Let Shelled Corn Heat Your Home

(Continued from Page 1)

Spangler's company has been making the furnaces since last fall, after receiving a startup grant from West Penn Power Sustainable Energy Fund, Inc.

Managed by Penn State, the energy fund provides grant funding and low-income financing to companies pursuing renewable energy technologies such as biofuels and windpower, according to Joel Morrison of Penn State's College of Earth and Mineral Sciences.

LMF received "royalty financing," from the fund, meaning that the company must pay back a specified amount on each stove it sells.

Morrison said that corn furnaces and stoves should especially "make sense for the average farmer" who has ready access to shelled corn.

Spangler said he received manufacturing rights for the corn furnace from Big M, an Illinois-based company who has been making them since the 1980s.

LMF is capable of manufacturing two to two and a half corn furnaces per day. According to Spangler, sales are increasing, with the company supplying eight dealers in several states, including Pennsylvania, Maryland, and Ohio.

"We've gotten a whole lot of phone calls," he said

The furnaces are going for about $3,000 on the retail market, Spangler said.

Features of the stove include a 14-bushel storage bin, cast-iron fire pot, corn metering auger, fan control, and thermostat relay.

According to LMF literature, induced air flow into the combustion chamber creates 99 percent burning efficiency in the furnace, with the corn leaving no creosote residue.

An energy and cost analysis released by Spangler shows that shelled corn provides 9,000 BTUs per pound, compared to 13,000 BTUs per pound of coal. Based on $3/bushel corn and $140/ton coal prices, the total cost of producing 18,000,000 BTUs of energy (provided by one ton of corn) is $108 for corn versus $98 for coal.

However, at $2.50 per bushel of corn, the cost of the same amount of heat is $90 when burning corn, according to the analysis.

"The price is comparable to coal and is a whole lot cleaner and safer," Spangler said.

Of all the fuel types included in the survey, oak wood provides the same amount of BTUs at the least cost — $80 based on a price of $115/cord.

Natural gas, fuel oil, and L.P. gas check in at $90, $110, and $158 in producing 18,000,000 BTUs, based on prices of $.50/cubic foot, $.85/gallon, and $.80/gallon, respectively, in the analysis provided by Spangler.

In its outlet store, LMF also offers corn stoves — smaller units producing 30,000 and 40,000 BTUs per hour. The stoves are designed more for "supplemental" heating than the larger furnace, Spangler said.

The Pennsylvania-made shelled corn furnace, with 14-bushel storage bin on left.

Share Yield Monitor Data With Experts

NORCROSS, Ga. — The tools of precision farming have helped growers collect more data than ever before on their crops and soils. Remote sensing, topography and electrical conductivity mapping, and soil test grids supply so much data that computerized geographic information systems have become a necessity. But in many cases, it's not easy to convert these data into useful information for management decisions.

To manage based on collected data, the factors that control yield and quality must be found. The factors that control crop variations within the field are not the same as those controlling variations from one year to the next or those from one field to another. In fact, variations within your field likely differ from those within your neighbor's field.

Yield-limiting factors interact with each other. A principle of limiting nutrients is that change in supply of one nutrient changes the optimum level of the others. As yields increase, the critical minimum for most inputs increases. But at the same time, critical maximum levels may decrease, narrowing the optimum range. Finding that optimum range is an important objective of exploring the data obtained from precision farming.

Recent site-specific research provided an example of this narrowing of the optimum range. In Quebec, variable rate application of phosphorus improved corn yields above either a check or a uniformly fertilized treatment...even though fertilizing uniformly produced no more yield than the check. The same study also found that soil test phosphorus declined rapidly in the absence of fertilizer inputs, while its spatial variability increased.

The analysis of spatial data requires a team. It's a new topic even for crop and soil scientists. The team needs to include a local crop adviser or agronomist, technicians trained in geographic data handling and mapping, specialists in soil fertility and plant nutrition, and experts in spatial statistics. Don't discount your own resource of practical and historical knowledge as a grower, but keep in mind that data shared with experts are more likely to improve management.

Teamwork on variable rate nitrogen has produced results. In Ontario, on-farm experiments involving strips of varying nitrogen rates have related crop response to local soil properties. We have found that the soil nitrate test usefully identifies variations from year to year in the supply of nitrogen from fall-applied manure. But it has been costly to sample for the spatial pattern of nitrate. In addition, its spatial pattern often doesn't follow the pattern of crop response. Some fields have shown a hint of interaction with other factors. For example, where soil test potassium is high, crops can use more nitrogen. In other fields, nitrogen needs have related better to cation exchange capacity or soil electrical conductivity.

Experience so far shows that each field is unique. Perhaps when the work progresses, common factors will be found that enable us to transfer relationships discovered in one field to another. But for now, unless we continue to experiment, the value of precision farming will not be realized.

You have valuable data. Share it with the experts to reap the benefits of its value. For more information, contact Dr. Tom Bruulsema, Eastern Canada and Northeast U.S. Director, PPI, 18 Maplewood Drive, Guelph, Ontario N1G 1L8, Canada, (519) 821-5519 or e-mail: tbruulsema@ppi-ppic.org.