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Fertilizer Price Projections Under Strait of Hormuz Disruption Scenarios

Shawn Arita, Ming Wang, Jiyeon Kim, Rwit Chakravorty, and Sandro Steinbach

North Dakota State University
Center for Agricultural Policy and Trade Studies

Fargo, North Dakota

>>> Highlights

- **Fertilizer Scenario Analysis.** This report uses a global fertilizer economic projection model to examine how different Strait of Hormuz disruption scenarios are transmitted through fertilizer prices. The model integrates vessel-traffic data, country-specific demand elasticities estimated on 25 years of bilateral trade data, and a scenario framework calibrated to prediction markets and shipping industry assessments. It projects monthly price trajectories under three stylized reopening scenarios: “Quick Reopening” (optimistic), “Contested Transit” (central), and “Extended Conflict” (pessimistic). The report presents price projections, demand destruction estimates, and purchasing-window implications for U.S. agriculture through the end of 2027. The model brackets the range of possible outcomes under strong assumptions, and it does not predict which scenario will materialize.

- **How high will prices go?** Under our central scenario, “Contested Transit,” in which the ceasefire holds but the Strait only partially reopens under contested conditions, urea is projected to peak at $784 per short ton (st) (+67%) in July 2026, and DAP is projected to peak at $866/st (+39%) in October. Under the “Extended Conflict” scenario, in which the ceasefire collapses, and the Strait remains closed through fall 2026, urea reaches $996/st (+112%) in October, and DAP reaches $945/st (+52%) in November. Even under the “Quick Reopening” scenario, in which both sides fully cooperate and the Strait is functionally operational by July, urea is projected to peak at $782/st (+66%), well above the pre-crisis $470 but below 2022 record prices.

- **Fertilizer prices to be elevated through 2027 in all scenarios.** Even under the most optimistic “Quick Reopening” scenario, fall prepay urea is projected to average $636/st, or 35% above pre-crisis levels. Under the “Contested Transit” scenario, fall prepay urea is projected at $733/st (+56%). DAP is similarly elevated: $855/st under “Contested Transit” during the fall purchasing and application window.

- **Affordability severely impacted through 2027.** In the “Contested Transit” scenario, urea is projected at $784/st, or 85% of the 2022 NOLA peak, but the affordability picture is considerably worse. In 2022, corn at $7.50+/bu partially offset higher input costs. In 2026, corn nearby futures are approximately $4.40 to $4.60/bu, meaning farmers absorb the full cost increase with no revenue offset. The urea-to-corn affordability ratio would reach 174 bu/st under “Contested Transit,” exceeding the 2022 peak of 110. Under “Extended Conflict,” the ratio would reach 221 bu/st, nearly three times the long-run average of 79. The same low crop prices that make the affordability squeeze worse for farmers also act as a structural dampener on how high fertilizer prices can go.

- **The U.S. is less exposed than other major importers, but not insulated.** Under the "Contested Transit" scenario, the U.S. benefits from two structural buffers: domestic nitrogen production, and the heaviest U.S. purchasing window (January to April) arrives after "Contested Transit" prices have begun to normalize. Brazil's exposure is larger because its peak import season (July to November) coincides with the highest projected prices. India's fertilizer subsidy is expected to dampen its price response and the LNG cascade adds to its import needs, meaning India is likely to pull its import demand back relatively less which make others demand-ration more.

- **Reported infrastructure damage means prices do not return to pre-crisis levels.** Damage to Qatar's Ras Laffan production infrastructure, Iran's South Pars complex, and QAFCO sulfur recovery implies a longstanding reduction in Gulf fertilizer production capacity. Even under the "Quick Reopening" scenario, urea remains 13% above pre-crisis, and DAP remains 22% above pre-crisis through at least March 2028.

>>> Fertilizer Price Projections

Following the February 28, 2026, military operations in the Persian Gulf and subsequent closure of the Strait of Hormuz to commercial shipping, global fertilizer markets have experienced significant disruption. Based on average 2022–2024 trade flows, the Gulf accounts for about 40% of urea exports and 26% of ammonia, indicating that a large share of globally traded nitrogen fertilizers is tied to the Gulf (see Exhibit 1). Unlike the 2022 Black Sea disruption, when Russian product was largely rerouted, a prolonged Strait closure could physically remove Gulf supply from the market and push fertilizer prices toward or beyond 2022 peaks, compressing farm income margins in ways that 2022 did not (NDSU Agricultural Trade Monitor, March 2026).

This report employs a global fertilizer market model specifically designed to analyze how geopolitical disruptions such as the Hormuz closure transmit through international fertilizer markets. The model projects month-by-month fertilizer price pathways under three reopening scenarios, integrating vessel-traffic data, country-specific demand elasticities estimated from 25 years of bilateral trade data, and a scenario framework calibrated to prediction markets and shipping industry assessments. We present those projections along with their implications for U.S. farm purchasing windows, affordability, and global demand destruction.

Product	Gulf Exports (MMT/yr)	Global Share	Key Exporters
Urea	20.6	∼40%	Oman, Qatar, Saudi Arabia, UAE
DAP	3.6	∼23%	Saudi Arabia
MAP	1.4	∼12%	Saudi Arabia
Ammonia	4.1	∼26%	Saudi Arabia, Oman, Qatar
Sulfur	15.3	∼44%	UAE, Saudi Arabia, Qatar, Kuwait

Exhibit 1: *Gulf Fertilizer Trade Exposure by Product.*

Note: "Gulf" refers to Persian Gulf exporting countries whose trade transits the Strait of Hormuz: Qatar, Saudi Arabia, UAE, Oman, Iran, Kuwait, and Bahrain. Export volumes are 2022 to 2024 averages from Global Trade Atlas (GTA) bilateral mirror-reported data.

Source: NDSU using data from S&P Global Trade Atlas.

The U.S.-Iran peace talks in Islamabad on April 12 ended without an agreement. Hours later, a U.S. naval blockade of Iranian ports was announced, effective April 13. The two-week ceasefire declared on April 7 remains formally in place through approximately April 22. Strait traffic remains at roughly 5 to 17 vessels per day (versus 130 pre-war), over 600-1000 vessels remain stranded in the Gulf, and war-risk insurance premiums stand at 1 to 5% of hull value. Mine-clearance operations have begun, but the timeline for meaningful commercial reopening remains uncertain.

Global Fertilizer Model

The global fertilizer model is a hybrid Structural Vector Autoregression (SVAR)–Partial Equilibrium (PE) framework that projects month-by-month prices for urea, DAP, MAP, and ammonia under different assumptions about how quickly the Strait of Hormuz reopens. It answers two questions: how high will prices go, and how long will they stay elevated? This report focuses on urea and DAP; the MAP and ammonia modules are operational but remain a work in progress.

For each month and each scenario, the model solves for the market-clearing price, the price at which remaining supply (after Gulf losses) equals reduced demand (after buyers cut back at country-specific affordability elasticities). An error-correction mechanism (ECM), with adjustment speeds estimated from product-specific Engle-Granger regressions, governs how quickly the observed price converges toward that equilibrium each month. The structural VAR provides the channel decomposition, quantifying how much of the price variance is attributable to energy costs, trade policy, Gulf supply, and agricultural demand. The model also accounts for cascade effects through which the Hormuz closure transmits beyond direct trade losses: the Liquefied Natural Gas (LNG) price spike that raises ammonia costs for gas-dependent producers worldwide and the sulfur supply shock that curtails phosphate production outside the Gulf. The model projects prices given the supply shock, non-Gulf supply response, and country-specific import demand responses. The ECM component determines how fast they get there, along with asymmetric dynamics: prices rise roughly 30% faster than they fall, a pattern the empirical literature calls "rockets and feathers."

Different countries respond differently to fertilizer price increases. The model uses country-specific import demand elasticities on 25 years of monthly bilateral trade, covering 15 major importing countries and four fertilizer products. The identification strategy uses exogenous supply-side instruments, specifically Title Transfer Facility (TTF) natural gas prices for urea, sulfur prices for DAP, and geopolitical supply disruption indicators, to isolate the causal effect of price on import quantities. The specification uses an affordability ratio, the fertilizer price divided by a production-weighted crop price composite, which means low crop prices actively pull down projected fertilizer peaks.

