

Agriculture Implications of Russia's War on Ukraine

On February 24, 2022, Russia initiated a widespread invasion of Ukraine from both its' own territory and from Russian military units stationed in Belarus. Consequently, the United States and other countries retaliated by imposing financial and trade sanctions on both Russia and Belarus. The combined impacts of the invasion and sanctions have disrupted commercial air, rail, and ocean shipping from Ukraine and Russia and have heavily impacted international trade flows (e.g., agricultural commodities and fertilizers).

Ukraine and Russia are major global exporters of wheat, corn, barley, sunflower seed oil, and rapeseed oil. These commodities are used to produce food, animal feed, biofuels, and other industrial products. Many countries purchase Ukrainian and Russian wheat and barley, including Egypt and Turkey. Major importers of Ukrainian corn exports include the European Union (EU) and China,

among other countries. India, China, and the EU are major importers of Ukrainian sunflower seed oil. (See Figure 1 next page.)

Farmers in most countries apply a mixture of fertilizers rich in nitrogen, potassium, and phosphorus to increase crop yields.

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What's inside this Issue?

Agricultural and Trade Implications of Black Sea Region Conflict, Planting Intentions, Input Price Volatility, Conservation Policy, Market Summaries, and more!

USDA's 2022 Planting Intentions Survey and Market Reaction

According to USDA's Prospective Plantings survey, U.S. farmers intend for 2022 to be a record year for soybean planted acres. For the 2022/23 marketing year, soybean planted acres are estimated to rise to the highest number yet, with USDA indicating 91 million acres of soybeans will be planted in 2022. This would be a 4.4% increase from 2021, after a 4.6% increase from 2020 to 2021.



Successful Farming.

age is estimated to be 1.943 million acres, slightly down (1%) from 2021 plantings, while combined medium and short grain rice is estimated to be 509,000 acres, a decrease of 53,000 acres (9%). In the 2022/23 marketing year, USDA expects cotton planted acres to increase to 12.2 million acres, up 8.7% compared to 2021, when 11.2 million acres were planted. This estimate is close to planted acres in 2020.

Market reactions to the report's release, primarily due to the continued decline in intended corn acres, caused the corn September future price to jump more than 25 cents before settling 20 cents above opening price for the day, near \$7.00 per bushel. Soybean September future prices had the opposite reaction, falling 37 cents below the day's opening price to around \$14.74 per bushel. The wheat September future prices looked to rise ahead of the report's release, up to almost \$10.50 per bushel, before falling 39 cents below the opening day price to \$9.96 per bushel. Cotton October future price reacted positively to the news of increased planted acres and rose 1.6 cents for the day.

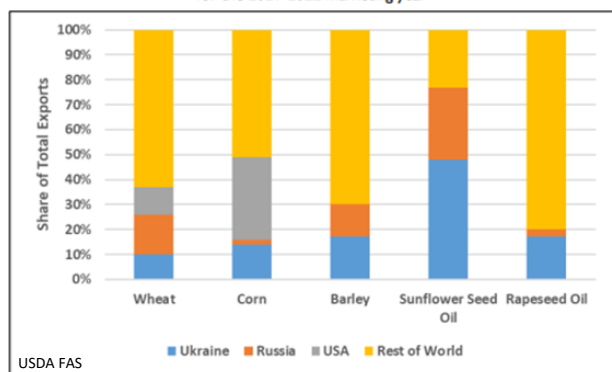
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Ukraine (cont.)

Russia and Belarus are the second- and third-largest producers of potash—the main ingredient in potassium-rich fertilizers. Russia also is a major producer and exporter of nitrogen fertilizers and phosphates. Many countries purchase fertilizer exports and raw materials for fertilizer production from Russia and Belarus, including Brazil, India, and the EU.

Daily U.S. wheat futures prices in early 2022 generally were higher than they had been for most of 2019- 2021 for a variety of reasons, including drought in the United States and Canada, increased demand from China and other countries, the continuing impacts of the Coronavirus Disease 2019 (COVID-19) pandemic, and other factors. These factors similarly affected daily futures prices for corn. After the Russian invasion, wheat prices increased to record high levels and corn prices increased.

Figure 1. Ukrainian, Russian, and U.S. Exports for Selected Agricultural Commodities for the 2021-2022 marketing year



Much of the planned wheat and corn exports from Ukraine and Russia for the 2021-2022 marketing year had been exported prior to the invasion. The war has diminished exports through the Black Sea, the major shipping route for both Ukrainian and Russian grain, although Russia maintains grain exports through the Caspian Sea. The majority of Ukrainian rapeseed and rapeseed oil exports for the 2021-2022 marketing year had been exported prior to the invasion, however exports of sunflower seed and related products have been impacted by port and processing facility closures.

Ukraine accounts for 16% of world corn and 12% of world wheat exports, and top wheat supplier Russia covers 17% of trade. Ukraine still has a good deal of its 2021 corn crop to ship and Russia has yet to plant 30% of its 2022 wheat crop. Ukraine and the United States are the lone world corn suppliers while Argentine and Brazilian crops are in progress. Although Ukraine's accumulated exports are up sharply from last year's thin season, the shipment stall comes at a bad time since there is still a lot of progress left.

In its March 2022 forecast issued after the Russian invasion, USDA projected that global use of wheat, corn, and oilseeds will increase, and end-of-year carryover stocks will decrease relative to prior marketing year levels. As a result, global stocks-to-use ratios will decline for the 2021-2022 marketing year relative to prior marketing year levels. Market prices tend to increase as stocks-to-use ratios decrease. USDA projected that Australia and India will expand wheat exports, the United States and India will expand corn exports, and Australia and Canada will expand barley exports. USDA also projected that some importers of sunflower seeds and oils may offset reduced supply of these commodities with additional purchases of other oil seeds.

New production of grains and oilseeds in 2022 will depend on planted acres and realized yields. Many countries grow wheat, corn,

and oilseeds. Annual planting times vary depending on the hemisphere, crop, and weather. Winter wheat varieties are planted in the fall and harvested late spring/early summer. Spring wheat varieties are planted in the spring and harvested in late summer. Plantings for 2022 winter wheat are complete for certain countries, including the United States and Ukraine. Plantings for 2022 spring wheat, corn, oilseeds, and other spring crops may begin as early as next month in the Northern Hemisphere. Farmers generally choose which crops to plant based on expected profitability. Historically, farmers have responded to high commodity prices by planting more acres of that commodity. Certain structural factors can limit farmers' abilities to switch between crops. For example, farms that specialize in growing corn and soybeans may not have the necessary equipment for planting wheat and barley. Crops may require different types of fertilizers to achieve optimal yields. Farmers may respond to high fertilizer prices by planting fewer total acres, adjusting the mix of crops planted, reducing fertilizer applications, and/or adjusting other farm practices.

Ukrainian Agriculture

Ukraine is a significant producer and exporter of agricultural products. In 2021, Ukraine exported more than \$27 billion in agricultural products to the world. Ukraine's top export markets were the European Union (EU-27) at \$7.6 billion, China at \$4.2 billion, India at \$2 billion, Egypt at \$1.5 billion and Turkey also at \$1.5 billion. These top five markets accounted for more than 60% of Ukraine's agricultural exports. Ukraine has six primary products with over a billion dollars in export sales: corn (\$5.8 billion), sunflower seed (\$5.7 billion), wheat (\$5.1 billion), rapeseed (\$1.7 billion), barley (\$1.3 billion) and sunflower meal (\$1.2 billion). Combined these top six products accounted for more than 77% of Ukraine's agricultural exports.

As the assault on Ukraine stretches on, the impacts to Ukraine's ability to produce the volume of tradeable commodities the global market has grown to depend on will become more significant. A substantial part of Ukraine's most productive agricultural land is in its eastern regions, exactly those parts most vulnerable to Russian attacks. The climate and soils of Ukraine have been likened to that of Kansas, Minnesota and North Dakota. And as with farmers in those states, farmers in Ukraine plant most crops in April and May, except wheat and rapeseed, which were planted in September and October and are now in the growth phase.

Not only will an ongoing war likely lead to fewer planted acres, but it is also likely to change the mix of crops that will be planted and harvested. With a heightened focus on feeding the Ukrainian people, it is likely that farmers will be encouraged to plant and harvest crop cereals intended for local consumption, rather than corn, sunflower seed and rapeseed for export.

