



The Sanctuary Products Organic Fertilizers for Turf & Soil Health!

Not All Fertilizer Products are Created Equal

This Independent Research with **Agricultural Canada** will examine the impact fertilizer products have on microbial populations. This study tests the impact of several common fertilizers types. These fertilizer types include – a traditional NPK fertilizer product, a poly coated urea product, an all-natural protein organic product and an organic based protein organic product.

When selecting a fertilizer, not all fertilizer products are created equal. There are endless choices of products, analysis, release characteristics and benefits. So, what should one consider when choosing a fertilizer product? It simply does not boil down to visual results. One must consider benefits like residual color, rooting, density, and growth. Also, one should consider the aspects of turf resilience and soil health. Your fertilizer selection goes much deeper than visual aspects that focus on superficial benefits like only color and growth.

One needs to consider the impact that a fertilizer has on soil health that affects turf resilience. The key to any fertilizer selection should explore this impact on soil health. Soil health defines the effectiveness of the fertilizer. This research examines the aspect of fertility that many times is overlooked. This research explores the impact that fertilizer has with respect to soil health as defined by microbial stimulation and biomass build-up.

Soil microbes are the nutrient delivery system and immune system in the soil. These natural soil microbial systems aid with nutrient delivery, build biomass and reduce common turf problems. An active microbial system has shown that the healthier the turf is the more resilient the turf is to everyday problems. These common everyday problems could include both weather and disease management issues that affect turf quality.

Product Selection

In this research study, there were 5 products selected to compare their impact on the natural soil microbial populations. The products selected included:

Sanctuary 8-3-6 – this is an all-natural product that is derived from protein and grain meals. Within these ingredients, the NPK are contained in a high-energy food source for the natural soil microbes.

Sanctuary 15-1-3 – this is an organic based product that is derived from protein meals, urea and grain meals. This product combines a traditional nitrogen fertilizer with organic ingredients.

Sanctuary 18-2-6 – this is a natural based product that is derived from ammonium sulfate, methylene urea and protein

meals. This product combines several traditional and organic ingredient sources.

Traditional 29-3-4 – this product is derived from urea, diammonium phosphate and potassium murate. This fertilizer is a commonly used turf care product.

Poly Coated 43-0-0 – this product is derived from poly coated urea. This is a common product used for its long residual release characteristics.

WE WORK WITH NATURE - SPRING, SUMMER, FALL AND WINTER!

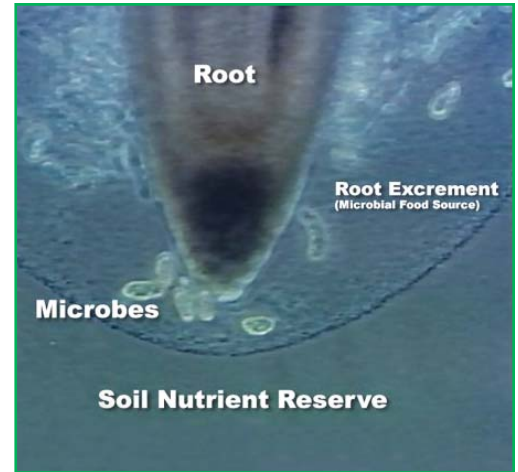
Research Protocol

For this research study, a sandy soil type was selected. This soil was pulverized and 250 grams of soil was placed in jars where the moisture levels were adjusted and maintained to 60% of holding capacity. The fertilizer products were added to individual jars and replicated 3 times. The nitrogen rate applied was equivalent to 1.0 lb of N/M. The jars were closed with lids to allow for good air exchange and the temperature was maintained at 24°C. The original soil without fertilizer was placed in a jar and used as the control. During the course of the study, soil samples were taken and tested at 0, 3, 7, 10, 14, 21, 42 and 63 days post amendment of the fertilizer. **The research tested the effects of:**

- The overall impact on the soil microbiology populations
- The overall rate of nutrient release for these products
- The impact on the availability of macro and micro nutrients.

