

AGRICULTURAL WASTE MANAGEMENT

What is waste management?

The proper management of waste from agricultural operations can contribute in a significant way to farm operations. Waste management helps maintain a healthy environment for farm animals and can reduce the need for commercial fertilizers while providing other nutrients needed for crop production. Agricultural waste typically associated with animals includes but is not limited to manure, bedding and litter, wasted feed, runoff from feedlots and holding areas, and wastewater from buildings like dairy parlors.

Best management practices (BMPs) such as pasture rotation and renovation to maintain adequate vegetative cover, riparian buffers, and structures built to trap or retain waste should be utilized in order to prevent contamination of both surface waters and groundwater. When this waste is carried in overland flow from rain events, it is categorized as a nonpoint source pollutant, or one that originates from diffuse areas of land. Nonpoint source pollutants are one of the primary water quality problems in the United States. Furthermore, runoff and waste that does not pass through a vegetated buffer zone along the waterbody is likely to result in bank erosion and subsequent property loss.

Why be concerned about waste management?

If not managed properly, agricultural waste from farm operations can pollute the environment resulting in impacts to water quality and a general loss of aesthetics. The degradation of water quality can impact adjacent waterways and groundwater both onsite and offsite. This degradation reduces the ability of these resources to support aquatic life and water for human and animal consumption. Nitrates, which are commonly associated with fertilizers and agricultural waste runoff, can seep into groundwater. Well water contaminated with nitrates is hazardous to humans, particularly infants, as it results in oxygen depletion in the blood. As insinuated above, proper waste management can reduce operating costs associated with fertilizer application if managed properly.



In an extreme case of improper management, livestock waste is concentrated in a riparian area causing severe water quality problems.

What are the benefits of waste management?

Like most other aspects of agricultural production, there are requirements for the application and management of agricultural waste on farms. However, the primary reasons behind managing agricultural waste make good sense both environmentally and economically. Where feasible, the reuse of animal waste in farming operations can reduce the quantity and hauling costs of commercial fertilizer. The contribution of animal waste increases the organic matter content of soils, which not only increases nutrient availability for crops but also improves the water holding capacity and tilth of the soil. Good waste management reduces the instances of well water contamination and minimizes surface water pollution.

How would one implement waste management?

Fortunately, there are planning documents and BMP options available to farmers for managing agricultural waste. Waste management is commonly part of an overall nutrient management plan developed for a farm. These plans play an integral role in the comprehensive waste management planning process and are used to spell out how farmers intend to maximize the benefit of nutrients available from farm waste products to benefit crop production and minimize environmental impact. Although State and Federal governments are demanding more accountability in agricultural waste management, many such plans are developed voluntarily as an important aspect of the business. Developing a plan for how waste is managed on your farm not only aids in the tracking

of operational costs and the making of better management decisions; it can also be used to leverage State and Federal funding assistance. Self-regulation protects private property rights and reduces the need for governmental control and regulations.

Site-specific waste management strategies should be developed and adhered to in order to maximize cost efficiency and adequately protect local environmental resources. This will require that routine soil and waste testing take place to match the crop needs to the nutrients available. By tracking the timing and application rates (quantity) of agricultural waste required, the space required to store operational waste can be determined.



A covered livestock feeding area located on an upland section of pasture is one example of good waste management.

Waste can be stored as a solid in building structures, or as a liquid in holding ponds or anaerobic lagoons. Being able to store waste in an acceptable form until it is needed is a critical component of a waste management strategy. If waste is not handled properly or is not applied at the right time, valuable nutrients are lost and environmental and human and animal health problems are created. Besides the management practices noted above, the BMPs listed below can be used to improve waste handling and application:

- Do not spread waste near waterways;
 - Locate winter feeding areas in relatively flat upland areas;
 - Employ other conservation practices that minimize runoff and erosion to fields where waste is applied;
 - Avoid spillage or overflow of lagoons, ponds and structures used to house waste;
 - Regularly check waste application equipment and make sure it is calibrated;
 - Where possible, divert runoff from land above livestock areas and away from nearby surface waters and wells;
 - If an alternative water supply source is unavailable for livestock, create dedicated, limited access points to streams for drinking; and
 - Consider adding flush gutters to livestock confinement systems to confine waste for future application.
- Avoid over-application by only applying manure to crops that can benefit from the nutrients;
 - Do not apply waste to fields when heavy rain is expected and runoff potential is high;
 - Exclude livestock from sensitive areas such as riparian buffers and wetlands;

Other ways to improve waste management on farms is to routinely check areas where fuel and chemicals are stored for spills and leaks and to be sure your farm is in compliance with applicable storage and handling regulations. Keeping up-to-date on technologies designed to improve waste management and integrating them into your waste management strategy is also good practice.

Contact the following agencies for technical and/or cost share assistance with waste management:

North Carolina

USDA Natural Resources Conservation Service
225 Valley River Ave., Ste. J
Murphy, NC 28906
(828)837-6417 x3
glenn.carson@nc.usda.gov

Georgia

USDA Natural Resources Conservation Service
185 Welborn Street, Box 3
Blairsville, GA 30512
(706) 745-2794 x3
doug.towery@ga.usda.gov

North Carolina

N.C. Division of Water Quality, Animal Feeding Operations Unit
1636 Mail Service Center
Raleigh, NC 27699
(919) 733-3221
http://dem.ehnr.state.nc.us/aps/afou/afou_home.htm

Cherokee Co. Soil & Water Conservation District
225 Valley River Ave., Ste. J
Murphy, NC 28906
(828)837-6417 x3
michael.stiles@cherokeecounty-nc.gov

Clay Co. Soil & Water Conservation District
PO Box 57
Hayesville, NC 28904
(828) 389-9764
glen.cheeks@nc.nacdnet.net

The following web sites provide additional information about waste management:

USDA Natural Resources Conservation Service
Nutrient and Pest Management Technical Resources
<http://www.nrcs.usda.gov/technical/nutrient.html>

Job Sheets for Individual Agricultural Practices
ftp://ftp-fc.sc.egov.usda.gov/NC/ECS/Job_Sheets/NC_Job_Sheets.htm

Vermont Natural Resources Conservation Service
Fact Sheets for Individual Conservation Practices
http://www.vt.nrcs.usda.gov/technical/Conservation_Practices/Index.html

North Carolina Division of Soil and Water Conservation
Guidance Documents for Animal Waste Management
http://www.enr.state.nc.us/dswc/pages/animalwaste_management.html

North Carolina State University, College of Agriculture & Life Sciences
Waste Management Program Departmental Links
http://www.cals.ncsu.edu/waste_mgt/

U.S. Department of Agriculture, Cooperative State Research, Education and Extension Service
Manure and Nutrient Management links
<http://www.csrees.usda.gov/manurenutrientmanagement.cfm>

University of Georgia, Department of Biological and Agricultural Engineering, Cooperative Extension
<http://www.engr.uqa.edu/service/extension/publications/>