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FARM PRACTICE — MANURE STORAGE AND USE

Description

Manure is a by-product generated by all animals and has value as a soil conditioner and a nutrient source for essential elements such as nitrogen, phosphorus and potassium. The nutrient value of manure varies considerably and is dependent on such factors as the type and age of an animal, the nutrients in animal feed, and on manure collection, storage and spreading methods used. Manure is increasingly being considered as a valuable green energy source for processes such as anaerobic digestion.

Manure is generally considered to be a fertilizer. The growth characteristics and nutrient requirements of crops should be carefully considered before fertilizing. Manure should be spread onto cropland at the same times when chemical fertilizer would normally be spread. If the nutrient content of a specific manure is not deemed to be significant for a given application, it can be considered as a soil conditioner if applied to the land to improve the physical characteristics of the soil. Manure storage facilities are typically required on most farms until it is ready to be spread at times of the year when it can be taken up by crops. In some circumstances, storage requirements may be minimal if the manure is purchased by other parties and moved to alternative sites.

Nuisance Concerns

The three primary disturbances mentioned in the *Farm Practices Protection (Right to Farm) Act* are odour, noise and dust. Odour is the main potential disturbance of concern with respect to practices involving manure storage and use.

Odour

Odour is the human perception of and response to chemicals in the air. The degree to which individuals perceive an odour to be a nuisance will depend on the frequency, intensity, duration and offensiveness of the odour. Other factors that come into play include a person's sensitivities and personal previous experiences.

Farmers engage in a variety of activities that produce odours. Most farms which handle, store and apply manure will generate some odour as part of normal operations.

See also Nuisance Reference: Odour

Activities and Operations

Distributed Manure by Grazing

Livestock which graze on pastures or are fed in fields deposit manure. The distribution of manure deposited in this fashion can be managed in such a way that it is spread evenly over the field or pasture. Rotation grazing and the regular relocation of feeding areas are key practices in accomplishing even distribution.

See also Farm Practice: Fertilizers and Soil Conditioners

Field Storage of Manure

Solid manure may be stored in fields prior to spreading onto cropland. If the manure is to be stored in the field for an extended period of time or in areas of high rainfall, piles must be covered from October to April inclusive. Manure should not be stored in fields that are prone to flooding, have high water tables, or are in close proximity to wellheads.

Manure Storage Facilities

A manure storage facility is a permanent structure in a designated location designed and operated to contain manure in an environmentally sound manner until it can be used for field application. These facilities should be located at least 30 metres from a well or watercourse to minimize contamination potential should leaks or spills occur. Manure will need to be stored during times of the year when a crop is not likely to take up the nutrients or when the risk of manure or manure nutrients entering surface waters or groundwater is too great. Manure may be required to be stored from five to seven months during the winter season. Actual recommended storage times will depend on locations within the province and on local weather conditions.

Manure may be stored as a liquid, semisolid or solid. Unroofed storage facilities need to be sized and managed to account for the incident precipitation that will result in extra volumes during the required storage period. Storage facilities must be structurally and environmentally sound.

See also Farm Practice: Storage of Hazardous Material

Manure Treatment Systems

Farmers with liquid manure systems may treat the consolidated manure or separate it into two products, a liquid portion which contains most of the nutrients and is very high in moisture content and a semi-solid portion with lower nutrient content. Treatment methods include physical, chemical, or biological processes. Biological treatment can be aerobic or anaerobic. Anaerobic digestion is a process which facilitates the capture and utilization of energy within liquid manure. Solid manure may also be considered as an energy source. For example, dry poultry litter is a potential source, the energy from which can be captured via various combustion technologies.

Manure Spreading

The timing of manure application needs to be considered carefully to minimize the risk of runoff and to maximize the potential uptake of the nutrients. Manure spreading, whether accomplished by tractor-drawn equipment or by irrigation, is not advised during periods of high rainfall or on snow-covered ground to protect sensitive fishery resources. Application rates should reflect the plant's nutrient needs and soil's absorption capabilities.

See also Farm Practices: Fertilizers and Soil Conditioners
Mobile Equipment
Stationary Equipment
Irrigation

Related Farm Practices

Other farm practices that pertain to practices involving manure storage and use include, but are not limited to, the following.

Composting

Manure can be composted before spreading on land or marketed off the farm.

See also Farm Practice: Composting

Transportation

The dry nature and high nutrient content of poultry litter makes it a product which can be transported for some distance to locations which are deficient in nutrients.

See also Farm Practice: Transportation

Legislation

Information on federal and provincial legislation can be found in Appendices B and C. Acts, regulations and bylaws that regulate or may affect manure storage and use include, but are not limited to, the following.

Federal Legislation

The *Fisheries Act* prohibits the discharge of deleterious substances such as manure into waters frequented by fish.

Provincial Legislation

The *Environmental Management Act* protects the soil, water and air environments from pollution. The *Agricultural Waste Control Regulation* under this Act allows a farmer to operate without a waste permit when storing and using manure according to the *Code of Agricultural Practice for Waste Management.*

Publications

Publications and fact sheets that provide information on manure storage and use include, but are not limited to, the following. Refer to Appendix D for details.

Advanced Forage Management
Advanced Silage Corn Management
British Columbia Agricultural Composting Handbook
British Columbia Environmental Farm Plan Reference Guide
British Columbia Environmental Farm Plan Reference Guide – Nutrient Management Reference Guide
Choosing and Calibrating Manure Application Equipment
Forage Crop Sampling for Nutrient Management
Manure Sampling for Nutrient Management
Nutrient Testing Laboratories
Phosphorus Considerations in Nutrient Management
Potassium Considerations in Nutrient Management
Soil Sampling for Nutrient Management
Understanding Different Soil Test Methods