



Feed Outlook

Michael McConnell, coordinator

Olga Liefert

Tom Capehart

Steven Ramsey

In this report:

[Domestic Outlook](#)

[Special Article: Ethanol Markets in 2020](#)

[International Outlook](#)

Strong Global-Feed Demand Raises Prices from a Year Ago

There are no changes made to the 2020/21 U.S. corn-market supply and use projections in the March *World Agricultural Supply and Demand Estimates* (WASDE). Estimated corn use for fuel ethanol in 2019/20 is raised 4 million bushels to 4,857 million bushels, due to revisions by the National Agricultural Statistics Service (NASS). The increase in fuel use lowered feed and residual estimates by the corresponding amount. Projected sorghum average-farm price for 2020/21 is raised \$0.20 to \$5.00 per bushels, based on continued strong export demand and reported prices received through January.

Both corn and barley trade are projected higher this month. Projected U.S. 2020/21 corn exports are left unchanged. Although the current commitments have already reached 90 percent of projected total exports, there is some uncertainty about the execution of all sales to China. Also, competition from South America is expected to intensify and will depend on weather conditions in the Center-West of Brazil.

Domestic Outlook

Michael McConnell

No Changes to the Projected Supply Outlook for 2020/21 U.S. Corn Market

No changes are made to the U.S. corn-supply outlook for 2020/21 in the March *World Agricultural Supply and Demand Estimates* (WASDE). Production is projected to be 14,182 million bushels, as reported in the National Agricultural Statistics Service's (NASS) January *Crop Production 2020 Summary*. The total is predicated on 82.5 million acres harvested and a 172.0 bushel-per-acre yield for the 2020/21 crop.

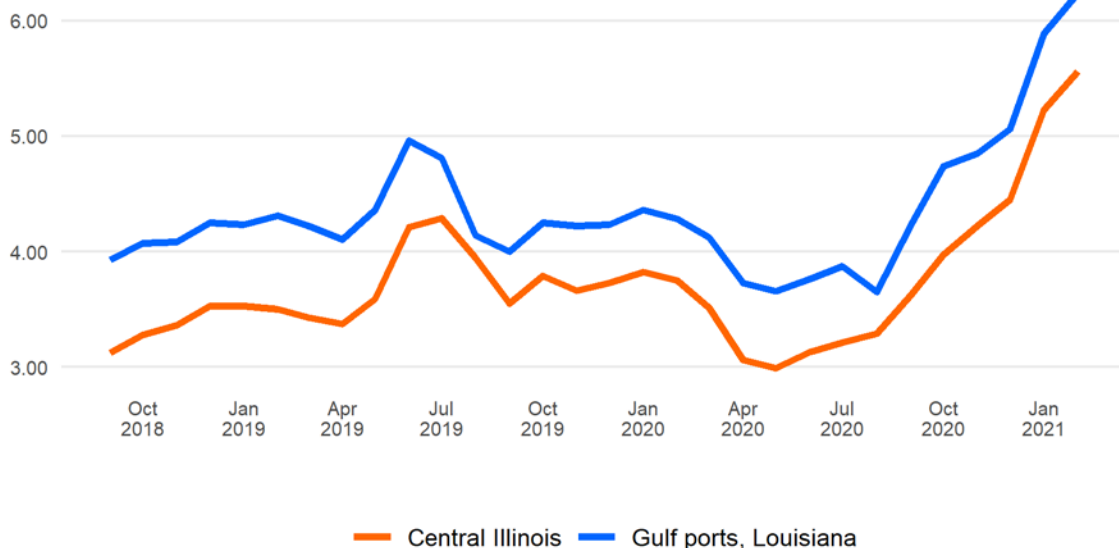
Corn Prices Continue to Increase through First Half of 2020/21

U.S. corn market prices continue to rise, largely driven by strong export demand and tight global supplies. The average cash-spot corn-market prices for Central Illinois and the Gulf for February 2021 were \$5.56 and \$6.24 per bushel, respectively. By comparison, the same prices in February 2020 were \$3.75 and \$4.29 per bushel. The steady rise in prices began this summer, as the production outlook for Eastern Europe—and to a lesser extent the United States—began to be lowered and China began to register large sales and shipments of feed grains, in particular corn.

Figure 1

U.S. corn cash market prices, monthly average

U.S. dollars per bushel



Source: USDA, Agricultural Marketing Service.

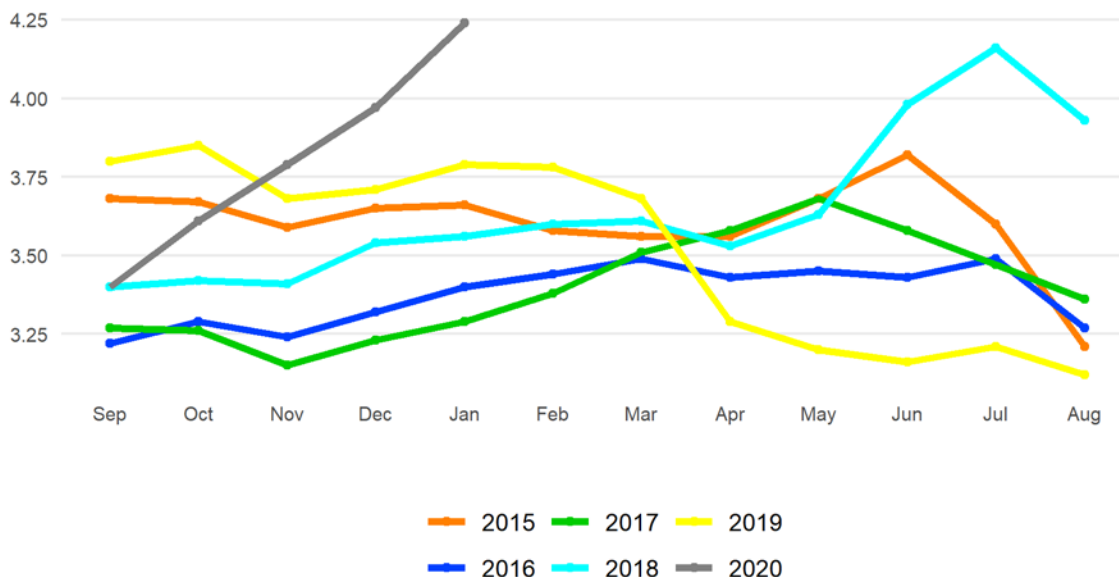
The higher cash-market prices have been transmitted to average-farm prices, as well. The current farm price for corn for 2020/21 is projected at \$4.30 per bushel. This price is unchanged from the previous month's projection, but a marked increase from the estimated 2019/20 season average farm price of \$3.56.

Average marketing-weighted farm prices remain below cash-market levels, likely reflecting corn that was forward contracted prior to the subsequent price increases—as well as transportation costs. The monthly season-average corn price has also been steadily increasing throughout the current marketing year, however, following cash and futures-market prices.

Figure 2

Price received for corn, monthly

Dollars per bushel



Source: USDA, National Agricultural Statistics Service.

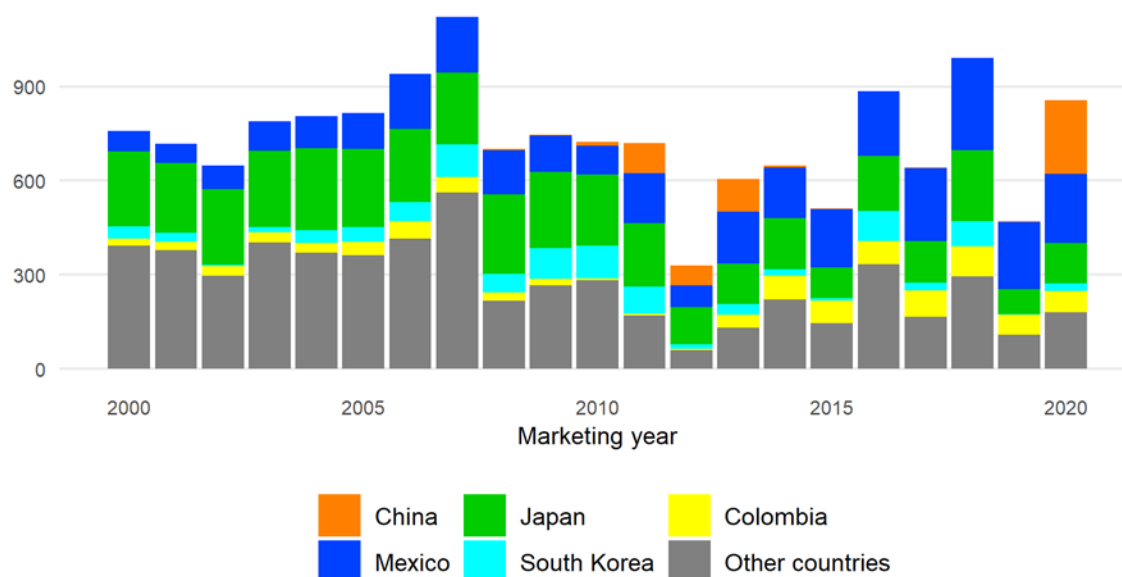
U.S. Corn Exports Projections Still Record, May Face Increased Competition during Remainder of 2020/21

Corn exports are projected to total 2,600 million bushels for 2020/21—unchanged from the previous month and still a record, if realized. The export market is providing strong support for corn prices, as reflected by the increasing Gulf-spot price. According to the Census Bureau, through the first 5 months of the marketing year, U.S. corn exports have totaled 857 million bushels. The current total is substantially higher than 2019/20, but it is not a record pace.

