



# Feed Outlook

**Michael McConnell, coordinator**

**Olga Liefert**

**David Olson**

**Tom Capehart**

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## Lower Corn Supplies Reduce Use, Raise Prices for 2020/21

U.S. corn production for 2020/21 is lowered to 14,182 million bushels, primarily due to the national average yield being reduced from 175.8 to 172.0 bushels per acre. Beginning stocks are also lowered, reducing total projected supplies by 400 million bushels compared with the previous month. The projected average farm price is raised from \$4.00 to \$4.20 per bushel, due to the tighter supply outlook. Domestic use and exports are also reduced, based on tighter supplies and higher prices. Corn exports are projected to be 2,550 million bushels in 2020/21, which would still be a record if realized, but is 100 million bushels less than projected in December.

U.S. corn production and exports are reduced, with exports projected down to a still record-high of 64.0 million tons. Argentine and Brazilian corn production are also lowered. Argentine exports are down, while Chinese corn use and imports are growing, as the spread between world and domestic prices is substantial. The imbalance created by these developments is pushing world corn prices higher, up sharply from just half a year ago. Higher prices are expected to limit corn consumption and imports in a number of importing countries.

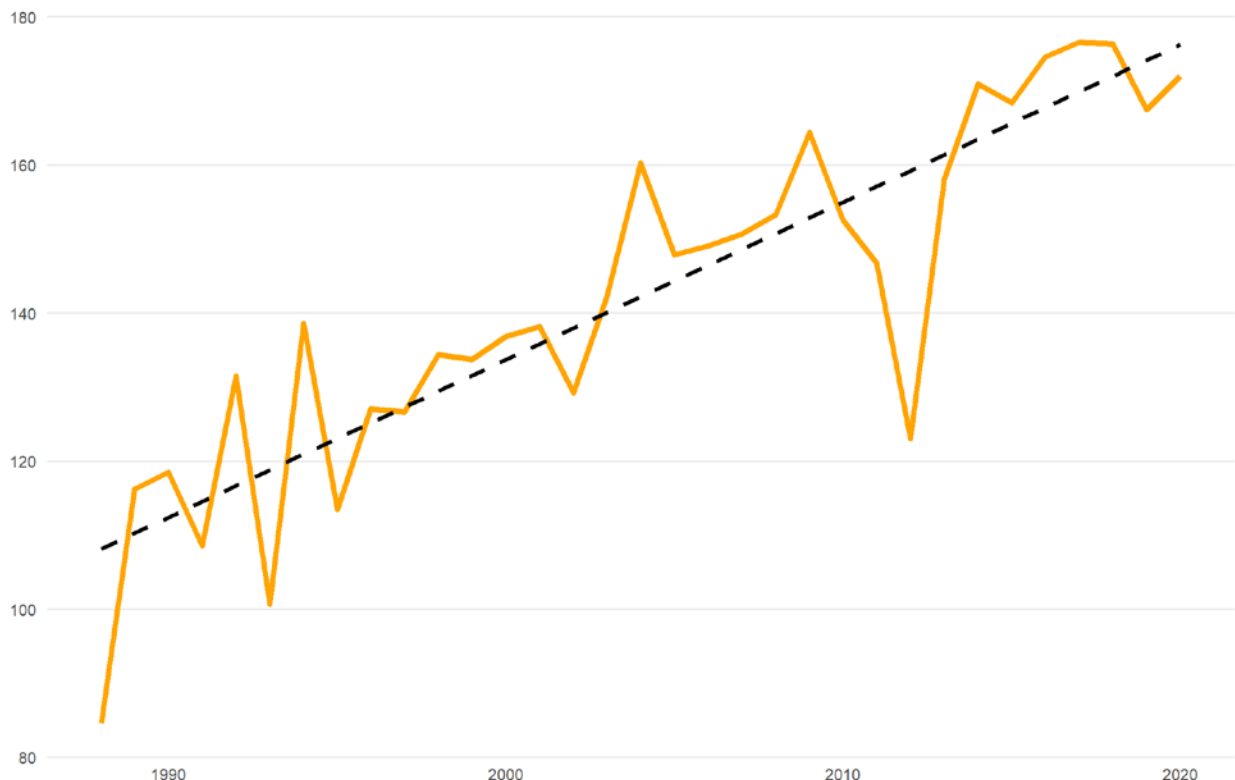
# Domestic Outlook

Michael McConnell  
David Olson

## U.S. Corn Production Reduced, Primarily on Lower Yields

Lower projected supplies for the 2020/21 corn market substantially tightened the market outlook in the January *World Agricultural Supply and Demand Estimates* (WASDE), lowering use across all major use categories and raising projected price levels. The National Agricultural Statistics Service (NASS) lowered corn production by 324 million bushels to 14,182 million bushels in its January *Crop Production 2020 Summary*. The lower production level is based on 82.5 million acres of harvested area for grain, as well as a yield of 172.0 bushels per acre—down from the last forecast of 175.8 bushels per acre published in November.

Figure 1  
**Corn yields, United States, 1988 to 2020**  
Bushels per acre



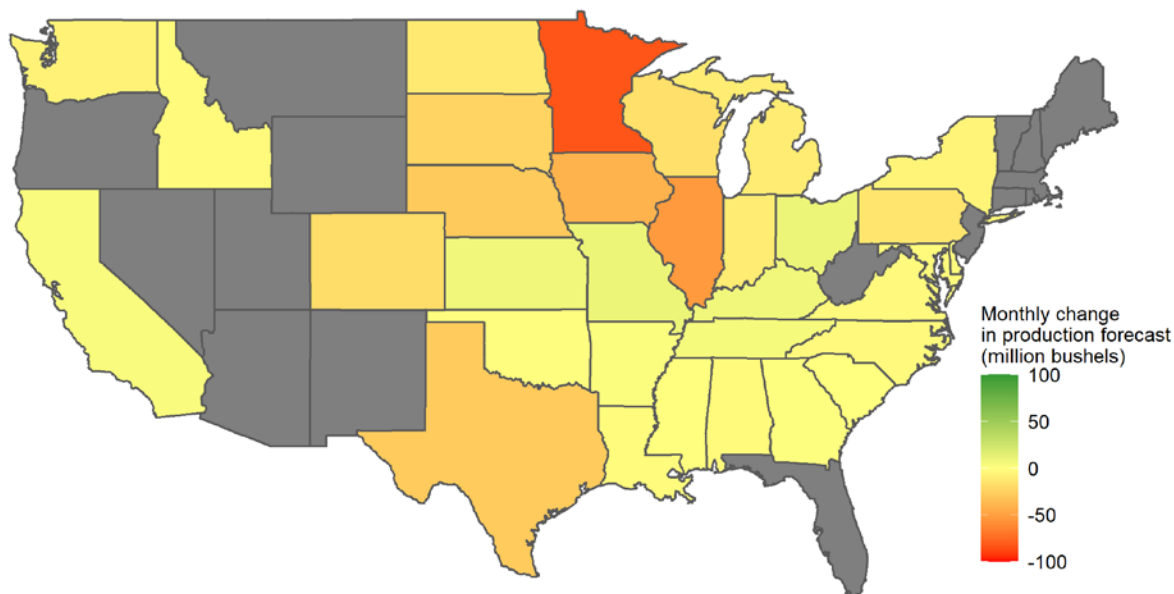
Source: USDA, National Agricultural Statistics Service.

