



Feed Outlook: November 2022

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U.S. Feed Supplies See Slight Uptick

Total U.S. feed grain production in 2022 is forecast up 660,000 metric tons in the November *World Agricultural Supply and Demand (WASDE)* report, as a marginally higher corn yield revision more than offsets reductions to sorghum. U.S. corn production is raised 35 million bushels this month, on a 0.4 bushel per acre yield increase to 172.3 bushels, while harvested area remains unchanged. Corn production is forecast to total 13,930 million bushels in 2022/23. U.S. sorghum production is revised down 9 million bushels in November, on a 1.6 bushel per acre yield reduction. U.S. producers are forecast to harvest 236 million bushels of sorghum in 2022, the lowest level since 2011/12.

In November, new crop corn usage increased by 25 million bushels, as higher supplies boosted feed and residual use. New crop sorghum use fell 10 million bushels this month, as reduced production further pressured exportable supplies. Corn ending stocks are up 10 million bushels from October at 1,182 million bushels and sorghum ending stocks increased 1 million bushels from last month to 24 million bushels

Global **2022/23** coarse grain production is projected at 1,459.5 million tons, down 0.3 million tons from last month and 43.8 million tons from last year. The major decline is led by reduced coarse grain prospects of 1.1 million tons in the **European Union**, followed by **South Africa** and **Argentina**, each with reductions of 0.6 million tons. **U.S.** sorghum exports for 2022/23 are projected lower this month.

Domestic Outlook

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U.S. Corn Production Is Up Slightly on Yield Adjustment

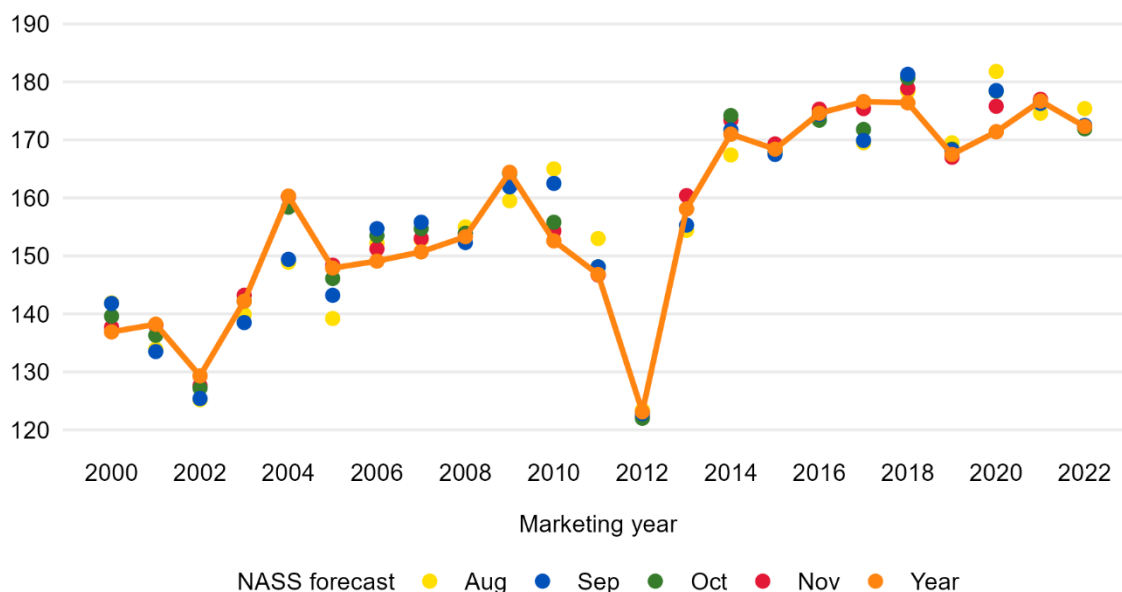
The USDA, National Agricultural Statistics Service (NASS) projects U.S. corn production in 2022/23 to be 13,930 million bushels, up 35 million bushels from the previous forecast, though 1,144 million bushels lower than last year and 3 percent less than the 5-year average. Harvested area in 2022 is forecast at 80.8 million acres, down 5 percent from the year prior and 2 percent under the 5-year average.

The U.S. corn yield for 2022/23 is projected at 172.3 bushels per acre, based on NASS's November forecast. This month's projection is up 0.4 bushels from October but still represents a 4.4 bushel decline from 2021/22. While widespread summer drought pressured yield potential in many States across the western corn belt, upward yield revisions in November in key Midwestern States helped moved the needle on the national average.