Each scenario is defined by a month-by-month schedule of how blocked the Strait remains, calibrated against three data sources: observed vessel traffic (IMF PortWatch/Kpler), prediction markets (Polymarket/Kalshi), and shipping industry assessments (Hapag-Lloyd, Maersk, BIMCO). Each scenario also incorporates a structural capacity floor reflecting reported infrastructure damage to Ras Laffan, South Pars, and QAFCO, which imposes a longstanding supply reduction that binds even after the Strait fully reopens.

The model projects wholesale NOLA prices. The projection horizon is short-run, and non-Gulf physical production capacity is treated as fixed during the crisis window, reflecting the assumption that fertilizer producers cannot meaningfully ramp up output on a monthly timescale. Non-Gulf supply is affected indirectly through the cascade channels. Higher LNG prices raise production costs for gas-dependent producers, and the sulfur shortage curtails phosphate output at plants outside the Gulf. The model captures these cost-driven supply contractions endogenously. The model does not forecast ceasefire outcomes or geopolitical developments, and it takes the three scenarios as given and projects their market consequences.

The simulations reflect conditions and market data as of April 13, 2026. All prices in this report are model projections under the stated scenario assumptions unless identified as historical benchmarks. A working paper providing technical documentation behind the model, "A Global Fertilizer Price Projection Model for Market Disruptions," is available at `https://www.capts-ndsu.com/ndsu-ag-trade-monitor`.

Scenario Assumptions for Three Reopening Scenarios

The central uncertainties in this crisis are when the Strait will reopen and how long renormalization takes afterward. Even under an immediate reopening agreement, physical reopening involves multiple sequential bottlenecks: mine clearance (several weeks minimum), insurance reinstatement (several weeks after corridors are declared safe), and backlog clearance (hundreds of stranded vessels). Oil tankers transit first under coalition escort, while fertilizer bulk carriers wait. The result is that even under optimistic assumptions, no meaningful fertilizer cargo moves for the 1-2 months after a ceasefire, and full normalization requires 2 to 3 months beyond that.

We model three scenarios that span the range of plausible reopening pathways and present them in Exhibit 2.

1. Quick Reopening (Optimistic Scenario): Ceasefire holds and extends. Negotiations produce a framework agreement. Mine clearance proceeds cooperatively with a single safe corridor opening by week 3 to 4. Oil tankers transit first under coalition escort, and fertilizer cargoes follow by week 5 to 8 as P&I clubs issue conditional coverage. Strait functionally reopens by July. Aligned with Goldman Sachs base case (Brent $80 to $90) and the Dallas Fed 1-quarter closure scenario.

2. Contested Transit (Central Scenario): Ceasefire nominally survives, but the Strait remains functionally restricted. Some vessels trickle through, but two-way traffic does not resume until a second shipping lane opens around week 5 to 8. Vessel traffic calibrated to Bloomberg/Polymarket/Kalshi: observed at 7% of pre-war during the ceasefire period (April 7 to 13), normalizing to 58% (September) to 78% (March 2027). The July normalization date is consistent with the Kalshi ≥60 July 1 contract currently priced at 52%. Aligned with Morgan Stanley "Continued Constraints" (Brent $100 to $110) and the Dallas Fed 2-quarter closure scenario.

3. Extended Conflict (Pessimistic Scenario): Escalation breaks the ceasefire. Hostilities resume at a lower intensity. The Strait remains 85 to 95% blocked through year-end, and the renormalization sequence that begins at week 3 to 4 under "Quick Reopening" does not begin until late fall. Prediction markets assign approximately 25% probability to traffic remaining below 60 ships/day through year-end, consistent with this scenario. Aligned with the Dallas Fed 3-quarter closure and Oxford Economics "Prolonged War" scenario.

Reported Fertilizer Infrastructure Damage. Even under "Quick Reopening," urea prices do not return to the pre-crisis $470/st. Reported infrastructure damage, Ras Laffan LNG Trains 4 and 6 (3 to 5 year repair timeline per QatarEnergy, feedstock to QAFCO and downstream South Asian producers), Iran's South Pars petrochemical complex (reported as severely damaged, with significant urea production capacity offline), and disruption to QAFCO operations (QAFCO is the world's largest single-site urea producer at 5.6 MMT/yr), creates significant reduction in Gulf fertilizer production capacity. The model projects a long-run structural floor of $532/st (+13%), and if this damage assessment is accurate, the pre-crisis pricing environment is unlikely to return before 2028.

Structural Floor Derivation. The structural capacity floor in each scenario translates reported infrastructure damage into a permanent supply reduction that binds after the Strait reopens. Under "Quick Reopening," the floor assumes only confirmed damage, for example, the loss of Iran's South Pars capacity and disruption to QAFCO operations, together removing significant Gulf fertilizer production. These floor estimates are conditional on the damage reports cited above, and if actual damage proves less severe, the floors would be lower. The floor binds in each scenario at the month when the blockage-driven price path would otherwise fall below it.

Assumed Scenario Trajectories for Fertilizer Export Supply Blockage Paths through Hormuz.

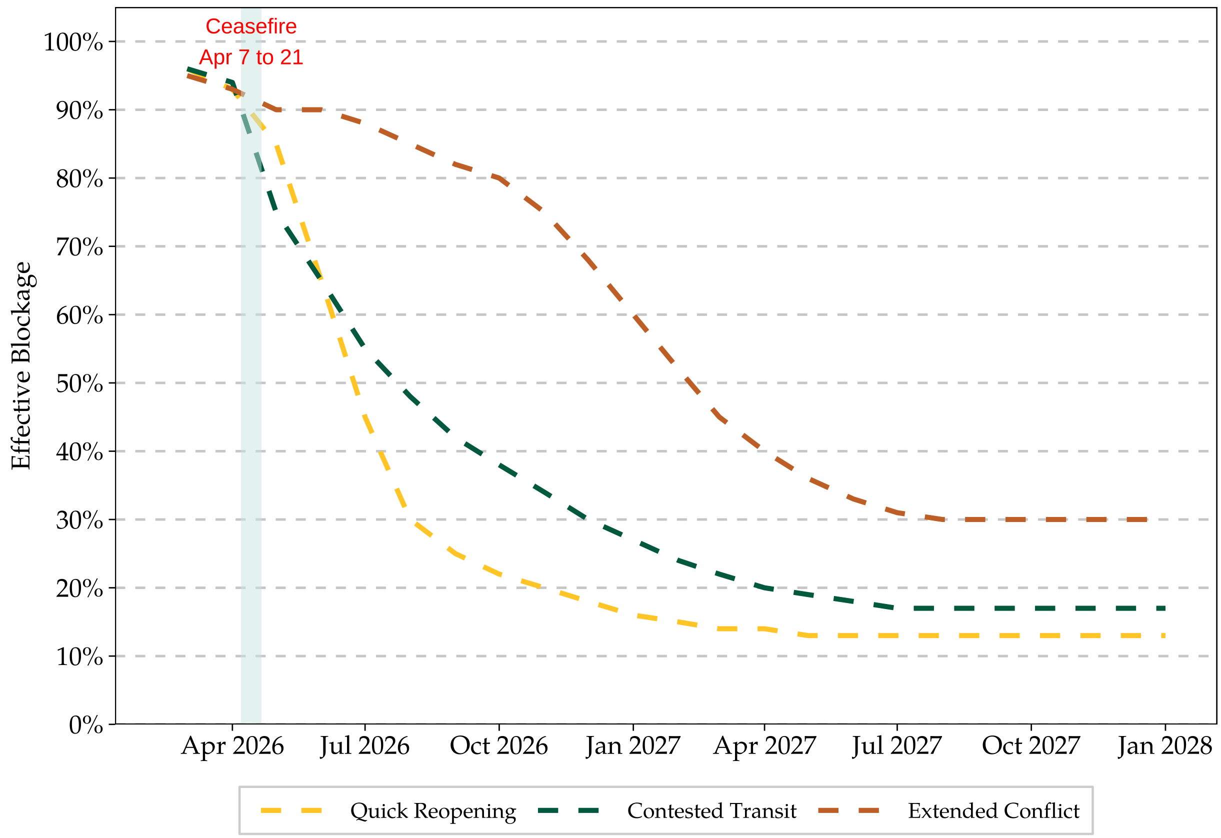

Exhibit 2: *Projected Effective Blockage in the Strait of Hormuz Under Three Scenarios (% of Gulf Trade Blocked).*
Source: NDSU scenario assumptions informed by Bloomberg vessel traffic data, Polymarket/Kalshi, and Hapag-Lloyd timelines.

