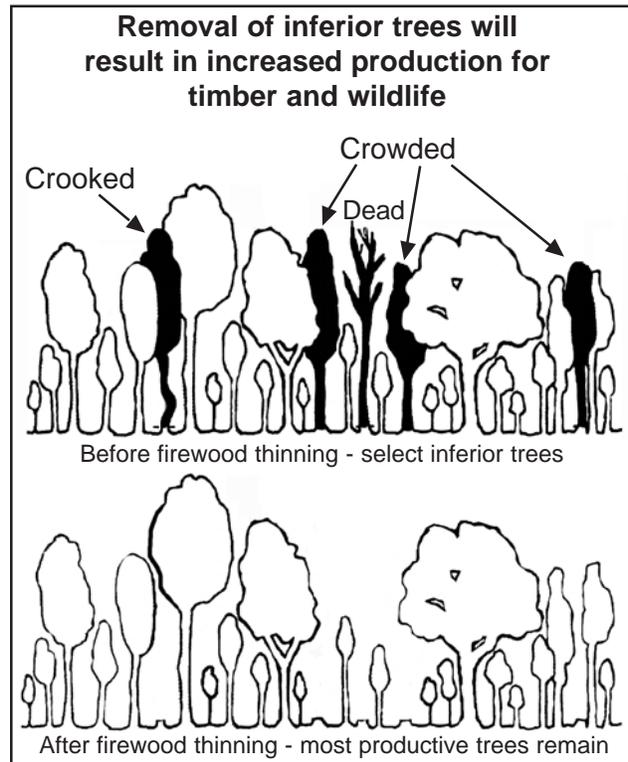
A few acres of trees are not enough to manage sustainably as your sole source for firewood. Estimates of how many acres of trees needed to heat your houses vary due to the quality of the fuelwood available, the size of the trees, site productivity, and the history of the woodlot. Woodlots in New York typically yield a half-cord of fuelwood per year, or 1-2 16" face cords. A full cord is 128 ft³ or a 4' x 8' x 4' stack. Thus, 12 - 15 acres, properly managed, can provide the 4-5 full cords most houses need for heating each year. Large or less energy efficient houses and poorly operated stoves need more acres of available fuelwood annually. People owning fewer acres for firewood production will need to access additional acreage or plan on a supplemental source of heat.



Keep firewood dry, off the ground, and stacked so air can circulate throughout the ranks. The roof on this firewood rack is being constructed.

Trees to avoid cutting -

When seeking firewood trees in your woodlot, use paint or flagging to designate the trees that you are NOT going to cut for firewood. These may be trees with straight, clean trunks of potential timber value, or those with wildlife or aesthetic value. These crop trees will benefit from



the removal of inferior trees that are competing for light and soil nutrients. Uninformed forest owners often cut straight trees because they are easier to split by hand, but this practice encourages the crooked, limby trees to proliferate. Firewood management is an excellent opportunity to thin a stand for long-term woodlot value, even for wildlife. For example, trees with low potential wildlife value can be removed to favor those with prime wildlife value.

Avoid cutting trees that are protecting streams, wet areas, and dry channels, or trees left in place as bumpers during timber harvesting. Inspect trees for wildlife dens and nests to avoid inadvertent damage. You should be certain of



Most woodlots will have trees with various types of cankers and defects. These defects reduce the growth potential of the tree and structurally weaken the tree. Weakened trees are more likely to fall during storms. Careful removal of these trees for firewood releases their growing space to other trees and reduces the proportion of defective trees in the forest.

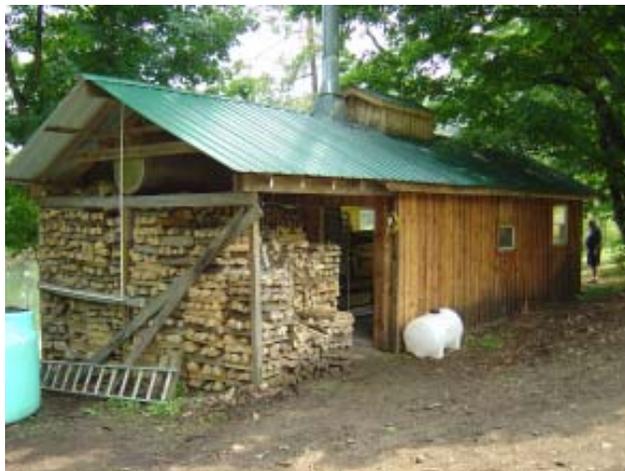
where your property ends and your neighbor's begins to avoid cutting trees you do not own.

