



Feed Outlook

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In this report:

[Domestic Outlook](#)

[International Outlook](#)

Increased Use Lowers Projected Corn Ending Stocks in 2020/21

U.S. corn ending stocks are lowered 150 million bushels from the previous month to 1,352 million in the April *World Agricultural Supply and Demand Estimates* (WASDE). The reduction is due to changes in corn used for fuel ethanol (25-million-bushel increase), feed and residual (50-million-bushel increase), and exports (75-million-bushel increase). Sorghum average-farm price for 2020/21 is projected \$0.05 per bushel higher than the previous month at \$5.05, based on the pace of monthly farm receipts through February.

A spike in **U.S.** corn shipments to several markets (including **Japan**, **Mexico**, **China**, and **South Korea**) during March supports an increase in corn exports to a new record. In recent weeks, U.S. corn sales and shipments have accelerated, with March corn export inspections reaching a historical record for a monthly corn shipment. Global corn imports are unchanged this month. The United States is expected to partly supplant **Ukraine** as an exporter to China and **Brazil** as an exporter to other destinations, while exports are reduced accordingly for both Ukraine and Brazil.

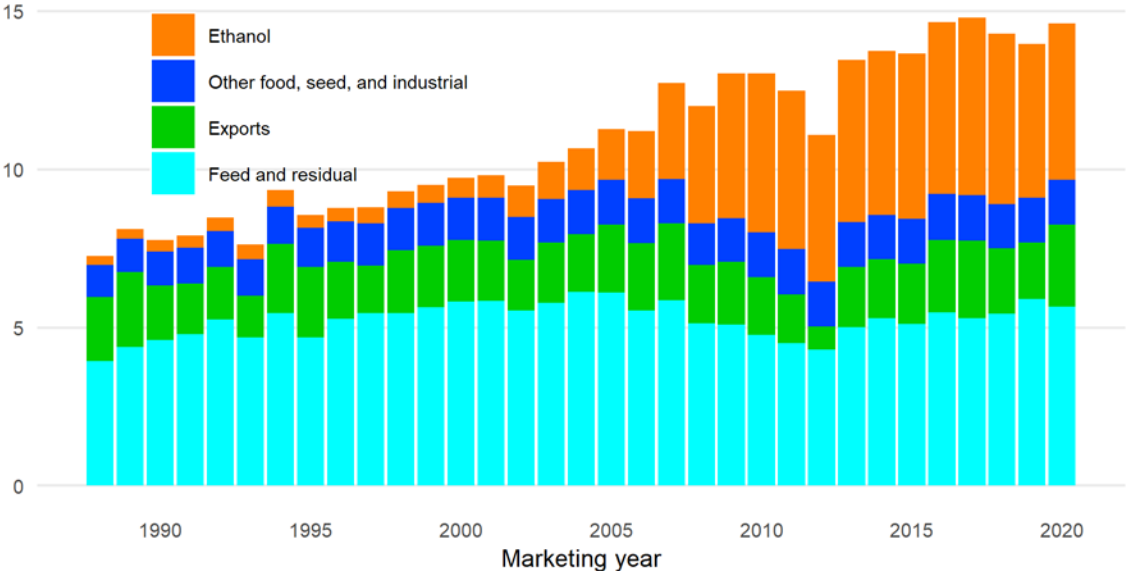
Domestic Outlook

Michael McConnell

U.S. Corn Ending Stock Projections Reduced Based on Strong Export Pace and Improved Domestic Use Outlook

U.S. corn use for 2020/21 is raised 150 million bushels in the April *World Agricultural Supply and Demand Estimates (WASDE)*, from 14,625 million bushels to 14,775 million. The higher projection is the result of increases to both domestic use and exports. Compared with the previous year, the current projection for 2020/21 total use shows a 5.8 percent year-over-year increase. The projected total for 2020/21 is still lower than the 2017/18 record of 14,798 billion bushels.

Figure 1
U.S. corn utilization
 Billion bushels



Note: 2020 is projected.
 Source: USDA, Economic Research Service.

Corn export projections are raised 75 million bushels in 2020/21 to 2,675 million bushels. This number would further increase the record total expected for the marketing year. According to the U.S. Bureau of the Census, the United States has exported 1,106 million bushels of corn through the first half of the 2020/21 marketing year (September through February)—a 77-percent increase from the same period a year ago. Additionally, export-inspections reports show

