

Title:	Emergency and Routine Mortality Management		
Sponsoring Agency	NIFA	Project Status	COMPLETE
Funding Source	Hatch	Reporting Frequency	Annual
Accession No.	227691	Project No.	NYC-125431
Project Start Date	10/01/2011	Project End Date	09/30/2014
Reporting Period Start Date	10/01/2011	Reporting Period End Date	09/30/2014
Submitted By		Date Submitted to NIFA	

Project Director

Jean Bonhotal
000-000-0000
jb29@cornell.edu

Recipient Organization

SAES - CORNELL UNIVERSITY
121 SECOND ST RM 1
ORISKANY, NEW YORK 13424-3921
DUNS No. 002254837

Performing Department

Crop & Soil Sciences

Non-Technical Summary

Following unexpected animal losses, producers need to consider all available management options, associated costs and environmental effects of mortality disposal. This calls for planning, coordination, networking, development of educational tools and establishing relationships with those who need help and those who are there to assist. Access to current information on disposal options, associated regulations, and available capacity of local service providers are important for proper disposal and disease control. NYS farmers faced over 10 disasters through fires, roof collapse, etc. this past year. In addition to animal losses, there is increased demand for disposal of recalled meat, fishery waste and liquid waste. Disposal methods need to protect ground and surface water. Passively aerated static windrow composting with strategic turning is a good method to manage these wastes and enhances biosecurity. It is simple, employs equipment used in daily operations on farms and is cost effective. This disposal method has been implemented in many places and many technical questions have been answered but there are still a few unknowns for which veterinarians, agriculture service providers and regulators want assurance. The current question is, "Are pharmaceuticals that are used to treat and euthanize livestock a risk to biosecurity and the environment" Trials are in progress to answer some of the questions, however when one is answered others surface. More investigation is needed to follow the fate of these drugs; a portion degrades and a portion may stay in the pile or leach out into soil or water. Additional mortality piles will be built with samples taken and analyses completed to determine the fate of several commonly used pharmaceuticals. Based on results from basic, applied and social science aspects of this project, guidelines for pile construction and management will be developed and incorporated into bulletins made available online through eXtension and in trainings for agency staff and industry stakeholders. To further the knowledge base and identify additional challenges in safe, economical mortality disposal practices, CWMI, APHIS and the Department of Homeland Security, along with other research institutions, will plan and coordinate a 4th international symposium. The symposium will highlight research and practice in the disposal field, facilitating discussion and planning for mortality disposal that adheres to best management practices. Extension's working relationships with agriculture, businesses, and government position is to provide information and education as well as implement solutions. Educational programs for producers and service providers, combined with web-based surveys of service providers, make it feasible to establish and update databases. Rapid access to this information needs to be available via web, email, and other methods.

Accomplishments

Major goals of the project

Goals: Help livestock farms/ranches manage animal mortality in routine and emergency situations in an economically viable, biosecure and environmentally sound manner through composting. Objectives: Work with depts of agriculture, NRCS, environmental regulators, animal and human health professionals to develop plans, connect people and guide policy decisions related to mortality and flesh waste. Improve practices that are implemented when fire, flood or barn collapse occurs to protect ground and surface water quality. Continue research on the fate of pharmaceuticals in composting and the environment. Plan and coordinate a national conference with APHIS, Homeland Security and collaborating universities to address issues pertaining to mortality disposal under routine and emergency conditions. Yr 1 Provide continued training, planning and networking to reach farmers, butchers, agriculture and health related agencies through such tools as Blackboard Connect, webinars, conferencing and on the ground demonstrations. Plan and coordinate a national conference with APHIS, Homeland Security and collaborating universities to address issues pertaining to mortality disposal under routine and

emergency conditions. Conduct research on degradation and fate of pharmaceuticals in compost, leachate and soils. Submit required reports. Yr 2 Provide continued training, planning and networking to reach farmers, butchers, agriculture and health related agencies through such tools as Blackboard Connect, webinars, conferencing and on the ground demonstrations. Conduct research on degradation and fate of veterinary pharmaceuticals in compost, leachate and soils. Combine data from parallel projects occurring in other state institutions. Work with Ag & Markets, livestock assoc. and NYSDEC to improve disposal of deadstock. Disseminate research-based information through publications, conferences and workshops. Work with 5 states to help them develop or fine tune policy. Submit required reports. Yr 3 Work with Ag & Markets, livestock assoc. and NYSDEC to improve disposal of deadstock. Evaluate implementation of practices. Demos and training to help improve implementation on farms and in other industries that have to manage mortality. Work with 5 states to help them develop or fine tune policy. Submit required reports. Ongoing and new research will answer questions to fine tune processes and ultimate disposal of the end product. Demos and training will help improve implementation on farms, and other industries that have to manage mortality. Communication infrastructure will be set up to respond to small and large disasters connecting communities down to the local response level. Regulators and farm managers will understand options and implement environmentally safe and economically feasible methods. 500 operations will improve deadstock compost methods. 15 states will work together to facilitate the exchange of information for response to natural and disease related disasters. Since borders do not prevent the spread of disease, Canadian regulators and educators are involved in this effort as well.