Figure 3

U.S. corn exports, September through January, marketing years 2000 to 2020

Million bushels



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

Distinct from previous years, however, a much larger portion of U.S. shipments have been destined for China. The Foreign Agricultural Service’s (FAS) Export Sales Report system shows record amounts of total commitments and outstanding sales for U.S. corn—mostly driven by large purchases for China’s market. In order to meet these outstanding sales, the U. S. export program would have to operate at a very high pace, consistently, for the remainder of the marketing year. Inspections data indicate a high export level for February—potentially a February export record—with strong demand to China, Mexico, and Japan. While the strong pace may be logistically feasible, the United States is also likely to face increased competition from Southern Hemisphere corn exporters in the second half of the marketing year. For additional discussion regarding the international corn markets, please see the International Outlook section of this report.

Corn Use for Fuel Ethanol Estimate Raised for 2019/20, 2020/21 Projection Unchanged

Corn use for fuel ethanol in 2020/21 is projected to total 4,950 million bushels. This is unchanged from the previous month, but represents a 1.9 percent increase over 2019/20 use, which was revised upward to 4,857 million bushels in the NASS *Grain Crushings and Co-Products Production 2020 Summary* released on March 1. The Department of Energy’s Energy

Information Administration (EIA) continues to show gasoline and ethanol production and use remain below pre-COVID-19 levels. For more discussion on the ethanol and motor gasoline markets, see the Special Topic section in this month's report.

Feed and residual use for 2019/20 is estimated to total 5,899 million bushels, a 4-million-bushel reduction from the previous month. The reduction matches the increase in use for fuel ethanol. Feed and residual for 2020/21 is projected at 5,650 million bushels, unchanged from the previous month. NASS's March 31 *Grain Stocks* report, providing March 1 inventories, will reveal the implied total disappearance for the December to February marketing year quarter.

Slight Annual Increase in Feed Demand Projected for 2020/21, with Lower Total Feed and Residual for All Grain

Total feed and residual of all feed grains and wheat in the United States is projected at 150.2 million metric tons, down from the 2019/20 estimate of 157.6 million metric tons. Grain consuming animal units (GCAUs) for 2020/21 are projected to be slightly higher than the 2019/20 estimate, increasing from 102.3 million units to 102.5 million units. The year-over-year increase in animal feed demand is primarily due to higher expected inventory indices of dairy cattle, beef cattle on feed, and hogs during the 2020/21 marketing year—more than offsetting the slight decline in poultry units.

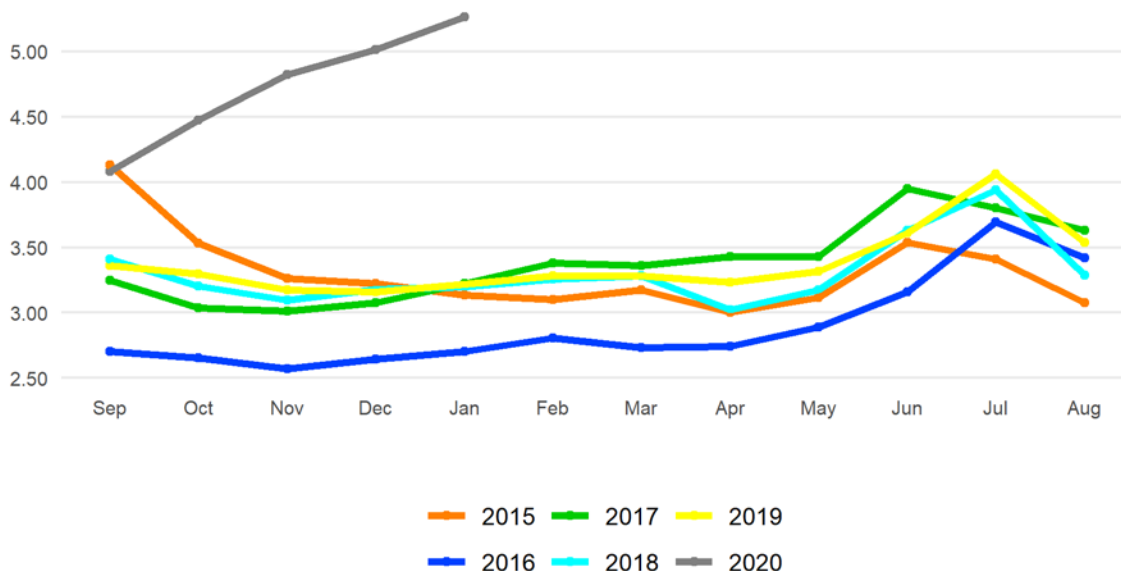
Export Demand Supports Sorghum Prices, Raising Projected Farm Prices

The 2020/21 projected sorghum supply and use balance sheet did not change from the previous month. Projected average-farm prices are raised \$0.20 from the February report to \$5.00 per bushel. Like the corn market, cash-sorghum prices have been very strong. Cash prices in February averaged \$12.39 per hundredweight in Kansas City, which is nearly double the February 2020 average. The monthly farm price has also been strong since the beginning of the marketing year, with the national average reaching \$5.26 per bushel in January.

Figure 4

Price received for sorghum, monthly

Dollars per bushel



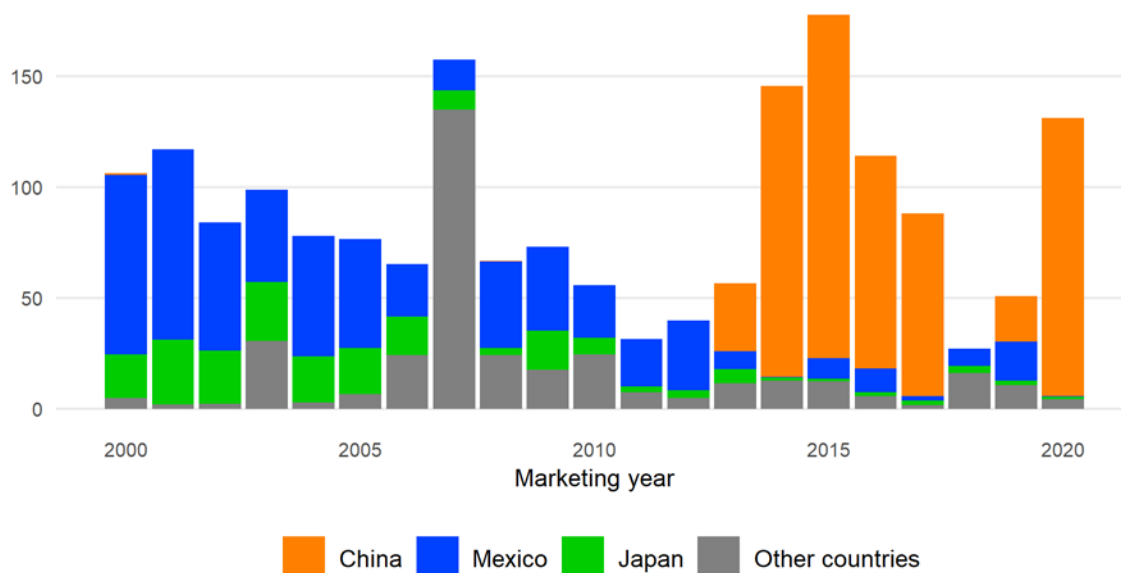
Source: USDA, National Agricultural Statistics Service.

The strong sorghum price is largely due to strong export demand. Sorghum exports for 2020/21 are projected to be 295 million bushels. While unchanged from the previous month, this represents a 44.9 percent increase from 2019/20. The majority of shipments have been destined for China—as well as remaining outstanding sales—which have commanded a strong price for sorghum due to the high Chinese domestic corn prices. As a result of the increased exports, projected U.S. domestic use of sorghum in 2020/21 is half of the 2019/20 estimate—falling from 171 million bushels to 80 million.

Figure 5

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

Million bushels



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

Changes in Projected Trade Lower Stocks for both Barley and Oats

Minor changes are made to the 2020/21 U.S. barley and oat balance sheets, both attributed to trade. Projected U.S. exports of barley are increased 1 million bushels to 10 million. This increase is based on the pace of shipments through January, as reported by the U.S. Census Bureau. Likewise, projected 2020/21 U.S. oat imports are lowered 2 million bushels to 92 million. In both cases, ending stocks are reduced by the corresponding amount. Projected average-farm price in 2020/21 for barley and oats remain unchanged from the previous month, at \$4.70 per bushel and \$2.70 per bushel, respectively.

Special Article: Ethanol Markets in 2020

Steven Ramsey
Michael McConnell

U.S. Ethanol Market Faced Shock in 2020

The U.S. ethanol market faced pandemic-related shocks in 2020, as COVID-19 reduced driving miles and demand for transportation fuel. These shocks ultimately impacted U.S. feed-grains markets, particularly corn. Since the creation of the Renewable Fuel Standard (RFS) in 2005, and the subsequent passage of RFS2 in 2007, the use of corn for ethanol fuel has created a link between U.S. feed grain markets and transportation fuel use. As a result of this linkage, the sudden change in social and economic behaviors caused by COVID-19 led to changes in U.S. corn markets. The following is a broad summary of the pre-pandemic state of the ethanol market, the 2020 ethanol market, and the identification of certain market factors that are expected to be important for the outlook of the U.S. ethanol market.

