



Feed Outlook: November 2023

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Higher 2023/24 U.S. Corn Yields Boost Total Feed Grain Supply

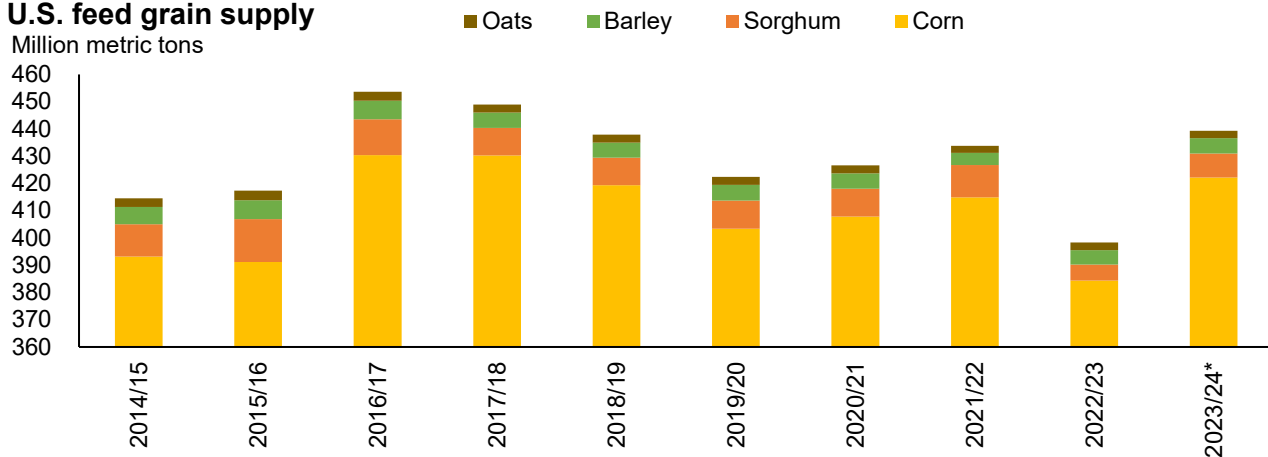
Despite a 6-bushel-per-acre reduction to 2023/24 U.S. sorghum yields, the U.S. feed grain supply is expected to grow by 3.4 million metric tons to 439.4 million (see figure 1). A projected 1.9-bushel-per-acre boost in corn yields propels the 2023/24 corn production forecast up by 170 million bushels to 15.2 billion. This increase more than offsets a cut to the 2023/24 U.S. sorghum crop, which is expected to contribute 47 percent more to the total U.S. feed grain supply than last year.

Global and U.S. coarse grain exports are projected higher this month, with the increase for corn partly offset by a reduction for sorghum. A rise in world corn exports is pushing the record-high trade (for the international October-September trade year) further up. An increase in supplies (higher beginning stocks and greater output) exceeds the rise in coarse grain use, boosting stocks.

Figure 1

U.S. feed grain supply

Million metric tons



Note: Asterisk (*) denotes forecast.

Marketing year

Source: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, *Production, Supply, and Distribution* Database.

Domestic Outlook

2023/24 U.S. Corn Yields Propel Production

In its November *Crop Production* report, the USDA's National Agricultural Statistics Service (NASS) raised its national corn production forecast, based on higher corn yields. U.S. corn production for 2023/24 is projected to be 15.2 billion bushels, a 170-million-bushel increase from last month's forecast. This number is the result of an increase in yields to 174.9 bushels per acre, from the October 2023 forecast of 173 bushels per acre. The harvested area forecast remains unchanged at 87.1 million acres.

Although yield forecasts were slightly adjusted from their October levels for some States, increases in major producing States—including Illinois (raised to 203 bushels per acre from 200), Indiana (up 3 bushels per acre to 200), Minnesota (increased from 179 bushels per acre to 181), and South Dakota (a 5-bushel-per-acre increase to 152)—contribute to the overall increase in the national corn yields. Ultimately, Illinois accounts for more than 19 percent of the overall increase in output—followed by South Dakota, Minnesota, and Indiana, respectively.

