



Strait Talk: How the Iran Conflict Could Affect Global Agriculture

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Key Takeaways

- Fertilizer prices are increasing in response to the closure of the Strait of Hormuz, threatening to further erode margins for producers of row crops.
- If producers respond to rising prices by applying less fertilizer, the result could be lower yields and tighter global supplies, which would in turn increase prices and mitigate the impacts of higher input costs.
- A long-lasting closure would impact international production of major row crops, potentially causing significant price increases that would benefit U.S. producers.
- U.S. pistachio producers are benefiting from the closure, which has hindered exports from Iran, a major pistachio producer.

The Strait of Hormuz is one of the most critical chokepoints for the global fertilizer trade. Persian Gulf countries are significant producers of fertilizer, and approximately one-third of the world's fertilizer moves through the waterway each year. Even if it opened immediately, the Strait's closure for two months and counting will continue to impact the global agricultural sector through 2027.

The magnitude of that impact depends on the duration and severity of fertilizer production and export disruptions. Under a short-lived disruption, we expect impacts will be limited to incremental margin pressure from higher input costs. Under a more prolonged or severe disruption, higher row crop prices could support average sector profitability, while materially widening the profitability gap between high- and low-performing operations due to uneven cost pass-through and yield outcomes.

Scenario Analysis

Scenario A: Rapid De-Escalation (Base Case, 50% Probability)

- The Strait of Hormuz reopens before August and remains open, allowing fertilizer exports to resume with moderate logistical constraints.
- Fertilizer prices remain elevated for six to 12 months but begin to normalize through 2027, with application rates largely unchanged.
- Yield impacts remain minimal; global crop prices are broadly unchanged relative to the pre-conflict baseline and producer margins are weaker than pre-conflict levels.

Scenario B: Prolonged Disruption (30% Probability)

- The Strait of Hormuz is effectively closed or subject to repeated disruptions through early 2027, with lingering declines in Persian Gulf fertilizer production and export.
- Suppliers intermittently declare *force majeure*, invoking a contractual clause that allows them to cancel deliveries due to unforeseeable and uncontrollable events.
- Global fertilizer prices revisit or exceed 2022 peaks, and application rates are reduced.
- We would trim our global row crop production forecasts for 2026 and 2027. This would, in turn, support prices approximately 20% above the pre-conflict baseline, with U.S. producer margins exceeding pre-conflict levels.

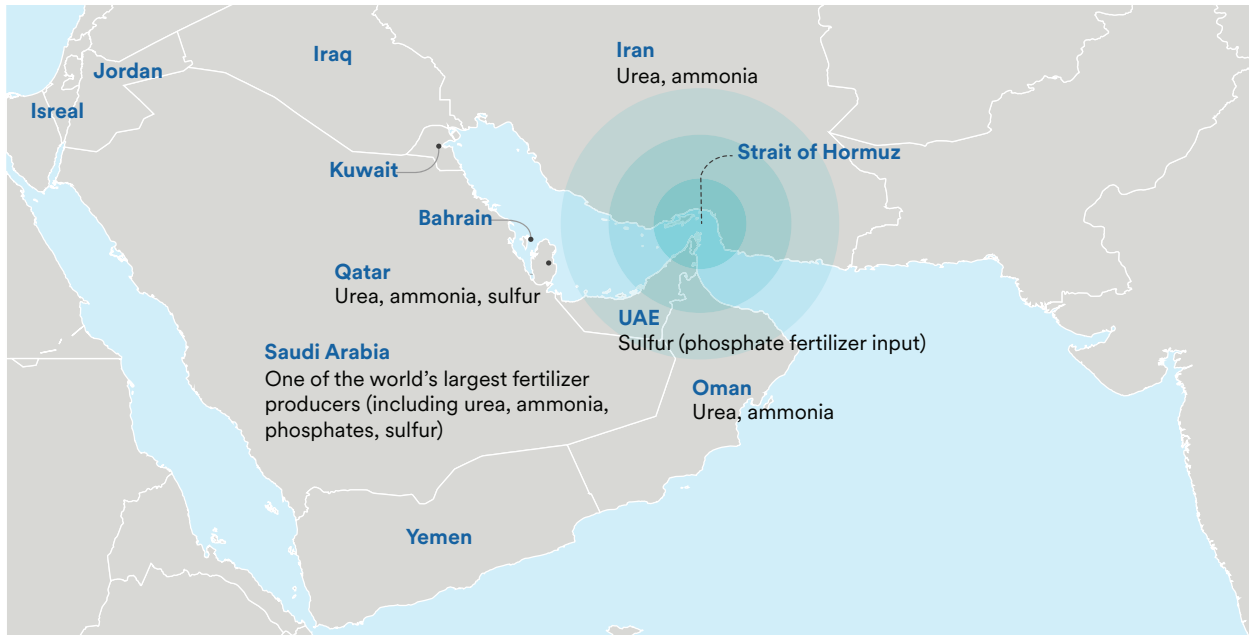
Scenario C: Severe Disruption With Material Yield Impacts (20% Probability)