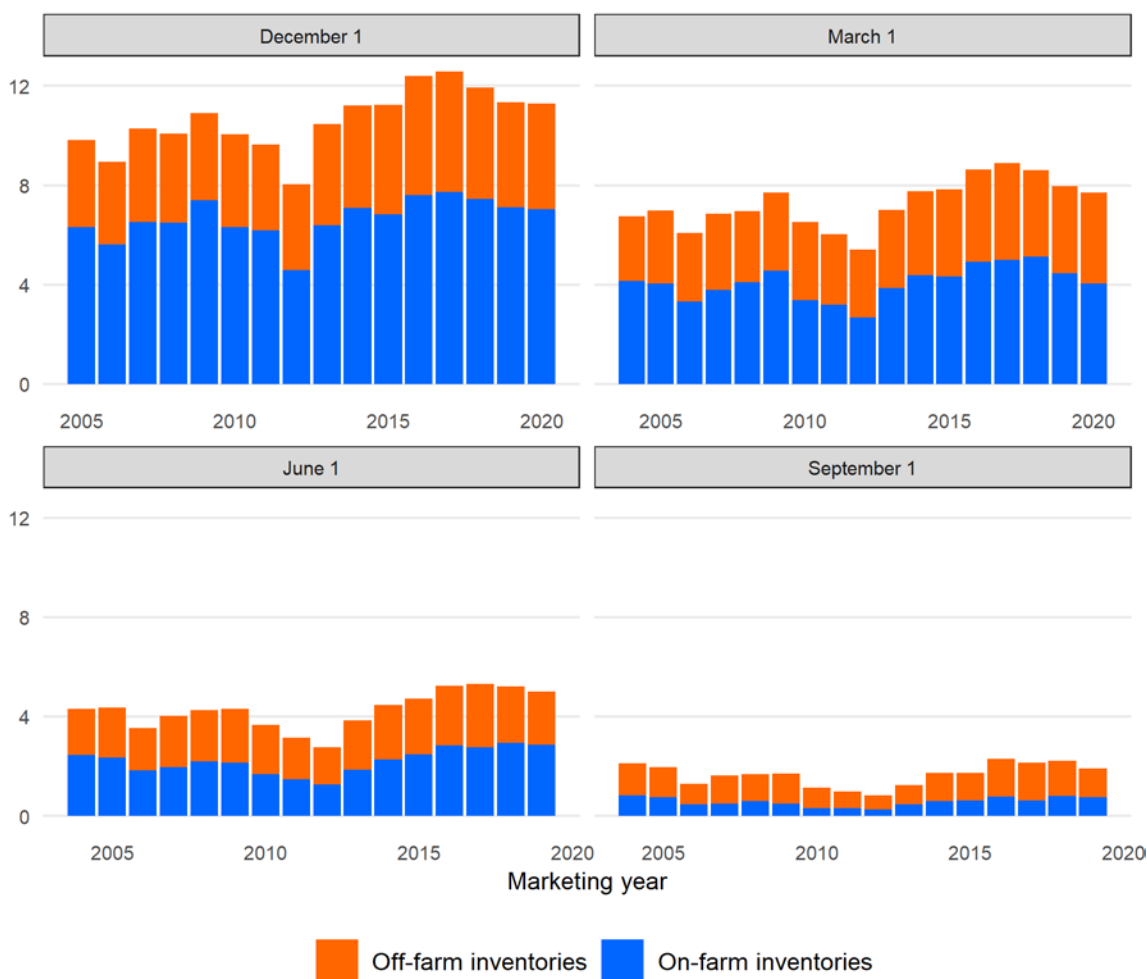
a record monthly total was likely shipped in March. For additional discussion on U.S. exports, please see the *International Outlook* section of this report.

On March 31, the USDA's National Agricultural Statistics Service (NASS) released its latest *Grain Stocks* report, which included March 1 stocks estimates. U.S. March 1 corn stocks are estimated at 7,701 million bushels, a 3-percent decline from the previous year's levels. The stocks report implies a total disappearance of 3,593 million bushels of corn between December 1, 2020 and March 1, 2021, which would be a 6-percent increase from the same period in 2019/20.

Figure 2

U.S. corn inventories, quarterly, on-farm versus off-farm

Billion bushels



Source: USDA, National Agricultural Statistics Service.

Gasoline and Ethanol Markets Improve in March, Raising Projected Corn Use for Fuel Ethanol

Corn used for fuel ethanol is projected to total 4,975 million bushels for 2020/21—a 25-million bushel increase from the previous month. Through the first 6 months of the marketing year, NASS reports that 2,448 million bushels of corn have been used for fuel ethanol production. This is a 9-percent decrease from the same period in 2019/20, which was prior to the COVID-19-related disruptions that impacted the U.S. gasoline and ethanol markets. U.S. ethanol production in February 2021 temporarily slowed due to extremely cold temperatures in the Midwest that affected energy grids and supply chains in the region. However, subsequent weekly reports from the U.S. Department of Energy's Energy Information Administration (EIA) indicate that gasoline production picked up in March. This increase has resulted in higher net input use of ethanol by motor gasoline blenders, a drawdown of inventories, and an uptick in ethanol production. A continuation of these trends for the spring and summer driving seasons are the main factors contributing to the raised corn-use projection for the sector.

Figure 3

Weekly totals of U.S. ethanol production, net inputs, and ending stocks

Million gallons



Source: U.S. Department of Energy, Energy Information Administration.

Feed and Residual Increased for 2020/21

Corn feed and residual use is projected at 5,700 million bushels, a 50-million-bushel increase from the March WASDE. The increase is due to the increased pace of disappearance recorded in the second quarter of 2020/21. Additionally, livestock inventories remain at relatively high levels, with grain-consuming animal units (GCAU) projected at 102.1 million units. This represents a 0.2-percent decrease from 2019/20's total of 102.3 million units, but is still larger than prior years. Between 2016/17 and 2018/19, GCAUs averaged 98.4 million units.

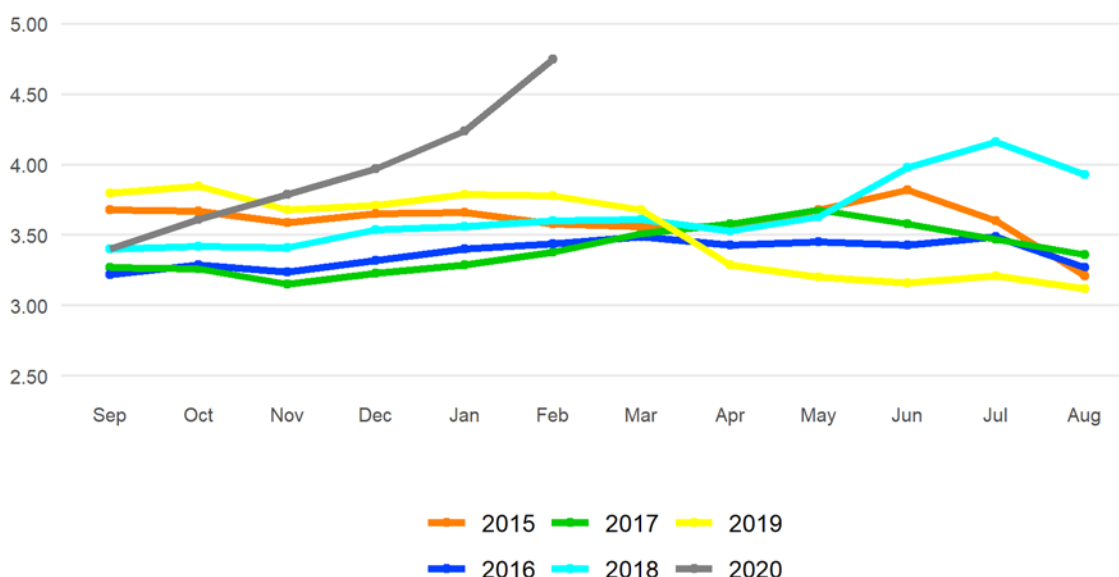
Corn Prices Remain Strong, Cash Prices Flat between February and March