The reduction in corn production was largely due to State-level reductions, led by Minnesota (83 million bushels lower than the November forecast), Illinois (53-million-bushel reduction), and

Iowa (41-million-bushel reduction). Like the national figures, reductions at the State level are primarily due to reduced yields. Increased corn production was reported in some States, but not enough to offset the reductions. The increases were led by Ohio (10-million-bushel increase), Missouri (10-million-bushel increase), and Kentucky (8-million-bushel increase).

Figure 2

**U.S. corn production changes between November and January, 2020/21 crop marketing year**



Source: USDA, National Agricultural Statistics Service.

Beginning stocks for 2020/21 are also lowered from the previous month by 76 million bushels, now totaling 1,919 million bushels. The change is due to revisions made to September 1 stocks, as reported in NASS's January *Grain Stocks* report. The revision further reduces projected supplies for the year. In sum, total supplies are reduced 400 million bushels in the January WASDE compared with the previous month.

## Feed and Residual Raised for 2019/20, Lowered for 2020/21

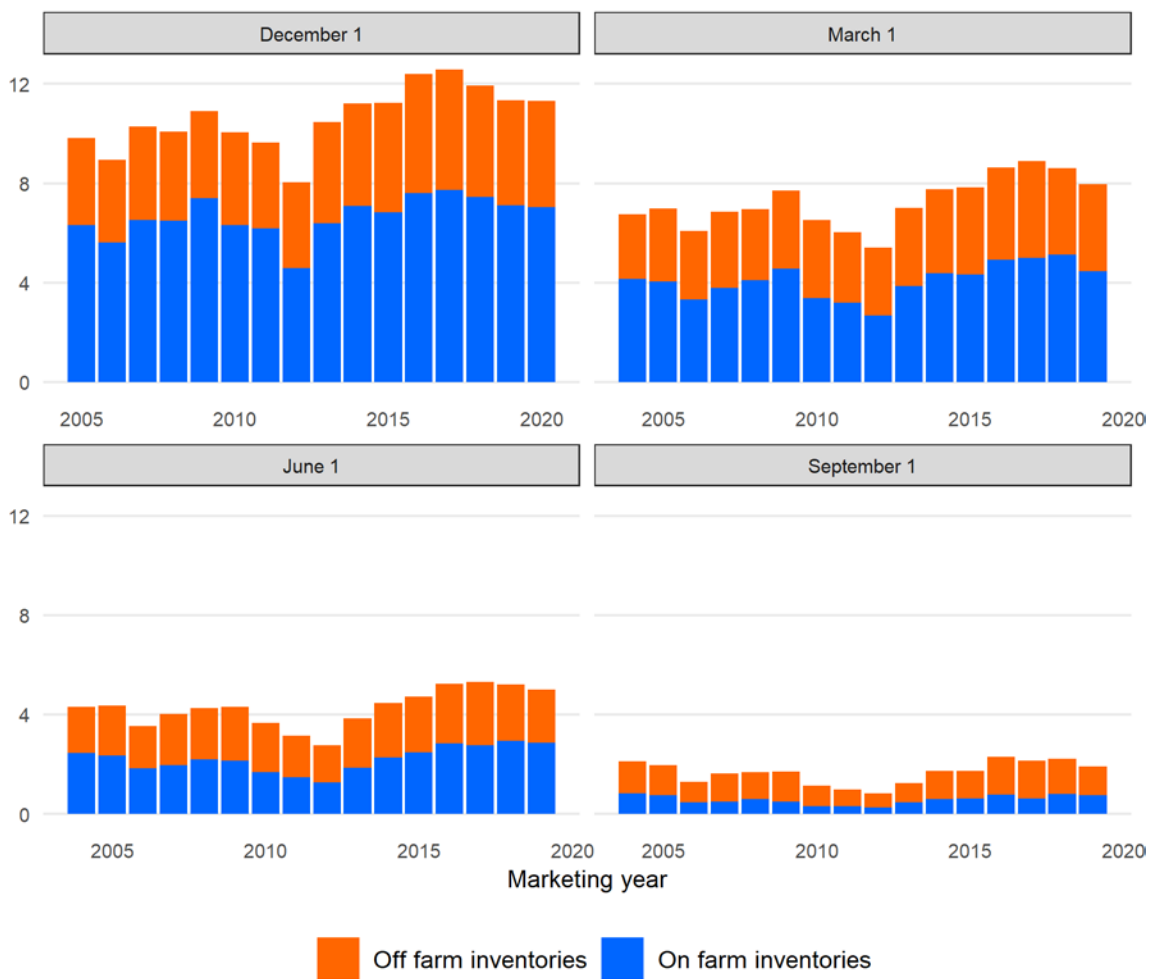
Corn feed and residual for 2020/21 is projected at 5,650 million bushels, a 50-million-bushel reduction from the previous report. Conversely, feed and residual for 2019/20 is increased 76 million bushels to 5,903 million bushels, due to revisions to 2019/20 quarterly stocks made in the most recent NASS *Grain Stocks* report. The downward revisions to the previous year's

inventories imply a higher level of disappearance in the U.S. corn market than previously estimated. NASS also released the first December 1, 2020 corn stocks figure, at 11,322 million bushels—nearly unchanged from the previous year’s total of 11,327 million bushels. This implies that 2,726 million bushels of disappearance for feed and residual occurred in the first 3 months of 2020/21—a 3.5-percent increase from the previous year. However, increased feed prices are expected to temper livestock inventories and animal product production moving forward in the marketing year. Projected grain-consuming animal units (GCAU) for 2020/21 are lowered from 102.1 million units in December to 101.8 million in January.

Figure 3

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

Billion bushels



Source: USDA, National Agricultural Statistics Service.

