



EVALUATING THE QUALITY OF COMPOST YOU BUY OR MAKE

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HIGH-QUALITY COMPOST is a wonderful soil amendment and fertilizer that provides numerous benefits for all crops and soils. Properly made compost is the best source of a broad diversity of available and slow release nutrients, humus, organic matter, humic acids, fulvic acids, and high microbial activity. The beneficial microbes in compost assist with nutrient uptake, plant health, water uptake, drought resistance, protection from soil diseases and nematodes, and numerous other important functions. The quality, diversity, and population of these microbes will vary widely between composts, often as a result of the compost manufacturing process. This article will help you evaluate the quality of compost that you purchase or make on farm.

To obtain maximum benefit from compost, it is important that quality control is practiced through the entire process. There are legal requirements for compost applied to organic farms, but these do not guarantee a quality product is being manufactured. The current USDA regulations for organic growers who use compost are: Compost is acceptable if (1) it is made from only allowed feedstock materials, except for incidental residues that will not lead to contamination, (2) the compost undergoes an increase in temperature to at least 131°F and remains there for a minimum of 3 days, and (3) the compost pile is mixed, or managed in some other way to ensure that all of the feedstock heats to the minimum temperature. The monitoring of these three parameters must be documented in the Organic System Plan and verified during the site visit. An explanation of how the composting system complies with Section 205.203(c) should also be presented in the Plan. The

USDA requirements are focused on minimizing contamination and pathogen problems. They do not address quality issues.

A grower may wish to purchase compost from an OMRI reviewed composter. While this is a valuable assurance of compliance with the accepted standards, it does *not* guarantee the quality of the compost. I am regularly disappointed at what passes for compost, even by some of the OMRI approved suppliers. Because each composter and each batch they make is likely to be different, it is very important for you to evaluate the quality of what you purchase or produce.

The following is an overview of things that you should be inspecting and looking for in the compost you receive or make. Requiring your supplier to hold up his/her end of the bargain ensures that you obtain a product with high performance characteristics and a minimum of downsides. If you find upon using this check list that some aspects are below quality standards, I urge you to contact your supplier and request an economic adjustment appropriate to the reduced quality. If they will not work with you on it, find another supplier!

The first four sections are all things that you can evaluate without any laboratory analysis. The Nutrient and Biological criteria can only be judged by lab work. A good composter who wants your business will be able to provide most of the information below from a recent batch of compost similar to that which you are purchasing. If they will not, find somebody who will. The composters will get better at meeting your needs if you require them to do so.

Following the Microbiological section is a list of questions and standards to ask yourself or your compost supplier. Become an informed compost consumer. Your soil and your pocketbook will thank you!

VISUAL INDICATORS

- All material is dark brown (Black indicates “burning” of compost; i.e. temperatures above 150°F during processing).
- Parent material no longer visible (The composting process breaks down the

material into much smaller and different structures than starting materials).

- Structure is mixture of fine and medium size particles, and humus crumbs.
- There is abundant, earthy smelling white mycelium in the moist parts of the pile (This is an indicator of Actinomycete activity).

PHYSICAL INDICATORS

- Fine to medium texture (all below ½ inch mesh, with high % of mixed, medium-sized particles). A small amount of soil (less than 10%) is desirable. Higher than 10% is excessive.
- Moisture between 20–30% (This is dry enough that the compost will not squeeze together into a ball. Below 20% water content is too dry for the compost microbes and humus quality. Above 30% you are paying for excess water that you do not need; especially important if buying by the ton).

ODOR INDICATORS

- Smells like “earthy” humus and soil from the forest floor (high in Actinomycetes, which create humus and protect plants from pathogens).
- No ammonia odor.
- No putrefaction or anaerobic odor (“funky” smells).
- No “manure” odor.

TEMPERATURE INDICATOR

- On delivery, compost should be within 10°F of air temperature (80–100°F). Higher temperatures (i.e. steaming when dumped, or too hot to hold your hand in the pile) indicates the material is NOT finished.

