THE QUARTERLY

*Dedicated to the industries financed by CoBank*

October 2022

# Inflation Abundance, Commodity Shortage

**The Fed's battle to temper inflation will go on, as will efforts to rebuild ag and energy supplies.**


## *Executive Summary*

Despite ongoing impacts from Russia's invasion of Ukraine and lingering supply chain effects from the pandemic, the U.S. economy remains incredibly resilient. So resilient, in fact, that consumers' seemingly unbreakable willingness to spend is vexing the Federal Reserve and causing it to aggressively raise interest rates to stamp out inflation. Rate hikes will continue into 2023 as a result and the outlook for the coming year grows increasingly gloomy.

In contrast, the energy and agri-food sectors have gained unexpected levels of pricing power as supply shortages now appear to be medium-term challenges. Agricultural production and transportation issues are still most severe in the Black Sea, but drought in Europe, Asia, and the Americas is making grain supply and logistics all the more uncertain. Hurricane Ian and low Mississippi River levels have also compounded worries about availability of farm inputs. And global natural gas demand is now poised to outstrip supply for years as the world gears up to replace Russian supply and build out renewable infrastructure. Risks and uncertainty remain exceptionally high, but elevated commodity prices also offer opportunities.

Finally, enormous implications rest in the balance amid tense negotiations over water rights on the Colorado River. Farming communities throughout the southwest anxiously await the results as a third La Niña weather year portends more drought.

And all of this is happening with mid-term elections just weeks away, and Congressional control up for grabs. It will not be a quiet end to the year.


### Topics In this Issue:



*This quarterly update is prepared by the Knowledge Exchange division and cover the key industries served by CoBank, including the agricultural markets and the rural infrastructure industries.*

# Inside this issue

# SPOTLIGHT

## Critics are Restless but the Fed Must Do More

*By Dan Kowalski*

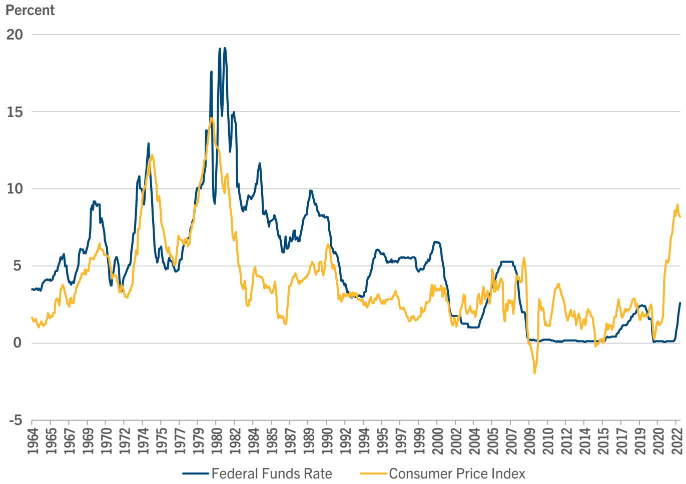
### Inflation is still near its peak and the economy is doing fine. Rate hikes will continue.

The calls are getting louder for the Fed to stop raising interest rates. Even some prominent economists are now weighing in, pleading with the Fed to recognize that further monetary tightening will have catastrophic effects on the U.S. and global economies, and that inflation is about to fall precipitously. The Fed does not see it that way, nor should it.

There are two reasons that the Fed will ignore these warnings. First, there is no solid evidence that inflation is on a steep downward path and there is also little evidence that higher rates are severely damaging the economy. The Fed's dual mandate is to maximize employment while maintaining price stability. Over the past three months, the U.S. economy has added an average of 372,000 jobs monthly, compared with a monthly average of 154,000 jobs over the past decade. And the annualized YoY change in the consumer price index over the past three months has ranged from 8% to 8.5%, very near the peak reached in June. Aside from direct pain to a few industries such as residential real estate, the economy has been incredibly resilient as consumers continue to spend while businesses raise prices.

**1 The Fed tried to tackle inflation by raising rates seven times in the 1960s and 1970s, but each time it buckled under political pressure and lowered rates before inflation was sufficiently under control.**

**EXHIBIT 1: Inflation and Federal Funds Interest Rates**




*Source: Federal Reserve of St. Louis*

The second reason the Fed will ignore its naysayers is credibility. Chair Powell is a student of Paul Volcker, who served as the Fed Chair from 1979 to 1987 and raised interest rates to 19% to tame inflation. Powell has called Volcker "the greatest economic public servant of the era," and has vowed that he intends, like Volcker did, to do whatever it takes to get inflation under control. High inflation really started becoming a problem in 1966 and remained elevated until 1983. The Fed tried to tackle inflation by raising rates seven times in the 1960s and 1970s, but each time it buckled under political pressure and lowered rates before inflation was sufficiently under control. This inconsistency badly eroded the credibility of the Fed during that time, and forced Volcker to send rates much higher for longer to end the wage-price spiral.

The economy is very different today, with the most pertinent difference being the massive increase in indebtedness. That will cause rate hikes to have a greater impact, preventing the need to raise rates nearly as high as Volcker did. But that does not exempt us from the severe pain that comes with steep rate hikes. Former Treasury Secretary Larry Summers has suggested that the unemployment rate will double in the process of getting inflation back down to 2%, and some other models point to more dire outcomes. Indeed, significant economic damage is not just a side effect from raising rates, it is in large part the cure to inflation. Consumer and business demand must fall back in line with supply to cool prices. And the Fed is unlikely to accomplish that without at least a mild recession.

Fed Governor Christopher Waller made this glaringly clear in late September when he stated that the Fed had still not faced a tradeoff between employment and inflation, and that "monetary policy can and must be used aggressively to bring down inflation." My interpretation to this statement is that economic pain is necessary to quell inflation, and we haven't yet experienced any. Rate increases must continue.

No one can predict with precision when the Fed will stop raising rates, or when rates will fall again – not even Jerome Powell. But the longer that elevated inflation persists, the more embedded it becomes in the economy, and the harder it is to root out. Powell is determined to conquer inflation as Volcker did, rather than falter like Volcker's predecessors. And that will require a lot of fortitude as the criticisms get louder, angrier, and come from a lot more people.

2 **Consumer and business demand must fall back in line with supply to cool prices. And the Fed is unlikely to accomplish that without at least a mild recession.**



# MACRO ECONOMIC OUTLOOK

## Strong Consumer Spending has the Fed in a Bind

*By Dan Kowalski*

**The Federal Reserve is finding it harder to cool the economy than almost anyone expected.** The Fed has increased its Federal Funds rate by 300 basis points since March, and is poised to raise it again by 75 basis points in early November. This is the fastest rate hiking cycle on record, but it hasn't yet been enough to bring inflation down or meaningfully weaken demand for goods and services.

Most corners of the economy are performing very well considering the Fed has been aggressively raising rates for seven months. Manufacturing continues to expand, consumer spending remains strong, the labor market is still extremely tight, and Q3 GDP data will likely show solid growth.

There are signs of slowing, however, which are the first cracks to form from monetary tightening. Consumer credit is on the rise while savings rates are falling. Financial conditions are steadily tightening and are now tighter than the historical average. And wage growth is falling even as inflation remains high, reducing consumer purchasing power.

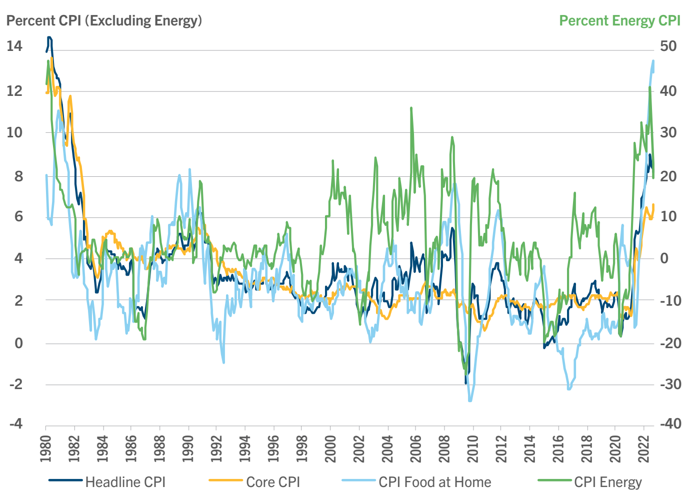
The slip in wage growth is one encouraging sign for the Fed amidst a lot of disappointingly strong economic data. Falling wage growth combined with falling inflation expectations indicates that a wage-price spiral has not developed, and there is widespread faith that the Fed will rein in inflation. After last week's hot CPI number of 8.2% YoY inflation, the Fed will be keenly watching these key statistics for reversal.