The projected average farm price of corn is unchanged from the previous month, at \$4.30 per bushel. Monthly farm prices, as reported by farm receipts, show a continuation of the upward trend seen in farm-gate prices that began during the 2020 harvest. With the majority of the crop typically marketed and priced by this point in the year, subsequent monthly prices will have less of an influence on the annual season-average price.

Figure 4

Price received for corn, monthly

U.S. dollars per bushel



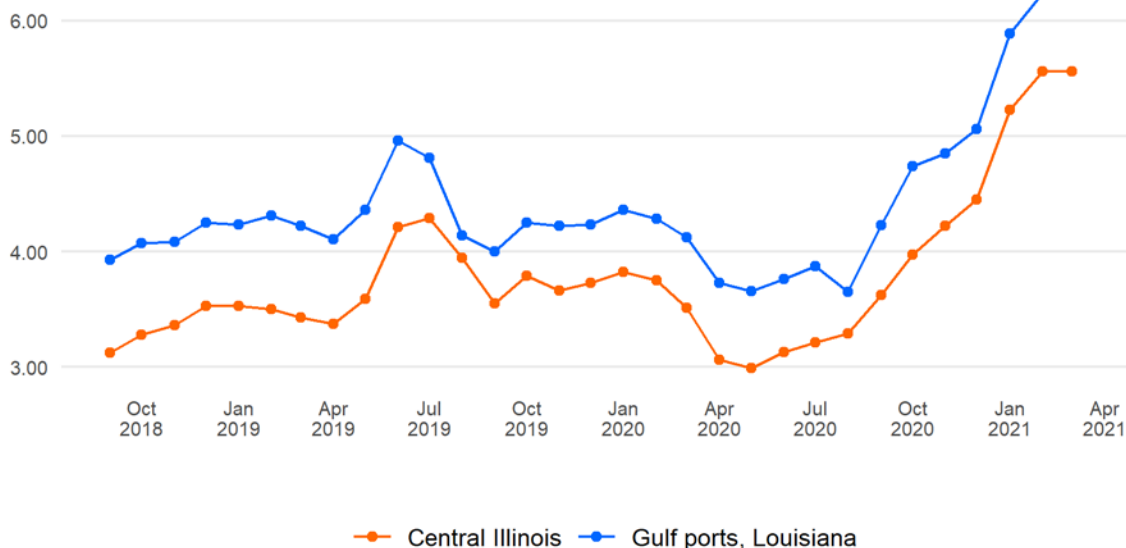
Source: USDA, National Agricultural Statistics Service.

Cash-corn prices also remain at elevated levels through the end of March. The average monthly price for both Central Illinois and Gulf cash-corn markets remained flat from February 2021 levels. However, the current price levels represent a substantial increase from the previous year.

Figure 5

U.S. cash market prices for corn, monthly average

U.S. dollars per bushel



Source: USDA, Agricultural Marketing Service.

Sorghum Stocks Tighten on Higher Disappearance

The U.S. sorghum-use projection is raised for 2020/21, tightening expected ending stocks. Feed and residual are raised 5 million bushels, projected to total 75 million bushels for the year. NASS estimates that March 1 U.S. sorghum stocks are 136 million bushels, a 17-percent decline from the same period the previous year. Since the fall, the sorghum market has been led by strong export demand, but the current pace of disappearance also suggests increased domestic use. With minimal sorghum use for ethanol being reported since August 2020, the increased use is captured by feed and residual.

Figure 6

U.S. sorghum inventories, quarterly, on-farm versus off-farm

Million bushels



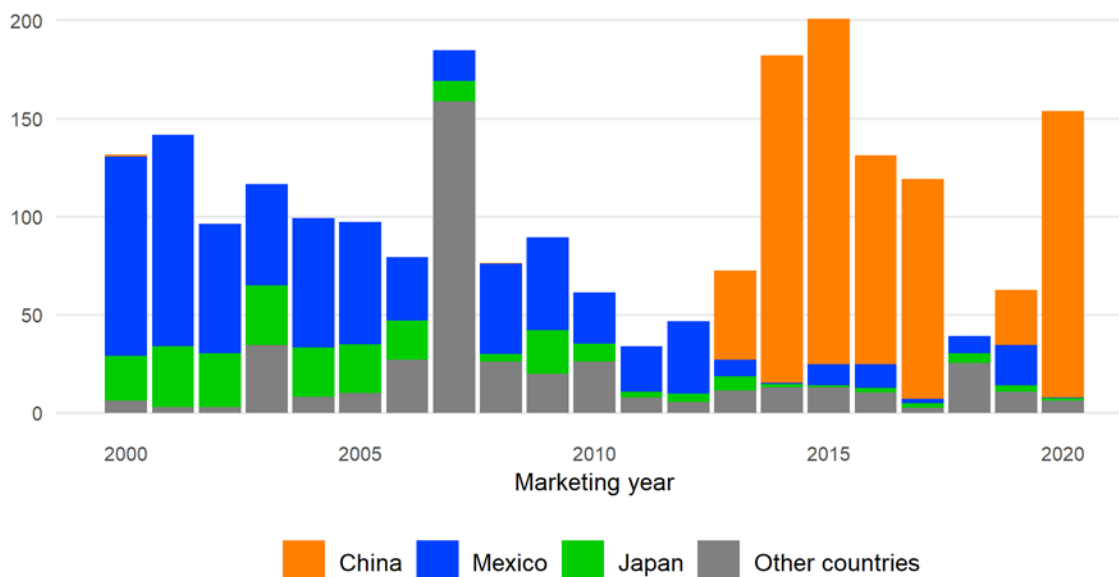
Source: USDA, National Agricultural Statistics Service.

