

Manure Management: Protecting Water Resources from Nutrient Pollution

Animal waste from barnyards, manure pits and field application can pollute ground and surface water when not contained or applied properly. By making Best Management Practices (BMPs) part of a conservation plan, a farmer can greatly reduce the chances of contamination. A manure system should prevent contamination of water in lakes, streams, springs and wells.

BMPs are managerial, such as manure management, rotational grazing, and conservation tillage, or structural, such as manure pits or lagoons, terraces and fencing.



You can prevent contamination of groundwater by observing the following practices:

MANAGERIAL

Apply manure appropriately - Determine the rate of application that will fulfill the crop's nutrient needs without causing environmental problems. This includes:

- **Timing** - Spread manure only when conditions are favorable. Avoid spreading manure in the winter or early spring, because manure applied to frozen ground can pollute surface waters during spring thaw run-off. If winter application is required, only spread manure on sod-covered fields where manure won't runoff as easily. *Do not spread manure in early spring, because the soil is often saturated.*
- **Location** - Avoid spreading manure on sloped lands or areas where manure could seep into water sources such as wetlands. Do not spread manure within 200 feet of a water source unless it can *immediately* be incorporated into the soil. *Avoid manure application on land subject to annual flooding, especially during flood prone periods.*
- **Incorporation** - Manure incorporated into soil is less prone to run-off than if it remains on the surface. Incorporate manure into the soil within 72 hours of application. *This is particularly important on slopes, near water bodies and during wet seasons.*

Test Soil and Manure

- Soil testing helps a farmer to decide what the nutrient needs are for the crop.
- Manure testing shows levels of nutrients in the manure.

By comparing the results of both tests, farmers can apply the right amount of manure. *Never apply more nutrients than needed – this is the first step in reducing nutrient run-off.*

Create a Composting site - By composting manure and other organic materials the farmer produces an excellent soil conditioner.

- Composting shrinks the weight and volume of manure and simplifies handling.
- Composting decreases odors and reduces the amount of pathogens.

Install and Maintain Buffer Areas. Riparian buffer zones are vegetated areas between streams or rivers and crop or pastureland. These forests and grasses act as living filters by absorbing nutrient and chemical run-off.

STRUCTURAL

Store manure properly - Manure should be stored in properly located and constructed facilities. The storage facility should be:

- Covered, contained, and impermeable to prevent runoff or leaching to the ground
- Have the capacity to hold a minimum of 3-6 months of manure.

Control Barnyard Run-off - Run-off from poorly managed barnyards and feedlots can carry pathogens, nutrients and oxygen-demanding substances into water sources.

- Shape barnyards by grading or filling so that run-off can be directed to a controlled outlet such as a *Settling Basin*
- *Grass Filter Strips* absorb nutrients from run-off reducing threats to surface waters

Install Fencing - For safety, livestock standing, feeding, and grazing areas are prohibited within 100 feet of drinking water reservoirs and their tributary streams. Construct barriers that prevent livestock or wildlife from accessing water sources. The farmer may need to bring water to livestock rather than livestock to water.

Construct Stream Crossings - Trampled stream banks erode easily allowing manure and sediments into surface waters. Limit the amount of access livestock have to stream banks by directing them over constructed stream crossings.

Build Diversions and Terraces - Divert run-off from critical areas using these channeled ridges or earthen embankments constructed perpendicular to slopes.

Install Grassed Waterways – Natural or constructed vegetated channels which filter and divert run off away from water resources.

Use a Conservation Plan - Farm operators should have a conservation plan designed to optimize crop yield and minimize effects on ground and surface water. This plan could include many of the guidelines described in this fact sheet.



Any questions or concerns about manure use should be directed to:

The Farm Products and Plant Industries at the Massachusetts Department of Food and Agriculture (DFA), 251 Causeway Street, Boston, MA 02114. Telephone: 617-626-1700. Website: www.massdfa.org

For additional information on Best Management Practices, developing a conservation plan, or creating a composting site, call your local United States Department of Agriculture Conservation Service office or contact the Massachusetts Department of Food and Agriculture at 617-626-1700 or access their web site at www.massdfa.org. Funding for incorporating BMP's to a farm is available through both the USDA and MFDA.