**1** **This is the fastest rate hiking cycle on record, but it hasn't yet been enough to bring inflation down or meaningfully weaken demand for goods and services.**

**2** **Ultimately, to get inflation levels down, consumer willingness and/or ability to spend must also come down.**

**EXHIBIT 1: Consumer Price Index**

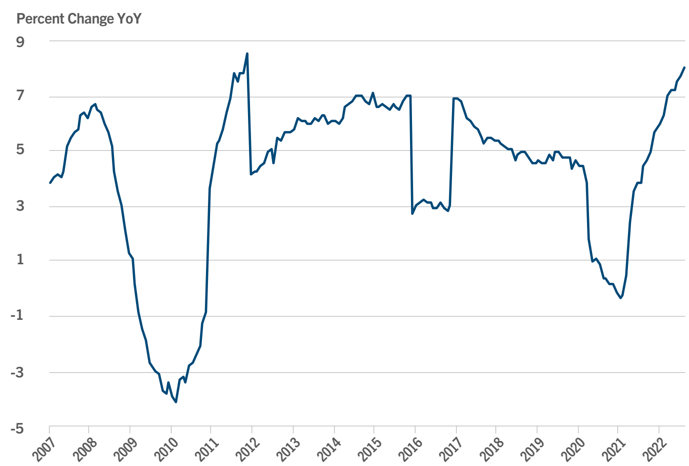
YoY Change




*Source: Bureau of Labor Statistics*

**EXHIBIT 2: Total Consumer Credit**

Percent Change YoY




*Source: Board of Governors of the Federal Reserve*

The value of the U.S. dollar has been hovering near record highs, and is unlikely to meaningfully decline anytime soon, with more rate hikes on the way and the U.S. economy still stronger than those of other developed countries. Strength of the dollar will pressure U.S. exports as the global economy struggles and U.S. goods remain expensive. This will continue to weigh on U.S. manufacturing and trade-related services.

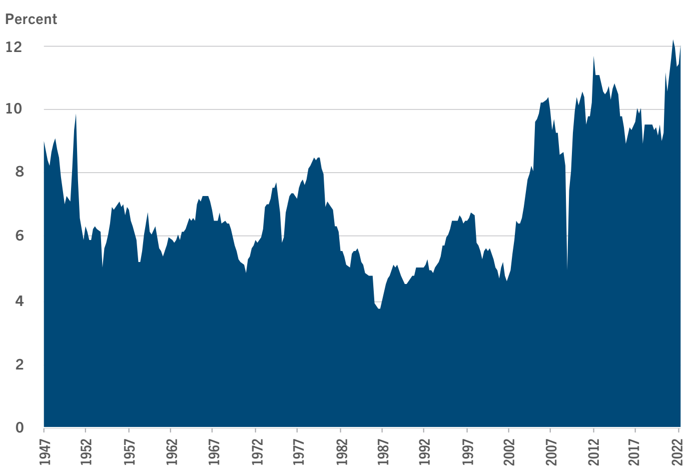
Ultimately, to get inflation levels down, consumer willingness and/or ability to spend must also come down. This is translated into price elasticity of demand, or how much demand changes as prices change. Consumers still have approximately $2 trillion of excess savings that were accumulated through the pandemic. This has created a unique ability to continue spending amidst double-digit price increases. Many public companies have talked about price elasticity in quarterly calls and have used these historically strong elasticities to inform pricing decisions. And profits have followed. Corporate profits in Q2 reached 12% of GDP, the highest on record dating back to the 1940s. In essence, this surge in profits is driving much of the headline inflation right now, and these profits will remain high until elasticities decline.

In summary, the Fed is in a jam, and its task of managing price stability is only getting harder. The lag between monetary policy actions and their effects in the real economy make the Fed's job incredibly difficult. The Fed will be making decisions in the coming months based on old data even while actions they have already taken will not have visible impacts until sometime in 2023. This makes it nearly impossible to know when it is appropriate to pause rate hikes. And as rates continue to go higher in coming months, our view of the collateral damage coming in the first half of 2023 mounts.

3 **Record corporate profits are driving much of the headline inflation right now,** **and these profits will remain high until elasticities decline.**

4 **The Fed is in a jam,** **and its task of managing price stability is only getting harder.**

**EXHIBIT 3: Corporate Profits/GDP**




*Source: Bureau of Economic Analysis*

# GRAINS

## Macro Demand Battles Bullish Fundamentals

By Kenneth Scott Zuckerberg

**The grain and oilseed complex experienced a bumpy ride over the past three months, especially at quarter end. Grain prices remained volatile, caught between falling energy prices, a surging U.S. dollar, a weakening global economic outlook, ongoing drought, and rising tensions in the Black Sea region.**

**Russia/Ukraine**

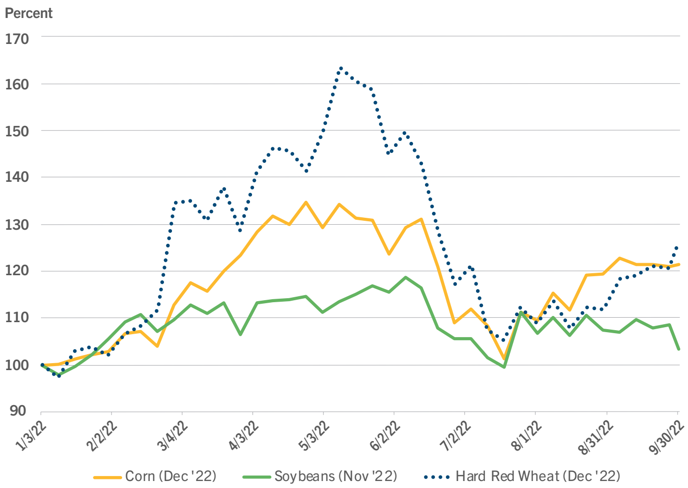
The conflict remains dynamic – and generally bullish for wheat – as Russia's efforts to annex certain regions of Ukraine increase the risk that Ukraine's grain exports (allowed by the Aug. 1 deal brokered by Turkey) will fall short of expectations. At quarter end, a total of 231 ships carrying 5.3 million metric tons (MMT) of grain and oilseeds had sailed from Ukraine's Black Sea ports since the grain export deal commenced on Aug. 1. While encouraging, that pace is less than half the pre-conflict export run rate of up to 6 MMT per month.

More important is the increasing risk that the Russia/Ukraine grain deal will NOT be renewed in November due to a recent escalation in military activities between the two nations. Two more factors create additional uncertainty. One, Russia's wheat harvest is 95% complete and is expected to reach record levels in excess of 100 MMT, threatening to put a considerable amount of "cheap" supplies on the market. Two, the continued negative effects of La Niña are expected to reduce Argentina's current wheat crop by about 6%, which may partly offset Russia's harvest.

**1** **Grain prices finished mostly higher in Q3, with corn and wheat futures up 11% and 8%,** respectively, partly offset by a 2% drop in soybeans.

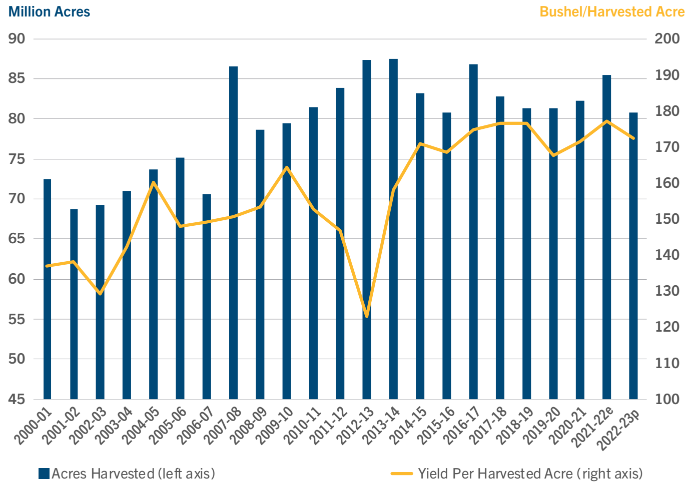
**2** **Corn and soybean exports for the new crop marketing year are up 13%** vs. last year; however, soybean exports to China are lagging.

**EXHIBIT 1: Grain Futures Price Comparison**




*Source: Barchart.com*

**EXHIBIT 2: U.S. Corn Acres Harvested vs. Yield**




*Source: USDA-WASDE September 2022*

**Drought**

Drought conditions in the Western portion of the United States during 2021 and 2022 were the most intense in 20 years based on a recent U.S. Drought Monitor report. Wheat is being hit especially hard, with USDA indicating that 64% of U.S. winter wheat acres are experiencing a drought vs. 42% last year.

Drought was a key factor in the steady ratcheting down of U.S. crop production estimates published by USDA in its September WASDE report. Global crop production remains uncertain, especially for regions negatively impacted by La Niña weather patterns, which are expected to persist for a third consecutive year.

Low water levels on the Mississippi River due to drought caused a spike in barge rates during the final week of September. On the former, the situation has worsened into mid-October and threatens to disrupt grain exports leaving the Midwest. (According to USDA, the Mississippi River accounts for approximately 60% of all U.S. grain exports.)

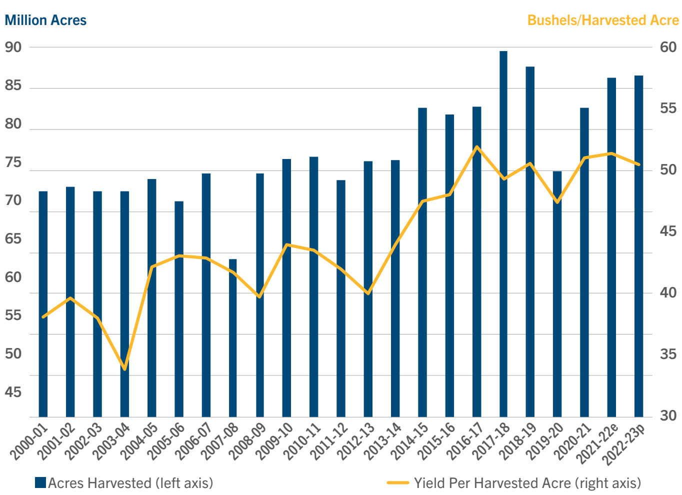
**Weather Volatility**

The third quarter ended with a bang as Hurricane Ian — a category 4 hurricane with winds in excess of 125 mph — made landfall on Florida's west coast during the final week of September. While the ensuing flooding in Florida was a non-event for the Corn Belt, west central Florida is home to the largest concentration of phosphorus fertilizer manufacturing in the U.S. (Mosaic has several facilities in the region). It's too early to evaluate whether any of the facilities or mines will suffer long-term damage. However, the impact of Hurricane Ian combined with the possibility of other storms for the balance of the Atlantic hurricane season could result in Q4 grain price volatility.

