



Municipal Sewage Biosolids Provide Significant Cost Savings to Ontario Farmers

by Mark Janiec, CCA, P.Ag.

The land application of municipal sewage biosolids provides farmers with important nutrients such as nitrogen, phosphorus, organic matter, micronutrients and, in some cases, potassium. At current fertilizer prices, a typical application of biosolids can provide approximately \$200.00/acre of nitrogen and phosphorus, not to mention the organic matter and micronutrient additions. A diverse array of biosolids materials and products are now available provincially including biosolids pellets, alkali and lime stabilized biosolids, dewatered biosolids as well as traditional liquid biosolids. 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.

Phosphorous



Most municipal biosolids contain between 2-5% phosphorous. This would mean that a typical application of biosolids could provide between 200-300 lbs/acre of available phosphorous. Soil test

results could easily be elevated from a low to a medium or from a medium to a high rating after one single biosolids application. This would provide most field crops grown in Ontario with enough phosphorous for approximately 5 growing seasons. This large phosphorous soil addition is one reason why biosolids may only be applied once in 5 years at the Ministry of Environment (MOE) approved application rate.

Nitrogen

The nitrogen contained in municipal biosolids is available in two forms, ammonium and organic nitrogen. Together they form the total nitrogen and this can vary between 1-7% depending on the source and the material. Biosolids pellets typically have less available nitrogen as some is lost during the pelletization process. The remaining nitrogen is in the organic form and ranges between 1-5%.

Liquid municipal biosolids have large amounts of both ammonium and organic nitrogen. A typical application would provide as much as 120 lbs/acre of actual nitrogen. This is enough nitrogen to grow a crop of corn if the biosolids were applied in the spring.

Cake and lime stabilized biosolids contain more available nitrogen than pellets, but less than liquid biosolids. A typical application could provide 40 lbs/acre of available nitrogen and an additional 200-300 lbs/acre of organic nitrogen. Remember that all of the organic nitrogen is not available in the first year of application.

Research indicates that between 10-30% of the organic nitrogen is available in the year of application. There is a large range in organic nitrogen availability and over time this is dependant on seasonal time of application, soil type, soil moisture and temperature, weather etc.

Potassium

Municipal biosolids are typically very low in potassium. A few municipalities are using the relatively new technology of alkali treatment to process and add further value to their material. Alkali treated biosolids are unique in the sense that potassium hydroxide is added when processing the biosolids and this greatly improves the fertility value. The addition of potassium to the biosolids can provide farmers with between 200-250 lbs/acre of potassium and an additional \$200.00/acre in nutrient value.

Organic Matter

Sewage biosolids contain approximately 50% organic matter. The source and type will determine how much is available. A typical biosolids cake application would provide about 3000 lbs/acre of organic matter.

Micro Nutrients

Micro nutrients are contained in all sources of sewage biosolids and are found in small quantities acceptable to the MOE. Micro nutrients that are required by crops, humans and animals and are found in sewage biosolids include: copper, zinc, cobalt, molybdenum, chromium and selenium. A typical application of biosolids may provide as much as 7 lbs/acre of copper and 5 lbs/acre of zinc. This could be a significant cost savings if purchasing these two micro nutrients. Check with your local biosolids contractor or municipality to find out the exact levels being applied in your area.



Summary

Farmers across Ontario are faced with the challenge of increasing input costs. Sewage biosolids application can add valuable nutrients to soils and may help reduce field crop production costs. Check with your local municipality or biosolids contractor for the nutrient characteristics of the biosolids available in your area. With a typical application of biosolids providing over \$200.00 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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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.