

# Fertilizer keeps things growing

Fertilizer is essential to plant growth. Through constant innovation, fertilizer and supplement products are improving yields and reducing environmental impact – feeding people around the world.

## Product innovation is the catalyst for growth

Different crops and conditions require different balances of nutrients. What makes wheat grow in Alberta might not be effective to grow PEI potatoes.

**Through innovation, research, and development, the Canadian fertilizer industry is creating new products and technologies to better meet these needs.**

## Key fertilizer product innovations for the future

As the world population continues to grow, the fertilizer industry is essential to ensuring we can meet rising demand for food. Plants still need the same 17 essential nutrients that they have needed forever. The fertilizer industry is continuously evolving to meet the fundamental challenge of getting those nutrients to plants in the most efficient way.

To do this, innovation in products can mean:



Optimizing product chemistry to make sure the nutrients are the most available for plant uptake



Including additives or coatings to reduce nutrient losses into the environment



Creating new products that don't provide plant nutrients directly, but instead offer supplements that act indirectly to improve conditions



### Quick facts:

- ✔ All fertilizer and supplement products are regulated by the Canadian Food Inspection Agency, and currently there are more than 1,500 fertilizer and supplement products registered in Canada.
- ✔ Tens of millions of dollars are put to research, development, and innovation each year by Fertilizer Canada's members.
- ✔ Fertilizer Canada supports an industry-led 4R Research Network comprised of leading Canadian researchers who quantify the economic, social, and environmental benefits of advanced fertilizer management programs like 4R Nutrient Stewardship.

## The future of fertilizer is innovative products:

The Canadian fertilizer industry is constantly innovating. Better performing products will help to increase crop yields, while reducing environmental footprint – a win for people and the planet.



### Stabilized Nitrogen Fertilizers:

These fertilizers slow down and reduce the loss of nitrogen, by up to 20 per cent, to improve nitrogen fertilizer uptake efficiency, increase crop yields, and reduce nitrous oxide emissions by up to 50 per cent.



### Control Released Fertilizers:

These fertilizers are physically coated with a polymer that controls nutrient release according to plant requirements at different growth stages. This increases the nutrient availability for the plant, maximizing plant uptake and minimizing potential losses to the environment.



### Slow-Release Fertilizers:

These products provide a slower release of plant-available nutrients over weeks to months. This allows farmers to apply product which then remains stable in the soil until plant uptake is optimal.

### Fertilizer products are vital to keeping Canadians fed and export targets met.

Studies have shown that without fertilizer there is a significant decrease in crop yields including up to a 40 per cent decline in wheat, 57 per cent decline in grain, and 60 per cent decline in corn yields. Enhanced nitrogen management strategies for key Canadian crops, like wheat production, increase crop yields in Canada, keeping food on the table, and providing income for farmers.

### Fertilizer products made in Canada

2019/2020 JULY TO JUNE; IN METRIC TONNES



**20 million**  
Potash



**5 million**  
Ammonia



**4.6 million**  
Urea



**1.7 million**  
Urea ammonium nitrate



**1 million**  
Ammonium sulphate



**725 thousand**  
Ammonium Nitrate / Calcium Ammonium Nitrate



**243 thousand**  
Other products

# What is NPKS?

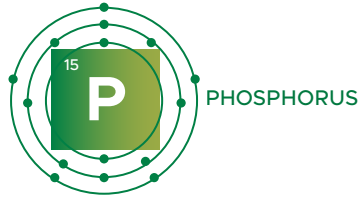
**NPKS represents the four most common macro-nutrients found in fertilizer and is used by plants to grow – nitrogen (N), phosphorus (P), potassium (K), sulphur (S).**

Not all plants require the same amount of nutrients. Fertilizer Canada, and its members, implement the 4R Nutrient Stewardship (Right Source @ the Right Rate, Right Time, and Right Place) framework to increase efficiency and yields by ensuring crops are getting what they need when they need it.



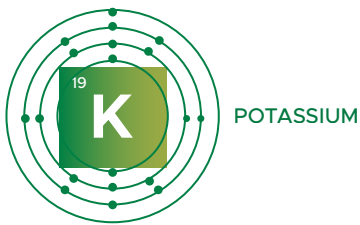
NITROGEN

- Derived from hydrogen gas and atmospheric nitrogen that react to form ammonia
- In Canada, nitrogen fertilizer is mainly produced in western Canada
- Largely responsible for leaf growth on plants
- Canadian crops relying heavily on nitrogen: wheat, canola, corn, barley



PHOSPHORUS

- Derived primarily from rock phosphate
- In Canada, phosphate fertilizer is produced in Quebec
- Largely responsible for root growth and flower and fruit development
- Canadian crops relying heavily on phosphorus: wheat, canola, soy, corn, barley



POTASSIUM

- Derived primarily from potash
- In Canada, potassium fertilizer is primarily produced in Saskatchewan
- Largely responsible for overall function of plant performance including root growth and stem development
- Canadian crops relying heavily on potassium: wheat, soy



SULPHUR

- Derived primarily as a by-product
- In Canada, sulphur is primarily produced in Alberta and British Columbia
- Largely responsible for protein synthesis
- Canadian crops relying heavily on sulphur: canola, barley, oilseeds

## Canadian farmers use fertilizer efficiently.

**Fertilizer consumption has risen over the past two decades in support of increased crop yields.**



Agriculture productivity of major crops in Canada has increased by about 34 per cent since 2005 through adoption of innovative technologies.



Canola, Canada's most valuable and nutrient intense crop has increased by about 80 percent since 2005.



Canadian farmers nutrient use efficiency exceeds world averages and ranges from 66 per cent to 78 per cent - helping reduce emissions and feed the world.

## Stable regulatory framework promotes industry growth

The Canadian fertilizer industry continues to innovate to create better products for people and the planet. The agriculture and agri-food industry in Canada is dependent on farmers' timely and affordable access to safe and effective fertilizers and supplements. A stable regulatory environment that promotes safety and innovation is critical to ensuring the conditions needed for this \$23.6 billion industry stay competitive internationally.

**Innovation for tomorrow: Feeding the world. Growing the economy. Protecting the environment.**