Through the first 2 quarters of the marketing year, the United States has exported 154 million bushels of sorghum, more than double the previous year's first-half total of 63 million bushels. Most of those exports have been destined for China, due to the high Chinese domestic prices for corn and feedstuffs. Total 2020/21 exports are projected to be 295 million bushels, which would be a 45-percent increase from 2019/20, as the pace of monthly exports are expected to moderate in the 2nd half of the year due to limited available supplies. The projected average-farm price of sorghum is raised \$0.05 per bushel to \$5.05, based on strong reported farmer receipts through February.

Figure 7

U.S. sorghum exports, September through February, marketing years 2000 to 2020

Million bushels



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

Barley Ending Stocks Projected Higher Due to Lower Feed and Residual Use in 2020/21

Projected U.S. barley use for 2020/21 is lowered 3 million bushels to 176 million in the April WASDE. Feed and residual are lowered 5 million bushels from the previous month, to 20 million. Exports slightly offset the decrease, with a 2-million-bushel increase, based on the pace of shipments through the first 3 quarters of the barley marketing year. No changes are made to projected barley supplies, with production and imports remaining at 165 million and 7 million bushels, respectively. Projected ending stocks are raised 3 million bushels from the March report, totaling 80 million bushels. Average farm prices are unchanged at \$4.70 per bushel.

Projected Oat Average Farm Prices Raised on Current Pace

U.S. oat-supply projections also remain unchanged from the March report, with production and imports projected at 65 million and 92 million bushels, respectively. Projected total use is lowered 5 million bushels, resulting in projected ending stocks being raised 5 million bushels to 43 million. The change in use comes from lower expected feed and residual, totaling 70 million bushels—accounting for the 5-million-bushel reduction. Average farm prices are raised,

however, from \$2.70 to \$2.75 per bushel, based on the pace of monthly reported receipts by farmers.

International Outlook

Olga Liefert

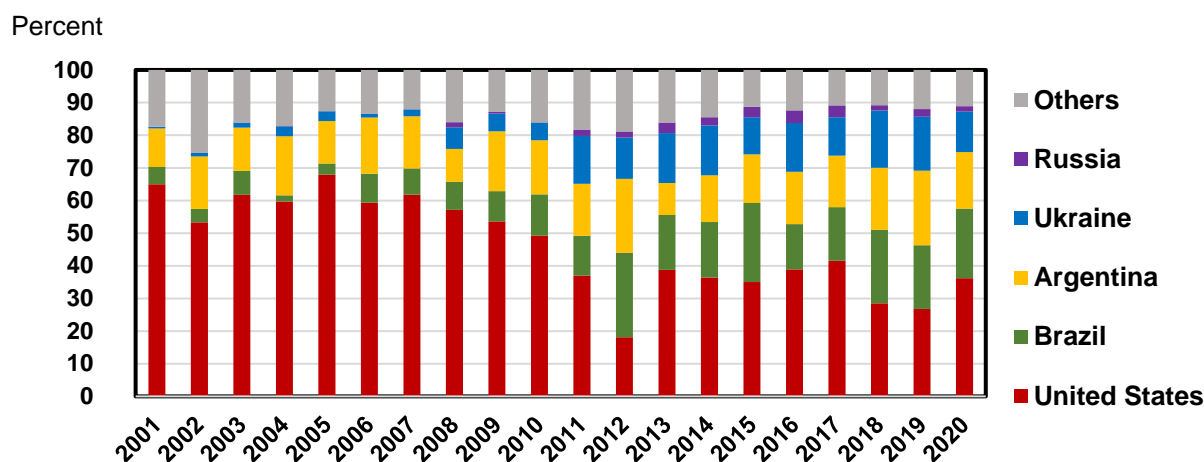
Record High U.S. Export Prospects Increase

Global coarse grain trade for October-September 2020/21 is forecast 0.4 million tons higher this month to 229.0 million. World corn trade is left unchanged this month. Barley trade is up 0.5 million tons to 31.3 million, while sorghum trade is up 0.1 million tons to 9.5 million.

Although global corn trade is unchanged, several important shifts in exports shares for three major exporters – **United States**, **Brazil**, and **Ukraine** – are projected this month for the international trade year. Small fully offsetting changes in exports are also made for **Paraguay**, **Moldova**, and **Burma**.

A spike in **U.S.** corn shipments to several markets (including **Japan**, **Mexico**, **China**, and **South Korea**) during March support an increase in 2020/21 U.S. corn exports this month, up 2.0 million tons (a rise of 75 million bushels to 2.650 million for September-August local marketing year) to reach a new record of 67.0 million. The U.S. share of the global corn trade now stands at 36.2 percent. Though higher compared to the last couple years, the U.S. world export share is still just on par with the average of the last 10 years. The reason the U.S export share this year is not exceptional, despite a very high export projection, is because global corn trade has expanded substantially, largely due to ballooning Chinese imports, which have been fulfilled largely by the United States and to a lesser extent **Ukraine**.

Figure 8
U.S. share in global corn trade, year 2020 refers to 2020/21 (forecast)



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

Corn import projections for major U.S. destinations (such as **China**, **Mexico**, **South Korea**, and **Columbia**) are left unchanged this month. The assumption behind the increase in the U.S. corn export projection is that the United States will partly supplant **Ukraine** as an exporter to China and **Brazil** as an exporter to other destinations.

