

APPENDIX D

Worksheet for Determining Compost Bin or Windrow Volume Requirements

Name: _____ Location _____

Step A—Determine the weight of animal carcasses to be composted.

Average daily loss (ADL) _____ lbs.

Design mortality weight (W1) _____ lbs.

Annual loss = ADL x 365 = (_____) x 365 = _____ lbs.

Step B—Determine the composting cycle times for the “design weight” to be composted in each windrow or bin.

Primary cycle time (days) = $5.00 \times (W1)^{0.5} = 5.00 \times (\text{_____})^{0.5}$
 = _____ days (If less than 10 days, use 10.)

Secondary cycle time (days) = 1/3 primary cycle time, minimum time \geq 10 days
 = $1/3 \times (\text{_____})$
 = _____ days (If less than 10 days, use 10.)

Storage time (days) = Year’s maximum period of time between land application events.
 = _____ days (from nutrient management plan)

Step C—Determine the needed composter volumes.

Primary composter volume (ft³) = 0.2 x ADL x primary cycle time
 = 0.2 x _____ x _____ = _____ ft³

Secondary composter volume (ft³) = 0.2 x ADL x secondary cycle time
 = 0.2 x _____ x _____ = _____ ft³

Storage volume (ft³) = 0.2 x ADL x storage time (days)
 = 0.2 x _____ x _____ = _____ ft³

Step D—Determine the dimensions of the compost facility, bin dimensions, and windrow size or number of bins.

Step E—Determine the annual sawdust required for the composting.

Annual sawdust needs (yd³/yr) = annual loss (lbs/yr) x 0.0069
 = _____ x _____
 = _____ yd³/yr

Equations for universal sizing of composting bins and windrows

$$T_1 = 5 \times W_1^{0.5} - \text{days}$$

$$\geq 10 \text{ days}$$

$$V_1 \geq 0.2 \times \text{ADL} \times T_1 - \text{ft}^3$$

$$T_2 = 1/3 \times T_1 - \text{days}$$

$$\geq 10 \text{ days}$$

$$V_2 \geq 0.2 \times \text{ADL} \times T_2 - \text{ft}^3$$

$$T_3 = \text{storage} - \text{days}$$

= Year's maximum period of time between land application events in keeping with the timing requirements of the nutrient management plan

$$V_3 \geq 0.2 \times \text{ADL} \times T_3 - \text{ft}^3$$

$$\text{Annual sawdust needs} = \text{ADL} \times 0.0069 - \text{yd}^3/\text{yr}$$

Where

ADL = average daily mortality (lbs/day)

W_1 = design mortality weight (lbs)

T_1 = Primary cycle time (days)

V_1 = Primary compost bin or windrow volume (ft³)

T_2 = Secondary cycle time (days)

V_2 = Secondary compost bin or windrow volume (ft³)

T_3 = Storage period (days)

V_3 = Storage volume requirement (ft³)