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Outlook

Economic Research Service | Situation and Outlook Report

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Feed Outlook

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Increased Imports from China Raise Global Coarse Grain Trade

U.S. corn production is unchanged from the previous month at 14,506.8 million bushels, based on a national average yield of 175.8 bushels per acre. Domestic use, exports, and ending stocks are also unchanged for 2020/21. The projected season-average farm price is unchanged at \$4.00 per bushel. Sorghum, barley, and oat production are also unchanged. Sorghum and barley exports are increased this month based on less domestic food, seed, and industrial use—freeing up additional supplies for the export market.

China coarse grain imports for 2020/21 are raised 4.8 million metric tons (MT) this month, based on continued strong domestic demand for livestock feed. China total imports of corn are raised 3.5 million MT to 16.5 million this month, while imports of sorghum and barley are increased as well. Global coarse grain production remains effectively unchanged this month, while exports are raised 1.2 million MT. The increased global exports are predominantly due to Ukrainian and Brazilian corn, Australia and Canada barley, and Argentine sorghum—all of which saw increased production for 2020/21.

Domestic Outlook

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

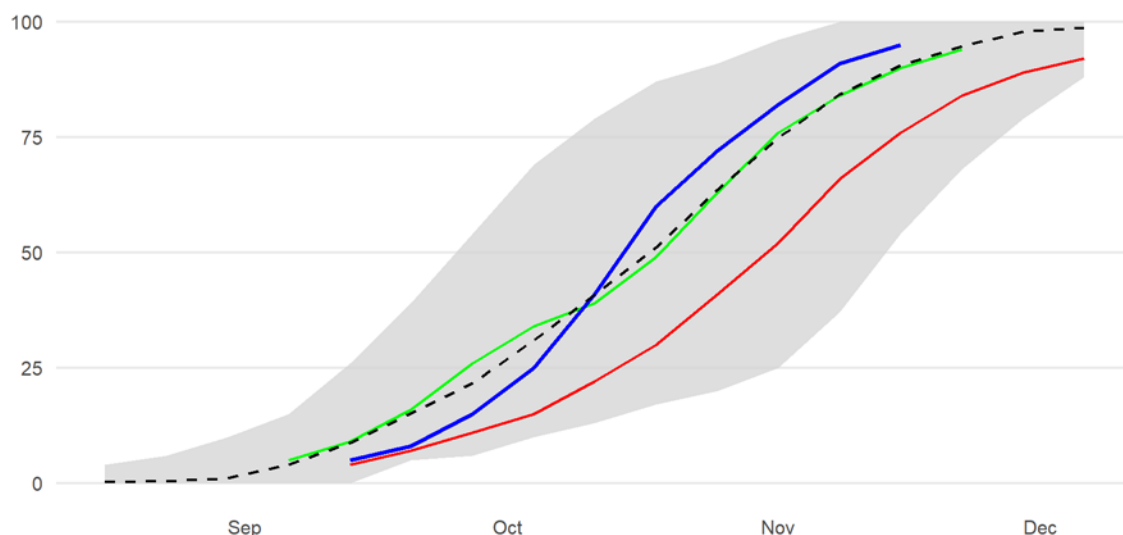
There were no changes to the projected corn outlook for 2020/21 in the USDA's December *World Agricultural Supply and Demand Estimates* (WASDE). The National Agricultural Statistics Service (NASS) did not publish updated corn production in its December *Crop Production* report, and will update its area and yield estimates in January, based on the results of the December Agricultural Survey. Production remained unchanged at 14,506.8 million bushels, with 82.5 million acres harvested and a yield of 175.8 bushels per acre.

Through November 15, 2020, in the NASS *Crop Progress* report's final corn harvest progress figures for 2020, 95 percent of the U.S. corn crop was harvested. That is well ahead of the previous year's level, as well as the average pace. At the State level, most major corn-producing States saw the harvest finish above or ahead of the average harvest pace. This is in stark contrast to 2019, which saw widespread harvest delays due to a late-planted crop in some areas—as well as cold, wet weather conditions.

Figure 1

Corn harvesting progress since 2005: 2018 (green), 2019 (red) 2020 (blue), average (dash), and range (gray)

