



# **Not For the birds: Basics of Small Ruminant Carcass Composting**

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# Nutrient Management and Composting: Maine



Figure 6-1. Whale bone remains following composting

# Nutrient Management and Composting: Maine



1. Ways of handling livestock carcasses
2. The biological process of composting
3. Maine law, reportable diseases
4. Elements of a Carcass Disposal Plan
5. Creating a compost pile that works

# Nutrient Management and Composting: Maine



Ways of handling livestock carcasses

Pros and Cons of:

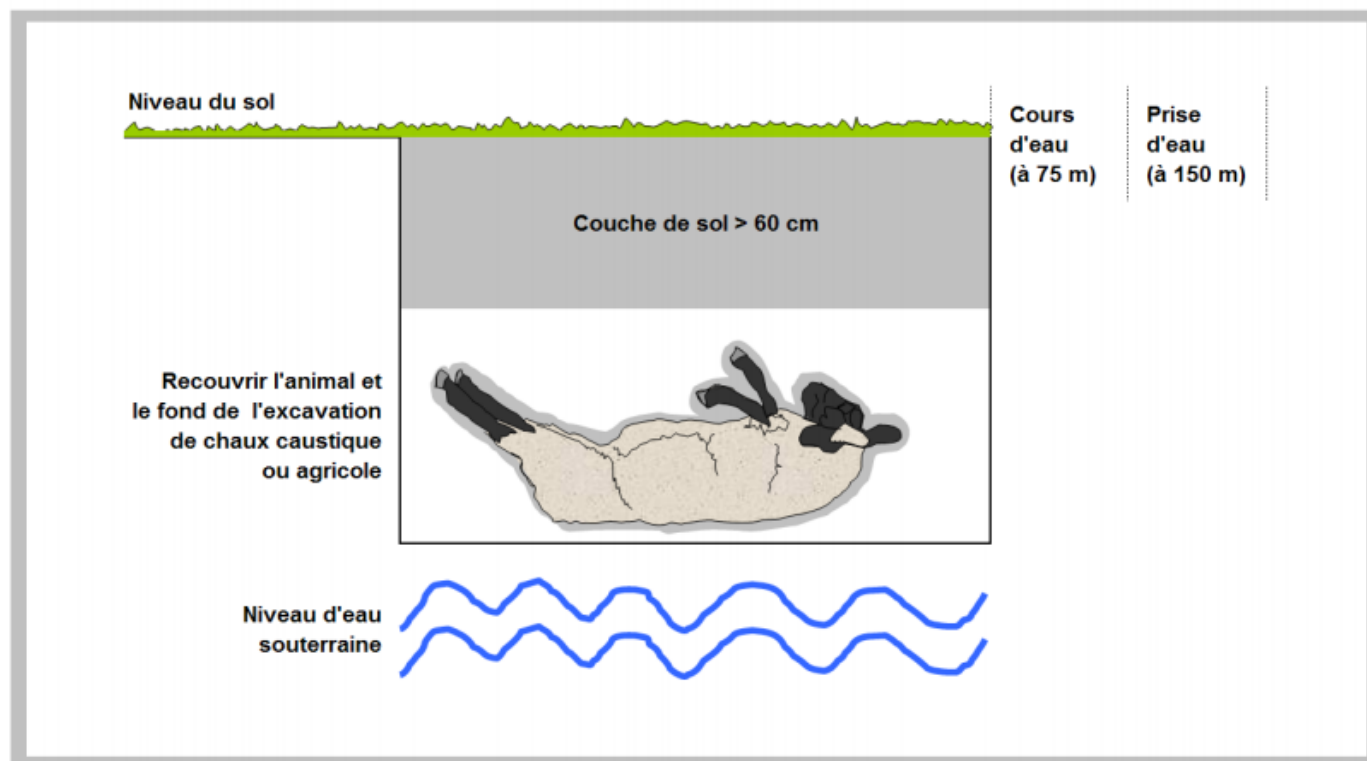
1. Burying
2. Incineration
3. Rendering Services
4. Composting



