



Adlai Schetter and his dad burn small square bales of various biomass crops, including Miscanthus grass and tropical maize, to heat their workshop.



Adlai is shown here feeding the fire in their Log Boss wood-fired boiler. The Miscanthus grass burns hot and clean.

## They Burn Grass To Heat Workshop

Adlai Schetter and his dad heat their workshop with grass, burning small square bales of various biomass crops. The high school FFA member encouraged his dad to put tropical maize and miscanthus to work as fuel.

"The biggest problem is getting the grass to the stove," says Schetter. "Growing up on a row crop farm, I have new respect for anyone with livestock who feeds small square bales daily."

The Schetters built a 60 by 90-ft. workshop and installed the PEX in-floor heat with the help of a family friend. Under his guidance, Adlai designed and installed the manifold, hooking it up to a Log Boss wood-fired boiler. "One of our neighbors has a baler, and he

bales the grasses, and I move them," says Schetter. "We burned about 1,000 bales a month last year."

Gary Letterly, extension educator at the University of Illinois, has advised the Schetters. "If you burn premium wood pellets, it will run about 1 percent or less ash," he explains. "Grasses will run 3 1/2 to 5 percent ash. When propane was \$4, burning grass looked good. Now it's not as good, but it is renewable."

Miscanthus and tropical maize are baled after they have dried down. In the case of the miscanthus, harvest is delayed until the leaves have fallen off and rains have leached out problem components.

"When you burn miscanthus, it is like burning little twigs," says Letterly. "It burns fairly hot and clean."

Schetter points out that because of the higher ash content, grasses need to be burned at a higher temperature than wood and with more air. "We turn the thermostat on the boiler up to 325 degrees and add air to burn the grass," he says.

Schetter likes the dual-purpose nature of the tropical maize. High in sugar content, the bales can be fed to cattle if not needed for heat. The crop can also be grazed.

Schetter credits Letterly and a grant from The Dudley Schmidt Initiative as helping them develop the bioenergy portion of the



The Schetters designed and installed this manifold and hooked it up to a Log Boss wood-fired boiler.

project.

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## Round Stove Design Has Many Benefits, Says Inventor

"If your stove isn't round, it's not as efficient as it could be," says Andrew Murray about heating stoves. Everything is round in the inventor's recently patented combustion chamber, which he calls an Efficient Solid Fuel Burning Appliance (ESFBA). FARM SHOW first met Murray at the Minnesota Inventors Congress in 2010 (Vol. 34, Issue 4), and he has been working on tweaking the design ever since.

He builds and sells circular stoves from his South Dakota shop to customers who burn wood. But he emphasizes the stove has the potential for many applications - burning biofuel and pellets, and being used indoors or outdoors as a forced air furnace or boiler, for example. It could also be used to dry grain or produce steam, he adds.

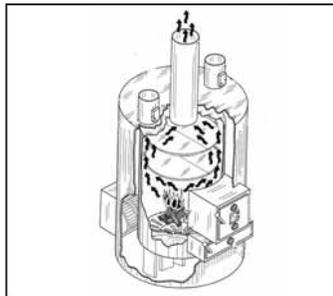
The heart of the stove's efficiency is the round cast iron baffle parallel to the fire grate. "My baffle holds back heat and smoke, increasing the pressure, which means higher efficiency for combustion," Murray explains. "My ESPBA benefits from a stronger cylinder shape, increase in internal pressure, more efficient heat distribution, and a smaller footprint compared to similar btu output appliances."

He sells his Dakota Stove set up to burn wood for \$2,600, plus shipping. It produces 175,000 btu's and uses one-third less wood than similar-sized stoves. The blower automatically adjusts between high, low and off.

The unit is 48 in. tall and 36 in. dia. The chimney is in the middle, so the stove can be placed closer to a wall. With chimney temperatures averaging 250 to 350 degrees, Murray believes his stove eliminates chimney fires.

"The safety and efficiency is significant, especially for the insurance industry. And, owners are more comfortable operating the stove," Murray says.

Currently he builds stoves per customer



Stove design burns efficiently thanks to its round design, especially the round cast iron baffle that's parallel to the fire grate. "Baffle holds back heat and smoke, increasing the pressure, which means higher efficiency for combustion."



request. He is also interested in connecting with manufacturers about new applications for the ESFBA.

"It would be a huge benefit to pellet and outdoor stove manufacturers," he says.

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Don Campbell built this 2-wheel dolly that doubles as a wagon. It rides on 20-in. tires and rims.

## 2-Wheel Dolly Doubles As A Wagon

"I had some 20-in. tires and rims sitting around in my shed and a couple of 2-wheel dollies that had not been used for several years. I decided to make something out of all of them," says Don Campbell, Gaylord, Mich.

"I first just added the bigger wheels to the dolly, replacing the original small wheels. I also widened the bed so I could carry more in the vertical position. Then I decided I could also use the dolly in the horizontal position by making a front axle with a quick-tach hitch. It turns the dolly into a mini flatbed

wagon that's lightweight, rolls easily, and is a handy size to carry attachments for my garden tractors.

"What I like is that I can tip it up vertically like a conventional 2-wheel dolly to pick something up, then drop it down horizontally and quick-hitch to the front axle for moving around. I made 3 of them and they're very handy."

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Wagon can be tipped vertically like a 2-wheel dolly to pick something up, then dropped down horizontally and hitched to the front axle for moving around.