Our scenario analysis applies a set of highly stylized scenarios whereby each scenario rests on substantial assumptions about the pace of Strait reopening. The schedules are informed by different sources. Bloomberg vessel traffic data show a pre-war baseline of approximately 64 tanker crossings per day, collapsing to an average of 2 per day during March and just 4 per day during the April 7 to 13 ceasefire period, approximately 7% of normal. Fewer than 10% of normal tanker traffic has moved for 45 consecutive days. Prediction markets provide a term structure of normalization probabilities: Kalshi prices the probability that the 7-day transit average reaches ≥60 ship crossings at approximately 15% by end-April and 52% by July 1 (Polymarket end-April normalization is consistent at 15%). These probabilities were substantially higher on the evening of the April 7 ceasefire, before collapsing as no meaningful traffic materialized and the Islamabad talks failed. Total traded volume across Hormuz-related prediction markets exceeds $40 million. Shipping industry assessments are consistent: Hapag-Lloyd estimates "six to eight weeks" to normal, Maersk notes the ceasefire "does not yet provide full maritime certainty." An estimated 600 to 1000 vessels remain stranded in the Gulf.

The monthly blockage percentages are constructed as follows. For the first two months (March to April 2026), the blockage is set directly from observed Bloomberg tanker crossing data relative to the pre-war baseline. From May onward, each scenario's blockage path is interpolated to match the timeline implied by its defining source. "Quick Reopening" tracks the Goldman Sachs/Dallas Fed 1-quarter trajectory and is consistent with the roughly 15% probability that prediction markets currently assign to normalization by end-April. "Contested Transit" is calibrated so that the month at which traffic reaches 50% aligns with the median Polymarket/Kalshi resolution date for ≥60 ships/day, currently approximately July 2026 (Kalshi July 1 contract at 52%). "Extended Conflict" is anchored to the approximately 25% probability that prediction markets assign to traffic remaining below 60 ships/day through year-end 2026, consistent with Oxford Economics and other assessments that significant disruption persists through the second half of the year. In all three scenarios, the blockage path floors out at the structural capacity loss percentage once physical blockage falls below it. The resulting schedules are judgment-based calibrations and are intended to bracket the plausible range of outcomes.

The model also incorporates cascade effects that extend the disruption well beyond the direct loss of Gulf fertilizer exports. The loss of Gulf LNG raises natural gas prices globally, squeezing European and South Asian ammonia and urea producers whose margins were already thin. Similarly, Gulf nations supply approximately 44% of global seaborne sulfur, a critical feedstock for phosphate fertilizer production. The loss of this supply curtails DAP and MAP output at plants far from the Persian Gulf, including OCP Morocco and producers across North Africa and South Asia. These feedstock cascades explain why DAP prices normalize more slowly than urea in all three scenarios.

Price Projections

The following sections present the model's price projections, affordability analysis, demand destruction estimates, and purchasing-window implications under each scenario. All results reflect the scenario assumptions described above and the global fertilizer model as of April 13, 2026.

Urea Projected Scenario Prices Remain Elevated Through the Fall Prepay Window in All Scenarios.

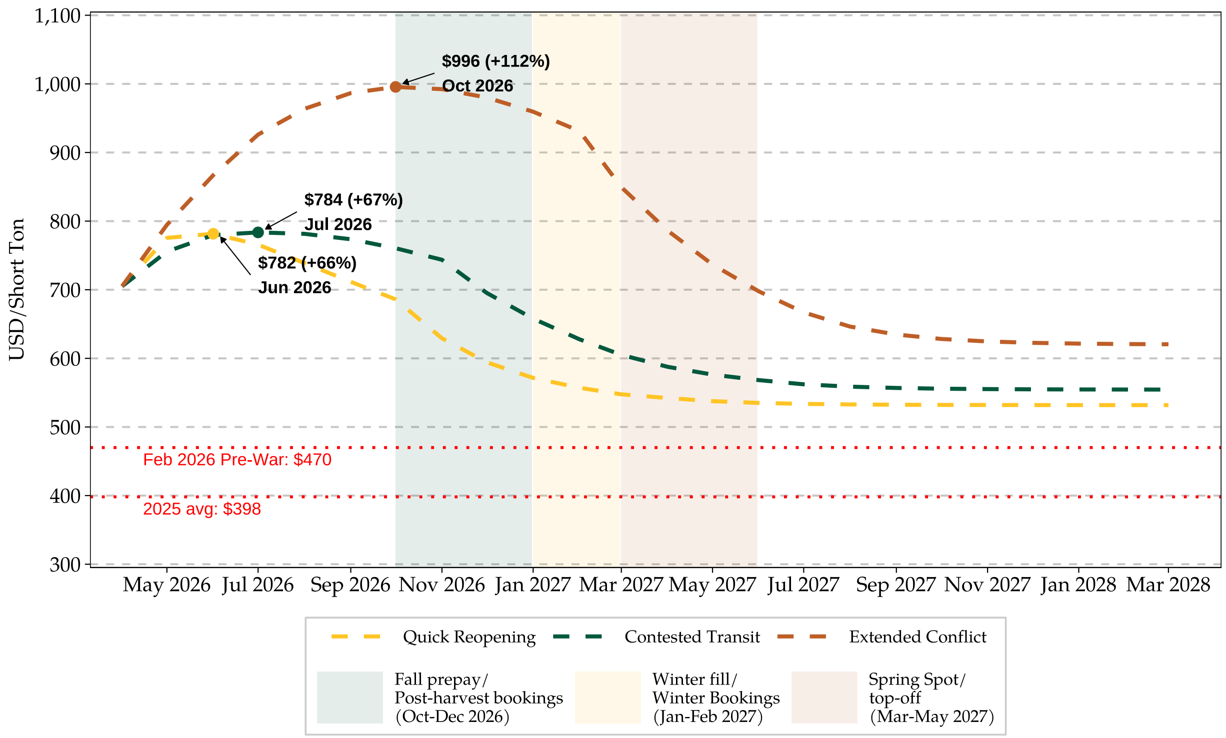

Exhibit 3: *NOLA Urea: NDSU Projections Under Three Scenarios.*

Source: NDSU.

All prices are model-projected values under the stated scenario assumptions, not observed market data. Historical benchmarks are labeled as such. Exhibit 3 shows projected prices for urea under each scenario. First, under “Contested Transit,” urea price peaks at $784/st in July, below the 2022 NOLA peak of approximately $910/st, but the price path is different from 2022. The 2022 episode followed a sharp V-shaped pattern driven by panic buying that collapsed within months. In 2026, the model projects a slower ramp and a sustained plateau. Under “Contested Transit,” prices remain above $700/st from April through November and do not fall below $610/st until after March 2027. This persistence reflects the underlying disruption itself. A minefield is cleared step by step over time, whereas sanctions are often priced in much faster.

Second, the gap between “Contested Transit” and “Extended Conflict” widens dramatically after July. Through June, the two scenarios produce similar prices because the Strait is largely blocked under both. From July onward, “Contested Transit” begins normalizing while “Extended Conflict” continues to tighten, driving urea above $900/st by July and peaking at $996/st in October. This makes the summer a critical decision window. If the ceasefire holds and vessel traffic begins to recover, prices will likely have already peaked. If not, the fall purchasing season will arrive when prices are at their highest levels. Third, even the “Quick Reopening” scenario projects urea peaking at $782/st, well above pre-crisis levels, because mine clearance, insurance reinstatement, and backlog clearance impose irreducible physical delays. The price decline under “Quick Reopening” is faster but still does not reach pre-crisis levels, and the structural floor of $532/st (+13%) reflects permanent Gulf capacity losses that persist under all scenarios. Projections beyond the first 12 months carry increasing uncertainty, as supply-side adjustments, including rerouting, non-Gulf capacity investment, and infrastructure repair, could accelerate normalization in ways the short-run model does not capture.