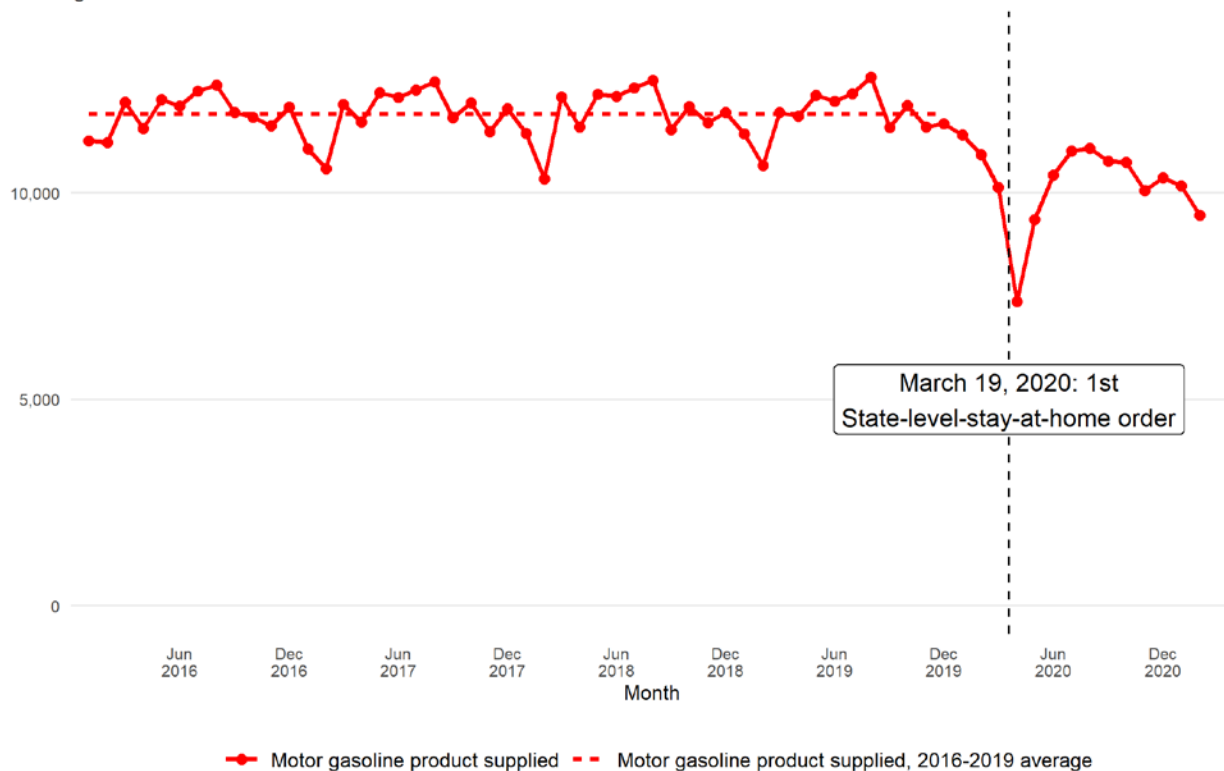
Ethanol Market Trends and Conditions Prior to COVID-19

For the 4 years spanning 2016-2019, the U.S. motor gasoline product supplied was quite stable. According to U.S. Energy Information Administration data (EIA), monthly gasoline product supplied averaged about 11.9 billion gallons between 2016-2019. Deviations generally followed seasonal patterns. Gasoline supply levels began 2020 up slightly from their 2016-2019 averages: 11.4 billion gallons in January, compared to an average January-supply level of 11.3 billion gallons and 10.9 billion gallons in February, compared to an average of 10.7 billion gallons.

Figure SA1

U.S. motor gasoline product supplied

Million gallons



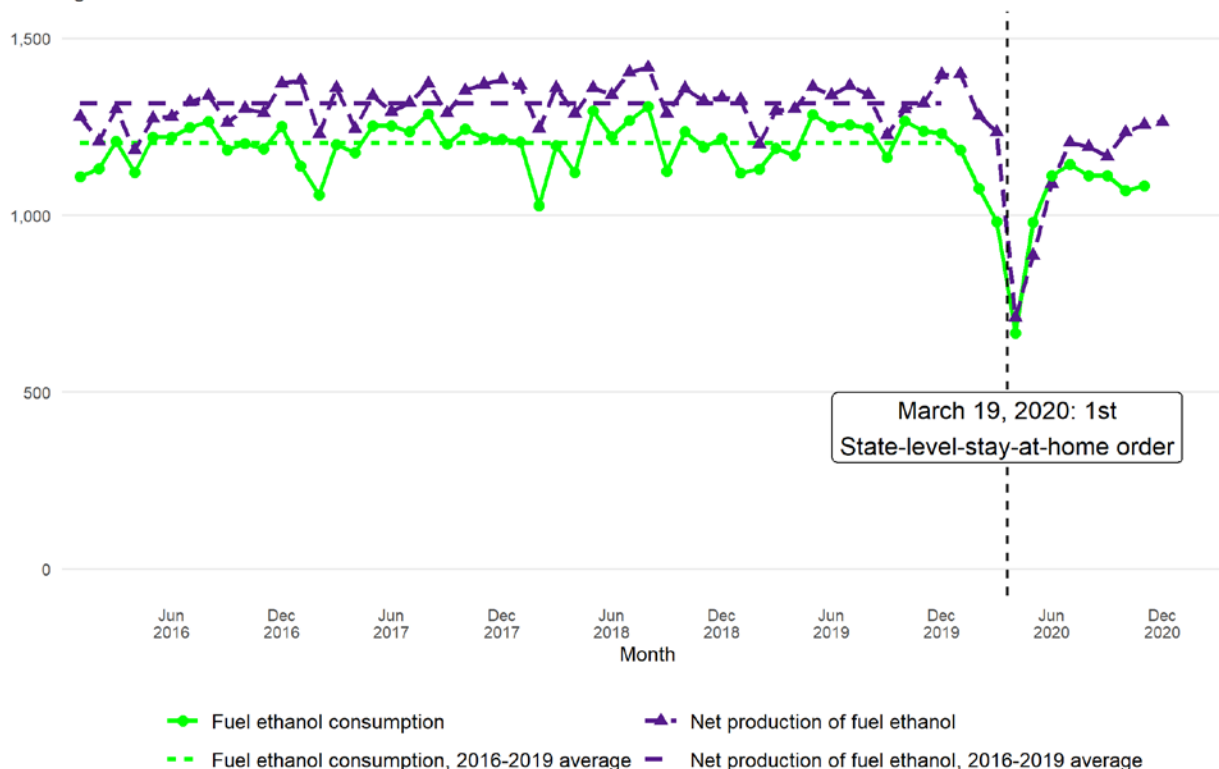
Source: U.S. Department of Energy, Energy Information Administration.

Due to the close relationship between gasoline and ethanol demand, similar patterns were seen in the amount of ethanol produced and consumed in the United States. For the 2016-2019 period, monthly production of ethanol averaged about 1.32 billion gallons, while consumption averaged about 1.20 billion gallons. Variations around these averages again tended to follow seasonal patterns. Ethanol production was up slightly to begin 2020, with January and February production levels of 1.40 and 1.28 billion gallons, compared to 2016-2019 averages of 1.34 and 1.22 billion gallons. Similarly, ethanol consumption in January 2020 was 1.19 billion gallons, up slightly from the 2016-2019 average of 1.14 billion gallons. At 1.08 billion gallons, consumption in February 2020 was down slightly from the 2016-2019 February average of 1.09 billion gallons.

Figure SA2

U.S. fuel ethanol: net production and consumption

Million gallons



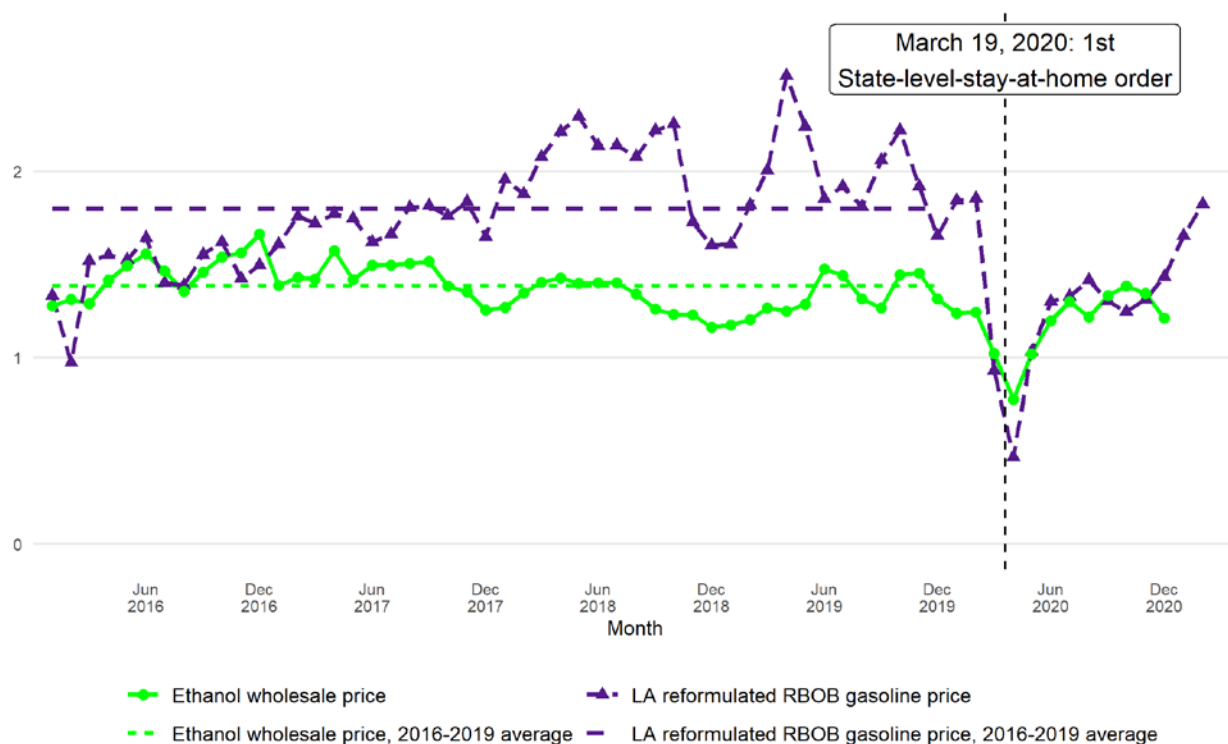
Source: U.S. Department of Energy, Energy Information Administration.

