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Feed Outlook: June 2022

In this report:

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<u>Domestic Outlook</u> International Outlook

Corn Ending Stocks Are Raised for 2021/22 and 2022/23, But the Feed Grain Market Outlook Remains Tight

The outlook for the 2022/23 U.S. corn market is for relatively higher ending stocks—primarily due to higher stocks coming into the year, due to lower total use estimated for 2021/22. Projected U.S. corn production for 2022/23 is unchanged at 14,460 million bushels. Lower estimated corn exports for 2021/22 are partially offset by higher food, seed, and industrial use of corn for both 2021/22 and 2022/23. The season-average corn price for 2021/22 is estimated at \$5.95 per bushel and is projected at \$6.75 per bushel for 2022/23.

Increased coarse grain beginning stocks, higher projected output, and virtually unchanged projected coarse grain use (higher corn, but lower barley consumption) leave world ending stocks higher, especially for corn in the United States and Ukraine. Global corn trade in 2022/23 is projected essentially unchanged this month.

Domestic Outlook

Michael McConnell Angelica Williams Claire Hutchins

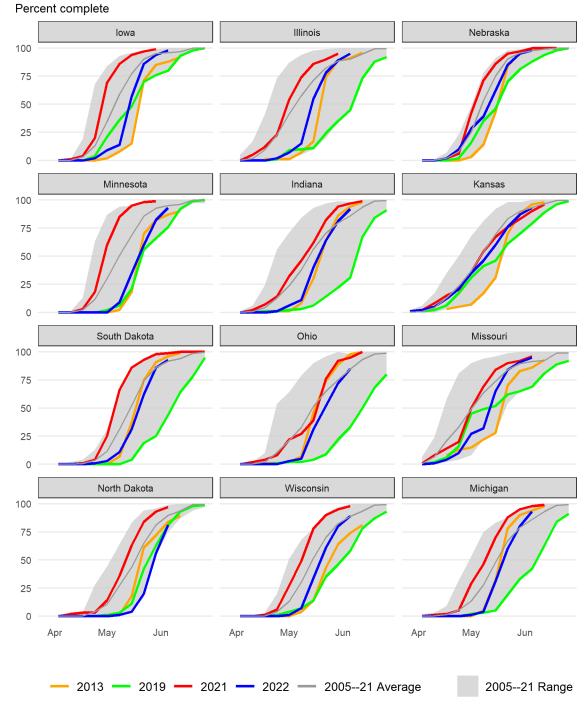
Corn Production Projections Are Unchanged for 2022/23, Total Supplies Are Projected Lower Than 2021/22 Estimates

The USDA's outlook for U.S. corn market supplies is largely unchanged from the May *World Agricultural Supply and Demand Estimates (WASDE)* report. Corn production in 2022/23 is projected to total 14,460 million bushels, based on a projected 81.7 million harvested acres and national average yield of 177 bushels per acre. Imports are projected at 25 million bushels (unchanged from the May *WASDE* report) and beginning stocks are projected at 1,485 million bushels (a 45-million-bushel increase, based on updated use estimates for 2021/22). As a result, projected total supplies are 15,970 million bushels—down from the current 2021/22 estimates of 16,375 million bushels.

Planting Progress Behind Average Levels, Substantial Progress Made During Month of May

The spring planting season was marked by cool temperatures and wet conditions throughout much of the Corn Belt during April and into early May. The weather conditions resulted in delays in planting progress in many of the key corn-producing States, which has an impact on the yield potential at the State and national level. Conditions improved during May, allowing for timely—although still behind average—plantings. By June 5, most States' planting progress was close to historical averages, such as in: lowa (98 percent), Illinois (95 percent), and Nebraska (98 percent). Persistent delays continued through May in regions of Minnesota (93 percent) and North Dakota (81 percent). Planting conditions in 2013 and 2019 provide comparable examples of crops impacted by poor weather conditions and delayed planting progress. In most States, the 2022 planting progress pattern is more similar to 2013. In contrast, more extensive delays occurred in 2019 and contributed to a substantially lower yield, relative to trend-levels.