Figure 1

U.S. corn yield, 2000 to 2022

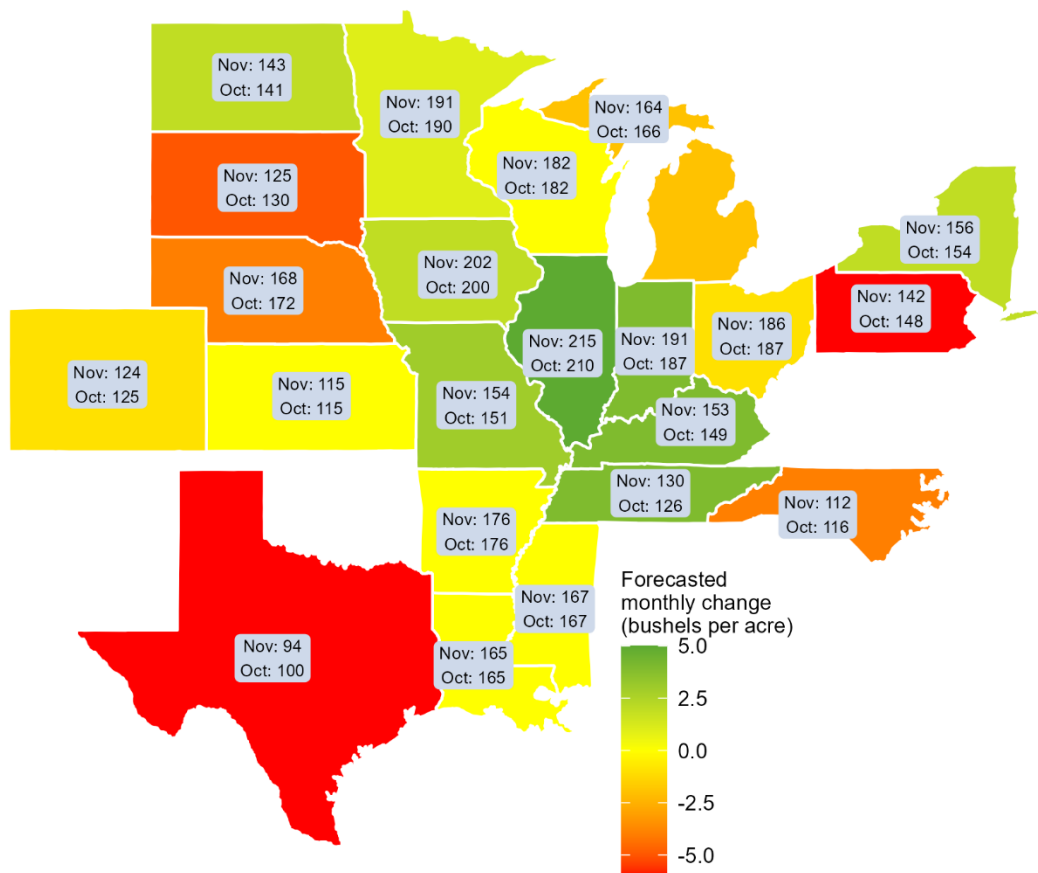
Bushels per acre



Source: USDA, National Agricultural Statistics Service.

The most impactful monthly increases in corn yield are shown in Illinois (up 5 bushels per acre to 215), Iowa (up 2 bushels per acre to 202), Indiana (up 4 bushels per acre to 191), Missouri (up 3 bushels per acre to 154), and Minnesota (up 1 bushel per acre to 191). Illinois, Iowa, and Minnesota are 3 of the largest corn-producing States in the country, harvesting—on average—more than 7.5, 10.5, and 12.5 million acres a year, respectively.

Figure 2
**U.S. corn yield by State,
 November 2022 forecast versus October forecast, bushels per acre**



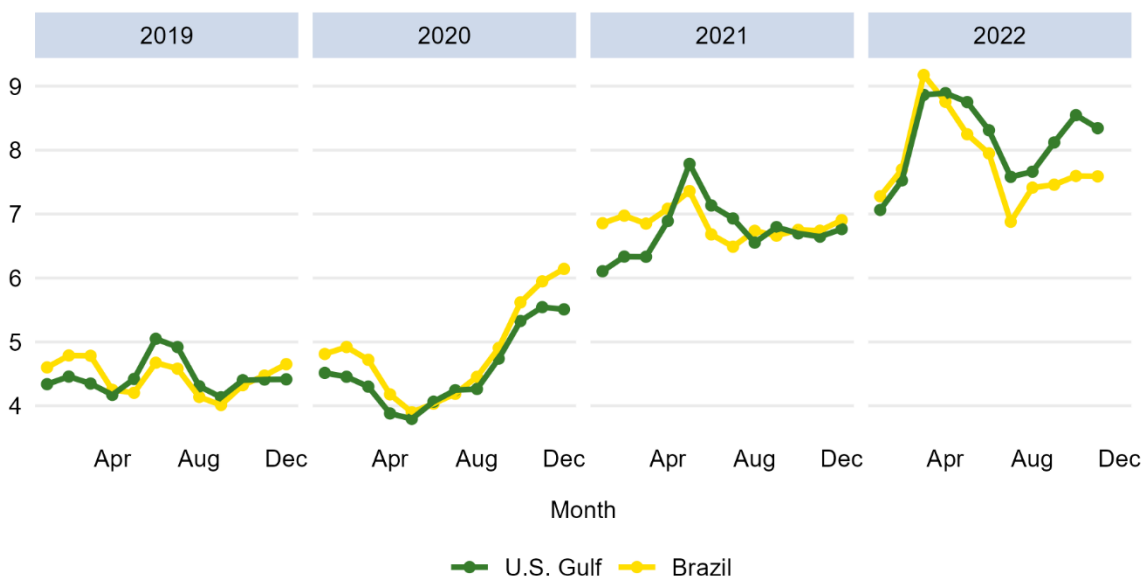
Note: Labels are included only for States forecast to harvest more than 400,000 acres in 2022.
 Source: USDA, National Agricultural Statistics Service.

At the State level, the largest year-over-year decline in corn production in 2022/23 can be found in Nebraska, with a 292-million-bushel fall from last year, due to lower harvested area and a forecasted 26-bushel yield drop from 2021/22 to 168 bushels per acre. This month's forecast reflects a 4-bushel-per-acre decline from NASS's October Nebraska projection of 172 bushels.

Corn Exports Are Off to a Slow Start, Driven By High Prices

While the November *WASDE* corn export forecast of 2,150 million bushels is unchanged from last month, there are 10 months left in marketing year 2022/23 and factors currently impacting trade forecasts could change moving forward. The current projection, if realized, would come in 13 percent below last year and 7 percent under the 5-year average—on a sluggish start to the new marketing year as international customers ration demand in a low-certainty, high-price trading environment. Much tighter supplies in 2022/23, paired with difficult inland logistics due to historically low water levels on the Mississippi River, support the highest U.S. Gulf corn export price for October on record—at \$8.55 per bushel.

Figure 3
U.S. Gulf and Brazil corn FOB price, by calendar year
 U.S. dollars per bushel



Note: FOB = freight on board.
 Source: USDA, Economic Research Service using data from AgriCensus.

