THE WARTIME HARVEST

By Sam Buchan, Kristen Ziccarelli, And Luke Lindberg

KEY TAKEAWAYS:

1. Americans were facing higher costs for agricultural goods and food products, well before Russia's invasion of Ukraine and now American farmers must wrestle with the high costs of critical agricultural inputs, like fertilizer. The result is greater strains meeting global demand while ensuring the sustainability of farmers' livelihoods.
2. The Spring 2022 planting season experienced some of the highest price increases in history, directly stemming from supply shortages of fuel, fertilizer, and equipment. Notably, food manufacturing costs have increased 14.2 percent since February 2021.
3. U.S. farms have planted 2.3 million acres less than the original estimate for 2022, compounding global concerns of a global food security crisis.
4. Policymakers must embrace American energy independence and remove excessive regulatory burdens on energy production and chemical manufacturing to mitigate supply-side constraints within the agricultural sector for the benefit of Americans and our allies.
5. As the world approaches a global food security crisis, the Biden Administration should expand avenues to terminate supposedly "climate friendly" policies that pay farmers not to produce much needed food. The Conservation Reserve Program represents one such example.

A PERFECT STORM

> *"Being a wheat farmer in central Kansas, where we have a climate and soils similar to Ukraine, I've been struck with the amount of additional responsibility or emotional responsibility I feel. It's made it feel more significant to me that I do all I can to raise a good crop, to take care of it.*"
>
> *-Kansas farmer Justin Knopf* (Doan, 2022)

Throughout the agricultural sector, from production to distribution, costs are undergoing historical increases, caused by a myriad of complicating factors, including Russia's brutal invasion of Ukraine and recent constrained energy production in the U.S. and other nations.

In 2020, the global pandemic triggered a steep decline in critical fossil fuel production at staggering and unsustainable levels as global demand plummeted in the presence of economic lockdowns. The repercussions for the agricultural sector, a significantly energy-intensive industry, were profound and linger today. The added efforts of the Biden Administration and the European Union to manage post-pandemic recovery in 2021 sought to reshapes the underpinnings of the economy radically. Unfortunately, this approach, largely represented by a "green" energy revolution and divestment from fossil fuels, demonstrates how important fossil fuels are to nearly every aspect of global economic prosperity, specifically food security. The outright opposition to fossil fuels, including through burdensome regulation, lease terminations, and the broad adoption of environmental, social, and governance (ESG) standards (Faulkender, 2022), now sees production stagnating

behind previous highs. Moreover, critical agricultural and industrial input costs, such as oil and natural gas, are rising around the world as producers are struggling to develop new wells to keep up with rising demand (OilPrice, 2022). Resultantly, the cost of everything from diesel to fertilizers is rising, much to the detriment of farmers and consumers (Buchan, 2022). These are just two examples of agricultural inputs that are integrally linked to the availability of food for consumers and dependent upon the availability of fossil fuels. It should be no wonder that the May 2022 Producer Price Index listed the cost of food manufacturing—the process in which livestock and agricultural products are readied for immediate or final consumption—at a staggering 14.2 percent since February 2021 (BLS, 2022). This increase inevitably cuts into farm profitability due to increased input costs and threatens the long-term sustainability of smaller farm operations in the event that a crisis of food security of prolonged.

The reemergence of war on the European continent compounds an already threatening global food security crisis and solidifies this fear into a reality that could last well beyond 2022. The imposition of sanctions by Western nations, although warranted, has contributed to the current food security crisis and highlighted the dependencies of many industries on Russian supplies of energy and agricultural commodities. Russia's subsequent actions to utilize its exports as a geopolitical weapon, including withholding exports of wheat and fertilizers, have inflamed the crisis further (ICIS, 2021).

The first supply-side shock came as Russian oil, natural gas, and refined product exports were intensely scrutinized by global traders and policymakers. The subsequent voluntary rejection of Russian energy and embargoes on Russian oil, natural gas, and refined product imports meant that refineries and chemical processing plants producing fertilizers were forced to scramble for alternative supplies in an increasingly tight market. Moreover, the two principal belligerents in the present conflict, Russia and Belarus, are themselves, major suppliers of fertilizers and other agricultural inputs—together exporting around 40 percent of the world's potassium-based fertilizers, which are dependent upon potash (Domm, 2021).