Figure 1
Corn planting progress by State, 2005 to 2022



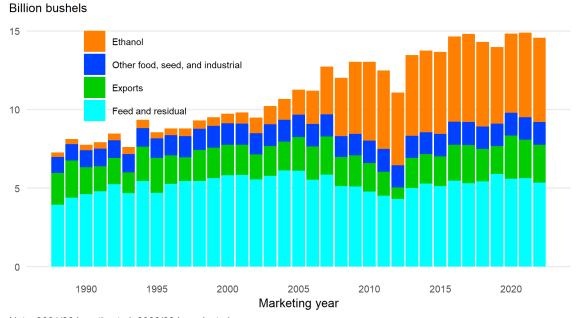
Source: USDA, National Agricultural Statistics Service.

Domestic Corn Use Is Projected To Be Lower in 2022/23

Total corn use for 2022/23 is projected to be 14,570 million bushels, including 12,170 million bushels of domestic use projected. Each projection represents a decline from current 2021/22

estimates of 14,890 million bushels and 12,440 million bushels, respectively. Higher prices and tighter supplies (both domestically and globally) are expected to constrain and ration demand, heading into the marketing year beginning September 1.

Figure 2
U.S. corn utilization



Note: 2021/22 is estimated, 2022/23 is projected. Source: USDA, World Agricultural Outlook Board.

Starch and Glucose/Dextrose Production Use Raise Outlook for Food, Seed, and Industrial Use

Food, seed, and industrial (FSI) use in 2021/22 is estimated to total 6,815 million bushels—a 5-million-bushel increase from the May *WASDE* report. The increase is due to higher milled products, as higher expected corn use for glucose/dextrose and starch production are expected to more than offset lower corn use for high-fructose corn syrup. The FSI estimate includes corn used for fuel ethanol at an estimated 5,375 million bushels—unchanged from the May report.

FSI use in 2022/23 is projected to total 6,820 million bushels, also a 5-million-bushel increase from the May *WASDE* report. The increase is due to the higher corn use for starch and glucose/dextrose production, and is expected to continue into the next marketing year. Corn used for fuel ethanol is projected to be at 5,375 million bushels—also unchanged from the May report.

Corn Exports Are Lowered for 2021/22, Remain at Historically Elevated Levels

Corn export estimates for 2021/22 are lowered 50-million-bushels from the May WASDE report, currently totaling 2,450 million bushels. The reduction is largely due to announced corrections by the U.S. Bureau of the Census, regarding lower corn exports to Canada in 2021 and 2022 than in the Bureau's officially released data. These data corrections, as well as the current pace of shipments reflected in USDA's Agricultural Marketing Service's (AMS) export inspections reports and the Foreign Agricultural Service's (FAS) Export Sales Report, reflect that exports are expected to be lower than the record-setting total in 2020/21. U.S. corn exports are now entering the season when they compete directly with corn production in the Southern Hemisphere—most notably exports from Brazil and Argentina. According to the International Grains Council, current free on board (FOB) corn export spot prices at the U.S. Gulf are higher than the comparable prices in Argentina and Brazil. Corn exports for 2022/23 are projected to total 2,400 million bushels, unchanged from the May WASDE report.

Figure 3

Global grain export prices, daily



Source: International Grains Council.

Ending Stocks Are Raised for 2021/22 and 2022/23

U.S. corn-ending stocks are expected to remain relatively tight for both 2021/22 and 2022/23, although both years are forecast to be above the 2020/21 ending stock levels of 1,235 million

bushels. Inventories at the end of 2021/22 are estimated at 1,485 million bushels—which represent a 45-million-bushel increase from the May WASDE report, due to adjusted use estimates. If realized, the stocks-to-use ratio is estimated at 10.0 percent.

Prices received by farmers for the 2021/22 crop continue to trend upward. In its latest Agricultural Prices report, the USDA's National Agricultural Statistics Service (NASS) reported that the national average price received for corn in April exceeded \$7.00 per bushel. Although the last 3 months' levels are currently comparable to the levels seen during the 2012/13 drought-stricken marketing year, it is also important to note that the majority of corn is historically marketed during the first half of the marketing year—and in particular between October and January. As a result, the relatively higher prices reported in the spring and summer will have a relatively lower impact on the season-average farm price. The season-average farm price for corn in 2021/22 is estimated at \$5.95 per bushel—a \$0.05 per bushel increase from the May WASDE report.