NUTRIENT INDICATORS

- Carbon: Nitrogen Ratio (optimum 12–15:1; OK up to 20:1)
- Total Organic Matter: 20–35%
- Total Nitrogen: 1.0–2.0%
- Nitrate Nitrogen: 250–350 PPM
- Nitrite Nitrogen: 0 PPM
- Sulfide: 0 PPM
- Ammonium: trace or zero
- pH: 7–8

- Cation Exchange Capacity (CEC): > 60 meq/100g
- Humic Acid Content: 5–15%
- ERGS Reading: 5,000–15,000 mS/cm
- LaMotte Humus Test: 25–30
- Relative Humus (rH): 26–28

MICROBIOLOGICAL INDICATORS

(As measured by BBC Labs, Tempe AZ)

- Heterotrophic Plate Count: 1 x 10⁸ – 1 x 10¹⁰ CFU/gram dry weight (gdw)
- Anaerobic Plate Count: Aerobes: Anaerobes at 10:1 or greater
- Yeasts and Molds: 1 x 10³ – 1 x 10⁴ CFU/gdw
- Actinomycetes: 1 x 10⁶ – 1 x 10⁸ CFU/gdw (very important)
- Pseudomonads: 1 x 10³ – 1 x 10⁶ CFU/gdw
- Nitrogen Fixing Bacteria: 1 x 10³ – 1 x 10⁶ CFU/gdw
- Maturity: > 50% on Maturity Index
- Stability: < 100 mg O₂/Kg compost dry solids/hour

QUICK QUESTIONS TO EVALUATE COMPOST QUALITY

Questions for the Compost Supplier & Amigo's Answers for Optimum Quality Compost

Source of raw materials?

- The greater the diversity of ingredients the better. The best composts are comprised of 3 or more ingredients.

Percentage of each raw material?

- > 50% animal manures such as cow, horse, sheep, chicken, turkey. Smaller % of materials such as pomace, straw, hay, rice hulls, sawdust. Low % (< 25%) of wood chips or green waste.

Percentage foreign materials?

- < 1% (i.e. plastic, garbage, etc.)

Percentage moisture during composting?

- 30–50%

Percentage moisture on delivery?

- 20–30%

Bulk density?

- 1½ – 2 yards per ton.

Length of composting process?

- 8–16 weeks.

Age of delivered compost?

- < 6 months.

Temperatures during composting?

- 130–150° F during first 4–6 weeks;
- 100–125° F during next 4–8 weeks.

Temperature of delivered compost?

- 80–100° F

Method of aeration?

- Compost turner.

Number of aeration/turnings?

- 6–20 turns.

Fertility analysis?

- Variable: 0.5–3% Total Nitrogen; 0.2–2.0% Phosphorus; 0.5–3% Potassium. Other nutrients are variable, but generally the higher % the better, except sodium and boron which should be low to very low.

Organic matter %?

- Between 20–35%

Carbon to Nitrogen Ratio?

- Between 10:1 to 15:1

Microbiological analysis?

- See "Compost Quality Standards"

Particle size?

- Below ¾ inch

Price FOB Site?

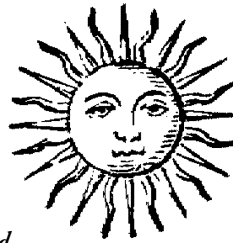
- \$18–\$30 per ton in 25 ton loads.

Delivered price?

- Variable, dependent on mileage.

Price with spreading?

- Spreading charges vary from \$5 to \$50 per ton based on site and quantity spread.



RESOURCES

Microbiological Analysis

BBC Laboratories
1217 N. Stadem Dr.
Tempe, AZ 85281
480-967-5931 www.bbclabs.com

Nutrient Analysis

A & L Western Ag Labs
1311 Woodland Ave., Suite 1
Modesto, CA 95351
209-529-4080 www.al-labs-west.com

Compost Thermometer

Reo Temp
11568 Sorrento Valley Road, Suite 10
San Diego, CA 92121
800-648-7737 www.reotemp.com

LaMotte Test Supplies

LaMotte Co.
P.O. Box 329
Chestertown, MD 21620
800-344-3100 www.lamotte.com

ERGS Meter

Pike Agri-Lab Supplies
P.O. Box 67
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866-745-3247 www.pikeagri.com 

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