## Food, Seed, and Industrial Reduced on Tighter Supplies

Tighter supplies have resulted in reductions to projected industrial use of corn for 2020/21, specifically for fuel use. Corn used for ethanol production is reduced 100 million bushels from the December report, totaling 4,950 million bushels. Based on NASS *Grain Crushings and Coproducts Production* report from September and November 2020 (the first quarter of the corn marketing year), 1,267 million bushels have been used to produce fuel ethanol. The quarterly total is 2.6 percent lower than the same period in 2019/20, reflecting the change in transportation fuel demand and changes to driving patterns caused by COVID-19. Year over year, the current 2020/21 projection for fuel use would be a 2.0-percent increase over 2019/20 totals, if realized.

## Corn Exports Lowered for 2020/21 Despite Demand from China

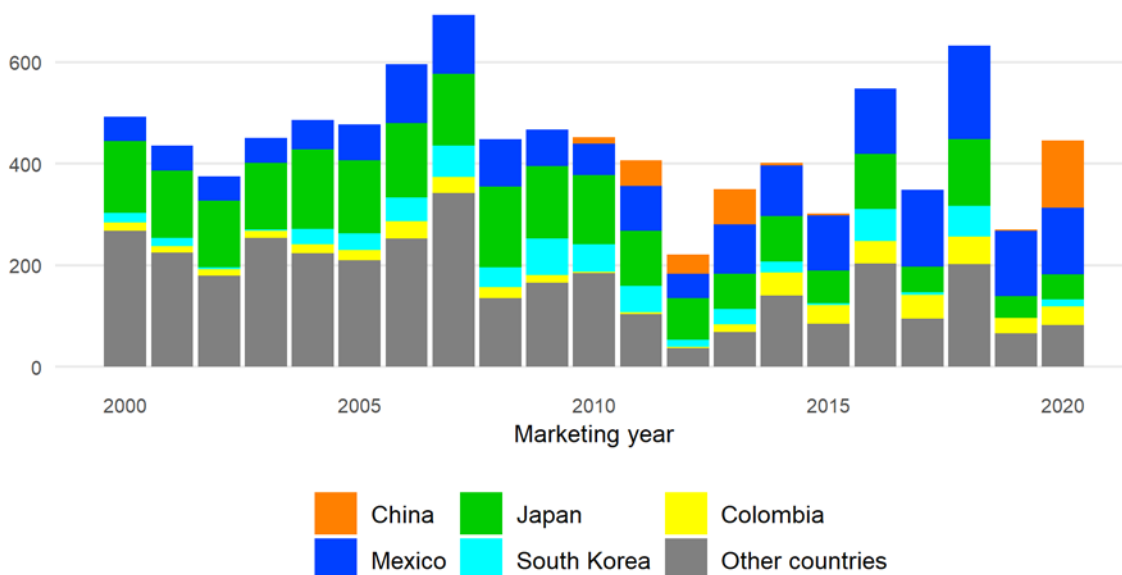
U.S. corn exports are lowered to 2,550 million bushels for 2020/21—a 100-million-bushel monthly reduction. The reduction in foreign shipments is also on the basis of tighter-than-expected supplies and higher-than-expected prices projected in the U.S. market. The total would still be a record, if realized. Despite tighter domestic supplies, strong global demand for feed grains—particularly from China—paired with weather-affected summer crops in Eastern Europe and South America, have resulted in strong international demand for U.S. corn and feed grains. For additional information, see the International Outlook section of this report.

Through the first 3 months of the marketing year, the United States has exported 446 million bushels of corn. Thus far in the marketing year, total foreign shipments have not reflected a record pace. The share of shipments to China, however, has been notable—both in terms of exports currently being reported the U.S. Census Bureau through the first 3 months of the marketing year and by total commitments reported by the Foreign Agricultural Service's (FAS) Export Sales Report system. The increase of China's presence in 2020/21 has come at the expense of other traditional and smaller markets. In order to reach the current record projection, a strong pace of shipments will need to occur through the remainder of the marketing year.

Figure 4

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

Million bushels



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

## Corn Price Raised as Projected Stocks Tighten

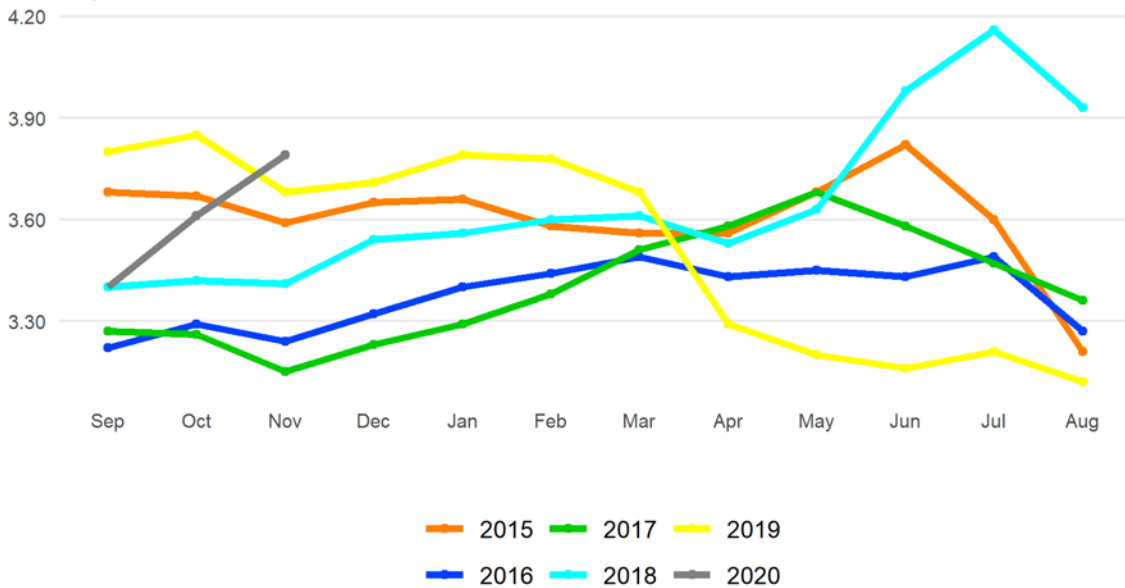
The U.S. corn market is projected to be tighter, as a result of the updates in the January WASDE, with the reduction in supplies outpacing lower use. Ending stocks for 2020/21 are projected to be 1,552 million bushels, a 150-million-bushel reduction from the December projection of 1,702 million bushels.