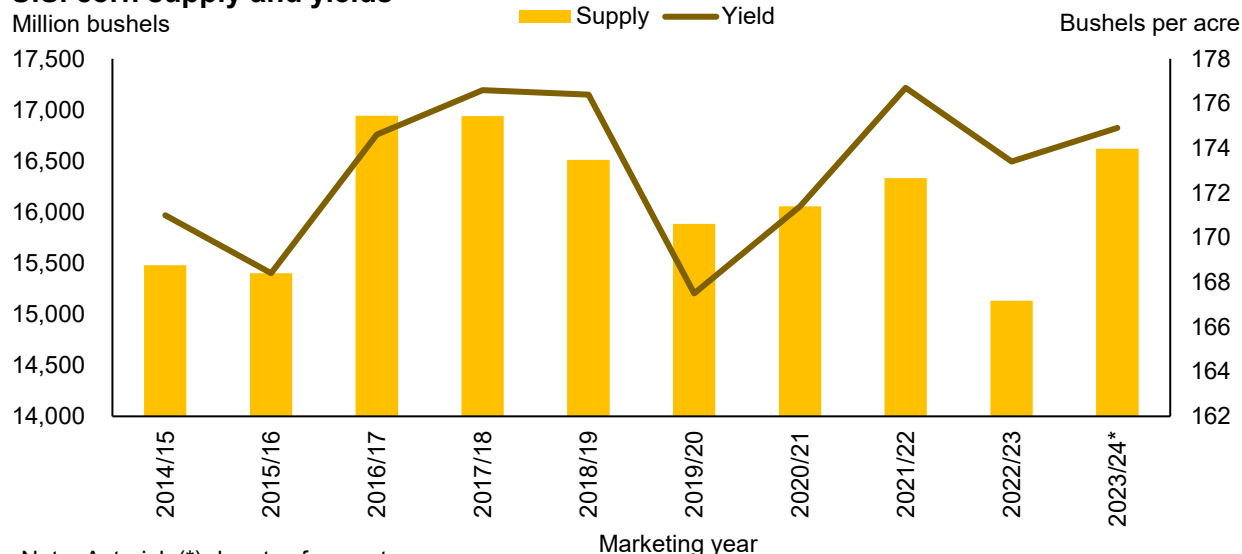
During the first month of the 2023/24 marketing year, corn imports were strong—nearly matching September 2022 and 2021 volumes combined, at just over 3 million bushels. Nevertheless, the anticipated growth in domestic corn output is expected to weaken U.S. demand for foreign corn, as harvest nears completion. As a result, the 2023/24 corn import forecast remains unchanged at 25 million bushels. The projected increase in corn production brings the 2023/24 U.S. corn supply forecast to 16.62 billion bushels—1.5 billion higher than 2022/23 (see figure 2).

U.S. corn use is expected to increase in tandem with the projected supply growth. Specifically, feed and residual corn use is raised this month, up 50 million bushels from last month to 5.65 billion. This increase will satisfy the growing number of feedlot placements at the onset of the 2023/24 marketing year, which also boosts grain consuming animal units up to 100.06 units this month, from 99.66 units. The 2023/24 corn-for-ethanol fuel use forecast is also raised this month, up 25 million bushels to 5.33 billion. In its November *Grain Crushings and Co-Products Production* report, NASS reported that September corn-for-ethanol fuel use was 12 percent higher than last year. Thus, the growth in the corn supply is expected to support strong ethanol demand. This report also included some revisions, resulting in a slightly lower 2022/23 fourth quarter corn-for-fuel ethanol use estimate. Reduced by 912,000 bushels, the 2022/23 corn-for-

fuel ethanol-use estimate now sits at 5.176 billion bushels. The reduction in total corn food, seed, and industrial use is offset by a slight upward adjustment to feed and residual corn use.

Figure 2

U.S. corn supply and yields



Note: Asterisk (*) denotes forecast.

Source: USDA, Economic Research Service using data from USDA, World Agricultural Outlook Board, *World Agricultural Supply and Demand Estimates*.

U.S. corn exports are off to a healthy start for the 2023/24 marketing year. In September, export volumes reached 125 million bushels, 25 million higher than September 2022. Furthermore, corn export commitments through November 2, 2023, are 31 percent higher than the same time last year at nearly 760 million bushels. These factors, complemented by a growing domestic supply, contribute to a 50-million-bushel increase in the 2023/24 corn export forecast to 2.08 billion.

Combined, anticipated increases in U.S. corn use do not exceed projected supply gains. Consequently, 2023/24 corn stocks are 45 million bushels higher this month at 2.16 billion bushels. The average price received by U.S. corn farmers is expected to fall from last month's forecast of \$4.95 per bushel to \$4.85 per bushel.

Sorghum Production Drops on Reduced Yields

Harvested sorghum area for 2023/24 remains unchanged this month at 6.3 million acres. Combined with a decrease in yields to 51.4 bushels per acre from 57.4, production is reduced by 38 million bushels this month to 322 million. The yield reduction leads to 2 consecutive years of below average production for the U.S. sorghum crop. Weather conditions in the Great Plains impacted yield and saw sharp reductions from October projections in Kansas, Texas, and South

Dakota. Nevertheless, projected sorghum production for 2023/24 is 71 percent larger than last year's estimate, despite the reduction in output.

Kansas and Texas, the two largest sorghum producing States, witnessed production cuts due to deteriorating yield forecasts. The Kansas sorghum yield forecast dropped 9 bushels per acre from October to 47 bushels per acre, up from last year's poor yield of 39 bushels per acre but well below expectations. The yield projection in Texas fell 3 bushels per acre this month to 54 bushels, up only 1 bushel from the 2022 sorghum crop yield.

