

Underground manure pumping gaining favor



A manure pumping unit such as this one is taking on manure handling chores at more and more farms across the country. The one above was recently installed at the Maplehofe dairy farm near Quarryville.

By CARLTON D. STODDARD

Pumping solid manure underground to a remote storage reservoir makes good sanitation sense, dairyman-veterinarian Dr. John A. Mehling believes. One such system was recently installed at the Maplehofe dairy farm, south of Quarryville in Lancaster County.

Flushing manure with thousands of gallons of water into a lagoon, daily spreading on top of the ground, or stacking manure in a pile, will be obsolete and unacceptable methods of manure disposal in the future, he predicts.

Mehling recognized that the new underground pumping system offers possibilities of improved manure management. He journeyed to Minnesota for a firsthand look at new solid piston manure pump installations where flies and odors have virtually vanished.

Vivid in Mehling's mind were reports warning of cattle and hog deaths from asphyxiation by fumes from liquid manure pits. He shared the concern of agricultural engineers Dr. Richard Guest at Cornell University and Dr. A. Roger Grout at Pennsylvania State University that agitation of liquid manure pits can stir up lethal gas endangering herd owners and animals alike.

Reports of methane gas explosions and suffocation from hydrogen sulfide generated in liquid manure pits under slat floors were well known to Mehling. He preferred a solid manure system for his own registered Holstein dairy

herd near Van Etten, New York.

Liquid manure systems with daily or hourly flushing require large amounts of water, and multiply tonnage to be hauled and spread, Mehling noted. Water is a resource which must be preserved and husbanded like the valuable nutrients in manure itself, he insists.

Mehling is unusually qualified to evaluate new ideas in manure management. He was student herdsman of the Ohio State University dairy herd, and obtained Ohio State degrees in both dairy science and veterinary medicine.

Mehling's new solid piston pump manure system is a model of efficiency. Conventional manure gutter conveyors empty into a horizontal hydraulic pump with 10½" inch diameter piston. Reciprocating with a long slow stroke like a Corliss steam engine, the big plunger compresses heavily bedded manure and impels it underground through a 12-

inch diameter high strength polyvinyl pipe to a remote 40 by 90 foot manure storage reservoir located a safe distance from the dairy barn.

Mehling elected the large solid piston pump in preference to hollow piston pumps which are intended to handle only semi-solid or slurry manure without bedding.

About six bales of straw a day are used for bedding, which helps to form a heavily matted crust on the manure surface in the storage.

Manure from the underground pipe ejects upward into the storage from the bottom, unlike manure stackers which add a layer daily on top of a pile, exposing the fresh manure to flies, and releasing odors.

Thick dry crust on the stored manure helps prevent pupation of fly larvae, seals in odors, and insulates against extremes of temperature. Hot summer sun can drive off fertile nutrients. Heat can

overaccelerate bacterial action in manure and decimate nutrients the way it deteriorates silage or wet grain. Winter cold can freeze manure rock solid and delay hauling in spring past planting time.

Mehling planned the manure reservoir with a concrete floor which slopes from ground level to eight feet depth at the far end,

serving as a ramp for easy entrance. A regular tractor hydraulic scoop loader and conventional manure spreader can be driven down the ramp floor into the storage.

Immediately after it is hauled to the field, manure is plowed under to seal nutrients in the soil and prevent run off.

One man on the tractor

plow and one man on the spreader work as a team. Mehling agrees wholeheartedly with Cornell University extension agronomist Dr. Stu Klausner that plowing manure under immediately is a must.

Diversion terraces were constructed to prevent barnyard run off water from entering the manure

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