

# New Barn And Manure System Are Keys to Expansion

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CHAMBERSBURG — Over 250 dairymen and their families took time from their busy field work to attend a recent dairy open house at the farm of Eugene and Janet Eberly, Mount Pleasant Farm. The Eberlys, whose operation includes two of their sons, Lynn and Darrell, have spent the last 14 months expanding their dairy operation.

Their new system includes a Penn State design drive through free stall barn with 150 stalls which incorporates "state of the art" natural ventilation and a rubber tire base in the stalls.

They have installed a unique manure transfer system at the end of the barn which utilizes stepped gravity flow channels. And, they converted an existing structure into a gated free stall heifer barn.

Since last fall they have added an additional 80 cows to their milking herd while retaining a rolling herd average of 17,076 pounds of milk and 642 pounds of fat. Over 90 percent of the herd is registered.

Featured speakers for the evening included Dr. Robert Graves, Ag Engineering, Penn State University, who was instrumental in the free stall barn design and adaptations, and Bob Hotchkiss, Franklin County Soil Conservation Service, who helped with the manure management system.

In his opening remarks, Eugene Eberly related that as his sons became more involved in their operation, the need to expand their operation became more apparent. With that in mind, their major concern became how to handle all

their manure. This concern prompted all the other changes.

Working with the Soil Conservation Service, the Eberlys decided on the gravity flow system because of the site of their facilities. Situated in limestone soil, the Eberlys found that working with the Soil Conservation Service was imperative in having guidance on how to make their pit environmentally safe, meet with all local ordinances, and still stay cost effective.

The manure in their new barn is all scraped to the center of the aisles where it is pushed into the receiving channels which feed into the main center channel. Only sawdust or shavings are used for bedding in the stalls so the manure does not lodge in the channels.

Gravity carries the manure to a large 5 foot sewer manhole where it enters a 2 foot pipe which slopes sharply down into their pit. Gravity carries the manure a total distance of 185 feet to the pit. There is a 15 foot slope from the floor of the barn to the bottom of the pit. The manure is emptied via a drain pipe at a level lower than the pit.

Eberly cited only two problems thus far with this system. Because of the dry weather and the excellent ventilation in the barn, water has had to be added in the channels to facilitate the manure's flow. Also, due to a methane gas buildup, the lid of the drain pipe has been blow off once.

Robert Hotchkiss, Franklin County Soil Conservation Service, stated that due to their location in limestone soil, the Eberlys had to line their pit with clay. Their pit is designed with a 240 day storage capacity based on 6,500 tons of manure from 200 cows and 100



The Eberlys family hosted this year's Dairy Open House in Franklin County. They have made considerable expansions to their dairy operation in the past 14 months. Pictured here (left), Twila and Darrell Eberly with their son Dallas; Lynn and Sue Eberly with daughters Stephanie and Dianne, Rose Eberly, and their parents Janet and Eugene Eberly.

heifers.

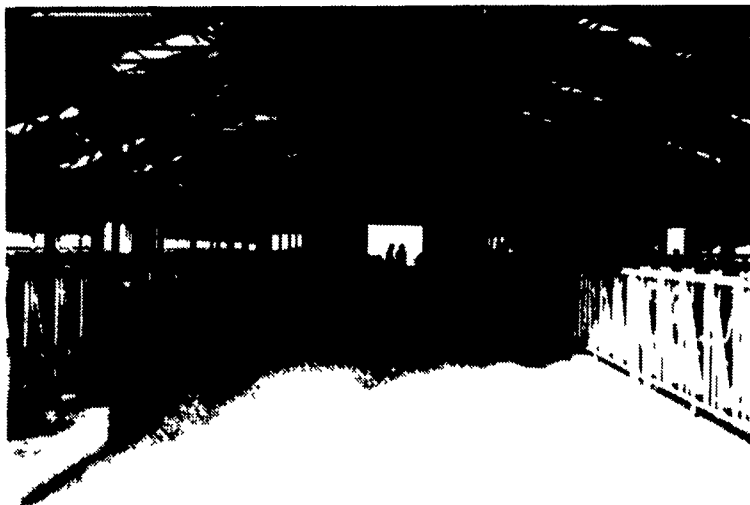
Hotchkiss also noted that the location was selected not just with the free stall building in mind, but also incorporates the heifer raising facilities and the location of Eberly's corn ground. The Soil Conservation Service is now working on a complete conservation plan with the Eberlys to determine the best cost return on their manure management dollars invested.

Graves noted that the Eberlys took an existing design and adapted it to their own situation. He stressed that any new facility must help the dairyman to be a better manager and should be tailored to his individual needs.

