

Scientists uncover the secret life of frozen soils

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Contrary to popular belief, winter plays a significant role in farming. The ground beneath that seemingly peaceful blanket of snow is not idle during the long, cold winter months and researchers want to know what is going on. Historically, studies have focused on times of the year when

data can be easily gathered. However, winter's freeze-thaw cycles, nutrient run-off and the effect of snow cover - or lack of snow cover - on soil are of great concern and can have significant impacts.

Inspired by a session at the 2011 joint Canadian Soil Science Society Meeting conference, the September issue of the *Canadian Journal of Soil Science* is a special issue on biological, physical and [chemical processes](#) in seasonally frozen soils. This comprehensive collection of papers tackles the frosty subject of frozen soils in Canada's varying topography and geographically distinct regions.

"Although some of these processes have been investigated in soils that are frozen for most of the year, such as in the Arctic, Antarctic and at high elevations, they have received less attention in seasonally frozen soils," explains Dr. Barbara Cade-Menun, lead author of one of the papers and guest editor of this issue of the *Canadian Journal of Soil Science*. "This may in part be due to the challenges of conducting field and laboratory research under winter conditions – it is much easier to wait until spring for sample collection."

"Yet this important research could impact producers' decisions during the growing and harvest seasons. A thorough knowledge of the effects of winter and freeze–thaw on soil winter processes in seasonally frozen soils is essential for their proper management, now and in the future. The papers in this special issue add to our knowledge in this area, could lead to future improvements in farming productivity and also suggest important future research directions."

Winter processes have broader implications beyond agriculture; forestry practices are impacted as well. By studying the effects of freeze-thaw cycles across many regions, in varying climate change scenarios, scientists can offer knowledge-driven (evidence-based) advice for best management practices for agriculture and forestry managers in all

regions in Canada, while also providing valuable knowledge for other regions in the world. As climates change, the potential for increased soil change is evident, management practices must follow suit and hopefully lead to improved productivity and sustainability.

Eleven papers comprise the special issue and include articles that are geographically broad and of national interest for both agricultural and forestry management.

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