Price received for corn, monthly U.S. dollars per bushel 7.50 7.00 6.50 6.00 5.50 5.00 4.50 4 00 3 50 3.00 2.50 Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Month 2012 - 2018 - 2020 2013 2019 - 2021

Figure 4

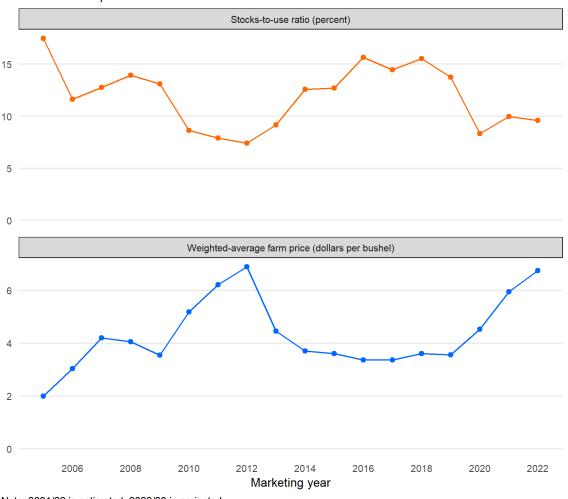
Source: USDA, National Agricultural Statistics Service.

Ending stocks in 2022/23 are projected to total 1,400 million bushels—a 40-million-bushel increase from the May WASDE report's projection. The increase in expected ending stocks is largely due to the increased supplies projected from the 2021/22 carryout. The higher supplies are partially offset by higher projected use in 2022/23. If released, this increase would result in a stocks-to-use ratio of 9.6 percent. The season-average farm price for 2022/23 is projected to be \$6.75 per bushel, unchanged from the May report.

Figure 5

U.S. corn stocks-to-use and farm prices

Percent or dollars per bushel

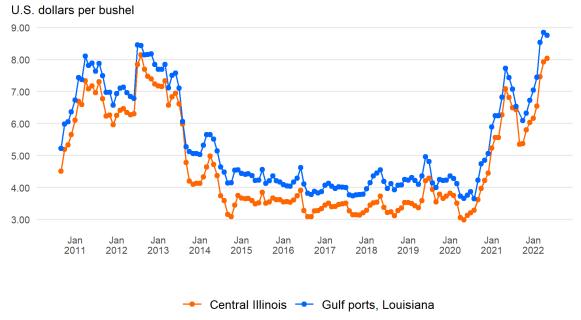


Note: 2021/22 is estimated, 2022/23 is projected. Source: USDA, Economic Research Service and National Agricultural Statistics Service.

Cash Prices for Corn Remain Historically High and Volatile

Domestic cash prices for corn remain at elevated levels. The May average cash price for Central Illinois was \$8.04 per bushel and the Gulf Export Terminal market was \$8.76 per bushel. By comparison, the price levels in May 2021 were \$7.08 and \$7.73, respectively—which were also elevated by historical standards, due to the strong demand from foreign markets and tight supply availabilities for domestic users. Daily and weekly price volatility is also present, due to numerous factors—including U.S. weather and growing conditions, as well as the evolving geopolitical conditions in the Black Sea region.

Figure 6
U.S. cash-market prices for corn, monthly average



Source: USDA, Agricultural Marketing Service.

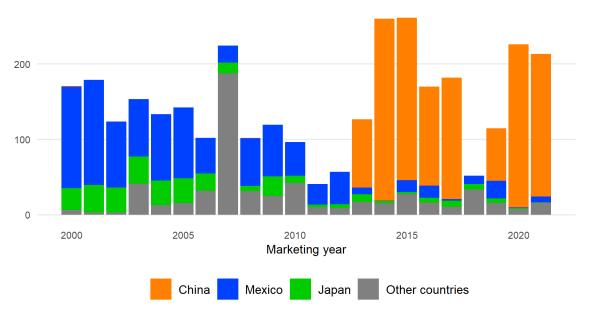
Reduced U.S. Sorghum Exports for 2021/22, Continued Higher Prices

U.S. sorghum exports estimates for 2021/22 are lowered this month by 10 million bushels to 290 million bushels, based on the lower pace of shipments reported by the U.S. Bureau of the Census. Through the month of April, 213 million bushels of sorghum have been exported, slightly behind last year's 226 million bushels but ahead of the 5-year average of 149 million bushels. China has continued to be the largest market for sorghum exports, followed by Mexico.

Figure 7

U.S. sorghum exports, September through April, marketing years 2000 to 2021

Million bushels



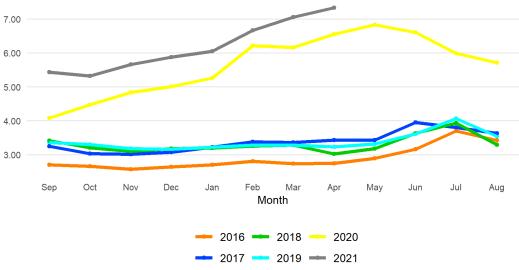
Source: U.S. Department of Commerce, Bureau of the Census.

