

Virginia Forest Landowner Update

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A Practical Heating Alternative

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When the Turman Flooring Plant in Galax, Va. turns 80,000 board feet of lumber into 62,000 board feet of flooring every week, it makes a desirable, value-added forest product upon which its customers can walk. It also makes piles and piles of sawdust - enough to fill 17 tractor-trailers every week. One year ago, what sawdust couldn't be burned as fuel to supply electricity to the flooring plant was a liability - given away or otherwise discarded as an operations expense. Today, thanks to some ingenuity and capital investment, this hardwood sawdust is being converted into wood pellets for pellet stoves - a renewable fuel.

Pellet mills operate by applying heat and pressure to the raw material (sawdust), which laminate the wood fibers into pellets. The sawdust used in the Turman Hardwood Pellet Mill is pure oak sawdust with uniform moisture content, features that facilitate the conversion to pellet fuel. Using a single-species mix makes it easier for the operators to maintain the target heat and pressure. If there were other species mixed in, the pellet quality would vary. Having uniform moisture content also helps - too little moisture and the fibers won't laminate properly; too much moisture and the heating efficiency of the wood pellets goes down.

While there are many benefits associated with adding value to low-value biomass (sawdust) to fuel, perhaps the most important benefits accrue when the wood pellets are used in pellet stoves. A modern pellet stove looks like any woodstove from the outside, but on the inside there is a complex assortment of baffles and air intake controls. These are designed to maximize the heat output from wood pellet combustion, and minimize the amount of unburned particles (that go up as smoke) and ash. This efficient combustion produces virtually no soot or smoke, and requires very little venting - instead of a chimney pointed up, the pellet stove has a vent that goes straight through the wall, similar to a clothes dryer.

The management for the Turman Pellet Mill is pleased with its production and sales. Each 12-hour shift produces 70 tons of wood pellets. Even in mid-summer, demand for the pellets is strong, with orders filled throughout the eastern United States. The long-term forecasts are also good - thanks in part to consistently high demand from Europe, where clean air regulations fuel demand for these clean-burning stoves. But the folks at Turman consider their greatest success to be the high quality of their pellets, relative to other hardwood pellets available on the market today. Random samples of the wood pellets have demonstrated that these pellets burn with a 0.4 percent ash content - burning a ton of these pellets will generate a mere 8 pounds of disposable ash!



Turman Pellet Mill employees load bagged pellets onto pallets.
Photo by: Jennifer Gagnon, Virginia Tech.

Production of renewable energy from woody biomass may help Virginia's forest landowners add value to non-commercial thinning or timber stand improvement (TSI) projects. Although this pellet mill does not create a new woody biomass market for landowners in the New River Valley (it uses all of its own sawdust), it does demonstrate the successful conversion of waste-wood into energy. Given the ample supply of low-value wood, and the high demand for energy, it is possible that this technology may expand the options for forest landowners interested in sustainable forest management.

Approximately 20 forestry enthusiasts, including the author and the VFLU editor toured this pellet manufacturing facility last month.

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Wood pellets. Photo by David Richert, DOF.



A pellet burning stove. Photo by: Jennifer Gagnon, Virginia Tech.

Want more information on pellet stoves?

Visit these websites:

1. www.hearth.com
2. <http://hometips.com/cs-protected/guide/pellet.html>
3. www.oldhouseweb.com
4. www.epa.gov/woodstoves/basic.html