# Maine Carcass Management Options:

## Bury

Figure 1. Critères d'enfouissement d'une carcasse ovine



©Christophe Cyr-Arsenault

# Maine Carcass Management Options:

## Incineration



Figure 1. Incinerator for managing poultry carcasses. (NDSU photo)

# Maine Carcass Management Options:



## Rendering

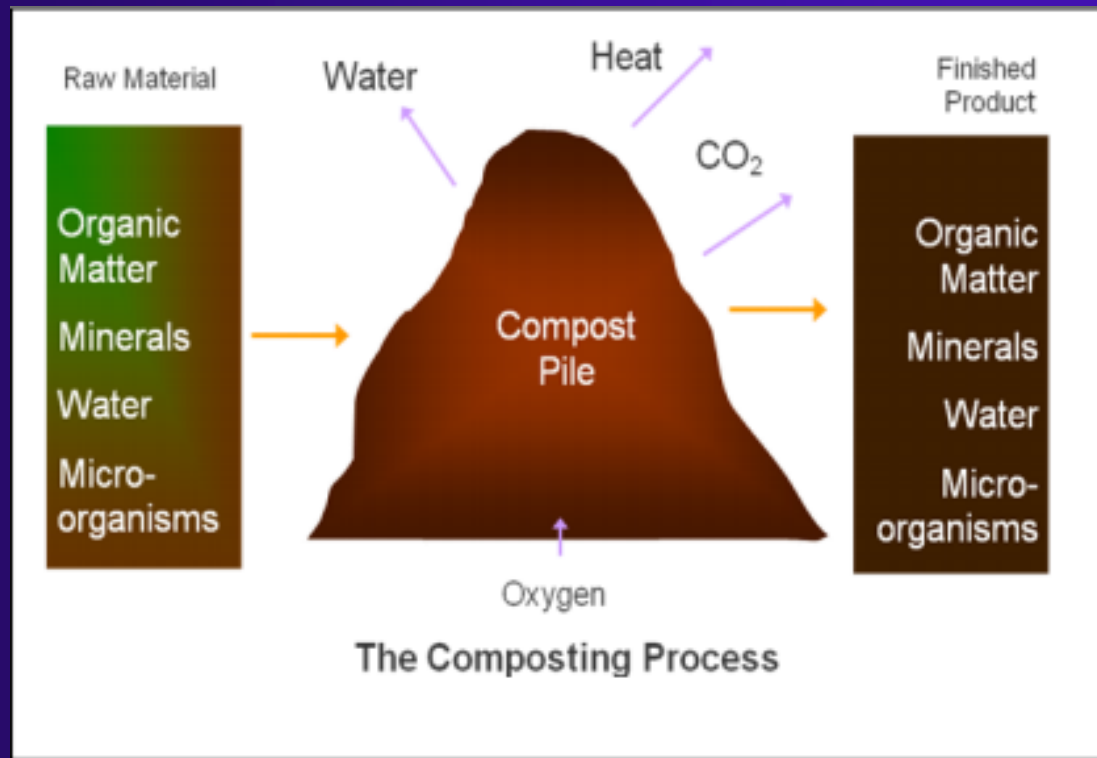




# Maine Carcass Management and Composting:



The process of composting:



NEED: PLANT / MANURE / CARCASS + WATER + AIR (O<sub>2</sub>) >>

GET: HEAT + CO<sub>2</sub> + WATER + STABLE ORGANIC MATERIAL





# Mortality Management



PLAN AHEAD for CARCASSES!

Animals	Annual Mortality rate (%)	# on Farm	# of Mortalities	Liveweight (lbs.)	Mortality weight (lbs.)
Ewes/Does	2	50	1	150	150
Birth	4	76	3	8	24
Lambs/Kid s	3	73	2	65	130
				Total pounds per year	304

General rule for feedstock needed:  
50 – 75 sq. ft/ 1000 lbs. carcass  
= 6 ft by 8 ft for goats or sheep

# Maine Carcass Management and Composting

- ❑ **Planning is important because...**
- ❑ It is unlawful to dispose of domestic animal carcasses and offal except in accordance with the

State of Maine

Chapter 211

“Rules for the Disposal of Animal Carcasses”

In accordance with these Rules...