Total sorghum use is lowered for the 2023/24 crop by 35 million bushels from last month to 320 million bushels for the marketing year. In short, lower supplies are expected to reduce sorghum export potential and decrease feed usage. More specifically, feed and residual sorghum usage is lowered 10 million bushels to 45 million. Sorghum exports were lowered 25 million bushels to 220 million. Despite the lower export projection, sorghum exports are forecast to increase by 111 million bushels from 2022/23.

Many factors impact global sorghum trade flows, resulting in volume variability. For the United States, however, robust sorghum exports are heavily dependent on China's sorghum purchasing. Over the last 3 marketing years, China has accounted for 86 percent of U.S. sorghum exports, on average (see figure 3). A poor U.S. sorghum crop in 2022/23 suppresses this average, as U.S. sorghum supplies were tight, limiting the availability of U.S. sorghum for purchase in the global market. In fact, the U.S. did not export any sorghum to China until November 2022—let alone reach September 2023 trade volumes until January 2023.

To start 2023/24, U.S. sorghum export shipments topped 12 million bushels. Notably, close to 97 percent of U.S. September 2023 sorghum exports were destined for China. Moreover, total U.S. sorghum export commitments eclipsed 120 million bushels as of November 2, 2023, with more than 80 percent reported for China. Thus, despite the aforementioned reduction in the 2023/24 sorghum export forecast, the United States is poised to double last year's volume.

For 2022/23, sorghum ethanol-for-fuel use was finalized this month, based on data provided by the U.S. Department of Energy, Energy Information Administration. The updated forecast is roughly 200,000 bushels lower than last month at 57.8 million bushels. This decrease has offsetting implications for feed and residual sorghum use, which is raised accordingly this month.

Looking forward, the United States is expected to allocate 53 million bushels of sorghum-for-ethanol fuel use in 2023/24. This forecast is unchanged from last month and will be achieved if

the pace of use exhibited in the final quarter of the 2022/23 marketing year is maintained. Ultimately, changes to the 2023/24 sorghum balance sheet result in tighter ending stocks, lowering the forecast by 3 million bushels from October to 26 million bushels. The projected season average farm price is also lowered to \$4.85 per bushel, down \$0.10.

Figure 3

Monthly U.S. sorghum exports to China and other trade partners



Source: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, *Global Agricultural Trade System*.

Barley and Oats Season-Average Prices Revised Higher

Through the first 4 months of the marketing year (June-May), barley and oats prices have exceeded expectations. In fact, both the all-barley and oats 2023/24 season-average price forecasts have been raised by \$0.20 per bushel to \$7.20 and \$3.50 per bushel, respectively. In the most recent *Agricultural Prices* report, NASS reported September malting barley prices averaged \$7.66 per bushel and \$5.23 for feed barley. For feed barley, September prices contribute to a marketing year-to-date average exceeding the same 3-year average by 20 percent. Moreover, malting barley prices have averaged \$0.60 above last year’s prices. Thus, an upward movement to the 2023/24 all-barley price forecast is warranted. A similar approach was applied to the analyses of U.S. oats prices, which are averaging higher than expected through September at \$3.91 per bushel.

International Outlook

Foreign Coarse Grain Production Higher on Larger Corn Crops for Ukraine and Russia

Global coarse grain output is up 4.8 million tons this month, as higher projections for corn and barley are partly offset by lower output for sorghum and millet. Foreign coarse grain production (global minus U.S. output) for 2023/24 is projected 1.4 million tons higher this month, while U.S. coarse grain output is up by 3.4 million tons, because of higher yields for corn (though lower yields for sorghum).

Corn output is boosted for **Ukraine**, with yields reported by the Government through October 31, 2023, slightly exceeding the previous record of 2018/19. In Ukraine, favorable rains and no heat stress at the tassel and silk corn development stages has supported growing conditions. Corn production in Ukraine this month is projected higher by 1.5 million tons to 29.5 million, with yields of 7.38 tons per hectare, the third highest level on record.

The 2023/24 corn production forecast for **Russia** is also projected 1.4 million tons higher this month. Corn area is reported to be higher than previously expected. Corn yields are also up, as the cumulative yield through October 30 is at a record high. This year, the **Russian** corn harvest is behind the average pace; however, yields might increase as harvesting moves to the high-yielding Central District. Corn production prospects are raised for **Paraguay**, where timely rains are expected to boost yields.

Lower projected corn output for **Mexico** partly offsets the global corn production gains. Due to unfavorably dry conditions, Mexican corn production is reduced because of the lower-than-anticipated area planted for summer corn and anticipated higher abandonment. Significant moisture deficiency has existed throughout the planting period and growing stage of summer corn in the major corn-producing regions. A reduction in summer planting was reported by the Mexican statistical agency (SIAP - Servicio de Información Agroalimentaria y Pesquera).