**3** **Excluding China, export figures were encouraging,** even as the U.S. dollar has rapidly strengthened over the past few months.

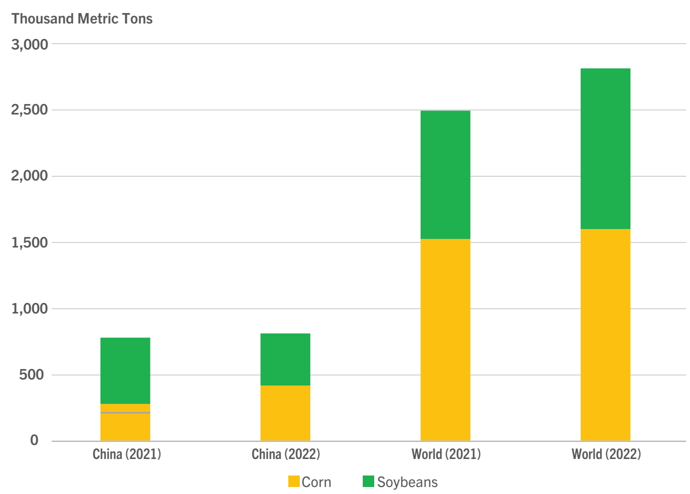
**4** **On farm grain storage is above 2021 levels for the three major crops,** perhaps signaling a stronger harvest-time basis this year.

**EXHIBIT 3: U.S. Soybean Acres Harvested vs. Yield**




*Source: USDA-WASDE September 2022*

**EXHIBIT 4: U.S. Accumulated Exports to China and Total World**
Current Marketing Year to Date as of September 22, 2022

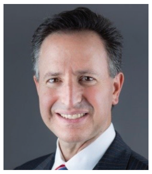



*Source: USDA-FAS*



# FARM SUPPLY

## Europe's Natural Gas "Tail" is Wagging Fertilizer's "Dog"



*By Kenneth Scott Zuckerberg*

**The ongoing Russia/Ukraine conflict continues to impact European natural gas prices, and in turn, global supplies and prices of nitrogen, phosphorous and potassium ("NPK") fertilizers.** While domestic nitrogen prices and specifically anhydrous ammonia dropped precipitously with a correction in U.S. natural gas prices, NPK prices are rising again with developments in Ukraine. We expect U.S. fall application demand will increase fertilizer prices.

Fertilizer prices fell during the second quarter largely as a result of a correction in prices of natural gas, a key input in nitrogen-containing formulations. Based on Iowa crop production cost data compiled and published by USDA, fertilizer prices during Q3 fell 13% for anhydrous ammonia, 16% for urea, 7% for MAP and 5% for potash. However, prices have been rising again as harvest advances in the U.S. and farmers and ag retailers shift their attention to fall application season.

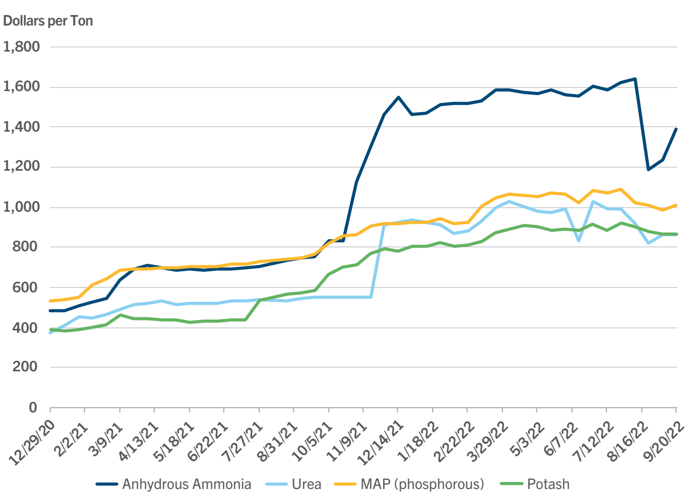
Aside from the Russia/Ukraine impact, the global economic slowdown, and resulting impacts on energy prices, several recent developments add additional complexity to the fertilizer space. Specifically, Canada and the Netherlands have announced plans (and/or aspirational goals) to reduce greenhouse gas emissions over the next decade by decreasing the amount of permitted fertilizer applications as a way to counter climate change. While mandated changes are unlikely in the U.S. in the near-term, the bigger risk we see is the potential for the reduced use of nitrogen fertilizers in the coming years. To support the expected growth in renewable diesel fuel, acres will likely shift from corn (which is nitrogen-intensive) towards soybeans (which typically require potash and phosphorous only).

**1** **Although planting started slowly last spring,** ag retailers that managed input inventories well during challenging times had a very good summer agronomy season.

**2** **Domestic fertilizer prices fell between 5% to 16% in Q3** (depending on formulation), amid a massive correction in energy prices due to recessionary fears.

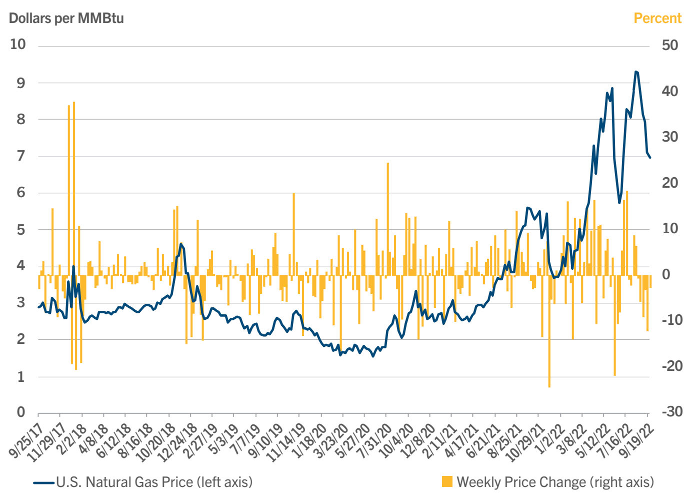
**3** While European natural gas prices have also fallen, **production cuts announced during Q2 by Yara, CF Industries, BASF will squeeze already tight fertilizer supplies.**

**EXHIBIT 1: Iowa Fertilizer Production Cost Summary**




*Source: USDA Agricultural Marketing Service*

**EXHIBIT 2: Weekly U.S. Natural Gas Prices Trailing Five Years**




*Source: Barchart.com*



# BIOFUELS

## While Production Declined, Profitability Held

*By Kenneth Scott Zuckerberg*

**Ethanol production continued to trend down as the third quarter came to a close, concurrent with recession fears, lower gasoline demand, and capital market volatility. The main event in the quarter was on the policy front, specifically the Inflation Reduction Act (IRA) of 2022. This monumental piece of bi-partisan legislation provides strong current and future support for renewable energy in general and biofuels in particular.**

IRA aims to curb spiraling inflation rates and takes square target at energy prices. A key element of the legislation is subsidizing and promoting private sector investment into domestic energy production while encouraging clean energy solutions.

The timing of the IRA is ideal given that the broader global energy sector is transitioning towards greater renewable fuel usage, supported by a "micro-transition" underway in the U.S. The latter features several distinct positives for biofuel including:

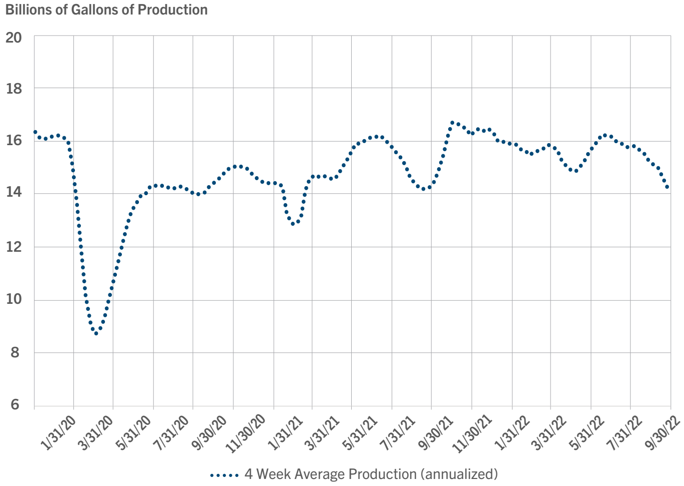
- Expanding use of fuel ethanol (towards 15% blending levels from 10% currently) to bridge to lower GHG emissions along with increased adoption of electric vehicles;
- Increasing renewable diesel production and usage as a drop-in fuel for trucks, heavy duty commercial equipment, ocean going vessels, and locomotives; and
- Developing sustainable aviation fuel using alcohol as a feedstock.