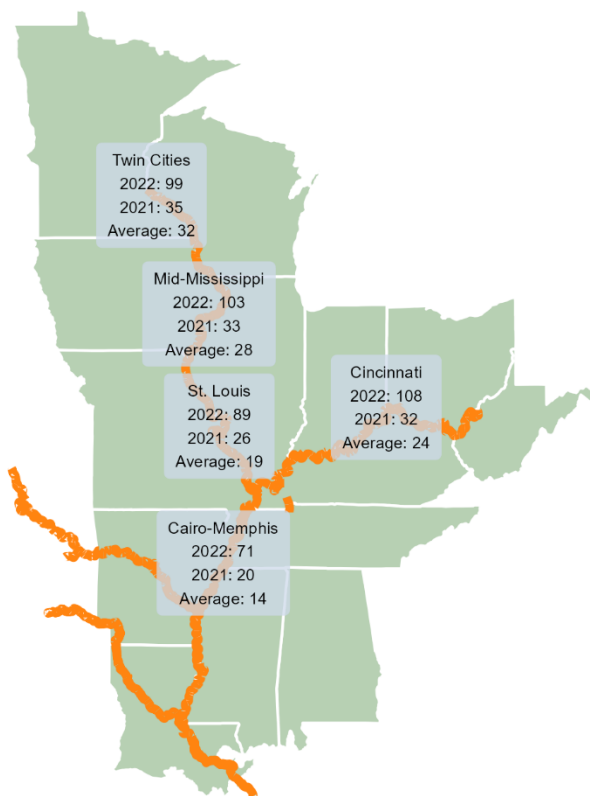
Mostly warm and dry conditions throughout much of the Corn Belt have resulted in a U.S. harvest progress of 87 percent as of November 6, faster than the 5-year average of 76 percent. The harvest typically puts downward pressure on domestic market prices. However, U.S. export prices are generally seasonally uncompetitive during the September to November quarter—given competition from other exporters such as Argentina, Brazil, and Ukraine—and also because of foreign demand for U.S. soybeans.

During September and October, U.S. corn freight-on-board (FOB) prices have been more uncompetitive (relative to other exporters) than in prior years due to a surge in transportation costs with low water levels on the Mississippi River and its tributaries. These disruptions are

assumed to be temporary and current Gulf bids show a moderation in prices beginning in January.

The ongoing drought impacting the western corn belt has not only limited corn yield potential across many States, but has also significantly depleted critical water sources that feed into the Mississippi River. According to the U.S. National Weather Service, water levels on the Mississippi River (recorded at five points between northern Arkansas to central Mississippi) showed the lowest readings on record for the month of October since records began in 1927.

Figure 4
**October barge freight rates on the Mississippi River and its tributaries,
U.S. dollars per metric ton**



Note: Average = the 5-year average of rates in U.S. dollars per metric ton for October between 2017 and 2021.

Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service.

Critically low water levels on the Mississippi River and its tributaries are significantly impacting the ability to move recently-harvested corn to New Orleans, sending grain barge rates for nearby delivery to substantially new highs. According to the USDA, Agricultural Marketing Service, record south-bound grain barge rates for October were reported in Winona, MN (\$99 per metric ton, up 185 percent from last year), Davenport, IA (\$103 per metric ton, up 212 percent from last

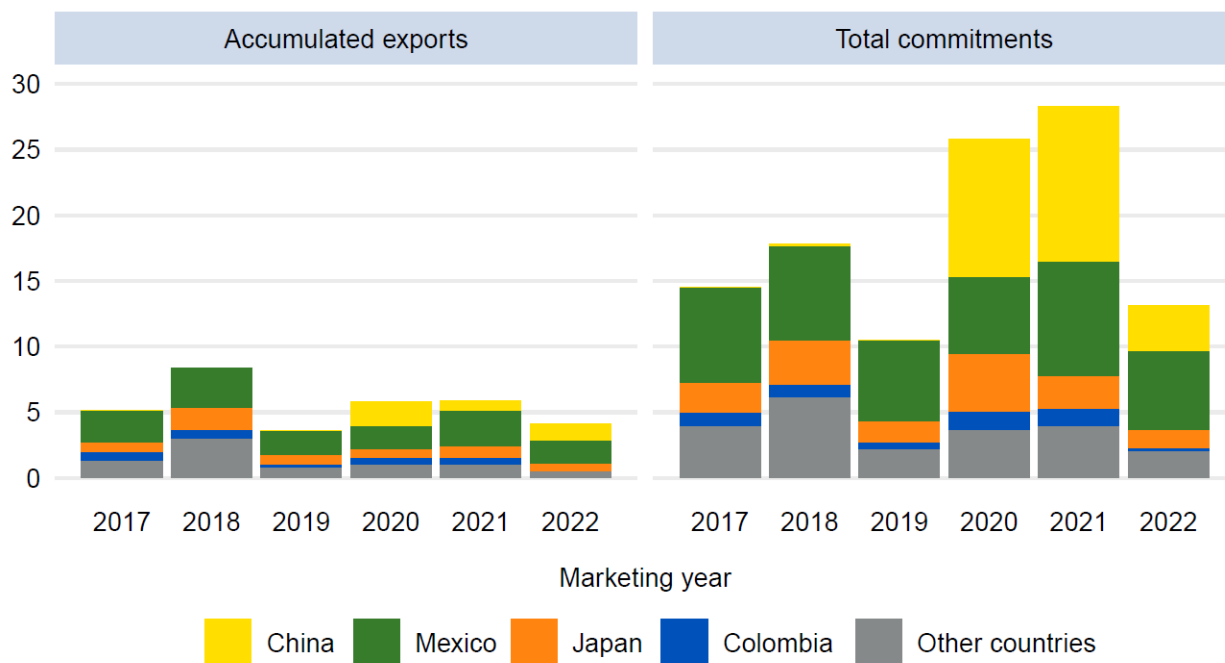
year), St. Louis, MO (\$89 per metric ton, up 242 percent from last year), Cincinnati, OH (\$108 per metric ton, up 238 percent from last year), and Memphis, TN (\$71 per metric ton, up 255 percent from last year).

International customers of U.S. corn are reacting commensurately to this high and volatile price environment as demonstrated by export shipment and sales information reported by the USDA, Foreign Agriculture Service. Between September and October 2022, total commitments (or accumulated shipments plus outstanding sales)—of 14.5 million metric tons—are down 53 percent from last year and 35 percent below the 5-year average. Accumulated exports of corn bound for all markets are also down at this point in 2022 at 4.15 million metric tons—a 31-percent-drop from the year prior—in response to a sluggish sales pace and logistical challenges. For further discussion on global markets, please see the international section of this report.

Figure 5

U.S. corn accumulated exports and total commitments, September to October

Million metric tons



Source: USDA, Foreign Agricultural Service.

