

Soil Amendments: Manure and Organic Fertilizers

Segment 4: Plant and Animal Byproducts

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Form AD-425-C (Revised 9/2006)

Soil Amendment – Plant Byproducts

- *Alfalfa meal* (or pellets) contains around 3% nitrogen and is commonly used as an animal feed.
- *Cottonseed meal* is a rich source of nitrogen (7%).
- *Fruit pomace* is what remains after the juice is extracted.
- *Soybean meal* has about 7% nitrogen.
- *Corn gluten meal* has about 9% nitrogen, but it has allelopathic properties that inhibit seed germination.
- *Wood ash* contains about 2% phosphate and 6% potash, but may be contaminated with heavy metals or plastic and typically has a high salt content.



Soil Amendment – Animal Byproducts

- *Blood meal* contains about 12% nitrogen.
- *Bone meal* contains about 27% total phosphate.
- Nitrogen levels in *feather meal* are fairly high (7 to 10%), but nitrogen is released slowly.
- *Fish meal* contains about 10% nitrogen, along with about 6% phosphate. The fertilizer analysis of *fish emulsion* varies with preparation method.
 - Acid-digested fish emulsion \approx 4-4-1
 - Enzyme-digested fish emulsion \approx 4-1-1
- *Feather meal* contains about 10% nitrogen.



Plant/Animal Byproducts

- Plant and animal byproducts are typically mixed with other amendments to provide a more complete fertilizer.

Photo credit: Charles Gould



Soybean
meal



Food Safety Considerations

- Food safety concerns are minimal.
 - If treated with a scientifically validated process
- Prevent contamination.
 - If contaminated or unknown it should be treated like raw manure



Feather meal



Blood meal



Bone meal



Recordkeeping

- Recordkeeping is an important component of a food safety program. Document the following:
 - Type of soil amendment being applied
 - Composting method and microbial testing (if applicable)
 - Fields receiving application
 - Date of application
 - Rate (quantity applied per acre)
 - Method of application
 - What crops will be planted
 - Third party purchased amendment
- Application records should be kept for five years.



Recordkeeping for Food Safety

- Name and address of supplier
- What was purchased
- Date and amount purchased
- Ensure proper handling procedures
- That a scientifically validated process was used



Buyer Demand

- Demand for plant and animal byproduct soil amendments is strong where there are large numbers of organic farmers.

Photo credit: Charles Gould



Cottonseed
meal



Key Points

- Plant and animal byproducts are unlikely to contain pathogens. However, care must be taken during storage to prevent contamination.
- Plant and animal byproducts are typically used in conjunction with another organic soil amendments to achieve a more balanced fertilizer.
- Most plant and soil amendments are slow release fertilizers.



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