Feed and residual use is revised higher to 125 million bushels compared to the May report, reflecting additional U.S. sorghum supplies for the domestic market. Ending stocks remain unchanged at 33 million bushels.

The season-average farm price estimate for sorghum this month is unchanged at \$5.95 per bushel for 2021/22 and the projected price for 2022/23 is \$6.65 per bushel.

Figure 8 Price received for sorghum, monthly

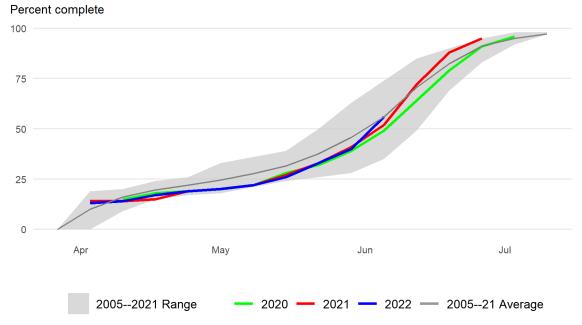
U.S. dollars per bushel



Source: USDA, National Agricultural Statistics Service.

According to NASS's most recent Crop Progress report, sorghum planting for the 2022/23 crop year has been on pace with the historical 5-year average, with 56 percent of the crop planted through June 5.

Figure 9 Sorghum planting progress, 2005 to 2022



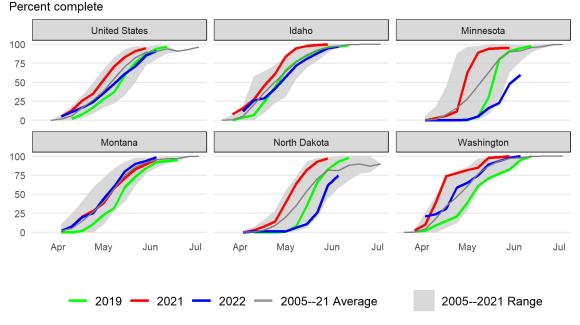
Source: USDA, National Agricultural Statistics Service.

Barley Planting Delayed in the Northern Plains

According to the NASS *Crop Progress* report, 91 percent of the U.S. barley crop was planted as of June 5, compared with a 5-year average of 97 percent planted. Spring barley planting in Montana and Idaho (the two largest barley-producing States) is nearing completion at 99 percent and 97 percent planted, respectively. However, poor planting conditions across the eastern Northern Plains (due to cold, wet weather) are barring farmers from entering their fields. Planting progress in North Dakota (the third largest barley-producing State) is only 75 percent complete, the lowest since 2013/14. Spring barley planting in Minnesota is only 60 percent complete, the lowest in at least 25 years. U.S. total barley emergence as of June 5 is 73 percent, trailing the 5-year average of 84 percent.

Figure 10

Barley planting progress by State, 2005 to 2022



Source: USDA, National Agricultural Statistics Service.

The season-average farm price for barley is projected to reach \$7.35 per bushel in 2022/23 (the highest on record), as strong demand for feed grains (compounded by recent global geopolitical tensions) support both feed and malting barley prices.

Grain-Consuming Animal Units Expected To Continue Decline in 2022/23

Lower animal inventories in both 2021/22 and 2022/23 are reducing grain-consuming animal unit (GCAU) forecasts. GCAUs in 2021/22 are estimated at 99.9 million units, while projections for 2022/23 are 98.7 million. This number is down from the 2020/21 levels of 101.2 million and the 2022/23 projection is the lowest since 2016/17. The annual trend is largely driven by lower cattle on feed and hog grain-consuming units. Total feed and residual use of energy grains are forecast to fall from 149.0 million metric tons estimated for 2021/22 to 142.0 million metric tons projected for 2022/23. The annual decline is primarily due to less corn projected for feed and residual use. Lower corn use is partially offset by higher wheat feed and residual use on a September through August basis, however.

International Outlook

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World Coarse Grain Production Prospects Are Up Slightly

Global **2022/23** coarse grain production is projected up 3.3 million tons this month to 1,479.2 million. A massive increase in projected corn output in *Ukraine* is partly offset by lower barley output in the *European Union*, *Australia*, *Ukraine*, and *Algeri*a—and by a reduction in corn production for *Zambia*. This month, the projection for *U.S.* coarse grain production for 2022/23 is unchanged.