A common indicator for wholesale gasoline prices is the Los Angeles Reformulated Gasoline Blendstock for Oxygen Blending (RBOB) gasoline price series from EIA. In general, the RBOB price exhibited an upward trend during the 2016-2019 period. However, prices did see a drop from about \$2.25 per gallon in October 2018 to \$1.61 per gallon in December 2018. RBOB prices recovered by April 2019, but afterwards trended downward through the end of the year. For the entire 2016-2019 period, the average RBOB price was about \$1.80 per gallon. Initial 2020 RBOB prices were in line with this average at \$1.84 per gallon in January, increasing slightly to \$1.86 per gallon in February. Average monthly wholesale-ethanol prices over this time were relatively stable around an average of about \$1.38 per gallon, though a slight downward trend was present—based on Agricultural Marketing Service data from locations in Illinois, Iowa, Minnesota, Nebraska, South Dakota, and Wisconsin. Wholesale ethanol prices were about 10 percent below this average for both January and February of 2020, at \$1.24 per gallon.

Figure SA3

Wholesale ethanol and Los Angeles RBOB gasoline prices

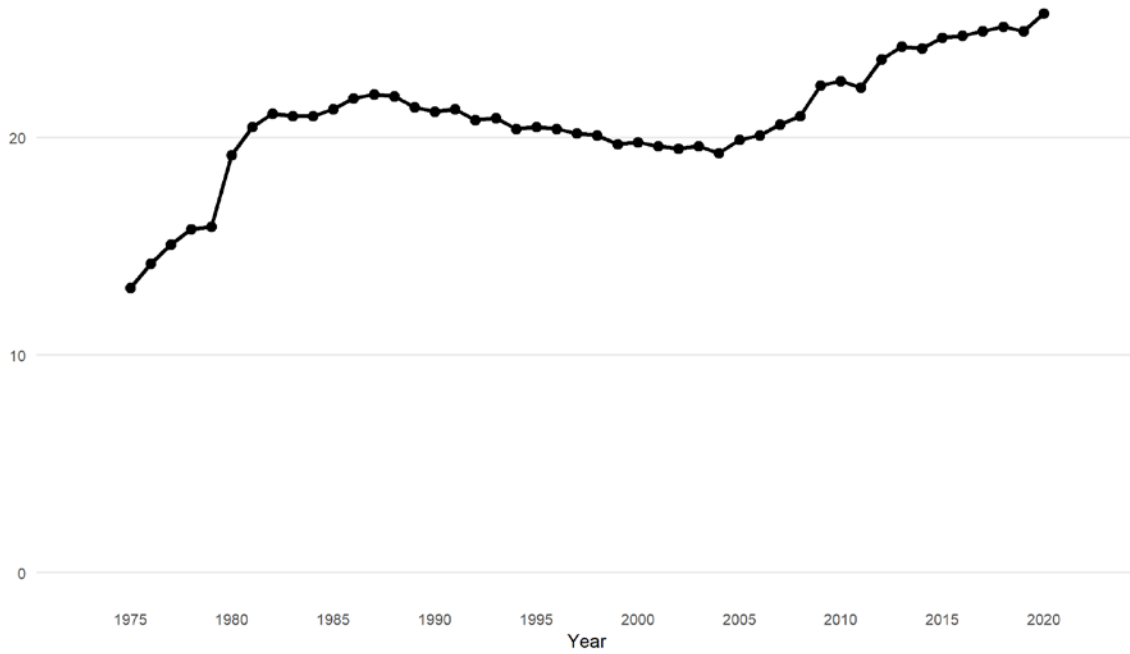
Dollars per gallon



Note: RBOB = Reformulated Gasoline Blendstock for Oxygen Blending
 Source: U.S. Dept. of Energy, Energy Information Administration; USDA, Agricultural Marketing Service.

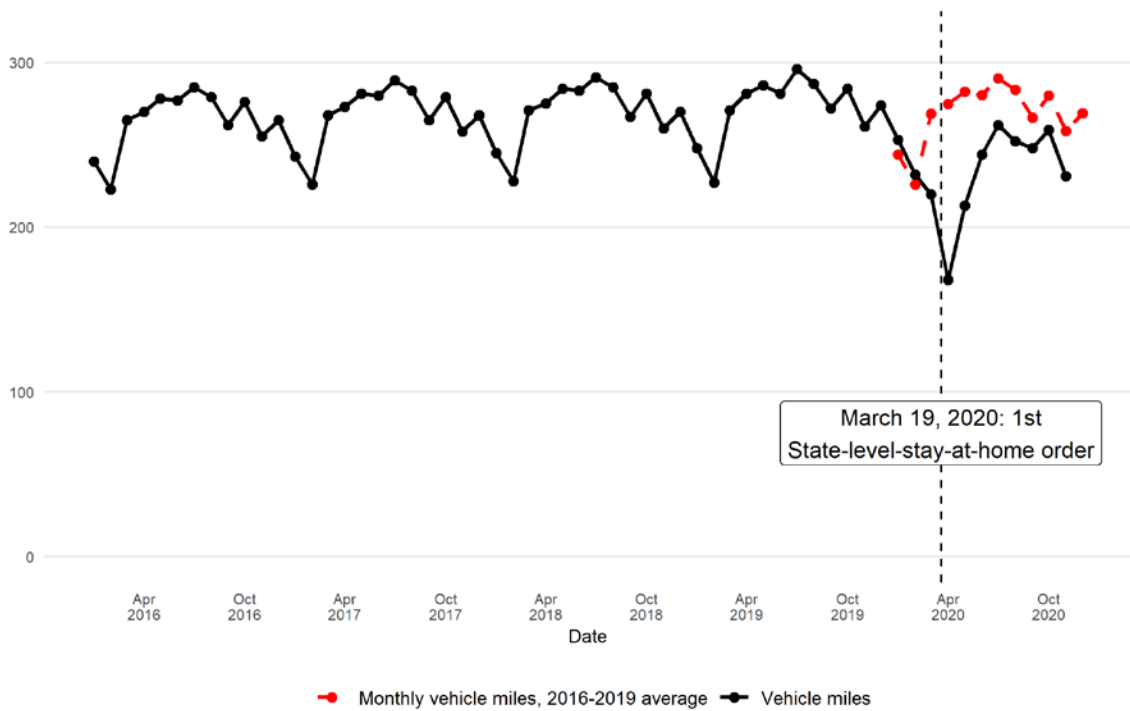
Gasoline consumption is essentially determined by (gasoline or hybrid) vehicle fuel efficiencies and the number of miles driven by U.S. motorists. Data from the U.S. Environmental Protection Agency (EPA) show that the average fuel efficiency for new vehicles produced in the United States increased at a steady rate since the mid-2000s. Since hitting a low of 19.3 miles per gallon (mpg) in 2004, fuel efficiency for new vehicles increased by about 0.4 mpg per year and is projected to have hit an all-time high of 25.7 mpg in 2020. Besides seasonal patterns, total miles driven by U.S. motorists, meanwhile, have been largely flat over the last several years. January and February of 2020 were in line with recent history, though up slightly compared to their 2016-2019 averages: 253 billion in January (up 3.7 percent) and 232 billion in February (up 2.7 percent).

Figure SA4
U.S. fuel economy
 Miles per gallon



Source: U.S. Environmental Protection Agency.

Figure SA5
U.S. vehicle miles
 Billions of miles



March 19, 2020: 1st
 State-level-stay-at-home order

Source: U.S. Federal Highway Administration.

Most of the ethanol consumed by U.S. motorists is in the form of E10 fuel, an ethanol-gasoline blend of up to 10 percent ethanol. Though higher blend rates such as E15 (10.5-15 percent ethanol) and E85 (53-83 percent ethanol) are available, infrastructure and regulatory constraints limit their usage. One issue is the limited availability of stations offering these higher blends: According to the U.S. Department of Energy, only about 3,700 stations offer E85 and about 2,000 offer E15. For comparison, the total number of U.S. fueling stations has been estimated at more than 106,000 by the U.S. Bureau of Labor Statistics. Reid Vapor Pressure (RVP) regulations have also limited the sale of E15 and E85 in certain states and months. Since passage of the Clean Air Act (1990), E10 has received an RVP waiver, which allows for its sale year-round. In May 2019, the EPA finalized regulations that would allow E15 to take advantage of this same waiver. The constraints on E15 and E85 have resulted in ethanol-blend rates that have remained at approximately 10 percent for several years. Consumer willingness to use higher blends, as well as the increasing popularity of electric vehicles, may also act as barriers to increased U.S. ethanol consumption. The difficulty in moving significantly beyond a 10 percent blend rate is often referred to as ethanol's "blend wall".

