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ACCELERATED SEASONING OF FIREWOOD

About one-fourth to one-half of the weight of live hardwood* stems is water, the exact percentage and amount per cord depending on species. Evaporating this amount of water requires much heat and so freshly cut, green wood burns slowly and small fires are difficult to maintain. The useful heat from burning green wood is around sixty percent of that given off by well-seasoned wood of the same species. Moreover the smoke from slow-burning green wood carries a much higher content of wood tar or "creosote." This condenses on the cooler walls of smoke pipes and chimneys, leading to more rapid build up of soot and greater risk of chimney fires.

These facts are well known to regular users of fuelwood and under normal conditions wood is seasoned for a year or more by stacking to allow natural drying. The process of seasoning green hardwood to air-dry condition (20% moisture) means removal of from 15 to 50 gallons of water per 16" face cord (4' x 8' x 16"). In New York State this process usually is rather slow due to the climate. Large roundwood with the bark intact is still far from air-dry after a single summer in an outside stack. "Seasoned" is by no means an exact term and when demand for fuelwood is high, as at present, the seasoning time is sometimes much too brief for full effect.

Either the producer or the purchaser of green wood can speed up natural drying by cutting wood to shorter lengths; by splitting the larger pieces; by stacking for maximum exposure to sun and air movement; and by sheltering the stack against re-wetting by rain. In all cases, wood stacked outside should be supported well off the ground to prevent water absorption from the soil and decay of the lowermost tiers.

Seasoning can be accelerated greatly by using solar energy to better advantage, and at the same time preventing re-wetting, by simply stacking fuelwood in a location well exposed to sunlight and then covering it with clear plastic sheeting. In sunny weather, temperatures within the plastic

* Term use to denote tree species that are broadleaved and deciduous (oak, ash, maple, beech, etc.)

covering will rise much higher than outside, warming the wood and evaporating the contained moisture. The water vapor produced either escapes or condenses on the shaded cooler side of the plastic covering. Accordingly some arrangement for ventilation must be provided. It is also desirable to hold the plastic away from the contact with the rough ends of the wood to prevent abrasion, allow air flow, and keep any condensate from re-wetting the wood.

The principles involved are the same as in solar barns and solar kilns used for drying hay or sawn lumber. These have been well studied but there seem to be no parallel studies of efficient design and drying rates for fuelwood. A test with the arrangement illustrated in Figure 1, however, demonstrated the effectiveness of the process. A large elm showing first symptoms of Dutch elm disease was felled, split, stacked in full sun and covered in early July as shown. The bolts were about 20 inches long and included round and split pieces up to 8 inches in diameter. By mid-October -- only slightly more than three months later -- the wood was bone-dry and burned freely. An added bonus was that high temperatures and rapid drying under plastic minimized bark beetle and other insect activity and kept the bark tight. This resulted in a much cleaner product, with brighter color than normally air-seasoned wood.

Many arrangements for plastic covering are possible. The thin 2 mil, clear, polyethylene sheeting sold for drop cloths or garden mulching can be used if carefully supported but it is easily torn. The 4 mil thickness is likely to be more satisfactory and less costly than 6 mil. Any clear polyethylene deteriorates badly after a few months of exposure to full sunlight, so the stack may have to be re-roofed to remain dry over winter.

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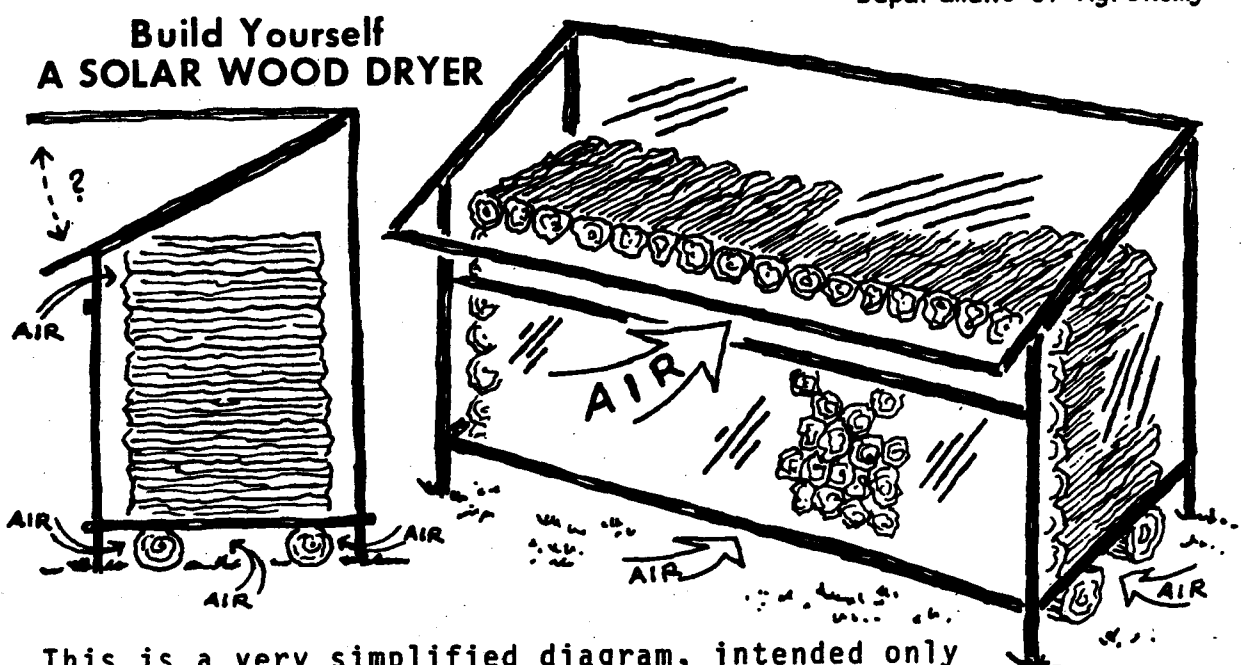
FIGURE 1



This is a very simplified diagram, intended only to illustrate the basic procedure. By utilizing this principle and improvising on construction, many variations are possible.
We'd be very interested to hear about your results.