Percent complete

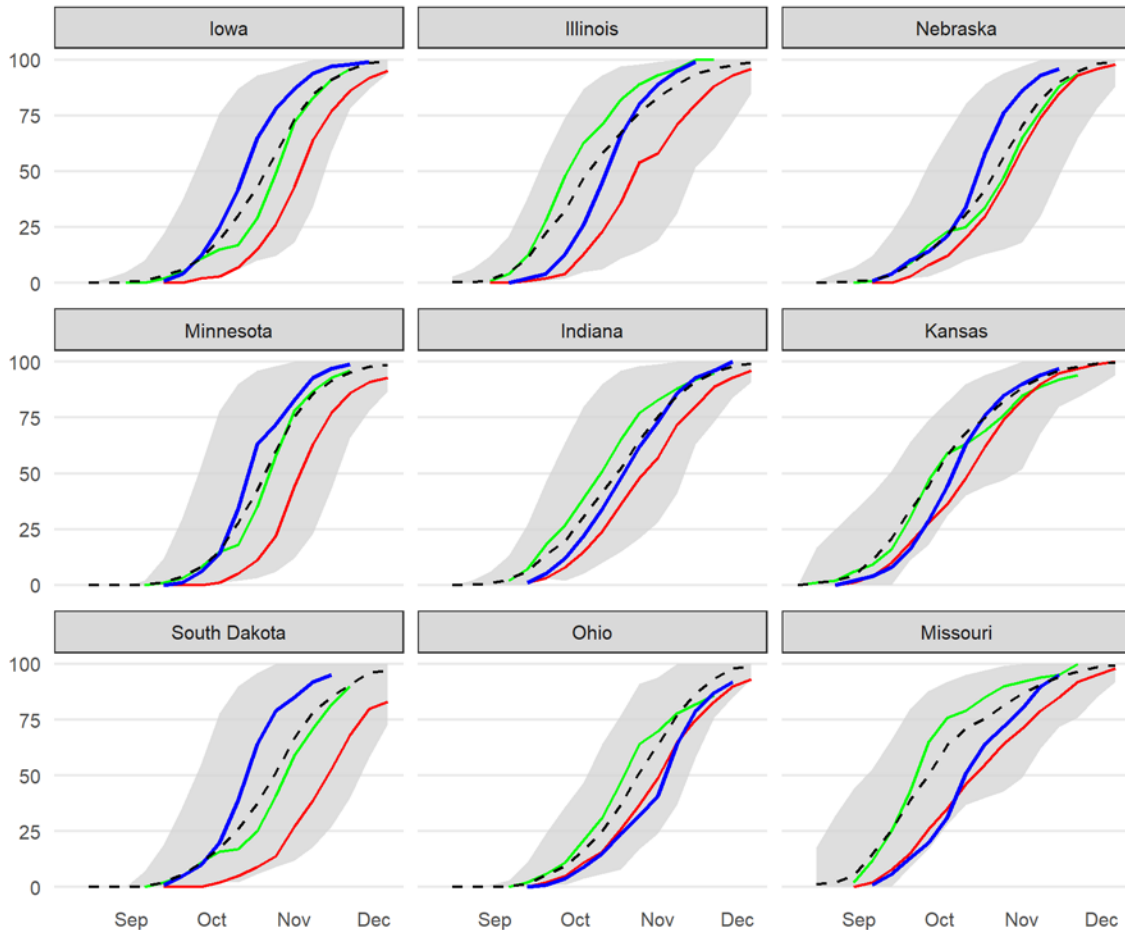


Source: National Agricultural Statistics Service, USDA.

Figure 2

Corn harvesting progress by State since 2005: 2018 (green), 2019 (red), 2020 (blue), average (dash), and range (gray)

Percent complete



Source: National Agricultural Statistics Service, USDA.

Exports Projected Record, Fuel Use Recovering for 2020/21

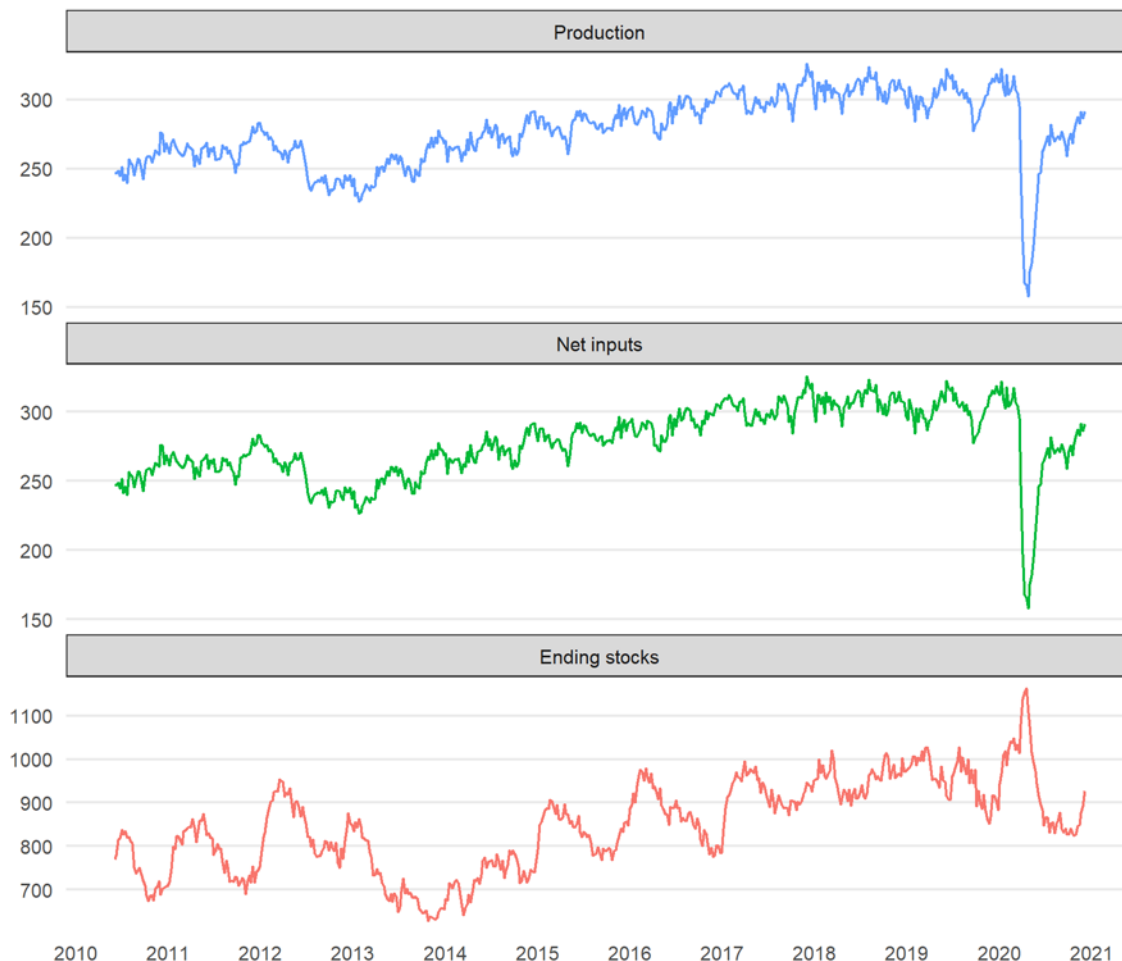
Domestic corn use for 2020/21 is projected at 12,175.0 million bushels, unchanged from the previous month. Food, seed, and industrial use is also unchanged at 6,475.0 million bushels. Of that, 5,050.0 million bushels are projected to be used for fuel. U.S. ethanol production has been substantially lower since April 2020, coinciding with lower gasoline consumption in the United States. According to the Department of Energy's Energy Information Administration, ethanol production, net inputs, and inventories of corn have been rising somewhat in recent weeks—despite gasoline production and consumption remaining below historical levels. Strong prices for milling co-products—such as corn oil, corn gluten feed, and dried distillers' grains—partially

