

Composting Guidelines for Vegetable Gardens **May 2011**

Background

In 2010 the Board of Health received a letter from two Foss Farm gardeners, complaining about the increasing use of fresh animal bedding at the Foss Farm Community Gardens. The complaint centered on the urine and feces content in the bedding, resulting in odor, flies, insects, and rodents. The letter states that the material “is making for an unpleasant and unhealthy gardening environment for other gardeners” and suggested that the use of fresh animal bedding be banned.

In researching the matter beyond the nuisance issues mentioned above, the Board found that there is general consensus among scientific and government sources that improperly treated animal manure is a source of pathogenic organisms on fresh produce. The Board has reviewed available literature and contacted numerous academic and government experts on this issue. Based on these findings the Board recommends the following:

Guidelines and Best Management Practices

1. Apply only properly composted manure to vegetable fields.
2. Do not use cat, dog, or pig manure in gardens or compost piles.
3. Thoroughly wash raw vegetables before eating.
4. Fresh or uncomposted animal bedding should not be used on vegetable gardens during the growing season.

Annotated Bibliography for further reading:

U. S. Food and Drug Administration - “Good Agricultural Practices for Manure Management”

Online at

<http://www.fda.gov/downloads/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/ProduceandPlanProducts/UCM169112.pdf> (accessed 5/12/11)

Growers should follow good agricultural practices for handling animal manure to reduce the introduction of microbial hazards to produce. Such practices include processes, like composting, that are designed to reduce possible levels of pathogens in manure. Good agricultural practices may also include minimizing direct or indirect manure-to-produce contact, especially close to harvest.

UMass. Amherst School of Public Health & Health Sciences. (Nyachuba, et. al.) – “BMP’s [Best Management Practices] for Vegetable Production/Good Agricultural Practices/ Manure Application”

Online at <http://www.umassvegetable.org/documents/BMPGAP.pdf> (accessed 5/12/11)

- Apply only properly composted manures on vegetable fields.
- Document manures used, the dates and methods of composting, and application dates.
- Do not apply non-composted manure within 120 days of harvest.
- Incorporate manure into soil.

Guidelines for Using Manure On Vegetable Gardens - by: Val Hillers, Ph.D. Extension Food Specialist, Washington State University. Online at <http://foodsafety.wsu.edu/consumers/factsheet15.htm> (accessed 5/12/11)

When fresh manure is used in a vegetable garden, there is a risk that pathogens that cause disease may contaminate garden vegetables. Pathogens (microorganisms which cause disease) that have been linked to manure applications include bacteria such as *Listeria*, *Salmonella*, and *E. coli* O157:H7, as well as parasites such as roundworms and tapeworms.

The risk of manure application is greatest for root crops like radishes and carrots and for leafy vegetables such as lettuce where the edible part touches the soil. Careful washing and/or peeling will remove most of the pathogens responsible for disease. Thorough cooking is even more effective at killing pathogens on garden crops.

To reduce the risk of disease, we suggest these precautions:

1. **Composted manure is safest to use for gardens.** You can either purchase composted manure or compost manure yourself. If you are composting manure, follow the American Organic Standards for compost production:
 - o the compost must reach a temperature of at least 130 degrees for a period of several days
 - o thoroughly mix the compost
 - o let the compost get to 130 degrees again
2. **If fresh (uncomposted) manure is to be used it should be applied at least two weeks before planting and roto-tilled or disked into the soil.** The American Organic Standards state that unless manure is composted, it must be applied at least 120 days prior to harvest of products likely to be eaten raw.
3. **If the 120-day waiting period is not feasible, such as for short season crops like lettuce or leafy greens, apply only properly composted manure.**
4. **For added safety, use water that meets drinking water standards to irrigate vegetables that are to be eaten raw.** This is particularly important within one month of harvest.
5. **Thoroughly wash raw vegetables before eating.**
6. Do not use cat, dog, or pig manure in gardens or compost piles because parasites that can be in these manures may survive and remain infectious for people.

"If You Use Manure in Your Garden, Take Precautions" - Carol Savonen, Oregon State University Extension Service.

Online at <http://extension.oregonstate.edu/gardening/node/55> (accessed 5/12/11)

Recent food poisoning outbreaks have been traced to fruits and vegetables eaten raw. Sprouts, lettuce, cabbage, tomatoes and melons have all been involved in isolated outbreaks, explained Carolyn Raab, food and nutrition specialist with the Oregon State University Extension Service. "The sources of contamination included manure, irrigation water, ice, unsanitary human handling, harvesting equipment or transport vehicles," said Raab. Home gardeners should be

aware that if they grow their produce in soil amended with unsterilized animal manure, they may expose their families to pathogens, microorganisms which may cause disease.

Microorganisms which have been linked to manure applications include bacteria such as Listeria, Salmonella and E. coli 0157:H7. Parasites found in manure include roundworms and tapeworms. These hazards can be avoided by home gardeners with a little common sense and care, said Raab.

If you use unsterilized manure to amend your soil, you should be especially careful when washing garden produce that has had direct contact with soil or irrigation water. Carrots, onions, lettuce, radishes, and other crops eaten raw should be especially well washed. Peeling vegetables also helps insure your produce is safe.

"It is better to be safe than sorry," said Raab. "To reduce health risks, wash all fruits and vegetables thoroughly under running water before eating them. Use a vegetable brush to remove visible soil."

"Safe handling is particularly important when fruits and vegetables will be eaten by people who are more prone to get food poisoning," she said. "Young children, pregnant women, older adults and those with cancers, AIDS and other illnesses that affect the immune system are more susceptible than others."

If a family member is at higher risk, Raab recommends serving cooked or canned vegetables and fruits for an extra margin of safety. Heating kills bacteria and parasites. But don't go overboard with soap, as the residues can be harmful.

To lower your risk from soil-borne pathogens:

*Apply manure at least 60 days before harvesting any garden vegetables to be eaten raw. *Fall is the best time to amend soil with manure; it allows enough time for breakdown of pathogens before spring planting.

*Never apply manure after root crops or to produce that comes in contact with the soil is planted. [Sic]

*Do not use dog, cat or pig manures in gardens or compost piles because pathogens or parasites may survive and remain infectious to people.

Mass. Dept. of Agricultural Resources MDAR "Guide to Agricultural Composting" -

Online at http://www.mass.gov/agr/programs/compost/docs/Guide_to_Ag_Composting2010.pdf

-(accessed 5/12/11)

MDAR recommends that for proper composting, a temperature of 131 degrees or above must be maintained for a minimum of 3 days in order to destroy human pathogens.