Further, Russia alone is responsible for supplying around 48 percent of ammonium nitrate and 11 percent of urea to global markets (ibid, 2022). Potash, ammonium nitrate, and urea are all critical components of modern fertilizers. This agricultural commodity has improved crop yield efficiency significantly, all while the global population grew in parallel. However, Russia, a nation that has notoriously deployed its commodity exports as a geopolitical weapon, represents only one piece of the broader geopolitical puzzle comprising the mosaic of global food security.

Meanwhile, Ukraine dubbed the "breadbasket of the world," typically exports 10 percent of the world's wheat supply, feeding an estimated 400 million people annually (UN, 2022). Following the outbreak of the war, Ukraine remarkably continued to deploy its agricultural sector to produce food for the world. Unfortunately, Russia has entangled its self-proclaimed "special military operation" within global humanitarian concerns. Ukraine's ability to operate as a functioning contributor to global food supplies is increasingly constrained by overburdened logistical export corridors and severely damaged domestic transport infrastructure, limiting its ability to move agricultural products away from the conflict to markets. Moreover, Ukraine's ability to carry these volumes to market has been virtually eliminated in recent months as Russia institutes its blockade on Ukraine's Black Sea ports. Thus, 18 million tons of grain intended for export sit stranded in Ukrainian silos. These compounded stressors also lead to fears that between 20 and 30 percent of Ukraine's winter

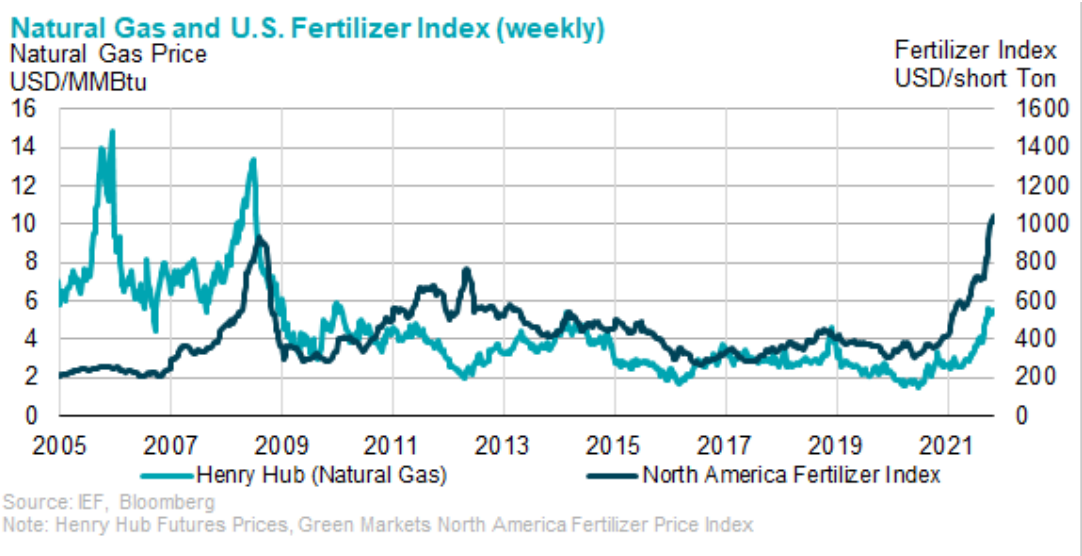
croplands will be left unharvested, with the winter planting season kicked off in July (UN, 2022).

These factors combined have created a perfect storm for both developed and developing nations, raising the likelihood of a sustained period of global food insecurity. For instance, the United Nations states that "more than 30 net importers of wheat are dependent on [Russia and Ukraine] for over 30 percent of their wheat import needs." (UN, 2022). Furthermore, these nations' share of cereal exports (barley, wheat, and maize) accounts for "18 percent of global output." Meanwhile, in the U.S., the 3.4 million American farmers who steward some 158 million hectares of land are not immune from the challenges of supply-side shortages and resulting cost increases (USDA, 2022). These farmers must now wrestle with whether to cut production in response to higher input costs, which would dramatically impact American consumers and stoke greater uncertainty for millions around the world. There is little doubt that the conflict has indeed arrived on U.S. soil, and it is taking its toll on American farmers.