driven by increased higher prices more broadly for livestock feed—may be contributing to producers’ revenues. While an uptick in recent weeks, ethanol production and inventory levels remain below historical levels.

Figure 3

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

Thousand gallons

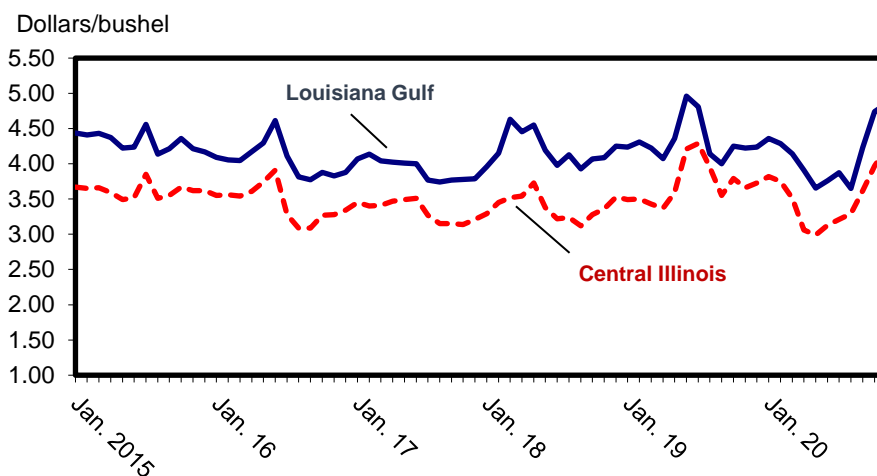


Source: Energy Information Administration, U.S. Department of Energy.

The United States is projected to export 2,650.0 billion bushels of corn in 2020/21, unchanged from the previous month. This would be a record export total, if realized. There is strong demand from China for feedstuffs—including corn, sorghum, and soybeans—as the country reportedly rebuilds its livestock inventories; particularly China’s hog herd, which was impacted by African Swine Fever in recent years. Additionally, weather-related year-over-year production decreases in Ukraine and the European Union have tightened supplies on the global market (for additional details see the International Outlook). This strong demand has resulted in higher corn prices over the past several months in the cash and futures markets in the United States. Trade

data from the U.S. Census show increased corn exports through the first 2 months of the marketing year, particularly to China. Additionally, the Foreign Agricultural Service's (FAS) *Export Sales Report* reports substantially higher outstanding sales to China for the remainder of the marketing year.

Figure 4
Monthly corn (yellow #2) prices for Central Illinois and Louisiana Gulf



Sources: USDA, Economic Research Service, *Feed Grains Database* and USDA, Agricultural Marketing Service.

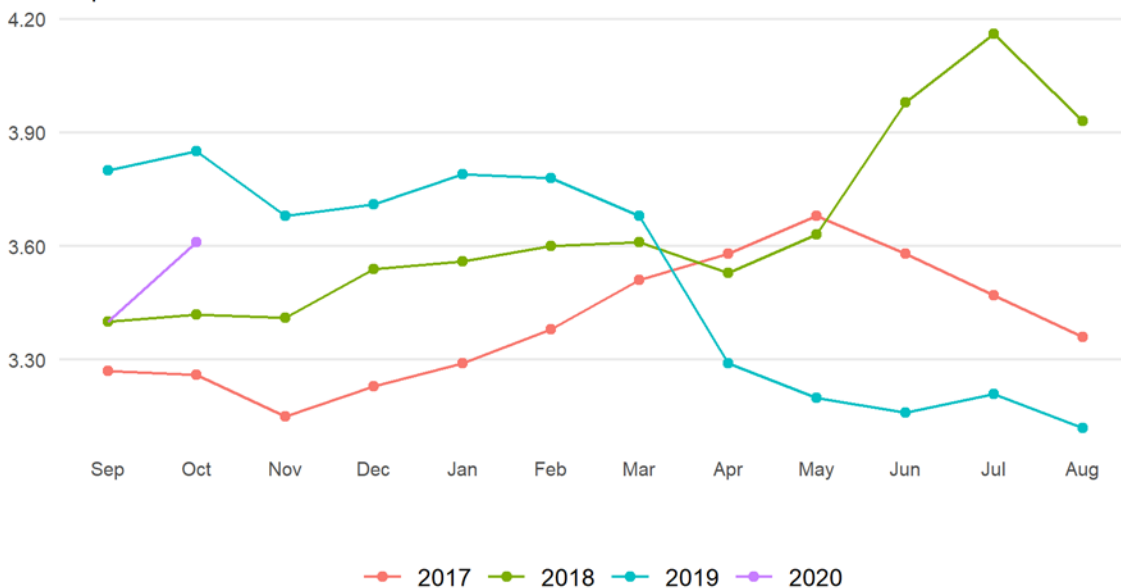
Corn Season Average Price Unchanged at 4.00 Dollars

The season-average farm price for corn is projected to be \$4.00 per bushel in 2020/21, unchanged from the previous month. This would be highest farm price since 2013/14, which averaged \$4.46 per bushel. NASS reported a monthly jump in corn prices received by farmers between September and October, from \$3.41 the previous month to \$3.61 per bushel. The current farm price projection is predicated on higher reported monthly farm prices continuing in the coming months, in line with the increases seen the past few months in the cash market for corn—particularly in the first half of the marketing year when the majority of corn is marketed.