The 2023/24 **Argentine** barley production forecast was revised lower this month. Barley planting is complete in the country and the crop is approaching harvest time at the end of November. Most of the barley crop is grown in the southern part of Buenos Aires. The crop in this region did not get an adequate amount of rain during its early growing season, although the dryness was not as severe as last year when barley yields fell to a 13-year low. Rains in October are expected to partly offset the losses. This month, barley yield is projected 5.5

percent lower than a month before. Note that Argentine wheat output is also projected considerably lower this month (but—as with barley—also higher than in the previous drought-stricken year of 2022/23).

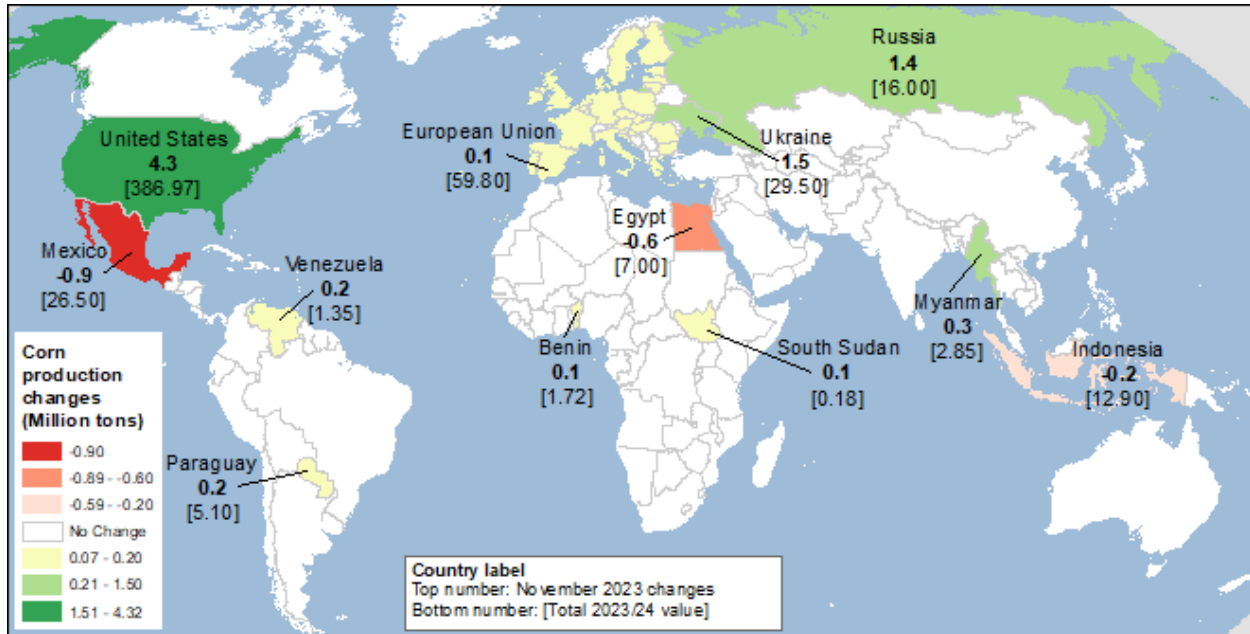
A number of production changes are made this month for the 2023/24 marketing year, across countries and commodities. Changes in global, foreign, and U.S coarse grain production (by type of grain) are shown in table A1. See table A2 for the whole list and brief explanations of this month's coarse grain production revisions by country and by crop. See below map A for changes in corn production and map B for changes in barley.

Table A1 - World and U.S. coarse grain production at a glance (2023/24), November 2023					
	Region or country	Production	Change from previous month¹	YoY Change²	Comments
		<i>Million tons</i>			
Coarse grain production (total)					
↑	World	1,499.3	+4.8	+52.2	
↑	Foreign	1,099.0	+1.4	+10.0	Partly offsetting changes are made for a number of countries and commodities. See table A2.
↑	United States	400.3	+3.4	+42.2	See section on U.S. domestic output.
World production of coarse grains by type of grain					
CORN					
↑	World	1,220.8	+6.3	+63.7	
↑	Foreign	833.8	+2.0	+25.1	Higher corn output is projected in Ukraine, Russia, Paraguay, Burma, and several other countries. The increase is partly offset by reductions in Mexico, Egypt, and the EU ³ , among other countries. See table A2 and map A.
↑	United States	387.0	+4.3	+38.6	See section on U.S. domestic output.
BARLEY					
↑	World	142.3	+0.5	-9.3	
↑	Foreign	138.3	+0.5	-9.5	Higher output projected in Russia and Ukraine is partly offset by reductions in Argentina, the EU ³ , and Turkey, among other countries. See table A2 and map B.
	United States	4.0	No change	+0.2	See section on U.S. domestic output.
SORGHUM					
↓	World	59.9	-1.1	+4.8	
↓	Foreign	51.7	-0.1	+1.4	A projected yield reduction in South Sudan.
↓	United States	8.2	-1.0	+3.4	See section on U.S. domestic output.
OATS					
	World	20.4	Fractional	-4.7	
	Foreign	19.6	Fractional	-4.7	Offsetting small changes for the EU ³ , United Kingdom, and Mexico.
	United States	0.8	No change	Fractional	See section on U.S. domestic output.
MILLET					
↓	World/Foreign	30.8	-1.0	-1.3	Lower output projected for India. See table A2.
¹ Change from previous month. ² YoY: year-over-year changes. ³ EU: European Union.					
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 by country at a glance for 2023/24, November 2023

