

Today's Jobs and Yesterday's Tools: Matching the Right Tool to the Right Job

By **ANDY PERLEBERG**

Unlike the Wilderness Act, which states that “work projects will be performed with the minimum use of tools as possible,” most family forest owners want to whip their woodlots into shape with the best skill, greatest safety and minimum amount of damage to their backs. However, similar to the Wilderness Act charge, the tools that are often employed to manage family forests are surprisingly primitive and traditional in nature. The credit for a quality task completed can be given equally to the design of a tool and the operator’s tool choice for application. This article will introduce you to a variety of common small-scale forestry tools, their uses, and their pros and cons based on real-life experiences. Also provided are references to resources to help you get started managing your forest.

Purchasing Tools

Forest owners value their land for a variety of reasons, be it privacy from neighbors, recreation, periodic revenues from harvesting timber or providing wildlife habitat. But there are two traits that most family forest own-



PHOTO COURTESY OF ANDY PERLEBERG, WSU EXTENSION

Can you name these common tools of the forestry trade?

ers have in common: you all want a healthy forest and you all love tools. So, how do you decide what to buy and what to pass up?

Here are a few purchasing tips that might save you time and money.

(1) Buy local when possible. This is important if the tool needs servicing or parts. Buying popular name brands also increases your chances of parts and service being readily available.

(2) Don't be afraid to purchase used equipment. The key is to buy something with a spotless track record, or make sure parts and maintenance options are close at hand.

(3) Buy equipment that is made for forestry applications. Not just any weed

whacker will do the job for controlling unwanted vegetation. Spend a little more to get a lot more from your tool.

(4) For expensive items, consider how much you will use the tool. If you will only use the tool occasionally, and it is available when you need it, you might consider renting the tool or equipment.

(5) You need to feel comfortable using your equipment. Safety equipment in particular varies widely and depends on your strength, ability and level of fatigue.

(6) Consider keeping two chainsaws on hand—one for large jobs and one for small jobs. There is no sense packing around a heavy saw if a small saw can accomplish the same task with half the effort.

(7) For advice on selecting tools and equipment, counting on dealers can be inconsistent. Checking the manufacturer's manual will help you understand the tool's characteristics and capacity to do the work. Perhaps your best bet is to talk with your fellow landowners at your woodland association meetings. Members frequently share notes and are always happy to talk about tools!



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Types of Tools

Forestry hand tools can be broken into the following categories:

- Fire Tools
- Tools for Measuring Your Forest and Products
- Tools for Moving Logs and Earth
- Multi-purpose Tools
- Planting Tools
- Pruning and Thinning Tools
- Tree Falling Equipment Tools
- Vegetation Management Tools

Learn more about small-scale forestry tools and their applications, where to get them and approximate prices from the WSU Forestry Extension webpage at <http://ext.nrs.wsu.edu/handtools>.

Fire Tools

For obvious reasons, tools used for creating and suppressing fire must be fully functional on demand. Examples of fire tools are backpack water pump, McLeod rake, Pulaski axe, Adzi hoe, spade and drip torch.

Depending on whether your conditions call for chopping through heavy brush and slash or raking grasses, the type of hand tool you select for suppressing a fire should fit its use. If you have questions about which tools work best, talk to your local state forestry fire program representatives—they can help you decide between solid products and “snake oil.”

Backpack pumps are especially good for chasing small fires running away from slash, pile burns, and maintaining a humid fireline. They come in rigid steel and hard plastic containers that form to your back, as well as in soft and collapsible nylon pouches. All have a capacity of about five gallons of water. Purchasing a backpack pump will be one of the best \$150 you’ll ever spend. Some landowners mount a tank, gas-powered pump and hoses on a pallet, along with tools, so that if a fire develops while cutting firewood, for instance, they can slip the pallet on the forks of a tractor or the bed of a pick-up, and jump on the fire quickly.

Drip torches are tools used for starting and maintaining fires. They can take a real beating while on the job, so it is important to continually monitor the drip torch for breakage. Caution must also be taken not to splash any of the flammable liquid onto your body or an unintended burn area—this is easy to do when adjusting the air flow value. A mixture of gas and diesel is usually used as fuel. A good drip torch can cost \$100-\$150.

Tools for Measuring Your Forest

“Getting the numbers” on your forest is important. Knowing what you have, how much and where it is located is necessary for planning purposes and is also critical for estate planning.

