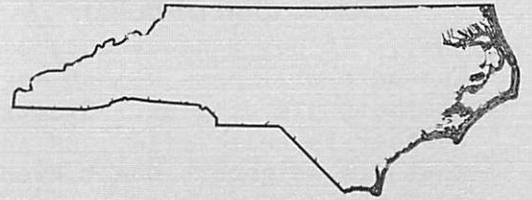


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Money Might Not Grow on Trees, But —

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Growers in North Carolina and adjacent states are showing increased interest in ways to reduce heating costs. A few monumental oil or gas bills prompted them to seek a cheaper, yet effective, fuel. At least 2 growers in Wake County have selected hardwood logs as their form of fuel, and both are very willing to share their opinions and experiences with others.

Ed Winborne, Fowler's Nursery, Raleigh: Ed is a real strong advocate of using hardwood logs as a source of heat, and he has fuel cost comparisons to support his beliefs. In the winter of 1982 Fowler's Nursery spent \$31,000 on fuel oil and natural gas. Ed estimated that his heating costs for this winter, with the conversion to wood, would be between \$4100 and \$4200, to heat the same amount of space and to deliver the same amount of BTUs. Labor is not included in that estimate, but Ed said 5 people could cut enough wood in one day to last 40 days. The crew is composed of one man with a chain saw, 2 tractor operators, and 2 men stacking logs. Labor also is required to keep logs supplied to the fire box. When the night temperature is predicted to be lower than 22°F Ed adds logs at 5 PM, and again at 11 PM. Night temperatures of 10° or less require a larger volume of wood at 11 PM, or a possible delay until midnight or 12:30 AM. The 6½ foot logs are neatly stacked (Figure 1), so one tractor operator can do the firing with little effort but considerable skill (Figure 2). Ed said several weeks of experience are needed before one really learns how to fire the heater.

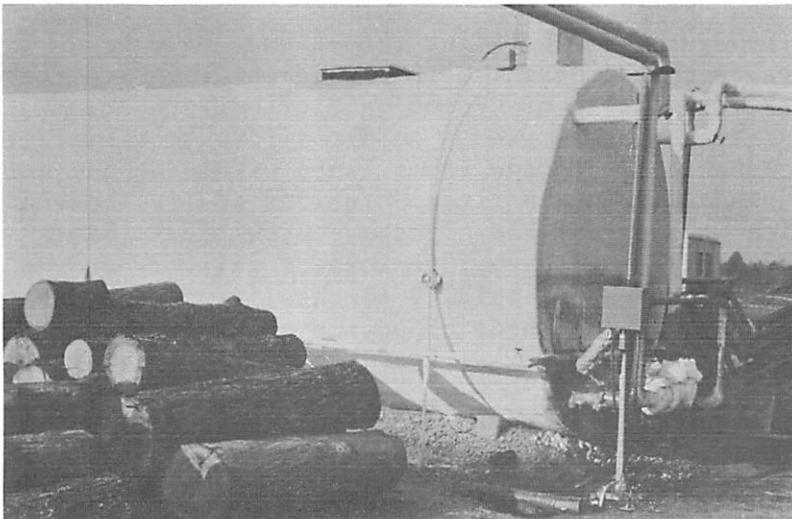


Figure 1. Hardwood logs neatly stacked by polyurethane-covered boiler at Fowler's Nursery, Raleigh.

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Description of boiler. Ed purchased a "Gripo cyclone" wood-fired heating unit. It has a heavy-duty 3/16" steel tank, insulated with polyurethane foam. The unit will burn almost any type of wood but Ed prefers hickory or oak because of their BTU content. Sweetgum and other hardwood species are suitable when weather is quite mild. Ed said the smoke from burning hardwood logs is so clean that his neighbors don't even know he is burning wood. They have asked if he is selling wood, as they can see the stacks of logs.

Figure 2. Ed Winborne, Fowler's Nursery, firing boiler with 6½' hardwood logs.



The unit can produce heat in the range of 750,000 to 3 million BTUs/hour. Ed has water storage capacity of 17,000 gallons. If the water temperature is 180° he will have 14 million BTUs stored up. Ed said he would not hesitate to add 20% more heated space to his range, with his present heating equipment. Decreased heating costs are actually prompting Ed to run some of his houses warmer than before, and has reduced the time required to callous geranium cuttings by 50% with the additional heat going to the propagation house. Ed knows his heating costs would be even less if he had more gutter-connected houses, rather than the numerous individual greenhouses he has constructed.

Polyurethane foam. A key to the savings in fuel costs is the urethane foam covering the tank and the heating pipes. At Fowler's the tank and pipes are covered with a one-inch layer of foam, which is then painted with an inexpensive white latex paint, which acts as an ultra-violet light inhibitor. This paint increases the durability of the foam. The company manufacturing the heating system advocates burial of the heating pipes but Ed didn't know how long polyurethane would be water-proof underground, so the heating pipes at Fowler's are elevated and painted.

(Reports about the dangers of polyurethane bursting into flames have been reported in several trade magazines, such as the July, 1982 issue of the Great Lakes Fruit Growers News and the November, 1982 issue of "Focus on Floriculture" from Purdue University. A lighted cigarette or spark from a welder's torch, or similar ignition, have almost sparked a holocaust in storage rooms lined with urethane walls. Toxic fumes reportedly could also result from such fires. Insides of fire box doors have been coated with urethane, with no apparent bad effects. Growers who have polyurethane-covered boilers, heating pipes and even interiors of delivery trucks probably would be well-advised to prohibit use of welding torches, lighted cigarettes, cigars or pipes around exposed urethane. These words of advice are from the Urethane Safety Group of the Society of the Plastic Industries, Inc.).

