



Municipal Biosolids Land Application Programs Provide Important Nutrients to Farms

By Marc Janiec, CCA, P.Ag.

The land application of municipal biosolids provides farmers with important nutrients such as nitrogen, phosphorus as well as organic matter. Traditionally, Ontario municipalities have successfully land applied biosolids in a liquid form following strict guidelines. Some municipalities are diversifying their land application programs and further processing the material. "New" biosolids products such as biosolids pellets, alkali and lime stabilized biosolids, and dewatered biosolids are now being made available to the agricultural community by several municipalities. The nutrient content of each material can vary so before you use biosolids, know your options and choose the one that is right for your farm operation.

Biosolids Product #1: Dewatered Biosolids

Dewatering biosolids is not a new technology but this material may be new to your area. Some municipalities are dewatering a portion of their biosolids to reduce the volume of material transported, effectively shrinking the volume by about six fold. This allows more material to be transported further from the source, which has resulted in increased access to biosolids for farmers around the Golden Horseshoe as well as south western Ontario. This material is typically surface applied to agricultural land and immediately incorporated. In an effort to reduce potential nuisance odors

and better manage nutrients, new technology advancements allow for the direct injection of dewatered biosolids into the soil.

Biosolids Product #2: Biosolids Pellets

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

Biosolids Product #3: Alkali Treated Biosolids

Sewage biosolids have traditionally been applied to agricultural land as either a liquid



Figure 1 Alkali treated biosolids at 17% solids pumped through a drag hose system

or solid (dewatered) material. Alkali treated biosolids are unique in the sense that dewatered biosolids at approximately 17% 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 still at 17% solids (Figure 1). The addition of potassium hydroxide raises the pH and in combination with high 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.

Biosolids Product #4: 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 is highly alkaline (pH 12) and thus is best suited to those soils requiring an increase in pH.

Summary

Municipalities across Ontario continue to manage their land application programs using best available technologies appropriate for them. Many different biosolids products are available across the province, however, check with your local municipality as certain materials may only be available locally or regionally. With a typical application of biosolids providing over \$150.00 of nutrients per acre and with the price of commercial fertilizer at an all time high, more farmers are inquiring and using biosolids than ever before.

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There are over 500 Certified Crop Advisers (CCA) in Ontario. Each CCA has demonstrated their knowledge about Ontario crop production by passing the required exams. 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.