

Unit F: Soil Fertility and Moisture Management

Lesson 2: Determining the Value of Manure and Compost

Terms

- Compost
- Fertilizer
- Global climate change
- Greenhouse effect
- Manure
- Methane
- Nitrate
- Organic matter

What qualities does manure have?

I. Manure is a byproduct of raising animals.

- ❖ It is used for energy, organic matter, and as a fertilizer for crops.
- ❖ Manure has value because of its contents.

- A. Since manure is produced by all animals raised, it is very available and inexpensive.
- ❖ One ton of manure contains an average of 226 kilograms organic matter, 4.5 kilograms nitrogen, 2.2 kilograms phosphoric acid, and 4.5 kilograms of potassium. Since plants need all of these to grow successfully, it is a great source of fertilizer.
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B. Manure requires equipment and time to utilize in the fields to grow crops.

- ❖ Commercial fertilizers have taken the place of manure on many fields.
- ❖ The advantage of manure over commercial fertilizers is that it contains organic matter in addition to nutrients.

Manure Spreader



- c. Since fertilizers are oil and petroleum based some are concerned that the energy crisis will lead to high priced fertilizer.
- ❖ Manure is being used more often in recent years by farmers that are returning to organic means.

Spreading manure in place of fertilizers



What are the uses and value of manure?

II. Manure is plentiful and has great value and several uses.

A. The value of manure depends on a couple specific factors:

1. **Kinds of animals producing the manure**
2. **What feed the animals are consuming and how much of the nutrients are going to the animals**
3. **How the manure is handled**
4. **How the manure is managed during application to crops**
5. **What kind of soil, crops, and slope the manure is applied to**

B. Uses of manure vary but include:

1. Fertilizer
2. Organic matter
3. Methane gas used for electricity
4. Increased crop yields for many years
5. Can be used on both crop fields and pasture or range areas

Liquid Manure
Applications



C. **Organic matter** is dead plant and animal matter that originates from living organisms.

Methane is a gas that is given off from organic matter.

Fertilizer is a material that contains nutrients needed by plants.

D. Care needs to be taken with applying too much manure because excess application can lead to salt problems and nitrate problems.

❖ **Nitrate** is the form of nitrogen used by plants.

What are the uses and value of compost?

- III. Compost is made by piling alternate layers 10 to 15 centimeters deep of plant material (grass clippings, old sod straw, or leaves) and soil. Adding nitrogen fertilizer and keeping the pile moist speeds up the decay. Organic matter added by the cover crop or compost helps keep the soil loose, adds nutrients, improves drainage, and increases moisture holding capacity.

- A. Compost can be made out of leaves, grass clippings, vegetable and fruit scraps, coffee grounds and filters, tea bags, wood chips, straw, and small twigs.
- B. Tiny living things do much of the work of breaking down organic materials to form compost. These tiny workers are called microorganisms and include such things as bacteria and fungi. Animals living in the soil help microorganisms break down organic materials. Worms and pill bugs are examples of soil animals that help change organic waste into compost.



- C. As microorganisms and soil animals turn organic materials into compost, they use the organic materials as food. The organic materials provide many of the nutrients that plants need for growth and activity. Eventually, these nutrients are turned to the soil, to be used again by trees, grass, and other plants.



- By using compost you return organic matter to the soil in a usable form. Organic matter in the soil improves plant growth by helping to break up heavy clay soils and improving their structure, by adding water and nutrient-holding capacity to sandy soils, and by adding essential nutrients to any soil. Improving your soil is the first step toward improving the health of your plants. Healthy plants help clean our air and conserve our soil, making our communities healthier places in which to live.

- D. Compost can be used to enrich the flower and vegetable garden, to improve the soil around trees and shrubs, as a soil amendment for houseplants and planter boxes and, when screened, as part of a seed-starting mix or lawn top-dressing. Before they decompose, chipped woody wastes make excellent mulch or path material. After they decompose, these same woody wastes will add texture to garden soils. By composting and mulching you can save money by reducing your fertilizer and landscaping bills, lowering your water bill, and spending less on trash pickups or disposal.

The following troubleshooting chart is a guide to more efficient composting using a turning unit.

Sympton	Problem	Solution
The compost has a bad odor	Not enough air.	Turn it. Add coarser materials.
The center of the pile is dry.	Not enough water.	Moisten materials while turning the pile.
The compost is damp & warm in the middle, but nowhere else.	Too small.	Collect more material & mix the old ingredients into a new pile.
The heap is damp and sweet-smelling but still will not heat up.	Lack of nitrogen.	Mix in a nitrogen source like fresh grass clippings, fresh manure, bloodmeal or ammonium sulfate.

Review/Summary

1. Describe qualities of manure.
2. List uses and value of manure.
3. Discuss environmental concerns with manure.