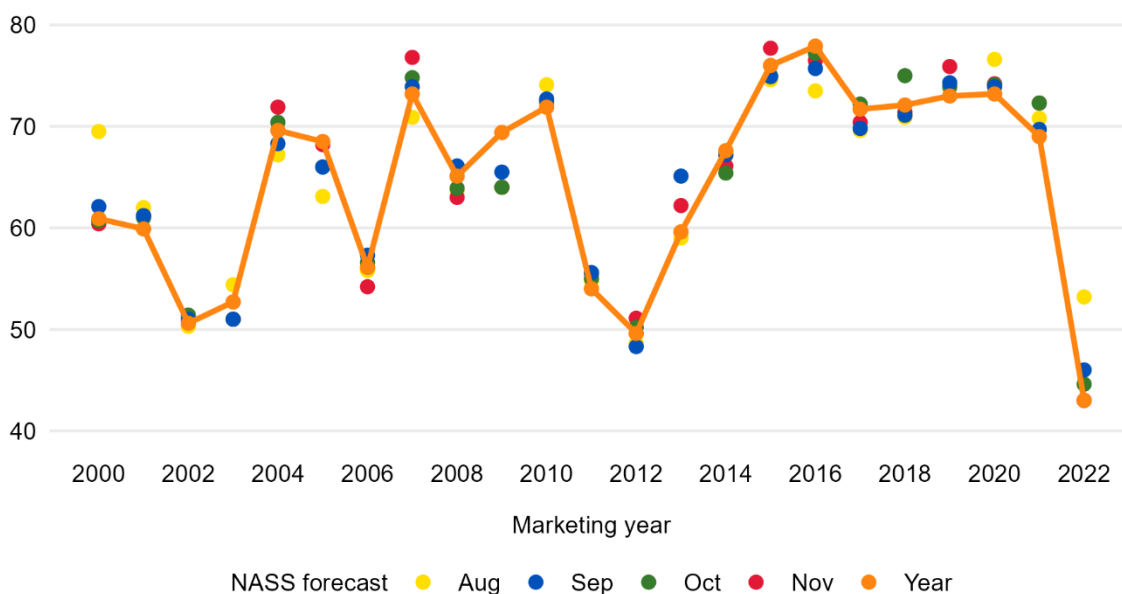
This month, corn used for feed and residual uses increased slightly on revised production numbers and the new total for 2022/23 is 5,300 million bushels. The corn ending stocks forecast increased a modest 10 million bushels in November to 1,182 million, still the lowest level since 2012/13—if realized—on lower carry-in stocks from last year (1,377 million bushels) and

drought-hobbled production. The forecasted corn season-average farm price for 2022/23—of \$6.80 per bushel—is unchanged from last month, but still the highest projected since 2012/13.

Sorghum Production Is Revised Lower

Sorghum production for 2022/23 is projected down 9 million bushels from the October forecast to 236 million bushels on reduced yields. NASS cut the national average sorghum yield by 1.6 bushels per acre in November to 43.0 bushels, the lowest level since 1964/65. Severe summer drought across the U.S. Great Plains weighed heavily on yield potential from Nebraska to Texas.

Figure 6
U.S. sorghum yield, 2000 to 2022
 Bushels per acre



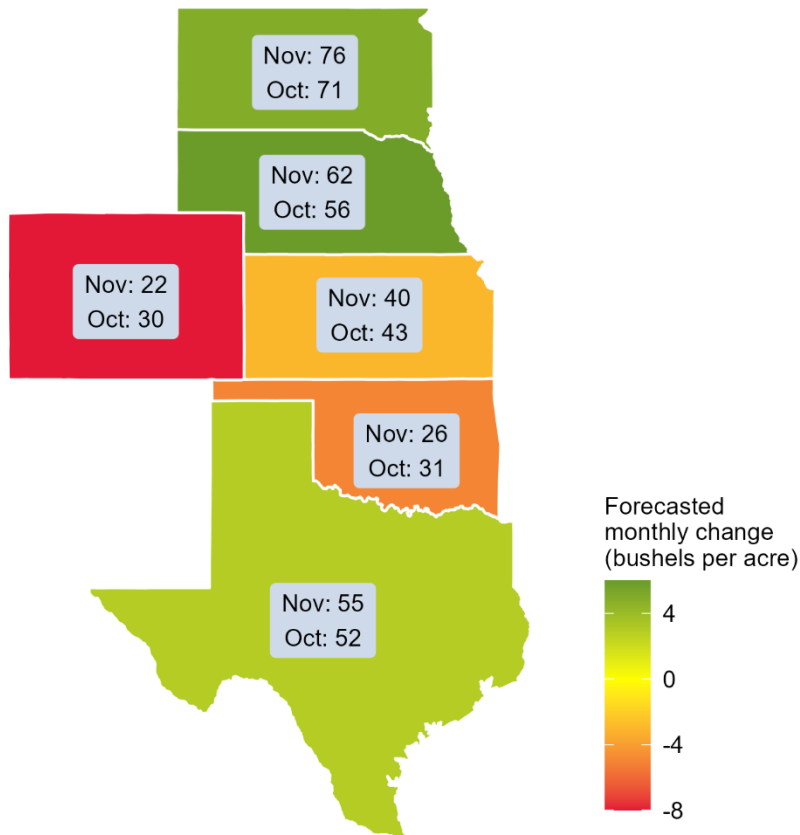
Source: USDA, National Agricultural Statistics Service.

A combination of lower yield and decreased harvested area are projected to sharply reduce sorghum production in Kansas and Texas, the crop’s two largest-producing U.S. States. The Kansas sorghum yield forecast fell 3 bushels per acre from October to 40 bushels, 38 bushels per acre lower than last year’s final yield estimate. The yield projection in Texas was revised up 3 bushels per acre this month to 55 bushels, still 10 percent lower than 2021/22.

NASS forecasts that total sorghum production will decline by nearly 50 percent from last year in both Kansas and Texas, to 124 million bushels and 60.5 million bushels, respectively.

Figure 7

**U.S. sorghum yield by major-producing State,
November 2022 forecast versus October forecast, bushels per acre**



Source: USDA, National Agricultural Statistics Service.