**1 Q3 ethanol production declined in the final month of the quarter,** **as macro fears resulted in a 6%-7% decline in gasoline demand.**

**2 It is normal for production to slow into harvest and subsequently rebound seasonally in October/November** **as corn is delivered to ethanol processors.**

**3 Margins finished the quarter near the upper end of long-term average levels** **of $0.25-$0.30/gallon amid relatively stable ethanol fuel prices.**

**EXHIBIT 1: U.S Fuel Ethanol Plant Production**




*Source: U.S. Energy Information Administration*

**EXHIBIT 2: Ethanol Fuel Price vs. Operating Margin**


*Soure: ISU-CARD*

# ANIMAL PROTEIN

## Meat Values Stoke Revenues, But Inflation Offers Pause

*By Brian Earnest*

**A slowing global economy, unrelenting food inflation, and consumers looking to stretch their dollar further are concerns for red meat and poultry demand through the remainder of 2022 and into 2023.** However, the remarkable resilience of consumer willingness to pay for meat and poultry since the start of the pandemic encourages industry optimism. At this point, nothing really sticks out as a major warning that consumer desire for animal protein is waning, rather retailers are shifting their focus to "value" items such as ground beef, chicken breasts, and pork chops.

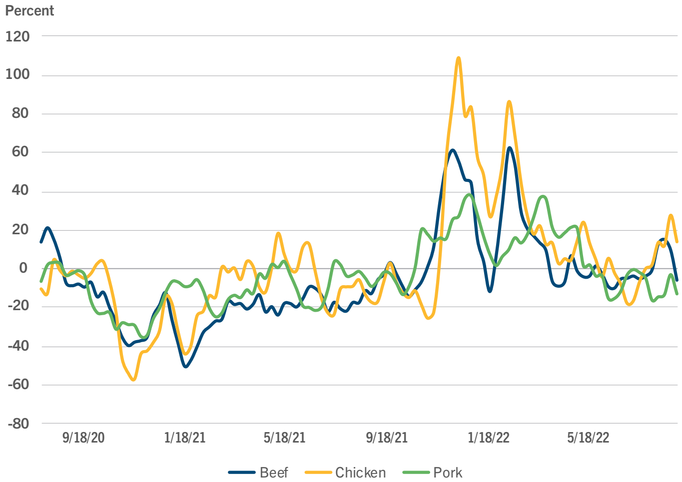
Retail grocery feature activity for meat and poultry alike have been a bit subdued through the summer months. Compared to the weekly ad rates in previous years, meat features have steadily fallen 10%-25% below 2019 levels this year, with prior year supply chain issues chiefly to blame. However, supply chains continue to recover and USDA forecasts domestic per-capita red meat and poultry consumption at a new record high of 225 pounds in 2022.

Aggregate meat and poultry production in 2022 will not be much different than a year ago, but production by category and export share will show some variation. Strong export demand for U.S. meat and poultry has played an ever increasing role in disappearance in recent years. Although total U.S. protein exports are down more than 7% YTD YoY and forecast lower in 2023, that is due to various supply side constraints – not due to global demand, which continues to be strong and supportive of meat and poultry prices across the board.

**1 Retail meat demand is holding up despite reduced advertising and promotion.**

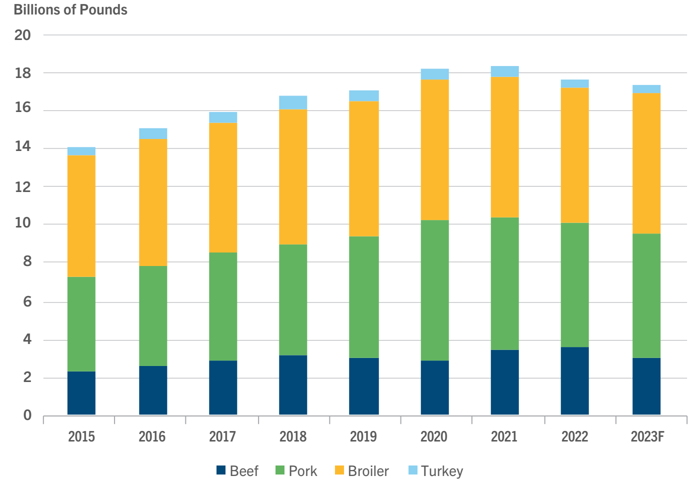
**2 Exports are slowing for pork and poultry, yet overall disappearance remains resilient.**

**EXHIBIT 1: USDA Retail Feature Rate YoY % change**
3-week Moving Average




*Source: USDA AMS, CoBank*

**EXHIBIT 2: U.S. Meat and Poultry Exports**




*Source: USDA, ERS*

## Chicken

Per capita chicken consumption is likely to fall short of a record this year, but will likely continue to set new records in coming years (pork and beef consumption could decline as a result of lower production). But expanding chicken consumption will require larger chick numbers, which have been a widely-cited challenge for broiler producers. However, front-end supply metrics (broiler layers, egg sets, and chick placements) have improved in recent weeks, which is encouraging. After falling short of market needs for quite some time, chick placements are up 5% YoY during the most recent six-week period. This should bolster supplies during the fourth quarter.

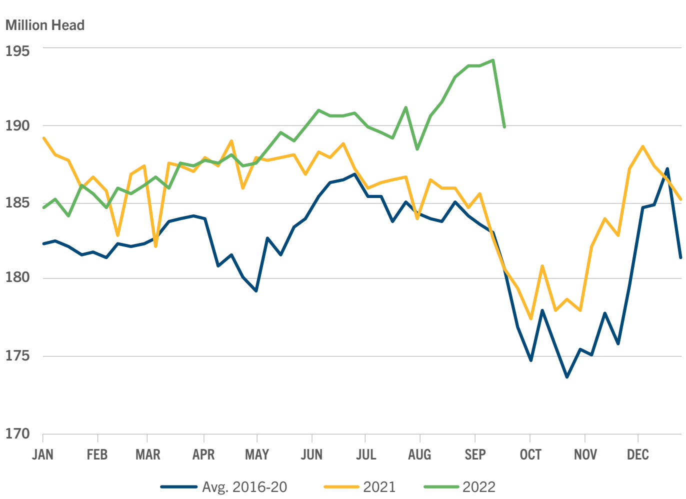
Export markets remain favorable to broiler meat despite ongoing HPAI outbreaks across the country, which fortunately commercial broiler facilities have largely avoided. Through July, U.S. broiler exports are up 5% from the five-year average but 4% below last year's levels. Leg quarter holdings in cold storage rose 13% during August and were up 23% YoY. This could be a signal that things are backing up, but we remain cautiously optimistic. Prices for leg quarters have only recently drifted lower after trading at record-high levels, up 40% YoY through much of the third quarter.

Breast meat makes up more than 30% of the broiler carcass, which bears consideration when assessing market valuation for product from the front half of the bird. Prices for boneless/skinless breast meat moved to all-time-highs, above $3.60/lb ahead of the grilling season. The market for breast meat has ratcheted down seasonally since then, helping retailers trying to appeal to budget-conscious consumers. Even with the remarkable strength breast meat has seen this year, shoppers looking to stretch their dollars will continue to see it as a wallet-friendly protein in the coming months. This should bode well for producer margins.

**1** While broiler chick hatchability has been an issue over the past few years, **weekly incubation rates have improved and chick placements are up 5% YoY.**

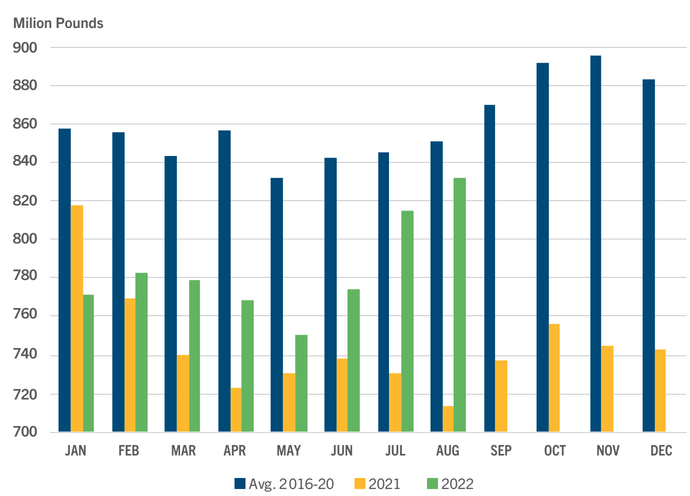
**2** **Breast meat prices shot up this spring and remained resilient through much of Q3,** as chicken still appeals to budget-minded consumers.

**EXHIBIT 3: Weekly Broiler Chick Placements**




*Source: USDA*

**EXHIBIT 4: Chicken in Cold Storage**
End of the Month




*Source: USDA*

## Beef

Beef markets remained generally strong through the most recent quarter with prices for live cattle 16% higher than a year ago. Federally inspected cattle slaughter for the July-August period was the largest in more than a decade, up 2.4% YoY. However, a relentless drought and rising feed costs have pressured weights while concurrently encouraging beef cow culling. As a result, beef production rose just 1.8% in July-August.

