

Composting FACTSHEET



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GLOSSARY OF COMPOSTING TERMS

Actinomycetes: A group of microorganisms, intermediate between bacteria and true fungi, that usually produce a characteristic branched mycelium. These organisms are responsible for the earthy smell of compost.

Aeration: The process by which oxygen-deficient air in compost is replaced by air from the atmosphere. Aeration can be enhanced by turning compost.

Aerator: A machine used to create new passages for air and moisture in a compost pile or windrow.

Aerobic: An adjective describing an organism that can live only in the presence of oxygen (i.e., an aerobic organism).

Aggregate, soil: Many soil particles held in a single mass or cluster such as a clod, crumb, block or prism.

Agricultural Wastes: Wastes normally associated with the production and processing of food and fibre products on farms, feedlots, ranches and ranges. May include animal manure, crop residues and dead animals.

Ambient Air Temperature: The temperature of the air in the vicinity of a compost pile.

Amendment, soil: Any substance such as lime, sulphur, gypsum or sawdust used to improve the productive properties of a soil. Fertilizers are one type of soil amendment. However, many soil amendments such as soil conditioners, do not have significant fertilizer value.

Ammonia (NH₃): A gaseous compound comprised of nitrogen and hydrogen. Ammonia, which has a pungent odour, is commonly formed from organic nitrogen compounds during composting.

Amorphous: Having no definite shape or structure.

Anaerobic: An adjective describing an organism that can live or function in the absence of air or free oxygen, or a zone in the compost mass that is without oxygen.

Backyard Composting: The composting of organic solid waste, such as grass clippings, leaves or food waste at a residential dwelling site, where the waste is generated by the residents of the dwelling and/or neighbouring units.

Bacteria: A group of microorganisms having single-celled or non-cellular bodies.

Biochemical Oxygen Demand (BOD): The quantity of oxygen used in the biochemical oxidation of organic matter in a specified time, at a specified temperature, and under specified conditions, normally five days at 20°C unless otherwise stated. A standard test used in assessing the biodegradable organic matter in municipal wastewater.

Biodegradable: Subject to degradation by biochemical processes.

Buffering Capacity: The ability of the soil to resist changes in pH. Commonly determined by the presence of clay, humus and other colloidal materials.

Bulk Density, Soil: The mass of dry soil per unit of bulk volume, including the air space. Bulk volume is determined before drying. Drying is accomplished at 105°C until no change in weight occurs over time.

Bulking Agent: An ingredient in a mixture of composting raw materials included to improve the structure and porosity of the mix, e.g., sawdust.

C: Chemical symbol for carbon.

Carbohydrate: Any compound containing only carbon, hydrogen and oxygen such as sugars, starches and cellulose.

Carbon Dioxide (CO₂): An inorganic gaseous compound comprised of carbon and oxygen. Carbon dioxide is produced by the oxidation of organic carbon compounds during composting.

Carbon-to-Nitrogen Ratio (C:N): The ratio of the weight of organic carbon (C) to that of total nitrogen (N) in an organic material.

Cation Exchange Capacity: The total amount of exchangeable cations that a soil can adsorb. It is expressed in milliequivalents per 100 g of soil or of other adsorbing materials such as clay.

Cellulose: A long chain of tightly bound sugar molecules that constitutes the chief part of the cell walls of plants.

Chemical Persistence: That property of a chemical to remain in the environment essentially unchanged.

Co-composting: The composting of a mixture of two or more types of wastes, e.g., manure and yardwaste.

Compost: A group of organic residues, or a mixture of organic residues and soil, that have been piled, moistened and allowed to undergo biological decomposition.

Composting: The biological degradation or breakdown of organic matter by a managed process.

Curing Area: An area where organic material that has undergone the rapid initial stage of composting is further stabilized into a humus-like material.

Damping-Off Disease: The wilting and early death of young seedlings caused by a variety of pathogens.

Decomposers: The microorganisms and invertebrates that cause the normal degradation of natural organic materials.