As shown in Exhibit 4, DAP price peaks at $866/st (+39%) under “Contested Transit,” driven by scenario-specific sulfur cascades. Gulf countries supply about 44% of seaborne sulfur. The sulfur cascades peak at 1.10/1.25/1.40 MMT across scenarios. Russia’s sulfur export ban removes the largest alternative source. OCP Morocco has announced production cuts. SABIC Agri-Nutrients has declared force majeure on Saudi fertilizer shipments. Under “Extended Conflict,” DAP reaches $945/st (+52%), approaching the 2022 peak of about $995/st.

DAP Scenario Prices Projected to be Elevated Throughout 2027.

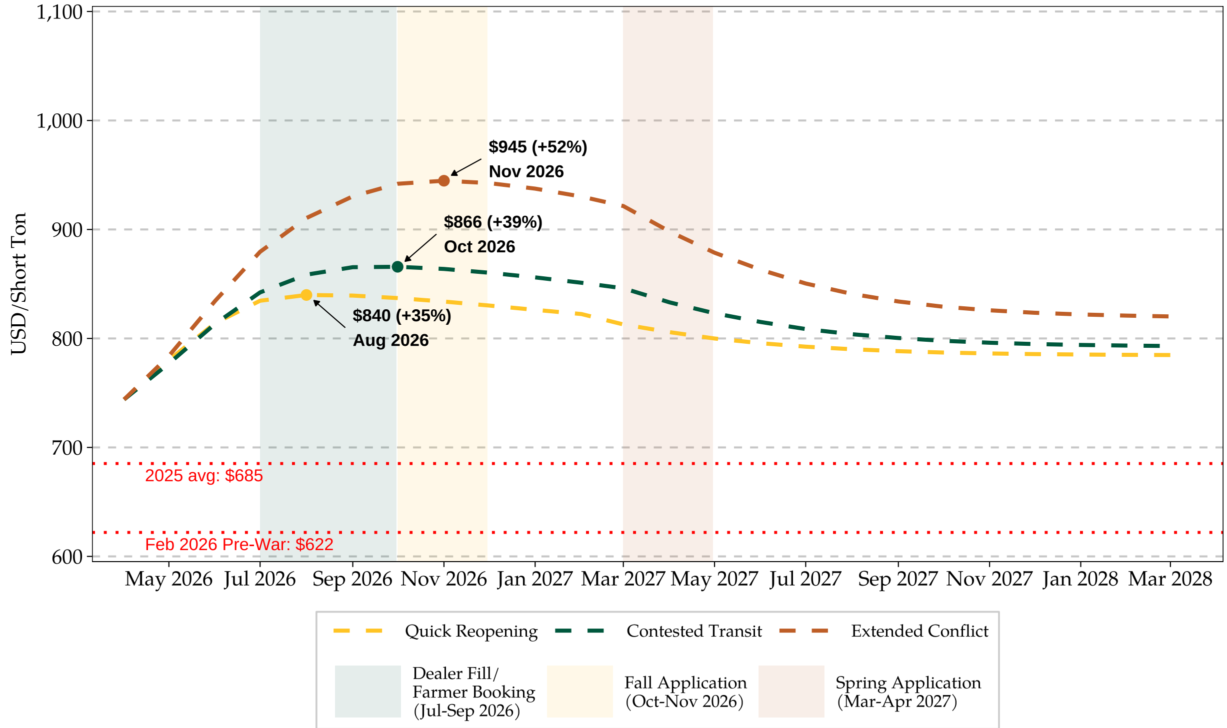

Exhibit 4: *DAP Price Projections Under Three Scenarios.*

Source: NDSU.

Purchasing Window Price Projections

Most spring 2026 nitrogen was 50 to 80% contracted before the crisis (Chakravorty et al., 2026). Concerns have been raised about the cost implications for the 2027 crop. The charts below show projected wholesale NOLA prices at each farmer purchasing window, compared to the 2025 average and the pre-crisis (February 2026) baseline. Urea and DAP are shown separately because they follow different procurement calendars. Urea is purchased in the fall for spring application, while DAP is purchased and applied in the same fall window.

Most Corn Belt farmers commit to urea purchases between October and February for spring application. Under "Contested Transit," the model projects fall prepay (October to December) averaging $733/st, or 56% above pre-crisis. Winter fill (January to February) is projected to average $643/st, and the spring spot window (March to May) projections average $590/st. Under "Extended Conflict," fall prepay averages $989/st, with all three windows remaining above $790/st (Exhibit 5).

Urea: Hormuz Scenario Projections at Farmer Purchasing Windows.

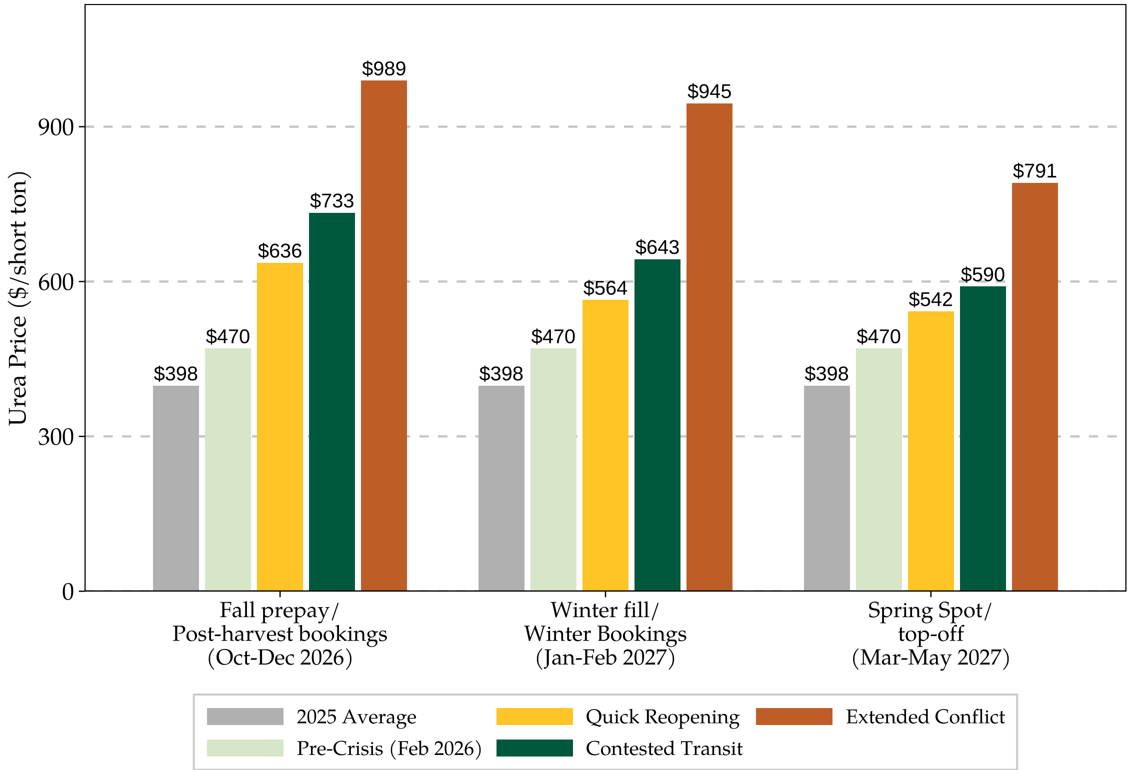

Exhibit 5: *Urea: Projected Prices at Farmer Purchasing Windows.*

Note: NOLA wholesale $/short ton. 2025 average from Bloomberg Terminal. Pre-crisis = February 27, 2026, NOLA spot. "Contested Transit" and "Extended Conflict" = global fertilizer model projections averaged over each window.
Source: NDSU.

These projections reflect model-derived wholesale NOLA prices under each scenario and are not intended as purchasing recommendations. Retail prices at the dealer level in the interior Corn Belt typically carry a $50 to $80/st basis above NOLA for freight, storage, and dealer margin, and the wholesale projections below should be interpreted accordingly.

