



**FERTILIZER CANADA**  
**FERTILISANTS CANADA**

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## **Fertilizer Agri-Economic Report 202**

### **Frequently Asked Questions**

#### **Who commissioned the study, and why?**

Fertilizer Canada, the association representing manufacturers, wholesale and retail distributors of nitrogen, phosphate, potash and sulphur fertilizers, and Canola Council of Canada, the association representing canola growers, processors, life science companies and exporters, as well as food and feed manufacturers, commissioned the study.

The study was commissioned to address a lack of data to surrounding the federal government's fertilizer 30 per cent emissions reduction target and how it would be reached. The study looks at what tools are currently available for farmers to reduce fertilizer emissions, what is a reasonable approach, and the economic impact to the farmer.

#### **What does the study assess?**

The study looked at a series of scenarios for major Canadian cropping systems across Canada and builds out a path forward to 2030 based on broader implementation of 4R practices. The study looks at the impact of 4R BMPs on GHG emissions and the economic impact to growers.

#### **What is nitrogen fertilizer?**

Nitrogen is a widely distributed element that makes up 78 per cent of the earth's atmosphere. While plants require a balanced supply of nutrients, it is the most important nutrient and is required in the greatest quantities. It plays a critical role in the process of photosynthesis and manufacturing of proteins. As plants grow, they take nutrients from the soil, and once harvested these need to be replenished by fertilizer for the next round of seeding. Nitrogen fertilizer ensures high yields, high quality, better disease resistance, and higher nutritional value of crops.

#### **How does nitrogen fertilizer emit GHGs?**

Nitrogen fertilizer that is not taken up by the plant can be broken down by microbes in the soil and then released as nitrous oxide. Efficient use of fertilizer through 4R BMPs helps prevent nitrogen from escaping into the environment.

#### **Why weren't all BMPs included in the study, and how did you select the ones that were included?**

The study looked at the BMPs that were listed in the Agriculture and Agri-Food Canada's discussion paper as well as the On-Farm Action Climate Fund. There were also BMPs not included in the federal government's documents that were included in the study because of their potential to effectively reduce GHG emissions.



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### **How are levels of 4R BMPs determined?**

4R BMPs can fall under basic, intermediate, and advanced for each of the R's (time, place, rate, and source). Which level a BMP falls under will depend on the region, crop, and soil. BMPs are not stand alone and should be considered as suites of practices that work together toward the goal of improving nutrient use efficiency and reducing nutrient losses from the cropping system.

### **What will increase 4R uptake?**

According to our most recent Fertilizer Use Survey, 58 per cent of the acres in Canada surveyed are following basic 4R principles. The same survey also found the biggest barriers to adoption are a lack of incentive, lack of information/ access, and expense. Providing farmers with the knowledge and support to implement and increase their levels of 4R BMPs will increase uptake in Canada.

### **What is the level of productivity for the increased yield scenario and how was that determined?**

The study used long term yield increase trends for the level of productivity, as well as Canola Council of Canada's industry goal for increased production for the canola crop.

### **Did the study look at reducing production emissions?**

No, the study focused on fertilizer application emissions in relation to the federal government's emissions reduction target.

### **Does the study assess all regions of Canada?**

The study includes the majority of agriculture regions in Canada: Quebec, Ontario, and the Prairies. While there are agricultural regions in each province the majority of acres is concentrated in the regions the study looks at. British Columbia and Atlantic Canada represent 3 per cent of agricultural regions and their omission does not significantly alter the trends or change the conclusions of the study.

### **What is a contribution margin?**

A contribution margin was used as a key economic indicator in the study, allowing comparison between regions. It was calculated by taking the revenue and subtracting variable costs.

### **What is the difference between intensity versus absolute emissions?**

Emission intensity reduction focuses on reducing the emissions it takes to produce a bushel of crop, rather than total emissions reduction that limits fertilizer emissions by 30 per cent below 2020 levels. Fertilizer application is directly connected to crop yields, so a total emissions reduction approach limits production capacity. An emissions intensity approach allows farmers to growing crops sustainability without limiting the amount they can produce.



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### **How many farmers currently use 4R practices?**

Through the Fertilizer Use Survey, we ask growers to self-assess their farming practices against 4R practices. In 2021, across all crops surveyed there was an estimate of 25.4 million acres that identified as implementing basic 4R principles— that is approximately 58 per cent of acres following 4Rs across the surveyed crops and regions.

More advanced 4R BMPs look to be in the range of 10-15 per cent in ON and QC and 10-25 per cent in the prairies. Additionally, only about 7 per cent of growers across Canada have a 4R Nutrient Management Plan in place with a qualified advisor. This is a significant start but shows there is an opportunity to further incentivize and accelerate increased adoption.