- The Strait of Hormuz remains closed throughout 2027, and physical damage to fertilizer production facilities or export infrastructure removes a share of Gulf supply for multiple years.
- Combined with additional shocks, including Chinese sulfuric acid and fertilizer export restrictions, fertilizer prices remain structurally elevated, with widespread availability constraints resulting in significant reductions in application rates.
- Global agricultural margins and cropping patterns undergo structural shifts. Global corn, wheat and soybean prices increase approximately 65%, but the United States outperforms due to lower reliance on fertilizer imports relative to peers. Incentives for efficiency-enhancing technologies and regional production expand, and food insecurity risks rise in import-dependent countries.

The Strait of Hormuz as a Fertilizer Chokepoint

A significant share of global urea and phosphate production originates west of the Strait and must transit the waterway to reach international markets (Figure 1). The United States sources a relatively small portion of its nitrogen and phosphate from these producers, but because fertilizer markets are globally integrated, price shocks propagate quickly, regardless of whether physical shortages immediately materialize.

Figure 1 | Gulf Countries Are Key Producers of Fertilizer Components

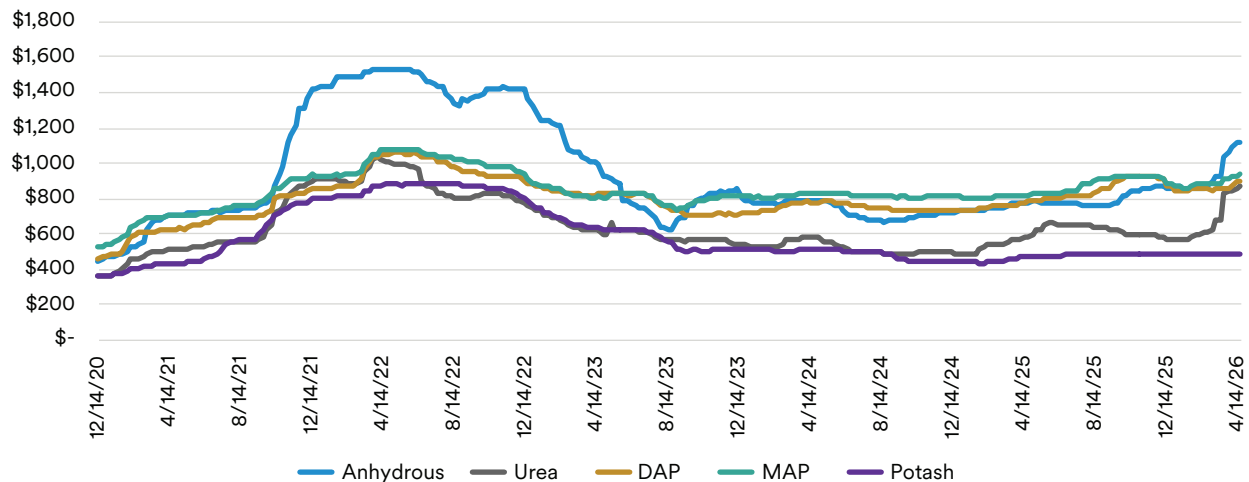


Source: World Population Review as of 2022, International Food Policy Research Institute as of March 2026.

Fertilizer Price Response

Prices of fertilizers already reflect the market's reassessment of supply risk. Nitrogen prices have risen materially, with urea and anhydrous ammonia showing sharp increases since the end of February (Figure 2).

Figure 2 | Recent Fertilizer Price Trends (\$/ton)



Source: DTN and MetLife Investment Management as of April 2026.