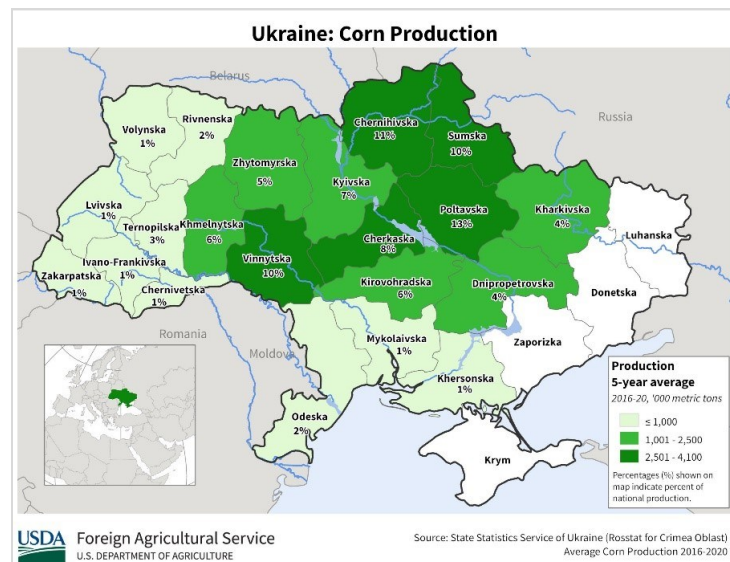
In the case of crops yet to be planted, as well as the wheat and rapeseed crops already in the ground, farmers will be challenged to find fuel for their machinery and fertilizer for their fields, which will likely reduce the total harvest on planted acres. It cannot be underscored enough that Ukrainians are under mortal threat; the situation goes well beyond disruptions to business as usual for Ukraine's farmers. Predicting what and how much will be planted by farmers living in daily fear for their lives feels insensitive, but a deeper understanding of Ukraine's top export crops can help explain the extreme market volatility of the last several weeks and potential risks to the larger world.

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Ukraine (cont.)

Corn

Ukraine is the world's seventh-largest producer and fourth-largest exporter of corn, responsible for 13% of global exports in the 2020/21 growing year. The crop is predominantly grown in the northern half of the country, with a concentration in the northeast, (including Chernihivska, Sumska and Poltavaska, visible on the map below) where approximately 35% of the country's corn is grown.



Ukraine exported more than \$5.8 billion in corn to the world in 2021. China (\$1.9 billion) and the EU-27 (\$1.8 billion) were the top two destinations for Ukrainian corn, accounting for more than 60% of corn exports. Ukrainian corn growers are trade dependent; over the 17/18 – 20/21 trade years an incredible 80% of Ukraine's corn production was exported. Despite similar growing seasons, Ukrainian corn is exported primarily between November and May, while U.S. corn exports are strongest between March and June. For the global market that means that relatively large stocks of trade year 21/22 Ukrainian corn remain stuck in-country after the closure of Ukraine's Black Sea ports. The March WASDE estimated Ukraine corn exports at 27.5 million metric tons. According to S&P Global Ukraine had exported 18.98 million mt as of February 23. This means that there are over 8.5 million mt still remaining to meet the USDA's export estimate for this marketing year. There has been discussion of utilizing Ukraine's state-run rail system to move the 8.5 million metric tons of Ukrainian corn to borders with Romania, Hungary, Slovakia and Poland, from where the grain can be delivered to ports and logistics hubs of European countries.

The Chinese and European markets are as reliant on Ukrainian corn imports as Ukrainian corn farmers are on those export markets. In 2019, the EU-27 imported \$4.6 billion in corn from the world, 63% of which was sourced from Ukraine. Brazil was a distant second, supplying 20% of the EU's corn market. In 2021, China imported nearly \$8 billion in corn from the world. The U.S. was China's largest supplier in 2021 with 70% of the market, but Ukraine was still a significant supplier. China imported 29% of its corn crop from Ukraine in 2021, valued at more than \$2.4 billion. In recent years, Ukraine commanded a larger share of China's corn imports. Over the 2016-2019 period, Ukraine's market share averaged 77%.

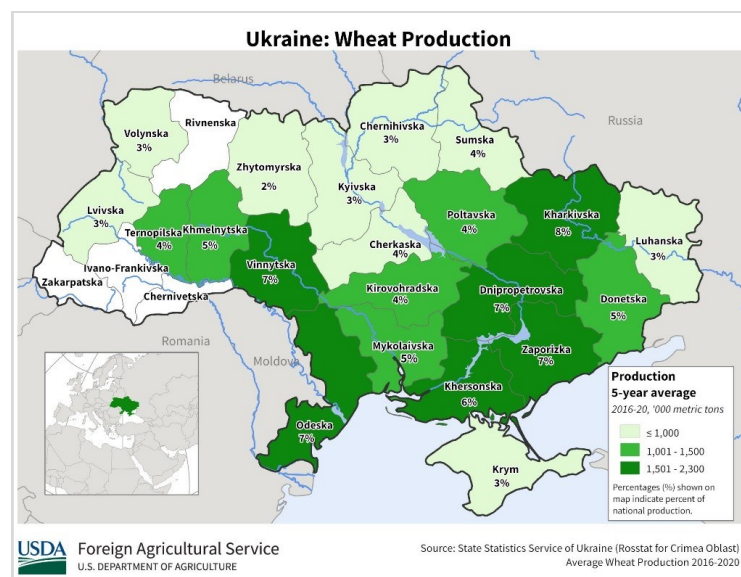
Wheat

Ukraine is the world's eighth-largest producer and sixth-largest exporter of wheat, responsible for 8.5% of global exports in the 2020/21 trade year. The crop is predominantly grown in the south-

ern/southeastern portions of the country. Ukraine's wheat growing season is like the winter wheat growing season in the United States, with planting occurring in September and October, growth throughout the winter and spring and harvest occurring in July and August.

Ukraine exported nearly \$5.1 billion in wheat to the world in 2021. Top destinations for Ukrainian wheat are completely different than that top destinations for Ukrainian corn. In 2021, the top destinations were Egypt (\$858 million), Indonesia (\$727 million), Turkey (\$445 million), Pakistan (\$353 million) and Morocco (\$232 million). These top five markets accounted for nearly 50% of Ukraine's wheat exports. Unlike the U.S. wheat export campaign, which is steady throughout the year, Ukrainian wheat is primarily exported between August and November.

In addition to the significant production and exports of wheat in Ukraine, Russia is an even larger supplier. In the 2020/21 trade year, 20% of the world's wheat exports came from Russia. Together, these two countries accounted for nearly 30% of the globe's wheat exports. Russia's export campaign is more like Ukraine, beginning in August, but stretching longer, into February. This means that both Ukraine and Russia have completed the bulk of their trade year 2021/22 wheat exports.



In response to Russia's invasion of Ukraine, several Western countries have introduced a series of measures to try to hobble the Russian economy. Many Western governments, including the United States, have imposed strict sanctions on Russian banks, elites and exports, and major international companies have suspended their Russian operations. In retaliation, on March 10, Russia announced a ban on exports of telecom, medical, auto, agricultural, electrical and tech equipment, as well as some forestry products, to about 48 countries that have "committed unfriendly actions" against Russia, including the U.S. and the EU, until the end of 2022. Russia exported more than \$7.1 billion in wheat to the world in 2021. While the export ban may be significant for some products, like fertilizer, which will be discussed below, only 6.2% of Russia's 2021 wheat exports were to countries "guilty" of committing "unfriendly actions." However, a few days later, on March 14, Russia announced a temporary ban on the export of wheat, rye, barley and corn to Eurasian Economic Union nations, which include Armenia, Belarus, Kazakhstan, and Kyrgyzstan, ex-Soviet countries. This temporary ban is significant because these four countries are all ex-Soviet countries, but only 4.1% of Russia's 2021 wheat exports were to the EEU.

Planting Intentions (cont.)

Despite increasing prices for wheat as a result of the war in Ukraine, total acreage for all classes for wheat will rise by just 1% this year to 47.4 million acres, which would be the fifth smallest number on record, according to the Prospective Plantings report released Thursday. Farmers actually expect to trim plantings of spring wheat varieties to 11.2 million acres, down 2% from a year ago.

On March 31, the CBOT Dec corn futures contract increased 4.2% on smaller-than-expected U.S. plantings, reaching a contract high of \$6.91 per bushel. That is an all-time high for the date, easily beating 2011's top of \$6.25-1/4. U.S. farmers reported 2022 corn acres at a four-year low, down 4% year-over-year. Recently, CBOT December corn futures climb above \$7.00 per bushel for the first time since 2012, though that mark was first hit in July that year. New-crop corn eclipsed the \$7.00-mark in 2008 and 2011, but not until June in both cases.

For corn, the supply picture continues to tighten for corn, and the market reflected this through increases in new crop prices. However, old crop prices continue to stagnate and are trading at the same price level or lower than they were a month ago. This suggests that end users are relatively current on needs and may be looking longer term but for now the market appears to have run out of friendly news on old crop. All attention will focus on Brazil's growing conditions for their second crop as well as Ukraine and then U.S. weather.

On soybeans, prices were sharply lower on a number that was really knee-buckling both in the acreage number, way at the top end of trade expectations, and indicating that even with just a trend line yield, we could have close to maybe 500 million bushel carryover. While the soybean acreage number in the U.S. means supplies may not be as tight as some expected, the fact the soybean acreage number came in high added a major weight to soybean prices.

While the market turns its focus to weather, commodity prices could be extremely sensitive to any weather issues this year. That's as the Western Corn Belt is already battling extreme dryness that is eating into the crop production picture.