Tighter supplies are resulting in higher prices for the U.S. 2020/21 corn market. The season-average farm price for corn is projected to be \$4.20 per bushel—a \$0.20 increase from the previous month’s report. Through November, as reported by NASS, the farm price received for corn has increased steeply in each successive month. The price levels remain below \$4.00 per bushel, however, as it is likely that much of the corn marketed thus far was priced prior to the significant increases in cash and futures corn prices. Cash prices for corn have been steadily increasing since the summer, when the diminished production outlook for Ukraine and Russia was developing, and increasing demand from China materialized in the market.

Figure 5

### Price received for corn, monthly

Dollars per bushel

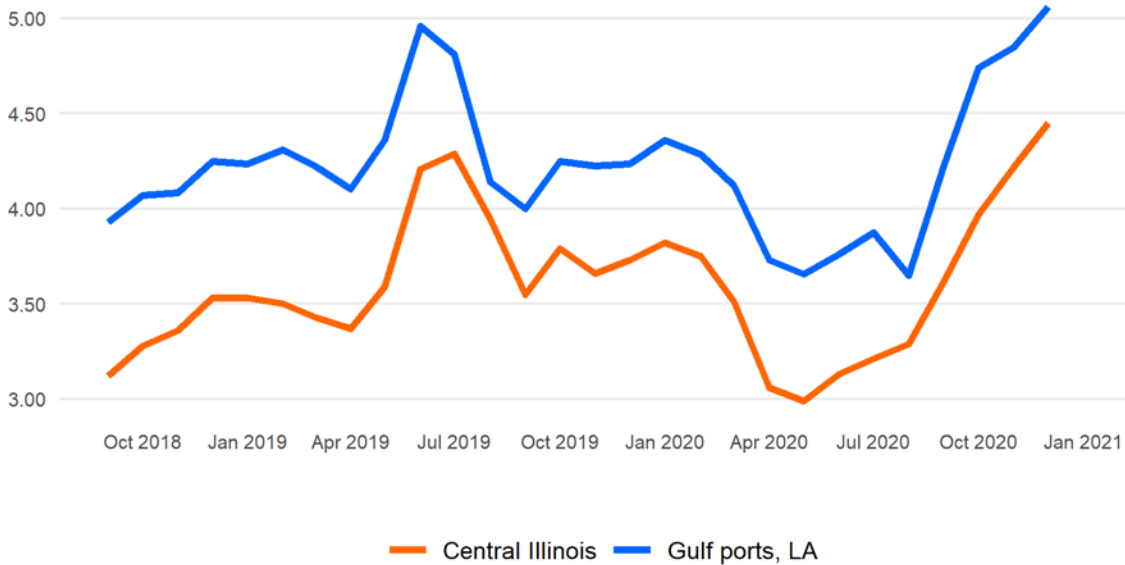


Source: USDA, National Agricultural Statistics Service.

Figure 6

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

U.S. dollars per bushel



Source: USDA, Agricultural Marketing Service.

## Higher Levels of Sorghum Production and Use Projected for 2020/21

The 2020/21 sorghum crop is projected to be 373 million bushels, up 2 million bushels over prior projections, as reported by NASS's January *Crop Production 2020 Summary*. The updated data shows a 0.1-million-acre increase in both planted area and harvested area, now projected to be 5.9 million acres and 5.1 million acres, respectively. NASS also forecasts a slightly lower yield of 73.2 bushels per acre, down 1.0 bushels from November.

Domestic use in 2020/21 is lowered from the previous month, down 10 million bushels to 85 million. Food, seed, and industrial use is lowered 10 million bushels to 15 million—based on a lower forecast of sorghum used to produce ethanol. Higher market prices, combined with reduced demand for transportation fuels, have resulted in minimal sorghum ethanol production during the first 3 months of 2020/21.

Foreign demand has been strong, however, as more sorghum is projected to be exported in 2020/21 to markets where demand for livestock feed is robust. The reduction in domestic use is more than offset by a 15-million-bushel increase in the expected export figure, now at 290 million bushels. If this increase is realized, it would be the largest export amount since 2015/16.

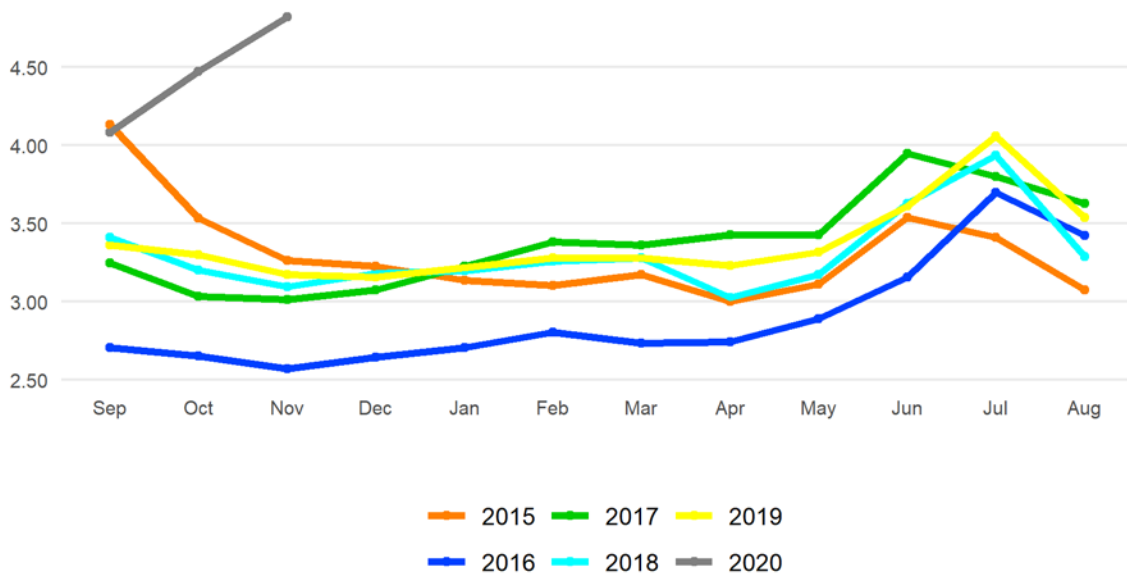
Stocks are projected to decrease by 2 million bushels, to 28 million bushels for the year. The season average price for sorghum is raised \$0.30 per bushel from the previous month to \$4.70 for 2020/21. The higher price outlook is reflective of tighter market and higher cash market prices. Monthly sorghum prices received by farmers have steadily increased over the first 3 months of 2020/21 and were significantly higher in recent months than at any point over the past 5 years.



Figure 7

**Price received for sorghum, monthly**

Dollars per bushel



Source: USDA, National Agricultural Statistics Service.

