



NEWTRIENT SNAPSHOT

Advanced Composting Technologies

Forced Air Large Animal Mortality Composting System



BUSINESS OVERVIEW

Advanced Composting Technologies (ACT) specializes in composting systems for a wide range of agricultural and organic waste applications, including livestock mortalities, food service waste, and specialty organic by-products. Developed through comprehensive research, testing, real-world installations, and close collaborations with the Natural Resources Conservation Service, this robust technology delivers applicable, cost-effective composting solutions. In addition to its proven systems, ACT provides tailored expertise and dedicated customer support to meet the specific requirements of each application.

PROJECT TECHNOLOGY OVERVIEW

ACT's composting technology utilizes forced air to accelerate the natural decomposition of livestock mortalities while decreasing the need for mixing events. Ambient air is forced through the system and calibrated to distribute the replenishment of oxygen throughout the organic material. Moisture is controlled, collected, and circulated into the compost. Aerated piles are used for primary composting and static piles for secondary treatment.

PROJECT SIZE

At a Virginia commercial dairy study¹, each compost bin was loaded with approximately 3,000 lbs. of dairy cow mortalities and ground for 20 minutes with 3,150 lbs. of double ground mulch, 4,050 lbs. of bedded pack dairy manure, and 1,800 lbs. of wood-fines from a door manufacturer's waste. The resulting mixture totaled 12,000 lbs. with 60 days' worth of storage available on-site. Daily mortalities were loaded into the grinder/mixer on a weight-based ratio of 3:2:1 with a bulking/carbon source and finished compost material.

REQUIREMENTS

Pretreatment is not required, but a bulking/carbon source should cap the mortality once the compost piles are created. Primary composting for large animals should run for 16 days. After, secondary composting is recommended for an additional heat cycle. Adequate mortality and compost storage and handling must comply with environmental regulations.

Characteristic ²	Preferred Range
C:N Ratio	30:1
Water Content	50-60% w.b.
Particle Size	0.8-1.2 cm
Porosity	35-45%
Bulk Density	< 640 kg/m ³
pH	6.5-8.0
Oxygen Concentration	> 10%
Temperature	140-150 °F

KEY CALL-OUTS



Runoff and Leaching Prevention:

Controlled, contained, and stabilized mortality compost reduces the risk of excess nutrient leaching and runoff into waterways.



Pathogen Reduction: High temperatures generated by microbial activity during the composting process nearly eliminates pathogens present in animal mortalities.



Cost Savings: Lowers costs associated with mortality handling and transport. Nutrient-rich compost acts as a valuable soil amendment, reducing reliance on commercial fertilizers.



Odor Minimization: Capture, control, and recirculation of excess leachate virtually eliminates odors.

Findings are based on an evaluation conducted under a Conservation Innovation Grant awarded to Newtrient. To view a more detailed description of these results, visit the Advanced Composting Technologies Large Animal Mortality Composting System Evaluation Summary on the [Newtrient website](#).

FINANCIAL OVERVIEW

CAPITAL INVESTMENT & OPERATIONAL COSTS



As of 2025, an ACT base unit is estimated at \$211,869.40. Storage areas cost about \$60.36/ft², covering primary, secondary, and curing spaces. A diesel-powered unit adds \$6,000 to capital cost. Optional preprocessing (shredder/grinder) equipment costs \$85,000 for one to five mortalities weekly, or \$105,000 for more. Operating costs include maintenance, monitoring, and electricity and/or fuel. Prices may vary with market conditions, project specifics, and ancillary structures.



DOWNSTREAM BENEFITS

The use of mortality compost as a nutrient-rich soil amendment reduces on-farm reliance of commercial fertilizers, lowering costs for field inputs. Finished compost can also create a potential revenue stream when sold for use as fertilizer or to nurseries for potting soil. Additionally, composting animal mortalities on-farm eliminates the need for off-site handling and transportation.

ENVIRONMENTAL IMPACTS

WATER QUALITY AND PATHOGEN CONTROL

Nitrogen and phosphorus present in large animal mortalities are stabilized in finished compost, reducing the risk of excess nutrient leaching or runoff into surface or groundwaters during application or storage. Through thermophilic microbial activity, sustained heat can virtually eliminate pathogens, a process essential for safe application and usage of mortality-based compost. ACT's containment system further prevents contamination.

MOISTURE AND ODOR MANAGEMENT

ACT's closed loop leachate control system adequately recirculates liquid, preventing the loss of excess moisture in the organic material. By adding the grinder/mixer at the beginning of the process, leachate collection is virtually eliminated. Maintaining the right moisture level is critical both for optimal composting performance and for minimizing odors commonly associated with traditional composting systems.

Finished Compost



REFERENCES:

- ¹ Peer, R. and Clark, R. Evaluation of Advanced Composting Technology's Enhanced Forced Aeration Composting System Complemented with Grinder/Mixer System. Virginia Cooperative Extension, Virginia Tech, Virginia State University. Final report prepared for Newtrient, updated November 2025. Included as Appendix to NRCS Practice Standard 316: For Acceptance of Large Animal Mortality Composting System, <https://www.newtrient.com/about/our-work/grant-funded-projects/2020-nrcs-conservation-innovation-grant/>.
- ² Advanced Composting Technologies (2025). <https://advancedcomposting.com/the-composting-materials-needed/>.

NEWTRIENT'S 9-POINT TECHNOLOGY SCORING

For Advanced Composting Technologies Large Animal Mortality Compost

Visit the [Advanced Composting Technologies Large Animal Mortality Composting](#) page in Newtrient's Solutions Catalog



Each solution can earn up to nine points, one for each criterion. Colored numbers indicate fulfilled criteria.

- 1 | Operational History
- 2 | Operational Reliability
- 3 | Market Penetration
- 4 | Capital Cost
- 5 | Operations & Maintenance Cost
- 6 | Value Proposition
- 7 | Vendor Information Sharing
- 8 | Case Study
- 9 | Funding Availability

Discover Newtrient's technology evaluation process: [Learn more about Newtrient's 9-Point Technology Scoring System.](#)



Newtrient's mission is to reduce the environmental footprint of dairy while making it economically viable to do so.

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