

Alberta Soil Health Benchmark Monitoring Project

Background:

There is an increasing interest in the link between soil health, plant health and ultimately food quality. Society is also concerned with carbon both in the air and soil. Since carbon and soil health are very closely connected, management practices which improve carbon sequestration will result in a healthy soil and nutritious food products.

The status and functionality of a soil should be measured not only by its chemical (fertility) properties but also for its physical and biological properties. Chemical components of soil have been intensively evaluated by commercial soil testing labs in Canada. Chemical fertility recommendations have been based on this knowledge. The role of soil biology, however, is not well understood and physical characteristics have not been monitored. Evaluation of biological soil characteristics has only become available during the past few years in laboratories in the United States and more recently eastern Canada. The existing biological labs do not base analysis and recommendations on parameters specifically related to Alberta soils. CARA's, (Chinook Applied Research Association) Soil Health Lab, under the direction of Dr. Yamily Zavala, provides a unique service in evaluating soil health constraint indicators. A biological and physical baseline developed within the province will provide a framework which can help define strategies for managing and improving the productive capacity, and sustainability, of our soils. A diverse micro-biological underground community may contribute to an overall healthier soil, including improved carbon sequestration. Improved aggregation stability will also contribute to enhanced carbon levels in the soil. Healthy soils produce healthy plants resulting in a higher quality food product.

Goals and Benefits

Understanding soil health will give Alberta producers a valuable tool for use in making strategic management decisions on their farms and ranches. Development of a benchmark data base is very important in order to better understand soil health limitations and apply appropriate management strategies. Improvements in soil health can result in higher production potential as well as strengthen the resiliency of the farm systems to cope with issues related to climate change.

This project will document soil health indicators at multiple locations in Alberta. Data from soil samples collected for various research projects and individual farmer submissions evaluated at CARA's Soil Health Lab will also be included in the benchmark inventory. This will result in representation from a significant portion of the province.

Landowners will be coached in the understanding of soil health in general as well as the analysis related to his/her location. The benchmarks will enable these producers to evaluate their management practices with respect to soil health.

In addition to the individual consultations, the topic of soil health will be addressed at extension events and activities across the province by each of the participating producer associations. Dr. Yamily Zavala will attend events and deliver presentations and demonstrations designed to increase awareness of soil functions. Other industry specialists will support the knowledge transfer as well.

Objectives:

1. Improve the understanding of soil health parameters amongst Alberta producers.
2. To establish soil health benchmarks by quantifying the level of various soil health parameters at 200 sites across Alberta which encompass a broad range of soil types and management systems.
3. Monitor how management practices affect soil health parameters during a 3 year time frame.