

What is Quality Compost?

Characteristics of High Quality Compost
Composting – Good Practices

Characteristics of High Quality Compost

C:N Ratio

% Moisture

Bulk Density

Volatile Solids

Texture

Ammonia

Nutrients

pH

Salinity

Odor

C:N Ratio

30:1 Optimal

Examples of Feedstock C:N Ratios

Leaves 48:1

Green waste chips 150:1

Separated Dairy Solids 18:1

Dry Lot Manure 15:1

Horse Manure 40:1

Shavings 450:1

% Moisture

40 to 60% provides "home" for bacteria

55% optimal.

Too high impedes airflow

Too low impedes composting process

Bulk Density

Understand this value for each feedstock

This value will assist in the blending of feedstocks

Optimal range is 800 to 1,000 lbs/cubic yard

Major impact on aeration: A high value impedes aeration. A low value will tend to cool off the composting temperature.

Volatile Solids:

- The “Organic” fraction of a feedstock that is available to microbial metabolism
- Directly affects compost process and compostability
- Need >40% volatile solids to encourage microbial activity

Texture: Particle Size and Shape

- Scale ranges from “fine” to “Coarse”
- Coarse materials facilitate aeration
- Fine materials accelerate breakdown
- Need a mixture of coarse and fines to ensure proper composting

Ammonia

Toxic to plants if compost used before Ammonia is stabilized

Nutrients

Most fertilizer sales driven by N, P, K values, whereas compost is marketed as a soil amendment to improve physical attributes of the soil.

pH

Low pH reduces compost activity and produces “smelly” Volatile Organic Acids

High pH favors ammonia losses and also halts microbial activity

Salinity - Conductivity

Measure of the soluble salts in a feedstock sample

High Salinity can rob moisture from plant roots in soil

Prefer less than 4 millimhos/cm in final compost product.

Odor

Refers to the ability of a feedstock to rapidly degrade and release obnoxious odors

Many odors simply part of the process

- Ammonia – released when pile too dry or pH over 8.5

- Volatile Organic Acids produced when pile too wet or pH too low

- Feedstock odors that persist during the compost process indicate a “poor” initial mix

Composting – Good Practices

Know your feedstocks: C:N Ratio, % Moisture, Bulk Density, % Carbon, % Nitrogen and Texture (Key information)

No cross contamination of raw feedstocks with active compost or finished compost

Pathogen Reduction Phase (PRP)

131 degrees F for 15 consecutive days, with a minimum of 5 turns

This will eliminate weed seeds, salmonella and eColi

Patience: Composting takes time

Example: Windrow composting system – 3 to 4 months for a finished product

Composting – Good Practices (cont)

Understanding the qualities of finished compost (stable)

Ammonia (NH₃) Levels

Carbon Dioxide (CO₂) levels

Testing:

Solvita Test by Woods End Lab – Tests ammonia and Carbon Dioxide

USCC STA Program – Certified lab for a finished compost analysis

Composting – Good Practices (cont)

Understanding the hazards of using an immature product:

- Ammonia damage to plants

- Phytotoxicity of Volatile Organic Acids (VOA)

- Nitrogen tie up

- Odors upon rewetting

- Reheating of bagged compost

Questions??

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