

## Poultry manure: economical nitrogen source for corn

NEWARK, Del. — Farming on the Delmarva peninsula is dominated by corn, soybeans and small grains for use by local poultry producers. This cropping system is a classic example of resource recycling, since much of the nitrogen required for these grains comes from the manure which is an industry by-product. In Delaware alone nearly 250,000 tons of poultry manure is generated each year.

Ideally, the system should be virtually self-contained. But for this to happen, farmers must know how to calculate the fertilizer value—especially nitrogen—of the manure they spread on cropland. This enables them to use it more efficiently, reducing the need for additional N from other sources. The result? Lower production costs without sacrificing yield.

Given the nature of many Delmarva soils (sandy and thus easily leached) and the climate (plentiful rain), poultry manure must also be managed so that shallow groundwater supplies are protected from excessive nitrate leaching.

Dr. J. Thomas Sims, a soil scientist at the University of Delaware Agricultural Experiment Station, has completed a three-year field study aimed at

developing a management program for the efficient agronomic use of poultry manure in conventional and no-tillage corn production. The project was supported in part by a grant from Delmarva Poultry Industry, Inc. (DPI).

Sims' findings indicate that by adopting the management practices he used, farmers should be able to optimize yields and minimize N losses when using poultry manure and so increase their returns without sacrificing yields. In the process, they would maintain groundwater quality. Sims reported on this research during the national meeting of the American Society of Agronomy December 1-5 in Chicago.


His project compared the effects of poultry manure and fertilizer N applied at four rates in the production of irrigated corn, using both conventional and no-tillage methods. His findings suggest that it is possible to attain equivalent yields with poultry manure while reducing nitrate leaching.

Since Delaware farmers no-till much of their corn acreage, Sims looked closely at the effect of poultry manure versus commercial fertilizer (ammonium nitrate) on no-till yields. He found

that when poultry manure was used in a no-tillage system, the three-year yield average was about 80 percent of that obtained with conventional tillage, though no-till applied manure in some cases gave greater yields. This suggests that corn farmers should encounter no major problems from surface applications of poultry manure.


The soil scientist found no significant differences in early whole plant N, ear leaf N or N uptake when using poultry manure instead of ammonium nitrate. In fact, he found a close relationship between ear leaf N from both sources.

Inorganic nitrogen levels were consistently higher in ammonium nitrate treated plots at all sampling dates. Tillage methods had no effect on soil N when poultry manure was used, but no-till treatments which received ammonium nitrate had greater levels of inorganic N at the June and July sampling dates. According to Sims, nitrogen leached below 24 inches by June 4 may be unavailable to corn plants later in the season, a fact which could reduce yields. He found no excessive levels of inorganic N in plots receiving poultry manure at any of the application rates used.



# Forest On Fowl

by  
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### Poultry Farm Biosecurity

Biosecurity is a term which is frequently used in conversations or discussions of poultry health. Although the definition of biosecurity may vary from person to person, in general biosecurity is a disease prevention program. It is an active program consisting of specific steps or actions taken to prevent poultry flocks from being exposed to diseases caused by biological organisms. Poultry diseases are not caused by spontaneous generation; therefore one step in disease control is to reduce the risk of exposure.

The following are procedures that the poultry producer should follow to reduce the poultry disease risk.

1. Screen wild birds out of all poultry houses. Care must be taken to use wire which will prevent wild birds from gaining entry to the building but not adversely affect the ventilation.
2. Sweep up and dispose of spilled feed at the feed bins. This not only reduces birds on the farm, but also reduces an attraction for rats and mice.
3. Lock poultry houses and secure premise entry gates. If the drive to the poultry house does not have an entry gate, evaluate the installation of one to control vehicle traffic.
4. Stop all service and delivery personnel and visitors at entry gates.
5. Restrict visitors. Permit only essential personnel on your farm and then control or monitor their movements.
6. Require visitors to sign a logbook indicating the date and time of visit. A visitor should be considered as anyone who is not a

member of the family or an employee.

7. Allow only cleaned and disinfected live-haul trucks and crates on your premises.

8. Make sure that cars, farm vehicles and equipment have been cleaned and disinfected before allowing them on your farm.

9. Provide sanitized disposable outerwear, headgear and rubber slipover boots for essential, authorized individuals who visit your farm.

10. Use only service crews (feed delivery, egg pick-up and other operations) who follow strict sanitary standards.

11. Wash and disinfect poultry equipment, egg flats and related items that come onto your farm.

12. No pet birds or chickens at home should be a condition of employment.

13. Remember that family members can inadvertently come in contact with other poultry or wild birds. Therefore family members should avoid wearing street clothes into the poultry house.

14. Family members who engage in hunting activities should prevent any contact between the clothing used during hunting and those worn in the poultry operation.

