

The Dirt on Soil

Soil health is crucial to sustainable farming

By Heather Hudson

Are farmers effectively managing their soil nutrients for the long term?

The answer might lie in the quality of our agricultural soil.

According to Greg Patterson, president, CEO and chief agronomist of A&L Canada Laboratories Inc., too many farmers are still not up to par when it comes to crop nutrient management.

“We’ve become very sloppy in the way we buy fertilizers and fertilizer materials because it’s cheap and it’s easier just to blast it on and not think about it,” he says.

“Many farmers across Canada have neglected to think about the amount of nutrients they remove from the soil when they harvest a crop. And that can be a short-sighted thing,” says Patterson, who also owns A&L Biologicals, which deals in the microbiology of soil.

With locations across Canada, the U.S., China, Australia and Mexico, Patterson is an authoritative voice when it comes to assessing and optimizing soil health. We got his opinion on the current state of soil, how it got here and how growers can boost fertility.

A global perspective

Even though he is loyal to his home and native land, Patterson says we could take notes from agriculture in less modernized countries.

“Other countries are miles ahead of us in understanding the ecological impact we have in farming on soils. They don’t have some of the tools and resources we have, so they have to do a better job in sustainable agriculture. As a result, they’re not quite as reliant on fossil fuels in their production systems.”

He points to Brazil’s ingenuity in breeding a variety of sugar cane that uses less nitrogen than others due to its endophytic nitrogen-fixing bacteria. Necessity has also been the mother of invention

in Israel where farmers are grafting plants onto root stalks that are more aggressive and can ward off and even resist disease.

“When you look at farmers who immigrate to Canada from other countries like Germany where land can be upwards of \$75,000 an acre, right off the hop they usually do a much better job than we do because they’ve had to be more conservative with their techniques, making use of every little piece of land instead of buying more.”

Soil quality in Canada

Patterson says the demise of the mixed farm has led to poorer quality soil from coast to coast.

“We took advantage of fertility levels that were built on farms over long periods of production agriculture where we had manure. Once the mixed farm kind of dropped off we didn’t have the manure input and we just started mining what was there.”

Plus, solutions used to ward off weeds, insects and disease may be compounding the problem of nutrient depletion without the farmer realizing it. Patterson points to a western mentality that treats symptoms without looking at the root of the problem.

“Weeds, diseases and insects are there for a reason: to help break down dead, dying plant material. If you have a persistent weed, it’s because something’s out of balance in that soil.”

Identifying the heart of the imbalance and treating it wisely, not quickly, will pay off in the long run, according to Patterson.

Harmonizing soil composition

What can be done to harmonize soil composition and boost nutrient levels? The answer might be found in marrying the best of modern technology with the tried and true farming techniques of our ancestors.

It starts with understanding the composition of your soil, including the unique differences between your fields. Patterson says

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Photo courtesy of Greg Patterson



farmers in the early 1900s had the right idea to treat problem spots in a field with lime in a measured, conservative way.

“They had a very sophisticated way of analyzing soil and measuring where the lime was to be put. They would pace off a field, take a sample, pace off so many more paces, take another sample and follow this pattern all over the field to get these benchmark sampling points so they could get a map. It’s very similar to what we do with GPS and GIS equipment today, but they did it manually.”

Patterson says the cost and time associated with applying the lime ensured they only put it where it was needed, something many modern farmers are not doing as effectively, if at all.

Most farmers take soil samples, but Patterson says it’s crucial to go a step further. Most growers know there are differences in some areas of their fields and it’s important to understand why those differences exist.

“Farmers subconsciously know that having high or optimum nutrient levels make that field perform consistently. If we can get that to a conscious level by helping them to understand that each piece of property of that farm has an optimum nutrient level, we’ll be further ahead.”

It can be as simple as taking a soil test from a field that produces well and comparing it to a section that doesn’t produce well and having the difference analyzed.

Finally, Patterson says replacing the lost nutrients to the soil is crucial. “How many pounds of magnesium, potassium, nitrogen and other nutrients do I actually remove from the farm each and every time I harvest a crop? Make sure they are put back in so you’re not mining the field.”

A holistic approach to farming

Patterson is encouraged by the increasingly sustainable approach Canadian growers are taking to farming. Instead of looking only at the right complement of pesticides, more farmers are looking at things like tillage practices and crop rotation.

“We’re becoming more aware of these types of rotation that influence the crops we grow. When we do a better job of rotation, we get healthier soil. It’s as simple as that.” ♦


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