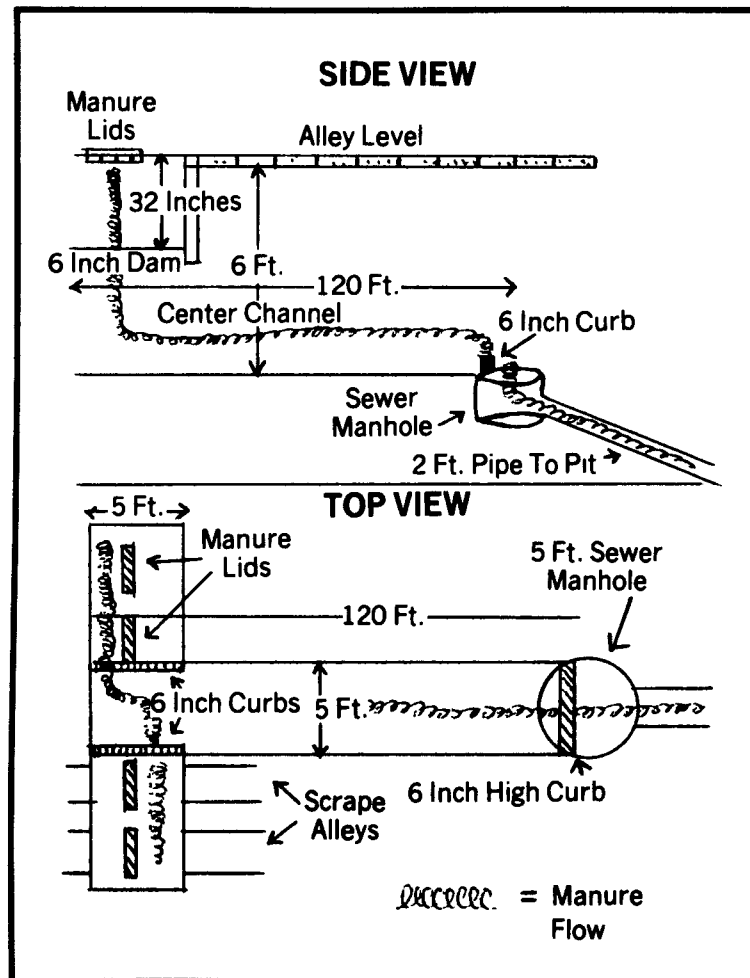
When selecting a dairy housing design, Graves stressed selecting for cow comfort and ease of cow handling.

He stated, "We lose more of our milk in the summertime to heat than we do in the winter to the cold. You want your barn to be a big sunshade in the summer. You need lots of ventilation and clean water if you want to keep those cows milking." He stressed the need for grooved floors and a turn out area to facilitate heat detection. The Eberlys have both.

When looking at heifer and calf housing, Graves noted that the



A drive through feed aisle facilitates feeding of the Eberlys milking herd in their new Penn State design free stall barn. Below the center aisle is the main channel of their gravity flow manure system which transfers manure from the barn and into their pit.



Pictured here is the Eberly's manure pit that is filled and emptied by the flow of gravity both into and out of the pit. The draped panels on the side of the barn can be raised or lowered to facilitate airflow through the barn. The rear panel that is down, is down only for display purposes.

Eberlys did a good job of taking an existing structure and adapting it to a good floor plan. Their new facilities include weaning pens and grated free stalls with self-closing headlocks at the feed area. He stressed the need to have a means of restraining heifers for treatment and breeding regardless of your herd's size.

The Eberlys' new free stall barn meets all of Graves requirements.

Excellent natural ventilation is achieved by openings at the eaves and a large ridge opening for the escape of hot air. Instead of rigid hinged side panels, their barn has large drop curtains, similar to those used on poultry houses. Any or all of the sections can be raised or lowered. The four sections allow for a variety of air flow patterns. The southern exposure is open year-round and the north curtains are raised from March to November.

Another interesting feature in this barn is the beds in the free stalls. While the stalls are a standard design, the beds are made of compact car tires set in a

clay base and covered with sawdust. This achieves the same effect as rubber mats without the cost.

Eugene notes that the installation is important and labor intensive, but the system has worked well and has been practically cost free except for the concrete work.

To make the stall beds, they first poured the stall curbs, front and back, and left them set. Next the stalls were filled with a moist clay base and sloped from front to rear.

The tires were then set into the clay base. Eberly advises slitting the bottom side of the tire and collapsing it to avoid water pooling in it. More moist clay was added around and inside the tire to within 2 inches of the top of the tire. Then, the tires and clay were covered with sawdust. The Eberlys used 900 tires in their 150 stalls.

The event hosted by the Eberly family, was organized by a cooperative effort between the Franklin County Cooperative Extension Service and the Franklin County Soil Conservation Service