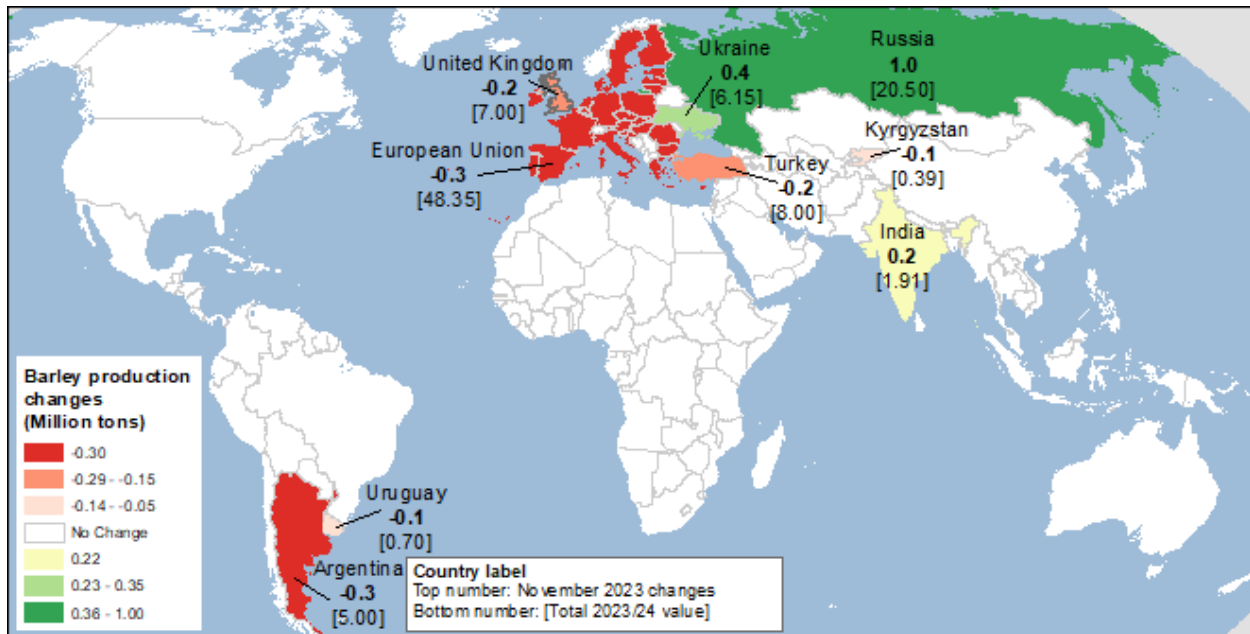
Type of crop	Crop year	Production	Change in forecast ¹	YoY ² change	Comments	
<i>Million tons</i>						
Coarse grain production by country and by type of grain						
UKRAINE						
↑	Corn	Oct-Sep	29.5	+1.5	+2.5	More than 60 percent of corn has already been harvested. The harvest reports indicate a near-record final yield. This month, corn yield is projected at the third highest level ever. See report text.
↑	Barley	Jul-Jun	6.2	+0.4	+0.1	Barley harvest is complete; according to the official reports, barley area (including Crimea) is projected higher than expected.
RUSSIA						
↑	Corn	Oct-Sep	16.0	+1.4	+0.2	Corn crop conditions are excellent. Although the harvest progress is slow this year, the reports indicate a higher-than-expected harvested area and record-high yields. See report text.
↑	Barley	Jul-Jun	20.5	+1.0	-1.0	Barley is 98 percent harvested. According to official statistics, the harvested area (excluding Crimea) turned out to be higher than projected. Yields are adjusted up slightly.
MEXICO						
↓	Corn	Oct-Sep	26.5	-0.9	-1.6	The official statistical agency reported that the planted area for the main growing summer season is the lowest in 4 years. Rain deficiency during the planting period in the country's corn belt is the main reason for area decline.
PARAGUAY						
↑	Corn	Jun-May	5.1	+0.2	+0.1	The corn here is in the middle of the growing season. Favorable early growing conditions warrant a modest increase in projected yields.
EUROPEAN UNION (EU)						
↑	Corn	Oct-Sep	59.8	+0.1	+7.5	Almost a washout adjustment. Higher-than-projected output in France is almost offset by lower projected production in Bulgaria .
↓	Barley	Jul-Jun	48.4	-0.3	-3.3	Harvest results indicate lower production in Finland and the Netherlands , partly offset by higher crop in France and Lithuania . Barley output is also projected lower for the United Kingdom because of officially reported lower area.
BURMA						
↑	Corn	Oct-Sep	2.9	+0.3	+0.2	Favorable rainfall supports crop development. Prices for fertilizer (urea) declined, encouraging more fertilizer application over larger area, thereby supporting higher yields.
INDONESIA						
↓	Corn	Oct-Sep	12.9	-0.2	No change	A delay in seasonal rains is expected to limit corn yields that are down this month from the previously projected record-high.
EGYPT						
↓	Corn	Oct-Sep	7.0	-0.6	-0.4	Extreme heat that exceeded the typically very hot weather harmed corn yields, now projected at the lowest level since 1996/97 crop year.
ARGENTINA						
↓	Barley	Dec-Nov	5.0	-0.3	+0.5	Barley yield is projected 5.5 percent lower than a month before because of dryness during the reproductive period. See report text.
TURKEY						
↓	Barley	Jun-May	8.0	-0.2	+0.6	Barley crop was harvested long ago. Large-scale drought in the north-western Marmara region affected yields more than expected. The decline in yields is based on Turkish official statistics.
INDIA						
↓	Millet	Nov-Oct	12.2	-1.0	-1.3	This year, an erratic monsoon rain is expected to limit millet yields.
¹ Change from previous month. Smaller changes are made for several countries, see map A for changes in corn .						
² YoY: year-over-year changes.						
Source: USDA, Foreign Agricultural Service, <i>Production, Supply and Distribution</i> database.						