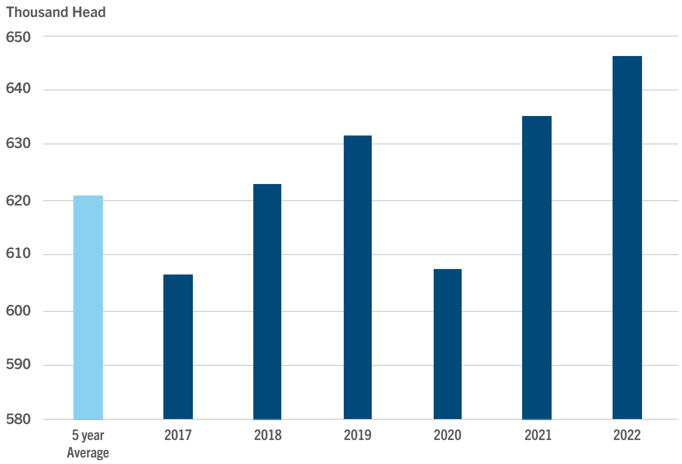
The year began with expectations of strained beef packing capacity and weaker demand as consumers emerged from COVID lockdowns, but neither of those have materialized. Demand has been resiliant, and supply has kept up. Beef exports are up 6% YTD and domestic consumption is consistent with a year ago, which has kept the boxed beef cutout riding above the usual seasonal downtrend and at a 26% premium to the five-year average. Seasonal pressure should ease beef prices through the remainder of the year, but with beef production forecast down 6% in 2023, prices should remain well supported for the foreseeable future.

While good beef demand and elevated slaughter levels have been positive for cattle feeders, they are now being increasingly pressured by higher feed, fuel, and labor costs. Costs of gain are up about 20% from a year ago, and 50% higher than the five year average. Still, placements continue to rise, and USDA's latest *Cattle on Feed* report indicated feedlot inventories were slightly higher than the record total reported a year earlier on Sept. 1. It is worth noting that the elevated inventory is of lighter weight cattle, indicating the pool of available feeders continues to shrink.

**1 Cattle slaughter numbers have surged in recent weeks, and are up 1.7% YoY, and 4% above the five-year average year-to-date.**

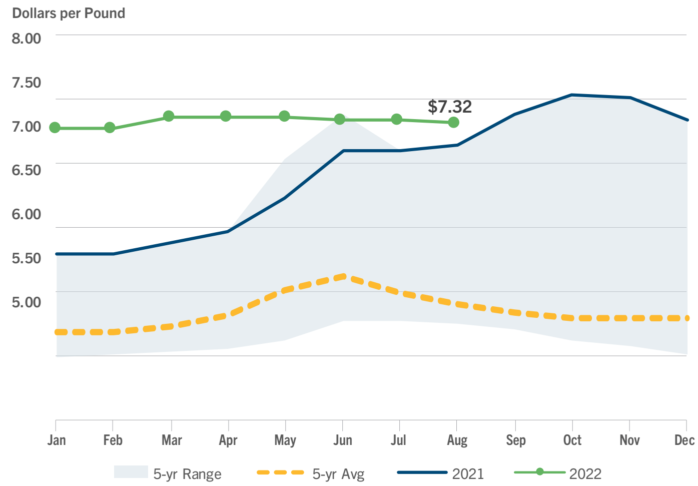
**2 Strong beef demand has largely overcome swelling retail prices. This is spurring optimism as cattle supplies erode, which will inevitably force beef prices higher.**

**EXHIBIT 5: Weekly Average Federally Inspected Cattle Slaughter**
Through First 38 Weeks




*Source: USDA*

**EXHIBIT 6: USDA All Fresh Beef Retail Price**




*Source: USDA*

## Pork

After starting 2022 below year ago levels, market-ready hog slaughter improved during the second quarter. Weekly harvest is now more in-line with what would normally be expected and is on par with year ago levels. Improved processing capacity utilization has come with lower hog weights, further straining market-ready hog availaiblity. While growth seems like an obvious direction for this sector given the competitive landscape, the breeding herd was reported at a five-year low of 6.16 million head in the most recent *Hogs & Pigs* report. Pigs per litter have also been relatively flat, suggesting dampened supply growth for the foreseeable future.

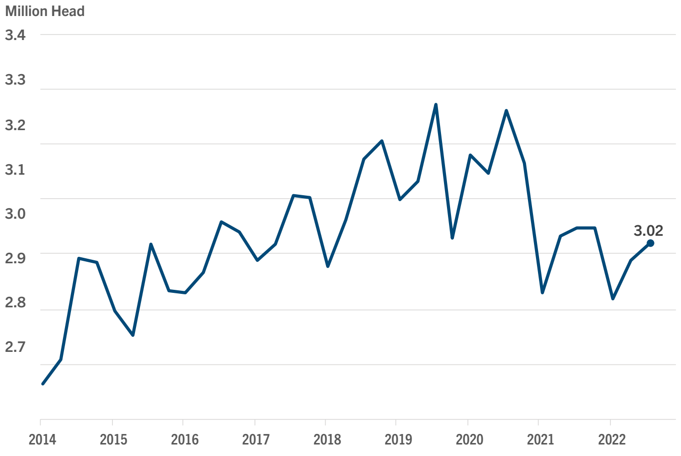
Hog prices typically peak in June then subside through the remainder of the year. However, tighter hog availability and improved processing led nearby lean hog futures to annual highs in August, topping out at $122/hundredweight (cwt). Prices have eased back towards $100 since then, a level well above typical seasonal highs, as strong consumer demand converges with expectations of tighter red meat supplies. Likewise, the pork cutout spent much of the most recent quarter above $120/cwt, about $50 above the five year average. While the cutout has seen universal support, hams (which make up about 25% of the cutout value) have been remarkably strong. We expect strong interest will continue through the holidays as buyers contend with lower turkey supplies.

With China rebuilding its domestic hog population following the 2018-19 African Swine Fever outbreak, opportunities for U.S. pork exports to China have become more limited: Through August, total pork exports are down 13% YoY. While U.S. pork shipments into China have declined, Mexico has picked up most of that volume. Shipments to most other destinations are steady, providing cautious optimism on the global front.

**1** **While the market is softening, pork prices have been remarkably strong** **this quarter with cash lean-hog prices topping $1.20/lb in early August.**

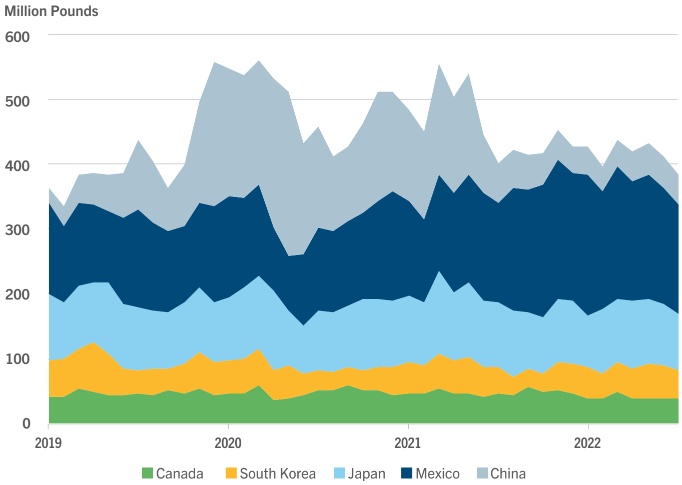
**2** **China continues to slow its pork imports,** **leading to a 13% reduction in total U.S. pork exports YTD, but Mexico has helped pick up some of those loses.**

**EXHIBIT 7: U.S. Quarterly Sows Farrowed**




*Source: USDA*

**EXHIBIT 8: U.S. Pork Exports to Major Destinations**




*Source: USDA*



# DAIRY

## Butter Prices Climb to Record Highs, Supporting Farmgate Milk Prices

*By Tanner Ehmke*

### Production

The U.S. dairy cow herd continued its gradual rebuilding last quarter with U.S. dairy farmers slowly adding more cows to the herd as milk prices hit historic highs. Producers, though, remain hobbled by high feed and labor costs and tight heifer availability, which is limiting herd growth despite positive margins.

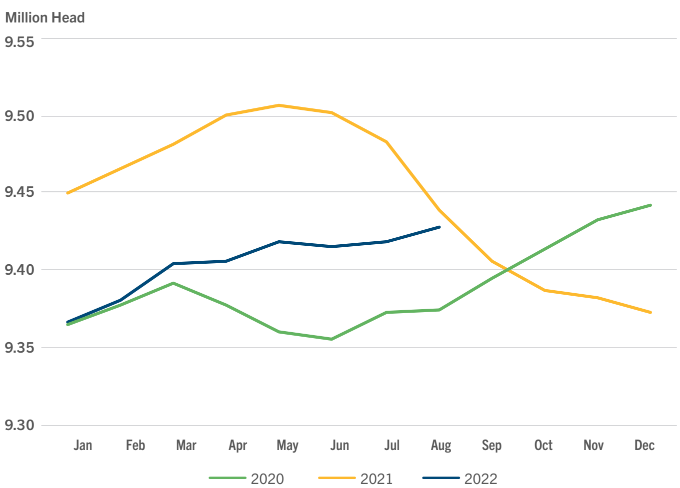
As of August, milk cow numbers in the U.S. totaled 9.427 million head, up 60,000 head YTD but still trailing year-ago levels by 11,000 head. Notably, the Texas dairy herd jumped by 30,000 head while South Dakota added 22,000 head, indicating that the U.S. dairy herd continues to migrate from coastal regions to central states where it is expanding. The national herd needs to add about 80,000 cows to eclipse the modern day record of 9.507 million head, which was set in May of 2021.

Producers continue to make advances in productivity, offsetting the slow herd growth and allowing total milk production to rise above year-ago levels. Milk collections in August tallied 19.0 billion lbs, up 1.6% YoY. Although production is up, milk supplies are still tight with domestic demand for dairy products holding strong and exports reaching a record clip. Because of ongoing strong demand and tight inventories, Class IV milk (used for butter and nonfat dry milk) posted a $4.00/cwt premium over Class III milk (used for cheese). Note that amid the pandemic in late 2020, Class IV milk traded at a $10.00/cwt discount to Class III, which illustrates the difficult task milk suppliers and manufacturers face in managing their hedging programs.

