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Swine Carcass Compostingas Part of an Environmentally Friendly Production System

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Abstract
As a consequence of normal swine production, mortalities must be handled on a daily basis. Average death losses of 4100 kg/year (9,000 lbs/year) per 100 sows pose a significant management and disposal task for Iowa swine producers. Several methods of disposal have been used for this costly and time-consuming task.

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Introduction

As a consequence of normal swine production, mortalities must be handled on a daily basis. Average death losses of 4100 kg/year (9,000 lbs/year) per 100 sows pose a significant management and disposal task for Iowa swine producers. Several methods of disposal have been used for this costly and time-consuming task.

The most common has been rendering. In the past, rendering companies paid swine farmers for carcasses. Over time, this slight income has been transformed into a liability as rendering companies began to charge for carcass pick-up, if they were available to pick them up at all. Biosecurity concerns on swine farms also make farmers reluctant to allow a rendering vehicle to drive onto the farmstead. Other disposal methods, as cited by Glanville and Trampel (1997), included burial, disposal in landfills, and incineration. Burial is time-consuming and impractical during winter; it also poses a hazard to shallow groundwater. Landfills generally are reluctant to take dead animals. Incineration, while effective, is costly (3¢–5¢/lb carcass) and may be a source of odor complaints by neighbors.

Carcass composting has been found to offer an environmentally safe, inexpensive, year-round alternative in the poultry industry. According to Moeller (1997), composting, when properly managed, does not generate odors. It also eliminates off-farm rendering vehicles that transport mortalities along with infectious pathogens, and is relatively easy to manage. However, the traditional liquid manure systems used in swine production, unlike the solid manure system of the poultry industry, lack the low moisture manure needed to establish a properly functioning compost process. Acceptance of poultry composting grew rapidly because poultry litter was easy to use as a co-compost material; liquid manure systems do not have this ready source.

The objective of this project was to show that composting of carcasses is a good alternative and fits well with many production systems.

Methods and Materials

In spring 2000, a composter was constructed on the ISU Lauren Christian Swine Farm. This farm has a total of 450 sows in a breed-to-wean operation, plus half of the pigs are taken through nurseries located on the site. The estimate mortality rate is 50 lbs/day or approximately 9 ton/year.

According to calculations, two primary and two secondary bins, each being 10’ × 10’ × 5’ are required. Two additional bins were added for bedding storage. The bin composter was constructed of wood, using a simple shed-roof design, with six bins in one row.

Mostly corn stalks and chopped corn stalks were used. Comments by the farm manager were noted. Spent corn stalk bedding was used as co-compost.

A “virtual tour” was set up through the website www.abe.iastate.edu/pigsgone, developed by Dr. T. Glanville. The swine mortality management website earned a Blue Ribbon Award in the 2001 National Educational Aids Competition, sponsored by American Society of Agricultural Engineers.

Results and Discussion

The composter at the Lauren Christian Swine Research and Demonstration Farm used on-farm labor, lower-cost construction, and a concrete floor and apron. The cost per bin was $1,146.00, or approximately $11.50/sq foot. The most important components are the roof and all weather surface.

Because there is no truly objective way to evaluate co-compost performance, the farm manager was asked for his opinions. Corn stalks and chopped corn stalks worked well, but sometimes were too dry. The farm manager reported adding water, snow, and liquid manure to help the process. Care had to be taken to not over-wet the piles. Crop residue likely will be the preferred co-compost in Iowa.

The results of this project will help to further acceptance of swine carcass composting. Often when composting is mentioned, people without first-hand knowledge will be skeptical and make comments indicating doubt of its effectiveness. The demonstration site allows them to see, smell, and become familiar with an actual operating facility. It also allows us to gather information about management techniques, amount of co-composting to use, and the amount of carcasses/bin.

Effective composting of swine carcasses is beginning to be generally accepted. There is still some doubt that large sows will compost, but this demonstration project illustrates the process.

Rendering cost and availability also is a concern in the cattle industry. Some cattle producers improperly dispose of carcasses and foster growth of scavenger populations. They are reluctant to believe that cattle also can be composted. A future project to illustrate cattle composting would be of value.

Acknowledgments

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Figure 1. The Carcass Composter at the Lauren Christian Swine Research and Demonstration Farm, Atlantic, IA, 2000–2001.