Remember, the purpose of a biosecurity program is to protect your livelihood and investment. You should not be intimidated if this program causes some inconvenience for individuals. Likewise you should not be apologetic to or make exception for individuals who are offended by action you initiate to protect your source of income.



Ohio Feedlot, the largest facility of its type in the state, feeds an average of 7,000 head.

## Ohio Feedlot fattens steers on manure ration

BY DEBBIE STILES-RENZI  
Staff Correspondent

SOUTH CHARLESTON, OH. — Manure disposal's a problem. High feed costs are a problem, especially pitted against low cattle prices. Impeded growing/fattening rates due to poor ventilation is a problem. Feedlot operators and their consignors have the proverbial deck stacked against them before the cattle are even put on feed.

But there's at least one feedlot operator who thinks he's got all these problems licked, and he answers how with just one word: FermWay.

Dr. William Hackett, DVM, says he's developed a process by which he can efficiently break down and use the huge quantities of manure produced at his 9,000-head capacity Ohio Feedlot (the lot's name, as well as the state where it's located).

The process, which he calls biofermentation, is a way of turning manure and bedding materials into FermWay, a substance Hackett claims can be used as a feed ration ingredient, a bedding material, or fertilizer. Hackett's presently feeding it and bedding his cattle with it.

How does it work?

"We depend on the aerobic bacteria," says George Berkhofer, a technician at Ohio Feedlot. According to Berkhofer, naturally occurring bacteria go into action and cause stockpiled manure and bedding to decompose into a dry, crumbly, odor-free product. They've been composting up to 700 tons a week. And all they add is air.

"We monitor it (the stored manure) constantly, for airflow and temperature," adds Berkhofer. "We rototill it, then put it through a spreader."

The temperature in the 12 processing units used nears 180 degrees during the decomposition process, thereby killing weed seeds and pathogens. Moisture levels, both before and during the composting, are kept at 45 to 50 percent so that decomposition is fast—four to seven days—and disagreeable odors minimized.

Once they've broken down the manure and sawdust-bedding material into a substance resembling garden compost, the folks at Ohio Feedlot mix it with corn gluten and feed up to an average of 7,000 head with it, in lieu of silage. Gary Hummel manages

Ohio Feedlot for Dr. Hackett, and he's sold on their method and choice of feed. Maybe because of the gains they're making with composted manure/gluten.

"Three-and-a-half pounds average daily gain on steers," he relates. "Two-and three-quarters to three pounds for heifers."

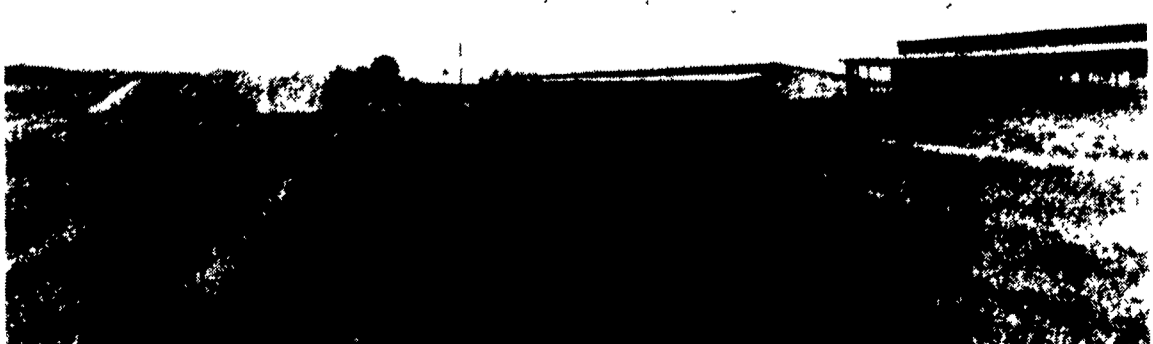
The cattle come in weighing 650 to 850 pounds. They're pre-conditioned by Ohio Feedlot's all-female crew (management

believes women are better with cattle), and then placed in pens which make up the two groups of four buildings connected with a cross-alley.

These quarter-mile-length barns were designed like the wings of an airplane for better air circulation. They were situated a particular way and placed a certain distance apart to permit maximum airflow between pens. These factors, combined with bedding made up of the FermWay product plus bark

and sawdust, result in good ventilation. Another problem solved.

Hummel says at Ohio Feedlot they feed custom, primarily, and they don't charge a yardage fee. Instead, they assess a \$3 per head handling fee, and then place a 10 percent mark-up on feed, as fed. This brings feed costs to 48 cents to 52 cents per lb., which apparently suits cattle consignors, as they've been pretty well filling up Ohio's largest feedlot with cattle year-round.



Manure is processed into a feed ration at Ohio Feedlot.