



FERTILIZER CANADA

FERTILISANTS CANADA

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THE RIGHT APPROACH TO CLIMATE SMART AGRICULTURE

PARIS – Canada, led by the province of Alberta, is implementing climate-smart agriculture by reducing greenhouse gas emissions from fertilizer use in crop production.

At least one million acres of farmland in Alberta are operating under 4R Nutrient Stewardship (Right Source @ Right Rate, Right Time, Right Place®), focused on reducing greenhouse gas emissions by 15 to 25 percent. These are farms that are not only adopting climate-smart practices but keeping records to verify and estimate the emission reductions.

Leading agronomy companies such as Agritrend and Farmers Edge have been working with Fertilizer Canada and the Government of Alberta to assist their farmer clients to apply their fertilizer more efficiently so they can improve profits and sell offsets in the Alberta greenhouse gas regulatory system.

To accomplish this, Canada's farmers are improving nitrogen management with the Nitrous Oxide Emission Reduction Protocol (NERP), delivered through a 4R Nutrient Stewardship plan on the farm. 4R Nutrient Stewardship is a science-based program, focused on sustainable agriculture that seeks to balance nutrient management decisions within a framework of economic, social, and environmental goals. NERP best management practices include the use of ammonium-based fertilizer, controlled release fertilizers, soil tests, precision placement and guidelines on fall application. These 4R Nutrient Stewardship practices are increasingly being adopted across Canada.

"Replenishing the nutrients used by the crop each year with fertilizer ensures the production of sustainable food. Farmers adopting this framework can improve the quality of the soil that plants need to thrive, without sacrificing the environment, ensuring the production of safe food for consumers," said Clyde Graham, Senior Vice-President of Fertilizer Canada.

While increasing crop production by 70 per cent to feed the growing population remains a priority, the fertilizer industry has also prioritized climate-smart agriculture as a way to minimize the impact on the environment. Nitrogen fertilizer is a driver of nitrous oxide emissions, but it is also the main driver of yield in modern high production systems.

Through careful selection of best management practices for nitrogen fertilizer as outlined in 4R Nutrient Stewardship, the nitrous oxide emissions per unit of crop produced can be substantially reduced, in some cases by up to half," said Dan Heaney, Vice-President of Research and Development at Farmers Edge.

As an added benefit to the farmer, the practices that reduce nitrous oxide emissions also tend to increase nitrogen use efficiency and the economic return on fertilizer dollars. It is estimated that increased profits per year range from \$9 to \$87 per acre.

"The application of 4R Nutrient Stewardship using NERP provides a framework for farmers to reduce on-farm emissions of nitrous oxide in a quantifiable, credible, and verifiable way that would allow farmers to produce saleable carbon credits," said Bill Dorgan, Business Unit Leader of Agri-Trend.

This framework for climate-smart agriculture is aimed at reducing regional, and ultimately global, nitrous oxide emissions.

"We are encouraged by the Government of Alberta's commitment to developing a nitrous oxide carbon offset program, and look forward to building similar protocols with other interested provinces, including Saskatchewan and Ontario," said Graham. "Internationally, small-holder farmers in developing countries can increase yield and improve environmental conditions by applying this framework."



The NERP was approved for use as an offset protocol in 2010 in Alberta. It is expected that the first NERP offset projects will be registered this year.

Fertilizer Canada has led two projects in Alberta, with financial support from Alberta Innovates BioSolutions, to provide NERP-based 4R Nutrient Stewardship training for farmers and the crop advisors who support them. In addition, Fertilizer Canada and the federal agriculture department (Agriculture and Agri-Food Canada) are jointly funding scientific field trials across Canada to quantify the N₂O emission reductions from 4R Nutrient Stewardship practices.

Across Canada, Fertilizer Canada is completing a four-year project to deliver 4R Nutrient Stewardship training and information focused on greenhouse gas emission reduction with support from Agriculture and Agri-Food Canada. The project was part of Canada's commitment to the Global Research Alliance announced at the Copenhagen COP.

The 1 million acres currently reducing greenhouse gas emissions using NERP represents roughly four per cent of Alberta province's 24 million acres of farmland. Though it's not enough, it demonstrates the fertilizer industry's commitment to accomplishing the Sustainable Development Goals set forward by the Food and Agriculture Organization of the United Nations.

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Fertilizer Canada represents manufacturers, wholesale and retail distributors of nitrogen, phosphate, potash and sulphur fertilizers. The fertilizer industry plays an essential role in Canada's economy, contributing over \$12 billion annually and 12,000 jobs. The association is committed to supporting the fertilizer industry with innovative research and programming while advocating sustainability, stewardship, safety and security through standards and Codes of Practice. Please visit fertilizercanada.ca.

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