DAP follows a different calendar because the majority of Corn Belt P&K is fall-applied via broadcast after soybean harvest. Farmers typically book during dealer fill (July to September) and apply in October and November. Unlike urea, delaying purchases offers little relief. Under the "Contested Transit" scenario, DAP prices are projected to average $855/st at dealer booking, $865/st at fall application, and still $880/st by spring 2027 (Exhibit 6). The sulfur cascade drives this persistence, as sulfur supply chains rebuild slowly even after the Strait reopens.

DAP: Hormuz Scenario Projections at Farmer Purchasing Windows.

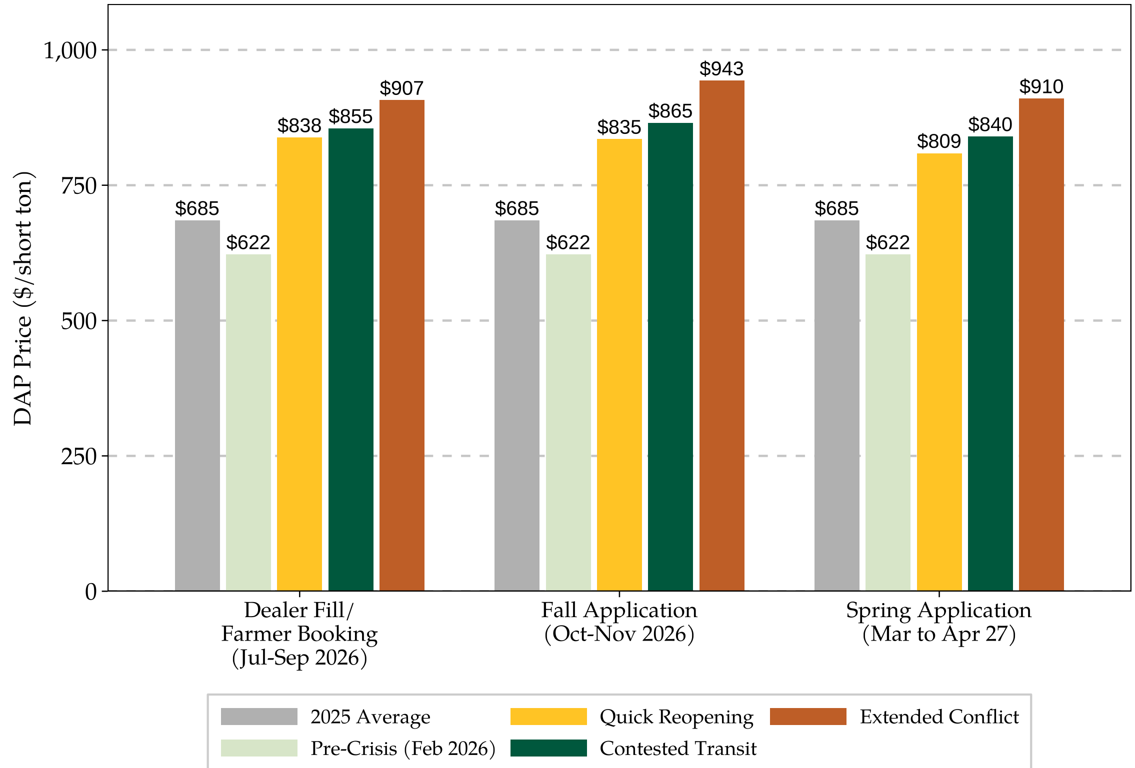

Exhibit 6: *DAP: Projected Prices at Farmer Purchasing Windows.*

Note: NOLA wholesale $/short ton. 2025 average from Bloomberg Terminal. Pre-crisis = February 27, 2026, NOLA spot. "Contested Transit" and "Extended Conflict" = global fertilizer model projections averaged over each window.
Source: NDSU using Bloomberg Terminal.

2026 vs. 2022: A Different Kind of Fertilizer Crisis

The 2022 Russia-Ukraine fertilizer crisis remains the benchmark in recent memory, with urea reaching about $910/st at NOLA and DAP exceeding $950. But the difference here is not just the size of the price move. Exhibit 7 compares historical price shocks in 2022 to the NDSU projection for urea and DAP. In 2022, Russia's invasion simultaneously removed grain exports and fertilizer supply, a "symmetric shock" where higher crop revenues partially offset higher input costs. The 2022 spike was a sharp V-shaped surge driven by panic buying that collapsed within months. However, in 2026, only the input side is disrupted.

The Strait of Hormuz carries negligible grain trade, grain stocks remain adequate, and crop prices are flat at approximately $4.40 to $4.60/bu corn versus $7.50+ in 2022. Therefore, the 2026 pattern is structurally different with a slower ramp, a sustained plateau through fall, and a normalization that never returns to pre-crisis levels. For a broader analysis of how the Hormuz disruption compares against 2022 and previous commodity price cycles, see Arita & Glauber (2026).

2026 Price Projections Lower than 2022 Record; Longer Expected Duration of Elevated Prices.

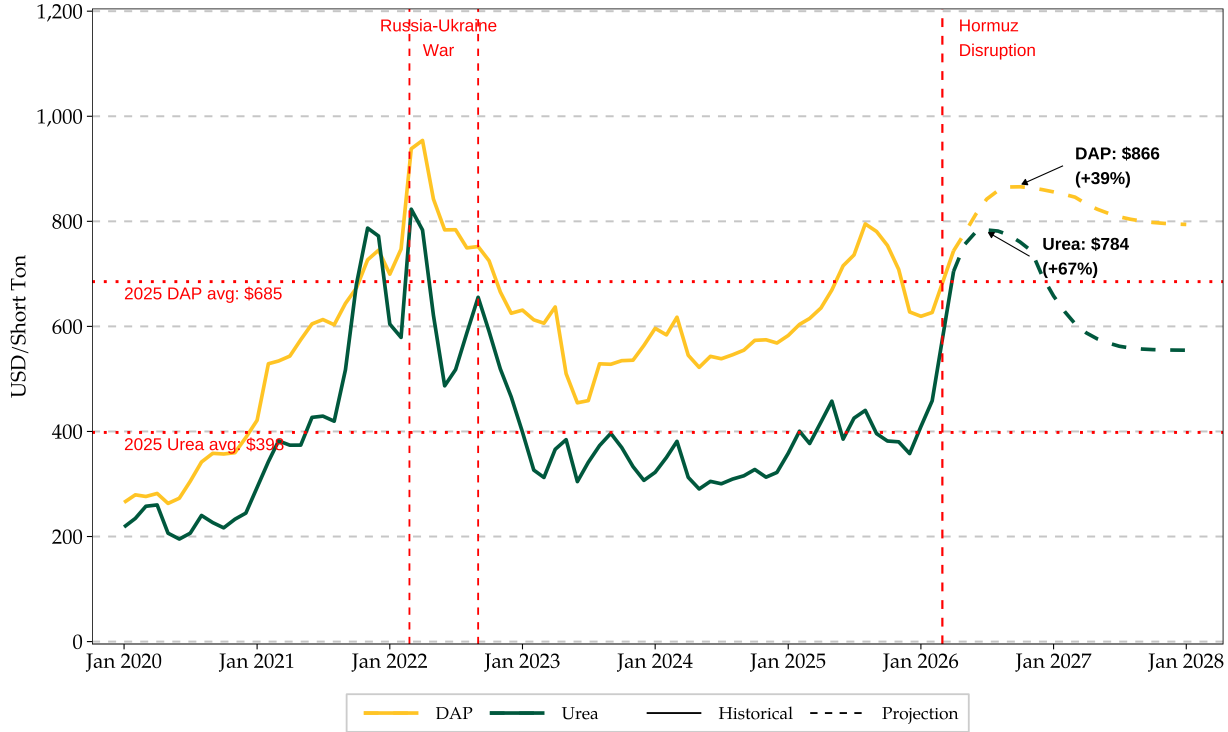

Exhibit 7: *Urea and DAP: 2020 to 2028 Historical and NDSU Projections (Contested Transit).*
Source: NDSU.

