INVESTIGATING THE SOIL

Soil organic matter (SOM) has implications for a number of environmental processes, such as sequestering carbon to remove carbon dioxide from the atmosphere. In 2015, Canadian agricultural researchers used the Canadian Long-Term Ecological Research (CLTS) network to examine the chemical composition of SOM and found that the composition was significantly affected by agricultural management practices. Their data helped characterize relationships between the biodegradability, thermal stability, and chemical composition of SOM under different practices. The findings show that SOM biodegradability and its thermal stability are linked to its chemical composition, an important finding for the productivity of semiarid ecosystems.

SCIENTISTS DISCOVER THAT CHARCOAL TRAPS AMMONIA POLLUTION

Cornell University scientists, along with other collaborators, have shown that charcoal can absorb large quantities of nitrogen from the atmosphere, resulting in the potential to create slow-release fertilizers with more nitrogen than is currently available or other potential nitrogen sources. This is common in fertilizers but is a highly reactive gas and it is often required for industrial use. Charcoal, in contrast, is a natural material that can retain and easily exchange nutrients to plants. The study identified charcoal’s ability to capture nitrogen from exhaust ammonia, which makes the way to release fertilizer for field and greenhouse crop production.

INCREASING CROP YIELDS IN WEST AFRICA

It is vital to improve food security that rural areas in West Africa continue expanding crop production, which currently increases about 1% per year. The region’s population, by contrast, is increasing at a rate of 2% per year. The region is key for food security, as it is one of the most important areas for food in the country. The primary application of these findings is in slow-release fertilizer for field and greenhouse crop production.

SCIENTISTS EXPLORE HOW SLOW RELEASE FERTILIZER BEHAVES IN SOIL

Testing soil samples at the CLTS has helped a University of Saskatchewan soil scientist understand how tripolyphosphate (TPP), a slow-release form of phosphorus fertilizer, works in the soil as a plant nutrient for much longer periods than previously thought. The study found that the adsorbed TPP apatite was present in the soil for up to a year. However, it is unclear how useful this fertilizer is over time, warranting further study to determine whether it can also be capable of providing the necessary phosphorus from mineral surfaces. The practical implications for agriculture may come in finding ways to slow-release fertilizers within calcium-rich soils, such as those generally found in Saskatchewan.

HELPING FARMERS

Soil charcoal research (SCS) has implications for a number of environmental processes, such as sequestering carbon to remove carbon dioxide from the atmosphere. In 2015, Canadian agricultural researchers used the Canadian Long-Term Ecological Research (CLTS) network to examine the chemical composition of SOM and found that the composition was significantly affected by agricultural management practices. Their data helped characterize relationships between the biodegradability, thermal stability, and chemical composition of SOM under different practices. The findings show that SOM biodegradability and its thermal stability are linked to its chemical composition, an important finding for the productivity of semiarid ecosystems.

MAXIMIZING SASKATCHEWAN CROP GROWTH

Saskatchewan soils are among the most nutrient-rich in the world. Researchers from the University of Saskatchewan used the CLTS to better understand how phosphorus behaves in the soil, and which type should be used for optimum growth. The study found that the application of phosphorus to rail metals was linked to phosphorus retention in soil, which is vital for ongoing food security that rural areas in Saskatchewan soil are among the most nutrient-rich in the world. Researchers from the University of Saskatchewan used the CLTS to better understand how phosphorus behaves in the soil, and which type should be used for optimum growth. The study found that the application of phosphorus to rail metals was linked to phosphorus retention in soil, which is vital for ongoing food security that rural areas in

CLIMATE CHANGE AND SASKATCHEWAN SOIL

Canadian crp and grazing land acid soils up to about 16 billion tonnes of atmospheric CO2 every year, and fuel one of the most important active carbon pools in the country. However, soil chemistry is key to the global carbon cycle. However, the study has outlined greater differences in soil chemistry than previously thought. The data helps predict how climate change might affect the quality and use of soils over time, and is important for those regions.

SUSHI FOR COWS

Cattle on the Prairies are hundreds of kilometres from the coast and yet it’s possible that seaweed could make its way into their diet as an added ingredient. “Seaweed is an accessible ingredient. It is a sustainable feedstock. It grows rapidly, doesn’t require arable land or fresh water to grow, “ said Dr. Andrew Sharpe, research scientist at Agriculture and Agri-Food Canada’s Lethbridge Research and Development Centre. The group wants to use the rare sugars like seaweed glycans to promote specific bacteria growth that has beneficial properties in the intestines of cattle. This research is important for improving the quality of meat and milk produced from traditional beef and dairy cows.