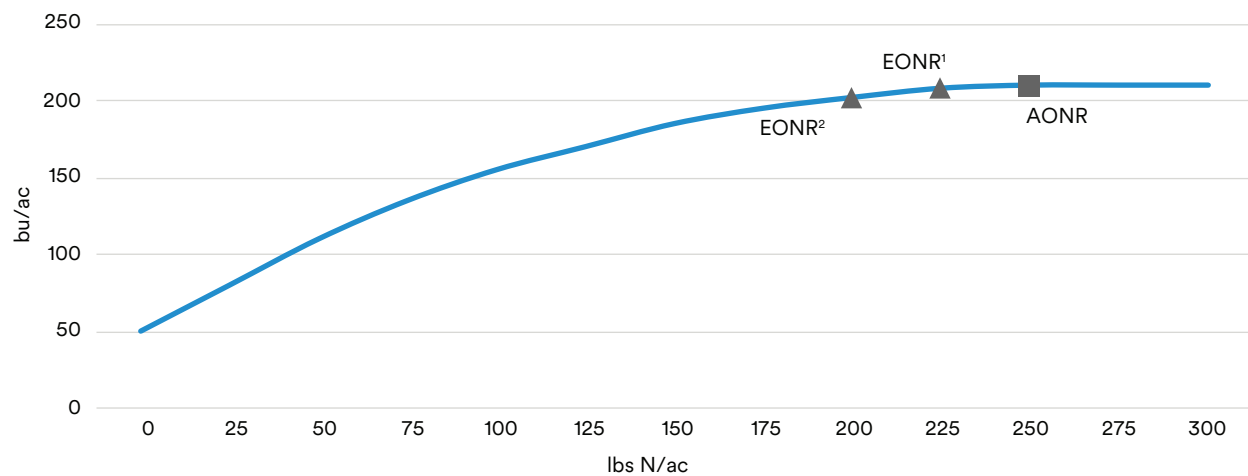
Even if shipping lanes opened today, material price relief would be unlikely until 2027 because of the lengthy transit time to reach the United States and other major markets, as well as the gap in supplies caused by production stoppages.¹

Meanwhile, the steady price of potash serves as a reminder of the importance of stable supply sources for fertilizer and other critical inputs. The United States imports 85% of its potash from Canada, and prices have been unaffected through the conflict.

From Input Inflation to Yield Risk

Higher fertilizer prices do not translate one-for-one into higher fertilizer expenses, as producers can adjust application rates and crop mix. Because nitrogen exhibits diminishing marginal returns on crop yields, increases in nitrogen prices relative to crop prices reduce the economically optimal nitrogen rate (EONR) (Figure 3). Producers often apply nitrogen above the EONR in pursuit of maximum yields and in such cases, have flexibility to reduce application rates modestly with limited impact on yields. Because yield responses flatten at higher nitrogen rates, yield losses are relatively minor until application rates are significantly reduced.

Figure 3 | Corn Yield Response to Nitrogen Application



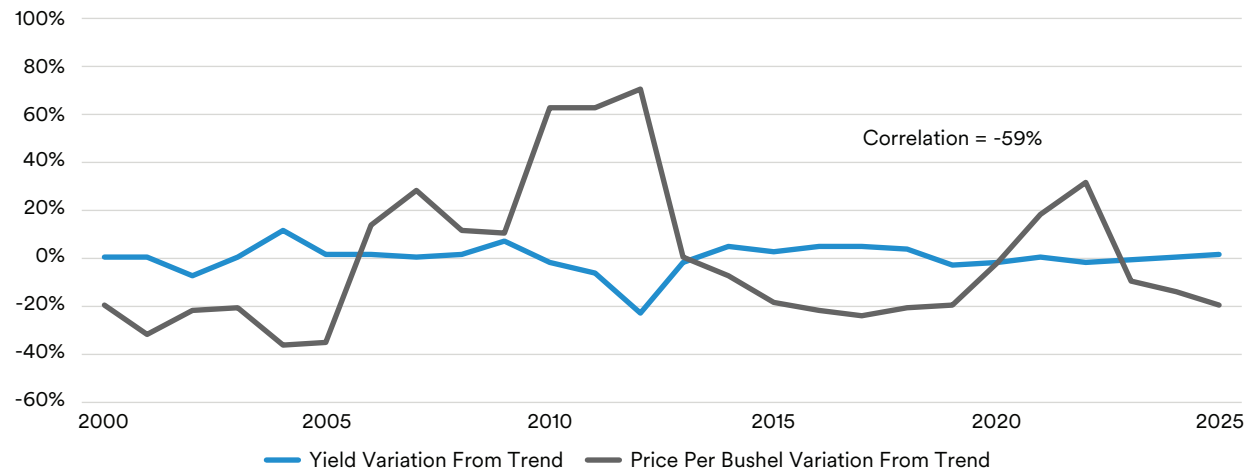
Note: Figure is for conceptual illustration only. EONR¹ represents the original economically optimal nitrogen rate under original prices. EONR² represents the new economically optimal nitrogen rate following an increase in fertilizer prices. AONR represents the agronomically optimal nitrogen rate that maximizes yields.