Map A – Corn production changes for 2023/24, November 2023



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

Map B – Barley production changes for 2023/24, November 2023



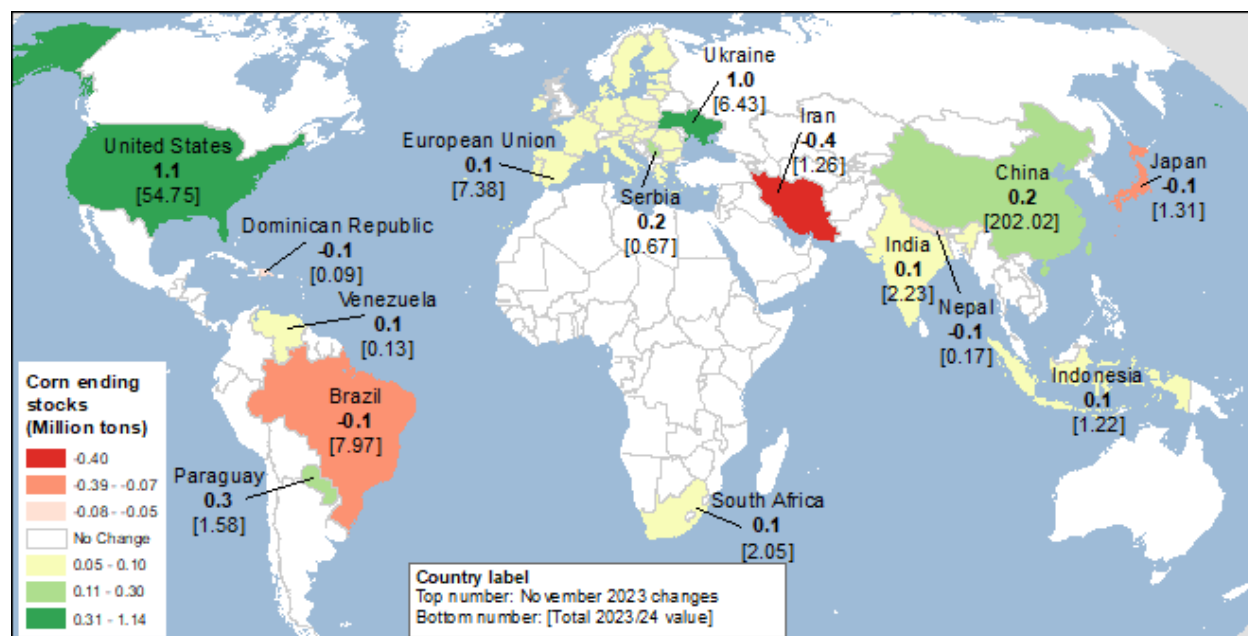
Source: USDA, Foreign Agricultural Service, *Production, Supply, and Distribution* database.

Coarse Grain Consumption and Stocks are Projected Higher

Global coarse grain consumption in 2023/24 is projected 4.1 million tons higher this month at 1,487.1 million tons, with an increase in foreign consumption adding to higher domestic use in the **United States**. Foreign use is up 2.5 million tons, driven mainly by upward revisions for corn feeding in **Canada**, the **European Union**, and **Mexico**—as well as higher barley domestic use in **Russia**. Partly offsetting are reductions in projected corn feeding in **Turkey** and **Iran**, and **sorghum** feed use in China.

