



What Does Compost Analysis Tell You About Your Compost?

Andy Bary, Craig Cogger and Dan Sullivan
Washington State University - Puyallup and Oregon State University

Sampling

Without a good representative sampling procedure compost analysis is a waste of time and money. To collect a representative sample of your compost:

- Grab 15 to 20 samples from different parts of the pile and combine them together. Your sample may be 10 gallons or more in volume.
- Don't sample the surface of the pile. You will need to dig into the pile, or break the pile open in several places and sample the exposed surfaces.
- Mix the sample thoroughly and take a 1 quart sub sample to send to the lab.
- Cool or freeze the sample for shipment. Contact the lab for specific handling and shipping instructions.

Laboratories

Use a laboratory that analyzes for compost on a regular basis. When choosing a lab:

- Ask for a copy of their report form to see if the results are presented in a manner that you can understand and in units you can relate to.
- How does the lab want the sample handled?
- What days of the week should you ship the sample to reduce holding time in the lab?
- What specific analysis do you want run and how much does it cost?
- How soon should you see the results?
- Extension bulletin listing laboratories in the PNW:
<http://eesc.orst.edu/agcom/webfile/edmat/html/em/em8677/em8677.html>

| Analysis | Why Important | Unit | Best | Comments |
|--|---|-------------------------|-----------------|--|
| C:N ratio | Ratio of carbon to nitrogen. Stable soil organic matter has C:N of 12-15. | None | 12 to 15 | Compost with high C:N will reduce N availability to plants. This affects compost use for farmland application. |
| Electrical Conductivity (EC) | A measure of soluble salts. High salts may injure plants. | mmhos/cm or dS/m | 0 to 4 | EC is critical for greenhouse potting mixes, less critical for farmland application especially in humid areas. |
| pH | Acidity or Alkalinity. | None | Most plants 6-7 | Below 5 or greater than 8 may injure plants. |
| Ammonium Nitrogen ($\text{NH}_4\text{-N}$) | Ammonium nitrogen is plant available N form, but high values injure plants. | ppm or mg/kg dry weight | Less than 500 | Ammonium is most critical in greenhouse potting mixes and in high pH environments. |
| Nitrate Nitrogen ($\text{NO}_3\text{-N}$) | Nitrate-nitrogen is plant available. | ppm or mg/kg dry weight | 200-500 | Low values indicate lack of plant-available N. |
| Moisture Content | Tells how much water and organic matter is present. | Percent as is weight | 40 to 60 | Compost with >60% moisture may be clumpy and hard to spread. High moisture also means more water and less organic matter per yard applied. Low moisture materials (<40%) may be dusty. |
| Organic Matter | Tells percent of dry amendment that is organic matter. | Percent dry weight | 40 to 60 | Low values (<30%) usually indicate that organic matter has been mixed with sand or soil. High values (>60%) indicate fresh, uncomposted material. |

Bulk density

Bulk density is measured in lb/yd wet weight, and is useful to know for field calibrations of applications. You can estimate bulk density yourself using a 5-gallon bucket.

<http://www.puyallup.wsu.edu/soilmgmt/Composts.htm>

Stability and maturity

Maturity describes a compost's fitness for a specific use. Stability describes a compost's resistance to further biological breakdown. Immature composts can contain phytotoxic organic acids. Stability and maturity are critical for compost used in greenhouse potting mixes and bagged products, but less critical for application to farmland, especially when several weeks elapse between application and planting.

Particle size

Different end uses of compost have different particle size requirements. Composts used in greenhouse potting mixes need to be of specific size to maintain correct porosity and water-holding capacity. Particle size is less critical when compost is applied to farmland, although large particles can affect the spreadability of the compost. Many composters screen their product to remove large sticks and twigs. Laboratories will do particle size analysis, but for land application, visual inspection is sufficient.

Other nutrients

Most composts contain significant amounts of P, K, Ca, and Mg. Compost analysis for these nutrients is sometimes useful. Analyses generally report total nutrients, only a portion of which is immediately available to plants.

For more information and printout source go to: <http://www.soils1.org>.

Washington State University Puyallup Research Station, 2606 W Pioneer. Puyallup, WA 98371

Bary, A., C. Cogger and D. Sullivan. 2002. Poster at Biologically Intensive and Organic Farming Research Conference. Yakima, WA.

Reformatted for printout.