**1** **The U.S. dairy cow herd continues to show only incremental growth,** **hobbled by high feed and labor costs.**

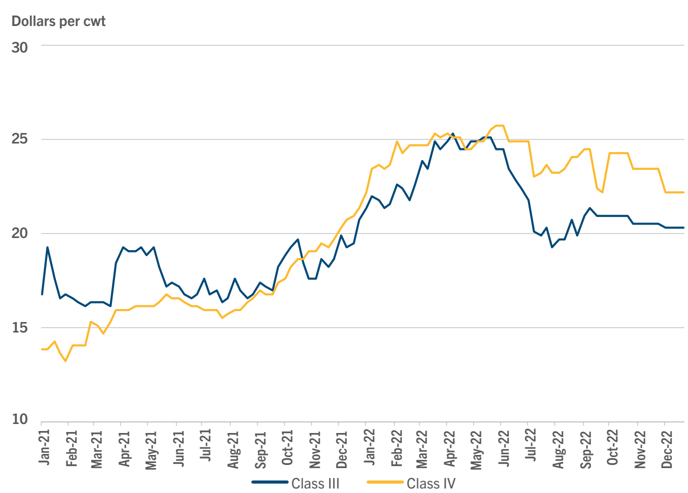
**2** **Class IV milk continues to hold a premium to Class III,** **elevated by rising butter prices.**

**EXHIBIT 1: U.S. Milk Cow Herd**




*Source: USDA-NASS*

**EXHIBIT 2: Class III & IV Milk Futures Curve**




*Source: CME Group; Barchart.com*

## Processing

The production hiccups happening in top-exporting New Zealand and Europe have tightened world supplies of dairy products, sending export demand to the U.S. The USDA has raised its forecast for U.S. dairy exports to a record $9.5 billion in 2022 despite a slowdown in Chinese purchases. Cheese exports in particular are moving at a record pace but still trailing the record pace of cheese production. At the end of August, 1.48 billion pounds of cheese were in cold storage, notably less than July's total as retailers build inventory for the upcoming holiday season. However, stocks were still 3.6% larger than a year ago and a record high for the month. Butter supplies remained extremely tight at 282.6 million pounds, down 22.1% YoY and the lowest for the month since 2017 when total use was nearly 10% lower.

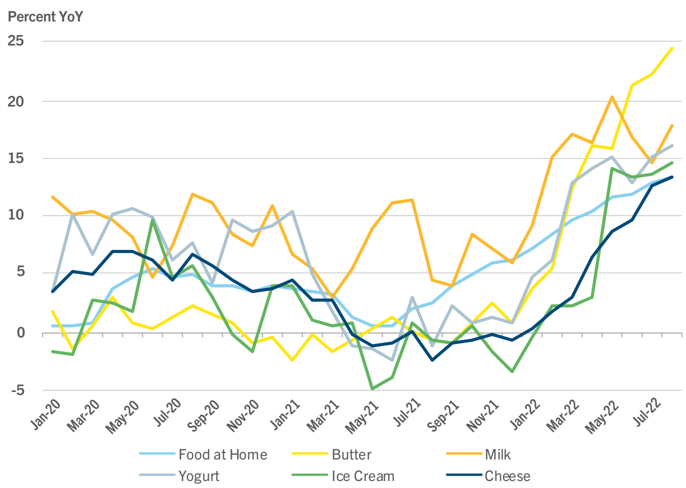
Butter prices charted record highs on the CME last quarter at $3.21/lb while Federal Order component prices showed butterfat reaching a new record of $3.40/lb. High butter prices are quickly being passed on to consumers with butter seeing the fastest price inflation in the dairy case at the grocery store. U.S. butter prices in September rose 32% YoY, according to the Bureau of Labor Statistics, compared to cheese prices that climbed 13% YoY. Price inflation for all food at home was also 13% YoY.

Although butter imports into the U.S. are record high, they are outpaced by the faster flow of exports. Canada and the Middle East have been notable destinations for U.S. butter as it continues to maintain price competitiveness to European butter on the export market. More greenfield butter processing capacity is slated to come online in Washington state – but not until 2024.

**3** **Butter prices notched new record highs last quarter.** High prices are likely through most of Q4, which is the peak usage season.

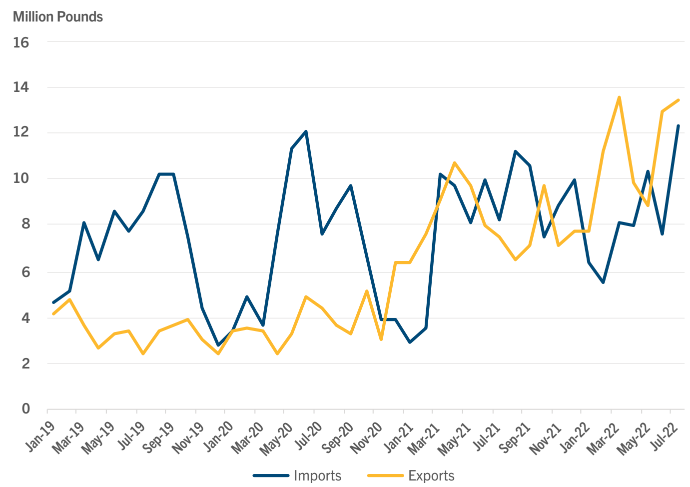
**4** **Prices for dairy products are outpacing other foods at the grocery store,** but is unlikely to stop consumers from buying dairy staples.

**EXHIBIT 3: Dairy Product Price Inflation**




*Source: BLS*

**EXHIBIT 4: U.S. Butter Trade**




*Source: USDA-ERS*

# COTTON, RICE AND SUGAR

## Cotton Prices Plummet, U.S. Rice Crop Smallest in Nearly 30 Years

*By Rob Fox*

*By Tanner Ehmke*

### Cotton

Heading into the fourth quarter, cotton prices are right where they began the year – about 90 cents/lb. However cotton remains one of the, if not the, most volatile and unpredictable of commodities. From January, prices marched steadily upward, peaking in mid-May at the $1.30/lb mark, before the global economic outlook sharply worsened. The corresponding broad-based commodity sell-off pulled futures down 25% in late June and early July in just 10 trading sessions.

Recognizing the catastrophic Texas crop conditions emerging on top of already tight global supplies, the cotton market got off the mat for another swing above $1.00/lb in August before finally capitulating in September. Central bankers across the globe are raising interest rates in unison in a grand experiment to put a halt to spiraling inflation, but the side effect will assuredly be a sharp reduction in demand for apparel and home furnishings. USDA projects global consumption of 119.0 million bales in marketing year (MY) 2022/23, just half a million bales below 2021/22, which seems wildly optimistic given the history of much sharper declines during global slowdowns.

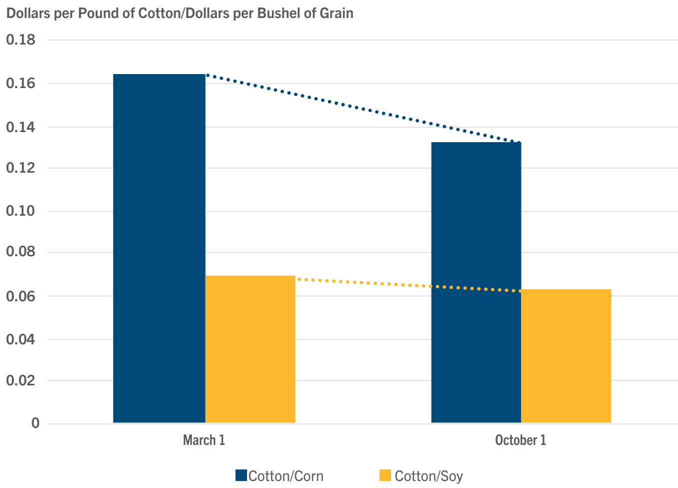
With harvest in most of the U.S. in full swing, further surprises on the supply side seem unlikely. The market is now focused on export sales and, beyond that, 2023 planted acreage. Since this spring when final 2022 planting decisions were made, cotton prices have deteriorated more significantly than corn and soybeans, which is to be expected

**1 Cotton prices collapsed** as worries about global macroeconomic conditions intensified.

**2 USDA is projecting record high U.S. rice prices** after the smallest harvest since 1993/1994.

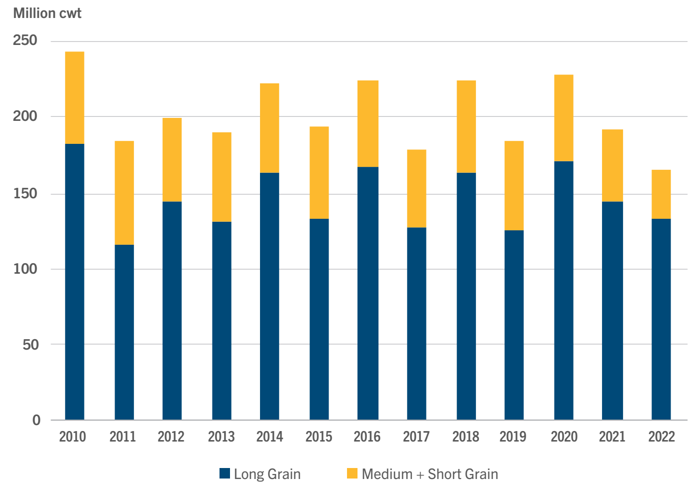
**EXHIBIT 1: Cotton Price Ratios Deteriorated in 2022**

December Futures Prices




*Source: USDA-ERS*

**EXHIBIT 2: U.S. Rice Production**




*Source: USDA-NASS*

amid a global economic downturn. Looking at current price ratios (Exhibit 1), we should definitely expect fewer planted U.S. cotton acres in 2023, perhaps less than 10 million for the first time since 2015.

