

FARM PRACTICE

FERTILIZERS AND SOIL CONDITIONERS

Description

Farmers have long recognized the need to enhance soil properties, including its structure, fertility and water retention by using soil amendments such as fertilizers and conditioners. Materials which improve soil properties – other than nutrient availability – and their suitability for plant growth are considered to be soil conditioners. Organic conditioners typically have carbon to nitrogen ratios greater than 30:1. Fertilizers are materials that supply significant amounts of one or more essential elements to improve plant productivity. Organic materials that have carbon to nitrogen ratios below 20:1 should be considered as fertilizers. Materials that have carbon to nitrogen ratios between 20:1 and 30:1 have properties common to both soil conditioners and fertilizers but should be managed primarily as a fertilizer.

Agricultural by-products such as manure, plant materials, and spent mushroom-growing media contain beneficial nutrients. By definition under the *Agricultural Waste Control Regulation*, these by-products are called agricultural wastes and can be used to fertilize or condition soil. To take advantage of the agronomic benefit these materials can offer, farmers apply them to land on which crops will be grown. Nutrient sources vary in their biological and chemical properties and characteristics. Some nutrients, notably nitrogen, can be lost from wastes into the environment at any point in the nutrient management process. Careful management is required to ensure that agricultural by-products which are applied to crop land do not produce nutrient-rich runoff which can contaminate surface water supplies such as lakes, streams, and marshes or leachates which can pollute groundwater supplies.

Fertilizers and soil conditioners must be spread evenly over the soil and are most effective when incorporated into the crop root zone. Publications such as the *Environmental Plan Reference Guide* and spreading advisories posted by the Ministry of Environment in consultation with the Ministry of Agriculture can help farmers decide when it is appropriate to spread manures and related by-products.

Materials which may be used as soil amendments include the following:

- lime products such as dolomite, hydrated lime and controlled-atmosphere storage lime
- gypsum
- sulphur
- compost (including spent mushroom growing media)
- wood waste such as sawdust and shavings
- peat
- manure
- fertilizers sold in a wide range of commercially available products
- non-agricultural wastes such as biosolids, organic residuals and composts)

Nuisance Concerns

The three primary disturbances mentioned in the *Farm Practices Protection (Right to Farm) Act* are odour, noise and dust. Of particular concern to practices surrounding application of fertilizers and soil conditioners are odour and dust.

Odour

Odour is a human sensory perception 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. Many livestock wastes, compost products or crop residues used as fertilizers or soil conditioners can release some odours.

See also Nuisance Reference: [Odour](#)

Dust

Dust is defined as fine-grained suspended particulate in air. The degree to which individuals perceive dust to be a nuisance will depend on the frequency, intensity and duration of a dust-generating event.

Farmers engage in a variety of activities that require the use of equipment or practices that will create dust. Many soil conditioning operations such as lime application can create dust. Dust may also be generated as fugitive dust when fine particulates are lifted from fields, roads, buildings and yards via air turbulence.

See also Nuisance Reference: [Dust](#)

Activities and Operations

Manure Storage and Use

Farmers are exempt from the *Environmental Management Act*, provided they comply with the *Code of Agricultural Practice for Waste Management*. They may apply farm wastes to their land if it serves as a fertilizer or soil conditioner and is not applied during periods of high rainfall. Wastes must be applied at a rate which takes into account the nutrient value of the waste, the nutrient absorption capacity of the land, and the nutrient use by the crop grown on the land. Excessive application should be avoided to prevent nutrients from entering nearby watercourses or groundwater sources and causing pollution.

See also Farm Practices: [Manure Storage and Use](#)
[Mobile Equipment](#)
[Irrigation](#)

Non-Agricultural Waste

Use of non-agricultural waste derived from processes related to or recycling of municipal solid waste; industrial, commercial and institutional waste; or demolition and land clearing waste may require the issuance of a permit or approval under the *Environmental Management Act*. If non-agricultural waste is applied to lands within the Agricultural Land Reserve (ALR), approval from the Agricultural Land Commission may also be required.

See also Farm Practice: [Storage of Hazardous Material](#)

Related Farm Practices

Other farm practices that pertain to fertilizers and soil conditioners include, but are not limited to, the following.

Composting

Farmers and ranchers may implement composting operations to prepare materials for application to land either as a fertilizer or soil conditioner.

See also Farm Practice: [Composting](#)

Livestock at Large

Livestock grazing in pastures or on the range can be used to spread fertilizer directly if the animals are moved and managed on grazing areas effectively. The amount of nutrients deposited is proportional to the duration they remain in a given area.

See also Farm Practice: [Livestock at Large](#)

Storage of Hazardous Material

Fertilizers must be stored in a structurally sound facility that is located at least 30 metres from any well or watercourse. Contingency plans should be in place to address inadvertent spills.

See also Farm Practice: [Storage of Hazardous Material](#)

Legislation

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

Federal Legislation

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

The *Species at Risk Act* outlines measures to mitigate or prevent damage to habitat that may be caused by the application of nutrients, wastes, fertilizers and soil conditioners to farmland.

Provincial Legislation

The *Environmental Management Act* protects the soil, water and air environment from pollution. Included under this Act are the following applicable regulations:

- The *Agricultural Waste Control Regulation* which allows farmers to operate without a waste permit when managing land application of nutrients, crop residues, waste and compost according to the *Code of Agricultural Practice for Waste Management*.
- The *Organic Matter Recycling Regulation* which regulates composting and land application for a range of organic materials. Included are minimum standards to follow when composting or using compost made from non-agricultural wastes.
- The *Mushroom Composting Pollution Prevention Regulation* which deals specifically with the requirements of any mushroom media production facility.

Publications

Publications that provide further information on fertilizers and soil conditioners include, but are not limited to, the following. Refer to Appendix D for details. In addition, crop production guides may provide helpful guidelines on application of nutrients to land. These guides are referenced in the applicable commodity fact sheets that comprise this Farm Practices Reference Guide.

British Columbia Agricultural Composting Handbook

British Columbia Environmental Farm Plan Reference Guide

British Columbia Good Agricultural Practices (GAP) Guide

On-Farm Food Safety

Soil Management Handbook for the Lower Fraser Valley

Soil Management Handbook for the Okanagan and Similkameen Valleys