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INSIGHT

Russia's Invasion of Ukraine: Implications for Agricultural Trade and Production

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On February 24, 2022, Russia initiated a widespread invasion of Ukrainian territory, including Russian attacks from forces deployed in Belarus. In response to the invasion, the United States and other countries imposed financial and trade sanctions on 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 impacted international trade patterns, including for certain agricultural commodities and fertilizers.

For more on U.S. and allied responses to Russia's invasion, see CRS Insight IN11869, *Russia's Invasion of Ukraine: Overview of U.S. and International Sanctions and Other Responses* and CRS Insight IN11871, *Russia's Invasion of Ukraine: New Financial and Trade Sanctions*.

Ukraine, Russia, and Belarus Are Major Exporters of Certain Agricultural Commodities and Fertilizers

Ukraine and Russia are major global exporters of wheat, corn, barley, sunflower seed oil, and rapeseed oil (**Figure 1**). 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.

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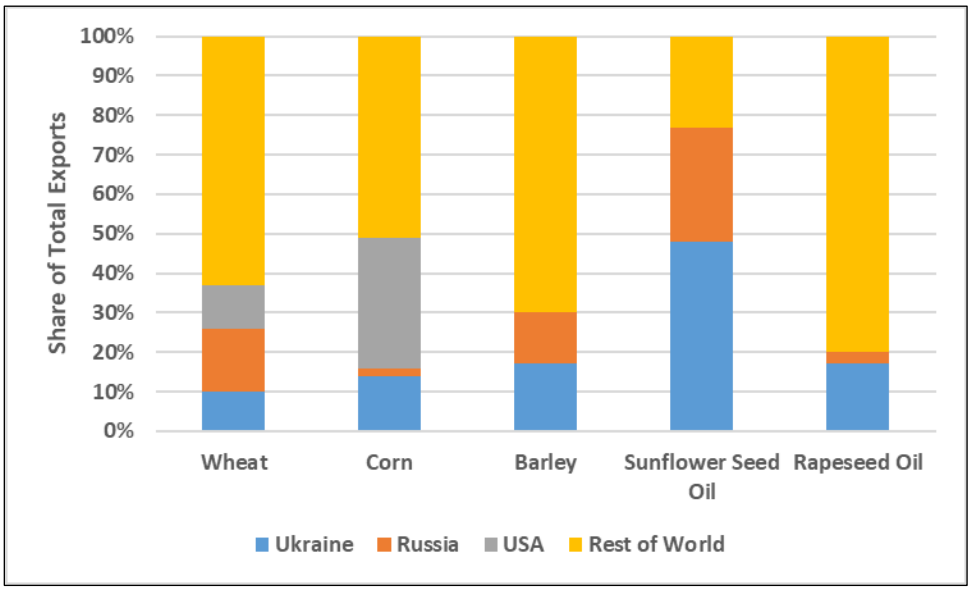
Figure 1. Ukrainian, Russian, and U.S. Exports for Selected Agricultural Commodities

for the 2021-2022 marketing year



Source: CRS using data from U.S. Department of Agriculture (USDA), Foreign Agricultural Service, *Grain: World Markets and Trade*, updated March 2022; and *Oilseeds: World Markets and Trade*, updated March 2022.

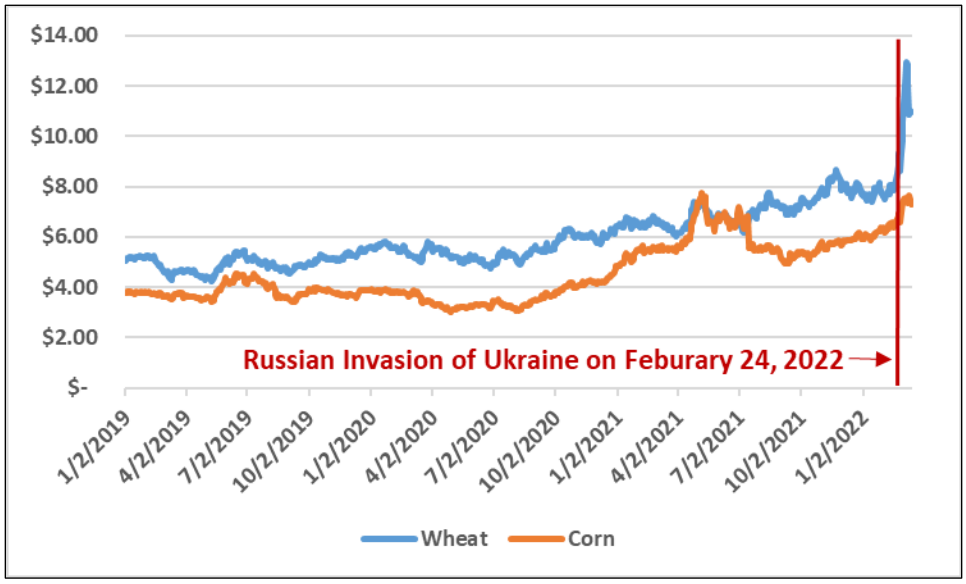
Notes: The 2021-2022 marketing year is crop-specific and covers the 12-month period starting at harvest time. Typically, the United States is not a major exporter of barley, sunflower seed oil, or rapeseed oil.

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

Initial Impacts on International Markets and Trade

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 (**Figure 2**). 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 2. Daily Closing Prices for U.S. Corn and Wheat Futures Contracts



Source: CRS using data from Nasdaq.com, downloaded on March 14, 2022.

Note: Prices are for wheat and corn futures contracts traded on the Chicago Board of Trade and not adjusted for inflation.

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 Ukrainian and Russian grains, 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.

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 (**Table 1**). 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.

Table 1. Global Stocks-to-Use Ratios for Wheat, Corn, and Oilseeds

by marketing year

Commodity	Stocks-to-Use Ratio 2019-2020	Stocks-to-Use Ratio 2020-2021	Stocks-to-Use Ratio 2021-2022
Wheat	38%	37%	36%
Corn	27%	26%	25%
Oilseeds	22%	23%	20%

Source: CRS calculations using data from USDA World Agricultural Supply and Demand Estimates, WASDE-622, March 9, 2022.

Notes: Values for the 2020-2021 marketing year are USDA estimates, and values for the 2021-2022 marketing year are USDA projections. Stocks-to-use ratios are the ratio of end-of-year carryover stocks to annual consumption for all uses

(e.g., food, animal feed, biofuels, and industrial uses). The stocks-to-use ratio measures the proportion of surplus commodity available relative to total annual use.

Implications for 2022 Commodity Production

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 varietals are planted in the fall and harvested late spring/early summer. Spring wheat 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.

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