Figure 5

Price received for corn, monthly

Dollars per bushel



Source: National Agricultural Statistics Service, USDA.

Feed and Residual for the Four Feed Grains and Wheat Projected Lower than 2019/20

Total feed and residual for the four feed grains (corn, sorghum, barley, and oats) and wheat for 2020/21 is projected to be 150.9 million MT, down from 155.8 million MT in 2019/20. There are projected to be reduced feed and residual quantities for all major grains, except for oats—which is projected to have a year-over-year increase. The overall reduction in feed and residual quantities is reflective of higher levels of exports for most commodities.

Grain-consuming animal units (GCAUs) are also projected to be slightly lower in 2020/21 compared with 2019/20—falling from 102.7 million units to 102.1 million. Year over year, lower units of cattle on feed and hogs more than offset slight increases in poultry and dairy cattle units.

Sorghum Export Projections in 2020/21 Increase with Less Going to Ethanol

Total sorghum supplies for 2020/21 are projected at 400.3 million bushels, including no monthly change to production. Food, seed, and industrial use is down 15.0 million bushels to 25.0

million, primarily based lower fuel ethanol use. NASS's monthly *Grain Crushings* report implies very little sorghum has been used to produce ethanol over the past few months, with margins likely discouraging production, as gasoline demand remains reduced and cash sorghum prices remain relatively high.

Offsetting this change is an increase of 15.0 million bushels for export, largely contributed to the increased demand for feed grains from China. Strong cash prices for U.S. sorghum have been largely attributed to the pull from export markets. The November average cash price for sorghum at Gulf ports was \$11.16 dollars per hundredweight, as reported by the Agricultural Market Service (AMS), compared with \$7.89 in November 2019. Due to market conditions and prices of substitutes, the season average price is revised up \$0.35, to \$4.40 per bushel.

Barley Domestic Consumption Down Fractionally, Offset by More Exports

Barley total supply remains unchanged at 252.6 million bushels. Revised feed, seed, and industrial use results in a marginal reduction of 2.0 million bushels—with food, seed and industrial use projected to be 141.0 million bushels for the year. This projection is down from the 2019/20 revised estimate of 141.5 million bushels. The monthly reduction is fully offset in a 2.0 million bushel increase in the projected exports, now at 8.0 million bushels for 2020/21.

International Outlook










Olga Liefert
Michael McConnell

Global Coarse Grain Production Mostly Unchanged, World Corn Production Reduced

Coarse grain production in 2020/21 is expected to be fractionally higher than previously forecast. Global coarse grain production is projected to be 1,447.8 million MT in this report, unchanged from the previous month. There are no changes made to U.S. production, with all changes due to the outlook for foreign production. The changes made for each feed grain commodity are mostly offsetting, as summer crops for the Northern Hemisphere conclude their harvest and the Southern Hemisphere is going through its summer planting season in November and December.

World **corn** production is projected to total 1,143.6 million MT for 2020/21, down 1.1 million MT from the November forecast. **Argentina** production is reduced 1.0 million MT to 49.0 million MT, accounting for the largest production decrease in this report. The reduction is based on domestic sources reporting area lower than previously expected. Dry conditions heading into the country's summer planting season have resulted in a slow planting progress, particularly in the regions of Santa Fe, Cordoba, and southern Buenos Aires. Additionally, domestic inflation and policies affecting trade and currency have reportedly been weighing on growers, as higher input costs and depressed domestic returns mitigate the strong prices for corn in the global market. Some corn area is expected to move into **sorghum**, which also has strong prices due to demand from China, and sorghum is less input-intensive than corn. Projected corn yield in Argentina is effectively unchanged from the previous month. Recent precipitation in many of the key growing regions has alleviated some of the concern over dry conditions heading into the planting season. Weather conditions heading into the new calendar year will be important determinants for this year's crop, though, as rising summer temperatures heighten the need for the rainfall that is essential to achieve good crop development.












Table A1 - World and U.S. coarse grain production at a glance (2020/21), December 2020