Under "Contested Transit," urea is projected to peak at $784/st, below the 2022 NOLA peak in absolute terms. But absolute prices tell only half the story. Exhibit 8 shows the same prices as bushels of corn per short ton of fertilizer, the ratio that determines whether a farmer can afford to apply. This corn-based ratio is a simplified measure. In the model, demand responses are estimated using a broader affordability variable defined as the fertilizer price divided by a production-weighted crop price index. For U.S. producers, the corn ratio closely tracks that broader measure and offers a more intuitive benchmark for a domestic audience.

2026 Price Projections Carry Extended Period of Affordability Challenges.

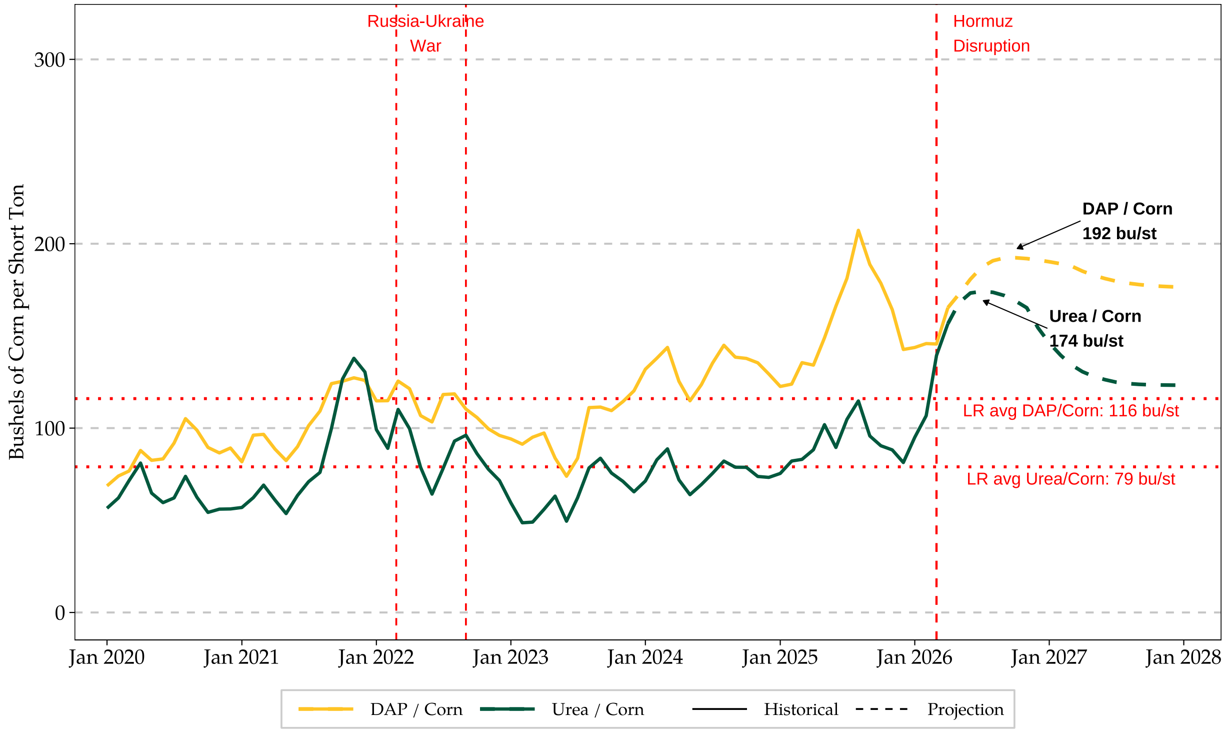

Exhibit 8: *Fertilizer Affordability Under Contested Transit Scenario: Bushels of Corn Per Short Ton of Fertilizer (2020 to 2028).*

Source: NDSU.

The affordability ratio shows why 2026 feels different. In 2022, the urea-to-corn ratio peaked at 110 because corn was above $7.50/bu, partially buffering the input cost shock. In 2026, the ratio reaches 174 bu/st under "Contested Transit" and 221 bu/st under "Extended Conflict," nearly three times the long-run average of 79, despite lower absolute urea prices (Exhibit 9). The difference is the absent of a revenue offset, leaving farmers to absorb the full cost increase at $4.40 to $4.60/bu corn. This asymmetry of rising input costs and flat crop revenues, is the key feature of the 2026 disruption.

The affordability squeeze translates directly into reduced purchasing. The next section examines where that demand destruction falls.

Affordability Projections Under the “Extended Conflict” Scenario.

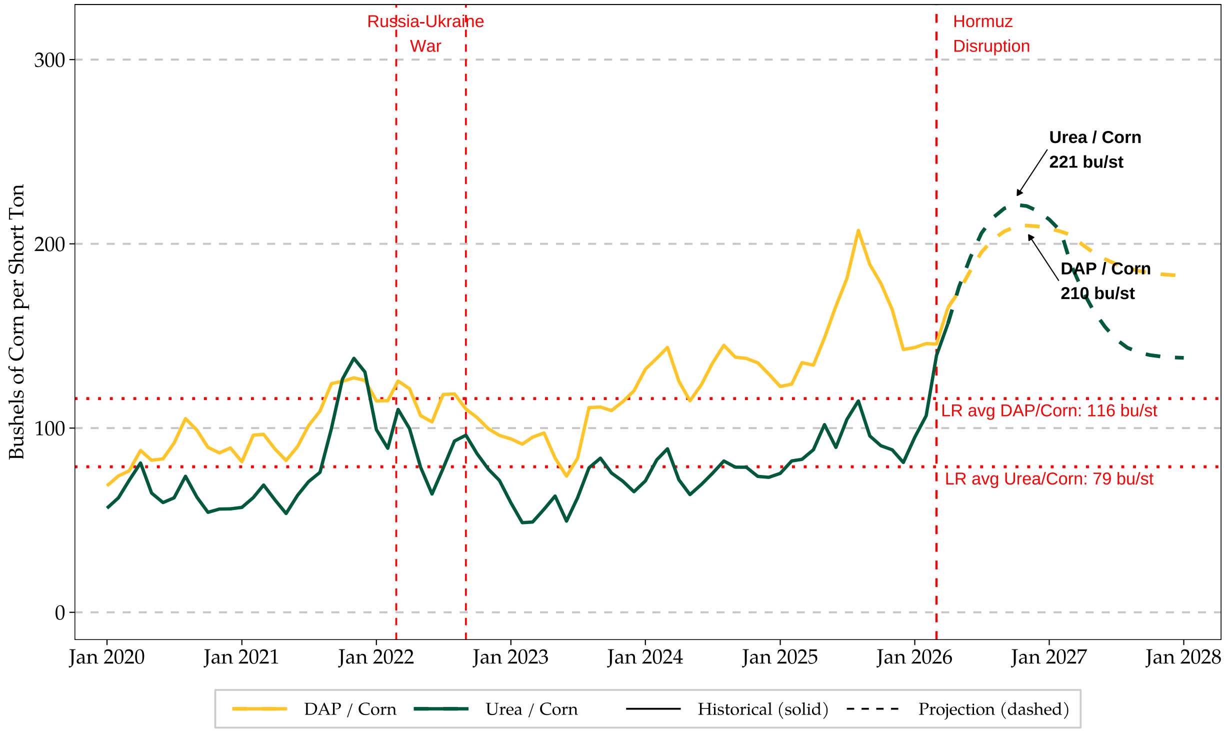

Exhibit 9: *Fertilizer Affordability Ratios Under Extended Conflict Scenario.*

Source: NDSU.

Demand Destruction: Which Countries Projected to Pull Back the Most?

Exhibit 10 shows projected urea demand destruction by region under the contested transit scenario. Under ”Contested Transit,” the model projects 12-month cumulative urea demand destruction of 7.0 MMT (14% annualized, seasonally weighted). India is the world’s largest importer, importing approximately 10 mmts of fertilizers from the Persian Gulf alone. India’s subsidy dampens the demand response during the crisis. At the same time, the LNG cascade adds import needs, which further limits the decline in India’s urea demand. As a result, a larger share of the global adjustment falls on more price-responsive regions, including Brazil, Latin America, the United States, and the EU-27 (see technical documentation for more detail on countries included in the model).