For **China**, according to official Chinese Customs data, October 2020 to February 2021 corn imports from all origins totaled 9.4 million tons. USDA's projection for the Chinese corn-import number, by definition, includes all trade flows, including any imports that enter the country via Free Trade Zones. Thus, to reach USDA's current import forecast of 24 million tons, imports from all origins need to average 2.1 million per month during the March to September period, modestly higher than the pace seen during the first 5 months of the marketing year. Current expectations are for robust exports of corn from the **United States** to China, but gradually declining shipments from **Ukraine** during the March to September period.

Elevated domestic prices in **Ukraine**, through the end of March, limited its price-competitiveness and the country has been recently showing a lower-than-expected pace of exports. Ukrainian corn exports are projected 1.0 million tons down this month to 23.0 million. A 1.0-million-ton reduction in corn exports is projected for **Brazil** for the international October–September trade year, down to 39.5 million tons. Planting delays of the Brazilian safrinha crop are expected to shift the start of this country's export program for second-crop corn by about a month, from July to early August, reducing the amount of corn exported before the end of the trade year in September. The export projection for the Brazilian local March-February marketing year is unchanged this month at 39.0 million tons, as Brazil will have ample time (from October through February 2022) to offset the delay in exporting corn.

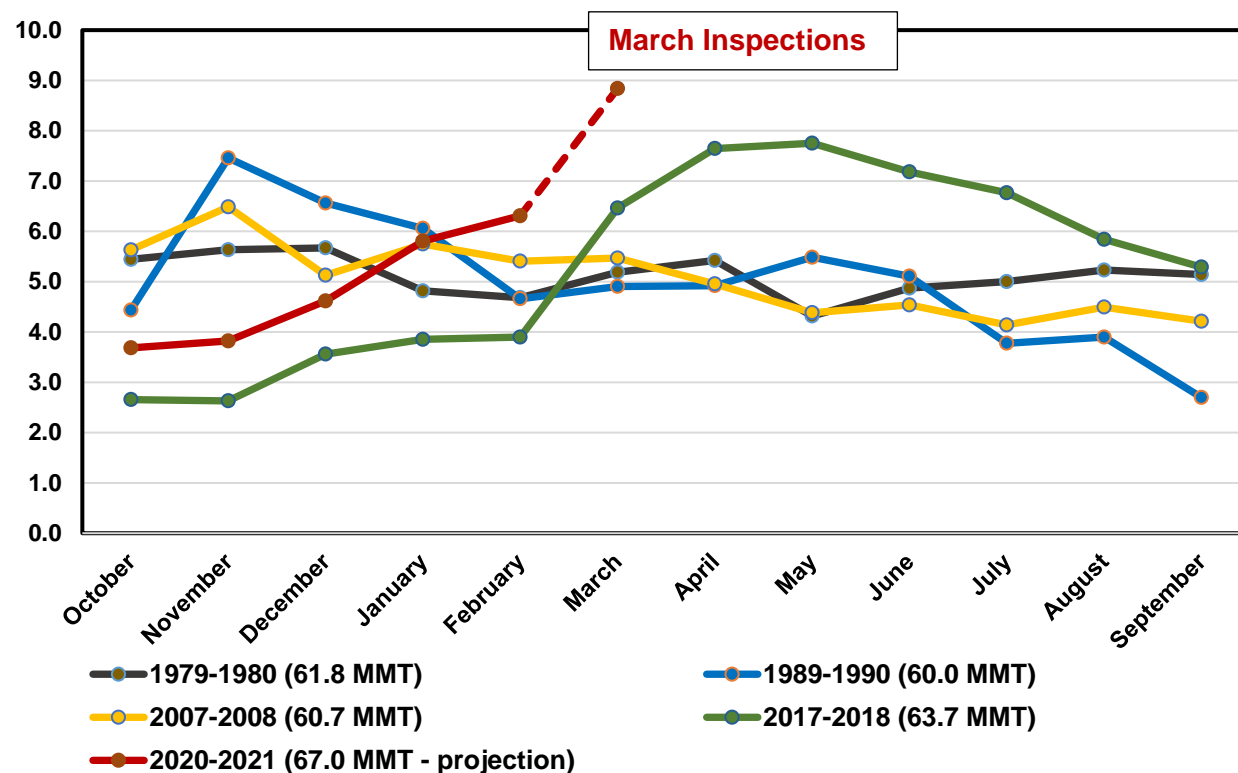
According to U.S. Census Bureau data, from the beginning of October 2020 through February 2021, the United States exported 24.3 million tons of corn. In March 2021, corn inspected for export reached a whopping 8.8 million tons, a historical record for a monthly corn shipment. Assuming the amount of corn inspected in March to be a current proxy for exports, in October–March, the United States exported 33.1 million tons of corn. This number is almost half of the updated forecast for this entire year, but still less than the United States exported during the same timeframe in 1989/90 and 2007/08. See below (figure 9) how corn exports in the current trade year compare to the only other 4 years in recorded history when U.S. October-September corn exports exceeded 60.0 million tons.

For the next couple of months, the prospects and dynamics of U.S. corn exports will be affected by crop developments in the Southern Hemisphere, as corn there will be gradually reaching

export markets after being harvested. The previous record-high of U.S. exports happened in 2017-18, a year when both Brazilian and Argentine corn were hit by drought, thus giving a boost to U.S. exports (note that according to Census Bureau data, the previous monthly high export record of 7.8 million tons happened in May of 2018). The inspections for the week ending on April 1 reached nearly 2.0 million tons, in line with high weekly exports since the end of February. This indicates a continuation of the brisk pace of exports, while outstanding sales remain at a historic high of about 30 million tons.

