



## SHORTAGE OF FERTILIZERS APPEARS UNLIKELY FOR NOW

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- A slowdown in fertilizer demand has been driving down international prices of fertilizers recently. In Brazil, inventories at *Paranaguá* and *Santos* are full, following record imports.
- Brazil is highly dependent on imports to meet its demand, with 85% of its consumption coming from abroad. In 2021, 41 million tons of fertilizers were shipped to Brazil.
- While the outlook for the war on Ukraine remains foggy, concerns that fertilizer supplies from Russia could be completely disrupted have not materialized. Imports from Russia and Belarus have continued to flow to Brazil.
- As fertilizer prices continue to trend down, we think that could ease some of the concerns that farmers — squeezed by rising cost of production — would skip the use of fertilizers, jeopardizing crop yields and global food supply.
- Yet we do recognize near-term risks: interruptions in gas supply in Europe could upend fertilizer manufacturers' activity.

### Global

**A slowdown in fertilizer demand has been driving down international prices of fertilizers recently.** Fertilizer prices soared to record highs in early March as the war in Ukraine sparked fears of a shortage of this crucial agricultural input that underpins global food security. But now, with most of the supply of fertilizers for the current marketing year already secured, most farmers are refraining from buying, hoping for future price cuts. Indeed, fertilizer supplies have been piling up from North to South America. In Brazil, a glut of the crucial chemicals at some of its main ports — inventories at *Paranaguá* and *Santos*<sup>1</sup> are full, following record imports — underscore that the price of nutrients may have to drop further before farmers resume buying. **While fertilizer usage may not have normalized (the implication for crop yield hinges on this matter), the risk of a large-scale shortage seems unlikely for now, in our view.**

According to Green Market's data, its weekly fertilizer price index is already down 35% from its peak on March 25. The price of US Gulf NOLA<sup>2</sup> urea granular fell to the lowest level since August 2021, while DAP<sup>3</sup> US Gulf NOLA sits 20% below its high. Potash US Gulf is the exception, with prices at a plateau since the beginning of this year. A contributing factor worth mentioning is freight costs, which have also been slowly trending down since peaking in September 2021.

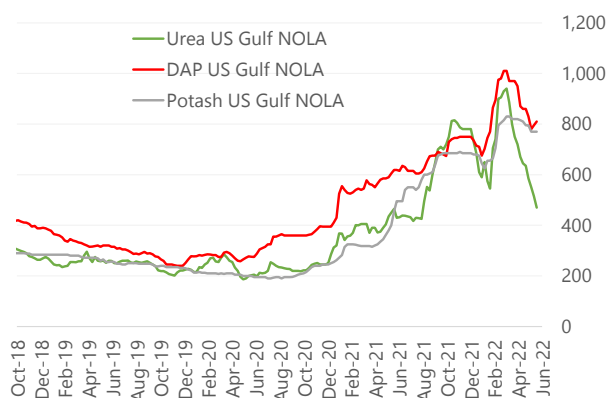
<sup>1</sup> <https://inteligenciafinanceira.com.br/saiba/economia/acumulo-de-fertilizantes-nos-portos-de-santos-e-paranagua-sinaliza-nova-queda-de-preco/>

<sup>2</sup> New Orleans, Louisiana.

<sup>3</sup> Diammonium phosphate.

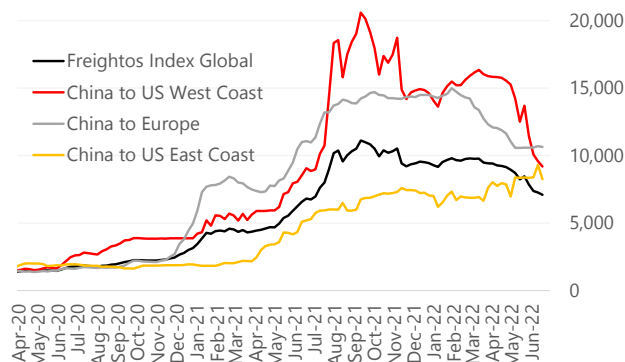


**Figure 1 –Fertilizer Prices (USD/short ton<sup>4</sup>)**



Sources: Bloomberg, Santander.

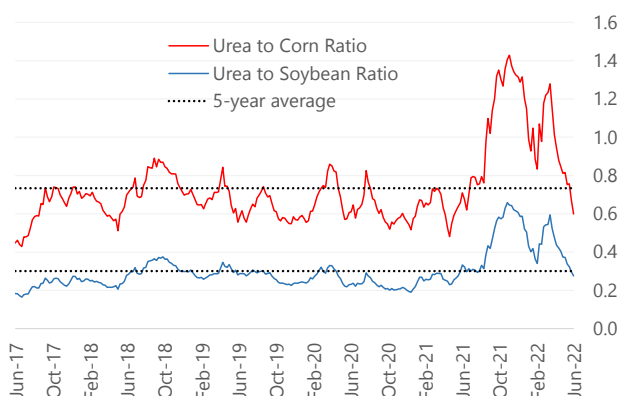
**Figure 2 – Freight Costs Index**



Sources: Bloomberg, Santander.

