

Conservation Innovation Grant Project Description: National Fish and Wildlife Foundation

Using Excess Manure to Generate Farm Income in the Chesapeake's Phosphorus Hotspots

1. Background

Project Overview

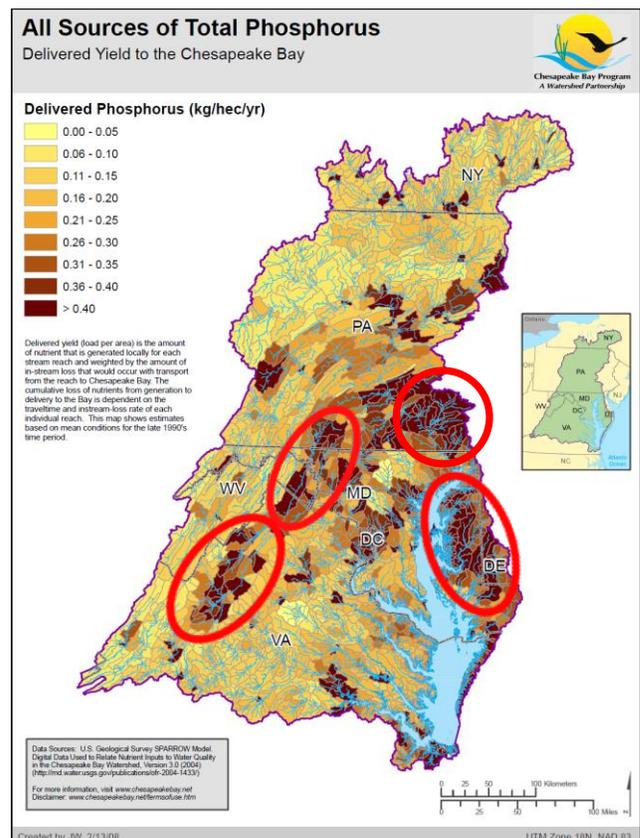
Over 40 percent of the nutrient loadings to the Chesapeake Bay come from agriculture and half of these nutrients come from animal manure. With 4,600 poultry houses on the Delmarva Peninsula alone, finding better solutions for managing manure in the Chesapeake Bay watershed is paramount.

This project will reduce excess land application of manure in four of the Chesapeake's "phosphorus hot spots" by accelerating adoption of innovative manure-to-energy technologies and the creation of marketable fertilizer products that generate farm income. Anticipated outcomes include: an annual reduction of 3280 tons of land-applied manure, an annual reduction of 100,800 pounds of phosphorus runoff, and an annual reduction of 200,000 pounds of nitrogen runoff. NFWF and the Chesapeake Bay Funders Network will launch a new Manure Initiative in partnership with the University of Maryland Center for Environmental Science, Farm Pilot Project Coordination, Virginia Cooperative Extension, the Lancaster County Conservation District, and the University of Maryland Environmental Finance Center. The Initiative will close the knowledge gap regarding viable manure-to-energy technologies, provide direct assistance to farmers and agricultural communities in identifying technologies that best meet their needs, and will facilitate grant funding and financing to design and implement four new manure-to-energy projects that are cost-effective both at producing energy *AND* reducing nutrient pollution to the Chesapeake Bay. The Initiative will be coordinated with state NRCS management teams and program specialists, investors, farmers, non-governmental organizations, and academic institutions.

While on-farm digesters are relatively widespread across the country and large-scale incineration plants have been built in Europe and Minnesota, adoption of innovative technologies that effectively produce energy for on-farm use or re-sale while also moving nutrients off-farm, have only come online recently. Results to date have identified both promising candidates for scale-up and important considerations for next generation deployment.

This project will provide an independent vetting and verification process to assist farmers and agricultural communities to navigate the barrage of salesmen and hyperbole, and the dearth of unbiased information about the real performance, and ultimate potential of these technologies.

The Manure Initiative directly supports the Obama Administration's strategy for restoring the Chesapeake Bay that was adopted in May 2010. More specifically, the initiative will aid USDA/NRCS in its goal to implement new conservation practices on four million acres in the Chesapeake watershed by 2025 by targeting funding to the places and practices that are most effective in reducing nutrient runoff.



The Manure-to-Energy Knowledge Gap

Based on the growth in demand for grants to support manure-to-energy technologies, in 2010 the Keith Campbell

<p>Chesapeake Bay Funders Network Agriculture Workgroup</p> <p>The Agua Fund Blue Moon Fund Bunting Family Foundation Chesapeake Bay Trust Degenstein Foundation Foundation for Pennsylvania Watersheds Keith Campbell Foundation MARPAT Curtis and Edith Munson Foundation National Fish and Wildlife Foundation Oak Hill Fund Prince Charitable Trust Town Creek Foundation Virginia Environmental Endowment Wallace Genetics Foundation</p>

Foundation funded an assessment of the various emerging technologies and markets that can transform manure nutrients into value-added products. The resulting report concluded that land application of manure and litter to support crop production is the most cost-effective method to manage manure; however, in the Chesapeake Bay watershed, the shrinking agricultural land base and the concentration of animal agriculture has caused a build-up of phosphorus in soils. Faced with new requirements for phosphorus management, farmers will increasingly need to find alternative uses for manure. This approach strengthens the collaboration between funding entities and aligns the technical and management resources to better support infrastructure for a focused effort. It builds on knowledge previously gained from partial demonstrations and embraces marketable byproducts within the manure-to-energy scope. Successful project demonstrations in key hot spots will multiply the impact and reinforce the value of nutrient capture in farm economics and environmental terms.

The report also found that manure-to-energy technologies are being marketed to farmers, but do not offer complete solutions to the challenges posed by excess manure. Examples of incomplete solutions include:

- Some farm-scale technologies that are excellent at producing energy, but leave a nutrient-rich byproduct that still must be managed by the farmer.
- Other technologies that produce energy and a fertilizer byproduct, but leave farmers to develop their own fertilizer markets to an entirely new set of clients (e.g., landscapers, garden retailers, etc.).
- Still other technologies that generate electrical energy for sale back to “the grid”, but in the absence of net metering, may not realize enough profit to justify the investment.
- Some technologies do not scale downward and are more appropriately deployed on a larger regional scale, but these technologies miss the opportunity to provide benefits on-farm, like heat energy to offset propane costs and electricity, which can be 20% of a broiler producer’s gross income.

The overarching goals of the Manure Initiative are fivefold: 1) reduce the land application of manure in the Chesapeake Bay’s nutrient hotspots, 2) displace imported fertilizer products with products derived from locally grown manure, 3) reduce phosphorus and nitrogen runoff to the Chesapeake Bay and its tributaries, 4) increase the viability of sustainable agriculture by transforming a manure liability into a farm asset, and 5) increase private financing of manure-to-energy technologies in the region. These goals will be achieved by helping farmers and agricultural communities make more informed decisions about which alternative manure use technologies make the most conservation and economic sense to meet their needs. Progress toward these goals will be measured by the following indicators:

Reduction in tons of land-applied manure	# of farmers engaged in adopting innovative alternative use technologies
Dollar value of fertilizer byproducts sold off-farm	# of website hits to Clearinghouse
Reduction in pounds of phosphorus runoff	# of calls from farmers and providers to Clearinghouse
Reduction in pounds of nitrogen runoff	# of states adoption cost-share standards for new manure-to-energy technologies
Average % increase in net farm revenue	# of private investors participating in project
	% increase in dollars invested by CBFN members