



felling axes & crosscut saws



what are they?

They are edge tools made from tool steel (hardened to maintain a sharp edge for longer). They're the manual tools for cutting and chopping wood that have evolved over thousands of years and become in their own way very sophisticated and efficient. They are an alternative to chainsaws, without the engine, moving parts and burning of fossil fuels.

Axes have been around longer than saws. A felling axe is a cold, brutal lump of steel on the end of a stick, with a sharp edge. It has exactly the right weight over the length of the tool so that when swung, the edge is driven into the wood with a huge amount of force. The profile is honed to give exactly the right combination of cutting and wedging. For example, a cut-throat razor is very fine and only cuts, whereas a splitting axe or maul (used for splitting logs rather than felling), is wide and only splits like a wedge. A felling axe is a combination of these 2 functions - first the cut, allowing the axe to penetrate into the timber; then the wedge, splitting a chip of wood out of the cut.

Crosscut saws are usually operated by two people. They're used for tree felling and cross-cutting, and come in a variety of lengths and tooth configurations. The easiest to maintain is the peg tooth configuration - as on a normal panel saw. Saws come in a variety of lengths depending on the wood you're cutting. The smallest can be around 3ft (1m). Teeth are 'set', which produces a wider cut than the thickness of the saw. To visualise this, put your hands together and push your fingers through each other so that they point in opposite directions - so that the distance between the tips of your fingers is greater than the width of your two hands. This means that the cut will be wider than the thickness of the saw blade, and prevent it getting stuck.



Using felling axes to make a wedge-shaped cut on the side of the tree facing the direction in which it's going to fall.

what are the benefits?

At woodcraft fairs you might see contests between a chainsaw and a two-person crosscut saw. It's often close. If the contest was run over a day, the chainsaw operator would win, but for a more detailed comparison, we should factor in the embodied energy of the equipment, plus the fuel for the chainsaw versus the food for the people doing the cutting.

On a smallholding you might spend £170 on an axe and saw, which will last for the rest of your life (and maybe your children's). The chainsaw, plus protective gear and certification can come to over £1500. The chainsaw will break after a certain number of years, and of course there's the consumption of fuel over its lifetime, with the accompanying monetary and environmental cost. Here's the rub: when chainsaws appeared, they represented a technological advance that gave a competitive edge to people who could afford them. Then the technology became cheaper and everyone had one. The economy adjusts to the new situation, and no-one can afford not to use chainsaws, because they won't be competitive. Everyone is locked in to the new technology. Production increases, as does the flow of raw materials into product. The result is that raw materials become devalued, as does the product. The market demands a higher level of throughput of materials, whereupon no-one is better off, but everyone is forced into making more product and using more raw materials. Then the next technical advance comes along, and it all happens again. This is true for the entire economy - it makes it difficult for people to hang on to sustainable production methods, unless people are prepared to pay a premium for sustainably-produced things, or they are subsidised, or the more environmentally-damaging production is handicapped in some way.

Felling with axes and crosscut saws requires more than one person. There needs to be collaboration. Tools that promote collaboration have greater value when it comes to community cohesion, and in the case of hand tools, they are more sustainable too. Community resilience is increased by the fact that it is not so reliant on external inputs of fossil fuels and high-tech equipment, and the huge corporate network behind it. We're not saying let's get rid of chainsaws for people working in forestry. But for smallholders, for whom felling trees / processing wood doesn't represent a large percentage of their work, they might want to consider it. NB: in the US, national parks are managed using hand tools not chainsaws.



Felling axe vs splitting axe, or maul: the felling axe has a very sharp, thin blade, and is lighter than a splitting axe, which has a heavier, thicker, wedge-shaped blade for splitting along the grain rather than across it; a splitting axe also has a hammer opposite the blade, for hammering in wedges.

what can I do?

Axes can be purchased second-hand at woodcraft fairs, or second-hand tool shops, market stalls or online; or new from blacksmiths specialising in tools. Saws - again, second-hand as above - or new from Flinn-Garlick (see resources).

Regular maintenance and sharpening is essential. The axe is easily maintained by use of a hand sharpening stone, which can be carried in your back pocket; and the axe can be used to fell the timber to make its own handle replacement if it is ever broken. Axe handles are usually made from ash in the UK - it's the timber with the best combination of strength and flexibility - or hickory in the US. New axe heads can be made by a good local blacksmith.

Saws must be oiled when not in use, to prevent rust. They can be kept sharp with a small file - as with a chainsaw.

With axe felling, there is serious potential for injuring yourself. Learn how to do it first - go on a course - to do it in the presence of someone who knows what they're doing.

Below is the order in which things are done when felling a tree. Study the art of safe tree-felling first. Assuming that you are armed with that knowledge, if you wish to fell a tree with an axe and/or a crosscut saw, here's the basic idea.

One creates a bird's-mouth cut (or a face cut) - a 45° wedge-shaped cut on the side of the tree facing the direction you want it to fall. Then use the saw to make a 'felling' cut from the other side of the tree towards the wedge cut, leaving a hinge of timber to control the direction of fall. You may need a wedge to shift the tree past its centre of balance and fall, but some trees fall of their own accord. The order and angle of cuts are exactly the same as when felling with a chainsaw.

There are no laws covering this - only about whether you can fell the tree or not; and no official training is required by law for felling trees by hand. By the way, each of the two people using the crosscut saw will take it in turns to pull, never push, because pushing could bend the saw and make it stick. Pulling keeps it straight.

resources

- lowimpact.org/felling-axes-crosscut-saws for more info, courses, links, books
- D Cook, *the Ax Book*
- International Labour Office, *Wood Harvesting with Hand Tools*
- Warren Miller, *Crosscut Saw Manual*
- orionn49.com/choosing_an_axe.htm - choosing an axe
- flinn-garlick-saws.co.uk - only manufacturer of crosscut saws in the UK



Using a crosscut saw to make a felling cut towards the cut made with felling axes on the other side of the tree.

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