For a detailed bulletin on how to use and apply measuring tools, see OSU Extension Bulletin *Tools For Measuring Your Forest* (EC 1129) or download at <http://extension.oregonstate.edu/catalog/pdf/ec/ec1129.pdf>.

These tools, such as cruiser’s stick, clinometer and prism, are important for measuring angles to determine tree heights and trail and road design, distances for stream buffer layouts and boundary delineations, volume and productivity determinations, calculating crown closure percentages near streams and in selection harvests, and locating yourself at a particular point, such as a section corner.

Applying the use of these tools together, landowners can develop excellent maps and inventory data, which can help landowners communicate with their logger, forester and family. For specifics, read Amy Grotta’s article elsewhere in this publication.

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Tools for Moving Logs and Earth

The two most common pieces of power equipment for small-scale forestry operations is a four-by-four All Terrain Vehicle (ATV) and a tractor. Both have their own advantages.

ATVs are powerful and nimble, and with the use of a cable, snatch block and an arch, are capable of pulling logs out of the woods.

Forest owner Tom Brannon says, "I use a cargo strap to connect the snatch blocks to trees. The nylon webbing doesn't seem to hurt the trees."

You can also mount a spray tank and pump on your ATV, or drag a trailer or brush mover behind it. You will want no less than a 500 cc engine for adequate power. The downside of the ATV is that it is lightweight, so some people break the bead of the tires and fill them with a 50:50 mix of antifreeze and water. Depending on how much weight you will be pulling, you may want to add weight to the front end, such as a steel plate. The weighted tires and front end make turning more difficult, but does not hinder the power of the machine and allows you to pull with better traction. Another feature of the perfect woods ATV is the gear drive; belt drives often break and can have problems engaging on demand. You will want an ATV with a radiator (not air-cooled) because the work it performs will heat up the engine. You will also want an ATV with four-by-four in reverse—remember that your father always told you to "never get stuck going downhill." Chains are only necessary on the rear.

Tractors have more power than

ATVs, but often have more limited mobility. Neither ATVs nor tractors can be used to work side hills; they are strictly relegated to up-and-down yarding.

Tractors can be implemented with powerful winches. In order to decrease soil disturbance, it is recommended to use an arch or somehow get as much of the logs' weight onto the wheels and off the ground. A 20-horse engine is considered the minimum for tractors to do forestry work, but most forest owners recommend that 30 horsepower should be the minimum considered. Thumbs and grapples can be implemented to your tractor for lifting logs, rocks and even brushing out blackberry and other undesirable vegetation.

Some additional ways to move logs by hand can be accomplished with the use of a hand arch (\$400-500), Peavey (\$40-\$90) or hand tongs (\$20-50). A hand-arch is perfect to use when thinning pole-size to small sawlog trees growing densely together. Trees can hang up during felling, and the arch can be hooked to the base of the tree to safely pull it down. A Peavey helps to roll hung-up standing trees or logs lying on the ground. The leverage gained by these tools' designs save you muscle



PHOTOS COURTESY OF FUTURE FORESTRY PRODUCTS

(top photo) A hand arch can be used for pulling a hang-up out of a tight stand in the first thinning.

(bottom) An arch can also be used to pull a log out of the brush for further handling.

strain, time and product loss.

Finally, hand tongs are real back savers! One doesn't need to bend down so far to handle firewood and smaller logs can be safely lifted. A few hours of lifting wood and this tool pays for itself. In the woods, it is easier to keep track of tongs if you have a holster or other way to clip the tool to your belt when not in use. Safety notes: (1) Don't try to lift more than your body is capable of handling; and (2) Be sure the tong points are secure in the wood so that the piece doesn't slip out and land on your foot.

Multi-purpose Tools

Multi-purpose tools are items such as chainsaws, axes and associated safety equipment. Your comfort level using forestry tools might determine your dependence on safety equipment. However, just because you are comfortable does not mean that an accident



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won't happen.

By far, the most commonly used tool around the woodlot is the chainsaw, so it is no small wonder that there are nearly 40,000 injuries in the United States each year! Logging is second only to commercial crab fishing for work-related fatalities. If it is dangerous for professionals, why would it be any less dangerous for you? Landowners should seek training before buying and using a chainsaw. In Washington, the WSU Extension program holds periodic trainings to teach you safe handling and maintenance. Other trainings are held around the Pacific Northwest by various organizations too, including classes just for women, so contact your university extension forester to get connected with a local training session.