| Region or country | Production | Change from previous month ¹ | YoY Change ² | Comments |
|---|---------------|---|-------------------------|---|
| <i>Million tons</i> | | | | |
| Coarse grain production (total) | | | | |
| World | 1447.8 | Fractional | +36.4 | |
| Foreign | 1065.1 | Fractional | +13.0 | Partly offsetting changes are made for a number of countries and commodities. See table A2. |
| United States | 382.8 | No change | +23.3 | See section on U.S. domestic output. |
| World production of coarse grains by type of grain | | | | |
| CORN | | | | |
|  World | 1143.6 | -1.1 | +27.3 | |
|  Foreign | 775.1 | -1.1 | +4.8 | Reduction in Argentina, the EU ³ , and Canada outweigh increase in Ukraine production. |
| United States | 368.5 | No change | +22.5 | See section on U.S. domestic output. |
| BARLEY | | | | |
|  World | 157.2 | +0.8 | +0.3 | |
|  Foreign | 153.6 | +0.8 | +0.5 | Higher output projected in Australia and Canada, more than offsetting lower production in the EU ³ . See table A2. |
| United States | 3.6 | No change | -0.2 | See section on U.S. domestic output. |
| SORGHUM | | | | |
|  World | 61.9 | +0.1 | +3.9 | |
|  Foreign | 52.4 | +0.1 | +3.2 | Higher output projected for Argentina. See table A2. |
| United States | 9.4 | No change | +0.7 | See section on U.S. domestic output. |
| OATS | | | | |
|  World | 25.3 | +0.1 | +2.2 | |
|  Foreign | 24.4 | +0.1 | +2.1 | Offsetting minor production changes projected for Australia and the EU ³ . See table A2. |
| United States | 0.9 | No change | +0.2 | See section on U.S. domestic output. |
| RYE | | | | |
| World | 13.6 | Fractional | +1.5 | |
| Foreign | 13.3 | Fractional | +1.5 | Slightly lower production projected for the EU ³ . See table A2. |
| United States | 0.3 | No change | Fractional | See section on U.S. domestic output. |
| MILLET | | | | |
| World/Foreign | 30.3 | No change | +0.2 | |
| MIXED GRAIN | | | | |
|  World/Foreign | 15.9 | +0.2 | +0.9 | Higher production projected for the EU ³ and Canada. See table A2. |
| ¹ Change from previous month. ² YoY: year-over-year changes. ³ EU: European Union. | | | | |
| For changes and notes by country, see table A2. | | | | |
| Source: USDA, Foreign Agricultural Service, Production, Supply and Distribution online database. | | | | |

Corn production in the **European Union (EU)** is reduced 0.5 million MT, while production in **Canada** is reduced by 0.4 million MT from the previous month's projection—totaling 63.7 million and 13.6 million MT, respectively. Both are lowered based on post-harvest production reports where lower-than-previously-forecast yields more than enough offset slightly higher harvested area. Both countries experienced dry conditions during key parts of the crop development cycle, particularly in **Bulgaria** for the European Union and in Canada's Eastern Provinces.

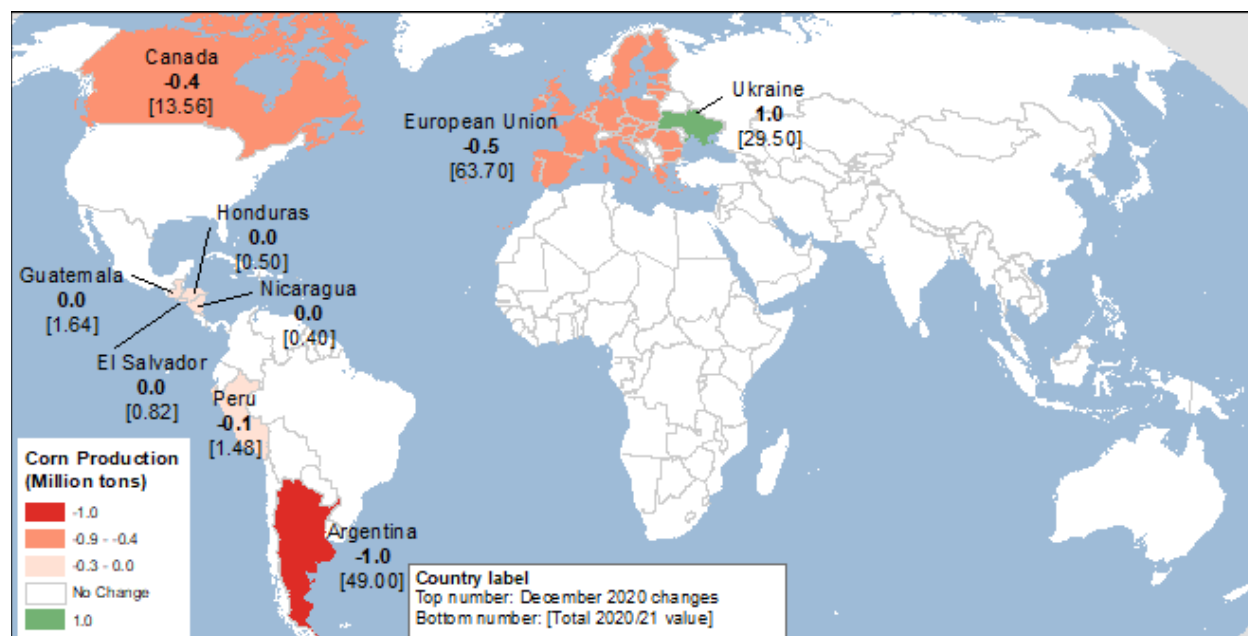
Corn production for 2020/21 in **Ukraine** is raised 1.0 million MT from the previous month, offsetting some of the global reductions. As the country's harvest comes to an end, late-season

reports show an improving outlook for yields, which have been heavily impacted by dry conditions, particularly in the country's southern- and eastern-producing regions. Production is still projected to be 5.9 million MT lower than the previous year, however, highlighting the impact of the weather on this year's crop.

