

Corn drying

(Continued from Page C20)

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utilizing corn cobs as fuel has resulted in a production-size cob gasifier at Waterman, and others are planned for construction soon at other seed plants the company operates. Early test runs indicate that the system works well, and that cobs make excellent fuel.

Cobs contain about 7200 BTU's per pound compared to 8800 from oak. While considerable research has been done to refine wood gasification techniques, DeKalb's gasifier is one of the first successful designs using cobs.

Chuck Lindhart, seed operations manager for DeKalb, explains the cobs are not burned for heat directly because such a system would require very large equipment.

Also, a heat exchanger would be needed, because heat coming off burning cobs is not clean enough for direct use. Using a heat exchanger would reduce usable heat by about 30 percent, and the total loss of energy through direct combustion would be 50 percent.

According to Lindhart, the cost of drying seed corn with cob-gas is considerably less than when burning propane, even at today's prices. Comparing the two fuels, propane's cost (at 50 cents a gallon), using a drying system already installed and paid for, is 56.6 cents per bushel of seed corn dried.

Drying with the cob gasification system, in-

cluding capital outlay expenses, will be only 28.6 cents per bushel.

The technology of corn cob gasification is simple.

The cobs are "burned" (pyrolysis) in a limited-oxygen environment which produces a gas. A small amount of ash remains. The gas is burned, and the resulting heat is mixed with outside air.

The warm air, 110°F., is forced by a fan through the seed corn ears to be dried.

The seed drying process dries the cobs as well as the grain, and then the cobs are ready for use as fuel.

The process is somewhat similar to making charcoal, says Lindhart. In comparison to natural and LP gases, the gas from corncob gasification is low grade, containing only a fraction of the BTU's per cubic foot.

The gasification chamber in the Waterman system is a hopper-bottom box about four feet square and made of heavy sheet steel, and lined with refractory.

The problem of tar buildup, normal in cob gasification, has been overcome. As shown in the drawing, the burning gas enters a combustion chamber. There, it swirls in a cyclone fashion, providing a long dwell time so that most particulate is burned.

According to Lindhart, a kind of "perpetual motion" exists when drying seed corn with cob gasification.

"There are about enough

cobs in the crop to dry the crop," he explains. "When we get rolling we will purchase very little propane or natural gas."

The company is concerned, he explains, about supply interruption of petroleum-based fuels, especially during the drying season. "Seed corn won't wait until they turn your fuel supply back on," he says.

Another reason for using cobs is to help conserve exhaustible supplies of fossil fuels. A third reason for the conservative measure is to save money. The long-range economics of cob

gasification are very favorable, he says.

"It will take several corn cob gasifiers to provide all the heat needed at this plant if we convert completely," explains Lindhart.

He adds that cob gasification may be adaptable to on-farm use in drying feed corn and possibly other crops. The challenge is to develop a system for saving the cobs as they leave the combine.

"I know of no farmers doing cob gasification," says Lindhart. "But it certainly has long-range potential."

State urges farmers to set fuel supplies

HARRISBURG — Pennsylvania Agriculture Secretary Penrose Hallowell today urged the state's farmers to establish regular sources of supply for gasoline and diesel fuel purchases. He said that this was important to protect fuel supplies in the event that the Department of Energy would change the base year for making farm fuel allocations.

"When the gasoline crisis struck in 1979, many farmers faced irregular supplies and shortages from their regular dealers. To supplement farm fuel needs, farmers often turned to purchasing needed fuel at the curb," Hallowell said. "Farmers who have continued to purchase fuel supplies at the curb may find themselves on the short end of allocations if a new base year is selected."

Hallowell said, "I would urge any farmers who still are purchasing gasoline or diesel fuels for farm use at the curb to return to their major suppliers without delay to protect themselves against changes in the base

year or the farm allocation procedure.

"Pennsylvania's family farms rely heavily on gasoline and diesel fuels," Hallowell said. "Right now farmers are receiving allocations at 100 percent of use for the 1977 crop year but we cannot expect this system to continue indefinitely. Any interruption in the farm fuel supply at any stage of production could prove to be economically disastrous."