THE COST TO AMERICAN FARMERS AND CONSUMERS

> *"A higher production cost will soon outpace revenues to farmers and ranchers across the industry, leading to more consolidation and financial hardships for many producers and further increasing the cost to American consumers."*
>
> *-Arkansas Farm Bureau Director Mark Lambert* (Jared, 2022)

Just ahead of the 2022 crop planting season, the cost of three nitrogenous fertilizers—the fertilizer most dependent upon natural gas as an input—experienced severe price increases (USDA, 2022). Urea climbed 149 percent, liquid nitrogen increased 192 percent, and anhydrous ammonia soared 235 percent. As fertilizer makes up one-third of operating costs for corn and wheat farmers, a roughly threefold increase in price stemming from tight supplies is devastating for agricultural production, not to mention the profitability of producing crops (USDA, 2022). The fact that approximately 25 countries are reliant upon Russia and Ukraine for more than 20 percent of fertilizer supplies demonstrates the severity of this supply challenge (UN, 2022).



Miles Mendel, a South Dakota farmer recently articulated the problem by saying, "we welcome the high prices we see, but have been around long enough to know that high prices like this always curb demand. Often, it takes much longer for low prices to bring back the demand than it took the high prices to destroy it… when prices drop, the Input cost decline is often much slower and creates huge problems for farmer to remain profitable." As of mid-July, crop prices are beginning to fall, but input cost increases are only slowly coming down (Singh, 2022).

To cope with these developments, many farmers are turning away from producing fertilizer-intensive crops, such as corn, and looking to crops that require less fertilizer, like soybeans and peas, while many others are replacing fertilizer with manure (Elkin et al., 2022) (Huffstutter et al., 2022). However, the latter instance is particularly challenging as waiting lists are growing and significant regulations abound due to the risk of manure-related water contamination. As the situation worsens, it would be hard to imagine how supplies will get into the hands of any farmer that cannot secure supplies or justify the high upfront costs.

While these instances represent challenges to near-term planting seasons, the long-term implications are just as significant, if not more so. Future costs are increasingly unpredictable for farmers planning the current winter and upcoming spring crop planting seasons. Key commodity futures pricing—where prices are estimated based on the convergence of myriad factors, such as farmer sentiment, input supply availability, and speculation—has been driven higher on the heels of a harsh geopolitical environment and lackluster response from policymakers. The International Food Policy Research Institute's Food Security Portal indicates an evolution within markets from typical price fluctuations to excessive price volatility (IFPRI, 2022). Wheat, corn, soybean, and cotton are experiencing the highest degree of volatility. These abnormal market conditions increase the risk of higher uncertainty for upcoming planting seasons, particularly when determining which crop will generate maximum returns. Simply put, farmers cannot make sound economic projections that determine future production levels and wholesale valuations. Moreover, from a market standpoint, the food and agriculture industry will likely see fewer investments, given the vast uncertainty in prices and supply.

With such heavy stress on farmers, there is little surprise that farmer confidence has declined throughout the U.S. Purdue University's Agriculture Economy Barometer indicates that since Russia invaded in late February, farmers' confidence has dipped to levels not seen since the early days of the pandemic (Purdue, 2022). Moreover, many farmers reportedly believe 2022 will be worse than 2021, and more than 90 percent expect their operating costs to increase by 20 percent or more.

While higher crop prices undoubtedly mean higher costs to consumers, these price increases do not mean farmers will secure profits or break even. Higher input costs for farmers are outpacing the prices farmers receive, forcing them to absorb the difference. It is representative of a negative feedback loop—one that Americans already see the effects of at the grocery store.

The consequences of increased input costs to farmers mean American consumers and families will continue to shoulder the costs of a global food crisis. High energy costs, beyond their direct influence on critical agricultural inputs, also contribute to what the Department of Agriculture terms "long-run trends in farm-to-consumer" increases in the same way the average American commuter struggles to afford gasoline costs for daily activities (USDA,

2022). For instance, the increase in diesel prices is significantly impacting truckers delivering products to markets around the country, which only continues the burden-shifting of price increases to customers. Rick Todd, President & CEO of the South Carolina Trucking Association, commented, "...there's no way that these costs don't get passed on to consumers because we are so truck dependent (Wilson, 2022). I mean, you don't have a deep-water river where you can barge a product straight to your house. You don't have an airport to land a plane to deliver to you. You don't have a train track that leads up to your house or grocery store... [s]o, these costs will be passed on to the consumer." In short, food prices at the grocery store are going up because it is becoming more expensive both to produce the food and transport it.