| Table A2 - Coarse grain foreign production by country at a glance for 2020/21, December 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 | | | | | | |
| ARGENTINA | | | | | | |
|  | Corn | Mar-Feb | 49.0 | -1.0 | -2.0 | Dry conditions in some key corn-producing regions reduce area and lower production. Yields remain unchanged. |
|  | Sorghum | Mar-Feb | 3.2 | +0.4 | +0.7 | Higher projected area harvested in response to increased export demand. |
| UKRAINE | | | | | | |
|  | Corn | Oct-Sep | 29.5 | +1.0 | -6.4 | The final weeks of corn harvest reporting show a marginally improved outlook for this crop's yields. Dry conditions in many of the country's key corn-producing regions result in low yields by historical standards. |
| CANADA | | | | | | |
|  | Corn | Sep-Aug | 13.6 | -0.4 | +0.2 | Official post-harvest reports show the recently harvested crop had lower yields than previously forecast. |
|  | Barley | Aug-Jul | 10.7 | +0.3 | +0.4 | Official post-harvest reports show higher harvested area and yield than previously forecast. |
| EUROPEAN UNION (EU) | | | | | | |
|  | Corn | Oct-Sep | 63.7 | -0.5 | -3.0 | Harvest results indicate lower production—primarily primarily in Bulgaria —but also in Spain, Germany, and France . |
|  | Barley | Jul-Jun | 63.4 | -0.1 | +0.2 | Lower production in Spain, Lithuania, and France outweigh higher production recorded in the United Kingdom . |
|  | Oats | Jul-Jun | 9.3 | +0.1 | +1.2 | Higher production is reported in Lithuania and Spain . Slightly lower production is reported in France . |
|  | Mixed grain | Jul-Jun | 15.6 | +0.2 | +0.9 | Primarily due to larger production in Lithuania . |
| AUSTRALIA | | | | | | |
|  | Barley | Nov-Oct | 11.0 | +0.5 | +2.0 | Improved growing conditions in key producing regions raise yield forecasts. |
| India | | | | | | |
|  | Sorghum | Nov-Oct | 4.2 | -0.3 | -0.6 | Lower area harvested based on planting progress thus far in the season. |
| ¹ Change from previous month. Smaller changes are made for several countries, see map A for changes in corn . ² YoY: year-over-year changes. Source: USDA, Foreign Agricultural Service, Production, Supply and Distribution online database. | | | | | | |

World **sorghum** production in 2020/21 is projected a slight 0.1 million MT higher than the previous month, totaling 61.9 million MT. The raised production outlook is primarily due to raised projections for **Argentina**—a 0.4-million MT increase to 3.2 million—as weather and market conditions push farmers slightly away from corn and soybean production. Like corn, weather conditions in late-December through February will be important in determining yields. The increase more than offsets the reduction of sorghum production in **India**, which is lowered 0.3 million MT, based on lower area.

Map A – Corn production changes for 2020/21, December 2020



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

World **barley** production is also raised for 2020/21, compared with the previous month's projection. This month, production is raised 0.8 million MT to 157.2 million MT. **Australia** barley production is raised 0.5 million to 11.0 million MT, due to improved weather conditions and initial post-harvest reports from domestic reporting agencies for the country's winter crops. Production in Canada is also raised 0.3 million MT from the previous month, based on higher area and yields from the country's official post-harvest production reports.

Global Corn Trade Raised, Driven by Strong Demand for Feed in China

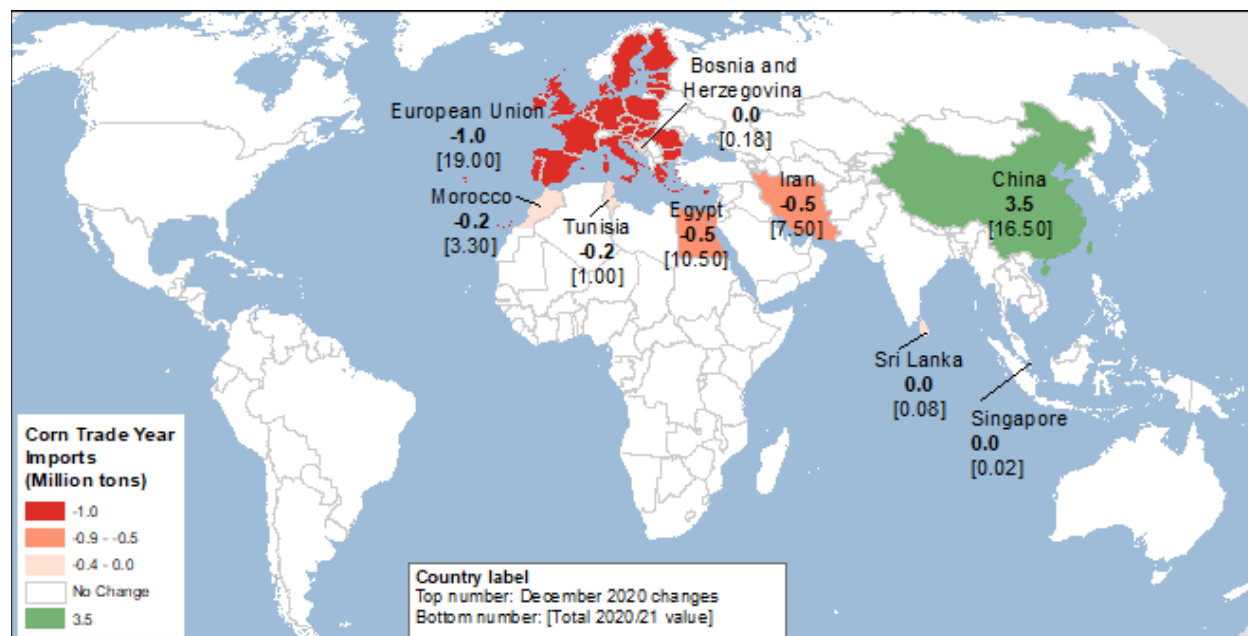
Projected world coarse grain trade for **2020/21** is raised in December. Changes in trade flows of most coarse grain commodity markets are primarily driven by increasing imports to **China** to meet its domestic feed needs. Total coarse grain imports for China are raised 4.8 million MT from the previous month, totaling 30.9 million MT, based on an October-to-September international trade year. This is a substantial increase from the 2019/20 import total of 17.5 million MT of imports.