Figure 9
U.S. monthly corn export sales, October-September trade year, selected years

Million metric tons (MMT)

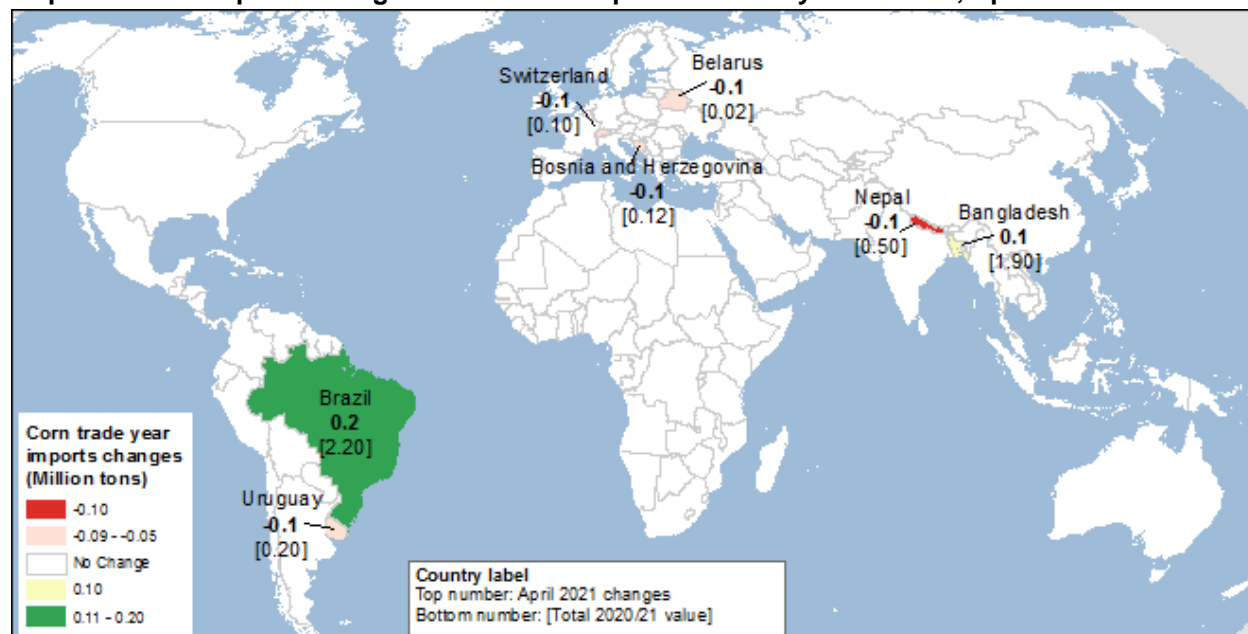


Source: USDA, Foreign Agricultural Service, *Global Agricultural Trade System (GATS)*; USDA, Agricultural Marketing Service, *Grain Inspected for Export*.

A few virtually offsetting changes are made for corn imports this month. The largest is a 0.2 million ton increase for **Brazilian** imports to reach 2.2 million tons. The crop comes from **Paraguay**, whose exports increase mirrors the change and goes mainly to southern Brazil, where livestock production is concentrated and high transportation costs make imported corn cheaper than that domestically produced in the Center-West of the country, a major corn-producing area. Smaller changes for both corn imports and exports are made for a number of countries.

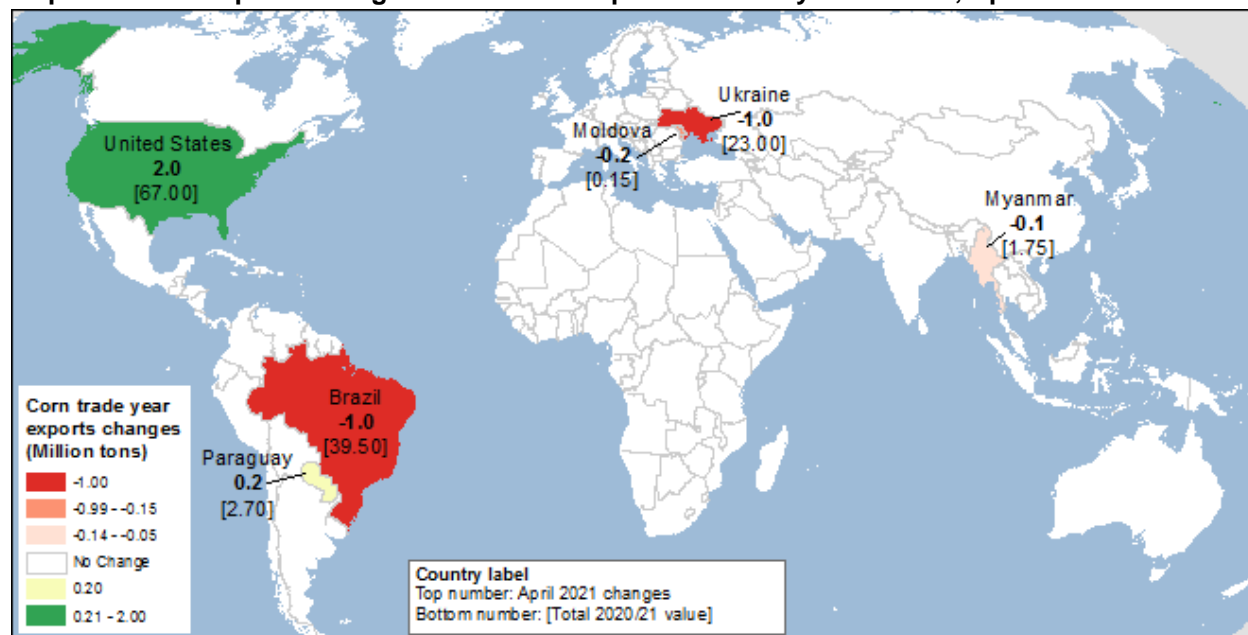
For a visual display of the changes in corn exports and imports, see maps A1 and A2 below.