For more information and a visual display of this month's changes in coarse grain production, see tables A1 and A2 below, as well as map A below. Changes in total global, foreign, and U.S. coarse grain production by type of grain are shown in table A1. Changes in coarse grain production by country are given in table A2. Map A displays this month's changes in barley production.

	Region or country	Production	Change from previous month ¹	YoY Change ²	Comments	
	j		Million tons			
Co	arse grain prodı	uction (total)				
	World	1,479.2	+3.3	-22.6		
Î	Foreign	1,097.1	+3.3	-6.0	Partly offsetting changes are made for a number of countries and commodities. See table A2.	
	United States	382.1	No change	-16.6	See section on U.S. domestic output.	
Νo	orld production o	of coarse gra	ins by type of gra	in		
				CO	RN	
	World	1,185.8	+5.1	-30.3		
	Foreign	818.5	+5.1	-13.6	Corn production is projected higher in Ukraine, with small offsettin reductions for Zambia and Peru. See table A2.	
	United States	367.3	No change	-16.6	See section on U.S. domestic output.	
				BAR	LEY	
Ţ	World	147.3	-1.7	+2.3		
ļ	Foreign	143.3	-1.7	+0.9	Reductions in barley production in the European Union (EU), Australia, Ukraine, and Algeria are partly offset by an increase in the United Kingdom. See Table A2.	
	United States	3.9	No change	+1.4	See section on U.S. domestic output.	
Cha	ange from previous m	onth. ² YoY: yea	ır-over-year changes. ³	Totals may	not add due to rounding.	

Corn production in *Ukraine* is projected 5.5 million tons higher this month, to reach 25.0 million. The increase is fully driven by higher reported corn area that exceeds previous expectations. The data from the Ukrainian Ministry of Agriculture suggest that farmers planted larger-than-expected areas for corn, which is the most input intensive among the grain crops, despite the shortage of fuel and other inputs. A possible explanation is that farmers held essential inputs acquired before the Russian military invasion and went along with corn planting—discounting or were ostensibly unconcerned with probable future scarcity of diesel for harvesting, overflowing grain stocks, and current limitations for exporting grain from the country.

	Type of crop	Crop year	Production	Change in forecast ¹	YoY ² change	Comments				
			/	Million tons						
2022/23 Crop year										
UKRAINE										
	Corn	Oct-Sep	25.0	+5.5	-17.1	Higher reported corn area, published by the Ukrainian Ministry of Agriculture.				
ļ	Barley	Jul-Jun	5.7	-0.3	-4.2	Lower reported barley area published by the Ukrainian Ministry of Agriculture.				
ZAMBIA										
ļ	Corn	May-Apr	2.7	-0.3	-0.9	Corn production is reduced, based on lower area reported by the Zambian Ministry of Agriculture.				
					EUROPEA	N UNION (EU)				
ļ	Barley	Jul-Jun	51.7	-0.8	-0.3	Dryness and heat in the southwestern part of the region are projected reduce barley yields in Spain and France, while more favorable weather in the northern EU improved barley yield prospects in Germany.				
AUSTRALIA										
	Barley	Nov-Oct	11.0	-0.5	-2.7	A revision, based on lower area in line with the recent estimates of the Australian Bureau of Statistics (ABARES).				
ALGERIA										
Ļ	Barley	Jul-Jun	1.6	-0.2	+0.7	Insufficient precipitation and heat in April-May in Algeria are projected reduce barley yields.				
			<u> </u>		<u> </u>	NDIA				
J	Barley	Apr-Mar	1.6	-0.1	-0.1	A revision, based on the Government's 3rd advanced estimate.				
UNITED KINGDOM (U.K.)										
Ц	Barley	Jul-Jun	7.1	+0.2	+0.1	Favorable conditions boost barley yields.				
2021/22 Crop year										
	_					NDIA				
	Corn	Nov-Oct	33.0	+0.5	+1.4	A revision, based on the Government's 3rd advanced estimate.				
H	Sorghum	Nov-Oct	4.5	+0.1	-0.3	A revision, based on the Government's 3rd advanced estimate.				
	Millet	NOV-OCT	11.4	-0.1	-1.8 M	A revision, based on the Government's 3rd advanced estimate. EXICO				
Ļ	Sorghum	Oct-Sep	4.9	-0.1	+0.3	Lower projected area and yield, in line with official data				
		•	maller changes	are made for	several coun	tries, see map A for changes in <i>barley</i> output.				

