

Balancing Food Safety and Organic Requirements for: Soil Amendments of Animal Origin

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Introduction

Livestock manure is a valuable resource for organic and sustainable soil management. It is most effectively used in combination with other sustainable practices such as crop rotation, cover cropping, green manuring and liming. The

timing of manure application is very important to ensure that the manure benefits the plants and soil. Manure, if applied and managed correctly, can be a great way to enhance soil and crop quality.



Photo by E. Chris Wisner

Requirements for Each Regulation

National Organic Program

- An organic producer must manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water.
- Raw manure must be incorporated into the soil not less than 120 days prior to the harvest of a crop with direct contact with the soil surface (e.g. Leafy greens), or 90 days prior to the harvest of a crop whose edible portion does not come in contact with the soil (orchard).

FDA FSMA Produce Safety

- Biological soil amendments of animal origin, including raw and composted manure, have been identified as routes of potential contamination of produce because they contain pathogens of public health concern. Previously there was no federal regulation on the production and application of compost in regards to food safety concerns. The Food Safety Modernization Act (FSMA) places new requirements on farms that are fully subject to it.

Frequently Asked Questions

What does FSMA regulatory text cover on biological amendments of animal origin?

- Establishes requirements for determining the status of a biological soil amendment of animal origin as treated or untreated and the requirements for treatment;
- Prohibits the use of human waste;
- Establishes application requirements and minimum application intervals; and
- Requires certain records of application and harvest intervals, documentation from suppliers of treated amendments, and records of treatment processes.

What is a biological soil amendment of animal origin?

Biological soil amendments of animal origin are biological soil amendments that consist, in whole or in part, of materials of animal origin, such as manure or non-fecal animal byproducts, including animal mortalities, or table waste, alone or in combination. The term 'biological soil amendment of animal origin' does not include any form of human waste.

There are two types of soil amendments of animal origin: treated and untreated. How is "treated" vs. "untreated" defined by FSMA?

FSMA defines a biological soil amendment of animal origin as **treated** if it:

- Has been completely processed to reduce microorganisms, either through composting (either verified through farmer records or by showing certificate from supplier to demonstrate compliance) or through some other validated scientific method (e.g., pelletized chicken manure that has been subject to heat treatment).
- In the case of **agricultural tea**, the biological materials used to make the tea have been processed and the water has no detectable generic *E. coli*/100 mL water.

FSMA defines a biological soil amendment of animal origin as **untreated** if it:

- Has not been processed to completion / or cannot verify through certificate
- Has become contaminated after treatment
- For compost tea: Materials used to make the tea aren't treated, or untreated surface water is used, or if the tea has detectable generic *E. coli*.

If I apply untreated (raw) manure on my farm, what is the time-interval in which I can harvest my crop to minimize the risk of contamination?

- The FDA is conducting a risk assessment of the number of days needed between the applications of raw manure as a soil amendment and harvesting to minimize the risk of contamination. This is estimated to take between 5-10 years to complete.
- At this time, the FDA does not object to farmers complying with the USDA's National Organic Program standards, which call for a **90 or 120-day interval between the application of raw manure and harvest**. In areas where raw manure is applied crops that do not touch the ground can be harvested 90 days after manure application. Crops that do touch the ground cannot be harvested until at least 120 days after manure application. The agency considers adherence to these standards a prudent step toward minimizing the likelihood of contamination while its risk assessment and research is ongoing.

What are the FSMA-approved composting methods?

