Michigan Biosolids Team

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Applying Biosolids to Land in Michigan

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Potential Benefits with Land Application

Research and experience have shown that biosolids can be beneficial both as a soil conditioner and as a source of nutrients. Biosolids contain appreciable amounts of essential nutrients for plant growth, especially N and P. All biosolids are typically low in potassium (K) because most of the K remains with the treated TWTDS effluent that is discharged. Biosolids also contain other essential plant nutrients, calcium, magnesium, sulfur, boron, copper, iron, manganese, molybdenum and zinc. When biosolids are stabilized by high lime treatment, they can also have some value as a liming material for acid soils and can substitute for agricultural lime. The application of organic matter from biosolids can improve the physical, chemical and biological properties of the soil. Organic matter can increase water infiltration and reduce soil erosion, increase water-holding capacity, reduce soil compaction and increase soil granulation, increase the ability of soil or surface material to retain nutrients, provide nutrients for plant growth, and provide food and energy for beneficial soil microorganisms. All of these beneficial properties make biosolids a good choice for homeowners, landscapers, farmers and foresters. In addition, farmers applying biosolids can reduce their fertilizer cost.

Agricultural use is subject to great variability over time, however, depending on weather conditions and crop type. Scheduling biosolids transport and application at times that are compatible with agricultural planting, harvesting and possible adverse climatic conditions requires careful management. When land is not available because of crop growth or because the soil is frozen or wet, some backup contingencies are needed, such as storage or an alternative management option such as landfilling or incineration. One type of biosolids that is becoming more common recently is dried and/or pelletized biosolids. Because producing biosolids in this form is complex and expensive, dried biosolids are often blended with other materials and marketed as an organic-based fertilizer with balanced nutrient levels. Alkaline stabilization has been used to produce a nearly odorless and granular product for use as an organic soil conditioner and fertilizer. It can also substitute for agricultural lime.

Comparing the advantages and disadvantages of each management option suggests that land application is likely to remain a major option in the future, particularly for small plants (those that treat less than one million gallons per day) that are generally close to application sites. Land application returns nutrients and organic matter to the soil where they can contribute to sustaining crop production.

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