

# Dead Poultry Composter Project: Tom Swaffer Composter

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A grant of EPA funds was made available by the Missouri Department of Natural Resources in October 1990 to selected southwest Missouri poultry producers representing each of the five major poultry processing companies. The purpose of the grant is to demonstrate the feasibility of composting dead birds in an environmentally sound manner. The grant is administered by Southwest Missouri Resource Conservation and Development, Inc., with technical assistance provided by the Natural Resources Conservation Service and educational activities provided by University Extension, University of Missouri System.

Tom Swaffer, of Stella, Mo., representing Simmons Industries, agreed to participate in the demonstration project. Swaffer's concerns about future regulations pertaining to dead bird disposal, environmental considerations and economical management of dead birds were factors in his decision to participate in the project. This guide describes the composting project relating to Swaffer's poultry operation.

## Production facilities

The Swaffer broiler operation consists of four buildings in which 6 flocks per year are grown to a market weight of 4 pounds. Table 1 outlines the characteristics of each building.

An aerial view of the building layout with composter for the Swaffer production facilities is shown below. Average mortality rate in these facilities is about 5 percent.

**Table 1. Building type and bird capacity in the Swaffer operation.**

| Building type | Number of birds | Weight in (lbs.) | Weight out (lbs.) | Time in buildings (days) |
|---------------|-----------------|------------------|-------------------|--------------------------|
| growout       | 20,000          | 0                | 4                 | 46                       |

# Composter

The composter serving this operation is a pole-type structure with monoslope, rafter-type roof construction and a short overhang to partially cover the work area. Primary composting bins are located along the front of the building, with secondary compost storage along the back. At one end of the building, an ingredient or litter storage area is enclosed with metal for rain protection. A concrete work area, partially covered by the roof overhang, is provided in front of the composter.

The four primary bins are 8 feet wide, 6 feet deep and 5 feet high, and are made with treated lumber. The secondary compost bin is 32 feet long, 8 feet wide and 5 feet high. Total composting volume is 960 cubic feet in the primary bins and 1,280 cubic feet in the secondary bin. The ingredient storage bin is 12 feet wide, 14 feet long and 5 feet high, and provides a volume of 840 cubic feet. Figures 1 and 2 show dimensional and structural characteristics of the Swaffer composter.

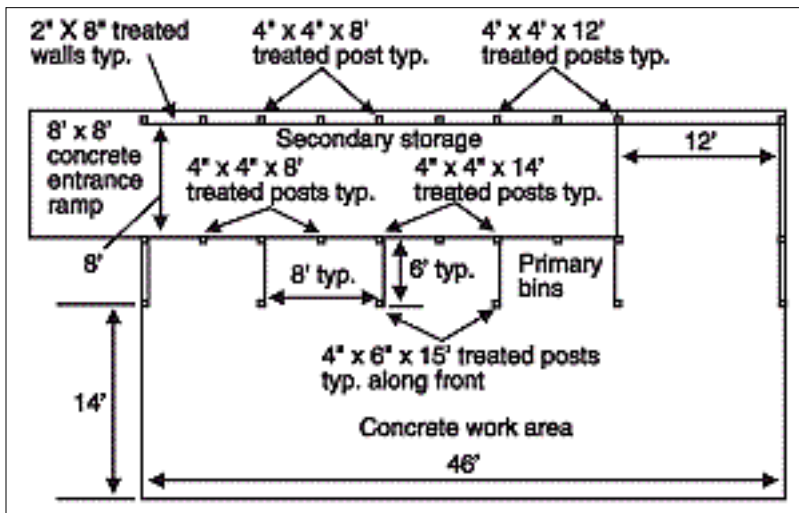


Figure 1. Plan view of the Swaffer composter.

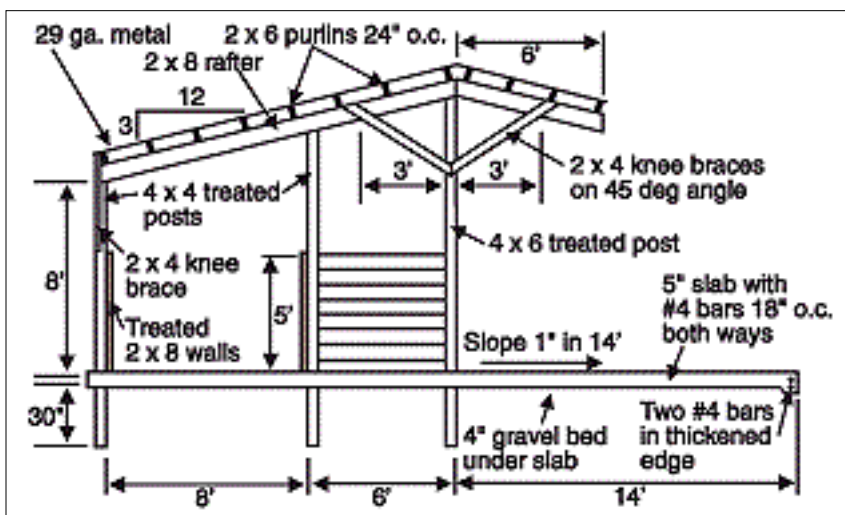


Figure 2. Cross section of the Swaffer composter.

# Operational characteristics

Swaffer estimates 20 minutes per day are spent layering dead birds and ingredients in the composter. One hour per day is required to pick up dead birds in the four buildings. An additional hour per month is spent moving compost from primary to secondary bins and bringing litter to the composter.

Swaffer uses a 65 hp tractor with a front-end loader to handle litter, move compost and load spreading equipment. A spreading truck is hired to spread the finished compost. Table 2 shows a laboratory analysis of the finished compost fertilizer value from the Swaffer composter.

Based on experience, Swaffer would prefer a composter with greater litter/ingredient storage area. Since broiler building clean out is done once a year, a year's supply of stored litter would be ideal. Presently, storage capacity is a 3 to 4 month supply. Swaffer estimates 40 tons of finished compost are produced annually in his composter, and 10 percent of the litter produced in the broiler houses will be used in the composter.

**Table 2. Analysis of litter and finished compost in the Swaffer operation.**

| Fertilizer nutrient                      | Litter | Finished compost |
|--|--------|------------------|
| Dry matter (percent)                     | 79.2   | 71.7             |
| Nitrogen (lbs./ton)                      | 75.0   | 60.8             |
| Crude protein (percent)                  | 23.4   | 19.0             |
| P <sub>2</sub> O <sub>5</sub> (lbs./ton) | 80.4   | 58.1             |
| K <sub>2</sub> O (lbs./ton)              | 37.2   | 24.7             |

## Cost

Composter costs depend upon many factors such as site, composter design, size, etc. Table 3 shows costs incurred for the Swaffer composter as constructed in November 1990.

**Table 3. Cost associated with the Swaffer composter (November 1990).**

| Item      | Cost (\$) |
|-----------|-----------|
| materials | 4,350     |

|       |       |
|-------|-------|
| labor | 2,180 |
| total | 6,530 |

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