Given the strength of soybean and cotton prices, and more recently improvements in corn prices, rice has a difficult road. Rice prices have improved to return to more competitive levels (similar to January and early February compared to other crops), but now fertilizer and fuel input price increases appear to be washing those gains away. California, impacted again by a major drought, proposed a \$2.9 billion plan to pay farmers to reduce some of their plantings to better manage water resources. The voluntary agreement negotiated

between government officials and some of the state's major water agencies is also aimed at protecting salmon and other wildlife and ecosystems. The agreement could leave as much as 35,000 acres of rice unplanted in the northern Central Valley growing region.

"Every crop in that region from rice and tomatoes and grapes to irrigated pasture for livestock and tree nuts like almonds, pistachios and walnuts are going to be affected by this," said Mike Wade, executive director of the California Farm Water Coalition in Sacramento. Rice is more flexible than some other crops for fallowing because it's not required to be irrigated every year, said Wade. California produces all of America's domestically grown sushi rice, he said.

The late-morning release of the annual USDA Prospective Plantings Report indicated U.S. producers plan to plant 12.234 million acres of cotton, up 9% annually, when a 12.0 million figure was anticipated by the industry. This result was not especially bearish, particularly when one considers the drought dominating much of the Texas cotton-growing region. However, when combined with today's outside market action in which crude oil and the equity indexes were down significantly, whereas the U.S. dollar turned higher, the cotton market decline wasn't surprising. The weekly export data will almost surely remain the key to price action in old-crop futures, whereas spring weather and the condition of the soon-to-be-planted 2022 crop will be the main drivers of moves in the new-crop contracts.

The new-crop gains in cotton futures probably reflected concurrent corn and grain market strength as much as anything else, especially if one believes the various crops are "bidding for acreage" at this point. With projected cotton plantings up only about 9% from spring 2021, despite nearby futures trading about 70% over the same levels reached one year ago, the market clearly wants to keep those acres in cotton.

Note: the first sugarcane harvested acreage estimate for 2022 will be available on June 30, 2022.



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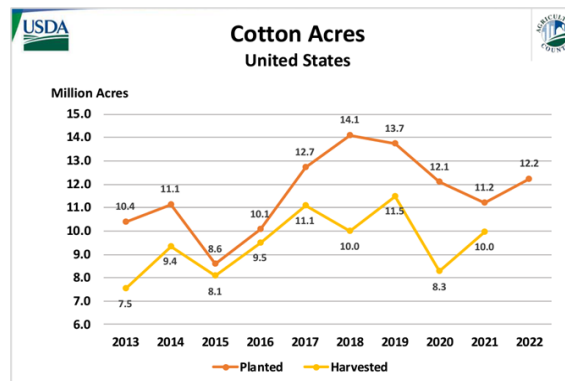
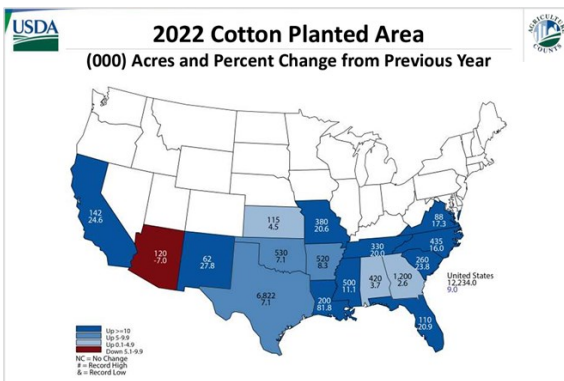
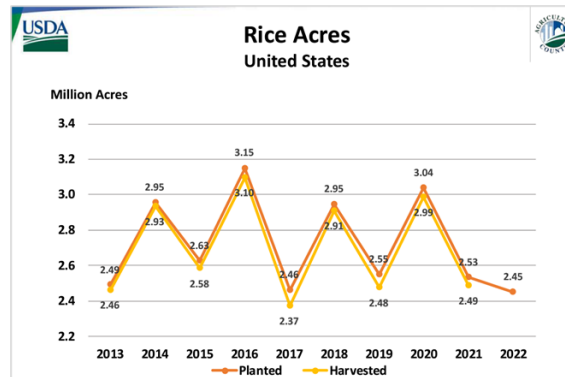
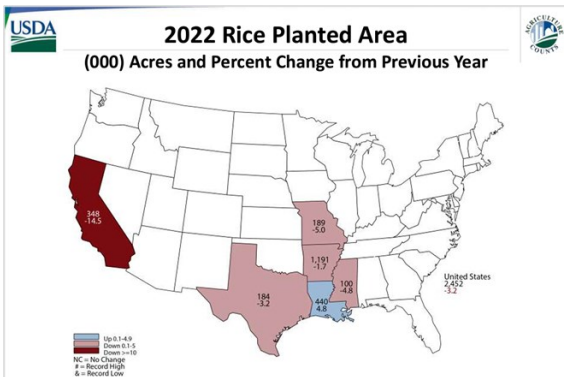
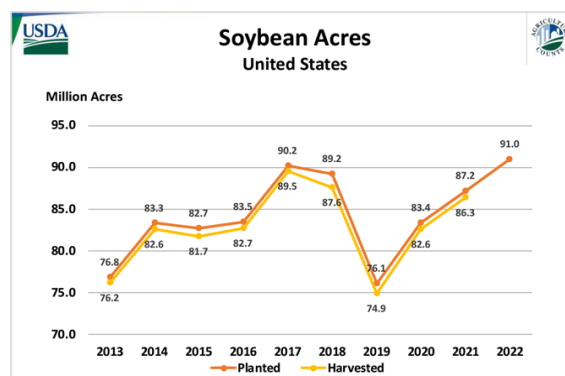
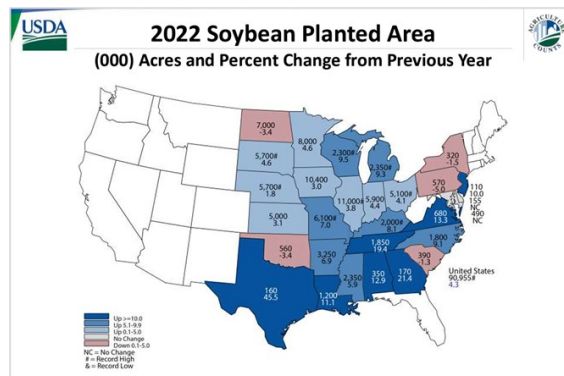
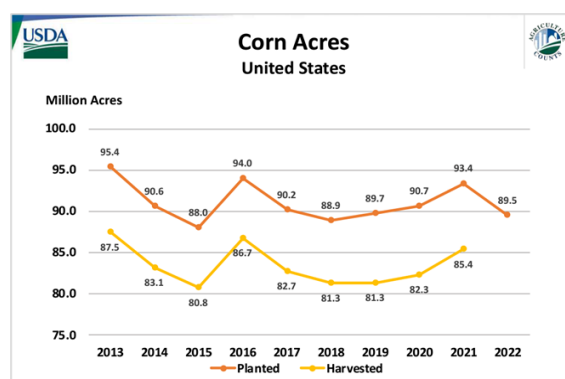
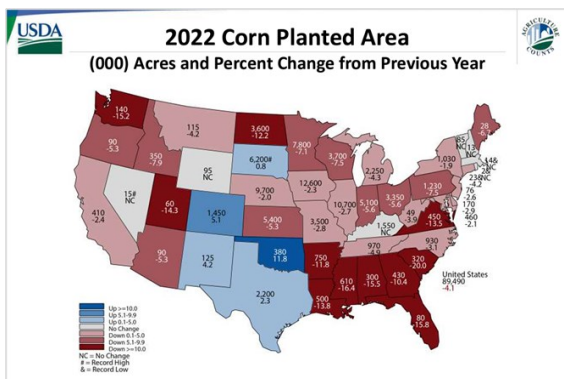
Principal Crops: Area Planted and Harvested - Louisiana and United States: 2021 and 2022

Crop	Louisiana			United States		
	2021	2022 ¹	Percent of previous year	2021	2022 ¹	Percent of previous year
	(1,000 acres)	(1,000 acres)	(percent)	(1,000 acres)	(1,000 acres)	(percent)
Corn	580.0	500.0	86	93,357.0	89,490.0	96
Cotton, upland	110.0	200.0	182	11,093.0	12,058.0	109
Hay, all ²	370.0	350.0	95	50,736.0	50,332.0	99
Rice, all	420.0	440.0	105	2,532.0	2,452.0	97
Long Grain	380.0	390.0	103	1,970.0	1,943.0	99
Medium Grain	40.0	50.0	125	526.0	483.0	92
Soybeans	1,080.0	1,200.0	111	87,195.0	90,955.0	104

¹ Intended plantings in 2022 as indicated by reports from producers.

² Intended area for harvest in 2022 as indicated by reports from producers.

Planting Intentions (cont.)