New crop sorghum use is lowered 10 million bushels from last month to 265 million bushels in 2022/23, as tight supplies and continued weakness in export commitments dampen export potential. U.S. sorghum ending stocks for the current marketing year total 24 million bushels, up 1 million bushels from the October forecast. The projected sorghum season-average farm price is unchanged this month at \$6.65 per bushel in 2022/23.

This month, 2021/22 sorghum FSI use increased 5 million bushels, on a strong crush pace at the end of the marketing year, while feed use declined commensurately, leaving old crop ending stocks unchanged at 53 million bushels.

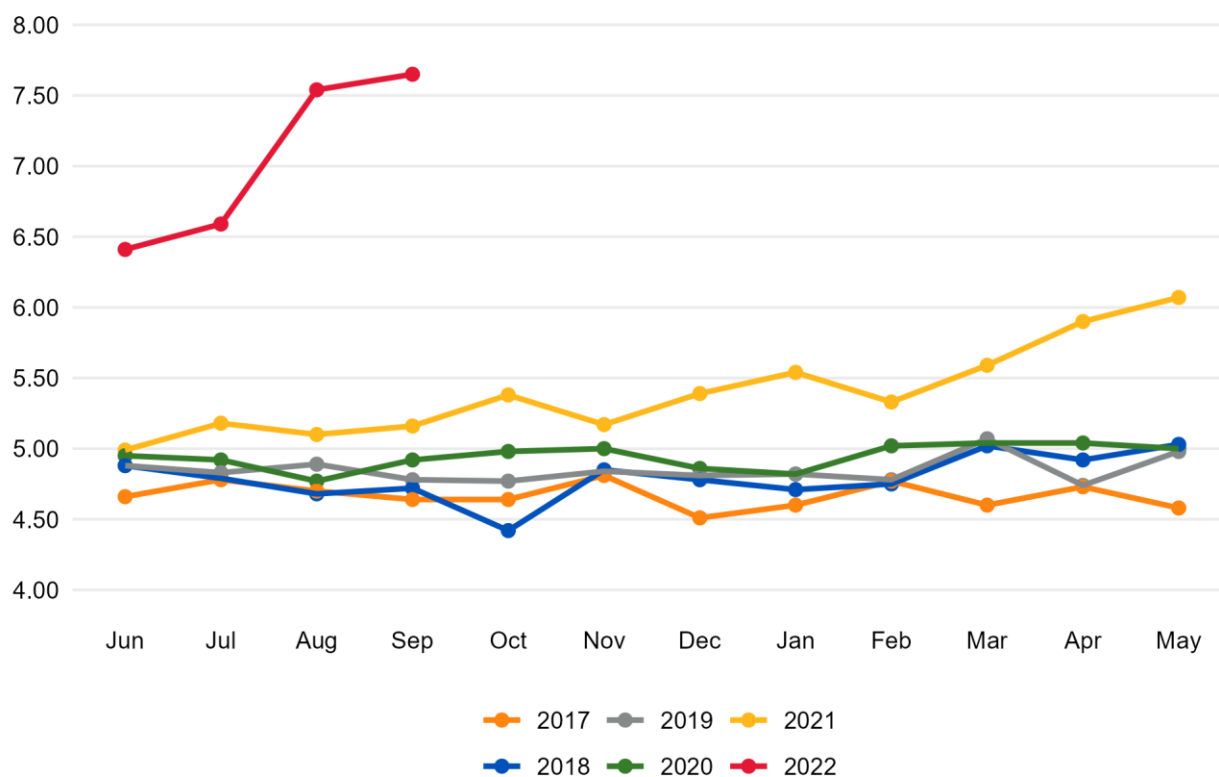
Barley Prices Continue To Climb on Strong Demand

With a 1-million-bushel increase in barley imports, combined with a cut in exports of the same quantity, barley ending stocks for 2022/23 are up 2 million bushels in the November *WASDE*

report to 65 million—up significantly following last year’s drought, but still the second lowest level since 2011/12

The projected season-average all-barley price for 2022/23 is revised up \$0.05 per bushel from last month to \$7.30, on continued strength in malting barley prices. Barley used for FSI, led by malting, makes up the significant majority of domestic barley use. For the month of September, NASS reported a malting barley price received of \$6.65 per bushel, up \$.11 per bushel from last month’s record, as malting companies lock in higher prices to secure supplies.

Figure 8
Price received for malting barley, by marketing year and month
 U.S. dollars per bushel



Source: USDA, National Agricultural Statistics Service.

Grain Consuming Animal Units Are Projected Down for 2022/23

Grain consuming animal units (GCAU) for 2022/23 are projected at 99.24 million units—a 0.75-million-unit decline from the updated 2021/22 estimate of 99.99 million units. The year-over-year drop is largely due to lower cattle-on-feed and hog inventories recorded in the last quarter.

Poultry GCAUs are projected higher at 0.36 million units, partially offsetting the decreases in the other species.

Feed and residual use for energy feeds (corn, sorghum, barley, oats, and wheat) are projected at 141.8 million metric tons on a September-August marketing year basis for 2022/23.

International Outlook

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World Coarse Grain Production Prospects Are Slightly Reduced

Global **2022/23** coarse grain production is projected at 1,459.5 million tons, down 0.3 million tons from last month and 43.8 million tons from last year. The major decline is led by reduced coarse grain prospects of 1.1 million tons in the **European Union**, followed by **South Africa** and **Argentina**, each with reductions of 0.6 million tons. Coarse grain reductions are partly offset this month by higher coarse grain prospects of 0.8 million tons from **Australia** and additional smaller changes in other countries of the world.

Corn production in the **European Union (EU)** is projected down 1.4 million tons, based on reports showing record low corn yields for Hungary, typically one of the **EU's** largest corn producers. The corn crop was devastated by searing high temperatures and extended drought across much of Europe during the critical periods of tasseling, pollination, and grain fill. Barley and oats prospects in the **European Union** were improved, with an increase of 0.2 million tons each.

Additional reductions are expected for Sub-Saharan African countries. A biannual review of 2022/23 grain production forecasts and updates for recent years was performed for each country of the **Sub-Saharan Africa (SSA)** region. The revisions in production indicate a drop in the **South African** and **Nigerian** corn crops that is mostly offset by increases in **Angola, Mali** and **Senegal**.