An increase in supplies (higher beginning stocks and greater output) exceeds the rise in coarse grain use, boosting stocks. World 2023/24 coarse grain ending stocks are forecast to increase 2.9 million tons this month to 341.1 million. Corn ending stocks are projected 2.6 million tons higher, mainly on account of the **United States** and **Ukraine**. Barley stocks are up 0.5 million tons, with an increase for **Australia** (higher beginning stocks only partly offset by increased feed use), while changes in sorghum stocks are slightly offsetting. Even with this month's increase, barley stocks are projected at 18.1 million tons, the lowest level in 40 years, a result of a 6-percent decline in global production and supplies. For more information on this month's changes in corn stocks, see map C below.

Map C – Corn ending stocks changes for 2023/24, November 2023



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

Global and U.S. Coarse Grain Exports Are Projected Higher

The projected 2023/24 world coarse grain trade for the October-September international trade year is up 2.4 million tons, with the increase for corn partly offset by a reduction in sorghum. The forecast for world corn exports is raised 3.0 million tons this month to 197.4 million, pushing the record-high trade further up.

For **Russia** and **Ukraine**, corn supplies are projected higher this month by nearly the same amount, as improved (and for Russia, a record high) corn yields boost output in both countries. However, the projected increases in corn exports for the two countries differ: Russian corn exports are projected 1.1 million higher, while Ukraine is expected to export an additional 0.5 million tons as grain exports from Ukraine have been impacted following the expiration of the Black Sea Grain Initiative (BGSi). Ukraine corn exports are projected to reach 20.0 million tons, the lowest level since 2017. Through their control of Black Sea trade routes, the Russian military actions have impeded trade by Ukraine. Military actions have also damaged Ukrainian grain export infrastructure on both the Black Sea (Odesa, Pivdenny, Yuzhny—among others) and the Danube River (Reni, Izmail, Killia). Subsequent to the Russian invasion, Ukraine has lost its leading position in the Turkish corn import market. Since the beginning of the year, Turkey has imported 60 percent more corn from Russia than a year before and more than double the amount compared with the pre-war time. During the same period of time, corn imports by Turkey from Ukraine have fallen by 80 percent.

Since the termination of the Black Sea Grain Initiative in July, Ukraine's exports of grain out of the Black Sea have been limited. For some time, Ukraine has been exporting more grain through its neighboring western countries. Responding to the concerns of EU farmers, the European Union placed a temporary ban on grain imports from Ukraine in May 2023, which expired on September 15.

Corn exports are also projected higher for **Turkey**, as large export shipments (to Egypt, Iran, and Libya among others), began in August after a record corn harvest and **Paraguay** (higher projected output). However, corn exports are projected lower for **India** because a decline in world market prices makes corn from India—which has high domestic prices—less competitive. Another reason for smaller Indian exports is reduced corn import demand by Bangladesh, one of the main destinations for Indian corn and where corn production is at a record high this year.

Record corn supplies are keeping corn prices attractive to importers. Low corn prices support world trade, despite sluggish macro-economic growth and political unrest in some importing regions. **Canadian** and **Egyptian** corn imports are raised each by 1.0 million tons this month. Canada has reported a higher-than-expected pace of imports from the United States, where export sales to Canada also surged. As of the week ending November 2, U.S. corn outstanding sales to **Canada** were nearly 5 times more the volume than in the same period the previous year. For **Egypt**, corn imports are projected higher because two of its main suppliers—Russia and Turkey—are projected to export more corn. **EU** corn imports are raised by 0.5 million tons, as Ukraine is expected to ship additional corn to the European Union via its neighboring countries. Corn import prospects are raised for **Mexico**, almost offsetting a reduction in projected output and reflecting observed higher corn imports for 2022/23. A small increase in corn imports is projected for **Saudi Arabia**, with reportedly increased demand for corn feeding (see the market feature in the November 2023 issue of the USDA, Foreign Agricultural Service *Grain: World Markets and Trade Report*: “Saudi Arabia Imports of Corn Exceed Barley for First Time in 45 Years”).