Crop Enterprise Budgets and Farm Management Tools for the 2022 Crop Year

The LSU AgCenter's enterprise budgets for corn, cotton, rice, sorghum, soybeans, sugarcane, and wheat are available at <https://lsuagcenter.com/topics/crops>. Once on the "Crops" landing page, please select the desired crop, and then the "Budget" icon to access the PDF documents.

Appreciation is extended to the Louisiana Soybean and Feed Grain Research and Promotion Board, the Louisiana State Support Committee of Cotton Incorporated, the Louisiana Rice Research Board, and the American Sugar Cane League for their support of this applied farm management research.

Fertilizer Prices Spike due to Russia Ukraine Conflict

Both fertilizer availability and price have been top concerns for farmers around the world for months. The Russian invasion of Ukraine has only complicated the situation for the already challenged global fertilizer market. Western sanctions and Russia's retaliatory export ban have taken Russia, a significant producer and exporter of fertilizer, out of many countries' markets. Russia is a major global player in all three nutrients that compose fertilizer: nitrogen, phosphate and potassium. Russia is the world's largest nitrogen exporter, supplying 16.5% of global nitrogen exports in 2018, the most recent year for which data is available. Russia is the world's third-largest phosphate exporter with a 12.7% share of global phosphate exports in 2018. Russia is the world's third-largest potassium exporter as well, supplying 16.5% of global potassium exports in 2018. Unlike the situation described above with respect to wheat and sunflower seed oil, Russia is a significant source of fertilizer imports for many of the countries on the "unfriendly" list. Fertilizer is a highly traded, global commodity. Forty-four percent of all fertilizer materials are exported. The division of the world's fertilizer importers, which are basically all countries that grow anything, into two groups – those that are "friendly" and those that are "unfriendly" – will make accessing fertilizer more expensive and more difficult.

The Ukraine-Russian war has exacerbated natural gas and nitrogen fertilizer concerns. Europe has a stated goal of reducing its reliance on natural gas from Russia. Russia is one of the largest holders of natural gas reserves, with Russia and Iran having over one-third of total reserves. However, transitioning away from Russian supply will result in higher natural gas prices in Europe. As a result, European production of nitrogen fertilizers will face a disadvantage relative to the U.S., where natural gas is more plentiful and already at lower prices.

Russia also is a significant producer of fertilizer ingredients, including nitrogen, accounting for 23% of ammonia exports. Russia has announced plans to restrict fertilizer exports, and sanctions against Russia could further heighten export barriers. Eliminating 23% of world-wide nitrogen exports will severely affect the nitrogen market. As a result, countries that rely on Russia will need to find alternative sources of nitrogen, including Brazil. Brazil imports 95% of its nitrogen fertilizers, with 21% of those imports coming from Russia.



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Russia's prominent influence on energy markets is quite well known. Russia is the world's third-largest oil producer, the second-largest crude oil exporter and the largest exporter of oil. Russia is the second-largest natural gas producer, after the U.S., the second-largest exporter of natural gas in gaseous state and the fifth-largest exporter of liquefied natural gas in 2019. Energy is big business to Russia. According to an article from The Associated Press states that before the invasion, Russian oil and gas made up more than a third of government revenues. To date, Russia's list of banned exports does not include energy products, but that does not mean Russia's energy exports have continued on unaffected. Because of Russia's invasion of Ukraine, many Western countries have sanctioned Russia's largest banks, its central bank and finance ministry, and moved to block certain financial institutions from the SWIFT messaging system for international payments, which has made Russia's trade of energy more difficult and expensive.

Fertilizer prices have been rising since 2020, reaching extremely high levels in the fall of 2021. Corn represents the crop with the single highest nitrogen use in North America (soybeans generally do not need additional nitrogen fertilizers, while wheat and other grasses would use nitrogen). As a result, increases in corn prices may signal increased demand for nitrogen fertilizers that pushes fertilizer prices higher. Natural gas is the major variable input in producing nitrogen fertilizers in North America and Europe. Other research has found that the relationship between nitrogen fertilizer and corn prices strengthens in the biofuels era.

Through October, farmer-paid prices can be attributed to the typical factors that cause corn and natural gas price rises. There are high correlations between corn, natural gas, ammonia prices, and most commodities, including crude oil. Up through October 2021, commodity price increases were responses to disruptions caused by the Covid pandemic and resulting price inflation. Large stimulus payments made by the Federal government also caused inflationary pressures. Anemic responses by the Federal Reserve Bank (FED) to combating inflation reinforced price inflation.

In October 2021, anhydrous ammonia far exceeded prices suggested by the traditional relationship between corn and natural gas prices, often by \$300 and \$400 per ton. Other factors are impacting those prices. U.S. ammonia production was reduced because of the planned maintenance of U.S. production plants and Hurricane Ida extending plant stoppages. During the summer, CF Industries, a North American nitrogen producer announced an antidumping petition for ammonia nitrate solution (UAN) against Russia and Trinidad and Tobago, potentially decreasing fertilizer supply and increasing price. Natural gas and ammonia prices outside the U.S. also played a role in the divergence. Fertilizer prices and supply likely will be more of an issue for upcoming crops than for the 2022 crop that will soon be planted in the U.S. Many farmers already have firm plans and made input purchases have been made for the 2022 crop in the U.S. Planning for the 2023 crop in the U.S. and other parts of the world will be difficult with uncertainty about nitrogen fertilizer prices and supplies.

Conservation Programs Funding Outpaces Producer Demand

Thousands of producers hoping to implement more conservation practices on their farms are lining up for government assistance through the Environmental Quality Incentives and Conservation Stewardship programs, as the Agriculture Department touts the promises of climate-smart agriculture as a mitigator of climate change. EQIP, bolstered in the 2018 Farm Bill with a 10-year budget increase of more than \$1 billion, was only able to accept 27% of the 33,701 farmers who applied for contracts in 2020, according to statistics compiled by the Institute for Agriculture and Trade Policy, an agricultural think tank. CSP, which actually saw its 10-year budget reduced by \$409 million in 2018, only awarded contracts to 25% of its 27,110 applicants in 2020.

Congress first established EQIP in the 1996 farm bill, merging other conservation programs that existed at the time. With a \$130 million budget, the program authorized NRCS to “provide technical assistance, cost-share payments, incentive payments and education” to producers who signed contracts promising to implement new environmental practices on their operations. Since then, the program has ballooned in size, using billions of dollars to offer producers one- to 10-year contracts for adding new farming techniques like cover crops, no-till and prescribed grazing, or for buying new fencing and irrigation equipment.

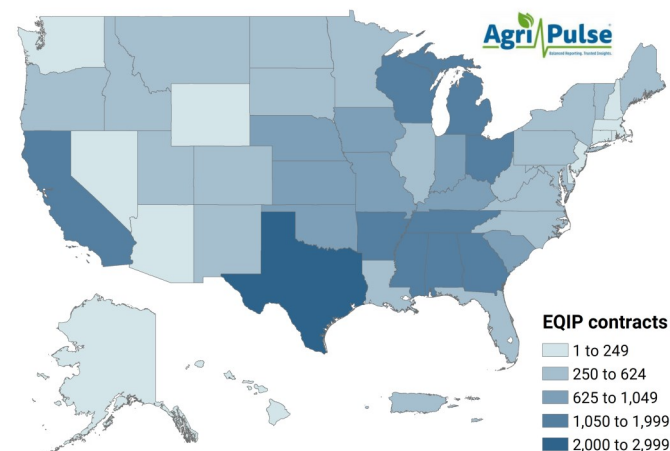
But this money needs to be allocated to all 50 states, while also following specific instructions laid out in the 2018 farm bill. Half of it needs to go toward livestock operations, at least 10% must be dedicated to wildlife habitat, and 10% toward source water protection. Another 10% is split evenly between socially disadvantaged farmers or ranchers and beginning farmers and ranchers.

Under NRCS’s current \$1.8 billion budget the agency is only able to fund about 25% of the applications that come into each state. The program’s allocations are projected to increase to a peak of \$2.2 billion by 2023, however, which should allow more producers access to the program. California and Texas were allocated the most EQIP funding in 2020. California’s NRCS office received \$121 million in 2020, which helped fund the 1,473 producers that signed contracts in the state. Texas, which signed 2,991 contracts with producers, was given \$120 million.

One EQIP contract, voluntarily entered into by farmers, can cover a certain practice or the purchase of certain items specific to that farm. Cover crops were by far the most popular practice used by farmers in the EQIP program in 2020, with 79,014 contracts being awarded to fund them. Nutrient management practices were covered by 22,415 contracts, while prescribed grazing, fencing and installing watering facilities were the focus of 17,224, 16,848 and 12,715 projects, respectively.