Turkey and **Pakistan** are projected to see corn output increase by 0.3 million tons each for 2022/23. **Turkey** is projecting 6.5 million tons of corn output, based on higher-than-expected yields. Favorable weather and improved moisture levels—compared to the preceding year that had been marked by drought in some of the primary corn-growing regions (Central Anatolia, Southeast Anatolia, Cukurova, and the Aegean region)—contributed to this revision. **Pakistan** is expecting a 9.2-million-ton corn output, based on official statistics. An increase in area harvested (along with improved production practices that include improved seed varieties) are important factors driving the increase in **Pakistan's** corn production.

For more information on this month's changes in coarse grain production, see tables A1 and A2 below. The changes in global, foreign and U.S. coarse grain production are shown in table A1, while changes in coarse grain production by country are given in table A2.

Table A1 - World and U.S. coarse grain production at a glance (2022/23), November 2022					
	Region or country	Production	Change from previous month ¹	YoY Change ²	Comments
<i>Million tons</i>					
Coarse grain production (total)					
↓	World	1,459.5	-0.3	-43.8	
↓	Foreign	1094.8	-0.9	-10.9	Small changes are made for a number of countries and commodities. See table A2.
↑	United States	364.8	+0.7	-32.9	See section on U.S. domestic output.
World production of coarse grains by type of grain					
CORN					
↓	World	1,168.4	-0.4	-49.1	
↓	Foreign	814.6	-1.2	-20.0	Production cuts for the European Union (EU), South Africa, Philippines and Nigeria are partly offset by higher prospects in Angola, Mali, Pakistan and Turkey. See table A2.
↑	United States	353.8	+0.9	-29.0	See section on U.S. domestic output.
BARLEY					
↓	World	149.0	Fractional change	+3.5	
↓	Foreign	145.2	Fractional change	+2.3	Lower projected output in Argentina and Uruguay is partially offset by higher prospects in Australia and the European Union. See table A2.
	United States	3.8	No change	+1.2	See section on U.S. domestic output.
SORGHUM					
↑	World	60.1	+0.2	-2.1	
↑	Foreign	54.2	+0.2	+3.3	Higher sorghum production in Australia and Senegal partially offset by small reductions in the European Union, South Africa and others. See table A2.
↓	United States	6.0	-0.2	-5.4	See section on U.S. domestic output.
OATS					
↑	World	24.5	+0.2	+1.9	
↑	Foreign	23.6	+0.2	+1.6	Higher production is projected in the European Union, specifically Sweden and Finland. See table A2.
	United States	0.8	No change	+0.3	See section on U.S. domestic output.
RYE					
↓	World	12.0	Fractional change	-0.5	
↓	Foreign	11.7	Fractional change	-0.6	Fractional reduction in the European Union.
	United States	0.3	No change	Small change	See section on U.S. domestic output.
¹ Change from previous month. ² YoY: year-over-year changes. ³ Totals may not add due to rounding.					
For changes and notes by country, see table A2.					
Source: USDA, Foreign Agricultural Service, <i>Production, Supply and Distribution</i> database.					

Table A2 - Coarse grain foreign production changes by country at a glance, November 2022

Type of crop	Crop year	Production	Change in forecast ¹	YoY ² change	Comments	
		<i>Million tons</i>				
2022/23 Crop year						
SUB-SAHARAN AFRICA (SSA)						
↓	Corn	<i>Various</i>	83.8	Fractional	-3.7	As a result of a biannual SSA review, corn output in each country of the region is revised. Corn production is projected lower for South Africa and Nigeria—and partially offset by small increases in Mali, Angola, Senegal, Namibia, Rwanda, and Togo.
↓	Millet	<i>Various</i>	14.2	Fractional	+2.6	Following a biannual review, and updates for past years for SSA countries. Reduced small adjustments are made for millet output in Angola and Zimbabwe, leaving a fractional amount of lower production this month.
	Sorghum	<i>Various</i>	28.2	No change	+2.8	Sorghum prospects are projected higher for Senegal, while fractional adjustments for South Africa and Lesotho offset the increase of sorghum production this month.
ARGENTINA						
↓	Barley	<i>Dec-Nov</i>	4.5	-0.6	-0.8	Barley production prospects are lowered due to below-average crop conditions that impacted yields.
AUSTRALIA						
↑	Sorghum	<i>Mar-Feb</i>	2.9	+0.3	+0.2	Sorghum production is revised up due to an increase in area harvested. As Cotton area is revised down this month as sorghum prices are strong, there is an expectation for sorghum area increase.
↑	Barley	<i>Nov-Oct</i>	12.7	+0.5	-1.2	Barley production is increased due to favorable growing conditions raising yields.
EUROPEAN UNION						
↓	Corn	<i>Oct-Sep</i>	54.8	-1.4	-16.2	Corn prospects are lowered due to major reduction in Hungarian corn crop.
↑	Barley	<i>Jul-Jun</i>	51.3	+0.2	-0.7	Barley output increased due to slightly higher production in Spain, Czech Republic, Bulgaria, and Netherlands based on official sources.
↑	Oats	<i>Jul-Jun</i>	7.8	+0.2	+0.2	Higher oats production in Finland, Spain and fractional increases in Czech Republic and Netherlands.
↓	Sorghum	<i>Jul-Jun</i>	0.7	Fractional	-0.1	Reduced sorghum prospects for France.
TURKEY						
↑	Corn	<i>Sep-Aug</i>	6.5	+0.3	No change	Increase in corn production due to improved conditions that contributed to higher yields.
PAKISTAN						
↑	Corn	<i>Jul-Jun</i>	9.2	+0.3	-1.4	Revised corn production based on recent press release from Government of Pakistan. Overall increase is due to higher area, use of better quality seed, and production practices.
PHILIPINES						
↓	Corn	<i>Jul-Jun</i>	7.9	-0.4	-0.4	Based on preliminary data indicating lower revised official records.
URUGUAY						
↓	Barley	<i>Dec-Nov</i>	0.8	-0.2	-0.1	Barley production is down based on lower planted area, according to official records.
ARMENIA						
↓	Barley	<i>Jan-Dec</i>	0.1	Fractional	Fractional	Based on revised official records.
2021/22 Crop year						
TANZANIA						
↓	Corn	<i>Jul-Jun</i>	6.5	-0.5	-0.2	Based on revised official records.
MEXICO						
↑	Corn	<i>Oct-Sep</i>	26.8	Fractional	-0.6	Based on statistical information from the Mexican Government.
URUGUAY						
↑	Corn	<i>Apr-Mar</i>	0.9	Fractional	Fractional	Based on revised official records.

