

Stream Bank Fencing Project Reaches Milestone

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WHITE HORSE (Lancaster Co.) — "Approximately 1,500 head of cattle are now not in the stream," said Dick Duncan, director of the state Soil Conservation Service during a ceremony commemorating the completion of 100 miles of stream bank fencing here at the James E. Kauffman farm.

Last week's ceremony, which included embedding the "golden post" marking a milestone in the cooperative efforts by the Pennsylvania Game Commission and the Department of Environmental Resources (DER), was attended by many representing the associates involved in the "Within Pasture Stream Bank Fencing" program.

The program, according to a release put out by the Game Commission, provides an inexpensive way to improve nutrient management and vastly reduce sediment loading. It transforms "hoof-rod-den banks into outstanding wildlife habitat, something sorely lacking along many riparian corridors," according to the Commission.

Fencing restricts cattle access and grazing, allowing vegetation such as grasses, shrubs, and trees to become established along stream banks. The vegetation acts as a buffer between cultivated fields, pastures, and streams, trapping sediment and pesticides and absorbing excess nutrients before they can enter the water, according to the Commission.

"It's a very simple, basic idea," said Peter S. Duncan, Game Commission executive director. "You are really putting a single strand of wire along the banks of streams in order to keep livestock out of the streams."

Duncan praised the cooperative effort between the public and private sector, where "economics and the environment can come together and both benefit," he said.

He told the various representatives and guests that, as of 1993, 27 of 37 counties are participating in the pasture stream bank fencing

program, with more than 300 farms as project participants.

"Stream bank fencing is a very important tool that Pennsylvania is using to restore the quality of the Susquehanna River and the Chesapeake Bay by reducing nutrient and sediment flow into our streams and waterways," said Caren Glotfelty, state DER representative.

"Since 1988, we've been funding this program because we feel so strongly about its ability to impact water quality," she said. "Not many programs can offer so much for so little. To date, we have invested \$4,000 for every mile of stream bank fencing — a very small investment for the rewards reaped by the project."

Glotfelty said that by simply keeping livestock out of streams with a low-cost, low-maintenance fence, farmers have seen considerable improvement. "Their herd health improves, the streambank rejuvenates with plant life, wildlife returns to the water's edge, water levels increase, and the overall beauty returns to the area once damaged by livestock... these rewards are all accomplished within a very short amount of time."

According to the Commission, limiting livestock access to streams reduces contact with waterborne bacteria and helps reduce the risk of injury. Fencing provides the farmer with control over where cattle graze, leading to a more productive pasture management system.

Glotfelty announced the department's "enhanced plans" for the program, including developing a complementary program to the project.

"Beginning in October, our new program will further increase the amount," she said, to 1,700 miles of stream bank fencing in the state by the year 2000.

George Miller, president of the Game Commission, said, "Wildlife need food cover, they need shelter cover, and they need travel cover," he said. "And certainly this stream bank fencing will provide that."

reducing the nitrogen concentration in poultry manure fall into four main categories, including better feed formulation, lower protein diets, using feed additives, and manure management.

Better feed formulation can include having a better handle on the protein and amino acid concentration of feed ingredients so as not to oversupply dietary protein leading to greater deposition of nitrogen in the manure. Variability of ingredient nutrients can be a problem and push nutritionists to apply a margin of safety to meet the bird's requirements.

This can be a problem with by-product meals such as meat meal and bakery by-products. As an example, the amino acid concentration can vary by as much as 8-45 percent (coefficient of variation) in meat meals supplied by some renderers, whereas others may vary by as little as 2-8 percent. In fact, today we have the ability to actually formulate for the bird's requirements based on true amino acid availability rather than total amino acid concentration, thereby better meeting the bird's requirements and not overfeeding protein and amino acids.

Phase feeding is another technique that can reduce the amount of manure nitrogen. While not new to the poultry industry, this technique of breaking the requirements



Last week's ceremony included embedding the "golden post" marking a milestone in the cooperative efforts by the Pennsylvania Game Commission and the Department of Environmental Resources (DER). From left, Rep. Arthur D. Hershey (R-Cochranville); Sen. Noah Wenger (R-Stevens); George Miller, Game Commission president; Peter Duncan, Game Commission executive director; James Kauffman; and Ag Fence representative Leroy Zimmerman.