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Number of EQIP contracts awarded by state, 2020



U.S. Seasonal Farm Price Outlook

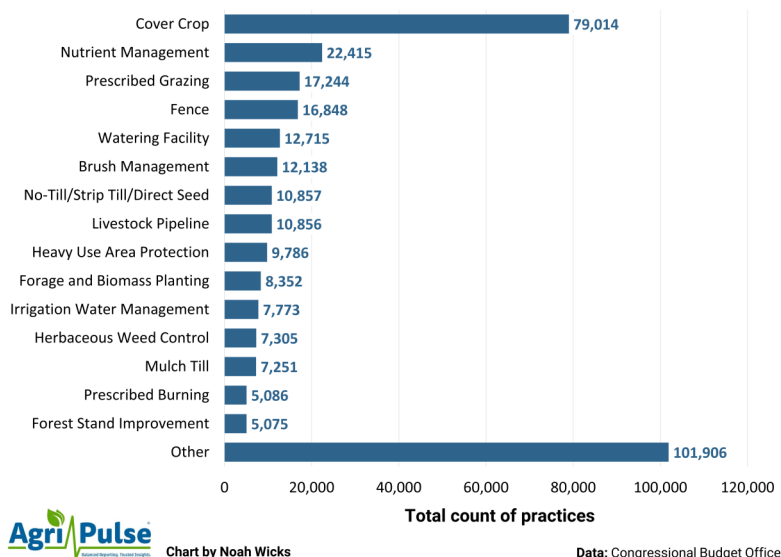
The following table represents national seasonal average farm prices (\$/unit), as per the USDA WASDE report.

Crop	2019/20	2020/21	2021/22	2021/22	2021/22
	Estimate	Estimate	February	March	April
Corn	\$3.56	\$4.53	\$5.45	\$5.65	\$5.80
Cotton	\$0.596	\$0.663	\$0.900	\$0.900	\$0.910
Rice (LG)	\$12.00	\$12.60	\$13.50	\$14.00	\$13.80
Rice (Southern MG)	\$11.60	\$13.00	\$13.90	\$14.40	\$14.00
Sorghum	\$3.34	\$5.04	\$5.45	\$5.80	\$5.85
Soybeans	\$8.57	\$10.80	\$13.00	\$13.25	\$13.25

Conservation Programs (cont.)

Producers can submit an EQIP application at any time, but to have a shot at securing timely funding, they must do so before state-specified cutoff dates. Their applications are then ranked by criteria developed by their state NRCS conservationist, with contracts going to the applications with the highest rankings. But EQIP's budget limitations leave many producers who already went through the often-lengthy process of applying – including some who already started working on their projects – without a contract.

Top EQIP conservation practices by count, 2020



CSP, which was created in the 2002 farm bill and then overhauled and renamed in 2008, is geared more toward producers who have already implemented some conservation practices in previous years and are looking to expand to using more.

The program typically requires a longer-term commitment than EQIP, with producers signing five-year contracts for not only maintaining conservation practices that have already been established, but for adopting new ones as well. While EQIP usually pays for one practice after it has been completed, CSP provides annual payments throughout the contract time period.

But the CSP's effectiveness has been a consistent point of debate during previous farm bills, with House Agriculture Committee members even proposing to eliminate the program in 2018. While the program was ultimately kept alive in the final version of the bill, it saw a decrease in its overall budget.

South Dakota, Arkansas, Mississippi and Minnesota received the most CSP funding in 2020. Over \$203 million was allocated to South Dakota that year for 90 contracts, while Mississippi-

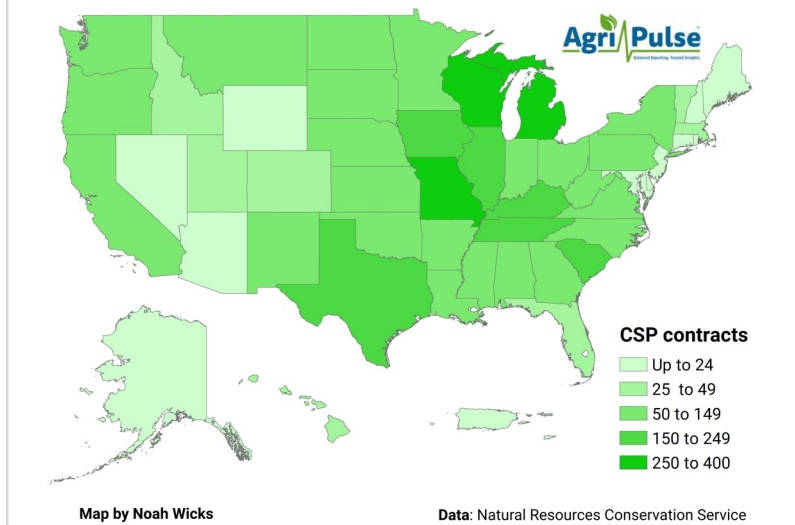
pi was given \$188 million for 114 contracts. Mississippi and Arkansas both received around \$170 million and had 114 and 101 contracts, respectively.

The Institute for Agriculture and Trade policy notes that expanding resources for CSP and EQIP are certainly not the only tools our food and farm system needs respond to the climate crisis. However, these programs can work in concert with other climate action policies, including stronger regulations on agriculture's major sources of emissions (dairy and hog CAFOs and synthetic fertilizers), reforms to commodity and insurance programs in the Farm Bill to support climate resilience, and deeper investments to support small and mid-sized producers contributing to local food systems.

What does this data mean for the immediate budget reconciliation process and the next Farm Bill? Perhaps the biggest takeaway is that there is intense demand for EQIP and CSP across the country, and that demand is not being met. There are some simple solutions to address this demand, some of which could be done without legislation. Other more lasting changes can be addressed now through budget reconciliation, and perhaps later through the 2023 Farm Bill.

EQIP and CSP are both intended to help farmers pay for environmental improvements on their farm. EQIP payments are intended for small, one-off projects like planting grass seed in waterways to prevent erosion, whereas CSP is intended to help pay for whole-farm projects, bundling projects together for broader aims like erosion control, water quality or wildlife habitat enhancement. Climate-focused farmers are perfect candidates for the whole-farm-focused CSP but are now often diverted to EQIP's new pilot program, or even to the broader EQIP program. This could be because in many locations EQIP is more well-known among farmers and USDA staff, or that it is a simpler program to administer. CSP is traditionally considered the next step for EQIP contract holders. While EQIP is considered a "one-and-done" cost share program, CSP is meant to work with farmers to implement larger conservation goals on their farm. Among these goals are cropland soil health/sustainability, fish and wildlife habitat, water quality and grazing land conservation.

Number of CSP contracts awarded by state, 2020



Crop Market Situation for the 2022 Marketing Year

The information that is presented in this market update reflects current information as of April 5, 2022.

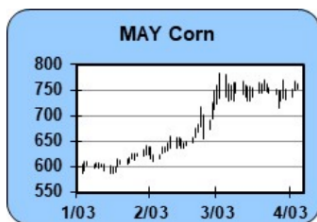
Corn

The most significant development currently affecting global feed grain markets in recent weeks has been Russia's recent military action in Ukraine. The conflict involves two major grain-producing and exporting countries. The events occurring in Ukraine have disrupted physical, logistical, human, and market assets in the Black Sea region—which is an important supplier of wheat, feed grains, and sunflower products to global markets. Russia's recent military action in Ukraine significantly increased the uncertainty of agricultural supply and demand conditions in the region and globally.

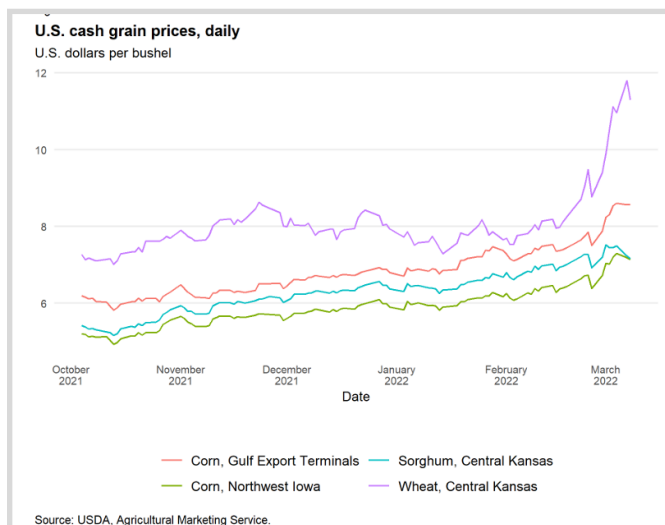
An issue of immediate concern is Ukraine's ability to export the remaining share of its 2021/22 grain harvest. There are at least three reasons why grain exports are projected to drop. The first is that the military action is expected to damage some of the stored grain—for example, there are reports of silos being hit by artillery fire. The second reason is that the Russian advance is harming physical Ukrainian infrastructure and the transportation of stored grain to the export ports on the Black Sea is becoming difficult or impossible. The third and most important reason is that the Black Sea ports have been closed and commercial shipping was all but suspended almost immediately after the beginning of the invasion. The insurance markets deem the Sea of Azov and the Black Sea (including waters close to Romania and Georgia) to be at high risk with soaring premiums. The ports themselves became the front line, with Russian ground forces and the Russian Navy blockading them.

The vast bulk of Ukraine's grain exports flow out of Black Sea ports. Lower projected exports mean more corn will remain in Ukraine. Half of

this grain is projected not to be exported at any time in the future, as some supplies either are destroyed or become unfit to use. The rest of this corn is projected to be stocked.



