Carcass Disposal: Composting

Composting
- Carcasses layered with organic material
  - Thermophilic microbes
  - Heat generation
  - Accelerates biological decomposition
  - Destroys pathogens
- Relatively safe and simple
- Nutrient rich, organic byproduct – ‘humus’

Compost Components
- Nitrogen
  - Carcasses, manure
- Carbon
  - Plant co-compost
    - Sawdust, ground cornstalks, peanut hulls, mulch, poultry litter, leaves
    - 3-5 yards³/1000# carcass
- Carbon: Nitrogen ratio
  - 25:1 to 40:1 ideal

Moisture
- Moisture ~ 40-60%
  - Crucial for microbial growth
  - < 40% → Slower degradation
  - > 60% → Fills air pockets, less oxygen/air flow, Slower degradation

Oxygen
- Maintains aerobic environment
  - 5% ideal
- Dependent on pile porosity
  - Encourage natural air flow
- Aeration
  - Forced: use of fans
  - Active: mechanical turning
  - Passive: air exchange within pile

Composting Process
- 1st phase – aerobic
  - Oxygen dependent
  - High temperature (135-140°F)
  - 3-12 weeks
  - ~50% reduction in biodegradable solids
- 2nd phase – curing
  - Lower temperature (77-86°F)
  - 10-240 days
  - Aeration less critical
  - Bulk density reduced 25%
Temperature
- Temperature range
  - 120-150°F
  - Monitor frequently
- Inconsistent throughout pile
  - "cool zone" on surface
- Ambient temperature can influence decomposition

Mixing
- Accelerates decomposition
- When core temperature
  - > 140°F
  - <90°F
- Form new windrow or transport to second bin

COMPOST DESIGN

Location
Indoors
- Less affected by
  - Weather, ambient temperature, wind, scavengers
- Space limitations
- Vehicle movement
- Prolonged management and monitoring

Outdoors
- Large animal
- Cover to protect
  - Weather
  - Scavengers
- Site location
  - Away from public areas, animal areas, water sources
  - Vegetated site
  - Clay/impermeable base

Basic Design
- Base layer (18-24")
  - Porous
  - Absorbent
- Carcasses
  - Whole or ground
  - Caution if zoonotic

Basic Design
- Layer with co-compost (4-6")
  - 5-7 feet high total
  - 12 inches on sides
- Biofilter layer on top
  - Weather dependent
    - Cool weather-silage
    - Warm weather-cornstalks
  - Porous materials
    - Absorbs moisture and promotes air flow
Pile Types: Bins
- Construction
  - Treated lumber or concrete
  - 3 sided, doors, drop-board front
  - Size dependent on carcass size and equipment used
- Secondary bins
  - For mixing or storing co-compost
  - Decreases scattered material
  - Retains heat well

Pile Types: Open and Windrows
- Size dependent on carcass
  - Place carcasses away from pile edge
  - Thick cover layer
- Management important
  - Check temperature, monitor pile
  - Add extra cover when necessary

Distributing Compost
- FAD may make compost unsafe for cropland
- Soft tissue should be decomposed
- Large bones should be buried
- Nutrient levels should be tested
- Reuse as compost cover material

CONSIDERATIONS

Composting Considerations
- On-site process
- Adaptable process
- Nutrient rich end product
- Transport of co-compost material
- Regulations

Record Keeping
- Start date of each compost batch
- Date and quantity of dead animal(s) or additions
- Internal temperature of each active compost batch
  - Measured, at minimum, weekly
- Date compost material aerated
Biosecurity

- Responders must
  - Wear appropriate PPE
  - Follow movement control procedures
- Vehicle cleaning and disinfection
- Site security
- Public perception

Resources

- USDA Foreign Animal Disease Preparedness (FAD PReP) Guidelines: Disposal
- USDA Foreign Animal Disease Preparedness Standard Operating Procedures (SOP): Disposal

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