Several cooperative agencies and state representatives spoke during a ceremony commemorating the completion of 100 miles of stream bank fencing last week at the James E. Kauffman farm. From left, at podium, Peter Duncan, Game Commission executive director; James Kauffman; Sen. Noah Wenger (R-Stevens); Rep. Arthur D. Hershey (R-Cochranville); Dick Duncan, state SCS director; George Miller, Game Commission president; and Caren Glotfelty, state DER representative.

Poultry Pointers

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house. On a dry matter basis, it averages 5.5 percent nitrogen, 8.1 percent P₂O₅, 4.5 percent K₂O, 16.3 percent calcium, and 1.2 percent magnesium. Broiler litter contains about 24.7 percent moisture with 4.4 percent nitrogen, 4.0 percent P₂O₅, and 2.9 percent K₂O on a dry matter basis.

Laying hens tend to be smaller than they were 15 or 20 years ago. They lay more eggs on less feed and consequently produce less manure. Meat type birds are not any smaller today but they are more efficient with a pound of feed, producing less manure per pound of gain than years gone by.

Despite the positive trends in manure utilization and reduced volumes per bird from previous generations, there may come a time when poultry producers will actually manage their birds to minimize manure and nutrient production so as to reduce the load on the environment.

Along these lines, there are strategies to reduce the deposition of nitrogen and phosphorus in poultry manure. Strategies for

of growing and laying birds into phases of greater or lesser need for protein and amino acids is now being adopted by the swine industry.

Formulations based on amino acid requirements rather than crude protein can minimize fecal nitrogen by reducing dietary protein. Similarly, feeding synthetic amino acids in place of protein can reduce fecal nitrogen as well. Recent studies by researchers at Cornell University have shown that substitutions of the amino acids methionine, lysine, tryptophan, and isoleucine for as much as 4 percent crude protein significantly reduces protein intake while maintaining egg production and egg weight. Scientists at Georgia have shown that additions of methionine and lysine to layer diets can reduce the protein from 18 to 16 percent and reduce the costs by more than \$4/ton. Apparently, these are cost-effective measures that can be adopted today.

Feed additives that have some potential include enzymes such as hemicellulases, beta-glucanases, and others that free up the carbohy-

drate portion of cereal grains and allow for better digestion and utilization of carbohydrates as well as protein components. This can lead to as much as a 20 percent reduction in fecal volume and nitrogen excretion. Other additives made from the yucca plant can bind ammonia and other noxious gases and prevent their contamination of the air by holding them in the manure for utilization by plants in a fertilizer application.

Lastly, management techniques such as keeping the manure free of water coming from leaking cups or watering systems can reduce gaseous ammonia emissions and prevent leaching of nutrients from the manure. Good ventilation in the manure pit can assist in drying manure and thus better hold nitrogen that might otherwise escape.

Composting manure can allow for the growth of good bacteria and fungi that hold manure nitrogen in a stable form that won't escape as readily as ammonia or leach away from the manure pile. The heat generated during composting (110-140 F) allows for further manure drying. Each of the above procedures will help better manage

manure nitrogen, thereby minimizing environmental contamination.

Strategies for minimizing phosphorus levels in manure are numerous, but a major impact can be made by selecting ingredients with the best utilization. Phytate phosphorus found in many cereal grains is a form that is not well absorbed by the bird. The phosphorus in corn and grain sorghum for example are only 19 and 22 percent bioavailable because of the large phytate phosphorus content. Compared with the phosphorus in meat meal and fish meal, which are 81 and almost 100 percent bioavailable, cereals can contribute to manure phosphorus.

Calcium added to the diets of broilers and laying hens as well as the calcium bound in monocalcium and dicalcium phosphates can reduce the utilization of phosphorus and result in passage through the bird's digestive system. For example, the phosphorus in monocalcium phosphate has a biological value of 120-135, whereas dicalcium phosphate is only 95-100 bioavailable. So high

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