

Wood chip heating system found economical, non-polluting

by Morley Seaver

Ontario Farmer

Bainsville cash cropper Ron McRae says the system satisfies cost and labour concerns

With rising electricity and oil costs, a new heating system from Prince Edward Island might be the answer for home heating. The fuel used? Wood chips.

A recent tour and workshop at the farm of Ron McRae, in Bainsville, Ont., 15 miles east of Cornwall, turned many sceptics into believers. McRae is a cash cropper and his home, shop and parent's home are all together in the middle of the property.

He began heating with wood in the early 1970s, when the energy crunch helped him decide that he could save money by installing wood furnaces. They used this heating system up until about three years ago.

Says McRae, "At that time, I decided that it would be more efficient and less labour-intensive if we were to get all of our wood-burning in one centralized location, so that's when we put the underground heat pump in. The system worked well but the furnace itself was inefficient. It would use a lot of wood and since I was stoking it with four-foot cord wood, it was pretty hard manual work. What I wanted to do was get something that would eliminate that manual labour and also burn the wood more efficiently."

McRae started to look around for alternate systems and came across the idea of a wood chip burner. There were only two manufacturers that could provide him with a system - one in P.E.I. and the other in Vermont. At the time, the P.E.I. system was more attractive and McRae purchased a unit.

The unit doubles as a heating system/water heater. "The wood chips are metered into a gasifier at a pre-set rate," says McRae. "The way that this fire is different from conventional wood fires is that we're metering the fuel in, which is the wood, and we're giving it the right amount of air to burn all of the fuel up. In a conventional wood burning system, you put all of your fuel in at once and restrict the air so that you don't burn it up too quickly. And when you do that, you can't burn it as efficiently."

The wood in the gasifier is subjected to free-burning and then as the smoke and gas leaves the gasifier, the secondary air is added and the combustion is completed at about 1800 degrees F. Because of the high temperature, McRae says that most of the smoke that comes out of the chimney is eliminated.

"We've had the scientific guys out monitoring the smoke and the carbon monoxide is very, very low. So because of this, the system is very environmentally friendly. If you think about other heating systems, years down the road, will they still be allowed?"

Roger Samson of REAP-Canada (Resource Efficient Agricultural Production), a research organization based at the Macdonald Campus of McGill University in Montreal, says there are a few reasons why more people across the country will turn to this type of heating system.

"There's been a lot of improvements in terms of combustion technology so we're dealing with more efficient units that are cleaner burning, less expensive and more reliable and safer. The other reason is that conventional energy costs are going up. And people are becoming more interested in woodlot management because the timber prices are so high."

Samson said there's a problem in dealing with wood waste. "I believe that this fall in the U.S., there's a new rule that no clean wood waste can be land-filled. So there's got to be an alternative outlet for that material. Efficient combustion systems would represent an excellent way to utilize this material."

According to Samson, P.E.I. is the leading province in the country in terms of wood chip combustion technology. There are about 60 units installed there, mostly in agricultural setups.

In eastern Ontario, people will be getting a break from the federal government. Under a project co-sponsored by the Eastern Ontario Model Forest program, a limited number of people will be subsidized up to 50% for installing these systems.

Samson says that the average system costs about \$18,000. "You do have a large capital cost at the beginning," says Ron McRae, "but you have to look at the savings. We heated the houses and shops from early November until late April. And we kept the houses very comfortable, about 72 degrees. I calculated roughly, against the current price of oil, that our fuel cost is one-third of what we would pay for oil. And then you have to think that oil is about one-half of what electricity is."

"I would definitely do it all over again if I had to," says McRae. "I've been through 20 years with burning wood and this is getting close to state of the art. The thing that always bothered me about burning wood was the smoke. I've always known that there is energy in that smoke, that we're wasting and polluting our environment at the same time. This system is able to burn that complete and that's what I've been looking for, for such a long time."

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