U.S. Motor Gasoline Demand Significantly Impacted by Pandemic

Beginning in March 2020, widespread cases of COVID-19 began to be recorded within the United States. During this time, a combination of public policy and social behaviors began to alter the social and economic landscape. One of the starkest illustrations of this change was the reduction in miles driven and gasoline consumption. This reduction occurred due to several factors that reduced travel. For example, a significant portion of the workforce transitioned to remote work, reducing commuting miles. Travel was also reduced by State- and local-government policies such as reducing the capacities and hours of restaurants and schools adopting distance-learning curriculums. More generally, significant numbers of individuals and households have been practicing social distancing—avoiding regular events and activities that put them near other individuals. As a result, the total miles driven by U.S. motorists fell, on average, about 16 percent for the months of March-November 2020 relative to the 2016-2019 averages.

This culminated in a reduction of motor-gasoline product supplied: According the EIA, motor-gasoline product supplied fell to 7.4 billion gallons in April 2020—a nearly 38-percent decline from April 2019. While supply recovered from this nadir heading into the summer and through

the fall, it remained below average. In total for 2020, the U.S. motor-gasoline product supplied was 123.7 billion gallons—a 13.3 percent reduction from 2019.

The reduction in gasoline product supplied resulted in lower demand for ethanol, as well. Ethanol production and consumption mirrored those of motor gasoline in the spring. Production and use levels fell steeply, and a sharp increase in ethanol inventories resulted, as the supply chain adjusted to the new market conditions. Even by September, as the market began to find a new stable level, monthly ethanol production remained around 5 percent lower than the previous year's levels. In total, the United States produced 13.9 billion gallons of ethanol during 2020, 11.7 percent less than the 15.8 billion gallons produced in 2019.

Ethanol consumption was hit just as hard, including a nearly 43 percent year-over-year decline in April 2020. Even after the immediate supply chain disruptions of COVID-19 had subsided and production, use, and inventory levels stabilized, monthly consumption between September and December 2020 ranged from 4 to 16 percent lower than the previous year. For the year, ethanol consumption fell 13.2 percent in 2020, from 14.6 to 12.6 billion gallons, closely tracking motor gasoline. While motor gasoline supplies and miles driven have rebounded from the initial stages of the pandemic, they have yet to achieve pre-pandemic levels.

The outlook for U.S. corn has evolved alongside developments in the motor-gasoline market. The USDA March 2020 projection for 2019/20 corn use for fuel was 5,425 million bushels. The projection fell steadily in the subsequent months to 4,857 billion bushels—the final number reported by the National Agricultural Statistics Service. Prior to COVID-19, fuel ethanol production accounted for between 37 and 39 percent of domestic corn disappearance per marketing year (September to August) in the United States. In the 2019/20 corn-marketing year, the amount of corn disappearance attributed to fuel-ethanol production fell to 35 percent and for the marketing year beginning September 2020, it is currently projected to be 34 percent.

Gasoline Consumption, Foreign Markets, and Feed Markets Expected to be Drivers of Ethanol Market Outlook

The demand for ethanol in 2021—and the derived demand for corn—will largely be driven by trends in gasoline consumption in the coming months. How and when U.S. consumers return to the roads will be the most important factor for this component of the corn market. Overall, gasoline prices through the end of 2020 remained lower than pre-COVID-19 levels, indicating that demand was still relatively weak. The RBOB spot price averaged \$1.43 per gallon in December 2020, which was up 204 percent from the April 2020 average of \$0.47 per gallon, but

was still lower than \$1.66 per gallon in December 2019. Through early 2021, however, prices have been steadily climbing back to pre-COVID-19 market levels, indicating that supply is continuing to adjust to current levels of demand, as well as higher crude oil prices. The USDA's 2020/21 corn used for ethanol forecast is currently 4,950 million bushels, which assumes higher corn use for ethanol from March to August relative to 2019/20.

However, there are several other market factors that will have important, although more marginal, implications. One trend that began during the end of 2020 is that ethanol production levels remained stronger than declining domestic blenders' use of ethanol, which has more closely followed gasoline consumption. Beginning in the fall of 2020, higher agricultural commodity and feedstuff prices began to have broad market impacts. The price increases were primarily the result of a reduced crop production outlook for the Black Sea region, lower U.S. corn yields expected for the 2020/21 crop, and increased foreign demand and trade for feed—largely driven by China. As a result, the price of milling co-products, such as distillers' grains and corn oil, has also been strong. While high co-product prices may help support higher ethanol production—as it contributes to mills' revenues—prices will also likely result in higher inventories of ethanol, which could constrain upward movements in ethanol prices. Unrelated short-term weather and market events in 2021 may also contribute to the ethanol market outlook, such as the extreme cold temperatures during late February that resulted in reduced ethanol production and a drawdown of inventories.

Figure SA6

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

Million gallons



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

Additional U.S. exports of ethanol will also be important: If domestic production cannot be fully absorbed by domestic use, then foreign markets may provide an outlet. In calendar year 2020, U.S. ethanol exports were 9-percent lower than the previous year, according to the U.S. Census Bureau, but with an uptick of shipment volumes in the last quarter of the year. This included higher shipments to markets such as the European Union, Mexico, China, and Hong Kong. Conversely, exports to Brazil were 40 percent lower in 2020, where domestic demand for motor gasoline has also been reduced by the pandemic. While additional supplies are available for export, the sector may also have to actively find or develop new markets, as the impacts of the pandemic on fuel and transportation extend globally.

In short, the ethanol market faced shocks in 2020 due to the pandemic and its broad impacts on the U.S. economy. The market remains in a dynamic state, as new information and

developments related to COVID-19 impact ethanol supply and demand, and, ultimately, the derived demand for corn in the United States.

International Outlook

Olga Liefert

Coarse Grain Output Projected Higher

Global coarse grain production for 2020/21 is projected up 5.9 million tons this month, to a record 1,444.8 million. The major contributors to the increase are India and South Africa for corn, and Australia for barley.

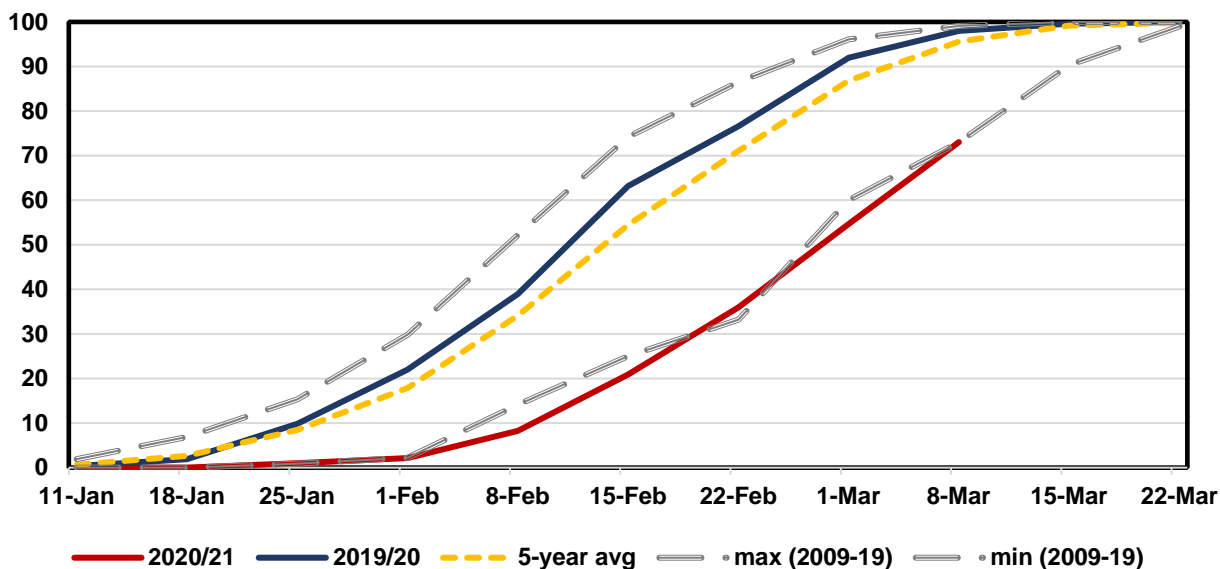
World **corn** production is projected 2.3 million tons higher this month, to 1,136.3 million. Corn output in **India** is up 1.7 million tons, to a record 30.2 million, accounting for the largest change in corn production outlook. Corn output projected for **South Africa** is up 0.5 million tons, to 17.0 million. Production of corn is slightly higher for the **European Union** (EU 27 + U.K.), Bangladesh, and **Indonesia**. Small reductions for **Mexico** and **Russia** are partly offsetting.

Corn production in **Brazil** is unchanged this month at 109.0 million, despite planting delays of the second crop corn, which constitutes almost 80 percent of Brazilian output (see figure 6).

Figure 6

Second-crop corn planting progress in Mato Grosso, Brazil

Percent planted



Source: Instituto Mato-Grossense de Economia Agropecuaria (IMEA).