Ed stresses the need for neat stacking of logs to make firing easier. He uses logs 6½ feet long when firing is heavy. Logs of different lengths are suitable when the weather is mild but burning is not too good, as you can't get the proper volume of wood into the fire box.

Anyone who has ever cleaned ashes out of a furnace or fireplace can't help but wonder what volumes of ashes one encounters when using wood-burning units. Beth Thorne, floriculture technician at N. C. State University, is pictured on the pile of ashes which resulted from burning 95 cords of hardwood (Figure 3).



Figure 3. Beth Thorne is sitting on the ashes from 95 cords of wood. Note neatly stacked logs behind Beth - a key to efficient firing.

I can summarize the interview with Ed Winborne by reporting he is very pleased with the system, and he is willing and eager to discuss the installation with anyone who desires information. His telephone number is 919-772-1217. Fowler's Nursery is located on 401 South, $\frac{1}{2}$ mile south of the intersection of highways 401 South and 70 East.

Tom Dewar, Fairview Greenhouses, Raleigh: Tom, JoAnn, Susie and Wayne Dewar have built a very nice greenhouse range on Holly Springs Road. In the summer of '82 they made a major expansion to their range, and Tom saw no reason to change his source of heat for the greenhouses. He said he was actually stubborn about changing. A \$2000 bill for one week of heating with butane in November, when it really wasn't very cold, convinced him he was ready to try something different. He knew about Ed's heating system, and decided to get a wood-heating unit. They began installing the unit the week before Christmas, and it took them 9 work days to complete the installation.

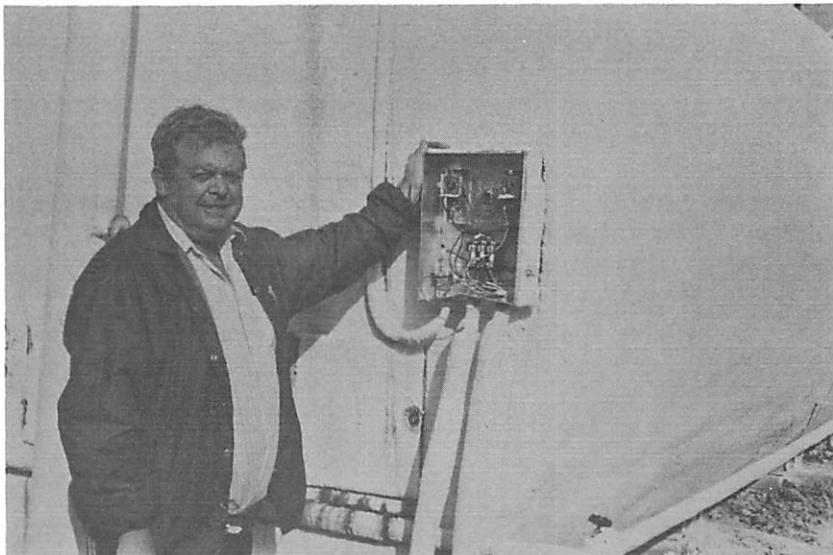
Again, the importance of the firing schedule was emphasized by Tom. Their schedule is to fire at 7 AM, noon, 5:30 PM and 11:30 PM. They will give an extra firing at 4 AM if it is a very cold night. They "anticipate" the weather 8 hours ahead with their firing.

A coil can be placed in the heated water, and the hot water can be used for dissolving fertilizer, an added feature of the unit. Another feature is that ashes can be removed while logs are burning, so the unit does not have to be shut down for cleaning. Brushes and a hose with cold water can be used to remove soot. This job takes about 15 minutes, and should be done about once a month.

Tom, shown at the panel for the automatic control of the draft fan (Figure 4), said he is as sold on the "Bob Cat" he or Wayne use for loading the logs as he is on the heating system. He likes the visibility one has while picking up the logs. He had been advised not to get such a machine for firing the boiler but so far he is very pleased with it.

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Figure 4. Tom Dewar at the automatic controls for the draft fan on his heating unit.



One can summarize Tom's opinion of the heating system by reporting his precise words - "totally, absolutely satisfied". He is pleased with the reliable service. The installer provides service for one year, and then one can buy a 9-year service contract, which is re-issued every 3 years.

The Dewars are predicting a 75 to 80% cost savings over butane gas. Labor is not included in the cost analysis.

Tom will be glad to answer any questions someone might have about the heating system and his experiences with it. The telephone number for Fairview Greenhouses is 919-851-6821.

These 2 examples of growers who have converted to wood are not cited as endorsements of this heating system, or criticism of any other heating units. It is our intent to acquaint growers with different heating systems and sources of heat. We are acting as intermediaries between growers who have made changes and those who are considering some changes. The free and willing exchange of ideas is a trait which distinguishes U. S. growers from those located in many other countries.

Additional information on wood-burning heating units will be presented at the North Carolina Holiday Plant Day, to be held February 24, 1983 at the Holiday Inn on Sugar Creek Road in Charlotte. There will be greenhouse tours in the morning, lunch at the Holiday Inn, and the talks will begin at 1 PM. The cost is \$10.00. The sum includes a buffet luncheon and registration. Further information about the Holiday Plant Day is provided on the green insert.