# International Outlook

Olga Liefert

## World Coarse Grain Production Prospects Reduced

Global coarse grain production in 2020/21 is projected lower this month at 1,438.5 million tons, down 9.3 million, mostly because of a decline in the United States. Lower estimated U.S. output drives global change, with foreign coarse grain production forecast down 1.1 million tons to 1,063.9 million. Global corn projections changed the most, down 9.7 million tons to 1,133.9 million tons, while changes for some other coarse grains are small (see tables A1 and A2).

World corn production is projected down 9.7 million tons from last month's forecast, while corn output in the United States is reduced by 8.2 million tons. Foreign corn production is lowered by 1.4 million tons this month, with several partly offsetting changes.

The largest revision for foreign corn production this month is for **Argentina**, down 1.5 million tons to 47.5 million. Last month, a production reduction in Argentina was caused by lower projected planted area. This month, persistent dryness affected early-planted corn during the critical stages of reproduction in the heart of the main corn-growing regions of western Cordoba, southern Santa Fe, and northern Buenos Aires—limiting yield prospects. About 30 percent of corn in these regions is assessed by local sources to be in fair to poor condition. However, seasonally warm weather, with no serious heat stress to the crop and timely rains in some areas, are expected to limit losses. The current yield forecast assumes normal weather going forward. The projected corn production is still the 3<sup>rd</sup> highest on record.

The same weather that struck Argentina also stressed corn yields in southern **Brazil**, particularly parts of Rio Grande do Sul and Santa Catarina. These states that produce almost half of Brazil's first crop corn are now moving to the filling phase of the reproductive period. The first crop corn represents only about a quarter of projected corn output, which moderates the impact of the reduction on the total crop. The rest (about 3 quarters) of Brazilian corn output comes from the second-crop (safrinha) corn, usually planted after the soybean harvest in January-March. Area and yield assumptions for safrinha corn are unchanged this month. Corn prices are running high in Brazil and are expected to boost safrinha corn area relative to last year, further reducing the impact of lower first crop yields and production on total corn output. With reduced first-crop yields, 2020/21 corn production for Brazil is projected down 1.0 million

tons this month (less than 1 percent) to a still-significant record-high of 109.0 million tons, 7.0 million tons ahead of last year.

Changes in projected coarse grain production for other countries are smaller. Table A1 gives changes in global, foreign, and U.S coarse grain output by type of grain, while table A2 presents changes in coarse grain production by country.












<b>Table A1 - World and U.S. coarse grain production at a glance (2020/21), January 2021</b>					
	Region or country	Production	Change from previous month <sup>1</sup>	YoY Change <sup>2</sup>	Comments
<i>Million tons</i>					
<b>Coarse grain production (total)</b>					
↓	World	1,438.5	-9.3	+27.1	
↓	Foreign	1063.9	-1.1	+12.0	Partly offsetting changes are made for a number of countries and commodities. See table A2.
↓	United States	374.6	-8.2	+15.1	See section on U.S. domestic output.
<b>World production of coarse grains by type of grain</b>					
<b>CORN</b>					
↓	World	1,133.9	-9.7	+17.5	
↓	Foreign	774.6	-1.5	+3.2	Reductions in Argentina, Brazil, and the EU <sup>3</sup> more than offset increases in Chinese and Indian production. See Table A2.
↓	United States	360.3	-8.2	14.3	See section on U.S. domestic output.
<b>BARLEY</b>					
	World	157.2	Fractional	+0.6	
	Foreign	153.6	Fractional	+0.4	Slightly higher output projected in Argentina and Serbia fully offset lower production in the EU <sup>3</sup> . See table A2.
	United States	3.6	No change	-0.2	See section on U.S. domestic output.
<b>SORGHUM</b>					
↓	World	61.6	-0.2	+3.7	
↓	Foreign	52.1	-0.3	+2.9	Lower output projected for India. See table A2.
↑	United States	9.5	+0.1	+0.8	See section on U.S. domestic output.
<b>OATS</b>					
↑	World	25.5	+0.1	+2.5	
↑	Foreign	24.4	+0.1	+2.3	Minor production changes projected for Russia, Argentina, and the EU <sup>3</sup> . See table A2.
	United States	0.9	No change	+0.2	See section on U.S. domestic output.
<b>RYE</b>					
↑	World	14.2	+0.6	+2.0	
↑	Foreign	13.3	+0.6	+2.0	Higher production projected for Russia. See table A2.
	United States	0.3	No change	Fractional	See section on U.S. domestic output.
<b>MILLET</b>					
↓	World/Foreign	30.2	-0.1	Fractional	Lower production projected for Russia. See table A2.
<b>MIXED GRAIN</b>					
	World/Foreign	15.9	No change	+0.9	

<sup>1</sup>Change from previous month. <sup>2</sup>YoY: year-over-year changes. <sup>3</sup>EU: European Union, EU-27 + United Kingdom (U.K.)

For changes and notes by country, see table A2.

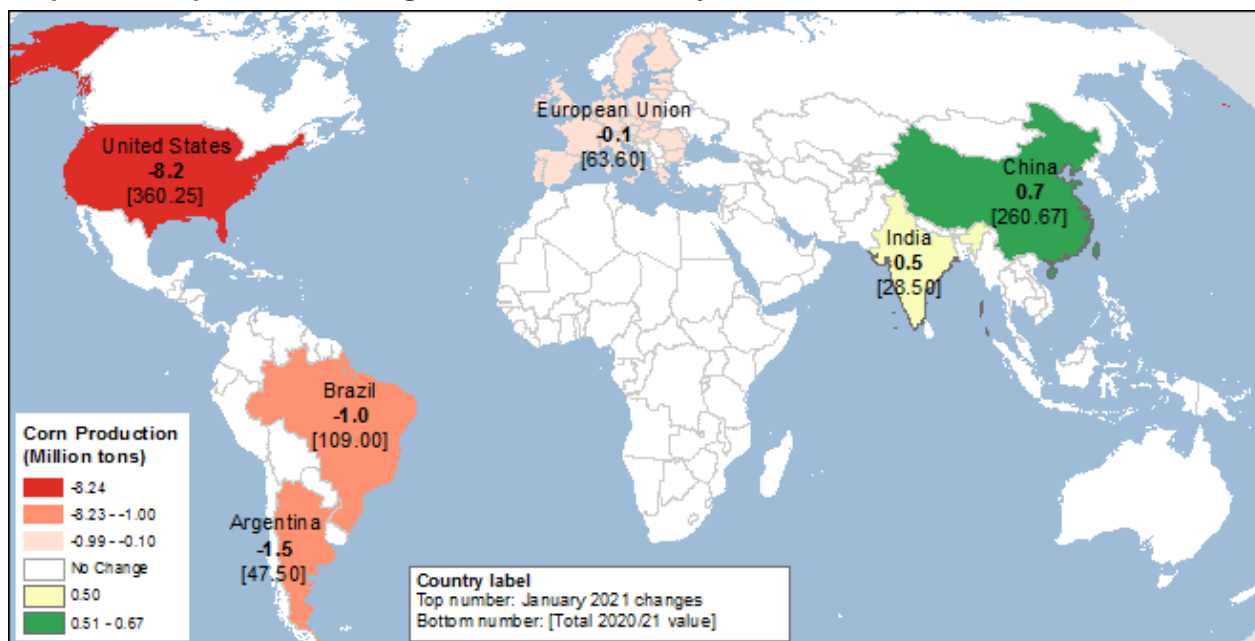
Source: USDA, Foreign Agricultural Service, Production, Supply and Distribution online database.