Safety clothing and features for chainsaws are continually being improved. Saw vibration is a known culprit for fatigue, and many saws are now built with anti-vibration features. When purchasing a chainsaw, explain what you plan to accomplish with the saw: is it for small tasks such as thinning and brush cutting, or for felling larger trees? Each saw is built for a range of bar lengths, so if you intend to use one saw for various tasks, ask your dealer if the saw will be out of balance and hence, less safe to operate.

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Table 1. Planting tool types, applications and characteristics.

Tool Types	Soil Type and Terrain	Seedling Type	Tree Planter Perspective
Shovels	Most; better on rocky ground than hoes and hoedads.	Small to large; can be sized to seedling; best tool for big 2+1, 2+2, 3+0 seedlings.	Uses leg power, good for planters lacking upper body strength; can use entire body weight to force shovel in soil.
Planting Hoes	Most; more difficult on rocky ground than shovels or dibbles; can clean planting spot with side of blade.	Small to large, can be sized to seedling.	Uses shoulders and back to throw hoe into soil; once in soil on steep ground, can lean on hoe handle to force blade deeper; faster on friable soil.
Dibble Bars	Pointed bars best in rocky or hard soils.	Best for plugs, other seedlings with smaller roots.	May be easiest on shoulders, legs and back.

—Adapted from 2002 *Northwest Woodlands* article, "Which Tree Planting Tool is Best for You?" by Ole Helgerson

Shopping at "the marts" for a saw is not advisable, as those businesses tend to have limited parts and little service.

Planting Tools

Your selection of a tree planting tool depends on the size of the seedlings, soil conditions, slash conditions and terrain (see article by Mike Nystrom elsewhere in this issue). Planting tools include shovels, hoes and dibbles or planting bars. While

each tool has its advantages and is explained in more detail in the Nystrom article, Table 1 is a quick reference to planting tool applications, characteristics and ergonomics.

Pruning, Thinning and Tree Falling Equipment

Thinning trees in your forest is usually a necessary management practice to maintain individual tree vigor and

—Continued on page 28—

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open the canopy to enhance understory development. Pruning, on the other hand, is a cultural practice conducted for a variety of reasons, including fire protection, aesthetics, wood quality and disease prevention. Tools to implement these practices are chainsaws and handsaws. Some people elect to equip their chainsaw with a longer bar to minimize the amount of bending they must do to cut the trees

For a list of small-scale forestry tool suppliers, visit the WSU Extension website at <http://ext.nrs.wsu.edu/hand-tools/suppliers/index.htm>.

near the root collar. While this may save some wear and tear on your back, the longer bar is more susceptible to kicking back on the slash you create. You can go through more trees using a chainsaw, but handsaws (such as a bow saw) are frequently used by landowners conducting small amounts of pruning on small trees.

Pruning saws come in a variety of shapes and sizes. If you purchase a pruning saw from a forestry supply catalog, you will likely get a quality product. This is not always the case if you purchase a saw from a home and garden store. Pruning saws take a beating in the woods, functioning not only to cut limbs, but sometimes as walking sticks too. Make sure the saw blade is rigid. Keep the saw sharp by cleaning

it frequently, either with a petroleum-based product or soap and water. A good hand saw can be purchased for around \$20, and an extension pole saw costs up to \$200. Shears or loppers are also used for pruning smaller limbs. The most clean-cutting loppers are those developed in New Zealand.

Some forest owners have used chainsaw pole pruners successfully. Their words of advice include: "Keep your feet on the ground," and "Limit your pruning to the first eight feet of the tree." These saws can no doubt do work quickly...so quickly that you must be careful not to inadvertently damage the tree with the moving chain.

For felling trees in your forest, you will want a chainsaw with a bar that will easily reach through to the other side of the tree. You will also want to pack a felling wedge or two and a single-bit axe useful for clearing your cut area and pounding wedges. Some people will use heavy nylon straps or chain binders to prevent some trees, such as red alder, from "barber-chairing." Once again, you are encouraged to seek professional training to learn to fell and buck trees.

To view small-scale tool safety and maintenance videos, see the WSU Extension website at <http://ext.nrs.wsu.edu/Video/forestrytools.html>.

Vegetation Management

Controlling unwanted vegetation can be conducted mechanically or chemically through herbicide applications. Anything that cuts can be used to ward off the brush, but some tools such as a machete or brush axe are most common. Either of these can be picked up from a forestry supplier for around \$25. Wear gloves and leather boots. Injuries often occur to the hand opposite from the one carrying the tool, or the toes and ankles when



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PHOTO COURTESY OF JOHN KELLER, WASHINGTON STATE DNR FOREST STEWARDSHIP PROGRAM

Using a backpack sprayer to control salmonberry.

swinging ruthlessly at the brush.