## Rice

World and U.S. rice prices climbed last quarter after India – the world's largest rice exporter accounting for nearly 40% of world trade in MY 2021/22 – banned exports of broken rice and imposed a 20% export tariff on several varieties of white rice. Dry conditions during India's planting season earlier this year reduced acreage at a time of already high grain prices. Rising concerns of available supplies led world grain importers to lean more heavily on subsidized Indian exports. USDA reduced its export forecast for India by 2 MMT to 20 MMT as a result of the ban and tariff. India previously banned exports of wheat and wheat flour and imposed a cap on sugar exports.

In the U.S., USDA-NASS cut its estimate of the U.S. rice crop to its smallest level since 1993/94 on fewer acres and lower yields. All rice production fell by 10.9 million cwt to 165.1 million cwt in the September *Crop Production* report, with the average all-rice yield falling 41 lbs/acre to 7,586 lbs. With both world and U.S. supplies tightening, USDA raised its average rice price forecast to a record $19.40/cwt with increases for both the long-grain and the medium- and short-grain prices.

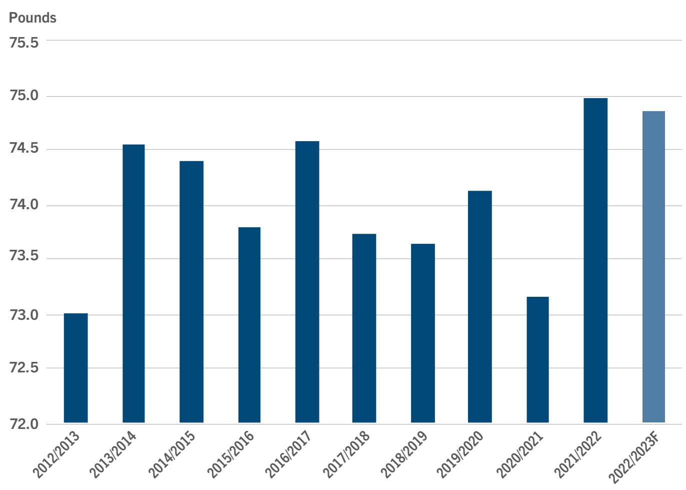
## Sugar

The Red River Valley sugarbeet harvest is nearing completion with both yields and extraction rates varying by location, but processors should have ample supplies assuming "normal" winter weather preserves beet conditions into early spring. New crop refined sugar is expected to be offered in the 40 cents/lb range, good by historic standards but well below record-setting wholesale prices as high as 70 cents/lb this summer. The Louisiana sugarcane crop is in excellent condition this year, particularly in relation to 2021 when Hurricane Ida caused lodging which hindered yield potential. Given the improved domestic sugarcane supply situation this fall, imports from Mexico may not be as large as USDA is projecting: 1.6 million short tons, raw value (STRV).

U.S. per capita sugar consumption hit a record high in fiscal year 2021/22 (Oct. 1-Sept. 30) at nearly 75 lbs, a 2.5% increase from the previous year. That comes despite record high wholesale prices. While still early to project 2022/23 consumption numbers, it would not be a surprise if moderating prices gave a boost to sugar use in food products and made domestic sweets and confections more price competitive overall.

**3** At nearly 75 lbs, **U.S. per capita sugar consumption hit a record high** in 2021/2022.

**EXHIBIT 3: U.S. Per Capita Sugar Consumption**




*Source: USDA-ERS Sweetener Market Data*

# SPECIALTY CROPS

## Water Levels Still Historically Low at Start of New Water Year

By Tanner Ehmke

### Water

Reservoirs feeding key specialty crop growing regions of the Western U.S. entered the new water year on Oct. 1 at historically low levels, implying another tight year for water allocations – irrespective of seniority in water rights. Lake Mead, the largest U.S. reservoir and water source for growers across much of the Southwestern U.S., is now at record low levels. Growers in New Mexico, Arizona, and other major produce-growing regions like California's Imperial Valley are bracing for reduced water allocations and increased fallowed acreage.

With a La Niña weather pattern possibly continuing into its third year, the precipitation outlook needed to raise reservoir levels across the West is dim. (La Niña typically means drier than normal conditions for the Western U.S.) More than 97% of California, which is the top specialty crops producer in the U.S., is currently in severe drought, according to the U.S. Drought Monitor. Drought conditions across the West are widely expected to continue with NOAA models projecting La Niña lasting into 2023. If this holds true, much of the western U.S. would face a third straight year of severe drought. The price of Nasdaq water futures continues to hold at record highs on low reservoir levels and an outlook for continued dryness into the new water year.

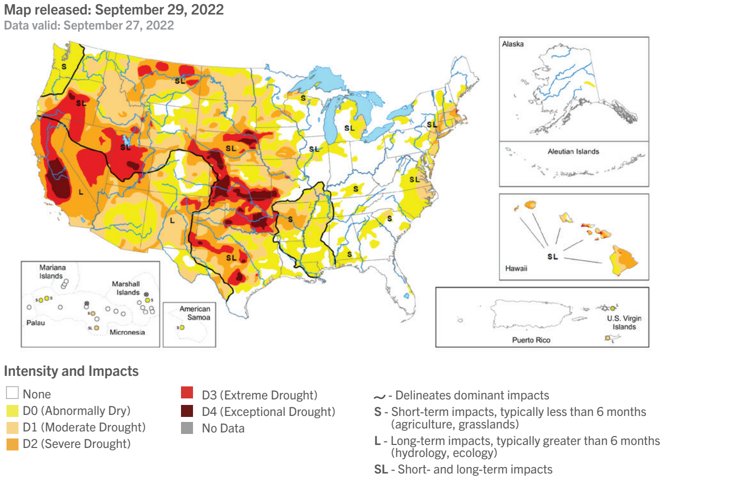
### Tree Nuts

A record carry-in of tree nuts from the 2021/22 crop year stemming from supply chain problems is weighing on nut prices as growers begin harvest of the new 2022/23 crop.

1 Western reservoirs are historically low at the start of new water year, **implying another tight year of water allocations for growers.**

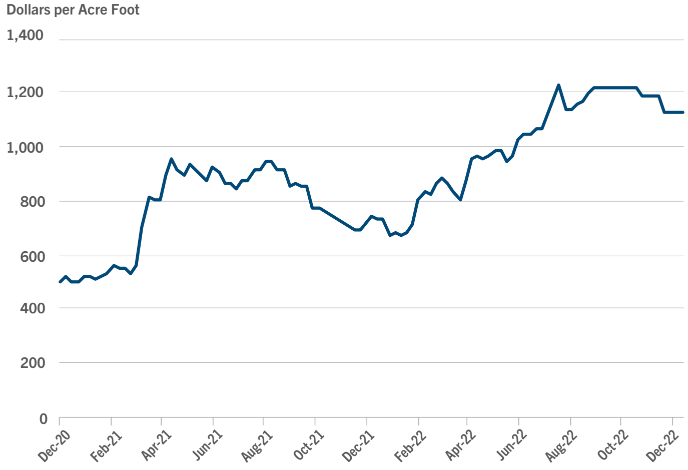
2 **Water prices continue to trade at historic highs** as the Western U.S. enters its third year of drought.

EXHIBIT 1: **U.S. Drought Monitor**




*Source: The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC.*

EXHIBIT 2: **Nasdaq Water Futures**




*Source: Nasdaq, Barchart.com*

Almonds in inventory heading into the new marketing year are record large at more than 800 million lbs, despite a record export pace in recent months. Supply chain bottlenecks in late 2021 and early 2022 left excess supplies at the end of the marketing year on July 31.

California's 2022 almond crop is expected to drop to 2.6 billion lbs this year, down 11% YoY due to drought and a February freeze during blooming. Although yields were the lowest in more than a decade, prices are slipping at harvest given the excess inventories. The strength of the U.S. dollar and a slowing global economy impairing global tree nut demand add to concerns.

USDA-NASS is also expecting California's walnut crop to be down 1% YoY at 720,000 tons as yields were also negatively impacted by freeze and drought, despite a 3% increase in bearing acres. However, some industry insiders believe USDA is being too conservative with its yield projections.

## Wine Grapes

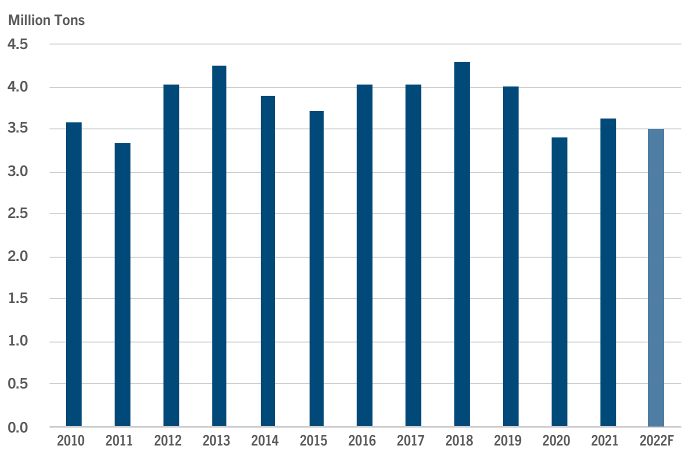
California's record-breaking heat over Labor Day expedited the wine grape harvest, cutting the season by two to three weeks and shrinking crop estimates. The heat wave was preceded by a killing frost in Northern California in the spring. USDA forecasts California's wine grape production at 3.50 million tons, down from 3.64 million in 2021.

