

Canadian Nitrogen Fertilizer Industry 101



7

N

Did you know?



Plants need nitrogen more than any other essential plant nutrient. Nitrogen was the first element to be identified as an essential for plants.



Nitrogen makes up 78 per cent of the air we breathe, but plants can't use this form of nitrogen on its own. When nitrogen from the air is combined with hydrogen to make ammonia, it's now in a form that can be used by plants as fertilizer.

What is nitrogen?

Nitrogen is a widely distributed element that makes up 78 per cent of the earth's atmosphere. Many plants and animals rely on nitrogen as it helps with internal processes such as forming amino acids, and making up the building blocks of protein.

HOW DOES NITROGEN FERTILIZE PLANTS?

While plants require a balanced supply of nutrients, nitrogen is the most important and 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.

WHAT ARE THE ADVANTAGES OF NITROGEN FERTILIZER?

Of the 17 essential nutrients, nitrogen is the one plants demand the most. Nitrogen fertilizer ensures high yields, high quality, better disease resistance, and higher nutritional value of crops.

Fertilizer Canada emphasizes the importance of managing and balancing the supply of nutrients to prevent both over and under fertilization by applying the framework of 4R nutrient management (Right Source @ Right Rate, Right Time, Right Place ®).

Learn more about the Canadian fertilizer industry:

FERTILIZERCANADA.CA |   

From manufacturing and processing, to transport and storage, to wholesale and retail, the nitrogen industry keeps Canada's economy growing.



A major export market.

The United States is Canada's largest fertilizer export market, ranging from ranging from \$800 million to \$1.2 billion each year.



Reliant on natural gas.

Nitrogen production facilities upgrade Canadian natural gas, the most efficient and lowest carbon dioxide (CO₂) emission feedstock and fuel source, into nitrogen fertilizers that improve quality and yields.



The 2019/2020 growing season saw the highest level of nitrate-based nitrogen fertilizers, like ammonium nitrate / calcium ammonium nitrate – including ammonia, urea, urea ammonium nitrate, and ammonium sulphate.



Approximately half of the food produced across the globe is supported by the use of nitrogen fertilizer.

NITROGEN FERTILIZER HELPS FIGHT FOOD INSECURITY AROUND THE WORLD, SUPPORTING U.N. SUSTAINABLE DEVELOPMENT GOALS.

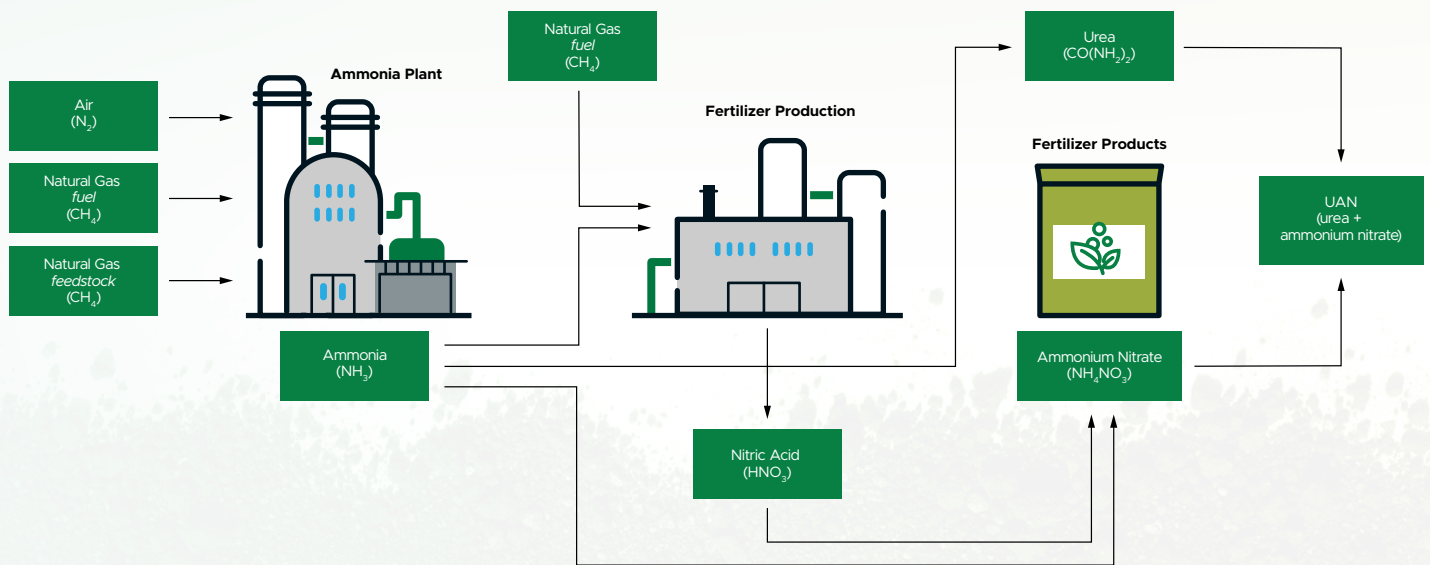
In the past 50 years, world nitrogen use has increase by 800 per cent. As the world's population continues to grow, global agriculture production will need to increase by 60-70 per cent to feed 9.7 billion people by 2050. Nitrogen can help increase crop yields using the same amount of land, providing a more effective use of resources and helping Canada feed the world.



How are nitrogen-based fertilizers made?

To manufacture nitrogen fertilizer, it must be removed from the air and combined with hydrogen to make ammonia. Ammonia is used in two ways: it is applied directly to crops as a nitrogen fertilizer, or it is used as a building block to make other nitrogen fertilizer products.

Production of nitrogen fertilizer



Nitrogen fertilizer requires hydrogen gas and atmospheric nitrogen to combine and create ammonia. The most-used hydrogen gas is natural gas. **These feedstocks are the most efficient source, and provide significant value to the Canadian natural gas supply.**

Once ammonia is created, other important fertilizers can be made such as Urea and nitrate based fertilizers.