Soil Amendments

Whenever you use soil amendments in the farm it’s important to consider the types of soil amendments used and understand the risks they may pose to the produce that is being grown.

Biological soil amendment of animal origin consists, in whole or in part, of materials of animal origin, such as manure or non-fecal animal byproducts, peat moss, perlite, pre-consumer vegetative waste, sewage sludge biosolids, table waste, agricultural tea and yard trimmings) intentionally added to the soil to improve the chemical or physical condition of soil in relation to plant growth or to improve the capacity of the soil to hold water.

Biological soil amendments means any soil amendment containing biological materials such as stabilized compost, manure, animal byproducts, peat moss, vegetative waste, biosolids, table waste, agricultural tea, or yard trimmings, alone or in combination.

Biological soil amendments of animal origin are highest at risk for produce contamination if improperly used. The FSMA produce safety rule only covers biological soil amendments of animal origin.

Biological soil amendment of animal origin consists, in whole or in part, of materials of animal origin, such as manure or non-fecal animal byproducts including animal mortalities such blood meal, bone meal, feather meal or fish emulsions or table waste, alone or in combination. This category does not include any form of human waste. Human waste is prohibited for use on produce crops, unless it meets the EPA regulation for biosolids.

In the regulation, biological soil amendments of animal origin are divided into two types, treated or untreated.

The produce safety rule defines a treated soil amendment as having been processed to completion to reduce microorganisms of concern.

For more information, please follow us at extension.psu.edu/fsma.
In the case of agricultural tea, the biological materials used to make the tea need to have been processed and the water can’t have detectable generic *E. coli*/100 mL of water. This can be achieved by using a scientifically valid controlled physical process (e.g., thermal), chemical process (e.g., high alkaline pH), biological process (e.g., composting), or a combination of controlled physical, chemical and/or biological processes that have been scientifically validated to satisfy the microbial standard for *Listeria monocytogenes*, *Salmonella* species, and *E. coli O157:H7*; or the microbial standard for *Salmonella* species and fecal coliforms.

In the case of agricultural tea, the biological materials used to make the tea need to have been processed and the water can’t have detectable generic *E. coli*/100 mL of water.

**Soil Amendments**

This can be achieved by using a scientifically valid controlled physical process (e.g., thermal), chemical process (e.g., high alkaline pH), biological process (e.g., composting), or a combination of controlled physical, chemical and/or biological processes that have been scientifically validated to satisfy the microbial standard for *Listeria monocytogenes*, *Salmonella* species, and *E. coli O157:H7*; or the microbial standard for *Salmonella* species and fecal coliforms.

**Untreated biological soil amendment of animal origin are those that:**

- Have not been processed to completion in accordance with the previous table, or in the case of agricultural tea, the biological materials have not been processed or the water used to make the tea is untreated surface water, or has detectable generic *E. coli* in 100 mL of water.
- Have become contaminated after their treatment.
- Have been recombined with an untreated biological soil amendment of animal origin.
- Is or contains a component of untreated waste that you know or have reason to believe is contaminated with a hazard or has been associated with foodborne illness.
- Is an agricultural tea that contains an agricultural tea additive such as molasses, yeast extract, or algal powder added in order to increase microbial biomass.

**Keep in mind that all biological soil amendments of animal origin, including mortality composting, must meet the microbial standards in the rule (sections 112.55(a) and (b)) or they must be considered untreated.**

Assess the risks from the soil amendments being used in your farm. Lower your food safety risks by properly managing the soil amendments you use. Always keep in mind the type of crop where you will apply the amendment, review the application method and timing of application.

For more information, please follow us at extension.psu.edu/fsma.

---

**The Rule**

Section 112.55 (a)

Section 112.55 (b)

**Microorganism**

**Standard**

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>E. coli</em></td>
<td>Not detected using a method that can detect 1 CFU/5 grams (or ml, if liquid is being sampled) analytical portion.</td>
</tr>
<tr>
<td><em>Salmonella</em></td>
<td>Not detected using a method that can detect 3 MPN/4 grams (or ml, if liquid is being sampled) of total solids.</td>
</tr>
<tr>
<td><em>E. coli</em> O157:H7</td>
<td>Not detected using a method that can detect 0.3 MPN/1 gram (or ml, if liquid is being sampled) analytical portion.</td>
</tr>
</tbody>
</table>

Fecal coliforms: Less than 100 MPN/1 gram of test solids (dry weight basis).

---

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

This publication is available in alternative media on request.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability, or protected veteran status.