

Explained in Brief

Global fertilizer

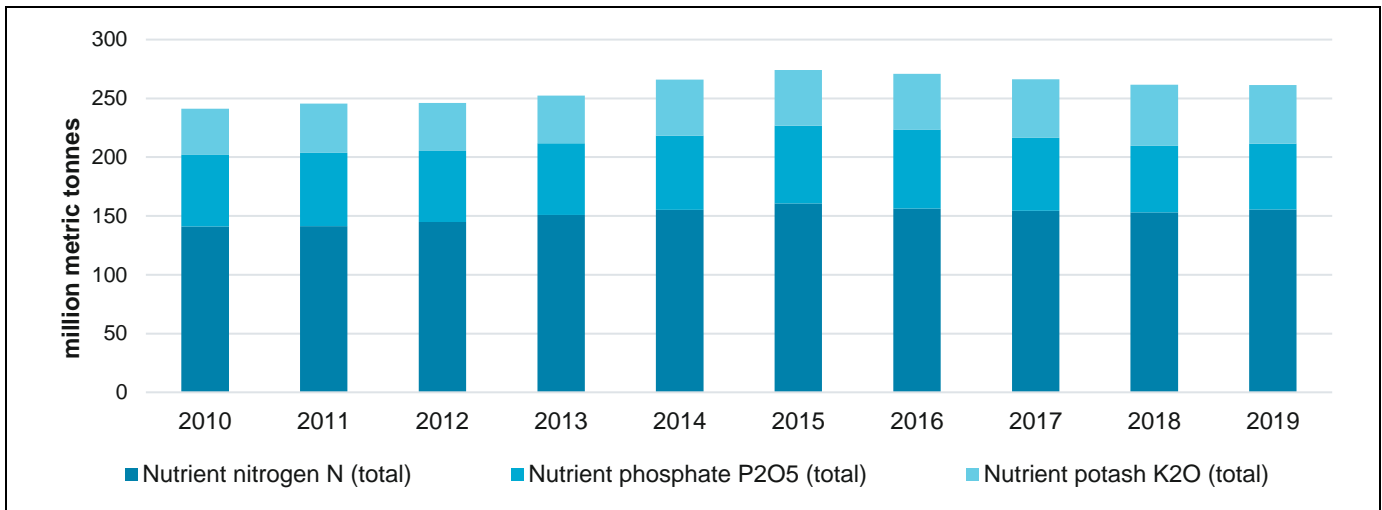
[Explained in brief](#) provides short, bite-sized information pieces on economic trends and topics in agriculture and agri-food industries. The intent of this series is to make complex content available to a broader readership. This issue looks at global production and trade of nitrogen (N), phosphorous (P) and potash (K) fertilizers. Note that the analysis refers to fertilizer nutrients (N, P, K), **not** fertilizer types (urea, ammonia, etc).

Global fertilizer production and exports¹

Nitrogen (N), phosphorus (P), and potash (K) are essential inputs for global agricultural production. They promote growth and development of field, forage and specialty crops, and drive average crop yields (see [“Explained in Brief”](#) on Alberta spring wheat, canola, durum and barley crops). In Alberta, total fertilizer and lime purchases by agricultural producers amount to 1.335 billion dollars (2020p). They are the single largest crop farming expenditure, and account for approximately 11 per cent of all farm operating expenses².

Global fertilizer production averaged just under 259 million tonnes (in term of nutrients) per year between 2010 and 2019. Nitrogen accounts for approximately 58 per cent, phosphorous for 24 per cent and potash for roughly 18 per cent of all fertilizers (figure 1). Largest producers of nitrogen (N) and phosphorous (P) fertilizers are China, India and U.S.A., while Canada, Russian Federation and Belarus mine the largest deposits of potash (K).

Figure 1: Global fertilizer production (by nutrient, in tonnes)



Source: [FAOSTAT](#)