Map A1 – Corn imports changes for October-September trade year 2020/21, April 2021



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

Map A2 – Corn exports changes for October-September trade year 2020/21, April 2021



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

Global **barley** trade for the October-September international trade year is projected slightly higher, up 0.5 million tons to 31.3 million. Barley imports are boosted for **China**, up 0.9 million tons to 9.2 million. After China blocked barley imports from Australia in 2020 over the diplomatic row between the two countries, China began to source barley from other countries. This month, barley exports are projected higher for the countries actively exporting barley to China: **Ukraine**

(up 0.1 million tons), **Canada** (up 0.3 million tons), **European Union** (EU27 + U.K.), mainly France (up 0.2 million tons), and **Argentina** (up 0.2 million tons). Barley imports are projected higher for **Mexico** (up 0.2 million tons) and **Vietnam** (up 0.1 million tons), based on the current pace of trade. However, imports are down 0.6 million tons for **Morocco**, reflecting the slower-than-expected pace of imports, which is likely related to the favorable winter and early spring pasture conditions.

Barley exports are reduced for **Kazakhstan** and **Iraq** by 0.2 million tons each, as both countries have exported less barley than was expected to date.

U.S. 2020/21 trade-year barley exports are up 50.0 thousand tons this month to 275 thousand (for the June-May local marketing year, exports are up 2.0 million bushels to 12.0 million), as the United States is expected to export additional malting barley to **Canada**.

World Coarse Grain Production Prospects Up Slightly

Global coarse grain production in 2020/21 is projected up 1.2 million tons this month to 1,446.0 million. Global corn production is increased 0.7 million tons to 1,137.1 million, and barley output is projected 0.5 million tons higher to reach 160.0 million. Sorghum is projected 0.1 million tons lower to reach 62.0 million, while mixed grain production is projected 0.1 million tons higher to 15.7 million tons. Changes for oats and rye are fractional (see table A1).

A reduction in **Argentine** corn is based on early harvest results and updated yield forecasts. A small reduction in sorghum output in **Australia** is based on unfavorable weather conditions in the eastern part of the country where sorghum is grown, and a reassessment of the yield potential. Most other changes in coarse grain production this month involve statistical adjustments, keeping up with official country or international sources (see table A2).

Information, details, and specific causes of the revisions of this month's changes in coarse grain production are given in tables A1 and A2 below. The changes in the total global, foreign, and U.S. coarse grain production *by type of grain* are shown in table A1, while changes in coarse grain production *by country* and by the *type of grain* are given in table A2.

For visualizing changes in corn production projections this month, see map B below the tables.

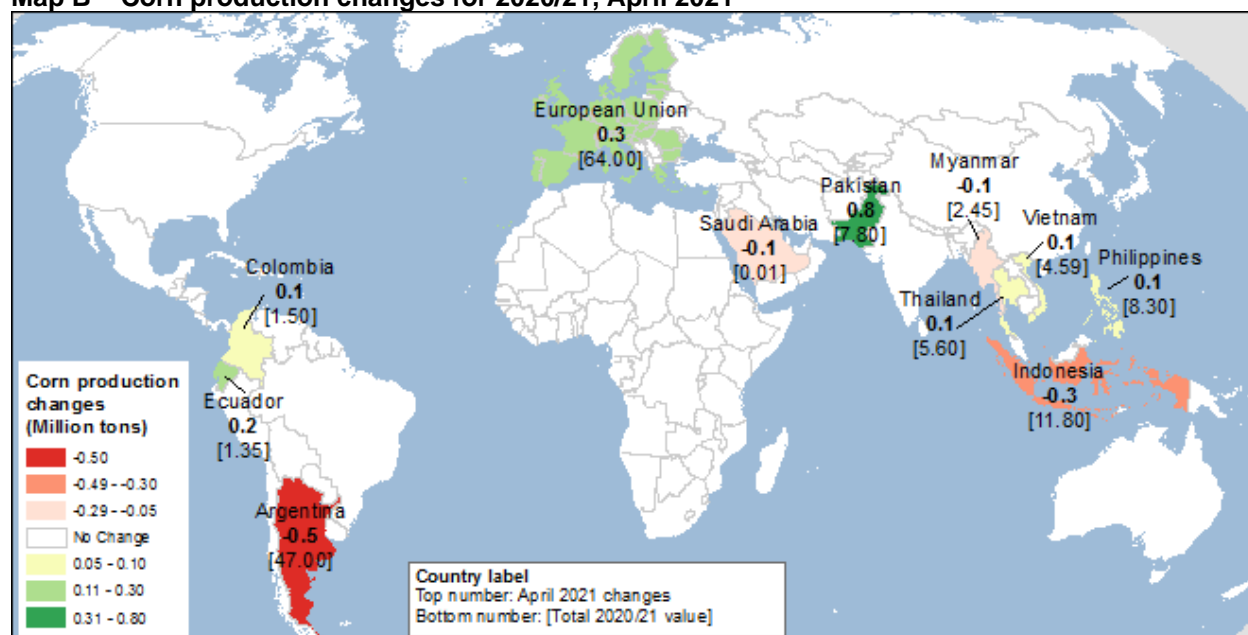
Table A1 – World and U.S. coarse grain production at a glance (2020/21), April 2021

	Region or country	Production	Change from previous month	YoY change ¹	Comments
<i>Million tons</i>					
Coarse grain production (total)					
↑	World	1,446.0	+1.2	+34.3	
↑	Foreign	1,071.4	+1.2	+19.2	Changes are made for a number of countries and commodities. See table A2.
	United States	374.6	No change	+15.1	See section on U.S. domestic output.
World production of coarse grains by type of grain					
CORN					
↑	World	1,137.1	+0.7	+20.5	
↑	Foreign	776.8	+0.7	+6.2	Higher corn production is projected for Pakistan, the EU ² , Ecuador, and several other countries. The production is partly offset by reductions for Argentina and Indonesia and Laos. See table A2 and map A.
	United States	360.3	No change	+14.3	See section on U.S. domestic output.
BARLEY					
↑	World	160.0	0.5	+3.3	
↑	Foreign	156.4	+0.5	+3.5	Higher projected production for Argentina and the EU ² is partly offset by a reduction for Mexico. See table A2.
	United States	3.6	No change	-0.2	See section on U.S. domestic output.
SORGHUM					
↓	World	62.0	-0.1	+4.0	
↓	Foreign	52.5	-0.1	+3.2	Lower projected output for Australia. See table A2.
	United States	9.5	No change	+0.8	See section on U.S. domestic output.
MIXED GRAIN					
↑	World/Foreign	16.0	+0.1	+1.0	Higher projected output for the EU ² .
¹ YoY: year-over-year changes. ² EU: European Union, EU-27 + United Kingdom (U.K.).					
For changes and notes by country, see table A2.					
Source: USDA, Foreign Agricultural Service, <i>Production, Supply, and Distribution online database</i> .					