What was accomplished under these goals?

In the 14 events in which CWMI participated/planned, over 550 agricultural and environmental consultants, regulatory personnel, youth leaders, educators and farmers/growers received training and outreach materials on best management practices in mortality composting to pass along to their constituents, stakeholders and other educators. Training people who can then go on to train others is a cornerstone of the work that CWMI does. As a result of the disaster preparedness and response pre-conference, communication infrastructure has been set up to respond to small and large disasters connecting communities down to the local response level. Participation at the conference in Oklahoma for farmer educators and then repeating the presentations on the LPE Learning Center website is expected to disseminate best management practices to thousands of beginning farmers, high school and college students, as well as professionals. Archiving webinar materials in this type of format allows for a greater reach in educating not only those that will actually handle the mortalities, but also allows the public to understand the science behind it which in turn fosters greater acceptance. In addition to workshops, conferences and the learning module, more communities of interest are being reached through our web-based map that includes each state's mortality and butcher waste policy and is kept up-to-date so that states can collaborate and get the most reasonable and protective policy enacted. The information gleaned from this map is useful in facilitating the development of workable carcass disposal solutions that are based on the lowest risk to both people and the environment.

What opportunities for training and professional development has the project provided?

This project has developed science-based educational materials disseminated through workshops, presentations and conferences, peer-reviewed journal articles and web-based fact sheets, as well as train-the-trainer sessions and one-on-one conversations with policy makers, farmers, agricultural professionals, students and other stakeholders. Educational materials and curriculum generated from this project have reached thousands of beginning farmers, high school and college students, as well as professionals that need continuing education nationwide. Presentations, workshops and other training has been performed for Soil and Water Conservation Employees, Extension educators, agricultural consultants and others responsible for training their constituents in waste management.

How have the results been disseminated to communities of interest?

CWMI was invited to lecture in four separate Cornell University classes on the use of carbon, the science of composting and composting at Cornell and around New York State. Through these lectures, 75 college students gained knowledge on the science of mortality composting and the environmental benefits and health and safety of using this tool to manage mortalities. In November, 2013 CWMI taught a two-hour mortality and manure composting course at the 2013 Agriculture In-Service to 30 Cornell Cooperative Extension Agents. The knowledge gained and materials provided in these training sessions will transfer to farm managers and workers across the state to help them improve methods for management of routine farm mortality. CWMI presented at the Disaster Preparedness and Response pre-conference to NYSAR³'s annual recycling conference. The most effective way to manage a disaster is to be prepared before it happens, and being prepared for animal mortalities is no exception. Seventy-five regulatory and municipal personnel as well as educators and other interested parties learned about animal mortality composting in Schoharie County following Superstorm Sandy in order to be more prepared for future disasters. Fifty 4-Hers at the 4-H Winter Round Up Horse Weekend participated in a workshop on "Composting When it Comes to Horses" to understand the options available to horse owners in the event of their horse's death. Three separate workshops on mortality composting were held in Lancaster, Kingston and Nedrow, NY educating over 125 farmers, personnel from the department of transportation, soil and water conservation, department of environmental conservation and department of health, extension educators and the general public on this important technique for mortality management. CWMI was invited to present at "What Farmer Educators Need to Know about Mortality Composting", a national conference held in Langston, OK in April, 2014. CWMI presented "Quality Assurance in Mortality Composting; Mortality Composting Safety" to an audience of 50 farmer educators from across the country. This same presentation was also made into a webinar sponsored

