
Environmental Policies for a Sustainable Poultry Industry in Sussex County, Delaware

Lynette Ward, DWRC 2000-2003 Fellow
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Photo by Danielle Quigley

Delaware's poultry industry plays a vital role in the state's agricultural economy. However, in recent years, concerns have increased about the potential impacts of land application of poultry manures generated by this industry on ground and surface water quality in southern Delaware. Economically viable alternatives to application of poultry manures to agricultural cropland are now being sought. **DWRC** graduate fellow Lynette Ward's research has focused on the development of "Environmental Policies for a Sustainable Poultry Industry in Sussex County, Delaware." Ward has evaluated several recent ideas for ways to improve the efficiency of manure management, in terms of their economic feasibility and practical effectiveness, such as the use of low phytate (high available P) corn and phytase enzymes in poultry rations, bioenergy production using manure as a renewable fuel source, composting or pelletizing manures for transport to other areas for use as a fertilizer for agronomic, vegetable, and horticultural crops, and use as a cattle feed supplement.



*Lynette Ward modeling
Sussex County industries*

Ward conducted her economic analysis using IMPLAN, a PC-based software system designed to create regional models. IMPLAN assisted in Ward's economic analysis of the alternative uses for poultry litter, and in her ability to measure the economic and social impacts of any changes needed to ensure a sustainable poultry industry in Sussex County in terms of factors such as revenue, tax issues, environmental regulatory compliance costs, impact on tourism revenues, and jobs created.

"In the first phase of my research, my advisors Dr. William Ritter, Dr. John Byrne and Dr. Young-Doo Wang suggested approaches for analyzing the technical feasibility of the alternative strategies. I searched the literature and internet, finding the work

of industry experts there or at technical conferences. For example, power companies and engineering firms which had already implemented existing biogas facilities provided useful data on which to base a model for Sussex County," Ward explains. "In the second phase, I added new findings about each option to the base information in IMPLAN. Now it was possible to extrapolate figures from existing use of these strategies to match Sussex County's manure production characteristics over a given time period and predict production costs and revenues. Some of the more promising options included composting, pelletizing, and improving nutrient use efficiency by modifying animal diets to reduce phosphorus excretion."

Ward, who on May 6th successfully defended her PhD thesis based on this research, says of her **DWRC** fellowship experience, "Working directly with Dr. Ritter, who has been a knowledgeable and personable mentor, was the educational highlight of my four-year PhD experience. I am deeply indebted to the **DWRC** for funding my research through this fellowship." Ward has received a contract to work in Pennsylvania for the Environmental Defense Fund as a livestock manure consultant studying agricultural nutrient management for watershed planning.

For more information on this project, contact Lynette Ward at lward@udel.edu, or her advisors by email at william.ritter@udel.edu, jbyrne@udel.edu, or youngdoo@udel.edu.

2003 DWRC Annual Meeting and Undergraduate Interns Poster Session

The 17-member **DWRC** Advisory Panel convened for lunch and their annual meeting on the UD campus April 25th. **DWRC** Director Tom Sims described the Center's plans for 2003 research and public education through WATER NEWS and our web presence. The panel discussed ways to enlist community support for research and training of new water scientists.

Following the lunch meeting, the **DWRC**'s six 2002 undergraduate interns presented posters of their project findings with their advisors at an informal session sponsored by the University of Delaware's Undergraduate Research Program to a crowd of nearly 500 visitors.