CERTIFIED CROP ADVISER

Choosing the Best Organic Soil Amendment for Your Farm

by Mark Janiec *CCA-ON*

The land application of organic soil amendments provides farmers with a low cost and in some cases, no cost source of important nutrients such as nitrogen, phosphorus, potassium, sulfur as well as organic matter and micro-nutrients. Farmers that do not have access to manure can use these soil amendments as a means of increasing soil fertility and organic matter, but which one is right for you?

Municipal Biosolids

Biosolids may be available locally as a liquid or a solid (dewatered cake) and usually at no cost and must be applied with a NASM Plan. Both liquid and cake are high in nitrogen and phosphorous with moderate amounts or organic matter and secondary nutrients. The processing and storage of the material will determine the nutrient content. Larger municipalities use anaerobic digestion in the sewage treatment process to stabilize the material resulting in higher nutrient content than the smaller municipalities which use aerobic treatment. Interestingly, aerobically treated biosolids, while lower in nutrients, contain moderate amounts of potassium, whereas anaerobically treated biosolids do not.

Municipal Biosolids Products

Some municipalities are diversifying their land application programs and further process their material. Biosolids products such as biosolids pellets, alkali and lime stabilized biosolids are now available to the agricultural community. The nutrient content of each material can vary significantly so ask for an analysis, and choose the one that is right for your fertilizer program. Typically, there is a cost associated with processed products.

a) Municipal Biosolids Pellets

Pelletization of municipal biosolids uses thermal drying through the addition of heat which eliminates pathogens and removes much of the water as well as most of the "available " nitrogen from the material. This process creates a biosolids pellet that is approximately 95% solids and is typically in the range of 2-4% nitrogen (organic) and 3-4% phosphorous. Biosolids pellets are recognized by the Canadian Food Inspection Agency (CFIA) as a product. A label is issued which provides the maximum application rate, and similar to commercial fertilizer, has a guaranteed minimum analysis.

b) Alkali Treated Biosolids

Alkali treated biosolids are unique in the sense that dewatered biosolids at approximately 22% solids undergo a process which includes the addition of heat, potassium hydroxide and mechanical shearing of the material.

The resulting chemical reaction and mechanical shearing produces a liquid material at 16% solids. The addition of potassium hydroxide raises the pH and in combination with elevated heat effectively eliminates all the pathogens from the material. The added potassium also improves the fertility value of the material.

There are many advantages to storing and land applying the material as a liquid as compared to a solid due to the materials flowable characteristics allowing for easier pumping, transfer, storing, and injection into the ground. The CFIA label analysis is 2-2-2 and 6% organic matter.

c) Lime Stabilized Biosolids

Lime stabilized (or alkaline treated) biosolids utilize alkaline by-products from the cement, lime and electrical generation industries. These materials are then mechanically mixed with dewatered biosolids and the resulting chemical reaction increases the temperature and pH of the material. The process is monitored, controlled and effectively eliminates pathogens. The resulting solid material has moderate amounts of organic nitrogen and phosphorous and is suited to those soils requiring pH correction due to its alkaline nature (pH 12) and in many cases land applied with a CFIA issued label.

Paper Mill Residuals

Paper mill residuals result from the recycling of paper fiber residuals during the paper making process and are typically low in nutrients but very high in organic matter. Caution, as the material can have a carbon:nitrogen ratio greater than 100:1, therefore it can temporarily tie up soil nitrogen*. An excellent material if organic matter is required but supplemental nitrogen will be required and the material must be applied with an approved NASM Plan.

Municipal Green Bin Compost or Source Separated Organics

These materials result from the collection of Municipal Green Bin material that is subsequently composted. A typical analysis would be 3% nitrogen, 1% phosphorous and 1% potassium. Also, an excellent material if organic matter is required as it is typically 55% or greater. It can be applied without a NASM Plan or Nutrient Management Plan if the material has undergone the proper pasteurization and meets the Ministry's Guidelines for unrestricted use. The material is generally sold in bulk.

Summary

Many diverse organic soil amendments are available across the province, however, check with your local municipality or contractor as certain materials may only be available locally or regionally. As the price of commercial fertilizer increases, more farmers are inquiring and using organic amendments as a low cost, effective source to increase both soil organic matter and soil fertility.

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There are over 600 Certified Crop Advisers (CCA) in Ontario. Each CCA has demonstrated their knowledge about Ontario crop production by passing the required exams and achieving international competency standards as set by the International CCA Program. In addition, they have the crop advisory experience, the education, the commitment to continuing education and have signed a comprehensive code of ethics, which places the grower's interests first.

This industry driven program helps ensure that Ontario crop producers are well served by those providing their crop production advice. This article was written by one of those CCA's.