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The Role of Soil Health in Sustainable Agriculture

Quick Think Report Prepared for CAPI by Senator Robert Black and Dr Susan Wood-Bohm



Quick Think
Report



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A Note From CAPI

Soil is complex. Soil is dynamic. It defines the fundamental capacity of Canada's food system. December 5 is World Soil Day and the Canadian Agri-Food Policy Institute (CAPI) urges scientists, policymakers, farmers and consumers from across the globe to reflect on the myriad ways soil is important. Trust us, there is a lot to consider.

Soil is resilient, but vulnerable to depletion. It is also a crucial natural resource that occupies a unique space in the Canadian agricultural policy landscape. Unlike parks and forests, agricultural soils are largely privately owned. As a policy institute focused on Canadian agriculture, CAPI can't overstate the important role healthy soils play in securing our food system.

In appreciation of World Soil Day, CAPI asked two leading figures in soil health, the Honourable Senator Robert Black and CAPI Distinguished Fellow Dr. Susan Wood-Bohm, to share their expertise on the subject. The main points listed below are a mere snapshot of the complex considerations surrounding soil – a primer, if you will. We hope the following Quick Think Report will spur some serious reflection and perhaps prompt some questions that you're more than willing to direct back to us.



1. Soil health is the foundation of plant, animal and human health.

Soil is a mineral-based, living ecosystem that hosts, and is shaped by, soil microflora that interact and fundamentally influence animal and plant life. **Soil** plays a major role in climate-change mitigation through its capacity to sequester carbon. Similarly, responsible farming and ranching practices surrounding soil can help mitigate climate changes through emissions reduction, increased biodiversity and improved air and water quality – all of which support farmers, boost the economy and provide nutritious food for Canadians and the world. ([CAPI, Wood-Bohm, 2018](#)).

2. Farming and ranching practices impact soil health and need to address local conditions, which can vary by region, soil type, topography, climate and crop rotation.

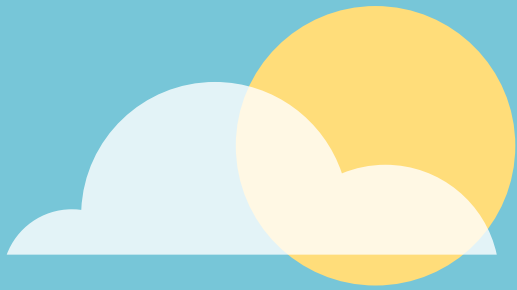
Encouraging soil health requires farming practices that address local conditions and that are based on scientific research developed in partnership with farmers and applied through localized farm management practices. At the same time, policies and initiatives developed to promote soil health need to take these regional differences into account. This method requires interdisciplinary collaboration and a hands-on approach, such as the [Living Laboratories Initiative](#) by Agriculture and Agri-Food Canada, where farmers, scientists, social scientists and policymakers work together to determine the optimal approach for sustainable farming ([CAPI, Benalcazar, 2019](#)).

3. Agricultural soils can be a climate change solutions provider, but their additional complexities must also be appreciated.

Soil health is improved by increasing its store of organic carbon, a process that contributes to climate change mitigation. However, these effects occur in a complex system. Focusing solely on promoting carbon sequestration in soils may impact other benefits of healthy soils, such as crop yields, moisture retention and other environmental impacts including biodiversity and the economic returns of the farm. ([CAPI, Samson, 2021](#); [CAPI, Smukler, 2019](#)).

4. The science around soil health needs to be well communicated and implemented.

Continued support for scientific research and the role soil health plays for climate change and One Health is crucial, as well as efforts to improve the data metrics and methods to measure it. In addition, interdisciplinary collaboration with farmers, social scientists, industry, policymakers and civil society will serve to enhance the evolution of soil science, increase adoption of the science and make it easier to communicate the findings to Canadians for the health of the sector and the planet. ([Barrett, 2020](#)).



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