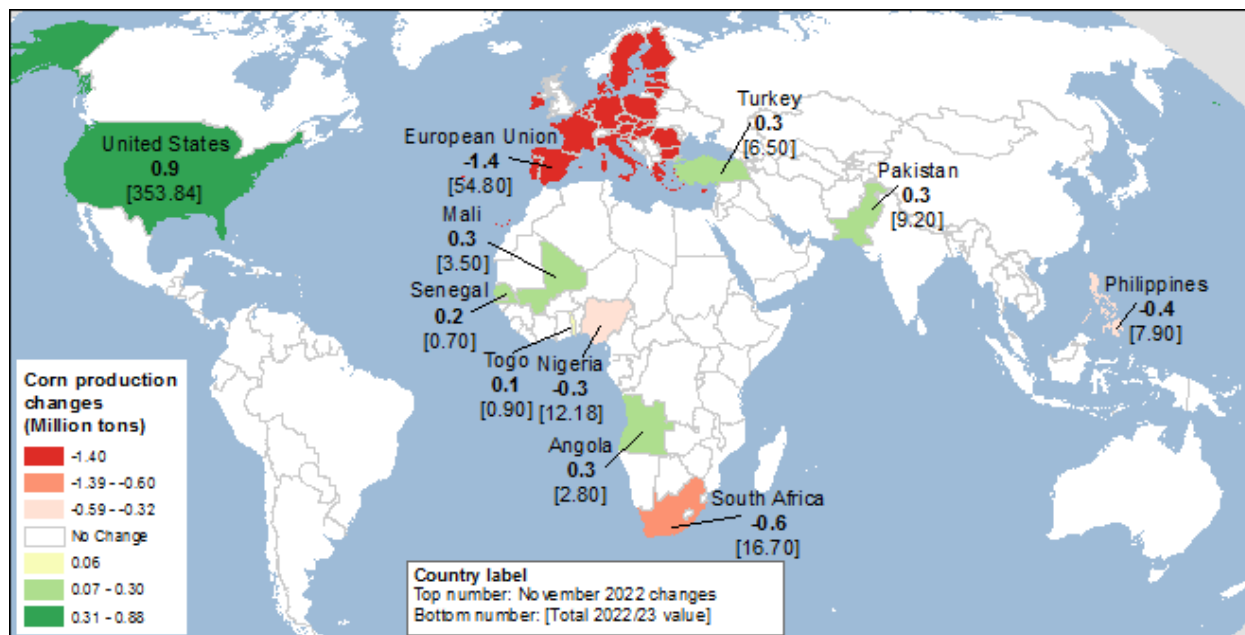
¹Change from previous month. Smaller changes are made for several countries, see map A for changes in **corn**.

²YoY: year-over-year changes.

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

For a visual display of production changes for corn, see map A below.

Map A – Corn production changes for 2022/23, November 2022



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

Corn Harvest Update in Ukraine

There are no major market changes for **Ukraine** this month. Ukraine’s corn harvest is ongoing but delayed compared to the same timeframe a year prior. According to Ukraine’s Ministry of Agriculture (as of October 27), 0.83 million hectares have been harvested compared to an average of 3 million at the same time in prior years. An additional 0.27 million hectares of corn were harvested the following week, bringing the total to 1.1 million hectares or 27 percent of the total area, as of November 4. The harvest is completed for barley and 95 percent completed for millet. As Ukrainian farmers face shortages in funds for fuel and reduced storage capabilities, it is expected that a portion of the Ukrainian corn crop will remain unharvested. **Ukrainian** corn production is forecasted at 31.5 million tons, unchanged from last month.

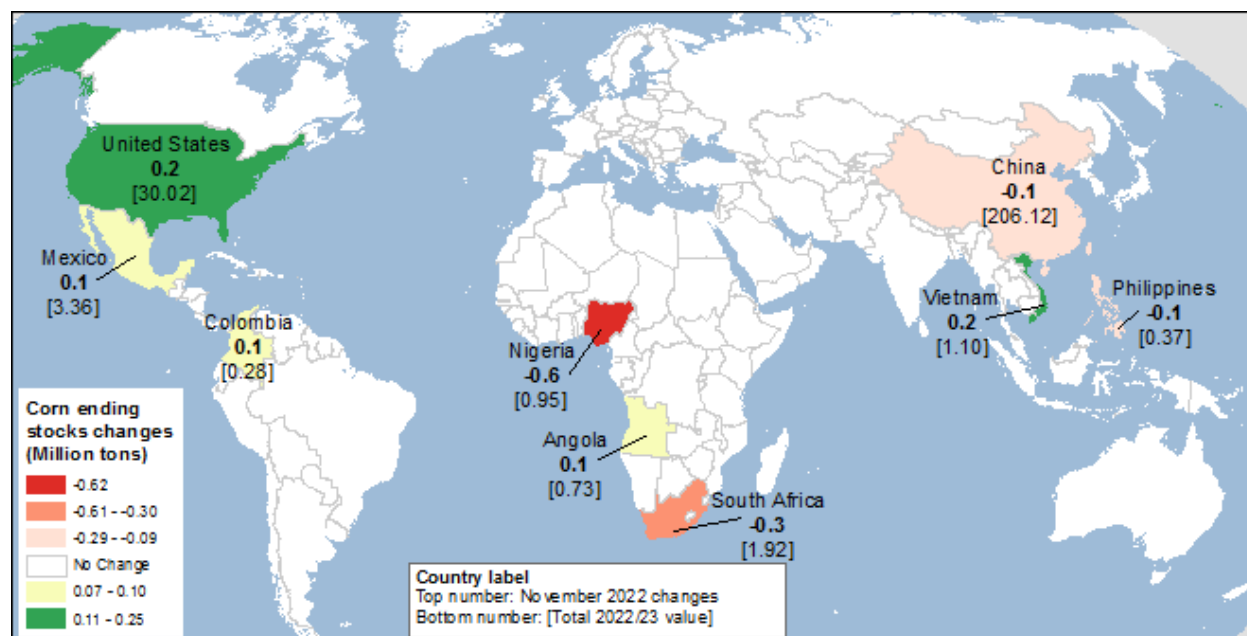
Higher Coarse Grain Consumption and Lower Stocks

Global coarse grain use in 2022/23 is projected slightly higher this month to 1,467.8 million tons. Much of the increase is in forecasted **U.S.** use, with revisions in domestic consumption, following changes in production and imports.