Domestic cash markets for feed grains in the United States have also increased substantially since the Russian military actions in Ukraine began. Daily bids for corn at U.S. Gulf Export terminals have increased to more than \$8.00 per bushel in March. Cash prices for corn and other feed grain markets have followed suit in many interior markets, as well. These new global market factors are now expected to be an important factor in the market outlook for 2021/22, as markets respond to changing developments occurring in Ukraine.

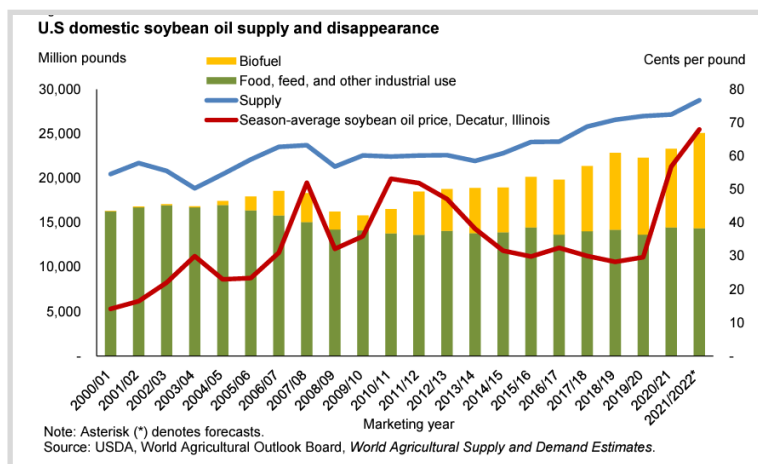


Soybeans

Global oilseed complex prices rallied during February due to the dry weather in South America and further reductions in soybean crops. The shrinking prospects for South American soybean crops have increased the value of U.S. soybean stocks. Despite these high soybean prices, soybean crush margins remain profitable for U.S. soybean crushers. With a lower supply of global sunflower seed oil, a modest increase in U.S. soybean oil export sales is anticipated. In response to tighter global vegetable oil markets, U.S. soybean oil prices rallied in February—Central Illinois prices reached 70.91 cents per pound. Consequently, the 2021/22 season average soybean oil price forecast increases to 68.0 cents per pound from 66.0 cents last month, which is 20 percent higher than the season-average price in 2020/21. In addition to vegetable oil prices that have been elevated since early 2021, volatility caused by the current interruption of sunflower seed oil supply in the Black Sea region may further ration demand of vegetable oils—particularly in the industrial sector.

In 2021/22, global stocks of the four major vegetable oils (palm, soybean, canola, and sunflower seed) are expected to decline to the lowest level of 21.94 million metric tons since 2016/17 as global oilseed crush has been reduced by 7 million metric tons. These tight vegetable oil stocks are the result of disappointing oilseed crops production between 2019 and 2021 in Canada, Europe, Russia, and Ukraine.

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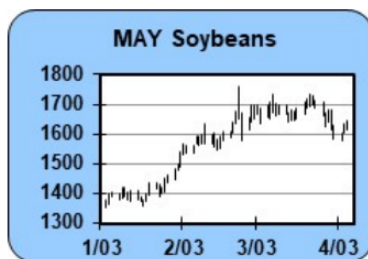
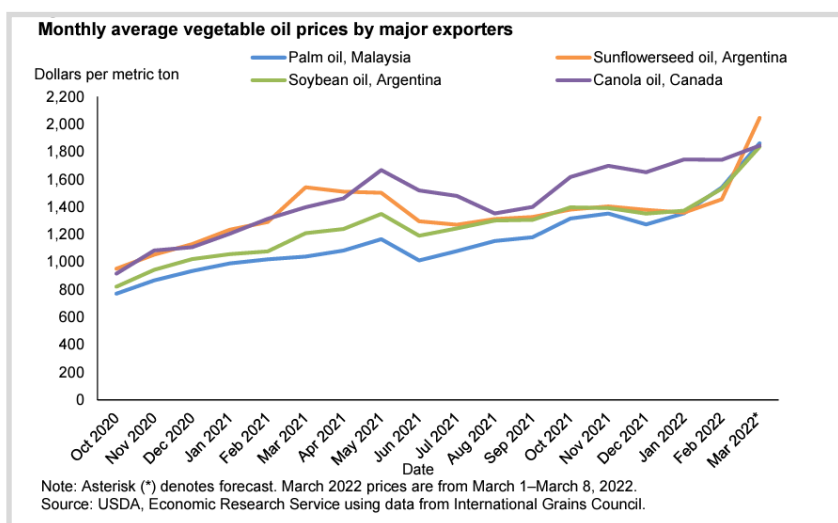
In-depth Crop Market Update (Cont.)

The information that is presented in this market update reflects current information as of April 5, 2022.

Soybeans (Cont'd)

Poor crops in South America have further extended run-ups in global vegetable oil prices. Volatility in vegetable oil prices has been compounded by the war in the Black Sea.

After the acreage report, soybean futures took a strong plunge, losing nearly 80 cents, while corn futures gained ground. Suddenly it looks more advantageous to produce corn, and consequently soybeans may be starting lose acres. If this is the case, November futures may be battling for acres, and this will occur through price appreciation. A great sense of reality out of Ukraine that the war will drag on and that crop production as well as commodity shipments will be anything but normal. This likely means increased demand for US soy oil but also other products such as meal and corn to fill the supply void left by the region. Crush margins remained favorable. Wet conditions in the delta region could limit planting progress. The technical picture begins to look friendlier, and now you may see more competition between November soybeans and December corn to secure acres. Beans are a high-priced commodity and currently, at least on paper, acreage will be up and that likely means an increase to projected carry out.



Dryness in South America further reduces soybean production as lack of rainfall in Rio Grande do Sul, Paraná, and Mato Grosso do Sul during February increased evaporative stress on soybean crops. These three major soybean-producing states have been experiencing severe drought conditions for the majority of the growing season.

Rice

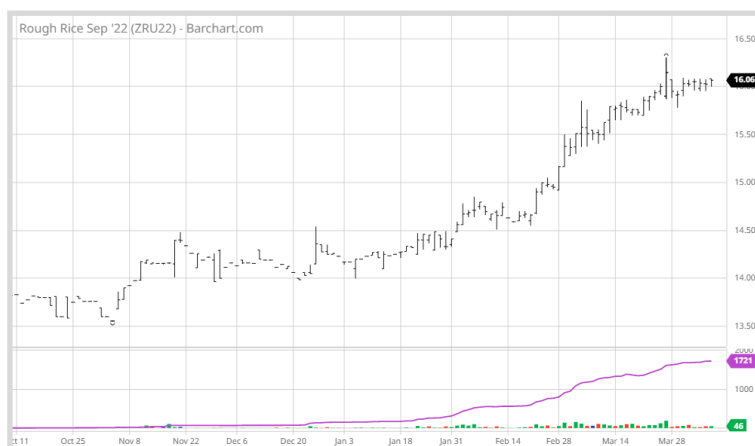
The key focal point for the crop markets was the March 31 Prospective Plantings. Ahead of the report, the average trade estimate for U.S. rice acres was 2.465 million. The actual total came in very close at 2.452 million. The rice market's reaction to the report was neutral with September 2022 rice closing a

half cent lower Thursday at \$16.025. Total 2022 rice acreage is projected to be down 3 percent or 80,000 acres, due mostly to a 60,000-acre reduction in California medium and short grain. At 2.45 million, this year's total U.S. rice acreage would be the lowest since 1987.

Rice production this year will shift to fields with the highest yield potential and most efficient water use. To complete the supply side of the new crop balance sheet, a carry-in of 21.4 and imports of 26 million give us a total supply that could be the tightest since 2019/20 at 190.1 million cwt. Lower production in 2022 and historically high U.S. rice prices point to lower exports and domestic use in the upcoming year.

The first USDA NASS Crop Progress report yesterday showed 12% of the crop planted nationally, versus the five-year average of 16%. The Texas crop was 43% planted, Louisiana was 49% planted, both a little behind their five-year averages. Arkansas is 2% planted, versus the average of 6%. Concerns about global food security, as well as uncertainty about U.S. planted acreage amid stiff competition from other crops, has been underpinning rice.

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USDA WASDE Report Release Dates for 2022

World Agricultural Supply and Demand Estimates (WASDE) Report: Jan. 12, Feb. 9, Mar. 9, Apr. 8, May 12, Jun. 10, Jul. 12, Aug. 12, Sep. 12, Oct. 12, Nov. 9, and Dec. 9.



In-depth Crop Market Update (Cont'd)

The information that is presented in this market update reflects current information as of April 5, 2022.

