RESEARCH ABSTRACT

ENVIRONMENT

Title: Minimizing Cost while Safely Composting Swine Mortality in Roofed and Unroofed Compost Systems – An Evaluation of Type and Amount of Amendments on the Compost Process – **NPB #97-1756**

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ABSTRACT

Proper disposal of carcasses occurring due to mortality in animal production is necessary for protection of the environment and prevention of the spread of disease organisms. Mortality disposal laws and regulations vary from state to state with regard to the legality of composting swine mortality and in many states where mortality composting is legal, restrictions on the system can limit the extensive use of the procedure by swine producers. A common restriction on mortality composting operations in many states has been the requirement that sawdust be utilized as the bulking agent in the compost operation. Because producer access to sawdust is limited in many areas of the United States, research was initiated to determine the effectiveness of alternative bulking agents on the effectiveness of the compost process.

Tests were undertaken to compare swine composting in sawdust with that in ground wheat straw and with that in ground corn stover. Initial tests were begun early in July, 1997, with two 200 kg (450 lb) sows placed in each of three 2.4x2.4x1.2 m deep (8'x8'x4') bins containing these three amendment materials (45 cm (18") of material under the carcasses). Thermocouples were placed around the carcasses to measure temperatures, and a hand held oxygen meter was attached to an insertable probe to measure oxygen levels at various locations within the bins. Early in October, 1997, the first set of bins was turned into secondary bins and a second set of three essentially identical bins was started. In all cases, the temperatures around the carcasses rose rapidly to above 60 ^{o}C and high temperatures were maintained for several weeks. Oxygen levels near and above the carcasses dropped to close to zero, but values laterally from the carcasses remained elevated suggesting good convective circulation in all materials. Leachate was observed shortly after composting began, and further leachate from the ground materials was observed when rewetting of the bins was done. Composting of these large animals was not entirely complete at turning after three months but was reasonably similar for the three materials. The results indicate that in bin compost systems with a roof, the composting process can be effectively completed using either straw or corn stover as an alternative to sawdust. The results also indicate the common recommendation of turning the compost at 90-day intervals may not be long enough for satisfactory degradation of large, mature animals and that consideration of extended composting times is necessary for large animals. Work is continuing on windrow and static pile systems to determine the effectiveness of alternative bulking agents in outdoor compost systems.