



# USE OF MANURE, COMPOST, & COMPOST TEA IN ORGANIC CROP PRODUCTION

*Guidance*

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Organic farmers are tasked with maintaining or improving soil organic matter content, and manure, compost, vermicompost, and compost tea are commonly used to do so. Operators must follow NOP regulations and PCO policy when using any of these fertility inputs on their organic operation.

## DEFINITIONS

- Manure- Feces, urine, other excrement, and bedding produced by livestock that has not been composted.
- Compost- The product of a managed process through which microorganisms break down plant and animal materials into more available forms suitable for application to the soil. Compost must be produced through a process that combines plant and animal materials with an initial C:N ratio of between 25:1 and 40:1. Producers using an in-vessel or static aerated pile system must maintain the composting materials at a temperature between 131 °F and 170 °F for 3 days. Producers using a windrow system must maintain the composting materials at a temperature between 131 °F and 170 °F for 15 days, during which time, the materials must be turned a minimum of five times.
- Vermicompost- The managed process of worms digesting organic matter into a beneficial soil amendment.
- Compost Tea- A water extract of compost produced to transfer microbial biomass, fine particulate organic matter, and soluble chemical components into water. Brewed for more than an hour.
- Compost Extract- The result of any allowed mixture of compost, water, additives that are not held for more than one hour before use.

## NOP REGULATIONS AND PCO POLICY

The USDA organic regulations at 7 CFR §205.203(c) require that manure and other fertility inputs must be managed so that they do not contribute to contamination of crops, soil, or water by excess nutrients, pathogens, heavy metals, or residues of prohibited substances.

## ADDITIONAL INFORMATION

### MANURE

Any animal manure that has not been composted according to the compost regulations (see below) is considered to be raw manure and must follow the raw manure restriction §205.203(c)(1). This includes aged manure and also composted manure that does not meet composting method regulations. Sewage sludge is prohibited under the USDA organic regulations at §205.105(g).

According to the USDA organic regulations §205.203(c)(1), raw animal manure may be

- Applied to land used for a crop not intended for human consumption;
- Incorporated into the soil not less than 120 days prior to the harvest of a product whose edible portion has direct contact with the soil surface or soil particles; or
- Incorporated into the soil not less than 90 days prior to the harvest of a product whose edible portion does not have direct contact with the soil surface or soil particles.

## **DEHYDRATED/PROCESSED MANURE**

Dehydrated or processed manure products must be treated so that all portions of the product reach a minimum temperature of either 150° F for at least one hour, or 165° F (without causing combustion) and are dried to a maximum moisture level of 12%, OR an equivalent heating and drying process may be used, if tests show that the product contains no more than 1000 MPN fecal coliform per gram of processed manure sampled and no more than 3 MPN Salmonella per 4 gram sample of processed manure. If dehydrated/processed manure meets the above requirements, it may be used without soil incorporation or days to harvest restriction.

## **COMPOST**

Off-farm compost must be reviewed by PCO, regardless of whether it is sourced from a certified organic operation or not. This includes spent mushroom compost purchased from certified organic mushroom houses. Producers making their own compost must keep accurate records of their composting procedure to demonstrate compliance and have these records available for review as part of their on-side inspection.

The following compost review criteria apply:

- Documentation of all compost inputs (feedstocks and additives) used in compost production are reviewed. All ingredients must be either non-synthetic or synthetics approved for use as soil amendments at §205.601. Common prohibited compost inputs include recycled wallboard gypsum and urea.
- Documentation must be available to show compost was produced in a manner compliant with §205.203(c)(2): produced in windrows and reached a temperature of between 131° F and 170° F for 15 days, and was turned at least 5 times, or else produced in a static aerated pile or in-vessel that maintains between 130° F and 170° F temperature for 3 days

Compost that contains any animal products (including livestock mortalities) and does not meet the compost requirements must follow the raw manure restriction §205.203(c)(1).

Compost that contains only plant materials and no animal products is permitted for use without restriction, even if it does not meet the compost requirements.

Composting livestock mortalities on-site is allowed if composting procedures are followed according to compost regulations. In Pennsylvania, the State Law says that any animal mortality needs to be properly disposed of in 48 hours.

## **VERMICOMPOST**

Vermicompost is allowed if:

- It is made from only allowed feedstock materials (including manure)
- aerobicity is maintained by regular additions of thin layers of organic matter at 1–3 day intervals,
- moisture is maintained at 70–90% and
- duration of vermicomposting is at least 12 months for outdoor windrows, 4 months for indoor container systems, 4 months for angled wedge systems, or 60 days for continuous flow reactors.

Producers must have records of all ingredients and the method of production. Vermicompost that contains only

plant materials and no animal products is permitted for use without restriction, even if it does not meet compost requirements.

### **COMPOST TEA AND EXTRACTS**

Compost tea or compost extracts that contain animal products are not allowed for the production of edible seed sprouts.

Compost tea may be made from PCO approved compost or vermicompost and may include other permitted materials (non-synthetic substances and synthetics permitted at §205.601 for soil and plant amendments). PCO must have documentation of compost production temperatures, methods, and all ingredients used in tea production.

Because of food safety concerns it is recommended that all tea made from compost (made with or without manure), that also contains added nutrients (fertilizers, carbohydrates, etc.) be tested for pathogens if used on crops for human consumption. Good Agricultural Practice (GAP) standards offer additional guidance. Contact PCO for more information.

### **RESOURCES**

- Mortality Composting Guidelines <https://extension.psu.edu/mortality-composting-guidelines>