**Table A2 - Coarse grain foreign production by country at a glance for 2020/21, January 2021**

Type of crop	Crop year	Production	Change in forecast <sup>1</sup>	YoY <sup>2</sup> change	Comments
<i>Million tons</i>					
<b>Coarse grain production by country and by type of grain</b>					
<b>ARGENTINA</b>					
 Corn	Mar-Feb	47.5	-1.5	-3.5	Dry conditions in some key early corn-producing regions reduce yields and production.
 Barley	Dec-Nov	3.7	+0.3	-0.1	Higher projected area harvested in response to increased export demand. Wheat (also a winter crop) area is reduced.
<b>BRAZIL</b>					
 Corn	Mar-Feb	109.0	-1.0	+7.0	Dry conditions in the Southern states of Brazil limit corn yields for the first-season crop. Year-over year expansion of second-crop corn area keeps corn output at record-high level.
<b>CHINA</b>					
 Corn	Oct-Sep	260.7	+0.7	-0.1	Official post-harvest reports (National Bureau of Statistics, NBS) show the recently harvested crop had slightly lower area, but higher yields than previously forecast.
<b>INDIA</b>					
 Corn	Nov-Oct	28.5	+0.5	-0.1	Area is projected higher, with planting progress better than expected before. The change is based on Government estimates.
 Sorghum	Nov-Oct	3.9	-0.3	-0.9	Area is projected lower than expected before, the reduction is based on Government estimates.
<b>EUROPEAN UNION<sup>3</sup></b>					
 Corn	Oct-Sep	63.6	-0.1	-3.1	Harvest results indicate lower production in <b>Germany</b> , partly offset by an increase in <b>Belgium-Luxembourg</b> .
 Barley	Jul-Jun	63.1	-0.3	-0.1	Lower production in the <b>United Kingdom (UK)</b> and <b>Finland</b> .
<b>RUSSIA</b>					
 Oats	Oct-Sep	4.1	+0.1	-0.3	Preliminary harvest results issued by the Russian statistical agency ROSSTAT.
 Rye	Oct-Sep	2.4	+0.6	+1.0	Preliminary harvest results issued by the Russian statistical agency ROSSTAT.
 Millet	Oct-Sep	0.4	-0.1	<b>Small change</b>	Preliminary harvest results issued by the Russian statistical agency ROSSTAT.
<sup>1</sup> Change from previous month. Smaller changes are made for several countries, see map A for changes in <b>corn</b> .					
<sup>2</sup> YoY: year-over-year changes. <sup>3</sup> European Union, EU-27 + United Kingdom (U.K.)					
Source: USDA, Foreign Agricultural Service, Production, Supply and Distribution online database.					

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

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



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

## Global Corn Balance Gets Tighter

Changes in corn trade flows this month are driven on the one hand by a reduction in production and exports for the **United States** and **Argentina** (as well as **Brazil**, though its exports are unchanged), and on the other by a further increase in projected corn imports by **China**. The imbalance created by these two developments is pushing world corn prices higher, sharply up from even half a year ago. Higher prices are expected to limit corn consumption and imports in a number of importing countries, thereby rebalancing the market. Meanwhile, **China's** corn use and imports are growing as the spread between world and surging domestic prices is large. Projected world corn grain trade for the 2020/21 international October-September trade year is reduced this month, down 3.3 million tons to 181.4 million.

In December 2020, the Government of **Argentina** announced its intention to close corn export registration prior to March 2021, which is the beginning of a new production year. The Government expressed concern that while producers were seeking to capitalize on high global corn prices, the quick recent pace of corn exports could threaten domestic availability and push prices and food inflation higher. However, on January 11, the Government replaced this plan with a temporary daily shipment cap of 30,000 tons. An observed slowdown in corn exports in December is assumed to continue into January and February, and is projected to limit Argentine exports, down 1.5 million tons.

The expected slowdown runs through the end of the March-February 2019/20 local marketing year that started in March 2020. This period is also part of the 2020/21 international trade year that begins in October 2020 and ends in September 2021. Hence, Argentine 2020/21 October-September trade-year exports are also reduced by 1.5 million tons. The reduction in exports for the 2019/20 local year frees additional supplies and boosts the country's carryin, fully offsetting this month's corn production cut and leaving 2020/21 corn supplies unaffected. Consequently, 2020/21 local marketing year (March 2021—February 2022) exports are not affected and are left unchanged.

Higher prices limit corn consumption and imports in a number of countries, especially with such traditional U.S. and Argentine buyers as **Mexico, Malaysia, Vietnam, Chile, Colombia, Dominican Republic, Peru, Saudi Arabia**, and several other countries—where corn imports are reduced this month (see map C). Corn imports are also lowered for the European Union (EU) (**EU-27 + U.K.**)<sup>1</sup>, down 1.0 million tons to 18.0 million. The reduction is based on surveillance data, and results in the lowest EU corn imports in 4 years. This reduction reflects a shift in Ukrainian exports away from the EU region, towards China.

The projections for **China's** corn imports continue to increase, up 1.0 million tons this month to 17.5 million, as Chinese demand for feed continues to be robust and generates additional imports. As corn domestic prices in China continue to be strong, and the spread between domestic and world prices grows, the country maintains a fast pace of imports into its Southern feed-deficit provinces and also the North China Plain. Since the beginning of calendar year 2020, China has already imported around 10 million tons of corn, far more than its current tariff-rate quota of 7.2 million tons allows, China is doing this despite making no formal announcement by its National Development and Reform Commission that additional quotas have been allocated, despite a recent World Trade Organization case indicating the need for more tariff rate quota transparency. China is obtaining corn mainly from the United States and Ukraine, with much smaller amounts coming from Bulgaria (part of the EU) and Russia.