by the Livestock and Poultry Environmental (LPE) Learning Center to an audience of educators, regulatory personnel and farmers. This webinar was recorded and is available for viewing by those interested in learning more and/or teaching about mortality composting. In July, 2014, CWMI hosted a five-day US Composting Council Compost Operator's Training Course in which 45 municipal solid waste professionals, business owners, government agency personnel and cooperative extension educators were instructed on compost operations, including mortality management. CWMI will continue to disseminate information as we have been working with Homeland Security, APHIS, IAD, the Canadian Government and 13 land grant Universities in planning the 5th International Symposium on Managing Animal Mortalities, Products, By-products, and Associated Health Risks: Connecting Research, Regulations and Responses in Lancaster, PA in 2015. This symposium is convened approximately every 2 years with 27 collaborating states, 5 Canadian provinces and 7-10 other countries. With each symposium, more information is shared and more infrastructure is built. Information gleaned at these symposiums has been instrumental in dealing with recent disasters such as floods and heavy snow storms as well as disease outbreaks such as porcine epidemic diarrhea virus (PEDV). CWMI is also helping to plan the second Waste to Worth, eXtension conference in April 2015, where many BMP's including mortality disposal will be presented.

What do you plan to do during the next reporting period to accomplish the goals?

{Nothing to report}

Participants

Actual FTE's for this Reporting Period

Role	Non-Students or faculty	Students with Staffing Roles			Computed Total by Role
		Undergraduate	Graduate	Post-Doctorate	
Scientist	0	0	0	0	0
Professional	4.4	0	0	0	4.4
Technical	3.2	0	0	0	3.2
Administrative	2.2	0	0	0	2.2
Other	0	0	0	0	0
Computed Total	9.8	0	0	0	9.8

Student Count by Classification of Instructional Programs (CIP) Code

{NO DATA ENTERED}

Target Audience

The target audiences for this project included college students, extension agents, regulatory and municipal personnel, general educators, farmer educators, farmers, 4-Hers, Soil and Water Conservation District employees as well as personnel from the departments of transportation, environmental conservation and health. The composition of our audience includes male and female, African Americans, Latino, Amish, Mennonite and many others from countries around the world. Our efforts have been delivered through formal classroom instruction, development of curriculum, workshops, extension and outreach. We have presented at conferences and have delivered information through webinars.

Products

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Other	2013	YES

Citation

Specialty Debris Management - Animal Mortality Composting in Schoharie County following Superstorm Sandy; November 12, 2013. Presentation.

Best Management Practices for Mortality Composting; November 20, 2013. Presentation.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Other	2014	YES

Citation

Composting When It Comes to Horses; February 22, 2014. Presentation.

Composting Roadkill; March 28, 2014. Presentation.

Manure and Mortality Composting; April 17-18, 2014. Presentation.

Quality Assurance in Mortality Composting, Mortality Composting Safety; April 24, 2014. Presentation.

Type	Status	Year Published	NIFA Support Acknowledged
Journal Articles	Submitted	2014	NO

Citation

Payne, J., Farris, R., Parker, G., Bonhotal, J., and Schwarz, M. Quantification of sodium pentobarbital residues from equine mortality compost piles. Submitted to Journal of Animal Science Sept. 2014.

Schwarz, M. and Bonhotal, J. The Fate of Ivermectin in Manure Composting. Submitted to the Journal of Environmental Quality, Sept. 2014.

Type	Status	Year Published	NIFA Support Acknowledged
Conference Papers and	Published	2014	NO

Citation

Schwarz, M and Bonhotal, J. Quality Assurance in Mortality Composting, Mortality Composting Safety. Proceedings from What Farmer Educators Need to Know about Mortality Composting, Langston, OK. April, 2014

Type	Status	Year Published	NIFA Support Acknowledged
Websites	Published	2014	NO

Citation

Schwarz, Mary, Reuter, Tim, Bass, Tommy, Payne, Josh. 2014. Livestock Mortality Composting – Beyond the Basics Part 2. Archived webcast on the eXtension website for the Livestock and Poultry Environmental Learning Center, available at <https://learn.extension.org/events/1683#.VH4d7MmZgV9>.

Schwarz, Mary and Bonhotal, Jean. 2014 updated. US Mortality and Butcher Waste Disposal Laws. Cornell Waste Management Institute. Interactive map updated continually at <http://compost.css.cornell.edu/mapsdisposal.html>.

Type	Status	Year Published	NIFA Support Acknowledged
Other	Published	2014	NO

Citation

Bonhotal, Jean, Schwarz, Mary and Rynk, Robert. 2014. Composting Animal Mortalities. Cornell Waste Management Institute. pg 1-23. Available at http://cwmi.css.cornell.edu/Composting_Animal_Mortalities.pdf.

Other Products

{Nothing to report}

Changes/Problems

{Nothing to report}