The largest change to 2022/23 domestic use is for the **European Union**, which is down 1 million tons for coarse grain (mainly corn and sorghum) due to sharply reduced production. **Chinese** barley feed use is also reduced, projected 0.5 million tons lower this month due to an anticipated reduction in exportable supplies from **Argentina**—that has seen lower crop prospects due to poor weather conditions—leading to lower Chinese imports. In contrast, **Russian** barley feed domestic consumption increases 0.5 million tons, reducing Russian barley exports by the same amount.

Multiple additional but partly offsetting changes for domestic coarse grain consumption are made this month across several countries and commodities. The reduction in global coarse grain production is steeper than the decrease in use, reducing projected global ending stocks. World 2022/23 coarse grain ending stocks are forecast 0.6 million tons lower than the October projection, to reach 326.4 million tons. Individual countries' changes in stocks mirror changes in production and trade revisions. The largest reductions are for **Nigerian** and **South African** corn (down 0.6 and 0.3 million tons, respectively), given this month's lower corn output and higher export projections. See a visual display of this month's country changes in corn stocks in map B below.

Map B – Corn ending stocks changes for 2022/23, November 2022



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

Global Coarse Grain Trade Is Down

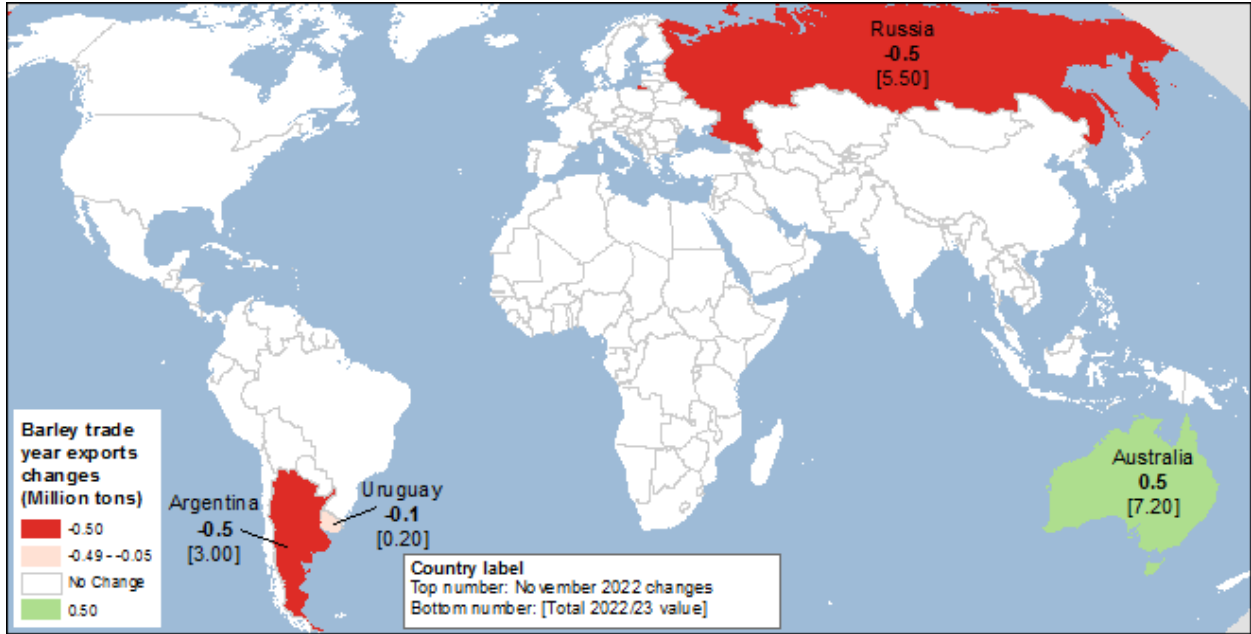
World coarse grain exports in 2022/23 (October-September international year) are forecast down by 1.8 million tons to 225.6 million. The decline is driven by reduced **Argentinian** and **Russian** coarse grain export projections. However, part of this reduction is offset by higher projected exports from **Australia**.

Global **corn** trade is projected at 183.5 million tons, similar to trade from 2 years ago and down 9.5 million tons from the 2021/22 estimate. This month's projected reductions are for **Argentina** by 1 million tons and **South Africa** by 0.3 million tons, both due to reduced production for the 2022/23 international trade year.

Global trade in **barley** for the international trade year is forecast to decline slightly to 29.6 million tons, down 0.5 million tons from last month. **Argentinian** and **Russian** exports are reduced by 0.5 million tons each while **Australia** steps in to partially fill the demand with an increase of 0.5 million tons. See a visual display of this month's changes in barley trade-year exports in map C below.

U.S. sorghum exports for 2022/23 (October-September trade year) are projected down 0.3 million tons to 4.5 million (down 10 million bushels to 175 million for the September-August local marketing year). The U.S. sorghum export reduction is fully offset by an increase in **Australian** sorghum exports for 2022/23 of 0.3 million tons, on a projected increase of sorghum production. Favorable weather conditions (that include above-average rainfall and ample soil moisture reserves across all sorghum producing regions in Australia) have contributed to sorghum's appeal, in combination with increased sorghum prices that improve sorghum's competitiveness with cotton. From a market standpoint, China has been by far the largest global sorghum importer, with the United States being China's dominant foreign supplier, followed by Australia and Argentina.

Map C – Barley trade year export changes, November 2022



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

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