United Kingdom 0.2 Ukraine [7.05] -0.3European Union [5.70] 8.0-[51.70] Algeria India -0.2 -0.1 [1.60] [1.60] Barley production changes Australia (Million tons) -0.5-0.80 [11.00] -0.79 - -0.50 -0.49 - -0.10 Country label No Change Top number: June 2022 changes Bottom number: [Total 2022/23 value] 0.20

Map A - Barley production changes for 2022/23, June 2022

Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution database.

While 2021/22 grain harvests in the Northern Hemisphere were generally completed months ago, in the Southern Hemisphere crops are still growing and being harvested. Brazil's second-crop corn harvest for the 2021/22 season started in late May-June and will continue through August 2022. Brazil is a vast country with a mixed bag of weather conditions this year. Precipitation has been below normal since mid-March in the Center-West region of Brazil that produces more than 60 percent of the second-crop corn. The dryness started back in March in the states of Goias and Mina Gerais, expanded to Mato Grosso in April, and spread to the entire region of central Brazil by end of May. In contrast, good to excellent weather conditions were beneficial for the second crop corn in southern Brazil, with Parana projected to harvest a record-high crop. The *Brazilian* 2021/22 corn production estimate remains unchanged this month at 116 million tons.

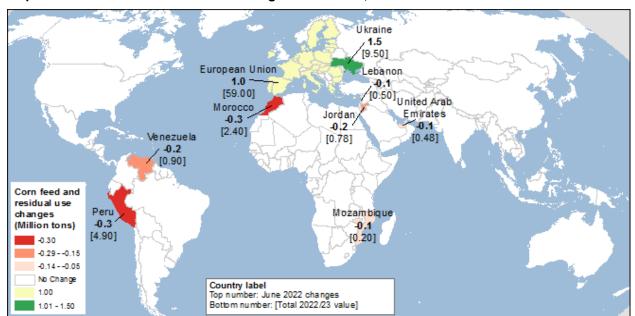
Global Consumption Is Unchanged, Stocks Are Projected Higher

Global coarse grain use in 2022/23 is reduced fractionally to 1,479.8 million tons. Global coarse grain feed and residual use is projected virtually unchanged, with higher corn but lower barley feed use at 912.8 million tons.

The largest change is for increased corn feed and residual use in *Ukraine*, up 1.5 million tons to 9.5 million, and more than 80 percent higher than the pre-war 5-year average. Under an

assumption that part of the Ukrainian surplus output is not going to be exported at any time in the future (as some supplies either are destroyed or have become unfit to use), the growing production volume is not boosting the country's exports, rather it expands the residual part of the feed category and stocks. Higher imports are expected to enhance corn feeding in the *European Union*, as relative feed grain prices favor corn over wheat and barley. The rest of the changes in feed and residual offset the above increases and are mostly based on reduced projected imports.

See a visual display of this month's country changes in corn feed and residual use in map B below.



Map B - Corn feed and residual use changes for 2022/23, June 2022

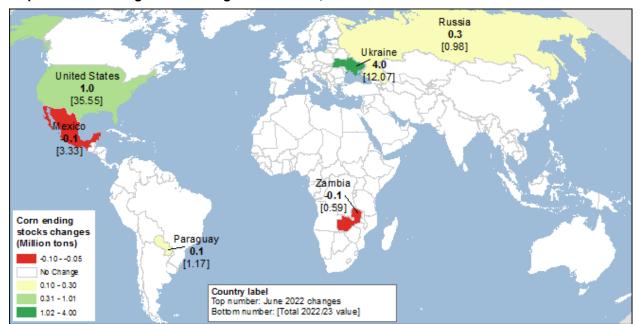
Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution database.

Lower projected trade for 2021/22 (mainly on account of the United States, Russia, and Ukraine) boost beginning stocks for 2022/23, up 1.9 million tons. An increase in global coarse grain supplies and marginally lower use push the projection for global ending stocks higher. World 2022/23 coarse grain ending stocks are forecast 5.3 million tons greater than last month's projection, to reach 335.7 million.