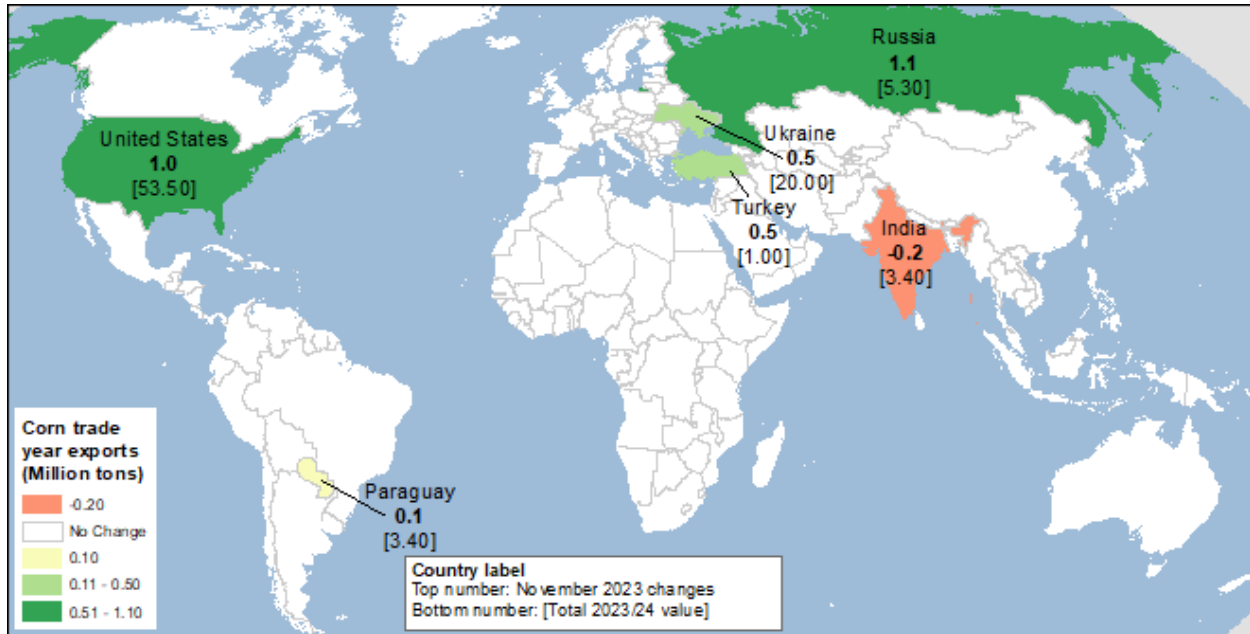
U.S. corn export prospects for 2023/24 are up 1.0 million tons to reach 53.5 million this month—up 10.7 million tons (or 25 percent) from the previous year and currently projected to be just 27 percent of world corn trade, the third lowest level in recorded history. October 2023 corn grain inspections reached 2.6 million tons, compared to 1.9 a year earlier. As of November 2, 2023, outstanding sales were 13.5 million tons, up 30 percent from a year ago.

Global sorghum trade is reduced this month, down 0.6 million tons, with lower exports by the **United States** and consequently reduced **Chinese** sorghum imports.

Barley trade is virtually unchanged this month, with almost offsetting changes—as higher projected barley exports for Ukraine offset a lower export forecast for Argentina, following production revisions for both countries.

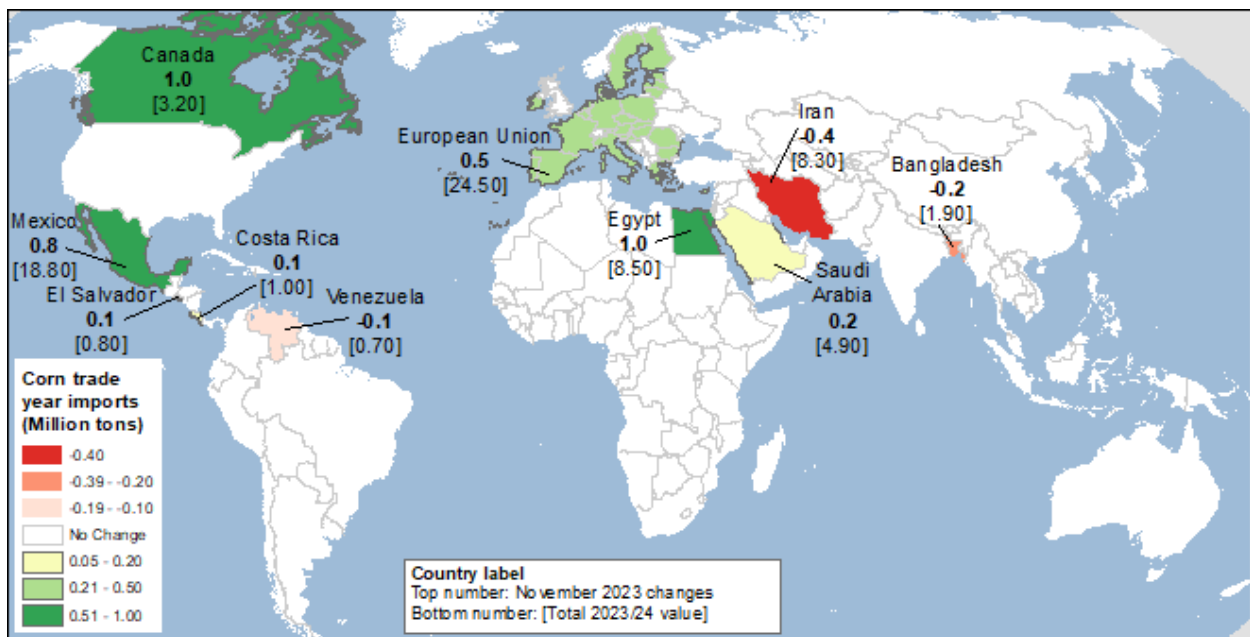
For more information on November’s changes in corn trade, see maps D and E below.

Map D – Corn trade-year exports changes for 2023/24, November 2023



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

Map E – Corn trade-year imports changes for 2023/24, November 2023



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

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