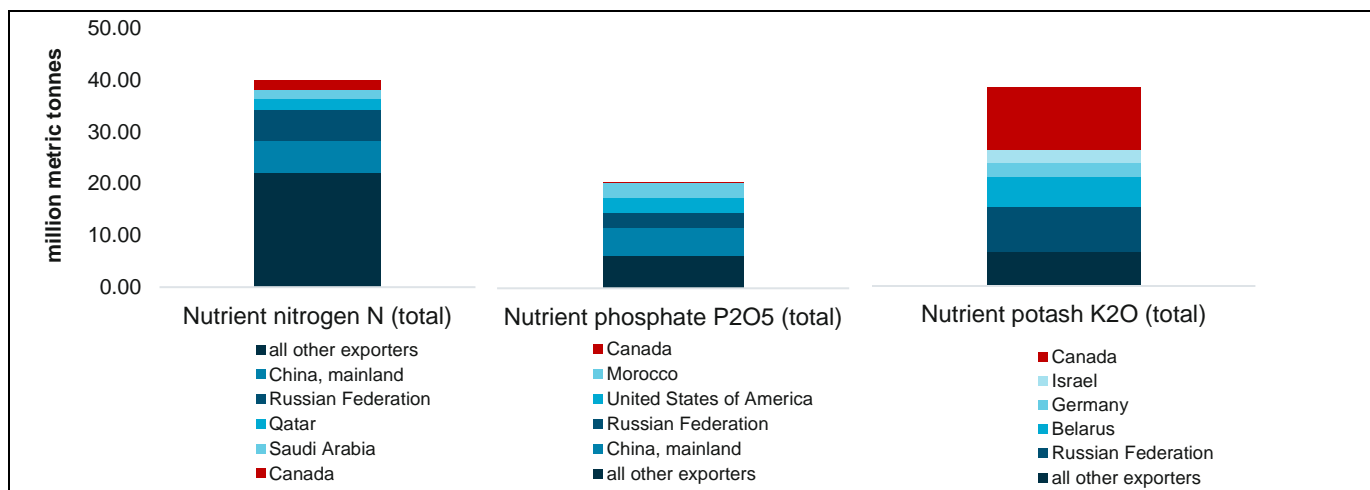
In 2019, 103 million tonnes of fertilizers were traded internationally. This is 36 per cent of all fertilizer production. Largest in tonnage are nitrogen fertilizers (46 million tonnes, 44 per cent), followed by potash (35 million tonnes, 36 per cent) and potassium (22 million tonnes, 20 per cent). Only a few countries trade in global fertilizer markets. Figure 2 overleaf shows average annual exports of mineral fertilizer nutrients for the period 2010 to 2019 and the largest exporters. Russian Federation and China (15 per cent of exports each) lead global *nitrogen exports*, followed by Qatar (4.8 per cent) and Saudi Arabia (4.5 per cent). Canada holds a small share of global nitrogen

¹ Production and export data from [FAOSTAT](#), with 2019 being the latest year for which consistent data is available. In addition, the [Nutrien, feeding the future, Fact Book 2020](#) provides information on fertilizer types.

² [Agriculture statistics yearbook, 2020, 46th edition, AFRED, see table 6.](#)

exports (three per cent), and a number of smaller suppliers (“all other countries”) export more than 50 per cent of global nitrogen. China (25 per cent) along with Morocco, Russian Federation and U.S.A. (each between 13 and 14 per cent) export more than 65 per cent of all *phosphorous fertilizers*. Canada no longer exports phosphate since spring of 2019. In the *potash* market, Canada holds the largest exports with a whopping 32 per cent market share. Together with the Russian Federation (23 per cent) and Belarus (15 per cent) these three countries supply 73 per cent of all internationally traded potash.

Figure 2: Global Fertilizer Exports (2010 – 2019, by nutrient in tonnes)

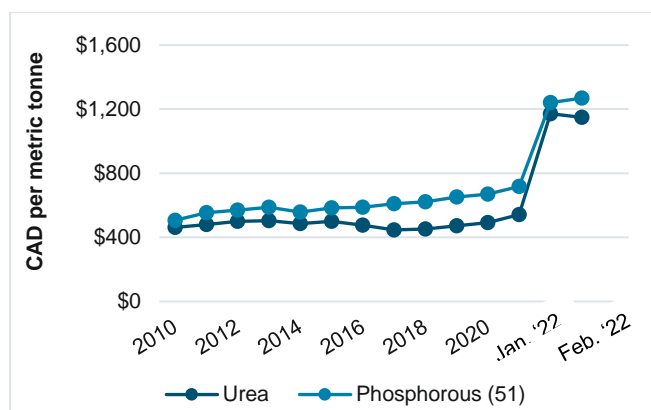


Source: [FAOSTAT](#)

Fertilizer price developments in Alberta

Fertilizer prices have seen an increasing trend over the past 16 months, mainly due to strong agriculture commodity prices and rebounded demand for industrial uses. Record high fertilizer feedstock prices (natural gas and coal) in Europe and Asia, in addition to export restrictions in key exporting countries such as China and Russia have sent fertilizer prices sky-rocketing since the fall of 2021 (figure 3). Given the importance of fertilizer as a farm input, price hikes will increase cost of production globally, therefore, reducing fertilizer demand and crop production, and pressure producer margins. For a detailed recent agricultural analysis [FAO 2022](#).

Figure 3: Prices of urea and phosphorous in Alberta



Source: [Competitiveness and Market Analysis section, AFRED](#).

Take home messages

- Internationally traded fertilizers are critical farm inputs.
- China and the Russian Federation are the largest exporters of phosphorous and nitrogen fertilizers respectively.
- Canada is the single largest producer and exporter of potash. However, Russian Federation and Belarus hold significant shares in global potash trade.
- Increased fertilizer prices raise cost of agricultural production, may reduce crop production and squeeze producer margins.



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