

Education is key to successful land disposal of sewage sludge

WOOSTER, Ohio — One of the major environmental problems created by urbanization is what to do with tons of waste generated daily by cities and towns. It's estimated that more than 8 million tons of municipal sewage sludge will be produced in the nation in 1985!

The application of stabilized sludge to cropland offers an attractive and economical disposal alternative for many cities, and the key to acceptance of land application hinges on public education.

Robert H. Miller, professor of agronomy at Ohio State, said educational programs by a team of faculty from Ohio State and the Ohio Cooperative Extension Service have helped many cities in the Buckeye State establish successful land application systems. Currently, more than 80 cities generating 30 percent of the state's total municipal sewage sludge are applying the sludge to agricultural land.

Miller, speaking during the annual meeting of the American Society of Agronomy, said community acceptance of land application of municipal sewage sludge is dependent upon carefully planned educational programs before land application begins.

He said an interdisciplinary educational program was started in Ohio in 1974. It has paid big dividends and can serve as a model for other states considering land application of sewage sludge.

Educational program should be designed to reach every group and individual directly involved in land application. Programs should be tailored to the target audience—these include key members of the agricultural community, land owners, city officials, local health officials, community leaders, the press, and interested citizens concerned about the relationship of sludge disposal, and environmental quality.

Miller said the education programs must present a complete picture of any potential problems as well as the advantages of land disposal of sewage sludge. City officials must understand the management systems necessary to assure success of land application for their own municipality. It is essential that program participants be fully prepared to provide candid answers to any questions.

Ohio, the nation's sixth most populous state has a number of major metropolitan areas. Although it is a highly industrialized state, agriculture is

still a very important industry and protection of agricultural lands is of major concern.

In addition to the team approach to public education, Ohio scientists and Extension specialists have developed and published a set of guidelines for the stabilization of sludge, cropland application rates, heavy metal limitations, and

management considerations.

Now in its third revision, "The Ohio Guide for the Land Application of Sewage Sludge" (Cooperative Extension Service Bulletin 598), has proven a useful management manual for cities in Ohio and other states planning to change their sewage disposal

system to one of land application of sludge.

"An open and honest approach is essential," Miller concluded, "to foster understanding, eliminate any distrust, and to minimize concerns, emotion, and controversy about land application of sewage sludge."

Dairies can harness wind for efficient energy

BELTSVILLE, MD — Windmills can provide an economical energy source for dairy farms, according to Dr. Herschel H. Klueter, agricultural engineer, with the U.S. Department of Agriculture, in a paper presented at the recent Small Wind Turbine Systems Symposium at Boulder, CO.

The best uses of wind energy for a dairy farm, according to Klueter of USDA's Agricultural Research Service, are to heat the water required for washing cows and milking equipment, and to cool the milk for storage. Since both cooling and heating capacity can be stockpiled in the form of ice and hot water, these are ideal uses for conversion of wind power.

Many dairy farms in the U.S. are found in areas with "good" wind—the Upper Mississippi and the Great Lakes. And the use of energy on a dairy farm is constant throughout the year, another reason these farms are a good choice for wind energy use.

This new application for wind power utilizes readily available

technology. Old-fashioned ice banks and ice water plate coolers can be easily converted to harness wind energy. A compressor freezes water during windy periods to save for later use, said Klueter of the Agricultural Equipment Laboratory at Beltsville Agricultural Research Center.

Energy efficiency can be increased by pre-cooling the milk with the incoming tap water by using a simple heat-exchanger. Also, the water used to cool the compressor can be utilized since it is discharged at a temperature of about 37°C (100°F). This temperature is ideal for washing the cow's udders and milking equipment — the main uses of warm water in a dairy operation.

To test this new use of wind energy, Karman Science Corporation in cooperation with USDA installed a wind turbine at the Colorado State University dairy farm in 1977. A hoop-shaped, vertical-axis rotor was used to power the generator. It measured 30-feet high, 20-feet wide, and was mounted on an eight-foot-high tower. Since the experimental dairy farm in Colorado is not in a good wind area, the power supplied by the windmill was supplemented by power from the utility company. Nonetheless, the experimental equipment showed that the use of wind power for dairy farm heating and cooling is technically feasible.

Several features would improve

the efficiency of the system, Klueter observed. If a variable speed windmill were attached to a variable speed compressor, the wind energy could be efficiently used to power the compressor directly. Also, to be effective, the size of the wind turbine would be correlated with the size of the dairy herd, he added.

Other uses of wind power that were studied by the U.S. Department of Agriculture included utilization of windmills for heating of buildings, for apple cooling and storage, for crop drying, for irrigation and for use in food processing. Of all the wind energy applications studied, use for dairy farms and for irrigation appear to be the most promising, said Klueter.



ANNUAL CHRISTMAS CANDLELIGHT PROGRAM

with live Tableaux scenes. Presented by the choirs of The Midway Church to the Brethren

(13 Evergreen Road, Lebanon)

Sunday Nights: December 20 and 27 7:30 PM

ALL ARE WELCOME!