# Exemptions

- Allowed to compost or bury one large (500 lb. or more) or two medium-size (100 - 499 lb.) animals annually without getting a professional site assessment
- However, set backs from sensitive features apply





# Carcass Disposal with Disease

- ❑ If a contagious disease is suspected, biosecurity measures and quarantine of the farm should be implemented immediately
- ❑ The Department must be contacted for assistance 207-287-3701
- ❑ The Department state veterinarian, Dr. Michele Walsh, will authorize implementation of the carcass disposal plan

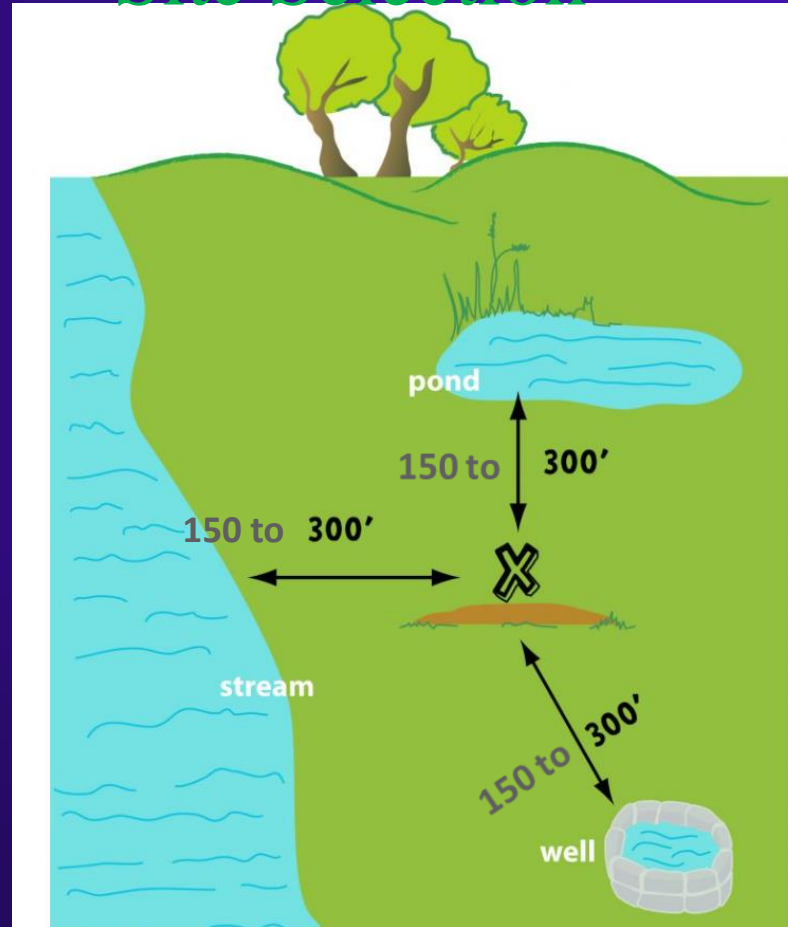
# Purpose and Elements of a Carcass Disposal Plan

Map with Hand Written Legend



# Elements of a Carcass Disposal Plan

## Site Selection





# Creating a Compost Pile that Works

## Composting Materials

**Table 1.** Carbon to Nitrogen (C:N) and percent moisture values of common carbon sources

Materials	C:N	Moisture, %
Corn stalks	60-73:1	12
Corn silage	38-43:1	65-68
Hay	15-32:1	8-10
Cow manure solids	11-30:1	67-87
Horse manure solids	22-50:1	59-79
Straw	48-150:1	4-27
Sawdust	200-750:1	19-65
Wood chips	451-819:1	--
Leaves	40-80:1	--