Seasonality amplifies the distributional impact. These estimates are weighted by each region’s monthly import pattern rather than assuming uniform demand across the year. Brazil’s peak urea import season (July through November) overlaps directly with the period of highest projected prices, concentrating its exposure during the worst months of the disruption. By contrast, the U.S. imports most heavily in January through May, by which time "Contested Transit" prices have begun to normalize in 2027. Importers without significant fertilizer subsidies bear a disproportionate share of the adjustment because their demand responds more strongly to price. Brazil, the EU, and the U.S. absorb the bulk of the global demand reduction, while India's subsidy regime insulates its farmers from world price signals, forcing unsubsidized importers to cut back further to clear the market.

Import Demand Destruction Projections for "Contested Transit" Scenario.

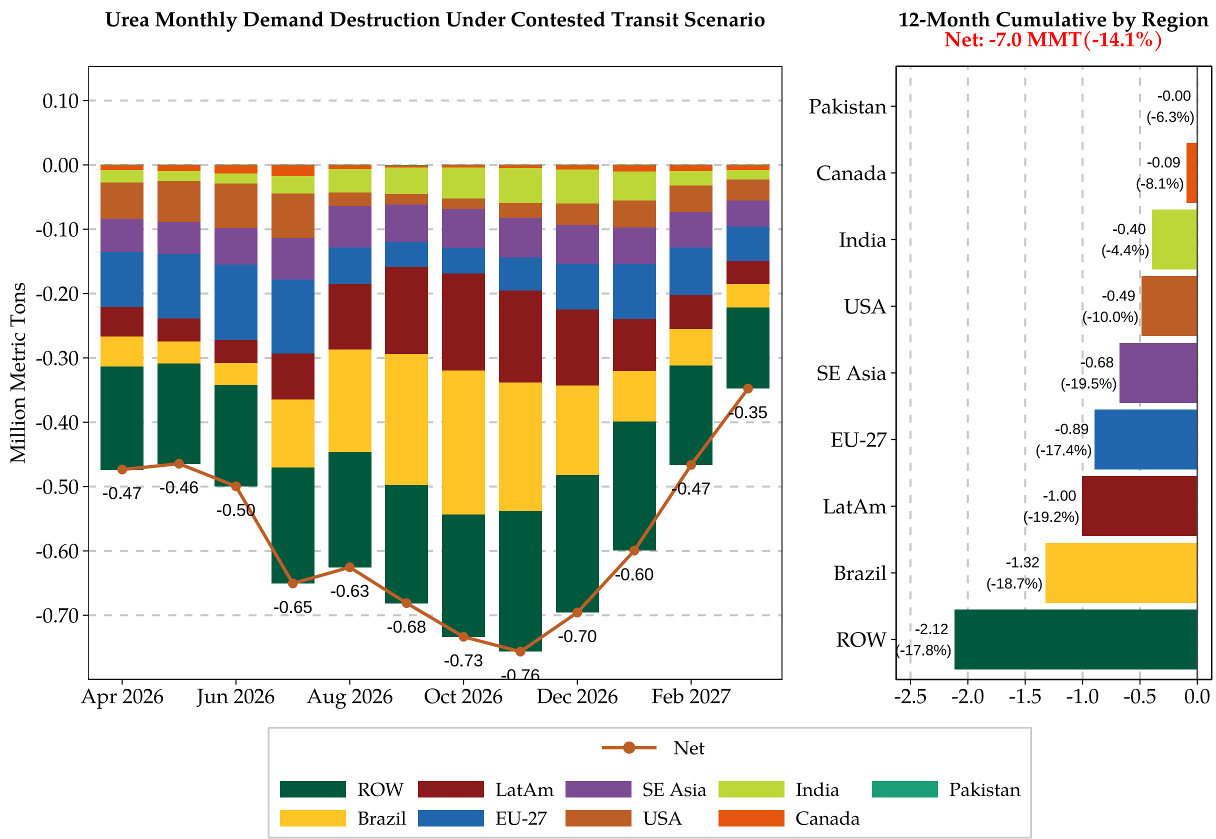

Exhibit 10: *Urea Demand Destruction by Region Under "Contested Transit" (Seasonally Weighted).*

Source: NDSU.

The calendar mismatch is quantifiable. Under "Contested Transit," the average urea price during Brazil's peak import months (July through November) is $769/st, while the average during the U.S. peak import months (January through March 2027) is $630/st, a 22% differential driven entirely by timing. For DAP, the gap nearly vanishes because the sulfur cascade keeps prices elevated longer: \$859/st during Brazil's window versus \$851/st during the U.S. window. Under "Extended Conflict," the U.S. timing advantage largely disappears because prices remain above \$900/st through January 2027, erasing the normalization that would otherwise benefit later purchasers.

Exhibit 11 shows projected urea demand destruction by region under the extended conflict scenario. The model estimates demand pullback rising to 10.1 MMT (20% annualized). Brazil's projected pullback reaches −1.94 MMT, roughly one-quarter of its total urea imports. The U.S. pullback rises to –0.68 MMT. These figures represent modeled reductions in import purchasing, not direct estimates of on-farm behavior. However, import reductions of this magnitude would likely translate into some combination of reduced application rates, substitution toward lower-cost nutrient sources, and acreage shifts away from nitrogen-intensive crops.

Import Demand Destruction Projections for "Extended Conflict" Scenario.

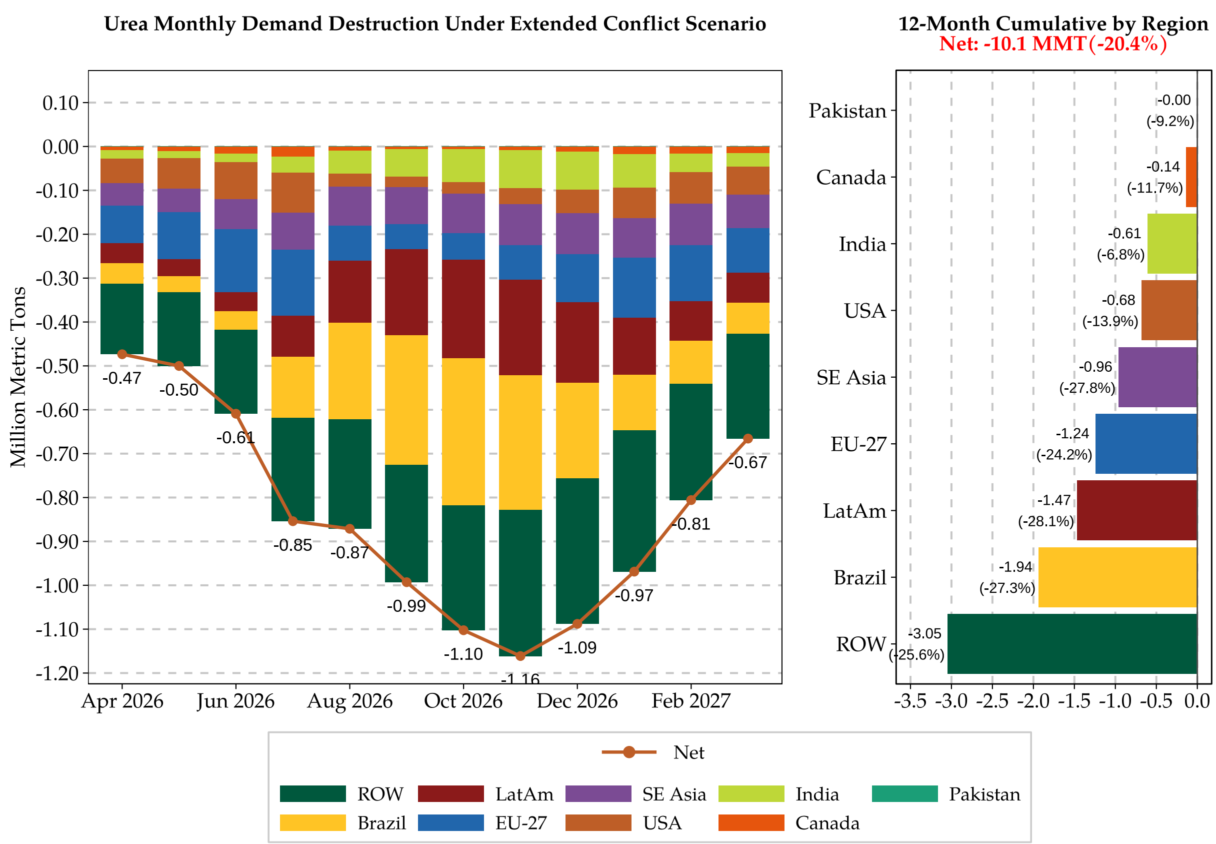

Exhibit 11: *Urea Demand Destruction by Region Under "Extended Conflict" (Seasonally Weighted).*

Source: NDSU.

