Program: Co-application of Paper Mill Bio-Solids and Liquid Swine Manure to Agricultural Soil

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In Partnership With
Terratec Environmental Ltd.
Abitibi Consolidated
Elite Swine Inc.

Objective:
1. To conserve fall-applied manure-N when combined with Paper Mill Bio-Solids
2. To slow down manure-NH₄ to NO₃-N conversion through immobilization
3. To improve chemical and physical properties of soil
4. To investigate bio-solids effects on corn grain yield

Project description:
Applying paper mill bio-solids to agricultural land has received global attention as a beneficial and safer method of their disposal. They contain plant nutrients that can be released to crops, thereby reducing the need for fertilizers.

In this research, paper mill bio-solids were provided by Abitibi Consolidated and brought to the field by Terratec Environmental Ltd. Liquid swine manure used in this experiment was provided by Elite Swine Inc. These paper mill bio-solids produced by Abitibi Consolidated showed a high C:N ratio and can contribute to N immobilization when combined with liquid swine manure in the fall.

However, testing the degradability of these organic materials by a reliable and quick method would allow a better prediction of their effectiveness in immobilizing nitrogen. Therefore, a biological technique was developed by incubating paper mill bio-solids with cow rumen micro-flora, which are able to decompose cellulosic materials, in the laboratory under anaerobic conditions.

The results from this technique indicate how decomposable these materials are, so that farmers can predict how much fertilizers would be needed to supplement these materials.

Support Appreciated from:

Ontario Ministry of Agriculture, Food and Rural Affairs

Community Benefits Include: Safer and economic alternative, sustainable agriculture, safer environment, reducing mineral fertilizers application