China **corn** imports for 2020/21 are raised 3.0 million MT to 16.0 million, and account for much of the increased grain imports. High domestic corn prices in China have led to increased shipments and sales from several export markets—mainly the United States and Ukraine—and

have contributed to steadily rising global grain prices since the summer of 2020. China has also seen additional shipments of soybeans, which are crushed domestically, and the meal used as a major component of livestock feed. The increased demand for feed is at least partially attributed to China's recovering swine herd, which was severely impacted by African Swine Fever in recent years, that resulted in steep culls of the domestic inventory.

Globally, the increased corn imports in China are partially offset by lower imports from several other major import markets. The **EU** corn import projections are lowered 1.0 million MT. These lowered projections are based on higher global corn prices, the ability to substitute wheat into feed rations, and the reduced availability and slow shipment pace of exports from Ukraine—the European Union's main foreign supplier of corn. Projected imports are also reduced for **Iran** (0.5 million MT lower), **Egypt** (0.5 million MT), **Morocco** (0.2 million MT), and **Tunisia** (0.2 million MT), all of which are markets that are reliant upon Ukrainian exports.

Map B – Corn import changes for 2020/21, December 2020

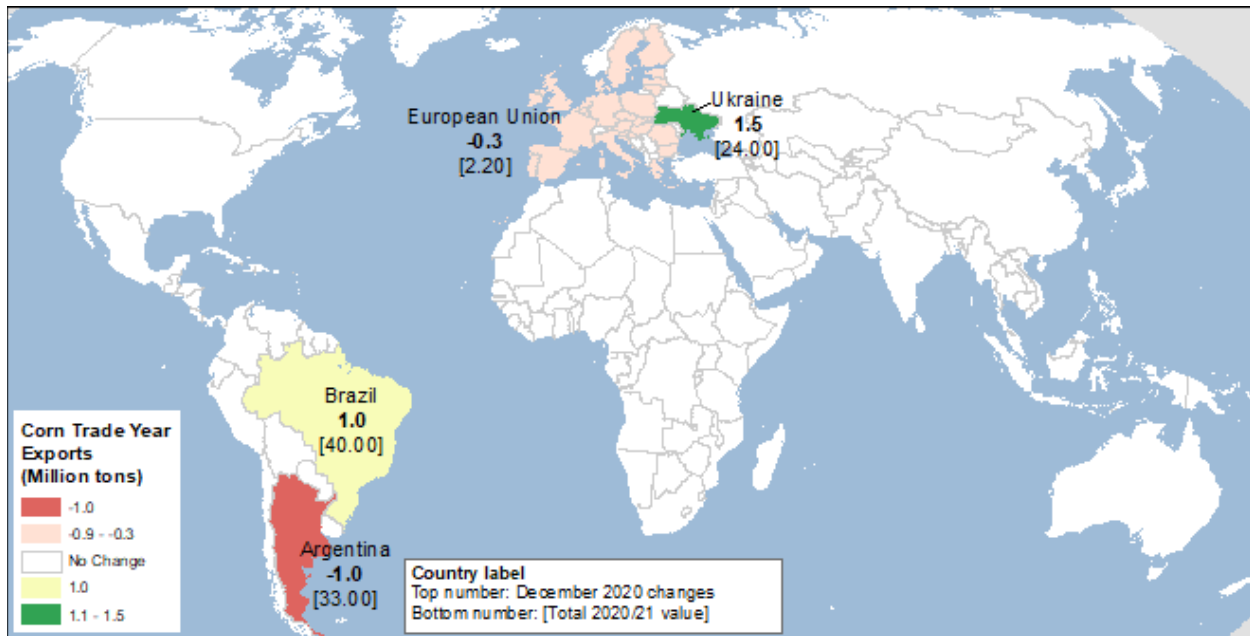


Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution online database.

Corn **export** projections are raised for **Ukraine** by 1.5 million MT to 24.0 million for 2020/21—as increased production, higher carryin, and lower ending stocks allow for more supplies to be shipped overseas. Although increased from the previous month, the current 2020/21 export projection is still substantially lower than 2019/20 totals of 28.9 million MT, due to the drought-impacted production issues seen in this year's crop. The **EU** export projections are reduced by

0.3 million MT compared with the previous month, based on the lower production outlook. Projected EU exports of 2.2 million MT for 2020/21 also represent a significant decline from the previous year's exports of 4.8 million MT. For the Southern Hemisphere exporters, offsetting changes relative to the previous month are made for **Argentina** (reduced by 1.0 million MT) and **Brazil** (increased by 1.0 million MT), based on recent month's trade data from each respective country.