Heavy-duty mechanized brush cutters work well (\$400-\$500). Mounted with bicycle-like handles and a saw cutting tip, you can work through two-inch diameter vegetation in a snap. Make sure to get the whacker with the shoulder-straps to alleviate back strain.

Herbicide applications are effective for controlling unwanted vegetation. The most common types of applicators are backpack sprayers. The wand is connected to the tank via tubing and the flow of herbicide can be controlled to broadcast or thin-line spray. The sprayers are charged with pressure via a pump that is controlled by hand (\$125), electric/battery drive (\$225) or motor drive (\$450). Most forest owners use hand pumps unless there is a large area to treat, such as brush along an entire road system. Some landowners modify their sprayers using extensions and fittings to

increase the spray area and range.

Unless you take extreme caution when filling and lifting the pack onto your back, expect to get a little wet. The four- to five-gallon tank weighs 35-40 pounds and can be clunky to get on. Some people will mount their backpack sprayers onto a pack board for easier lifting and more comfortable carrying.

Finally, when using backpack sprayers:

1) Read and follow the label directions for personal safety equipment (such as long sleeves, rubber boots, eye protection, etc.);

2) Secure your backpack sprayer during transport;

3) Repair all leaks to prevent herbi-

cides from dripping on your clothes or skin;

4) Never use without the lid on the tank; and

5) Label sprayer with the name of the product it contains.

Small-scale forestry tools will be among the most frequently used of all tools. Keep them clean for safety and function, paint them blaze orange to find them when needed, and they will help you to control the development of your forest. ■

ANDY PERLEBERG is an extension forester for Washington State University. He can be reached at 509-667-6658 or andyp@wsu.edu.

CALENDAR

QuickBooks for Agribusiness, Nov. 1, 2, 6, 7 and 8, Salem, OR. Contact: Chemeketa Community College at 503-399-5139 or 503-589-7946 for registration information.

Integrated Vegetation Management in Practice, Nov. 8-9, Portland, OR. Contact: Western Forestry and Conservation Association at www.westernforestry.org or 503-226-4562.

Sprayer Calibration, Nov. 15, Salem, OR. Contact: Chemeketa Community College at 503-399-5139 or 503-589-7946 for registration information.

Starker Lecture Series: A Century of Forestry: Policy and Politics in the Pacific Northwest with Bill Robbins, Nov. 16, 4:00-6:00 p.m., OSU LaSells Stewart Center Construction & Engineering Auditorium, Corvallis, OR. Contact: Nathalie Gitt at 541-737-4279 or Nathalie.gitt@oregonstate.edu.

Label Comprehension, Nov. 18, Salem, OR. Contact: Chemeketa Community College at 503-399-5139 or 503-589-7946 for registration information.

Keeping Working Forests: The Role of Forests in Preserving Open Space, Nov. 28-29, Bend, OR. Contact: Western Forestry and Conservation Association at www.westernforestry.org or 503-226-4562.

Forestry Vegetation Management, Nov. 30, Salem, OR. Contact: Chemeketa Community College at 503-399-5139 or 503-589-7946 for registration information.

Understanding the Past, Creating our Future: The Western Forestry Conference, Dec. 6-7, Vancouver, WA. Contact: Western Forestry and Conservation Association at www.westernforestry.org or 503-226-4562.

Worker Protection Standard, Dec. 8, Salem, OR. Contact: Chemeketa Community College at 503-399-5139 or 503-589-7946 for registration information.

Weed Identification and Management, Dec. 9, Salem, OR. Contact: Chemeketa Community College at 503-399-5139 or 503-589-7946 for registration information.

Forest Road Surfacing: Principles, Designs and Applied Practices, Dec. 11-12, Olympia, WA and Dec. 14-15, Canyonville, OR. Contact: Western Forestry and Conservation Association at www.westernforestry.org or 503-226-4562. (See coupon ad on back page.)

2007 Oregon Logging Conference, Feb. 22-27, 2007, Lane Events Center, Eugene, OR. For more information, visit www.oregonloggingconference.com or call 541-686-9191.

Brazil Forestry Study Tour, April 15-29, 2007, Curitiba, Brazil. Contact: Mark Willhite at mark@worldforestinvestment.com or 503-695-6419.

Send calendar items to the editor at rasor@safnwo.org by November 13, 2006, for the winter issue.

Forest Stewardship Plans



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