\*On-Farm Composting Handbook, 1992, R. Rynk

# Creating a Compost Pile that Works

For proper composting, the bulking agent  
Must Provide: Adequate Carbon:Nitrogen  
ratio

## Carbon Nitrogen Ratio

Swine Carcass	5:1
Recycled Secondary	30-50:1
Sawdust	140:1

Target **30:1**

- Too **LOW** C/N
  - NH<sub>3</sub>
  - Other odors
- Too **HIGH** C/N
  - Low decomposition rate
  - Low temperature

# Creating a Compost Pile that Works

For proper composting, the bulking agent  
Must Provide: **Proper pile structure**





# Creating a Compost Pile that Works

For proper composting, the bulking agent  
Must Provide: **Adequate moisture**

**NEED TO MAINTAIN MOISTURE BETWEEN 50 – 65%**

- ✓ MOISTURE FOR MICROBES
- ✓ SUFFICIENT AIR FOR MICROBES

**CAN DETERMINE BY SQUEEZE TEST**



# Creating a Compost Pile that Works

For proper composting, the bulking agent  
Must Provide: **Adequate moisture**

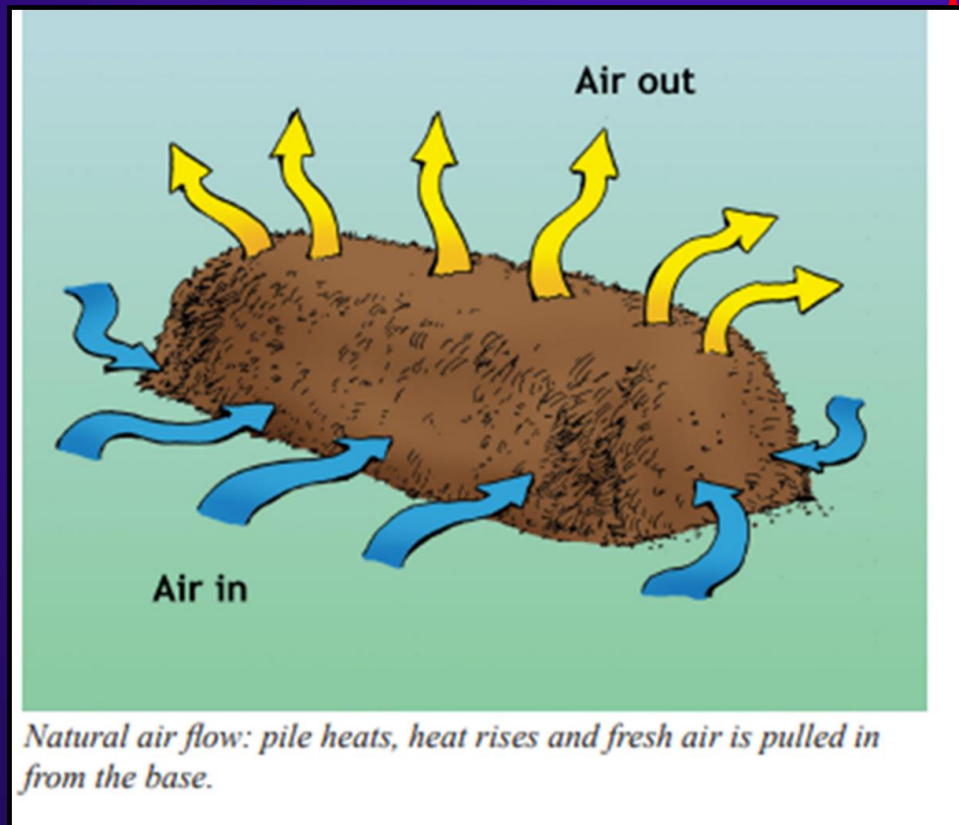
Swine Carcass	65%
Recycled Secondary	40-50%
Sawdust	20-50%

**Target 55%**

- Too **LOW** Moisture
  - Low decomposition
  - Low temperature
- Too **HIGH** Moisture
  - Putrid odors
  - Flies