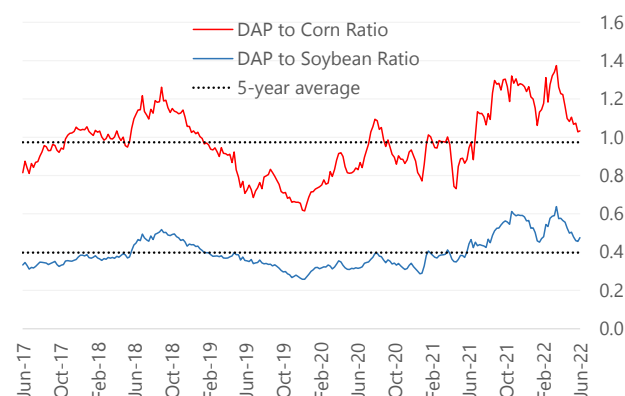
While it is too early to tell whether the relief will continue going forward, fertilizer-to-grain price ratios, an important affordability metric, have plunged. As seen in Figures 3-5, showing international prices for fertilizer and grains, ratios of both urea and DAP to corn and soybeans are receding to their respective five-year average levels. Indeed, the urea-to-corn ratio is already below its five-year average. Once again, the exception is potash, though its prices have also decelerated. Effectively, with cost-to-price ratios returning to average levels, an important consequence is that farmers are favored to plant as much as possible.

**Figure 3 – Fertilizer Affordability – Urea**



Sources: Bloomberg, Santander.

**Figure 4 – Fertilizer Affordability – DAP**

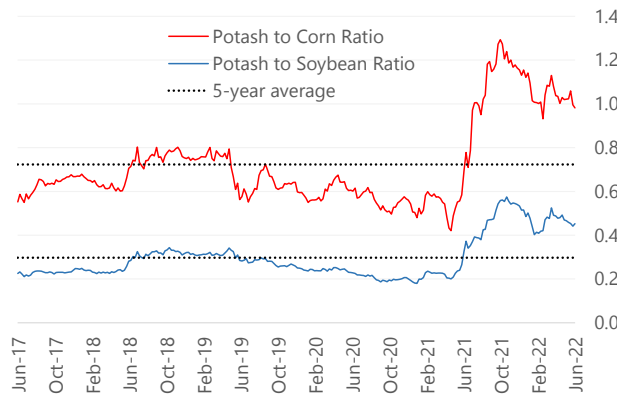


Sources: Bloomberg, Santander.

<sup>4</sup> 1 short ton = 0.907 metric ton.



**Figure 5 – Fertilizer Affordability – Potash**



Sources: Bloomberg, Santander.

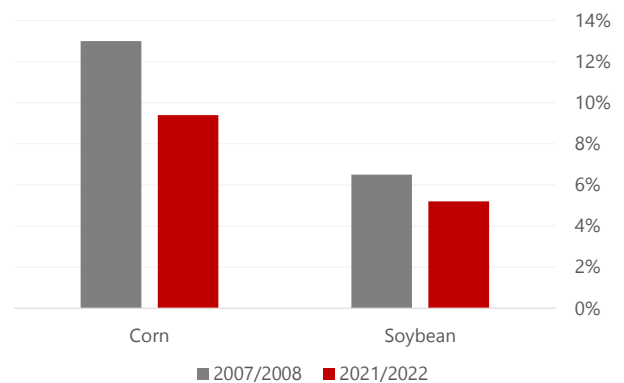
If history is any guide, we can look at 2007, when international fertilizer prices soared to a then all-time-high, only to collapse in 2008. This price surge was due to strong global demand (particularly in China and India, but also in the U.S. and Brazil owing to increased fertilizer usage for biofuel production) and low fertilizer inventories, fueled by a macro backdrop of a weak USD and rising commodity prices. By late 2008, high fertilizer prices squeezed farmers, causing demand destruction, with the collapse in the global credit market and the subsequent slowdown in world economic growth worsening the case. While some similarities can be drawn, this time around we have global balance of grains tighter than in 2007.