Digested Sewage Sludge (Biosolids): Solids arising from sewage treatment which have been held in a properly designed and operated biological sewage treatment system, for a period of time sufficient to achieve at least 35 per cent reduction by weight in total volatile residue, and which has been dewatered to contain at least 10% solid material.

Enzyme: A protein molecule which acts as a catalyst for specific biochemical reactions.

Erosion: Wearing away of the land surface by running water, wind, ice or other geological agents.

Evaporative Cooling: Cooling that occurs when heat from the air or compost pile material is used to evaporate water.

Fast Composting: An intensive composting method that produces finished compost in one to two months. This method requires frequent turning to maximize aeration. When temperatures of 60°C (140°F) are achieved, a "thermal kill" of pathogens, or "partial sterilization" occurs.

Fertilizer: Any organic or inorganic material of natural or synthetic origin added to a soil to supply certain elements essential to the growth of plants.

Fungus: (Plural: **Fungi**) A group of simple plants that lack a photosynthetic pigment. The individual cells have a nucleus surrounded by a membrane, and may be linked together in long filaments called hyphae. The individual hyphae can grow together to form a visible body.

Green Compost: Materials mixed together to be composted.

Green Manure: Green plant material incorporated into the soil, to improve the soil qualities.

Heavy Metals: A group of metallic elements that include lead, cadmium, zinc, copper, mercury and nickel. Can be found in considerable concentrations in sewage sludge and several other waste materials. High concentrations in the soil can lead to toxic effects in plants, animals and humans ingesting plants or soil particles.

Herbicides: Agents used to inhibit plant growth or kill specific plant types.

Humic Acids: Chemical or biological compounds composed of dark organic substances that are precipitated upon acidification of a basic extract from soil.

Humus: Stable organic fraction of the soil matter remaining after the major portion of added plant and animal residues have decomposed. Humus is usually dark in colour, amorphous and relatively resistant to further rapid degradation.

Inoculant: The dried or inactive microorganisms that become active when added to the compost pile.

Invertebrates: An animal without a backbone or spine.

K: Chemical symbol for potassium.

Leachate: The liquid that results when ground or surface water contacts solid waste, and extracts material, either dissolved or suspended, from the solid waste.

Leaching: The removal of materials in solution from the soil by percolating waters.

Lignin: A substance that, together with cellulose, forms the woody cell walls of plants and the cementing material between them. Lignin is resistant to decomposition.

Macronutrient: Essential nutrient needed in relatively large amounts, e.g., nitrogen and potassium.

Manure: The fecal and urinary excretion of livestock and poultry. Sometimes referred to as livestock waste. This material may also contain bedding, spilled feed, water or soil. It may also include wastes not associated with livestock excreta, such as milking centre wastewater, contaminated milk, hair, feathers or other debris.

Mesophilic Range: Operationally, that temperature range most conducive to the maintenance of optimum digestion by mesophilic bacteria, generally accepted as between 21°-38°C (70°-100°F).

Microbe: See Microorganism.

Micronutrient: An essential nutrient needed in small amounts, e.g., boron, molybdenum. Also called a *trace* or *minor* element.

Microorganism: An organism requiring magnification for observation, e.g., a bacterium.

Moisture Content: The fraction or percentage of a substance comprised of water. Moisture content equals the weight of the water portion divided by the total water plus dry matter weight.

Mulch: A material spread over the soil surface to conserve moisture and porosity in the underlying soil to suppress weed growth. Grass clippings, compost, woodchips, bark, sawdust and straw are common mulch materials.

Municipal Solid Waste (MSW): Discarded materials, substances or objects excluding special hazardous, or biomedical wastes, which are collected or originate from residential, commercial, demolition, land clearing, construction, institutional and industrial sources, and which typically are discharged to municipal landfills. Municipal solid waste may include agricultural manure, and "digested sewage sludge".

Mycelium: Collective term for fungus filaments or hyphae. (See Fungus).

N: Chemical symbol for nitrogen.

Noxious Weeds: A group of weeds that physically harm cultivated plants by crowding them out.

Nutrient: A chemical element taken into a plant that is essential for growth, development or reproduction.

