

Bernalillo County Extension Master Composters

Hot Composting in the Desert Guide

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This method is also referred to as: *dynamic, managed, fast, batch, or thermophilic* composting.

Location: A hot composting bin should sit in a convenient location, on the soil, near a water source and in maximum shade during the hot season.

Container: Ideally desert dwellers should use a bin of reduced porosity (fewer holes). For hot composting the minimum bin size is 3'x3'x3' up to a maximum size of 5'x5'x5'. This appropriate bin size is necessary to retain (insulate) in the heat that will be generated by microbial activity. Bins may be made from wood, concrete blocks, straw bales or plastic. Wire mesh bins need to be completely lined with plastic or cardboard, leaving a one inch air intake gap at the bottom of the bin.

Carbon:Nitrogen Ratio: Attention is given to a mixture that has enough nitrogen combined with the carbon to support rapid proliferation of microorganisms. Nitrogen (greens) is necessary for microbial reproduction and brown as a food (energy) source. A workable approximation of the appropriate mixture would start at 1lb. brown to 1lb. of green that would be a 50/50 mix to a minimum nitrogen of 3 lbs. brown to 1 lb. green, a 75:25 mix. So within the cubic yard of material there should be a minimum of 25% nitrogenous material.

Pile Construction: This is a batch method. First, place 6-12" of bulking material at the bottom of the bin. Organize enough green and brown material (1 cubic yard) to fill the bin completely all at once. Soak the browns in a wheelbarrow then mix in the greens, then start filling the bin. After every 6" of fill add 4" of bulking, continue the process until the bin is full. Cover (lightly) the top of the pile with plastic, cardboard, leaves or straw.

Ingredients: Varied ingredients of various sizes are added; smaller ingredients will more easily decompose.

Moisture: The pile needs to be 50% moist throughout the decomposition process. Microbes exist, reproduce and produce enzymes in a thin film of moisture on organic matter. A low porosity bin placed in the shade with a cover will reduce evaporation. When a hot pile is turned the contents may be watered as necessary to maintain 50% moisture.

Aeration: As the microorganisms rapidly reproduce they consume oxygen. As we regulate air flow in desert composting by using a reduced porosity bin, it is an imperative to add bulking material as the pile is built. Bulking moderates compaction of wet materials and provides spaces for air flow throughout the pile. Turning the pile at the appropriate time will completely aerate the mix and provide an oxygen source for microorganisms so they can continue to proliferate.

Temperature: Within approximately 24 to 48 hours the pile will heat up from microbial enzymatic activity on carbon substrate (carbohydrates). A temperature of 150 F is adequate and may be sustained for 7 to 14 days. The moist heat in the pile helps soften all the organic material allowing moisture penetration and thereby better access for microorganisms. If a pile fails to heat to the expected temperature it may be turned and more nitrogenous material may be added. Overheating may be controlled by turning and watering the pile.

Management: When the pile starts to cool down (about 7-14 days) then it should be turned, churned and watered to maintain 50% moisture. Ideally the top becomes the bottom and the sides become the insides so that all the material eventually becomes exposed to the high core temperature. The turned pile will heat up again. This turning process is continued until all but the bulking material has turned to humus. Then it is screened and allowed to cure for 2-4 weeks.

Time to Product: Variable 4-12 months. Faster than cold composting.

Product Volume: 1/2 - 1/3 of original pile size