**Figure 6 – Green Markets North America Fertilizer Price Index (USD/ short ton)**



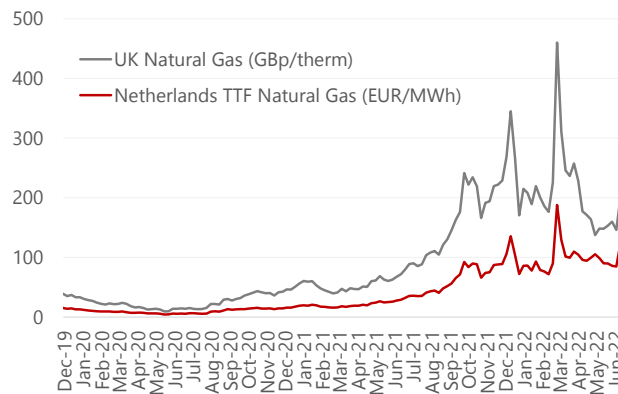
Sources: Bloomberg, Santander.

**Figure 7 – US Grains – Stock-to-Use Ratio (%)**



Sources: Bloomberg, Santander.

**Figure 8 – Natural Gas Prices**



Sources: Bloomberg, Santander.



Another important consequence of this high volatility in fertilizer prices is that farmers will factor in and pay more attention to the nutrient's usage when determining planting decisions. For instance, planting areas of crops that require large amounts of nitrogen fertilizer (like corn and wheat) will likely fall compared to planting areas of crops that need less nitrogen, such as soybeans. The USDA<sup>5</sup> Prospective Plantings report published on March 31 indicated that American farmers in 2022 intend to plant 4% fewer acres with corn (89 million acres) and 4% more with soybeans (91 million acres). According to the USDA Acreage Report, corn planted area for the 2022-23 marketing year is estimated at 89.9 million acres, down from 93.4 million last season and in line with market expectations. Conversely, the estimate for soybean planted area is 88.3 million acres, up from 87.2 million last season but below the market's estimate of 90.6 million.

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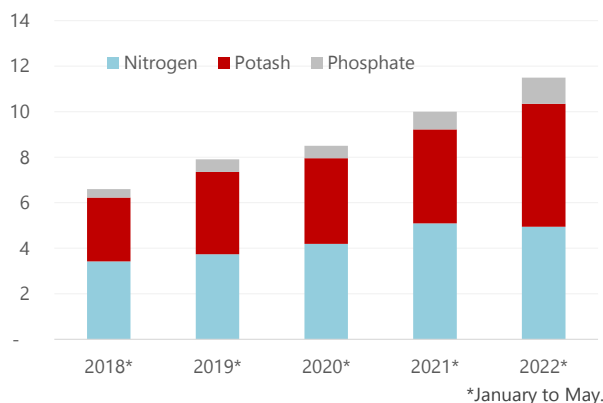
<sup>5</sup> United States Department of Agriculture.



## Brazil

Brazil is the largest fertilizer importer in the world, with 85% of its demand coming from abroad (this high dependence on imports is even more pronounced with respect to potash, at 96%). In 2021, 41 million tons of fertilizers were shipped to Brazil, with Russia (23%), China (14%), and Morocco (11%) among the main countries of origin. While the outlook for the war on Ukraine remains foggy, concerns that fertilizer supplies from Russia could be completely disrupted have not materialized. Russian fertilizer sales are exempt from the sanctions imposed by Western countries in response to the war, so shipments continue to find their way to its main consumers.

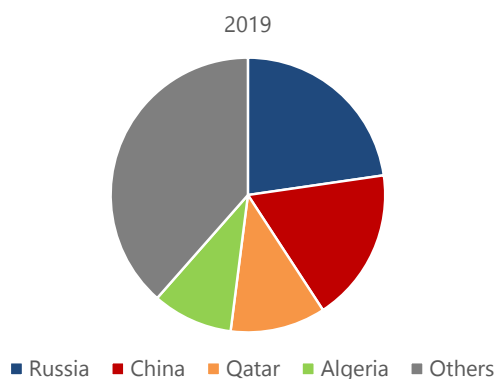
**Figure 9 – Brazil Fertilizer Imports (Million tons)**



Sources: SECEX, Santander.

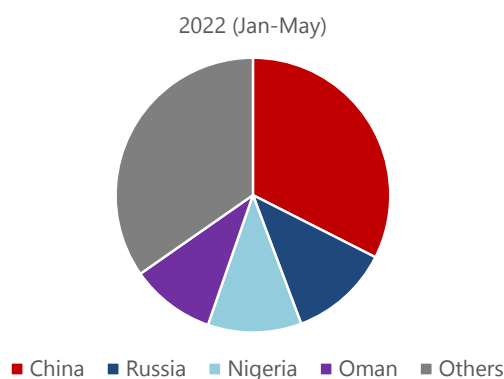
According to SECEX, total fertilizer volume imports from January to May 2022 increased 15% compared to the same period of 2021. As seen in the Figures 10-15, global nitrogen fertilizer markets are more decentralized than in the past (i.e., more countries can supply fertilizers), and in 2022 China has surpassed Russia as the leading exporter to Brazil. The story is a bit different for global supplies of potash fertilizer, with production more concentrated in a few countries. Even with the ongoing conflict in Eastern Europe, imports from Russia and Belarus have been flowing to Brazil. Still, the federal government launched in March a National Fertilizers Plan<sup>6</sup>, and it expects to reduce its external dependency for fertilizers to 50% (from 85%) by 2050. According to the plan, the country would seek greater autonomy by increasing domestic production, investing in new technology, and making progress in so-called “fertilizer diplomacy,” which seeks to increase the pool of suppliers.