Nutrient-Holding Capacity: The ability of a medium to absorb and retain nutrients so that they will be available to the roots of plants.

Offal: Parts removed as waste from a carcass meant for food.

Organic Fertilizer: By-product from the processing of animal or vegetable substances that contain sufficient plant nutrients to be of value as fertilizers.

Organic Matter: Matter derived from living or once-living organisms that gradually can be broken down to yield important plant nutrients.

Oxidize: To chemically combine with oxygen.

P: Chemical symbol for phosphorus.

Pathogen: Any organism capable of producing disease or infection. Often found in waste material, most pathogens are killed by high temperatures in the composting process.

Peat: The unconsolidated soil material consisting largely of undecomposed, or only slightly decomposed, organic matter accumulated under conditions of excessive moisture.

Permeability, Soil: The ease with which gases, liquids or plant roots penetrate or pass through a bulk mass or layer of soil.

pH: A measure of the concentration of hydrogen ions in a solution. pH is expressed as a negative exponent. Thus, something that has a pH of 8 has ten times fewer hydrogen ions than something with a pH of 7. The lower the pH, the more hydrogen ions are present, and the more acidic it is. A pH of 7 is considered neutral. Compost decomposes fastest with a pH of around 6.5 (slightly acidic).

Phytotoxic: An adjective describing a substance that has a toxic effect on plants. Immature or anaerobic compost may contain acids or alcohols that can harm seedlings or sensitive plants.

Pollution: The presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment.

Porosity, soil: The percentage volume of total soil bulk not occupied by solid particles.

PTO: Power take off. Drive shaft and coupling on a tractor which transmits power from the tractor engine to implements and secondary equipment, such as, pumps, grinders, windrow turners.

Recipe: The ingredients and proportions used in blending together several raw materials for composting.

Red Worms: *Eisenia fetidae*, commonly known as red worms, are deep maroon in colour. They thrive only in manure or garbage and are rarely found in ordinary soils.

Slow Composting: A minimal-effort composting method that produces finished compost in a year or more. Slow composting requires little maintenance.

Soil Compaction: The disruption and reduction of the large pores within the soil.

Soil Conditioner: A soil additive that stabilizes the soil, improves its resistance to erosion, increases its permeability to air and water, improves its texture and the resistance of its surface to crusting, makes it easier to cultivate, or otherwise improves its quality.

Soil Structure: The combination or arrangement of primary soil particles into secondary particles, units or peds. Compost helps bind soil primary particles to improve the structure of the soil.

Soil Texture: A characterization of soil type, based on the relative proportions of sand, silt and clay in a particular soil.

Stabilized: An adjective describing compost that has at least passed through the thermophilic stage, and to a point that biological decomposition of the waste has occurred to a sufficient degree that the compost has beneficial value to plant growth. Stabilized compost can be stored, handled and used without giving rise to odour or self-heating problems, even if it should become wet.

Thatch: Dead and drying grass plant parts such as roots, stems and shoots, that accumulate above the soil surface.

Thermophilic: An adjective describing microorganisms that thrive in, and generate, temperatures between 45°-68°C (113°-155°F).

Topdressing: A layer of compost, or other material, applied to the surface of soil.

Vermicomposting: The process by which worms convert organic waste into worm castings.

Volatilization: Evaporation or the release of compounds into gaseous form.

Windrow: A long, relatively narrow, and low pile. Windrows have a large exposed surface area which encourages passive aeration and drying.

Woodwaste: Includes hog fuel, mill ends, wood chips, bark and sawdust, but does not include demolition waste, construction waste, tree stumps, branches, logs or log ends.

Worm Castings: The dark, fertile, granular excrement of a worm. Granules are rich in plant nutrients.

Yardwaste: Vegetative matter resulting from gardening, horticulture, landscaping or land clearing operations, and includes materials such as tree and shrub trimmings, plant remains, grass clippings, trees, stumps and uncontaminated lumber from demolition operations.

This is one of a series of Factsheets on Composting. A list of references used in producing this series is included in the Composting Factsheet "[Suggested Reading and References](#)."

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