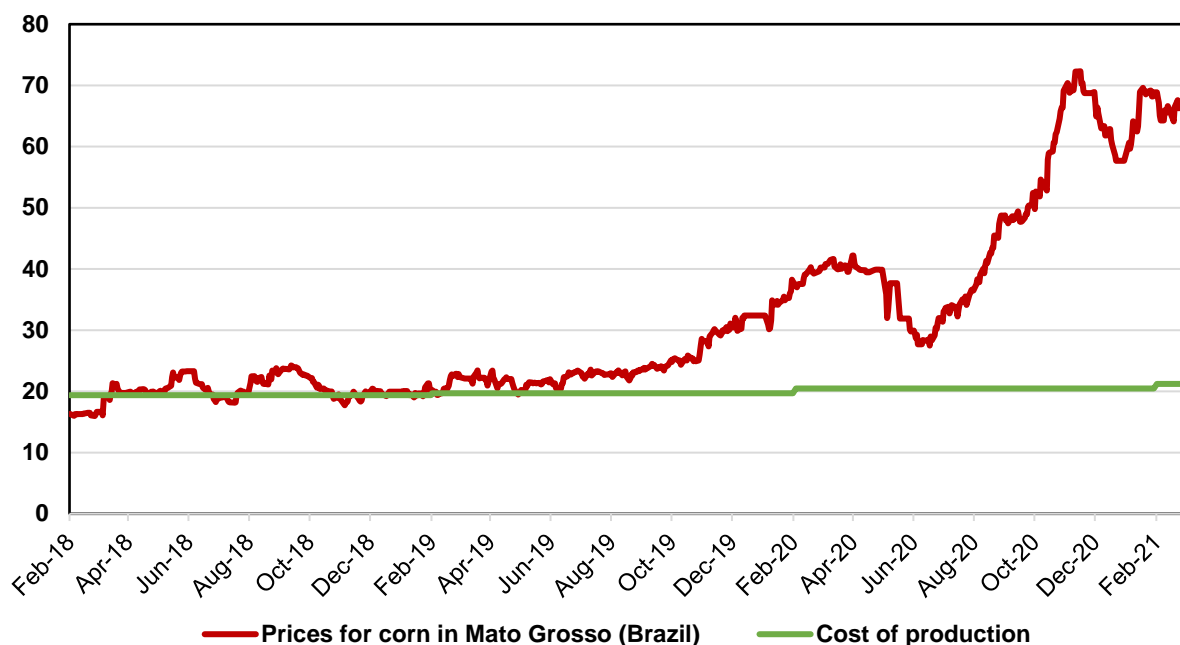
As a delayed soybean harvest and excessive rainfall stalled planting, a large part of the crop will be planted outside the ideal window in Mato Grosso, which is by far Brazil's largest producing

region of second-crop (safrinha) corn. As of now (the beginning of March), farmers have planted just above 70 percent of projected area, compared to the 95 percent average.

Planting outside of the ideal weather window carries the risk of lower yields, because of the precipitation pattern in Brazilian Center-West. Rains could possibly come to an end sometime in April-May, which might be insufficient for the later-planted corn to acquire full yield. Reduced yields result in a higher per unit cost of production. However, farmers are still expected to plant the projected area. High corn prices, both global and domestic, provide sufficient incentive to plant, as the skyrocketing domestic prices (currently more than *three times the per unit costs of corn production*) can easily cover the increased production costs if lower yields do materialize (see figure 7). This projection is based on the assumption of normal (average) weather going forward, and crucial precipitation in April and May will be watched closely.

Figure 7
Strong prices incentivize planting, despite increased risk of reduced yields in Brazil

Real (Brazilian currency) per sac (60 kilogram)



Source: Instituto Mato-Grossense de Economia Agropecuaria (IMEA); Escola Superior de Agricultura Luiz de Queiroz (ESALQ).

World **barley** production for 2020/21 is raised 2.1 million tons to 157.4 million, as **Australian** barley output got a 2.0-million-ton boost to 13.0 million. Australian barley is a winter grain and its harvest is complete. A tiny increase in barley output is projected for India.

Sorghum production is projected 0.5 million tons higher to 62.1 million, on account of higher **Indian** output, that is partly offset by lower projections for **Australia** and **Mexico**.

Millet output is up 1.0 million tons to 31.2 million, reflecting an increase in **India**.

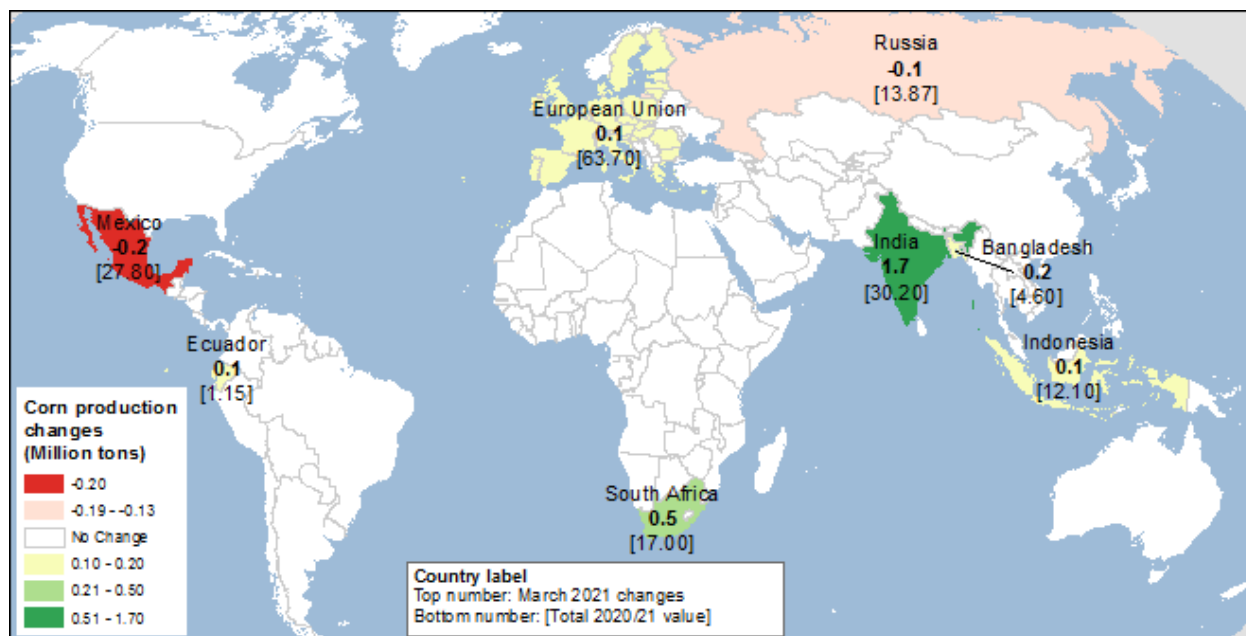
Additional information and details of this month's changes in coarse grain production are provided in tables A1 and A2. The changes in global, foreign, and U.S. coarse grain production *by type of grain* are shown in table A1, while changes in coarse grain production *by country* are given in table A2. For visualizing changes in corn production this month, see map A.

Table A1 – World and U.S. coarse grain production at a glance (2020/21), March 2021				
Region or country	Production	Change from previous month	YoY Change ¹	Comments
<i>Million tons</i>				
Coarse grain production (total)				
↑ World	1,444.8	+5.9	+33.1	
↑ Foreign	1070.3	+5.9	+18.0	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	1,136.3	+2.3	+19.8	
↑ Foreign	776.1	+2.3	+5.5	Higher production prospects in India and South Africa. Small upward adjustments for the EU ² and Indonesia. See table A2 and map A1.
United States	360.3	No change	+14.3	See section on U.S. domestic output.
BARLEY				
↑ World	159.5	+2.1	+2.9	
↑ Foreign	155.9	+2.1	+3.0	Higher output projected for Australia. Small adjustments are also made for a number of countries. See table A2 and map A2.
United States	3.6	No change	-0.2	See section on U.S. domestic output.
SORGHUM				
↑ World	62.1	+0.5	+4.1	
↑ Foreign	52.6	+0.5	+3.3	An increase in India is partly offset by reductions for Australia and Mexico. See table A2.
United States	9.5	No change	+0.8	See section on U.S. domestic output.
OATS				
↑ World	25.6	+0.1	+2.6	
↑ Foreign	24.6	+0.1	+2.4	A small increase in Australia, and fractional changes for Russia and several other countries. See table A2.
United States	0.9	No change	+0.2	See section on U.S. domestic output.
MILLET				
↑ World/Foreign	31.2	+1.0	+1.0	Higher millet output projected for India. See table A2.
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</i> online database.				