U.S. corn exports on both a trade year and local-marketing-year basis are still forecast to be record-high, with strong demand from China. As of December 31, 2020, U.S. export sales reported local-marketing-year shipments of 5.2 million tons to China, while according to grain-inspection data, the first week of January added another 0.5 million tons. While outstanding U.S. sales to China are reported at 6.5 million tons, there remain 7.6 million tons of outstanding sales

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<sup>1</sup> Trade excludes intra-trade.

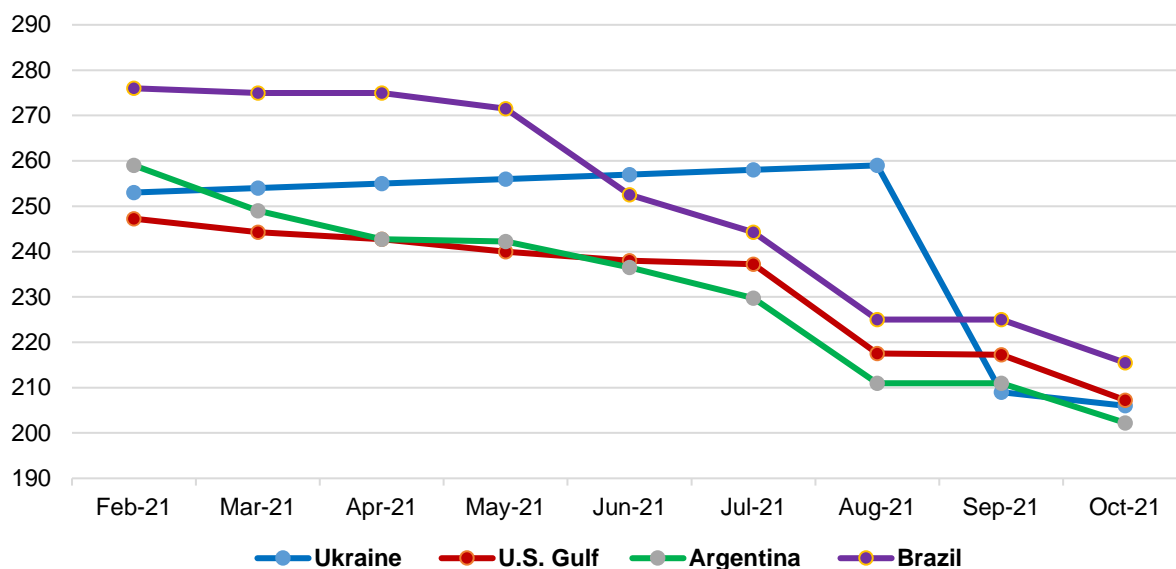
to “unknown” destinations. Sales to China often switch from “unknown” to China, or other destinations, as they are shipped.

**U.S.** corn exports for the international October-September trade year are down 2.0 million tons to 64.0 million this month, still at a record-high (2.55 billion bushels for the September-August local-marketing year, down 100 million bushels). Based on Census and grain inspection data, U.S. corn exports for October, 2020 through January 7, 2021 reached 12.8 million tons. Meanwhile, as of December 31, outstanding (weekly) export sales hit 28.7 million ton—a level never reached until the end of 2020.

Despite recent production cuts, the United States continues to be a relatively price competitive corn exporter. This advantage is projected to last through April-June of 2021. See figure 8.

Figure 8  
**Corn Free On Board (FOB) forward prices**

U.S. dollars per metric ton, January 13, 2021

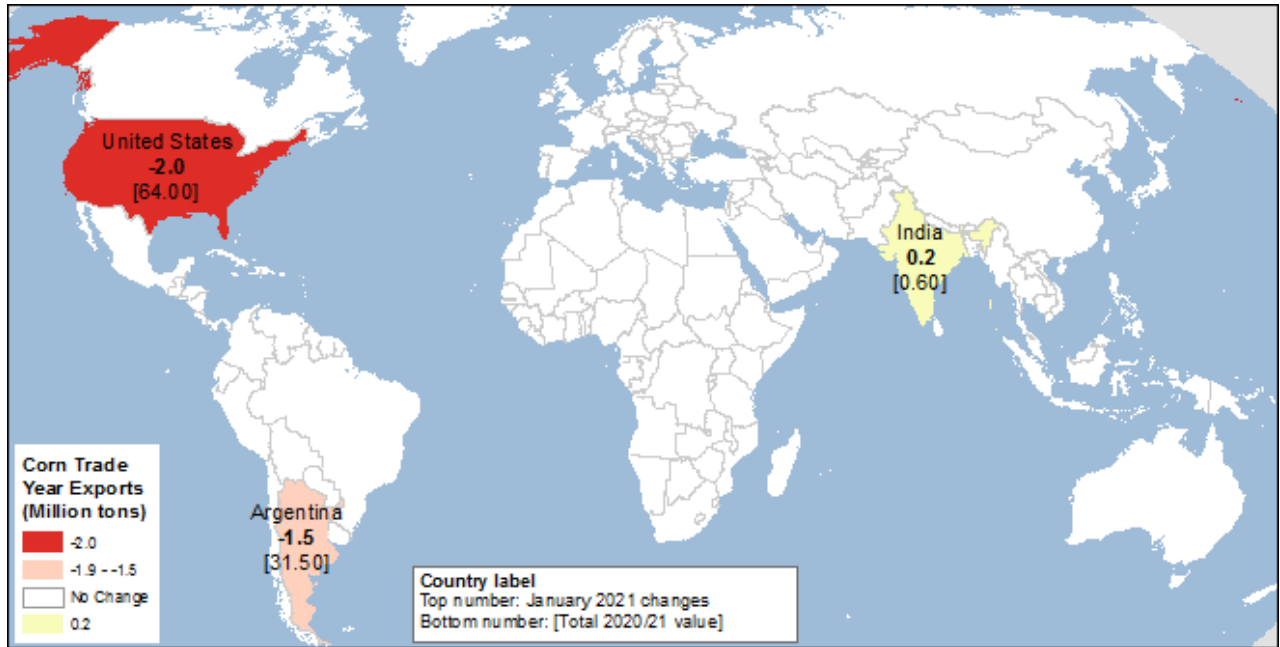


Source: AgriCensus.

The only other change is corn exports from **India**, up 0.2 million tons. This reflects higher projected corn output and the country’s additional exports to Bangladesh and Nepal.