If you are unfamiliar with the techniques of selecting trees for firewood, consult with an experienced forester from the Department of Environmental Conservation, or a private sector forester. These forestry professionals can help you inventory the potential for firewood harvesting, mark firewood trees, and provide a long-range written plan to help you meet other goals for your forest. Master Forest Owners (MFO) are community volunteers, trained by Cornell University, to help in making decisions about tree selection, including helping you identify which tree is which. Contact your local MFO by calling Cornell Cooperative Extension.

Splitting logs into firewood

Once a tree is felled and bucked into pieces sized to fit the wood stove or fireplace, it should be split as soon as possible. Green wood splits more easily than dried wood and the smaller pieces will dry out faster than intact round logs. Some forest owners split the wood immediately to vary their woodland tasks and maintain stamina. Cut out notches and burls that will be difficult to split.

For household use, an 8-lb. splitting maul or borrowed/rented log splitter are usually more economical than purchasing a log splitter. It will take practice to learn to read the grain, cracks, and knots that make firewood splitting easier. Use a splitting block to stabilize logs you are striking with a maul and wear eye protection, steel-toe boots, and a back brace to prevent strain and injury.



Stack firewood to allow easy access and movement. Stack securely to reduce risk of piles falling.

Reducing firewood problems

Firewood that is fully dried yields the most heat, and is the safest to burn. Firewood should be seasoned to complete dryness under a shelter for at least one full year. The trees cut for firewood this summer will be ready to burn this winter only if fully dried. Dry wood burns efficiently, has fewer insect problems, and will minimize creosote accumulation in your chimney.

Ants, termites, other insects and mice can be a problem if firewood is stored too close to the house, or if infested wood is brought inside. To keep ants, termites, other insects and mice away, firewood should be stored outdoors away from the house and under a shelter or tarp. Keep firewood dry, off the ground, and stacked so air can circulate through the ranks. Avoid storing firewood in the forest where wood-eating insects can infest the logs.



Stacking firewood on the ground can increase the risk of insect and fungal infestation.

Only bring in enough firewood for a day or two. Before bringing wood inside, remove the loose bark flaps and inspect the wood for insects or signs of insects (eg. holes that have been bored), and check hollow logs for mouse nests. Wood infested with insects should be split into thin segments to remove the insects, and then used for kindling. Any insects accidentally brought indoors should be swept up or removed with a vacuum, and insecticides should never be used to kill insects on your firewood.

Cutting firewood on your own or a friend's property is exciting and fun, but carries a special obligation to ensure you do not create a problem elsewhere through the transport of invasive insect and disease pests. For example, the

Safety summary

What can go wrong	Preventing the problem
Damage to hearing, eye injury, concussion from flying debris during chainsaw use	Wear a logging helmet with a face shield and ear protection. Learn chainsaw safety from a certified instructor.
Back strain from repeated bending, lifting, and twisting with heavy logs	Wear a back support device
Severe wounds from chainsaw	Wear wrap-around logging chaps, bibs, or chainsaw pants and chainsaw boots. Attend chainsaw safety classes.
Creosote-laden chimney becomes fire hazard	Burn fully seasoned, dry wood at the right temperature for the stove. Minimize cool fires.
Severe burns	Wear wood stove gloves when adding wood to an operating stove. Only burn wood in a wood stove (not garbage, wrapping paper, or chemicals).

transport of firewood between home and camp has been a primary cause to accelerate the spread of the Emerald Ash Borer within Michigan. As a first step, contact your NYS DEC forester to see if the region where you are cutting has any invasive insect or disease pests of concern. If there are numerous dead trees, invite the forester for a visit to assess the cause of the problem. If there is any chance of potential spread, you should season any freshly cut firewood (even though some may be dead stems) for 12 months before you move it more than 25 miles. You can split and stack the wood on-site to enhance the seasoning process. Seasoning will allow insects



Correct felling techniques, such as those taught through Game of Logging increase productivity and safety while reducing damage to other trees.

and disease to exit the wood for more suitable habitats. If your firewood cutting leaves the healthiest stems behind and you are careful not to damage the trees that remain, there is little chance that you will re-infect your woods.

Additional References

Van Ryn, Debbie M. and James P. Lassoie. 1987. *Managing Small Woodlands for Firewood*. Cornell University Media Services. Ithaca, NY. 32 pp.



Some trees are designated as "bumper" trees, or trees along skid trails and haul paths that protect other trees. These trees should be retained, otherwise the trees they protect may become damaged during subsequent forest activities. Try to locate corners on skid trails to take advantage of low value trees as future bumper trees.