Map C – Corn export changes for 2020/21, December 2020



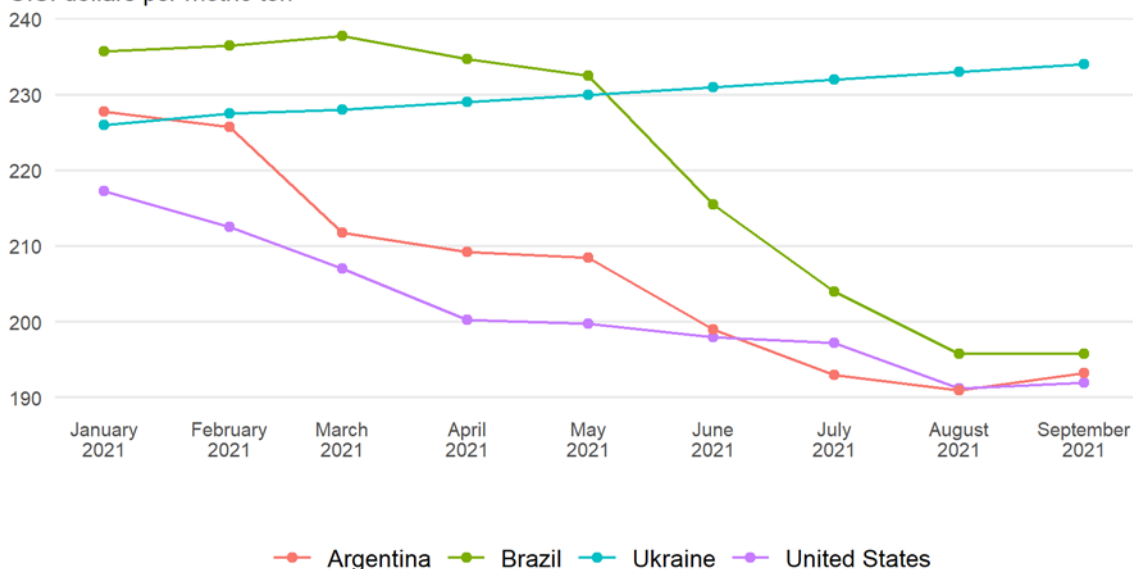
Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution online database.

Near-term spot corn prices have been relatively strong, with two key Northern Hemisphere exporters seeing year-over-year declines in exports and Southern Hemisphere exporters still several months away from supplies reaching the world market. Based on reported bids at the ports for export, the United States has been the lowest-priced supplier for corn scheduled to be shipped over the next several months. It is not until March 2021 for Argentinian corn and July 2021 for Brazilian corn, that shipments become more competitive with the United States. This reflects the relatively tight supply market situation, in conjunction with strong demand from China.

Figure 6

Corn Free On Board (FOB) forward prices

U.S. dollars per metric ton

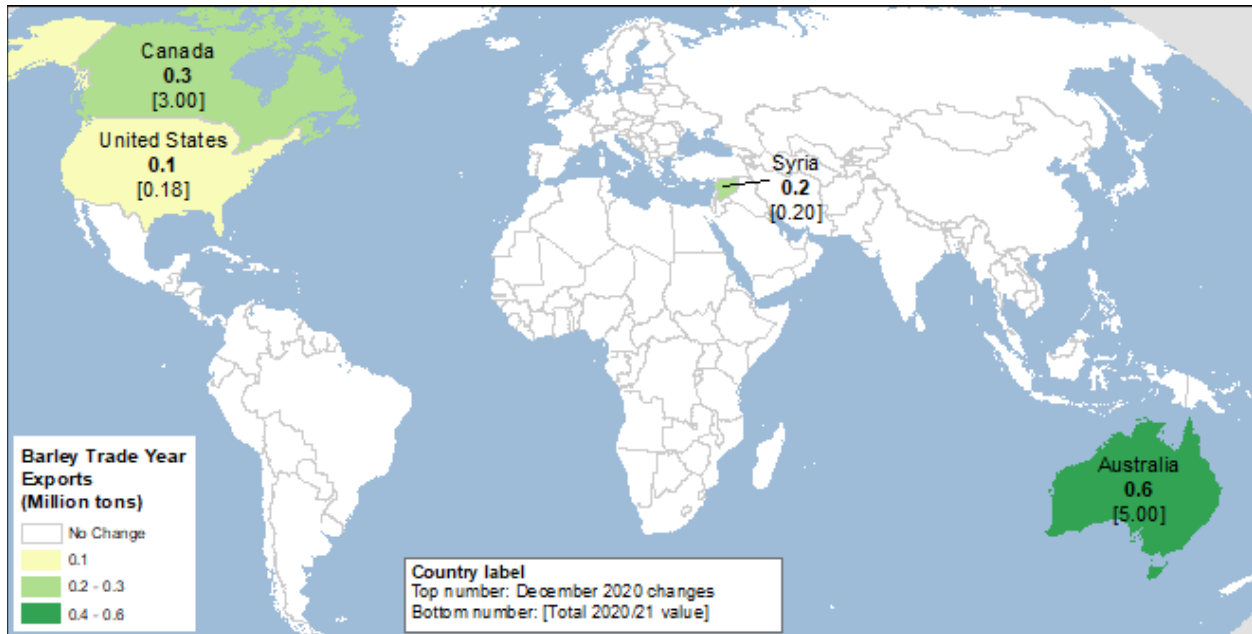


Note: Bids quoted on December 9, 2020.
Source: AgriCensus.

Barley and Sorghum Trade Increase for 2020/21

World **barley** trade is raised for 2020/21 compared with the November report, with **imports** on an October-to-September trade year 1.1 million MT higher. Barley import projections are raised for **China** (0.5 million MT higher) and **Saudi Arabia** (0.3 million MT), which are expected to be used predominantly for feed use. **Export** projections are raised for **Australia** (0.6 million MT) and **Canada** (0.3 million MT), based on higher production projections allowing for additional supplies to be exported. Projected exports for **Syria** are also raised 0.2 million MT in 2020/21, from virtually zero, as the country is exporting barley to Jordan and North African countries.

Map D – Barley export changes for 2020/21, December 2020



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

World **sorghum** trade for 2020/21 is also raised from the previous month. **China** sorghum imports are raised 0.8 million MT to 7.0 million MT. As with corn, this is a substantial increase from 2019/20 sorghum imports of 3.7 million MT, due to higher domestic feed demand. Sorghum exports for 2020/21 are raised for **Argentina** (by 0.4 million MT), based on increased projected production—and the **United States** (by 0.4 million MT), due to less sorghum being used in domestic industrial use, freeing additional supplies.

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