# Creating a Compost Pile that Works

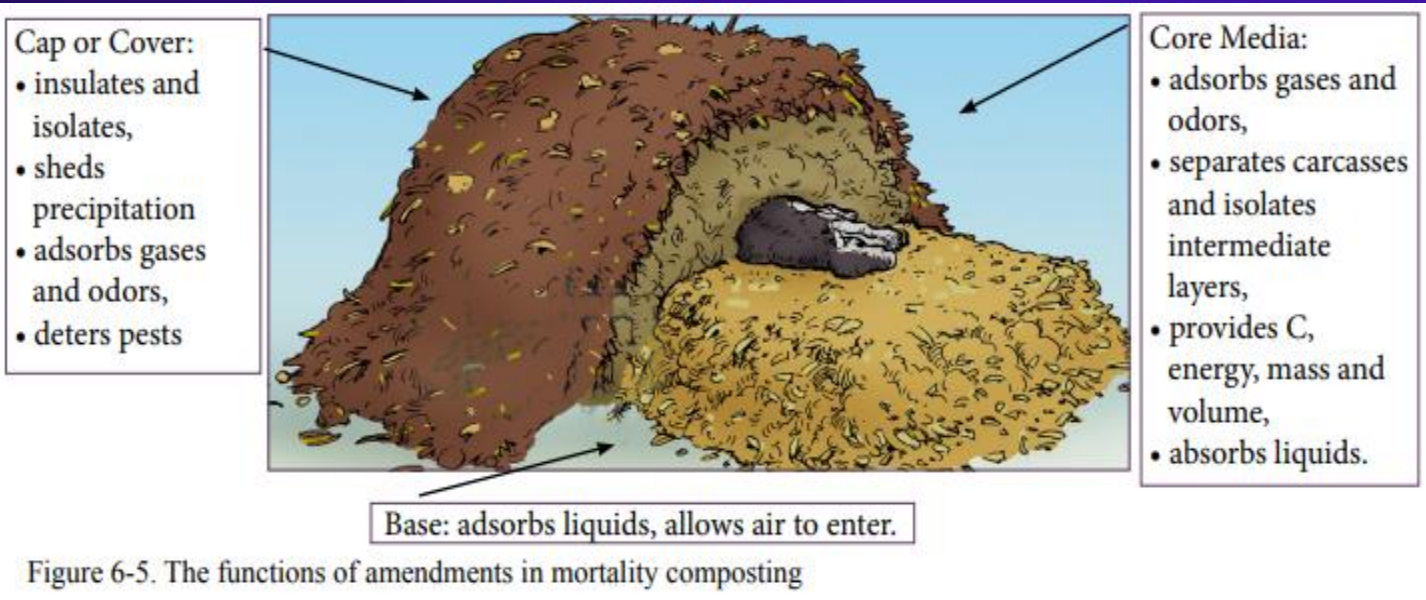
For proper composting, the bulking agent  
Must Provide: **Air infiltration into the pile**





