

Biological Soil Amendments of Animal Origin (BSAAO)

Food Safety Modernization Act (FSMA) Fact Sheet for Produce Growers

What is a BSAAO?

Any soil amendment intentionally added to the soil to improve the chemical or physical



condition that contains an animal ingredient (manure, fish emulsion, egg shells, blood meal, bone meal, etc.). If it comes from an animal in any way, shape, or form, it's a BSAAO. This flyer is intended for growers using a BSAAO.

Is it ok to use BSAAO?

Absolutely! This flyer will discuss how to properly use treated and untreated soil amendments of animal origin.

When is a BSAAO considered treated?

If the treatment was a scientifically valid controlled process. This process can be physical (e.g. thermal), chemical (e.g. high alkaline pH), biological (e.g. composting), or a combination of the above. The treatment process must be validated to satisfy the microbial standard of 21 CFR Part 112.

Can I do the composting myself?

Yes. Just remember you must use a scientifically valid controlled process for composting. Aged or stacked manure is not considered a valid treatment process!

If I am doing the composting, do I have to send samples for testing?

No. You must keep a record documenting process controls (e.g. time, temperature, and turnings).

What if I am purchasing a treated soil amendment of animal origin?

To be considered a treated BSAAO you will need an annual Certificate of Conformance from the supplier. This certificate must state the following:

- Treatment process is a scientifically valid process that has been carried out with appropriate process monitoring; and
- the amendment has been handled, conveyed and stored in a manner and location to minimize the risk of contamination

Are there minimum time intervals from applying a BSAAO to harvesting of produce?

Yes. The treatment status determines the time interval from application to harvest (21 CFR Part 112 Subpart F).

Treatment Type	Application Method	Time Interval
Untreated	Does not contact produce during and minimizes the potential for contact after application	90/120-day rule
Untreated	Does not contact produce during or afterwards	Unrestricted
Treated § 112.54(a)	Unrestricted	Unrestricted
Treated § 112.54(b)	Minimizes potential for produce contact	Unrestricted

What is page 2 all about?

Designed specifically for trainers to help with Module 3 of the PSA Grower Training.

If BSAAO is treated to § 112.54a

- Applied in any manner with no restrictions
- 0 day harvest interval

L. monocytogenes

Not detected using a method that can detect one colony forming unit (CFU) per 5 gram (or milliliter, if liquid is being sampled) analytical portion

Salmonella spp

Not detected using a method that can detect three most probable numbers (MPN) per 4 grams (or milliliter, if liquid is being sampled) of total solids

E. coli O157:H7

Not detected using a method that can detect 0.3 MPN per 1 gram (or milliliter, if liquid is being sampled) analytical portion

If BSAAO is treated to § 112.54b

- Applied in manner minimizing potential for produce contact during/after application
- 0 day harvest interval

Salmonella spp

Not detected using a method that can detect three MPN *Salmonella* species per 4 grams of total solids (dry weight basis)

Fecal Coliforms

<1,000 MPN fecal coliforms per gram of total solids (dry weight basis)

Two options under § 112.54b are 1) static composting that maintains aerobic conditions at a minimum of 131°F for 3 consecutive days and is followed by adequate curing; and 2) turned composting that maintains aerobic conditions at a minimum of 131°F for 15 days (do not have to be consecutive), with a minimum of five turnings, and is followed by adequate curing.

Untreated BSAAO

Applied in a manner that does not contact produce during or after application = 0 day harvest interval

Untreated BSAAO

Applied in a manner that does not contact covered produce during application and *minimizes the potential for contact* with produce after application = Under FDA review -- Currently 90/120 day rule