DECEMBER SAVINGS

Order now & make the best buys of the year!!

- CASH DISCOUNTS
- LOW LIST PRICES
- NEW PRE-PAY PLAN

Everything leads to big savings in DECEMBER. Big Dec. cash discounts good until January 4th, 1982.

FERTILIZER — CHEMICALS ASGROW SEED are all priced to sell in December.

Talk to us before you buy. To insure that our salesmen see you - Call 717-397-5152

BULK BLENDS
MASTER FARMER
ANHYDROUS AMMONIA

ORGANIC PLANT FOOD CO.

2313 Norman Rd., Lancaster, PA 17601
Phone: 717-397-5152

Hours: Monday thru Friday 7 to 4
Sat. 7:30 to 12:00

PARS Soil Service

Distributors of Liquid Calcium (Promesol)

BOOK NOW! Beat The Spring Rush

CALL: ROBERT KEIPER
717-299-2095
or 717-367-1589

Authorized Dealers
MARTIN AG SERVICE WHITE HORSE GRAIN CO.
717-354-4996 215-869-8006

SEE US AT BOOTH 659 DURING THE PA FARM SHOW

WE ARE NOW THE

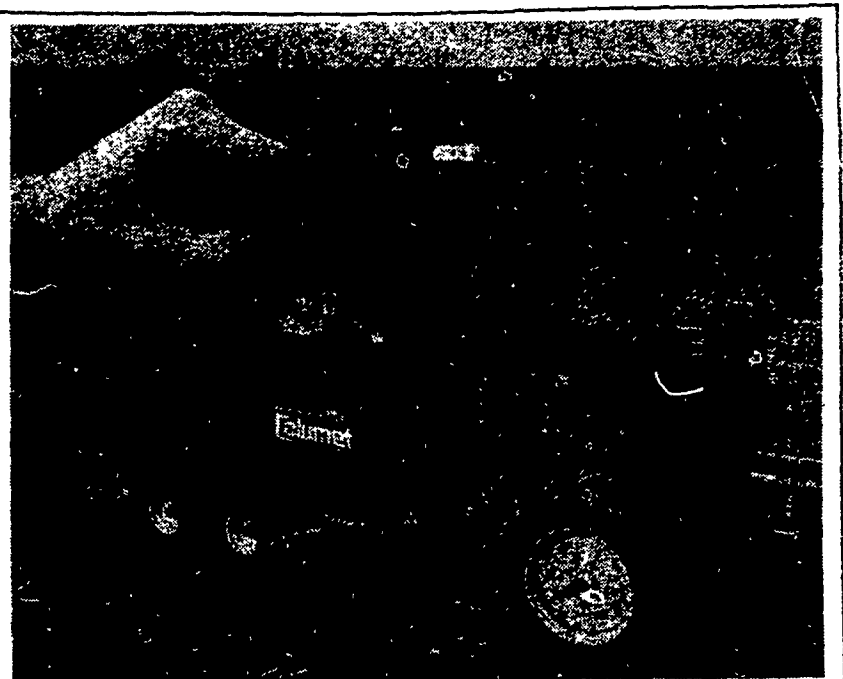


ALASKA
KODIAK WOODSTOVES

Woodstove Heat
By the people who know cold.

FACTORY OUTLET
For Coal/Wood Stoves/
Boilers/Furnaces
Fireplace insert
\$595

CHESTER B. NOLT
30 S. Hershey Ave. (Bareville) Leola, Pa. 17540
PHONE (717) 656-6898
Hours: Mon. & Tues. By Appointment
Wed., Thurs., Fri. 10 to 8; Sat. 10 to 4



Like money in the tank

Invest in a Calumet Vacuum Tank with soil injector.

Liquid hog manure can save you several thousands of dollars in commercial fertilizer costs. That's why it pays to invest in Calumet. Pick the tank size that fits your herd—from 1180 to 4500 gallon capacities. Choose from three vacuum pumps—177 CFM, 247 CFM or 353 CFM—for fast filling. Select PTO powered at 540 or 1000 RPM, or optional hydraulic motor drive. Then put those liquid assets to work with a Calumet 2- or 4-shank soil injector. Injecting helps retain four times the nitrogen usually lost in surface



So start profiting from the fertilizer produced on your farm. Get a Calumet vacuum tank and soil injector. It's a tank you can bank on.

USED EQUIPMENT
12' Better Bilt Auger Pump
10' Badger Pump
8' Calumet Pump

spreading. And you'll reduce odor and runoff problems. You'll get long-term dividends too. Calumet tanks are engineered for years of efficient, low maintenance operation. Heavy duty steel alloy tanks are epoxy-coated to resist corrosion. Double reinforced A-frames and support skids add strength for heavy loads. All Calumet products are backed by a 12-month warranty.

CALUMET & NESSETH DISTRIBUTOR



F. ERNEST SNOOK

RD 3 - Box 84, Mifflinburg, Pa. 17844
Phone: 717-966-2736