Pathogen Analysis of NYSDOT Road-killed Deer Carcass Compost Facilities

Quarterly Progress Report #5

09/01/06 – 12/31/06

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Task 1: Select Pathogens for Study – task 1 is complete

Subtask 1.1

- This subtask has been completed (see Quarterly report #1) having selected the following pathogens for study:
  - *Escherichia coli*/Fecal coliforms
  - Fecal Streptococcus/Enterococci
  - *Salmonella* spp.
  - *Mycobacterium avian paratuberculosis* (MAP)

Subtask 1.2

- This subtask has been completed.
- Reports titled "Summary of Rationale of Bacteria Studied" and "Prevalence of Pathogens in Roadkill Summary" are complete (see Quarterly report numbers 1 and 2).

Task 2: Establish Compost Piles – task 2 is complete

Subtask 2.1

- Location of sites for establishing 3 pilot demonstration piles is complete (see Quarterly Report #1).

Subtask 2.2

- Pilot piles were built in October in Watertown, Cortland and Highland, NY.
- Three replicate research piles were built in November at the Cornell University compost site
- This subtask is complete (see Quarterly Report #1).

Task 3: Investigate Pathogen Concentrations and Compost Characteristics

Subtask 3.1 – subtask 3.1 is complete

- Woods End Research Laboratory (WERL) in Maine was selected to perform the pathogen analyses.
- The Johnes laboratory at the Cornell College of Veterinary Medicine was selected to analyze the manure for *Mycobacterium avian paratuberculosis*.

Subtask 3.2

- Replicate samples of compost were sampled from the 3 pilot piles for month 12 testing, and sent to WERL for compost composition, particle size and pathogen analysis:
  - All 3 pilot pile sites were sampled on 10/16/06.
  - Holes were dug in the compost piles at 3 sites around the perimeter of the pile. Sample # 1 was taken from all 3 holes at approximately 12" into the pile, sample # 2 at 12 – 18" in, and sample # 3 at 18 – 24".

- ❖ Pathogens were analyzed on all 3 samples while compost composition and particle size were analyzed on one composite made at WERL from the 3 samples being mixed together.
- ❖ Temperature data was downloaded from Cortland only and the logger was relaunched (as the memory was full) on 10/17/06. The logger at Cortland was removed on 12/13/06, and the logger in Highland was removed on 12/14/06. The logger in Watertown was missing. DOT personnel are not sure what happened to it, but they are looking for it.

- Month 12 sampling of the 3 research piles was done on 10/9/06:
  - ❖ Replicate samples of compost were sampled for month 6 testing in the same manner as at the pilot sites, and sent to WERL for compost composition, particle size and pathogen analysis in the same manner as at the pilot piles.
  - ❖ Temperature data was downloaded from all 3 loggers and the loggers in piles 2 and 3 were removed. The logger in pile 1 was removed on 12/13/06.

Subtask 3.3

- All data collected thus far (temperature, composition and pathogen data) has been entered into Microsoft excel to be analyzed using statistical measures when all data has been collected.
- Compost pathogen and deer goo pathogen data have been analyzed statistically using ANOVA in the S-Plus operating system.
- Temperature data has been summarized to average daily temperatures and number of days above 44 and 55^{o}C have been calculated for each pile.
- Statistical analysis on all data continues

Task 4: Outreach and Guidance to Facilitate Implementation of Composting Road Kill Deer

Subtask 4.1

- Bill Davis (illustrator) has submitted graphics to CWMI for use in the DVD, 1 or 2 posters, fact sheets and guidance materials.
- The revised draft of Guidance to Address Worker Health and Safety for Biological Hazards Associated with Composting Road-Killed Deer in New York was written by Nellie Brown, Director, Workplace Health and Safety Program, Cornell University. A meeting will take place in January to discuss this draft.
- Video footage by Insights productions is continuing.
- Information about the project has been posted on the Cornell Waste Management Institute website at http://cwmi.css.cornell.edu/tirc/tirc.htm

Subtask 4.3

- Jean Bonhotal spoke at the National Carcass Disposal Symposium 2006 on December 5 in Beltsville, Maryland about the project. Her session was entitled “Pathogen Assessment of Passively Aerated Composting of Road Kill.”

- Nellie Brown also spoke at the same conference on the same day, presenting "Hazard Reduction for Workers Collecting and Composting Road-Killed Carcasses.
- A poster has been created that was displayed at the above symposium.

Task 5: Progress and Final Reports

Subtask 5.1

- Two of the three required meetings have been held (see Quarterly report numbers 1 and 2).
- A third meeting is in the planning stages to discuss the Guidance to Address Worker Health and Safety for Biological Hazards Associated with Composting Road-Killed Deer in New York draft written by Nellie Brown.

Subtask 5.2

- 4 quarterly reports have been submitted – this is the 5th.