Drought conditions typically lead to higher-quality wines due to higher skin-to-juice ratios. The heat wave, though, raised the sugar content in wine grapes, which could impact quality with sugar-to-acid ratios. Acids and aroma concentrations were likely not impacted by the heat. Thankfully, unlike last year, the 2022 vintage won't suffer from smoke taint from wildfires.

**3** **Tree nut supplies are ample** with record carry-in from the 2021/22 crop.

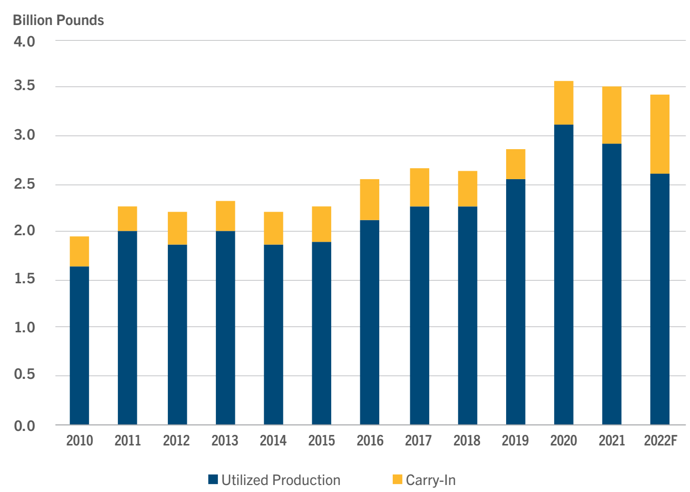
**4** **The California wine grape harvest is expected to be lower** YoY due to record heat and drought.

**EXHIBIT 3: California Wine Grape Production**




*Source: USDA-NASS*

**EXHIBIT 4: California Almond Production and Carry-In**




*Source: USDA-NASS; Almond Board of California*

# POWER, ENERGY AND WATER

## The U.S. is a "Gas Island" No More

*By Teri Viswanath*

**Over the past century, the U.S. has operated as a natural gas island, with domestic supply just sufficient to meet the nation's requirements.** International trade mostly took the form of cross-border pipeline balancing with Canada and Mexico. U.S. residential and commercial building owners, chemical manufacturers, and power plants (the predominant consumers of this fuel) have been the primary beneficiaries of the nation's world-class recoverable reserves, witnessing only brief periods of high prices – a boast that few industrialized nations can make.

In 2016, however, the 'islanding' effect for consumers in the "lower 48" began to change with the arrival of large liquefied natural gas (LNG) export facilities on the Gulf.[1] These Atlantic coastline behemoths formed the market equivalent of a land bridge to Europe, laying the groundwork for greater resource competition or globalization and the possibility of higher prices.[2] U.S. LNG capacity has since grown and the U.S. exports more LNG than any other country.

Since that original conversion of the Sabine Pass terminal in early 2016, six additional LNG export projects have been commissioned, totaling 13.8 billion cubic feet per day (Bcf/d) of capacity or slightly more than the average 13 Bcf/d demand by all U.S. residential consumers. By 2030, new export facilities could expand that capacity to just under 30 Bcf/d, which is roughly equivalent to the daily demand from all U.S. power

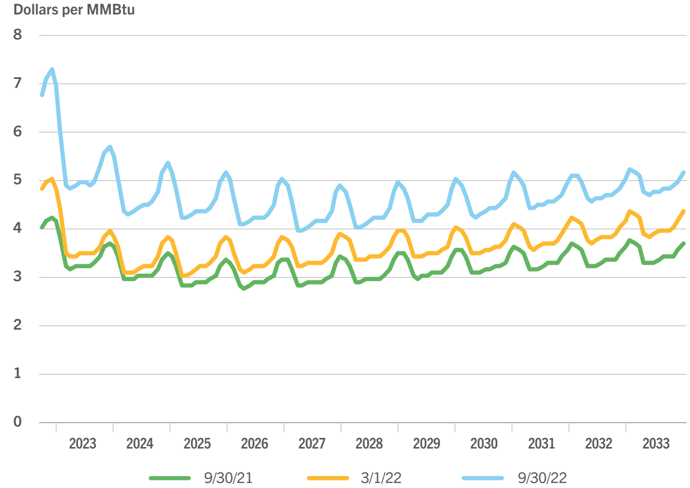
**1 It took the domestic power sector roughly 20 years to achieve the sort of demand growth that exports have achieved in just five.**

**2 LNG exports have converted the U.S. natural gas markets from a mostly captive pricing market to one at least partially exposed to world prices.**

**EXHIBIT 1: Henry Hub Natural Gas Spot Price**


*Source: U.S. Energy Information Agency, Thomson Reuters*

**EXHIBIT 2: U.S. Natural Gas Futures Curve**




*Source: CME*

plants, the largest domestic consuming sector. Theoretically, that should not pose a particular challenge from a supply perspective, given the enormity of U.S. production resources. Rather, it is the incremental demand that has been added in such an abbreviated time frame that will have producers scrambling to satisfy a soon-to-be crowded marketplace.

It took roughly 20 years for the domestic power sector to achieve the sort of demand growth that exports have achieved in just five. From a pricing perspective, LNG exports have converted the U.S. natural gas markets from a mostly captive market to one that is at least partially exposed to world prices. This influence was felt over the summer, as injection season prices rose from $3.30/MMBtu last year to $7.04 this year, but could potentially rise further in the event that stockpiles grow lean this winter. More importantly, however, the market has already priced in this global linkage, lifting the long-term range of natural gas prices from $3-$4/MMBtu to a $4-$5/MMBtu window.

3 **The "export effect" has lifted long-term domestic natural gas prices from $3-$4/MMBtu to a $4-$5/MMBtu window and possibly higher.**

[1] *LNG carriers have been transporting natural gas to global destinations since the late 1950s, starting with the Methane Pioneer – the world's first oceangoing LNG tanker- carrying a LNG cargo from the Louisiana coast to the United Kingdom in 1959. LNG exports did not resume from the continental U.S. until 2016, but another LNG export facility began operations in Alaska in 1969 and operated for several decades.*

[2] *From a shipping cost perspective, landed LNG to Europe from the U.S. makes the most economic sense. That said, most U.S. LNG went to Asia in 2021 because prices there averaged $18/MMBtu versus $16 in Europe. So far in 2022, the U.S. exported about 11 Bcf/d of gas as LNG with 7.5 Bcf/d, or 68%, going to Europe - where prices have averaged $33/MMBtu versus $29 in Asia. (Reuters, "Factbox: Could the U.S. ship more LNG to Europe?", July 2022.)*

# COMMUNICATIONS

## Fixed Wireless Gains Momentum While Smartphones Connect With Satellites

*By Jeff Johnston*

**T-Mobile and Verizon delivered outstanding fixed wireless results in Q3 at the expense of tier one MSOs (multiple system operators) Charter, Comcast, and Altice. T-Mobile and Verizon added 816,000 fixed wireless subscribers while the three MSOs failed to grow their subscriber base at all.**

Perhaps even more startling is the fact that over the last 20 years, Comcast has added at least 100,000 broadband subscribers every quarter, except for one during the financial crisis in 2009. T-Mobile and Verizon are offering aggressive fixed wireless pricing bundled with smartphone plans to pry subscribers away from cable.

Broadband operators located in smaller and/or rural cities could face competitive threats if the national operators decide to target these markets. Their fixed wireless market strategy is largely a function of where they have excess capacity in their networks. We do not see standalone fixed wireless operators as much of a threat to fixed line broadband operators as they don't have a smartphone bundle to offer, which dilutes their value proposition in markets where fixed line broadband already exists.

In other Q3 news, Apple announced its iPhone14 with limited satellite connectivity which could be a precursor to offering voice and enhanced data services nationwide when new satellites are deployed in a few years. Currently, the service is being offered free for the first two years and is limited to an SOS feature that connects users to first responders plus basic text messaging throughout Canada and the U.S.

Apple partnered with Globalstar, and the two plan to deploy next generation satellites by 2025 that we believe will increase network capacity and reduce latency. If so, the service would provide great utility for unserved rural Americans and could accelerate landline losses if it's priced competitively, which we believe it will be. Our rationale is based on the notion that Apple introduced satellite connectivity to (ultimately) increase its iPhone sales, therefore charging a high price for the service would be counter to this strategy. SpaceX and T-Mobile also announced they will begin beta testing a smartphone satellite service by the end of 2023 and that most of T-Mobile's phones will work with the service.

1 **T-Mobile and Verizon dominated the home broadband market in Q3,** adding 816,000 net subscribers.

2 **Cable operators Charter, Comcast and Altice failed to grow their subscriber base in the quarter,** ending a 20 year growth trend for Comcast.

3 **Apple's new iPhone14 launched with basic satellite connectivity,** bringing rural Americans one step closer to a connectivity option they've never had.

This quarterly update is prepared by the Knowledge Exchange Division and covers the key industries served by CoBank, including the agricultural markets and the rural infrastructure industries.

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**CoBank's Knowledge Exchange Division welcomes readers' comments and suggestions.
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