Source: MetLife Investment Management as of April 2026.



At the same time, demand for major row crops is inelastic, meaning even small supply reductions can have a disproportionate impact on prices (Figure 4). If elevated fertilizer prices prompt meaningful cutbacks in nitrogen application, average yields could soften, slowing inventory accumulation or potentially tightening global balance sheets and supporting higher prices. Any price response, however, would likely emerge gradually, as markets incorporate updated yield expectations through the growing season and into harvest.

Figure 4 | Corn Price Response to Yield Fluctuations

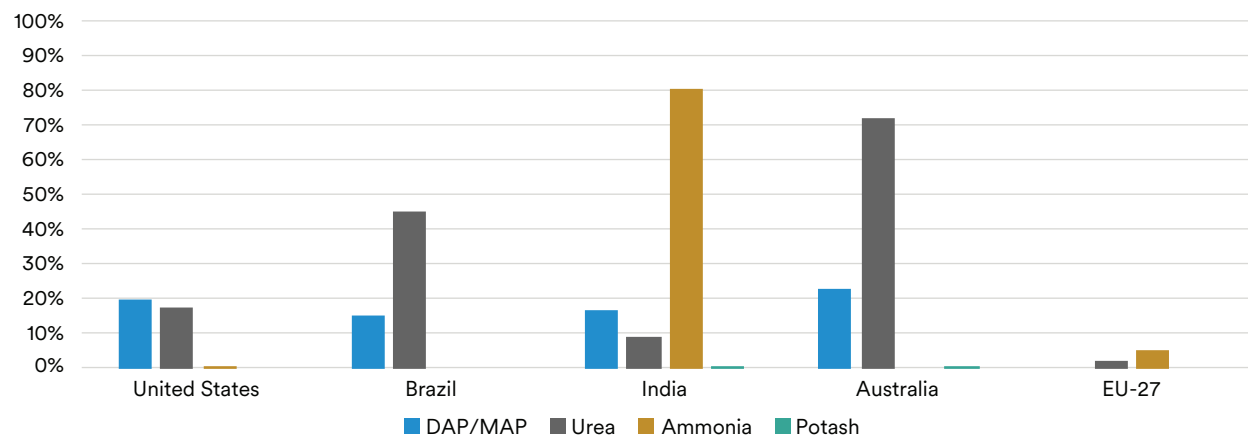


Source: USDA, MetLife Investment Management as of April 2026.

Extended Closure and Global Production Risk

The duration of the disruption in shipping through the Strait of Hormuz will determine the global impact on row crop prices. Brazil, India and Australia depend more on fertilizer flows through the Strait than the United States does (Figure 5). If disruptions extend into their planting and growing seasons, global crop production could be reduced, tightening world balances and causing notable price increases. In such a scenario, U.S. producers may face higher costs but would benefit from stronger global prices while consumers absorb higher food inflation. In this scenario, U.S. producers would be in a more favorable operating environment than competitors abroad due to their lower reliance on imported fertilizers and superior productivity.

Figure 5 | Global Fertilizer Consumption Transiting the Strait of Hormuz



Source: North Dakota State University and MetLife Investment Management as of April 2026.

Potential Stress Varies Geographically and by Operation Capitalization

Producers who secured fertilizer prior to the conflict face less exposure than those purchasing after it. This means that agricultural producers that are further north with a later planting season are more likely to come under stress, and producers further south are less likely to experience stress, as their much earlier planting season means they were more likely to have purchased inputs ahead of the conflict. According to the U.S. Department of Agriculture's latest Crop Progress report,² Southern U.S. states are largely ahead of their normal planting schedules, thanks to warmer soil temperatures and earlier field access.