Hallowell said that petroleum-based fuel consumption on Pennsylvania farms totaled more than 120 million gallons in 1977. At least 60 percent of gasoline used on farms that year went into dairy enterprises and production of corn and forage crops which support the dairy industry.

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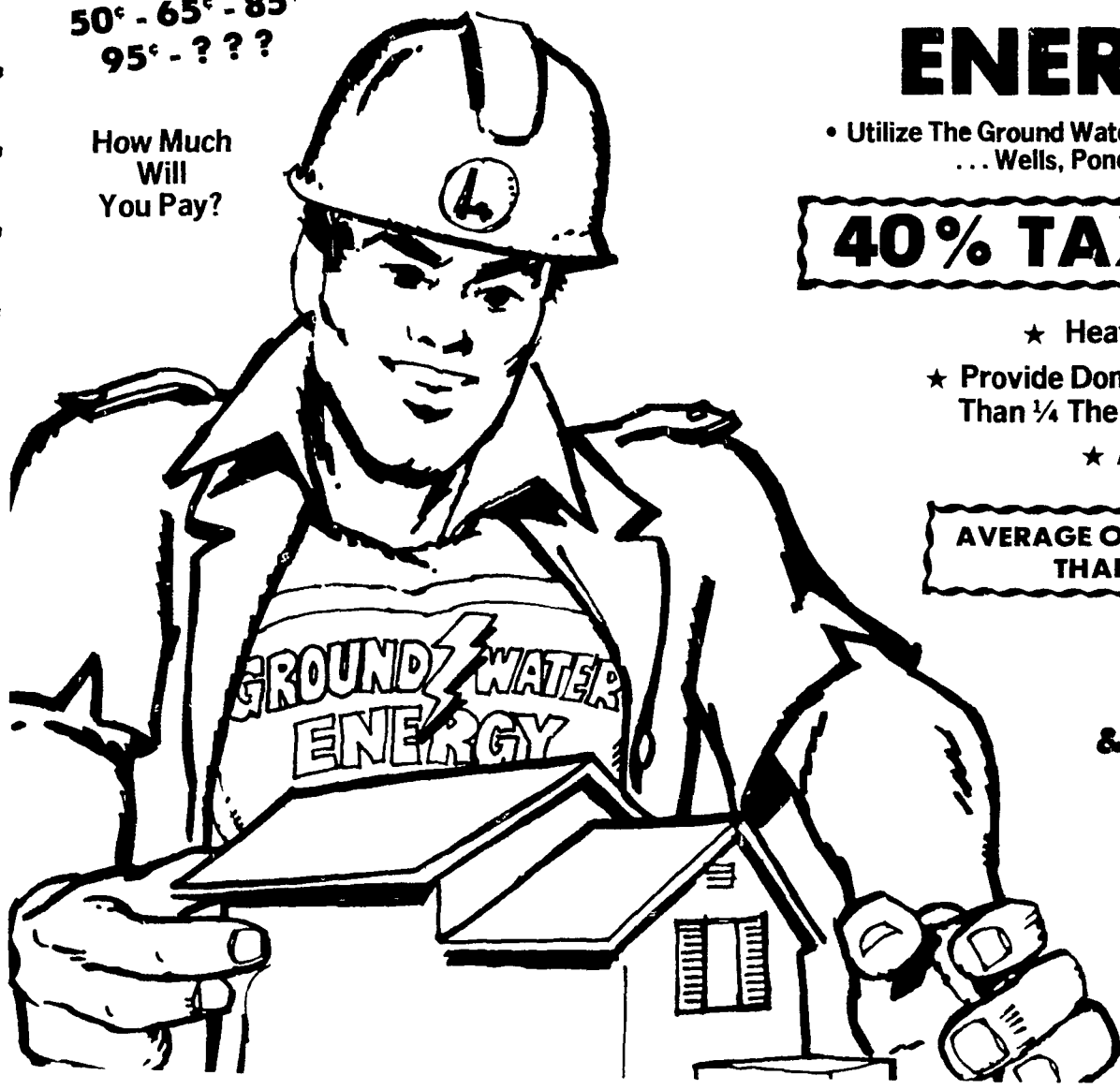


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