Rice (Cont'd)

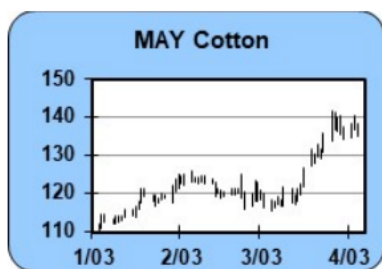
Rice futures remain in a broader sideways trend, and is at about the mid-point of its range over the past month, which is \$15.90 to \$16.25. The market has underlying support from concerns about global food security, although global rice supplies specifically are not especially tight.

Cotton

As for next season, the United States Department of Agriculture released its Prospective Plantings report on March 31, to little fanfare. The figure of 12.2 million acres was largely within market expectations but may not have captured the full impact of the rise in cotton futures from mid-March. In addition, the severe drought affecting West Texas renders large-scale abandonment increasingly likely, should significant precipitation not be received before the planting window opens. Hence, the outlook for US production in 2022/23 remains subject to considerable change.

Modest U.S. cotton supplies early in the season, harvest delays, and logistical issues disrupted normal seasonal shipping patterns this year. Through the first 7 months of 2021/22, U.S. cotton exports totaled only 5.8 million bales, or 39 percent of this season's forecast. However, shipments trended higher in recent weeks and are expected to remain strong through the end of the season. Nevertheless, U.S. cotton exports are forecast 10 percent lower in 2021/22 at 14.75 million bales. Global cotton import demand is also projected to decrease in 2021/22, with exports by Brazil and India—the second and third largest exporters—likewise expected lower. Based on the 2021/22 export projection, the U.S. share of global trade is forecast at 32 percent, compared with the 3-year average near 35.5 percent.

The relationship between Chinese and international prices (as measured by comparing the CC Index with the A Index adjusted to local terms) underwent a transformation during March. Whereas for many months the latter value had traded at a significant discount to Chinese offering rates, late in the month that dynamic was reversed, and by March 31 import offers had moved to an equivalent premium of almost 11 US cents per lb.



That being said, China continued to appear as the major destination in US export sales reports released during March. Net additions to the overall commitment remained robust, and by mid-month had already exceeded Washington's projection for the season (14.75 million statistical bales of 480 lbs). Shipments maintained the improvement observed since late January and registered a marketing-year high in the week ended March 17. However, with that exception, export numbers were well behind the average required to meet USDA's projection.

Cotton prices were negatively affected by the outbreak of Russia/Ukraine war, and there may be implications for planting. While cotton prices remain high and attractive by historical standards, recent increases in prices for other crops may have eroded cotton's favorable position. A result

could be that cotton acreage may not increase as much as was forecast just a few weeks ago.

Other major commodities that experienced significant volatility relate to energy. Natural gas is a key export from Russia, and gas prices were already high before the conflict. Natural gas is also an ingredient for (Nitrogen) fertilizer production. Fertilizer prices were high before the conflict. With the conflict, those prices can be expected to remain high, and availability may be limited. High fertilizer prices and reductions in availability will affect all crops and may lower yields if supplies are rationed.

Oil is another energy-related commodity that has experienced significant volatility. Current oil prices near \$130/barrel (Brent) are almost double the average from December (\$74/barrel). Higher oil prices may eventually extend pressure on polyester prices, but a greater effect on the cotton market could come from consumer demand. The use of oil and natural gas for heating, electricity generation, and transportation is essential for the functioning of economies and households around the world.

Substitute sources of energy are not immediately available in most cases. This means that cost increases for energy will be passed on, and strains on budgets for energy-related necessities may divert spending away from more discretionary items like clothing and home furnishings. In addition, fear of the war's spread may cause consumers to pull back on overall spending and increase savings.

Any global pullback in spending could lower cotton demand and economic growth. Before the war, economies around the world were already set to face challenges from inflation, the withdrawal of stimulus, and increases in interest rates.

In-depth Crop Market Update (Cont.)

The information that is presented in this market update reflects current information as of April 5, 2022.

Sugar

While the market impacts of the Russian-Ukraine conflict on sugar are not yet as significant as with other commodities, the dynamics between the U.S. and world sugar prices can be influenced via crude oil prices and trade bans. World raw sugar futures tend to follow crude oil prices, which have climbed sharply since the conflict started. Brazil, the biggest world sugar producer, announced that its state-controlled oil company (Petrobras) has raised gasoline and diesel fuel prices, as of March 10th. This move can incentivize Brazilian mills to divert sugar for exports into ethanol production.

Also on March 10th, in retaliation for Western sanctions, Russia announced export bans for some goods and agricultural commodities including sugar exports to certain countries. Both events can initiate a bullish effect. If world prices continue to rise, U.S. prices particularly for raw cane sugar—already on a twelve-year high—may follow suit to attract sugar imports.

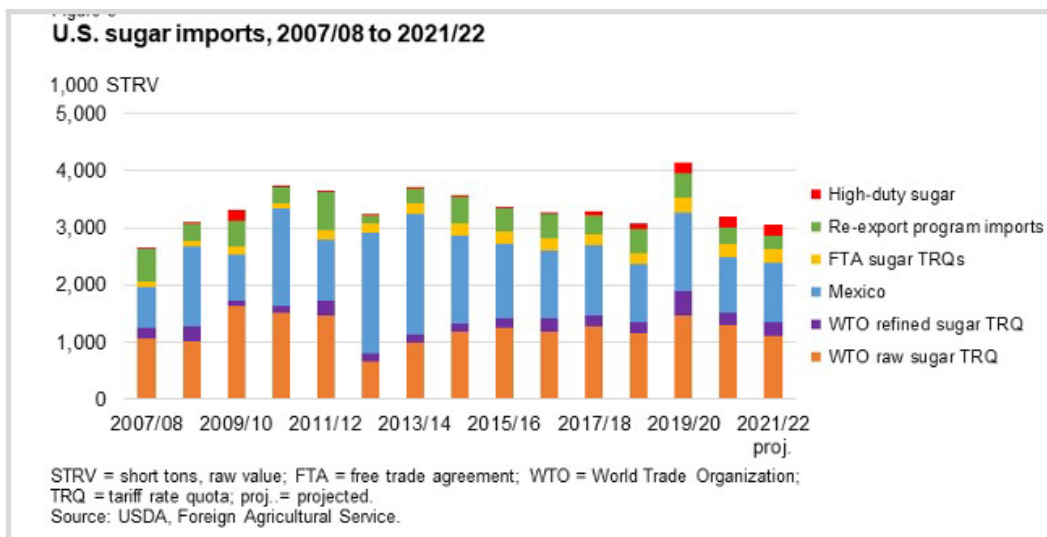
Beet sugar production is reduced 12,183 STRV to 5.389 million on lower sucrose extraction and larger beet pile shrink reported by the processors on the USDA, Farm Service Agency's (FSA) Sweetener Market Data (SMD). Still, if realized, this level will surpass the prior record high, for both crop year and fiscal year production, achieved in 2017/18. The USDA's National Agricultural Statistics Service (NASS) has no update on sugar beet production data on its March Crop Production report. Data from the SMD report show that processors' sugar extraction from sliced beets through January is 14.81 percent, which is above the 10-year average.

NASS updated sugarcane production forecasts in its March Crop Production report. Since the changes were minimal, cane sugar production estimates this month are largely based on the latest information provided by processors in the SMD. Florida cane sugar production is lowered 45,059 STRV to 1.960 million, which incorporated the effect of the late January freeze to the crop. Louisiana cane sugar production is unchanged at 1.906 million STRV, as the harvest campaign concluded in January and expected September 2022 production remains in line with recent average. Texas is also unchanged at 130,000 STRV. The State's production through January continues to lag the normal pace due to the unusually wet season that has delayed harvest schedule by as much as 60 days. The Texan processor indicated that plans have been made to extend the campaign through mid-April to make up for the lost time.

Total imports for 2021/22 are up 31,091 STRV to 3.043 million. This projection is 152,000 STRV less than 2020/21 and would still be the lowest since 2008/09 absent any action to increase minimum trade quotas or Mexican import access. Based on the terms of the Suspension Agreements, the Export Limit calculated by the U.S. Department of Commerce (DOC) later in March is expected to be 1.037 million STRV, about 14,500 tons lower than last month's 1.052 million. While the expected volume of total imports is historically on the low side, 2021/22 accumulated imports (October 1st to February 28nd) are 238,431 STRV higher than at the same time last year. This suggests that 50 percent of the total expected imports have already been entered during the first 4 months of the fiscal year, which is the strongest since 2016/17.

High-tier imports is responsive to the price differentials between the U.S. and the world futures markets, and to the logistical and transportation costs. Based on the No. 16 and No. 11 sugar futures as of March 10th, the margin between the domestic and world raw cane prices is between 16.45 to 17.50 cents per pound through the November contract. This is below 18.61 cents per pound, the level at which high-tier raw sugar imports would be economical (assuming a 3.25cent per pound marketing cost on top of the 15.36-cent tariff). Refined high-tier imports can be a viable option depending on which U.S. refined priced is used. The price divergence between Northeast refined cane and Midwest refined beet sugar has widened since October 2020. In general, if the margin between the U.S. and world refined sugar price is greater than 22.4 cents per pound (assuming a 6.1-cent per pound marketing cost on top of the 16.3-cent per pound tariff), then high-tier refined sugar is feasible. Given the nearby quotes for U.S. refined cane sugar and world refined sugar of around 52 cents and 24 cents, respectively, the margin would be around 28 cents per pound, which exceed the cost of importing high-tier sugar (22.4 cents per pound).

