

Lancaster Co. REAP Program Now Offers Help:

# Animal Waste Disposal—Some Problems and Solutions

As the local dairy, beef and poultry industries expand in size, one problem grows even faster. That problem is:

How to get rid of the waste in a manner which will keep peace with increasing numbers of neighbors, meet stricter pollution laws and still not cost so much it makes farming impractical?

Increasing attention is being devoted to solving this dilemma. Farmers, agribusinesses, educators and government are among those spending increasing amounts of time and money on this mushrooming problem.

One indication of the concern and the efforts to solve the problem is the new program by the Rural Environmental Assistance Program (REAP) to subsidize animal waste storage systems which meet certain minimum requirements. REAP will pay up to 50 per cent or a maximum of \$2,500 of the cost of "animal waste storage treatment and diversion facilities," or more specifically, "manure pits and lagoons."

Lagoons are not allowed in limestone soils, however, because of the danger of underground pollution. Since limestone underlines a major portion of Lancaster County, lagoons are severely restricted under the REAP program.

According to Orval Bass, district conservationist of the U.S. Soil Conservation Service, Lancaster County is mostly going withholding tanks under the subsidy program.

**Reasons for Holding**

The primary purpose of these tanks, he explained, is to hold the manure for extended periods of time so that it can be spread under ideal conditions.

Requirements are that the tanks be large enough to hold waste output of about 100 days.

The 100 day figure enables farmers to avoid spreading



The concrete slab and related equipment are about all that's visible of the large pit at the John Landis farm near East Petersburg. The animal waste storage pit,

manure on frozen ground. In Southeastern Pennsylvania the frozen ground or holding period runs approximately from mid-December till April 1, or about 100 days.

Some of the major pollution problems stemming from an animal wastes are believed to result from spreading manure on frozen ground, Bass explained. When the ground is frozen, the manure readily mixes with rain and runoff to flow into streams.

When the ground is not frozen, the manure mixes with the soil and there is relatively little runoff, Bass explained.

Until recently, nearly all local farm waste disposal systems have operated in one or two manners: Either the manure has been hauled daily or nearly so, or else it has been stored only briefly—possibly for a couple of weeks.

Even where storage has been

for longer periods, it has not usually been long enough or timed in such a way as to avoid frozen ground.

Another problem with systems of limited storage capacity has been lack of available ground for disposal during the long summer crop season. Some farmers have solved this problem by growing a variety of crops and grains with different planting and maturity dates. Increasing use of corn has aggravated the summer disposal problem.

The storage of the waste also allows—to the greatest extent possible—the spreading of manure on days when the weather is suitable. Rainy weather, particularly when the ground is water-logged, is to be avoided because of increased dangers of runoff.

Farmers with neighbors also know that some kinds of weather

are better than others to keep odors to a minimum.

**Large Storage Needed**

Obviously, to hold the waste from a modern farm operation for 100 days requires a very large storage facility.

For design purposes, Bass figures the farmer needs to allow storage capacity of 15 gallons a day for dairy cows, 12 gallons a day for beef cattle, 2.1 gallons for pigs, .81 gallon for sheep and .047 for poultry.

That figures out to a 37,500 gallon tank for a small 25-head dairy operation; a 150,000 gallon tank for a relatively large 100 head dairy operation; a 120,000 gallon storage for a 100 head steer operation.

A similar 100-day capacity for a 10,000 poultry operation would be 47,000 gallons.

**Design, Costs**

Systems of this type which are being approved under the REAP

program, Bass said, are either approved prefabricated concrete or reinforced concrete poured on the site.

Cost of these systems varies considerably. Bass has seen them run all the way from about six cents per gallon of capacity up to about 18 cents.

For a 60 cow dairy herd, Bass figures a reasonable cost estimate would be \$6,000 for a pit alone, with an extra \$3,000 to \$4,500 for related equipment. Obviously, it's costly.

Bass warns farmers that REAP funded projects must meet minimum standards to insure they work. Some local farmer attempting to take shortcuts on costs found their tank didn't work and the money was wasted, he stated. Failures have resulted both from systems which sprang leaks and from systems which simply collapsed

(Continued on Page 15)

## A Look at 3 Animal Waste Systems

Orval Bass, district conservationist of the U.S. Soil Conservation Service, recently showed Lancaster Farming three animal waste disposal systems which he thinks are working. (See related story on this page.)

One on the John Landis farm near East Petersburg was installed by Zimmerman Industries, the Ephrata pre-fab concrete firm. The round 36-foot diameter pit is 12 feet deep. It was built early this year with REAP help.

Landis' pit was installed to the rear of his dairy operation on

open ground. The pit itself is underground, with just the concrete surface showing just above ground level. This concrete surface has a couple of openings to allow the waste to flow in and be pumped out into the "honey wagon."

Weidler Grube, who lives farther north just off Route 283, has been operating what Bass considers to be a similar and successful system, which was built long before REAP got into the act.

Grube's system, built in 1967, is not visible to the casual observer

His system is also built underground, with a concrete surface. But the concrete surface is part of a larger rectangular concrete feed lot or walking area for his animals. About the only thing which gives his pit away is the system which brings the waste from the barn to the pit.

Grube's pit has the same diameter, 30-feet, as Landis', but at eight feet deep, it's four feet shallower. But Bass explained that it still has 100 days of capacity, since Grube has a relatively small dairy herd.

John B. Groff, Mount Joy RD1,

has an entirely different kind of system, but one which Bass thinks is very successful. It's an irrigation system.

Groff said he got his ideas for the system from Donald Hostetter, Chester County.

The system begins with two 160-foot gutters which slope at the rate of one and one-half inches per 10 feet. These gutters carry the animal waste directly into a large pit at the low end of the building.

Periodically, Groff opens the gate of his gutters and flushes with water from a pond which he built near his barn. Besides cleaning the gutters, the water serves to liquify the waste and make it suitable for irrigation.

The only power used in the system is a three-phase 30-horsepower motor which pumps water into the gutters from the pond and pumps the sludge into the fields.

The only problem so far with the system is that the nozzles sometimes clog up out in the field. Groff presently is looking for a better type of nozzle.

Another drawback of Groff's system, according to present REAP standards, is that the pit has only a 30-day storage capacity, while recommendations are for a 100-day storage to get over the winter freeze. Because of limited storage, Groff has to irrigate every 30 days.



Orval Bass District Conservationist

But Bass feels that Groff has a very minimal problem of pollution because his farming practices include a complete conservation program. "I wouldn't advise anyone to irrigate without waterways and terraces because of the dangers of runoff following a heavy rain," Bass said.

Groff has been using his irrigation system for a year. He has 68 milking cows. His new veal operation is also on the system.

A major advantage has been that it saves labor.

He previously hauled every day and it took about 50 minutes to load and unload.

Now he figures about six hours a month, pushing switches and occasionally moving an irrigation pipe.



This is a view of John B. Groff's veal calf pens. The facility was designed in such a

way that wastes from the pens flow into his irrigation system.