# Creating a Compost Pile that Works

## Pile construction



# Creating a Compost Pile that Works

## Pile construction

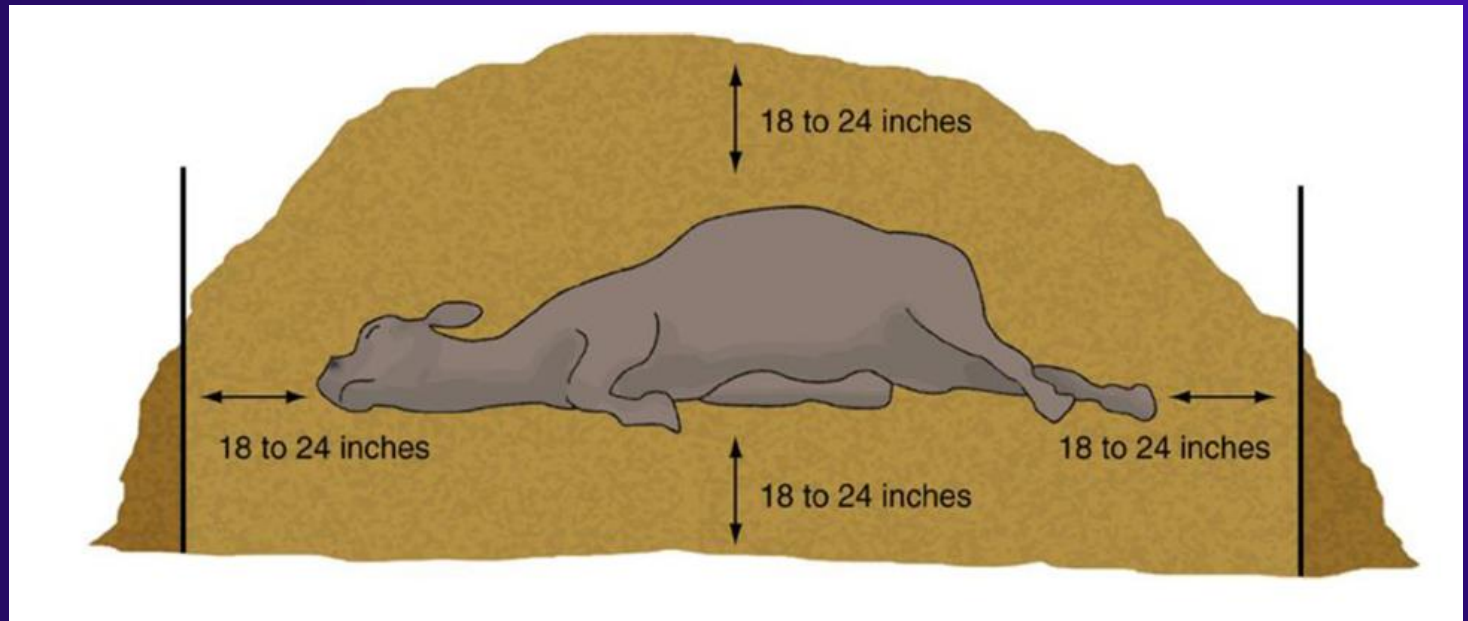


Illustration by Josh Payne, Livestock Mortality Composting Protocol, USDA 2017



# Pile Construction



Add used bedding material

[https://www.barbadosblackbelly.com/links/images/How\\_to\\_Compost\\_a\\_Dead\\_Sheep.pdf](https://www.barbadosblackbelly.com/links/images/How_to_Compost_a_Dead_Sheep.pdf)



# Pile Construction



Figure 6-9. Deer carcasses placed on the base layer



Wood chips

Straw





# PILE CONSTRUCTION – Covering with corn silage/bedding mix







# PILE CONSTRUCTION – Venting a large carcass





# Checking the Progress



36 inch Compost Thermometer





# DECOMPOSITION - Cattle at 12 weeks





# DECOMPOSITION TIMES - Chickens after 3 weeks 3 days





# DECOMPOSITION – Goat at 4 weeks



Proceedings of the Mortality Composting Conference, April 25, 2014,  
Goat Field Day, Langston University, OK



# DECOMPOSITION – Sheep at 6 weeks



Here is what is left of a 225 pound ram after six weeks. There was about 8 pounds of recognizable bones and wool. Surprisingly, there was no odor.



**BEST MANAGEMENT PRACTICES  
FOR  
ANIMAL CARCASS COMPOSTING**

**Bill Seekins  
October, 2011**



Maine Department of Agriculture, Conservation & Forestry





# Basics of Small Ruminant Carcass Composting



## SUMMARY

1. Composting is recommended to handle livestock mortalities.
2. Composting requires appropriate plant feedstock, O<sub>2</sub> and water in certain proportions
3. Be aware of Maine Law and Reportable Diseases
4. Composting Plan includes selection of a good location and materials to work with
5. Materials and pile building technique promote decomposition and a stable end product





# Contacts

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[https://www.maine.gov/dacf/ahw/animal\\_health/](https://www.maine.gov/dacf/ahw/animal_health/)



# Questions and Answers

