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CARBON CREDITS FOR MANAGING CROP NUTRIENTS

"Farmers have real, measurable, additional carbon credits to offer world markets."

(Don McCabe, Ontario Federation of Agriculture)

Agricultural organizations have been seeking opportunities for recognition of farmer contributions toward mitigating greenhouse gases. For this to happen, regulatory programs need to allow offsets. Offsets are defined as carbon emission reduction credits traded from regulated to non-regulated industries. Governments plan to regulate greenhouse gas emissions from large factories, but not those from farms. Farm emissions are diffuse, sporadic, and difficult to measure directly. Nonetheless, science is elucidating the effects of crop management practices in terms of probability and magnitude of mitigation, and this provides a potential opportunity for farmers to receive carbon credits.

A common first reaction to the concept of carbon credits is: "I don't like the idea of letting large companies off the hook by paying for the right to pollute!" In an ideal world, no one would be allowed to pollute. But in reality all human activity has impacts on the environment. Even breathing emits carbon dioxide. The concept of carbon trading recognizes this, and facilitates cost-effective reductions. It also opens big opportunities for collateral improvements benefitting crop production.

Storing carbon in the soil doesn't just reduce the carbon dioxide in the air; it's good for the soil. Farmers have long been encouraged to build up soil organic matter, for its contributions to soil structure, soil nutrient retention, and prevention of erosion – long-term benefits that often don't relate directly to short-term profit. Carbon trading provides funds to strengthen the short-term incentives to help get to the long-term benefits.

So, working with the carbon trading programs that are developing is a good idea. It's also an important opportunity for crop advisers to contribute their expertise to make sure it's done right. There are pitfalls to such programs. Here's what to watch out for.

First, many programs looking at specific emissions in isolation lose sight of the whole picture. For example, carbon credits are often calculated on a per-acre basis for implementing specific practices that are thought to increase soil carbon or reduce losses of N. If the effect of the practice on the yield or quality of the crop is not taken into account, the net greenhouse gas emission per unit of production may actually go in the opposite direction, or be smaller than that calculated per unit of land area. If society's demands for production from the whole system are to be met, the increased land requirement may negate all benefits of the practice.

Second, practices are site-specific in their impacts on yields, greenhouse gas emissions, and the total performance of the cropping system. It takes a person with agronomic expertise to advise on the selection of the right practices to reduce the carbon footprint of a unit of crop produced.

Sound agronomic recommendations contribute to higher crop yields that increase the return of carbon to the soil, and conserve soil organic matter with the appropriate tillage management. They include recommendations for the right source, rate, timing and placement of plant nutrients. The right combinations can increase N use efficiency and minimize nitrous oxide emissions.

For many situations, investments in science are needed to develop practices to achieve these objectives. The fertilizer industry is supporting a right source – right rate – right time – right place nutrient stewardship strategy that emphasizes the development of science-based practices leading to a more economically, environmentally and socially sustainable agriculture. Let's take advantage of the opportunity carbon credits provide to make progress on this strategy.

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Abbreviations in this article: N = nitrogen.

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