

# BIOTRONICS

**Expel Products, Inc.  
Presents  
The Treatment of Septic Systems Using Ag-Scent Products**

Many homes and businesses throughout the world utilize septic systems and cesspools for the elimination of human waste. Both of these systems are similar to anaerobic digesters used in municipal waste treatment plants. The breakdown of waste materials in these systems is performed by bacterial action. It has been documented that the limiting step in the elimination of waste from such anaerobic systems is the hydrolysis of macromolecules (starch, protein, fats, etc.) to soluble compounds. This limitation is often a result of the size and activity of the natural population of bacteria found in a system. To rectify this problem, one needs to augment the natural population with bacteria capable of digesting the macromolecules found in the system.

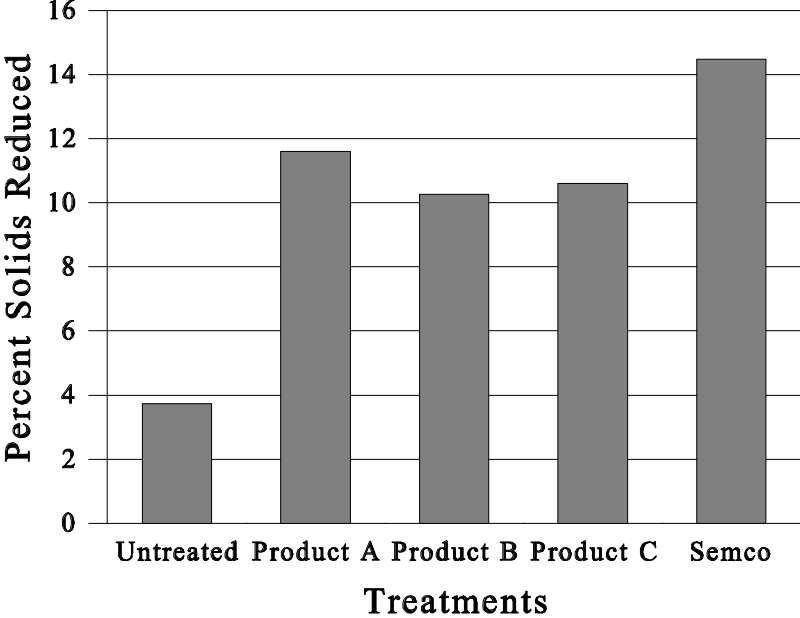
The scientists at Expel Laboratories in conjunction with leaders in the bacterial augmentation field have selected bacteria with the ability to grow, and in turn, enzymatically digest the macromolecules found in these anaerobic systems. The major benefit Ag-Scent has the ability to perform these functions in an anaerobic environment. In addition, the Laboratories have developed methods to ferment and formulate these bacteria into shelf stable liquid and powder products. Expel and our lab development partners have developed bacteria that have been used to augment systems throughout the world. The results of a laboratory test and a test at a municipality demonstrating the activity of Ag-Scents bacteria are to follow.

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**Laboratory Test:**

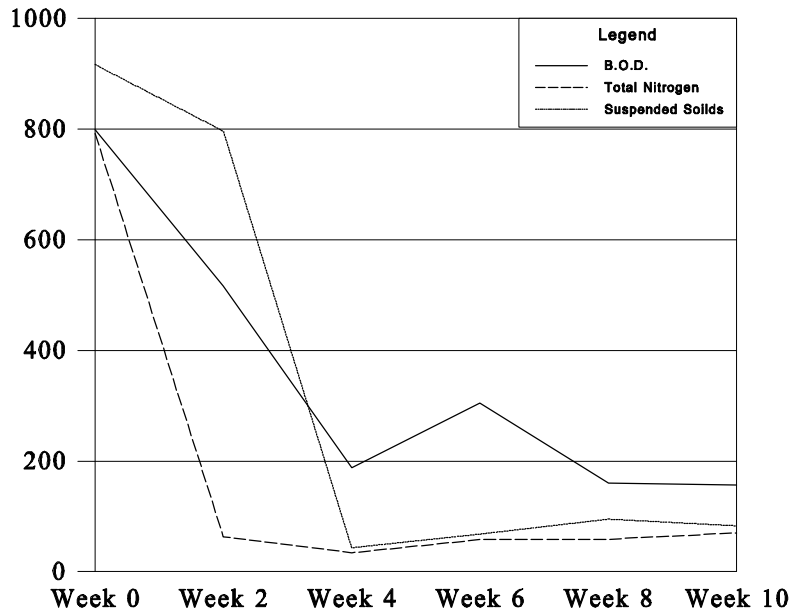
Waste material was collected from a municipal treatment plant. The waste material was divided into sub samples and treated with Ag-Scent bacteria and three commercial products. After 72 hours of incubation, the total level of solids in each treatment was determined. As shown in Figure 1, Ag-Scent bacteria outperformed all other treatments in the reduction of solids in the samples.



**Figure 1: Comparison of Solids Reduction on Human Waste by Four Commercial Products.**

## Test at a Municipal Waste Treatment Facility:

A blend of Ag-Scents bacteria was added to a municipal waste treatment system to test their ability to reduce biochemical oxygen demand (BOD), total nitrogen, and suspended solids. Data was collected for ten weeks. As demonstrated in Figure 2, Ag-Scents bacteria significantly reduced the BOD, total nitrogen, and suspended solids over the period tested.



**Figure 2: Effect of Ag-Scents Bacteria on Biochemical Oxygen Demand, Total Nitrogen, and Suspended Solids in a Municipal Wastewater Treatment Plant.**

In summary, the digestion of macromolecules in the anaerobic environment found in septic systems, cesspools, and municipal waste facilities is a limiting factor in the utility of the system. We have demonstrated in Figures 1 and 2, that the scientists at Expel and their product partners have selected bacteria with the ability to breakdown these macromolecules under the harsh, anaerobic conditions found in such systems.

Our work in these areas never stops. It is our mission to develop products that “safely and by the use of environmentally pro active bacterial agents make the world a better place to live”.

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