This is already the reality for millions of Americans dealing with the fallout of 40-year high inflation (AFPI, 2022). The May 2022 Consumer Price Index indicated an 8.6 percent increase from 2021, rising above April 2022's 8.3 percent inflation rate (BLS, 2022). Prices of agricultural products are particularly exposed to these increases, with the Bureau of Labor Statistics report highlighting that food-related inflation reached 11.9 percent (ibid, 2022).

As consumers grapple with the pressure and magnitude of paying more for less, grocers also find themselves pressed to keep shelves stocked and provide readily available access to everyday household goods. Before Russia invaded Ukraine, grocery store prices were already soaring and had increased globally by 20.7 percent in February 2022 from the previous year (UN, 2022). Further estimates state that it could inflate another 22 percent in the coming year due to geopolitical instability (ibid, 2022). Moreover, the most vulnerable American populations are left out to dry as they struggle to make less money go further. The average American spends more than 15 percent of their annual income on food—when inflation soars, the increase in food prices represents more than a static number; it represents an overall shift in how Americans live (USDA, 2022). When everything costs more, Americans have nowhere to turn.

SOWING THE SEEDS FOR SUCCESS

Over the past two years, Americans have witnessed the effects of supply chain disruptions ripple across the globe, from the pandemic to mismanaged economic recovery to Russia's invasion of Ukraine. The modern globalized world features immense interdependencies in how food arrives on the tables of American families. While geopolitical conflicts have the power to strain supply chains significantly, the failure of policymakers to understand the relationships between sectors presents the core risk to mitigating and surmounting challenges.

Presently, continued supply-side pressures may only exacerbate imbalances in supply and demand, leading to even greater cost increases for producers and consumers. For the U.S. to secure prosperity, policies must immediately address the root causes of our own supply-side constraints and secure supply chains that are capable of withstanding geopolitical factors. This can be done in a way that protects and empowers American farmers and provides much-needed relief to American families and consumers, all while mitigating threats to global food security.

In response to the array of challenges ripping the agricultural sector, the Biden Administration issued a lackluster easing of its proclaimed 'climate-friendly' incentives for non-production. In May 2022, the administration announced it would only support requests

for the early termination of contracts under the Conservation Reserve Program (CRP)—a program in which farmers register lands and receive rental payments not to produce crops in exchange for conservation—for farmers in the final year of their CRP contract (USDA, 2022).

While establishing a pathway to terminate existing CRP contracts will open additional farmable land for immediate production, its limited implementation reiterates the internal conflict within the administration between climate purists and economic realists. To ensure increased crop yields, the Biden Administration should expand this program to all CRP contracts, not simply those in their final year, thereby increasing the maximum production possible to alleviate global food scarcity and related inflation at home. In farming, the scale of production matters, and additional acreage may help offset the cost of specific inputs. Whether proposed or fully implemented, the CRP contract termination pathway is not without its challenges. The move could send the demand for fertilizers higher still as farmers continue to search for ways to boost land profitability.

In what amounts to an attempt to alleviate fertilizer market pressures, the Biden Administration hailed the promotion of a $500 million program to drive the adoption of green fertilizers (White House, 2022). While this may be a nice gesture for renewable energy producers looking to expand operations to fertilizer production, it is by no means a realistic solution to address the immediate costs facing American farmers. The administration's efforts also wholly reject the need to address supply-side constraints within oil, natural gas, and mineral production sectors that are essential to commercially viable fertilizers.

American energy independence and industrial and manufacturing growth are central to achieving this. The priority of policymakers should be to incentivize the production and processing of domestic energy. This will also require a regulatory reform that enables expeditious growth in American chemical processing, fertilizer manufacturing, and mineral processing. Such reforms would further leverage the abundance of U.S. natural resources to facilitate competitive enterprises that lift the American farmer and relieve American consumer pains, all while creating rewarding career opportunities. That means creating pathways for developing infrastructure for chemical processing in regions like the Gulf of Mexico and Appalachia, expanding mining operations in key states producing agricultural inputs, such as potash and phosphate, and most of all, streamlining permitting for new oil and natural gas development on federal and private lands. This also means, in addition to permitting, eliminating both government-led and private sector barriers to accessing capital, principally in the form of ESGs, so that U.S. refining capacity can be restored, modernized, and expanded to meet the needs of the modern economy, not the fantasy economy of environmental activists. Without this, Americans will continue to lose at the grocery store, the pump, and their businesses.

America's farm families must come first when correcting shortages that send ripples across the world and into every pocket of America. Prudent steps may lessen the effect of supply shortages if implemented swiftly and targeted at the right segments of the economy.

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