

Manure systems have to be built properly

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CHAMBERSBURG
"Whatever you build, do a quality job," says William J. Bowers. An agricultural engineer from the Soil Conservation Service, Bowers was addressing a capacity audience attending the Regional Manure Conference on February 4 in Chambersburg. He spoke of sizing, site selection, construction and maintenance techniques for storing manure.

The Chambersburg conference was the first of four given in a "traveling road show" format in Pennsylvania. Conferences on subsequent days were scheduled for East Brandywine, Bethlehem and Lewisburg in a collaboration between the Soil Conservation Service and Penn State University.

If you had previously thought of manure management in terms of a pitchfork and shovel, one of these conferences was the place to be. Agricultural engineers and agronomists discussed storage and handling systems, compared costs and nutrient retention of manure systems and use of manure for crop production.

Bowers says good manure management is important for a number of reasons. "Manure storage helps to make maximum use of nutrients. The big item is nitrogen. If you put it out in the fields in January, very little

nitrogen will be left by June." He adds manure handling is a system and if it is not properly utilized, farmers may unwittingly cause pollution and incur possible involvement by the Department of Environmental Resources.

Bowers enumerated the reasons for wanting to store manure. The first is the convenience of spreading manure when weather and scheduling allows. Then, with increasing fertilizer prices, "We have a real resource here and we need to take advantage of it." Thirdly, he says, "A nutrient not in the right place can become a pollutant."

One area he discussed was the difference between manure storage and a manure lagoon. A lagoon may be four to ten times larger than storage and is designed to break down solids and nutrients. But storage systems are designed to conserve nutrients and ultimately to be emptied.

Factors to be considered are the type, size and number of animals, type of bedding used, amount of wash water entering the system and the length of storage time. Bowers noted the Soil Conservation Service considers six months the minimum time of storage. Barnyard runoff and storm rainfall amounts also need to be considered in sizing storage.

Site selection should be close to the source of manure. As much

clean runoff should be excluded as possible while polluted runoff should be collected. Method of loading and unloading and existing handling equipment must be considered as well as personal preference of the farm operator. As Bowers stated, "If you like reinforced concrete, build a reinforced concrete manure storage."

Other factors in deciding storage type and location are suitability of soil, is the possible site on a flood plain, space available, distance to a well or the nearest dwelling, direction of the prevailing wind and local regulations. One thing Bowers views as important is vegetative screening. "I think this is something we have overlooked

in the past. Remember, out of sight, out of mind."

Critical aspects in considering the use of holding ponds as temporary storage are the impermeability of the soil, depth to bedrock, type of bedrock and level of the water table. Bowers advocates the use of test pits to check the water table.

If you are using a gravity flow system to load a manure storage, Bowers says you must use little or no bedding. There must be six feet of elevation from the hopper to the full level in storage. Pipe size for a dairy operation is 24 inches or more and for a swine operation, six inches or more, with a minimum four feet of cover over the pipe.

Bowers also says manure must cover the pipe outlet before freezing weather.

If topography is right, you can use a gravity unloading system to get the manure to the spreader from the storage tank. You must slope the bottom of the storage to the outlet channel and use two gates, one as an emergency shutdown to avoid accidental unloading of the entire storage system.

"If you have a choice and can only go either loading or unloading with gravity, look at your system very carefully before you make the decision."

In making decisions regarding storage, Bowers urged farmers to take stock of their operation.

"Build what you design," Bowers urged, "and operate it according to plan. We want to see manure get to the crops."



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- #1 Dr. Pete Ferretti - Extension Vegetable Specialist - Penn State
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 - #2. Dr. Mike Orzolek - Extension Vegetable Specialist - Penn State
Topic: Intensive Pepper Production
 - #3 Dr. Ernest L. Bergman - Professor of Plant Nutrition - Penn State
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