

Conservation Innovation Grants Project Final Report

Grantee Name: NC Division of Soil and Water Conservation

Project Title: Innovative Animal Mortality Management

Project End Date: September 28, 2011

Summarize the work performed during the project:

Implementation of Innovative Mortality Management Systems:

The Division of Soil and Water Conservation worked with eleven (11) EQIP eligible producers in North Carolina to demonstrate innovative mortality systems through the course of this project. Three different types of innovative technologies were implemented: forced air composter (3 systems installed); Biovator rotary composter (2 systems installed); and Gasification (6 systems installed). Nine of the producers who participated in the project were poultry growers, and two were swine producers. \$153,000 of CIG funds were applied to support implementation of these systems, and these funds were matched by \$298,793 of state cost share funds and \$176,809 of cooperator funds.

Figures 1 and 2 are photographs of the completed forced air composter and dry stack on the Dale White Farm. It is very apparent that the composter is capable of reaching and sustaining temperatures for effective pathogen kill.

Figure 3 is a photograph of the Biovator rotary drum composter on the Henry Moore Farm, and Figure 4 is a photograph showing a gasification system and freezer for a small poultry operation similar to those installed under this project.

Five Producer Workshops Held

The Division partnered with technology providers and local soil and water conservation districts to hold five mortality management workshops across the state. The locations and subject of the field days are shown in Table 1 below.

Table 1: Producer Workshops Dates and Locations

Workshop Location	Date	Sponsors	Technologies Shown	Estimated Number of Attendees
White Farm – Alexander County	January 8, 2010	Advanced Composting Technologies, Alexander SWCD, NRCS	Forced air composter	30
Dennis Raynor Farm – Johnston County	January 12, 2010	Advanced Composting Technologies, Johnston SWCD, NRCS	Forced air composter	25
Lacy Cummings Farm – Robeson County	January 13, 2010	Advanced Composting Technologies, Robeson SWCD, NRCS	Forced air composter	25
Julian Barham Farm – Johnston County	May 25, 2010	NC Cooperative Extension Service	Biovator Rotary composter	35
Multiple Farms – Wayne County		Wayne SWCD, DSWC	Biovator Rotary composter, Forced Air composter	



Figure 1: Completed forced air composter on the Dale White Farm before it was used.



Figure 2: Dale White Farm composter being loaded.



Figure 3: Biovator rotary composters on the Henry Moore Farm.



Figure 4: 400 lb. Gasification System with mortality freezer.

Figure 5 is a photograph from the field day on the White Farm.



Figure 5: Producer field day at the White Farm in Alexander County.

Division staff also participated in a farm field day on May 25, 2010 at the Julian Barham Farm where one of the Biovator composters has been installed. The Biovator was featured on the farm tour. Approximately 35 people participated in the field day. Forced air composters were also discussed on the field day as another innovative alternative to traditional mortality management systems (incineration and burial).

Describe significant results, accomplishments, and lessons learned. Compare actual accomplishments to the project goals in your proposal:

The initial plan for this project was to install mortality gasification systems for managing swine mortalities. However, shortly following the beginning of the project, we began to hear some concerns about the fuel efficiency of the gasification systems. In November 2007, the Division saw a demonstration about the Biovator technology, and it was approached by some farmers about implementing this technology. This technology offers the advantage of not requiring a significant quantity of fuel to treat the mortalities. The Henry Moore Farm and the Julian Barham Farm are very pleased with the results of the Biovator, thus far.

We also planned to demonstrate forced aeration composters for swine operations. However forced aeration composters have now been installed on several swine farms in North Carolina, so the innovative aspect of the traditional application this technology has diminished. The traditional application involves constructing the bins and floor in-place, which is quite expensive. We worked with Advanced Composting Technologies, Inc., to demonstrate the technology using a pre-fabricated construction approach, which should result in a significant reduction in cost of the systems. The initial pre-fab construction approach was successful for this application, but the company developed some other modifications that will help to further lower the costs and customer satisfaction with the pre-fab construction approach. The company is already making plans to scale up pre-fab approach for application on swine operations.

Biomass Marketing Systems, the supplier for the gasification systems, has been working with farmers where their systems have been installed to modify their hearth grates to improve the fuel efficiency. Some improvement in efficiency has resulted, but work continues. The company has also made some modifications to some of its larger freezer units to make it easier to insert and remove mortalities.

The Division also planned to install a forced aeration compost system on a beef or dairy operation. However, we learned that the NC State Veterinarian would not be willing to grant a permit for a cattle composting operation due to the inability of the composting operation to reach the high temperatures necessary to destroy Bovine Spongiform Encephalopathy (BSE) prions.

We switched our focus more toward gasification systems for managing cattle mortalities, but the cost of the systems and of fuel has made this option unattractive..

We plan to approach a poultry farmer who is interested in trying out another rotary composting system for poultry, the Ecodrum system. Several farmers have approached local soil and water conservation districts about trying this system.

Potential for Transferability of Results

The technologies demonstrated in this CIG grant project have high potential for transferability. Both forced air composters and mortality gasification systems have been added to the North Carolina Agriculture Cost Share Program, and the forced air composters are also eligible for funding in North Carolina through the state EQIP program.

Conclusions

The Innovative Mortality Management project has been a very successful project. Innovative systems were installed on eleven farms through the project, and several field days were held to share the technologies with other interested producers. The Division continues to promote innovative mortality management technologies, and is offering a special state cost share allocation to innovative poultry mortality management systems at present.

The only disappointment was that we were unable to implement a demonstration project for a cattle/dairy operation due to concerns about fuel prices for gasification systems and bovine spongiform encephalopathy for composting systems.

The Division is extremely grateful to USDA-NRCS for awarding the grant to support the project, and hopes to cooperate again in the future on similar innovative projects.