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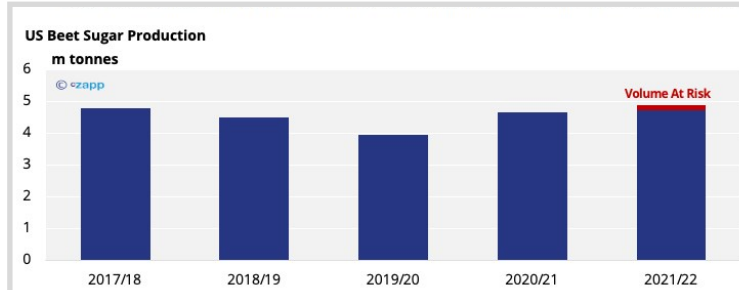
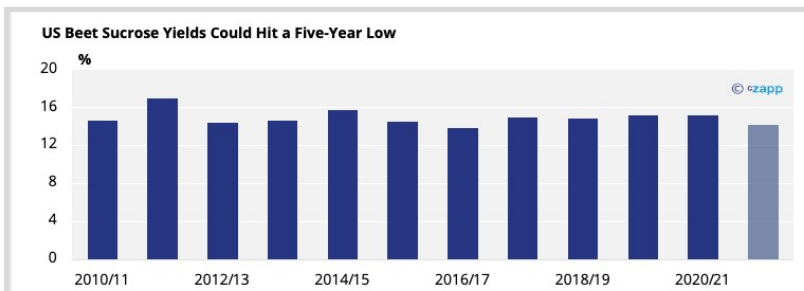
In-depth Crop Market Update (Cont.)

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Sugar Cont'd

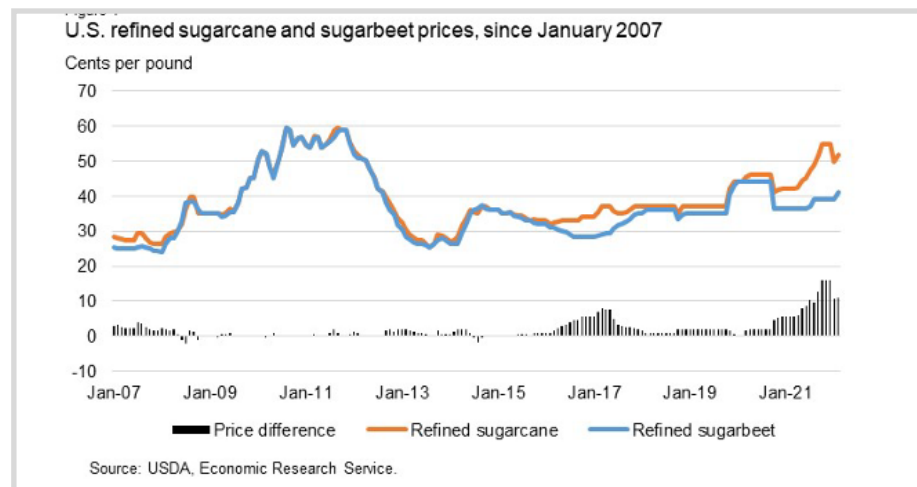
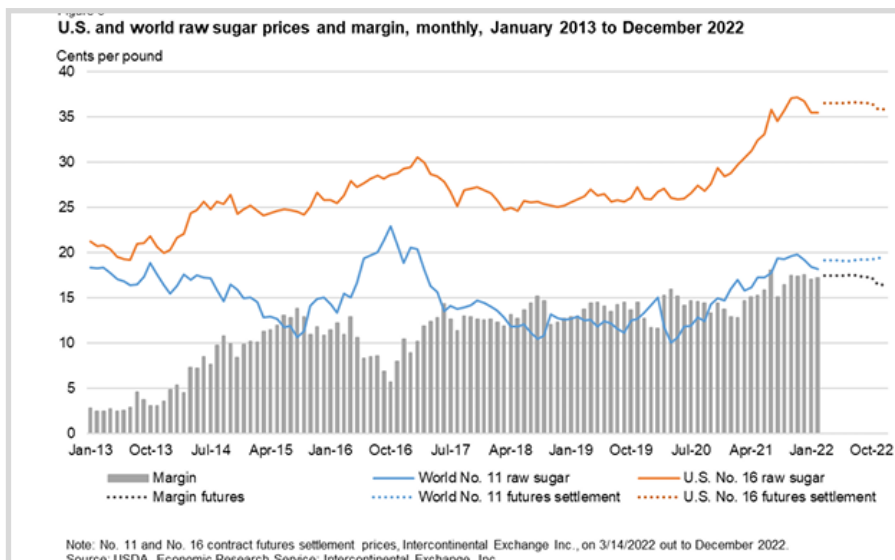
US beet sucrose yields could hit a five-year low following heavy rain post harvest. There's talk of at least a 150k ton deficit in expected production. The USDA may increase Mexico's import quota, but any shipments wouldn't arrive for several months. Heavy rains have weakened US sugarbeet yields. As such, beet sucrose yields could drop to 14.12% in the US, a five-year low. Heavy rains have diluted the sucrose content for beet harvested towards the end of the crop. Harvested beet is stored outside before it's processed (sliced), leaving it exposed to wet weather.

If sugarbeet yields do drop, the US should produce 4.71m tons of sugar this season, down 150-200k tons from our current estimate. Some in the trade think the USDA will expand sugar import quotas if yields are indeed low. These imports would likely come from Mexico as they hold first refusal for additional demand. Most of this would enter as raw sugar to be refined, with a small amount entering as refined.



In the recently released USDA April WASDE report, U.S. sugar supply for 2021/22 is decreased 60,343 STRV as decreases in sugar production are only mildly offset by an increase in high-tier tariff imports. Beet sugar production is decreased by 50,670 STRV to 5,338,098. About half of the reduction is attributable to lower production expected out of Michigan due to increased beet pile shrink reported by processors this month and fewer sugarbeets imported from Canada for processing than originally expected. With production in the Red River Valley region expected

to run unusually long into the first week of June, production is reduced marginally to reflect increased risk to sugarbeets stored in increasingly warmer conditions. Also, production in California is expected to be slightly lower than originally forecast. Beet campaigns in the Pacific Northwest and Great Plains are planned to be over by the date of the April WASDE and their production estimates made in late March have been incorporated into projected beet sugar production. Florida sugar production is decreased 22,335 STRV to 1,937,235 based on lower sucrose recovery from processors' continuing analyses of the effect of late January freezes on the crop. Texas sugar production is reduced by 2,000 STRV to 128,000 based on processor reporting. High-tier tariff imports are increased by 14,662 STRV on recorded entries of raw sugar in the first two months of 2022. Projected high-tier tariff imports of refined sugar are unchanged from last month. U.S. sugar deliveries for human consumption are increased by 65,000 STRV to 12,365,000 based on strong to-date deliveries by beet processors and on higher-than-expected direct consumption imports through the end of February.



Ukraine and Russia together account for more than a quarter of the global trade in wheat, as well as a fifth of corn sales. Prices for those staple crops are soaring on concerns over supply disruptions at a time when global food prices have already reached record highs. The threat to wheat supplies from Russia's invasion of Ukraine has been exacerbated by a shift in global stocks away from major exporters such as the U.S. and the EU. This undermines their effectiveness as a cushion in times of crisis. U.S. wheat futures rose to a 14-year high on March 3rd as importers scrambled for supplies following the closure of ports in Ukraine and disruption to supplies from Russia. The two countries account for about 29% of global wheat exports.

The invasion may not directly impact U.S. supply chains, but it will likely disrupt specific sectors, commodities and products as well as create uncertainty, which typically leads to market volatility. Futures grain markets, from wheat to grains for livestock feed, will likely be affected most by the invasion. China announced it is open to grain shipments from Russia. This would provide an outlet for Russian grain sales and help China meet its grain import needs. Much like what happened during the tariff war between the U.S. and China, trade alliances and flows may shift. Ukraine and Russia will have very little direct impact on U.S. protein markets, but the conflict could impact some trade sectors indirectly, including protein production. China, the world's biggest importer of corn and soybeans and one of the top buyers of wheat, is moving to secure essential supplies in global markets, helping push prices even higher.



A group of growers inquired about a quarterly newsletter being delivered to them containing relevant market news and agricultural policy events. As a result, this publication will be delivered electronically per the release schedule. Please contact Dr. Mike Deliberto at mdeliberto@agcenter.lsu.edu to be added to the email distribution list. As always, subscription is free of charge.

Quarter	Reporting Period	Release Date
1	January 1 through March 31	April 15
2	April 1 through June 30	July 15
3	July 1 through September 30	October 15
4	October 1 through December 31	January 15