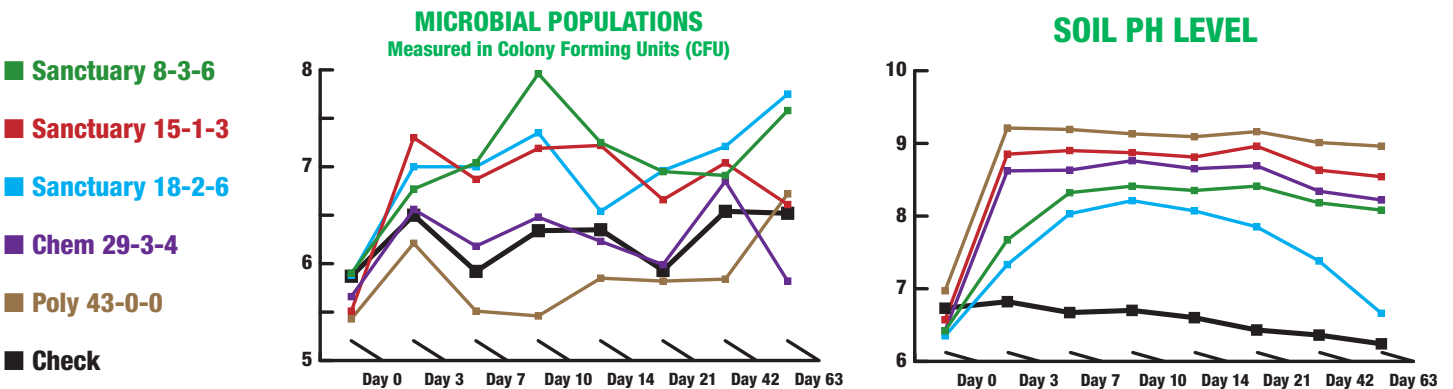
Microbial Role in Turf Resilience

The soil microbial populations play several key roles in nutrient management and turf resilience. In fact, the turf excretes an energy rich food source from the root to colonize microbes (see photo). These microbial populations play a critical role in moving nutrients into the turf. This interaction between the root and microbes. It plays an essential role in nutrient uptake, which is critical for turf resilience. Without this interaction, the turf is prone to more stress and disease related problems.



Research Summary

The lab samples taken at 0, 3, 7, 10, 14, 21, 42 and 63 days were plated and microbial counts were measured. The summary data was collected and these results were graphed to illustrate the impact of these 5 products on microbial populations and soil pH. The results show 4 key points that illustrate the benefits of the Sanctuary products over traditional fertilizer products.



- The Sanctuary products substantially increase the soil microbial populations, which is essential to nutrient availability and uptake. These nutrients reserves impact turf resilience that translates into turf quality and soil life.
- All the Sanctuary products increased the microbial populations. This impact can be correlated to the amount of organic content of each product. The greater the organic nutrient content, the greater the microbial stimulation and the longer the residual impact. Regardless of the Sanctuary product selected, all the Sanctuary products offer microbial stimulation to enhance turf quality and resilience.
- Poly-Coated Urea products have reduced the soil microbial populations. This has a substantially negative impact on microbial soil balance that impacts turf quality and resilience. This microbial population plays a critical role in stress tolerance and disease management.
- The Sanctuary products build soil microbial population that translates into increased soil biomass. This increased biomass is stored turf nutrient reserves that can be utilized by the turf during periods of stress. These reserves are essential during periods of extreme weather or increased disease pressures.

The Sanctuary Biological Advantage

This research study shows the critical impact that fertilizer selection can play in microbial stimulation. Microbial populations play an essential role in nutrient uptake, which translates into overall resilience and quality turf. A vibrant microbial population plays a key role in nutrient uptake. Without this delivery system, the turf is prone to weather and disease related problems. The use of Sanctuary products will build and stimulate these populations. Whereas urea or coated urea products provide timely residual color, these fertilizer products have a detrimental impact on soil microbial populations. In moving forward, the Sanctuary products provide the vehicle to build microbial populations that have a direct impact on turf resilience and quality.