Table A2 – Coarse grain foreign production by country at a glance, March 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 (2020/21)					
AUSTRALIA					
↑ Barley	Nov–Oct	13.0	+2.0	+4.0	Barley in Australia is a winter crop and grows in areas close to wheat. Harvesting of winter crops is complete by now. According to the most recent report by the Bureau of Agricultural and Resource Economics and Sciences (ABARES) of Australian Government, barley yields turned out to be 18 percent higher than projected last month and 6 percent higher than the previous record of 2016/17. Excellent yields in the states of Western Australia and New South Wales are primarily responsible for this revision. For oats —another winter crop—both area and yields are adjusted slightly higher.
↓ Sorghum	Mar–Feb	1.5	–0.3	+1.2	Sorghum in Australia is a summer crop. Projected area is reduced based on local reporting, but is still more than three times larger than a year before.
SOUTH AFRICA					
↑ Corn	May–Apr	17.0	+0.5	+1.2	The increase moves production to a near-record high. This year has been favorable for corn, especially for the the western part of the corn belt, with excellent early planting and growing conditions in all major states. Abundant precipitation in November-January and lack of heat stress is beneficial for the crops, supporting higher yield expectations. The country's Crop Estimates Committee (CEC) issued its first production forecast in line with the increase.
INDIA					
↑ Corn	Nov–Oct	30.2	+1.7	+1.4	A change in line with the second advanced estimate of the Indian Ministry of Agriculture.
↑ Sorghum	Nov–Oct	4.7	+0.9	Small change	A change in line with the second advanced estimate of the Indian Ministry of Agriculture. Sorghum in India is grown as both rabi (winter) and kharif (summer) crops.
↑ Millet	Nov–Oct	12.5	+1.0	Small change	A change in line with the second advanced estimate of the Indian Ministry of Agriculture.
EUROPEAN UNION (EU)³					
↑ Corn	Oct–Sep	63.7	+0.1	–3.0	Slightly higher projection for corn area reflects the latest estimates of the Polish official statistical service.
MEXICO					
↓ Corn	Oct–Sep	27.8	–0.2	+1.1	Limited rains and frosts are expected to reduce winter corn area. The reduction is in line with official data.
↓ Sorghum	Oct–Sep	4.3	–0.2	Small change	Area and yield are reduced due to frost and insufficient precipitation, primarily in Tamaulipas (east of Mexico and a major sorghum area).
INDONESIA					
↑ Corn	Oct–Sep	12.1	+0.1	+0.1	Abundant rainfall and excellent growing conditions support near-record corn yield. The first crop harvest is virtually completed; planting for the second season corn has recently began.
BANGLADESH					
↑ Corn	May–Apr	4.6	+0.2	+0.5	Favorable weather and growing conditions, as well as wider use of hybrid varieties of corn by farmers, support record corn yield.
¹ Change from previous month. Smaller changes for corn output are made for several countries, see map A.					
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</i> online database.					

Map A – Corn production changes for 2020/21, March 2021



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

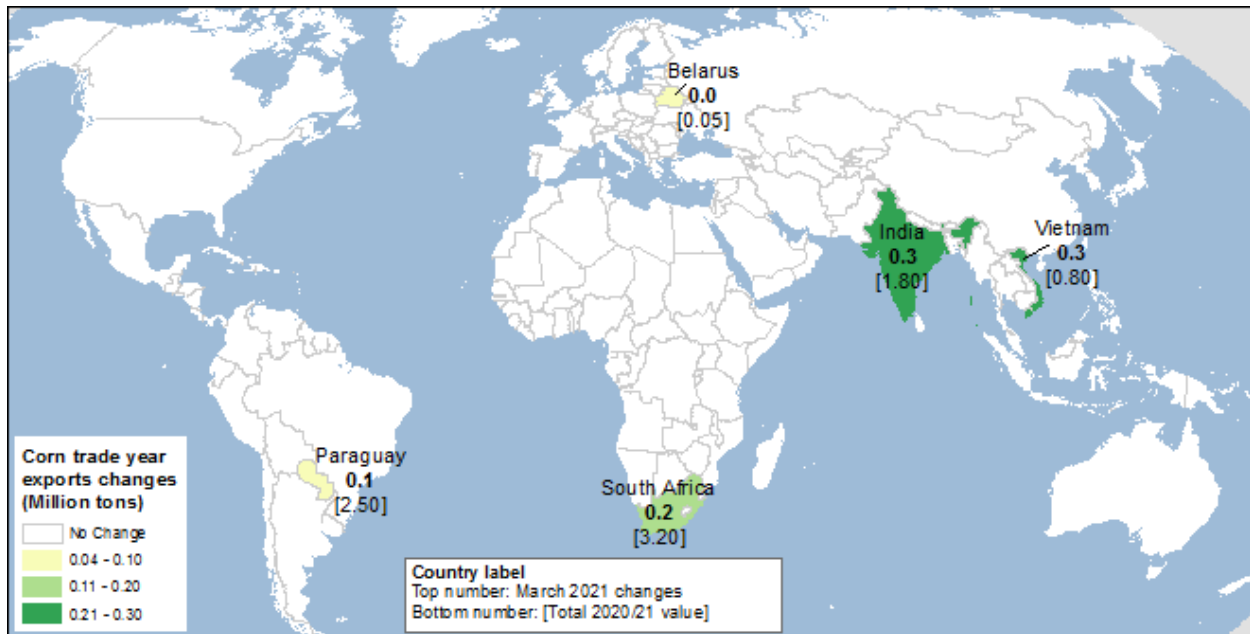
Global Corn and Barley Trade Getting Bigger

Projected 2020/21 world coarse grain trade for the international trade year (October-September) is up by 2.0 million tons to 228.7 million this month. **Corn** and **barley** trade are projected 1.0 million tons higher each, as a larger projected production allows for increased exports, while the higher the pace of shipments in January adjusted the outlook.

Corn exports are up for **India**, where high supplies allow record-high shipments to **Bangladesh** and **Nepal**. In **Vietnam**, both corn imports and exports are projected higher this month. While importing an additional 0.5 million tons of corn from **Argentina** and **Brazil** (both countries being highly price-competitive in South-East Asia), **Vietnam** exports or re-exports part of this amount to the nearby ASEAN (Association of Southeast Asian Nations) countries, such as the **Philippines**. Higher projected corn output for **South Africa** is expected to generate additional exports, mainly to neighboring **countries**, though with some shipments also heading to Europe and potentially Asia. An increase in corn exports for **Paraguay** is based on a high export pace; the crop goes mainly to corn-thirsty southern Brazil, with its budding livestock production and the high transportation costs of obtaining corn from other parts of this vast country.

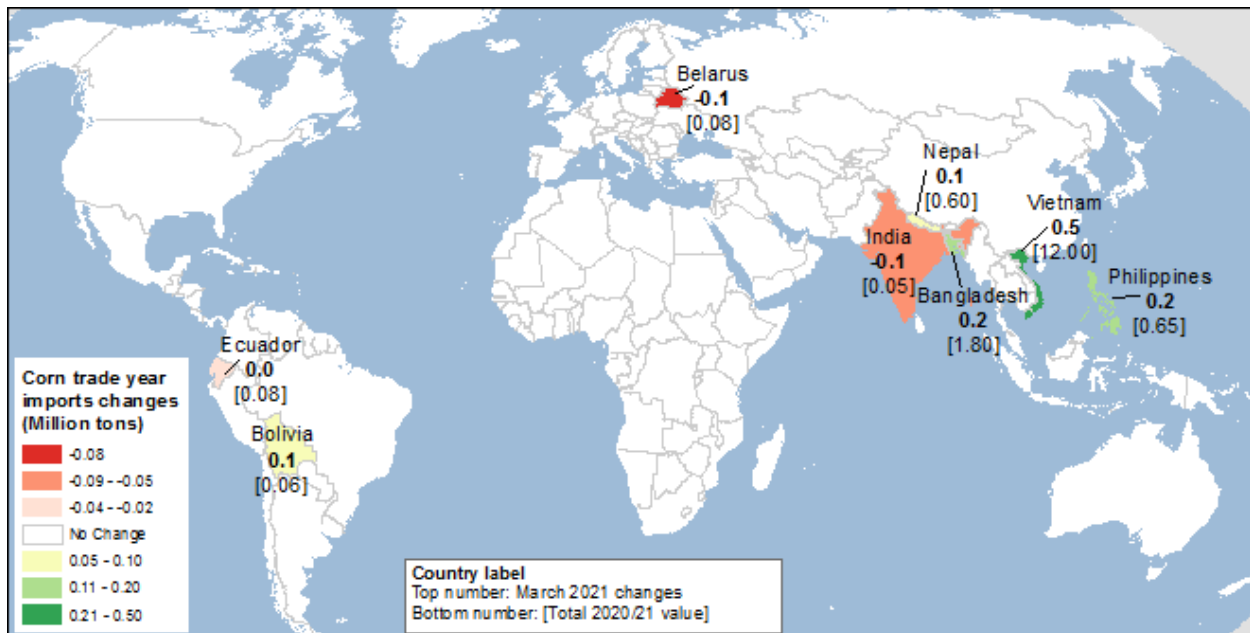
For a visual display of the changes in corn international trade-year exports and imports, see maps B and C below.