Potential stress across the sector will also depend on producers' capitalization and relationships with operating lenders. Smaller producers will have more difficulty getting an increase in their operating lines to compensate for the increase in input costs. Meanwhile, well-capitalized producers are more likely to have pre-purchased inputs such as fertilizer prior to the conflict.

Ancillary Agricultural Impacts

The closure of the Strait could also affect corn prices through higher demand for ethanol. Higher fuel prices can improve the economics of higher-ethanol blends where E15 and E85 are available, leading to modest increases in corn use through discretionary blending. However, ethanol production capacity puts a cap on gains, limiting upside for corn demand to a few hundred million bushels, according to our estimates. Similarly, higher diesel prices could spur additional demand for renewable diesel and biodiesel, but both soy crush capacity and production capacity constrain short-term impacts.

Finally, higher diesel prices raise transportation costs, which could widen crop basis and affect producers differently. Those located further from consumption points and export terminals would see smaller increase in higher crop prices, as they're weighed down by widening basis levels.

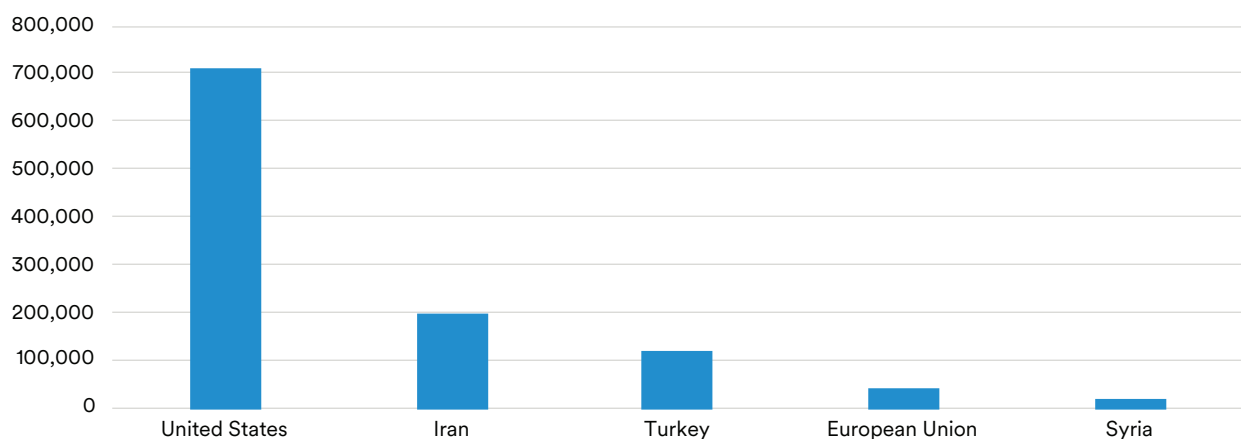


Non-Row-Crop Implications

Livestock operators are likely to face higher feed costs that they would have to absorb or pass through to consumers. Given that the size of the U.S. cattle herd is already small by historical standards, cattle producers should be able to pass these costs onto consumers, despite the fact that beef prices are already at record highs.

Growers of permanent crops have less flexibility to reduce fertilizer usage and will likely have to bear the increased fertilizer expense with little upside. An important exception is pistachios, where Iran's role as a major global producer introduces the likelihood for tighter supply and price pressure that could be long-lasting if the conflict directly impacts production, processing or export capacity (Figure 6).

Figure 6 | Global Pistachio Production by Country (Metric Tons)



Source: U.S. Department of Agriculture, Foreign Agricultural Service and MetLife Investment Management as of April 2026.

Conclusion

The conflict in Iran and the closure of the Strait of Hormuz are disrupting the global fertilizer trade and raising input costs for agricultural producers around the world. While this disruption does not constitute an existential threat to U.S. agriculture, it does meaningfully reshape risk distribution across the sector. Over the last few years, productivity gains have outpaced demand growth, resulting in rising inventories and depressed prices. A supply shock has the potential to rebalance the supply-and-demand equation back toward profitability.

If disruptions are short-lived, the primary impacts will likely be margin erosion through higher input costs. Prolonged disruptions to global fertilizer trade create crop production risks that could ultimately support higher commodity prices — an environment in which the U.S. agricultural sector would be well positioned to capitalize, given its relatively lower reliance on fertilizer imports compared with global peers.

Endnotes

¹ NDSU Agricultural Trade Monitor: Fertilizer Price Projections Under Strait of Hormuz

² USDA: Crop Progress. April 27, 2026.

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