**Figure 10 – Brazil Nitrogen Fertilizer Imports by Origin – 2019**



Sources: SECEX, Santander.

**Figure 11 – Brazil Nitrogen Fertilizer Imports by Origin – 2022**

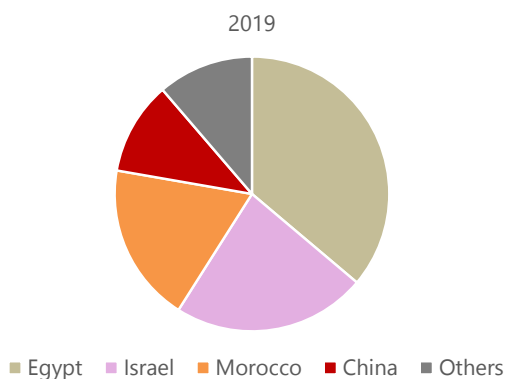


Sources: SECEX, Santander.

<sup>6</sup> <https://www.gov.br/agricultura/pt-br/assuntos/noticias/governo-federal-lanca-plano-nacional-de-fertilizantes-para-reduzir-importacao-dos-insumos>

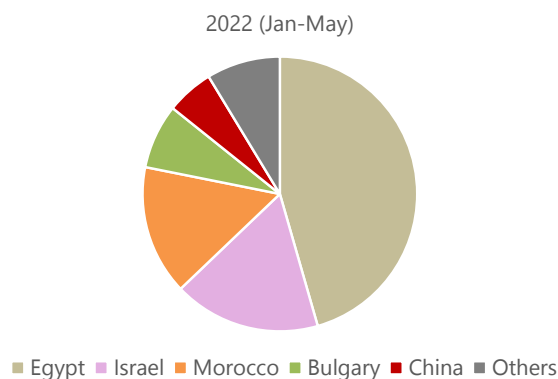


**Figure 12 – Brazil Phosphate Fertilizer Imports by Origin – 2019**



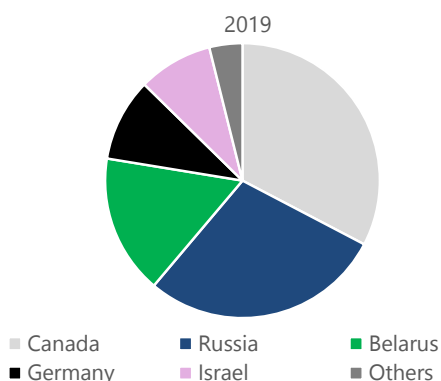
Sources: SECEX, Santander.

**Figure 13 – Brazil Phosphate Fertilizer Imports by Origin – 2022**



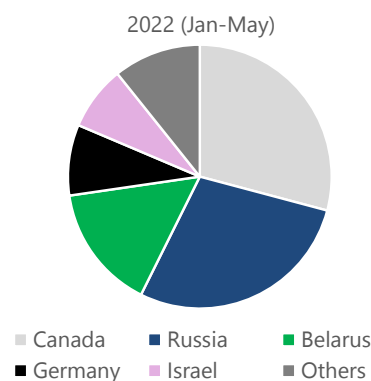
Sources: SECEX, Santander.

**Figure 14 – Brazil Potash Fertilizer Imports by Origin – 2019**



Sources: SECEX, Santander.

**Figure 15 – Brazil Potash Fertilizer Imports by Origin – 2022**



Sources: SECEX, Santander.

**As fertilizer prices continue to trend down, that may ease some of the concerns that farmers — squeezed by rising cost of production — would skip the use of fertilizers, jeopardizing crop yields and global food supply. . .**

**. . . Yet we do recognize near-term risks.** A minority of Brazilian farmers that have not secured the necessary amount of fertilizer for the current marketing year can delay their purchases until the eve of the soybean seeding period in September. However, waiting too long could cause them to face transportation bottlenecks that could leave some farmers empty-handed, so we expect some increase in demand. Additionally, recent geopolitical developments in Eastern Europe are triggering interruptions in gas supply in European countries, where key fertilizer industries — heavily dependent on natural gas — are located. In particular, nitrogen fertilizers are likely to be the most affected, as natural gas is the primary raw material in production of ammonia, which is then used to produce urea.



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