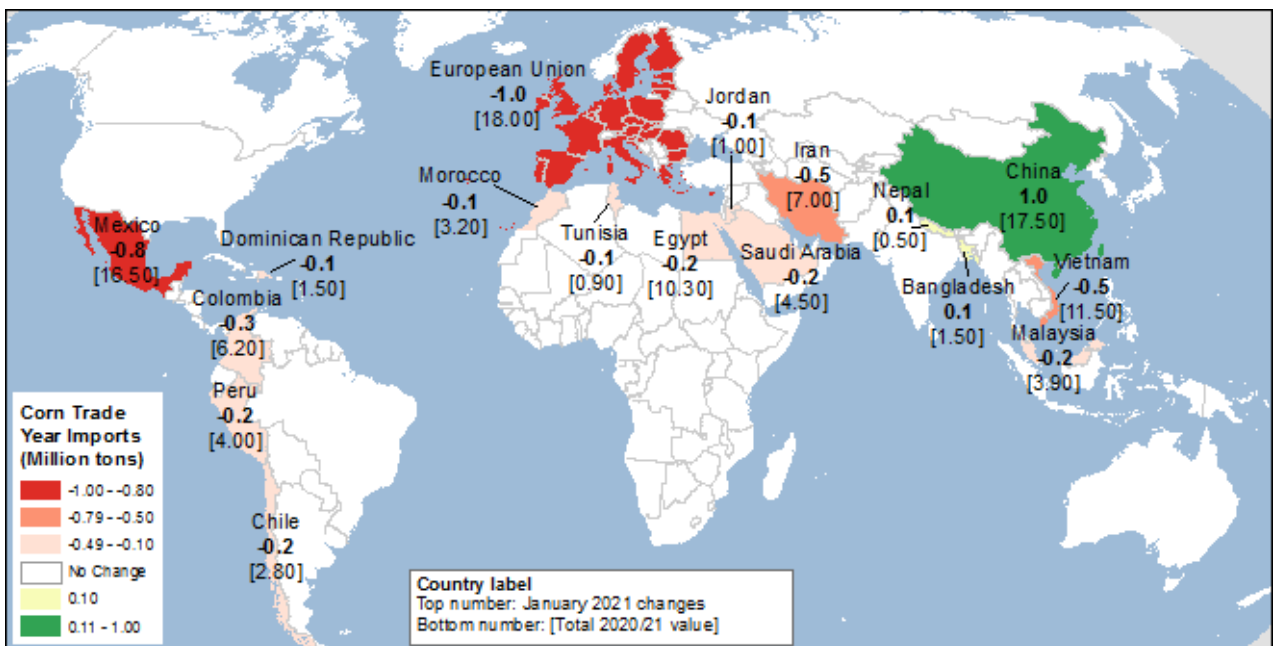
For a visual display of the changes in corn international trade year exports and imports, see maps B and C below.

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



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

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



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

The changes in exports and imports for other coarse grains are, although small, nonetheless important. One change is higher projected **U.S.** sorghum exports to **China**, up 0.4 million tons. The United States is now expected to export 9.0 million tons of sorghum, mostly to China, while projected Chinese imports reach 7.4 million, as the country is striving to purchase more available and non-quota-restricted feed grain. Another change is for barley, as **Turkey** is



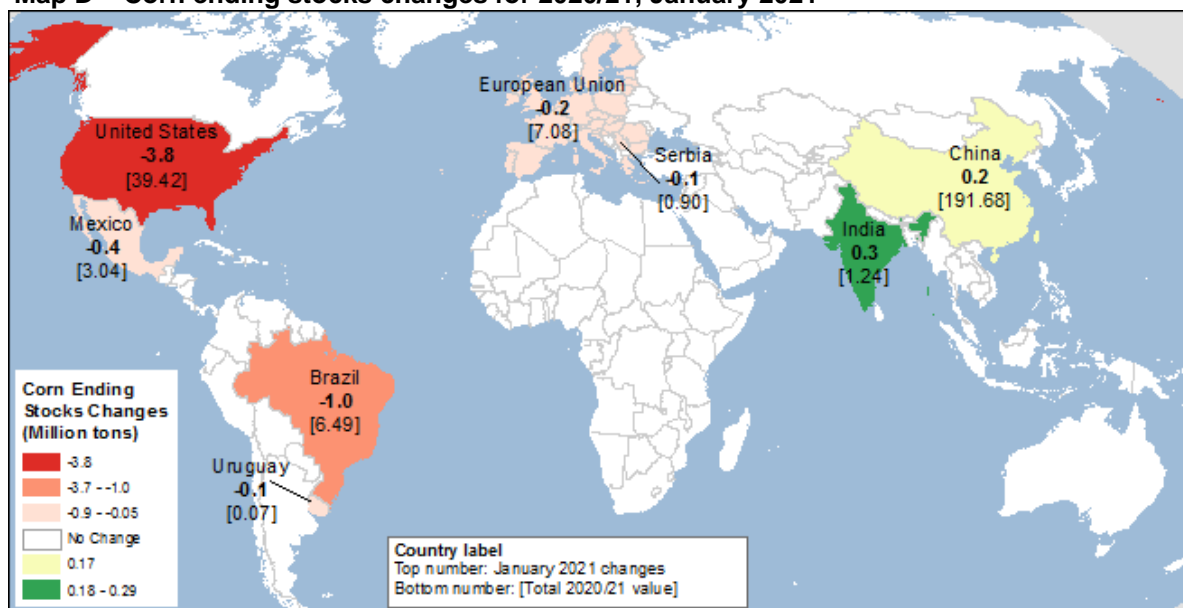
expected to import 0.2 million more tons of barley. This would be a 40 percent increase relative to last month, with Turkey's import duty set to zero through April.

## Corn Consumption and Stocks Projected Down

Global **corn** consumption is projected down 5.0 million tons, though for the world (less China), the consumption decline is 6.5 million tons. In addition to the reduction in the United States, corn use is projected down for a number of countries following lower imports ([see the discussion on consumption and imports](#), and also corn imports [map C](#) above). Partly offsetting these reductions is an increase in corn (and sorghum) use in **China**, due to higher projected output and imports.

Global **corn** stocks took a 5.1-million-ton reduction this month, driven mostly by a decline for the **United States** (75 percent of the decrease), following lower projected corn production in the country (see the discussion in the domestic section above). Nonetheless, the United States is expected to have sufficient stocks to fulfil the current lowered projection for exports. Foreign corn stocks are projected down by 1.31 million tons. The largest reduction is made for Brazil, as its production reduction is absorbed by stocks. The new projection is closer to the stocks level observed in the last 3 years. See a visual display of this month's country changes in corn ending stocks in map D.

**Map D – Corn ending stocks changes for 2020/21, January 2021**



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

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