Map B – Corn trade year (TY) exports changes for 2020/21, March 2021



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

Map C – Corn trade year (TY) imports changes for 2020/21, March 2021



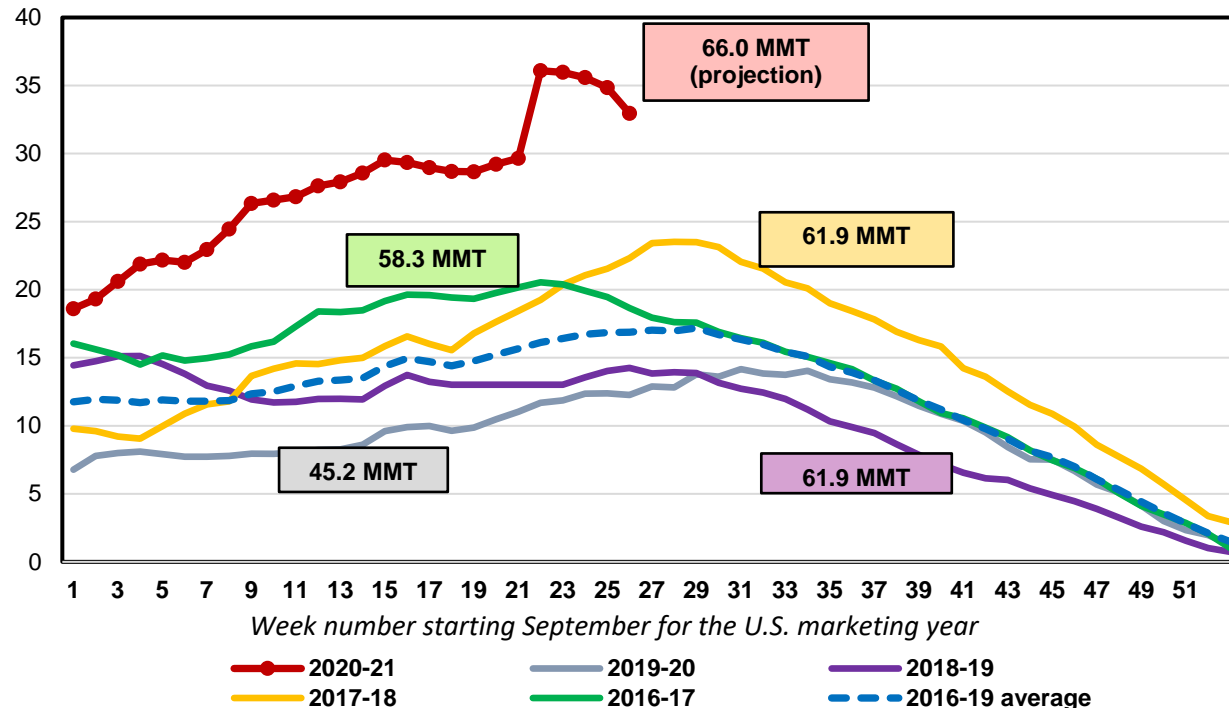
Source: USDA, Foreign Agricultural Service, *Production, Supply, and Distribution* online database.

The **U.S.** corn export forecast for the 2020/21 October-September trade year is unchanged this month at 65.0 million tons (66.0 million tons, or 2,600 million bushels, for the local September-August marketing year). Outstanding sales are at historic highs and have reached about half of currently projected U.S. exports. Note that historically, the final export number for a given year

has always been more than double the peak volume of outstanding sales in a given marketing year (see figure 8).

Figure 8
Outstanding sales and U.S. corn exports (yearly exports are given in colored boxes)

Million metric tons (MMT)



Source: USDA, Foreign Agricultural Service, U.S. Export Sales.

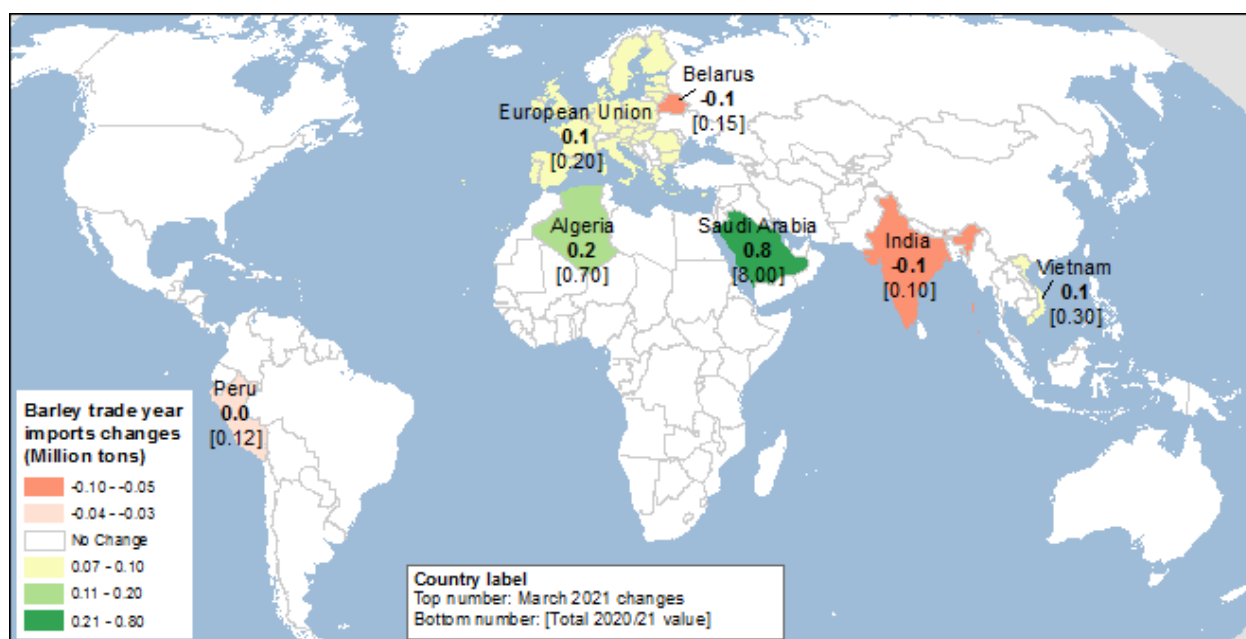
Also, the current commitments (a sum of September-January exports, February inspections, and outstanding sales) have already exceeded 60 million tons, or 90 percent of projected total. However, there are several issues that call for caution. It should be noted that a) outstanding sales have still to be executed, the bulk of them being directed to China, implying some uncertainty about full execution of sales and b) competition from South America is expected to intensify and will partially depend on weather conditions in the Center-West of Brazil. In recent weeks, Argentina’s corn export prices have seen a sharp seasonal decline, trumping previous U.S. price competitiveness. It is also assumed that Brazil will likely see large exports of its new safrinha crop, beginning the latter half of July, that will compete with U.S. exports later in the year.

World **barley** trade in 2020/21, for the October-September international year, is projected up 1.0 million tons to 30.8 million. The increase is due to projected higher barley output in **Australia**. The two largest world importers of barley are **China** and **Saudi Arabia** (malting and feed barley for China and mainly feed barley for Saudi Arabia), which together account for more than half of

the globally traded crop. When Australia virtually lost access to Chinese imports in 2020 over the diplomatic row between the two countries, after China levied an anti-dumping and anti-subsidy tariff on Australian barley of 80.5 percent—Australia reconfigured its barley trade, exporting more to Japan, Thailand, and Vietnam. But more importantly, Australia started to export to Saudi Arabia—partly supplanting Argentine, EU, and Black Sea exporters. This month, barley imports are boosted for **Saudi Arabia**, which has recently made a large purchase of almost 700 tons of barley from Australia. Barley imports are also raised for **Vietnam** (increased purchases of Australian barley) and **Algeria** on larger shipments from the European Union.

For a visual display of the changes in barley trade-year (TY) imports, see map D below.

Map D – Barley trade year (TY) imports changes for 2020/21, March 2021



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

Global Coarse Grain Use and Stocks Follow Revisions in Production and Trade

Most changes in **coarse grain domestic use** this month follow the revisions in production and trade.

Global coarse grain domestic consumption (both feed and residual use, and food and industrial (FSI) use) in 2020/21 is projected up 4.3 million tons this month to a record high 1,458.5 million. Several larger changes reflect production revisions and multiple changes across corn-importing countries. Global feed and residual use is raised 0.9 million tons for corn, 1.5 million tons for

barley, millet FSI consumption is projected 1.0 million tons higher, while changes for other coarse grains are smaller.

Additional information and details of this month's changes in coarse grain domestic consumption are provided in table B.

Table B - Coarse grain domestic consumption at a glance (2020/21), March 2021				
	Country or region	Domestic consumption	Change¹	Comments
		<i>Million tons</i>		
↑	World	1,458.5	+4.3	
↑	Foreign	1,144.4	+4.3	Foreign domestic use of corn is raised 1.2 million tons; barley use is up 1.6 million tons, millet is up 1.0 million tons, sorghum consumption is up 0.3 million tons, while oats use is up 0.1 million tons.
↑	United States	314.2	No change	See section on U.S. domestic output.
↑	India	47.4	+2.4	Based on revised production estimates: (a) corn feed consumption is up 0.5 million tons, while corn food, seed, and industrial (FSI) consumption is up 0.3 million tons; (b) millet is up 1.0 million tons, mainly for food consumption; (c) sorghum consumption is increased by 0.6 million tons, also mainly for food use. See also table A2 for production changes.
↑	Saudi Arabia	12.6	+0.8	Larger barley imports from Australia, as the country is re-routing higher barley supplies away from China (see discussion in the report).
↑	Bangladesh	6.2	+0.4	Increased corn imports from India are expected to be used for feeding.
↑	Australia	8.7	+0.4	Increase in barley feed use follows a higher projected output. See also table A2 for production changes.
↑	Algeria	7.9	+0.2	Higher barley imports are expected to be used for feeding.
¹ Change from previous month. Smaller changes are made for a number of countries.				
Source: USDA, Foreign Agricultural Service, <i>Production, Supply, and Distribution</i> online database.				

An increase in global coarse grain production is projected to exceed higher use this month. World **coarse grain ending stocks** for 2020/21 are therefore projected up 1.9 million tons this month to 318.1 million. The largest change is a projected increase in coarse grain stocks for **India**, up 1.0 million tons to 3.2 million (due to a rise in corn, sorghum, and millet production). All other country changes are much smaller, with an increase for **Australia**, up 0.4 million tons for barley. Other changes are smaller.

Suggested Citation

McConnell, Michael, Olga Liefert, Tom Capehart, and Steven Ramsey, *Feed Outlook*, FDS-21c, U.S. Department of Agriculture, Economic Research Service, March 11, 2021.

Use of commercial and trade names does not imply approval or constitute endorsement by USDA.

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.