Table A2 – Coarse grain foreign production by country at a glance, April 2021

	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						
PAKISTAN						
↑	Corn	Jul–Jun	7.8	+0.8	+0.3	The increase is based on data from government sources. The use of hybrid seeds increased substantially, taking up 70 percent of corn area, stimulated by growing demand from poultry producers.
EUROPEAN UNION (EU)³						
↑	Corn	Oct–Sep	64.0	+0.3	–2.8	At this point, the changes are a fine-tuning of European crop area and output. This month brings many partly offsetting revisions for European corn—with higher rejected output in Croatia, the Czech Republic, and Italy— while production is reduced for France and Bulgaria, among other countries.
↑	Barley	Jul–Jun	63.4	+0.4	+0.1	There are multiple partly offsetting revisions for European barley. The adjustments are made for Spain, Lithuania, Finland, France, Austria, and a number of other countries.
↑	Mixed Grain	Jul–Jun	15.7	+0.1	+1.0	There are multiple partly offsetting revisions for European mixed grain. Adjustments are made for the United Kingdom (U.K.), Lithuania, France, Austria, and a number of other countries.
ECUADOR						
↑	Corn	May–Apr	1.4	+0.2	–0.2	The increase is based on official data indicating lower area and improved yields.
PHILIPPINES						
↑	Corn	Jul–Jun	8.3	+0.1	+0.3	Favorable rains and above-average crop conditions throughout main growing areas result in higher yields.
THAILAND						
↑	Corn	Jul–Jun	5.6	+0.1	+1.1	The increase is based on official final data indicating slightly improved yields. The crop has been already harvested.
ARGENTINA						
↓	Corn	Mar–Feb	47.0	–0.5	–4.0	The reduction in yields is based on the lower-than-expected early harvest results, with 12 percent of area harvested as of April 8, as reported by the Ministry of Agriculture.
↑	Barley	Dec–Nov	4.5	+0.4	+0.7	The increase is based on the Ministry of Agriculture data indicating higher barley yields. The crop was harvested several months ago.
INDONESIA						
↓	Corn	Oct–Sep	11.8	–0.3	–0.1	Rice and corn in Indonesia are grown in the same fields. Abundant rains motivated farmers to plant more rice (up 100 thousand hectares). Rice area is projected higher this month, while corn area is reduced by the same amount of 100 thousand hectares.
INDONESIA						
↓	Barley	Jul–Jun	4.3	–0.2	–0.4	Updated information from the governmental statistical service (Servicio de Informacion Agroalimentaria y Pesquera (SIAP)) suggests lower barley area.
AUSTRALIA						
↓	Sorghum	Apr–Mar	1.4	–0.1	+1.1	Excessive dryness during the growing period was followed by heavy rains and flooding when the crop is ready to be harvested, reducing yield potential.
¹ Change from previous month. Smaller changes for coarse grain output are made for several countries, see map B for cor production changes. ² YoY: year-over-year changes. ³ EU: European Union, EU-27 + United Kingdom (U.K.). Source: USDA, Foreign Agricultural Service, <i>Production, Supply, and Distribution online database</i> .						

Map B – Corn production changes for 2020/21, April 2021



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

Coarse Grain Feed and Residual Use Projection Up

Global use of coarse grain in 2019/20 is projected up 5.4 million tons this month to 1,463.9 million, with the United States accounting for about a third of the increase (feed and ethanol use of corn and sorghum). World feed and residual use is projected 3.9 million tons higher this month (with the United States accounting for 1.2 million tons of the increase). Foreign use of coarse grain is up 3.5 million tons, while foreign feed and residual use is up by 2.7 million.

Several changes reflecting production revisions, shifts in feeding among grains, the macroeconomic situation, and trade changes across importing and exporting countries motivated this month's revisions. The largest increase in corn use (apart from the United States) is projected for **Ukraine**, up 1.0 million tons this month, following a reduction in its corn export forecast. Coarse grain use is projected higher by 0.9 million tons for both **China** (higher barley imports) and the **European Union** (higher feed use of corn, barley, and mixed grain mostly in line with production changes). Higher corn output has also lifted corn consumption in **Pakistan**, up 0.6 million tons. With increased supplies coming from higher beginning stocks and imports, **Brazil** is expected to feed 0.5 million more tons of corn. Partly offsetting are reductions for **Morocco**, down 0.6 million tons (lower projected barley imports), and for **Argentina**, where corn feed use is projected down 0.5 million tons following lower production prospects. Other changes that are made for specific countries' domestic use are smaller.

World coarse grain ending stocks for 2020/21 are projected down 2.4 million tons to 315.7 million, 15.5 million tons lower than last year and the smallest in 7 years. The United States is driving a reduction, as foreign coarse grain ending stocks are actually up 1.4 million tons this month. The largest change in foreign stocks comes from the **European Union**, up 1.7 million tons, and is following a downward revision of feed use for several prior years. Another noticeable change is a reduction in corn stocks for Saudi Arabia, down 0.4 million tons. This reduction is an accumulated result from a multi-year downward revision of Saudi's corn area and output. Changes in coarse grain stocks for the other foreign countries are all under 0.2 million tons and reflect changes in production, consumption, and trade in each individual country.

Suggested Citation

McConnell, Michael, Olga Liefert, and Tom Capehart, *Feed Outlook*, FDS-21d, U.S. Department of Agriculture, Economic Research Service, April 13, 2021.

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