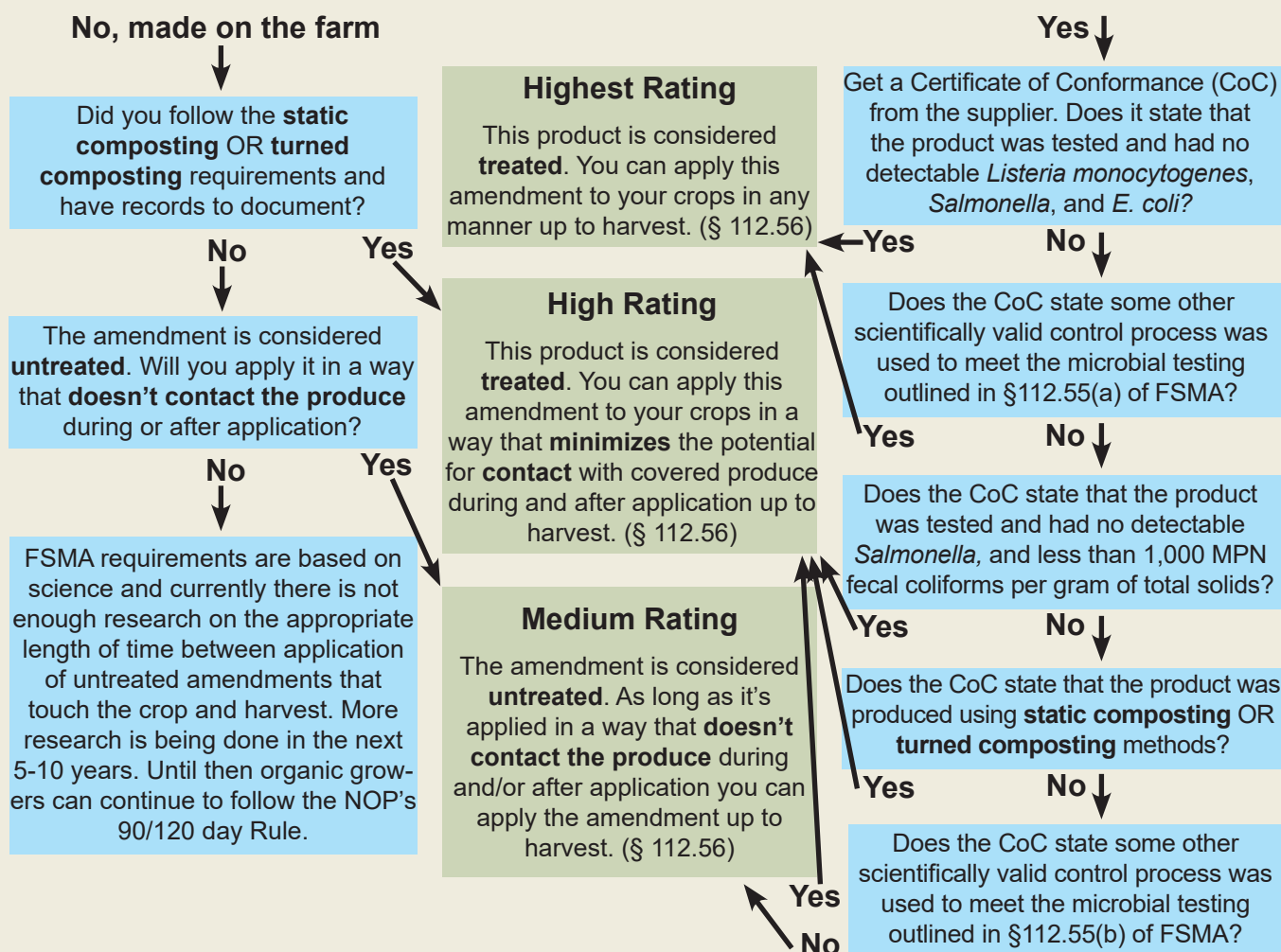
The Produce Safety rule, subpart F includes two composting methods that are approved because they meet the standards to limit the detectable amounts of bacteria (including *Listeria monocytogenes*, *Salmonella* spp., fecal coliforms, and *E. coli* O157:H7). Stabilized compost prepared using either of these methods must be applied in a manner that minimizes the potential for contact with produce during and after application. Farms are allowed to establish alternative composting methods if they provide

Treated Inputs of Animal Origin

FSMA has outlined two allowable treatment processes for soil amendments of animal origin. Take any biological soil amendment of animal origin (e.g. compost, raw manure, bone meal, feather meal, blood meal, etc.) through the flowchart below to determine how many days before harvest and in what manner the amendment must be applied under FSMA.

FSMA categorizes animal based amendments into **treated** and **untreated** categories. Determine what status your amendment is by answering these questions.

START HERE: Did you buy the product?



the same public health protection as the methods listed in the final rule.

- 1) **Static composting** that maintains aerobic (i.e., oxygenated) conditions at a minimum of 131°F (55 °C) for 3 days and is followed by adequate curing, which includes proper insulation.
- 2) **Turned composting** that maintains aerobic conditions at a minimum of 131°F (55 °C) for 15 days, with a minimum of five turnings, and is followed by adequate curing, which includes proper insulation.
- 3) **Alternative methods** -- If you use an "alternative" composting process not described

above, records of scientific data or information you rely on to support any alternative, but validated, composting process must be kept.

Are there any other FSMA approved processes for other inputs of animal origin (e.g. blood meal, bone meal, fish meal or feather meal)?

Yes. Farmers can get a certificate from their input supplier verifying that the inputs have gone through a scientifically valid controlled physical process (for example, thermal), chemical process (for example, high alkaline pH), or combinations of those two that can demonstrate that the microbial standard is met.

Biological Soil Amendments of Animal Origin Recordkeeping Requirements

IF YOU MAKE YOUR OWN COMPOST: For soil amendments that growers treat and apply on their own farms, records must be kept to document that process controls (e.g., time, temperature, and turnings) were achieved.

- Records related to on-farm soil amendment treatment must be reviewed, dated, and signed by a supervisor or responsible party within a reasonable time after the records are made.

IF YOU PURCHASE COMPOST OR OTHER INPUTS OF ANIMAL ORIGIN, growers must document annually that:

- The process used to treat the biological soil amendment of animal origin is a scientifically valid process that was carried out with appropriate process monitoring; and
- The biological soil amendment of animal origin has been handled, conveyed, and stored in a manner and location to minimize the risk of contamination by an untreated or in-process biological soil amendment of animal origin.

You can demonstrate compliance with requirements of purchased inputs by getting a certificate of conformance or certificate of analysis for the product from your supplier.

References

1. Maintaining soil health and the 90/120 manure application requirements are described in the National Organic Program part §205.203(c) of the Federal Regulations. Full text of the regulations can be accessed here: https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=809c076a56d166fd00ea95d286bd0dc5&mc=true&n=pt7.3.205&r=PART&ty=HTML#se7.3.205_1201

2. Biological Soil Amendments of Animal Origin are covered in Subpart F of the regulatory text on the Standards for Growing, Harvesting, Packing, and Holding of Produce for Human Consumption. <https://www.federalregister.gov/d/2015-28159/p-2231>

3. FDA FSMA Factsheet on Key Requirements. <https://www.fda.gov/downloads/Food/GuidanceRegulation/FSMA/UCM472887.pdf>

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