Under “Extended Conflict,” the seasonal pattern shifts. Because prices remain elevated through October and November, the peak demand destruction months extend into the Northern Hemisphere fall and winter import windows. The U.S. and Canada, which are partially shielded under “Contested Transit” by their later purchasing timing, lose that protection when prices stay above 00/st through January 2027. The urea analysis above applies analogous logic to phosphate markets, where an additional transmission channel, the sulfur cascade, introduces distinct dynamics.

Outlook

The trajectory of fertilizer prices from this point depends on three developments that will become clearer over the next several weeks. First, whether the ceasefire survives the current naval blockade escalation and produces a durable framework for the Strait reopening. The lack of an agreement in the Islamabad talks on April 12 and the escalation to a U.S. naval blockade of Iranian ports have materially reduced the probability of the “Quick Reopening” scenario. The next marker is whether the formal ceasefire window (approximately April 22) extends or expires. At the time of this report’s writing, prediction markets currently assign roughly 60 to 70% probability to a formal ceasefire extension but simultaneously price a 35 to 45% probability that the ceasefire is declared broken by April 21, reflecting the fundamental ambiguity of a truce that both sides may formally maintain while effectively violating.

Second, the pace of mine clearance and insurance normalization once any reopening begins. Even under cooperative conditions, the physical sequencing of mine clearance, corridor certification, P&I club reinstatement, and backlog clearance imposes a 5 to 12 week lag between a political agreement and the first meaningful fertilizer cargo movements. Industry assessments of normalization timelines range from “six to eight weeks” (Hapag-Lloyd) to six months (eToro), with multiple analysts characterizing the mine clearance effort as likely taking months rather than weeks. Third, the extent to which reported infrastructure damage to Ras Laffan, South Pars, and QAFCO is confirmed by independent engineering assessments, which will determine whether the structural capacity floor is closer to the lower (12%) or upper (26%) bound.

For U.S. producers, the immediate decision window is fall 2026 fertilizer purchasing. Under all three scenarios, fall prepay urea prices are materially above pre-crisis levels. The summer months (June through August) will reveal whether the crisis is tracking the “Contested Transit” path, where prices have peaked and are beginning to normalize, or the “Extended Conflict” path, where the worst price levels still lie ahead. Future analyses may update these projections as vessel traffic data, prediction market prices, and ceasefire developments evolve.

Scope and Limitations

The global fertilizer model projects month-by-month wholesale NOLA prices for urea and DAP under three highly stylized reopening scenarios. Each scenario rests on substantial assumptions about the pace of Strait reopening, the severity of infrastructure damage, the behavior of non-Gulf suppliers, and the response of importing countries to higher prices. The model is designed to bracket the range of plausible market outcomes given those assumptions, not to forecast which scenario will materialize. The model takes the three reopening scenarios as given and does not attempt to forecast ceasefire outcomes, diplomatic developments, or military escalation. Instead, it projects what happens to fertilizer markets if a given scenario materializes.

All projections are NOLA benchmarks and reflect a single world-price framework. The model does not account for regional price differentiation, localized supply-demand imbalances, trade policy measures such as tariffs or export restrictions, or freight and logistics cost differences across importing markets. In practice, prices vary across regions. U.S. NOLA prices may trade at a discount to delivered prices in Brazil, India, or Southeast Asia, where freight costs and supply scarcity premiums are higher during the disruption. For example, interior Corn Belt retail prices typically carry a $50 to $80/st basis above NOLA for freight, dealer margin, and storage. The demand destruction estimates measure reduced import purchasing at the country level, not reduced fertilizer application or acreage changes on individual farms, which depend on dealer inventories, substitution options, and farm-level budget constraints that the model does not observe.

Non-Gulf physical production capacity is treated as fixed during the crisis window. Projections beyond 12 months should be interpreted with increasing caution, as supply-side rerouting, infrastructure repair, and non-Gulf capacity investment could accelerate normalization in ways the short-run framework does not capture.

References

Arita, S., Chakravorty, R., Kim, J., Lwin, W.Y. and Steinbach, S. (2026). Strait of Hormuz Closure and Global Fertilizer Trade Disruptions. NDSU Agricultural Trade Monitor 2026-03. Center for Agricultural Policy and Trade Studies, North Dakota State University. March 17, 2026. https://doi.org/10.22004/ag.econ.396250

Arita, S. and Glauber, J. (2026). "Will the Iran Crisis Lead to Another Round of Food Price Spikes?" IFPRI Blog, March 2026. https://tinyurl.com/ifpri-iran-food-prices

Arita, S., Wang, M., Kim, J., Chakravorty, R., and Steinbach, S. (2026). "A Global Fertilizer Price Projection Model for Market Disruptions." ARPC Working Paper, North Dakota State University. https://www.capts-ndsu.com/ndsu-ag-trade-monitor

Chakravorty, R., Arita, S., and Steinbach, S. (2026). "Projected Impact of the 2026 Strait of Hormuz Closure on Corn, Soybean, and Wheat Profitability in North Dakota" ARPC White Paper 2026-05, North Dakota State University. https://doi.org/10.22004/ag.econ.396378

Goldman Sachs (2026). "How Will the Iran Conflict Impact Oil Prices?" https://tinyurl.com/gs-iran-oil-prices

Kilian, L., Plante, M.D., Richter, A.W., and Zhou, X. (2026). "The Impact of the 2026 Iran War on U.S. Inflation: A Scenario Analysis." Federal Reserve Bank of Dallas Working Paper 2609.

Kim, J. and Arita, S. (2026). "Fertilizer Import Demand Elasticities: Country-Specific Estimation Using CIF Affordability Ratios." ARPC Working Paper, North Dakota State University.

Morgan Stanley (2026). "Iran Conflict: Three Market Scenarios Investors Should Consider." https://tinyurl.com/ms-iran-scenarios

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The Center for Agricultural Policy and Trade Studies at North Dakota State University is the premier hub for applied economic research on agricultural trade, policy, and risk management in North Dakota and the Upper Midwest. Through its flagship products like the *NDSU Agricultural Trade Monitor*, the Center provides timely insights for producers, agribusinesses, and policymakers on evolving agricultural trade and policy developments.

About the Authors

Shawn Arita, Ph.D.

Shawn is the Associate Director of the Agricultural Risk Policy Center at North Dakota State University. His research provides timely insights for policymakers, producer groups, and trade analysts navigating the impacts of supply chain shocks on global agricultural markets.

Ming Wang, Ph.D.

Ming is a Junior Research Economist with the Agricultural Risk Policy Center at North Dakota State University. Her research examines how agricultural and environmental policies affect rural economies, land use, and international trade, providing insights for evidence-based policymaking.

Jiyeon Kim, Ph.D.

Jiyeon is a Junior Research Economist with the Agricultural Risk Policy Center at North Dakota State University. Her research examines how international trade and agricultural policies affect the farm economy, providing insights into how agricultural production responds to trade shocks.

Rwit Chakravorty, Ph.D.

Rwit is a Junior Research Economist with the Agricultural Risk Policy Center at North Dakota State University. His research focuses on production economics, examining risk management strategies and market disruptions affecting input costs in domestic and global markets.

Sandro Steinbach, Dr. Sc.

Sandro is the Director of the Center for Agricultural Policy and Trade Studies at North Dakota State University. He works on trade, policy, and risk issues affecting U.S. agriculture, leading research and policy analysis that supports agricultural producers and policymakers.

Richard H. Barry Hall 400, Fargo, ND

capts@ndsu.edu

Website

LinkedIn