The largest change is a 3.9-million-ton increase in coarse grain stocks in *Ukraine*, reaching 13.1 million. Adding in wheat, projected Ukrainian grain ending stocks approach 20 million tons. The Government is reportedly trying to help farmers save the upcoming harvest by getting some type of mobile storage, perhaps like silo bags that are widely used in other countries. Coarse grain (corn and barley) stocks are projected higher in *Russia*, up 0.5 million tons, reflecting

lower exports. *U.S.* coarse grain ending stocks are projected 1.1 million tons higher (see domestic section above).

Individual countries' changes in stocks follow production and trade revisions. All other projected changes in stocks are lower than 0.2 million tons. See a visual display of this month's country changes in corn ending stocks in map C below.



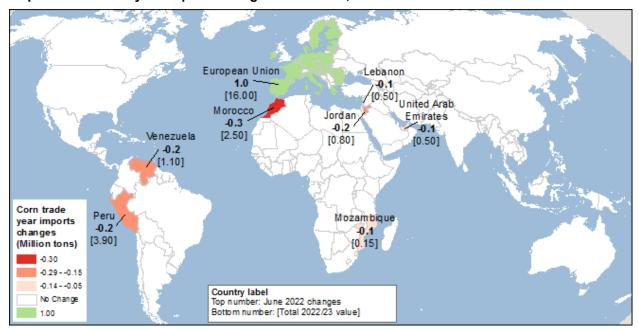
Map C - Corn ending stocks changes for 2022/23, June 2022

Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution database.

World Corn Trade Is Unchanged for 2022/23 and Reduced for 2021/22

Global **coarse grain** trade for the **2022/23** October-September international trade is projected down 0.6 million tons to 227.9 million this month, the lowest in 3 years, with virtually all changes involving barley. **Corn** trade for 2022/23 is unchanged this month, with a number of offsetting adjustments to imports. The largest change in corn imports is a projected increase to the **European Union**. Given that relative grain prices favor corn versus wheat and barley for feed use, demand for feed grain in two major EU feed-importing countries—Spain and Italy—Is expected to be met by increases in corn imports from outside the European Union, as both wheat and barley output in these countries are reduced this month. The offsetting changes include lower corn imports to **Jordan**, **Lebanon**, **Morocco**, **United Arab Emirates**, and **Peru**—these changes are rollover changes from the previous year.

See a visual display of this month's country changes in corn (October-September trade year) imports in map D below.



Map D - Corn trade year imports changes for 2022/23, June 2022

Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution database.

Barley trade for 2022/23 is projected down 0.6 million tons this month, with partly offsetting changes in exports by *Australia*, the *European Union*, *Ukraine*, and the *United Kingdom*. All of the changes follow the adjustments in barley production forecasts. On the importers' side, the largest change for barley is for *Saudi Arabia*. Since China banned imports of Australian barley, Saudi Arabia became the latter's largest export destination. This month, Saudi Arabia is projected to import 0.5 million tons less barley, following a reduction in Australian barley supplies.

For the current **2021/22** October-September international trade year that runs through the end of September 2022, **coarse grain** trade is projected down 2.5 million tons to reach 235 million, still the second-highest exports on record. Global **corn** trade in 2021/22 is projected lower, down 1.4 million tons this month to 189.1 million, still a record-high and 3 percent above the previous record corn trade estimated for the prior year of 2020/21. Lower projected corn exports by the **United States** drive the decline, with a downward revision of U.S. exports to Canada. With 4 months left in the trade year, the pace of **Russian** corn exports is lower than expected. These declines are partly offset by higher corn export projections by the European Union and Moldova.

Global **barley** exports for 2021/22 are projected 1 million tons lower this month, with reductions for *Russia* and *Ukraine*. The Russian pace of barley exports appears to be lower than expected, though the Government has suspended publication of the relevant trade data, citing possible "misuse and misinterpretation" of the data. Because of Russia's blockade of its Black Sea ports, *Ukraine* can only export grain via rail, trucks, and barges—which is estimated to theoretically total under 2 million tons a month, although it is not clear how this number will be impacted by changes on the ground in Ukraine. It appears that Ukraine is currently prioritizing corn over barley and other crops shipments in order to relieve huge stocks of corn intended for export but locked within the country. Hence, the pace of Ukrainian barley exports is lower than expected. Barley imports for 2021/22 are reduced for *China* and *Saudi Arabia*, down 0.5 million tons each, based on the pace of trade. Barley imports to the *United States* (from Canada and Argentina) are projected slightly higher this month (see the domestic section above).

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