



Feed Outlook: December 2024

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2024/25 U.S. Corn Ending Stocks Are Reduced on Greater Use

The 2024/25 U.S. coarse grains supply forecast remains relatively unchanged this month at 447.5 million tons. Although China continues to exhibit weak demand for U.S. corn, alternative destinations are seen purchasing U.S. corn—which competes with Argentina as the cheapest in the global market. Observed census and export inspection shipments (plus outstanding sales to date) contribute to a 150-million-bushel increase in the 2024/25 U.S. corn export forecast. Moreover, elevated, but stable domestic gasoline demand continues from the prior year into the early part of 2024/25, along with strong foreign demand for U.S. ethanol. As such, the corn-for-ethanol-use forecast is raised 50 million bushels this month. A minimal change was made to the sorghum balance sheet (imports) this month, and prices remain at parity with corn at \$4.10 per bushel.

With no changes to U.S. coarse grains production, reductions in foreign production lower global output prospects. Decreases in coarse grains production for the European Union, Mexico, Indonesia, and Australia are partly offset by higher output for Ukraine, Canada, Australia, and China (oats). Global coarse grains consumption is expected to be higher, particularly with strong internal demand from Brazil. World coarse grains trade is marginally higher. Higher projected U.S. corn exports are partly offset by reduced corn exports from Brazil and the European Union. The lowered Australian barley projected output reduces world barley exports. Global coarse grains stocks are reduced.

Domestic Outlook

Demand for U.S. Corn Strengthens

There are no changes to 2024/25 U.S. corn production and supplies this month. Despite a slight downward revision to yields in November by the USDA, National Statistics Service (NASS) to 183.1 bushels per acre, this projection remains just over 3 percent higher than the 2023/24 yield estimate. A year-over-year decline in planted corn area of nearly 4 million acres contributes to a production forecast of 15.1 billion bushels—nearly 200 million bushels behind last year. However, higher beginning stocks in 2024/25 are more than offsetting, boosting the supply projection 200 million bushels above last year to 16.9 billion bushels.

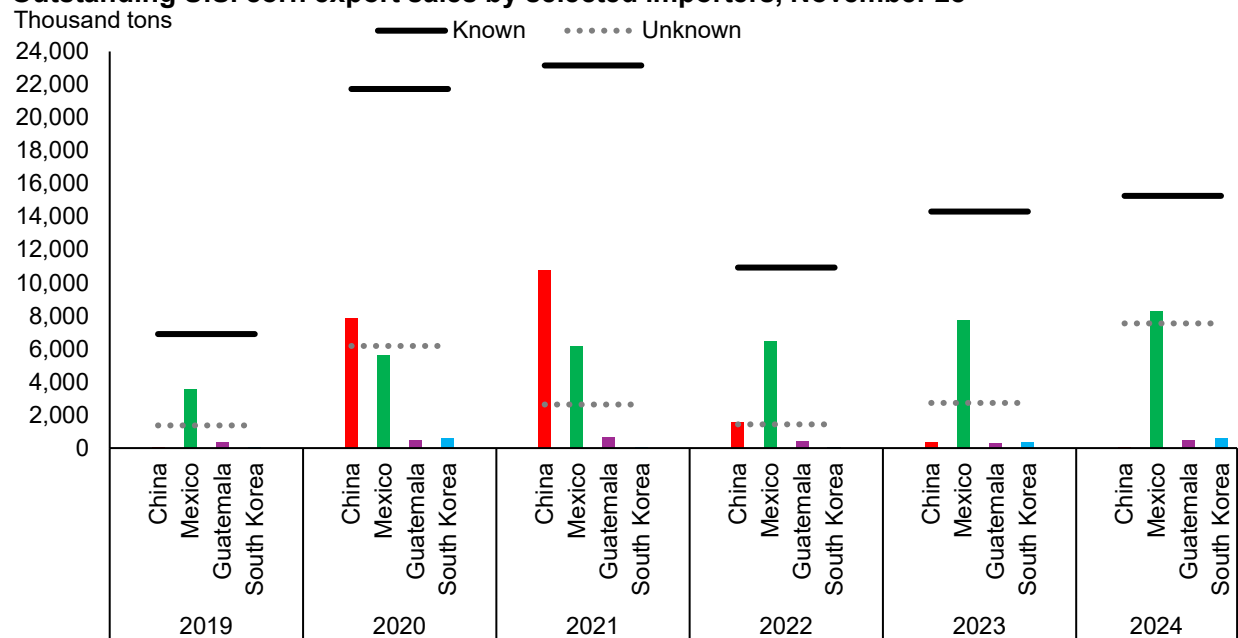
The USDA, Foreign Agricultural Service (FAS) reported that (as of November 28) U.S. corn export commitments (accumulated exports plus outstanding sales) were nearly 1.35 billion bushels. This number is roughly 330 million bushels higher than the same time last year and is largely driven by strong demand from Spain, Ireland, Japan, South Korea, Morocco, Tunisia, Colombia, Guatemala, and Mexico. The stronger than anticipated corn demand from these countries more than offsets weak demand by China, reflected in China's total commitments that are nearly 99 percent lower than this time last year at 26.3 million tons (see figure 1). Although unknown outstanding corn sales are nearly 190 million bushels higher than last year, recent export sales reports indicate China may account for a smaller portion of unknown sales than in prior years. Other destinations, like Saudi Arabia, Colombia, Tunisia, Vietnam, Japan, and the United Kingdom have constituted a larger share of the unknown category than expected thus far.

Like export commitments, export inspection data provide insights to future U.S. export volumes ultimately reported by the U.S. Bureau of the Census. For November 2024, grain inspection data provided by the USDA, Agricultural Marketing Service (AMS) indicate that the United States has shipped more than 11.3 million tons of corn (nearly 450 million bushels), exceeding last year's first-quarter volume by roughly 114 million bushels. Nearly 49 percent of inspections reported through November are accounted for by Mexico, followed by Colombia at just over 17 percent, and Japan at 15 percent. Although U.S. corn shipments to Mexico represent the largest share of total commitments, corn shipments to Japan during the first quarter of 2024/25 exhibit the largest year-over-year growth among these countries, up more than 875,000 tons (see figure 2). These factors, combined with realized corn export volumes through October (40 percent above last year) and globally competitive prices, warrant an increase in the 2024/25

U.S. corn export forecast. Raised by 150 million bushels, U.S. corn exports are expected to reach 2.5 billion bushels—satisfying the projected rise in global corn demand to offset a reduced export forecast for Brazil.

Figure 1

Outstanding U.S. corn export sales by selected importers, November 28



Source: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, *Export Sales*.

Figure 2

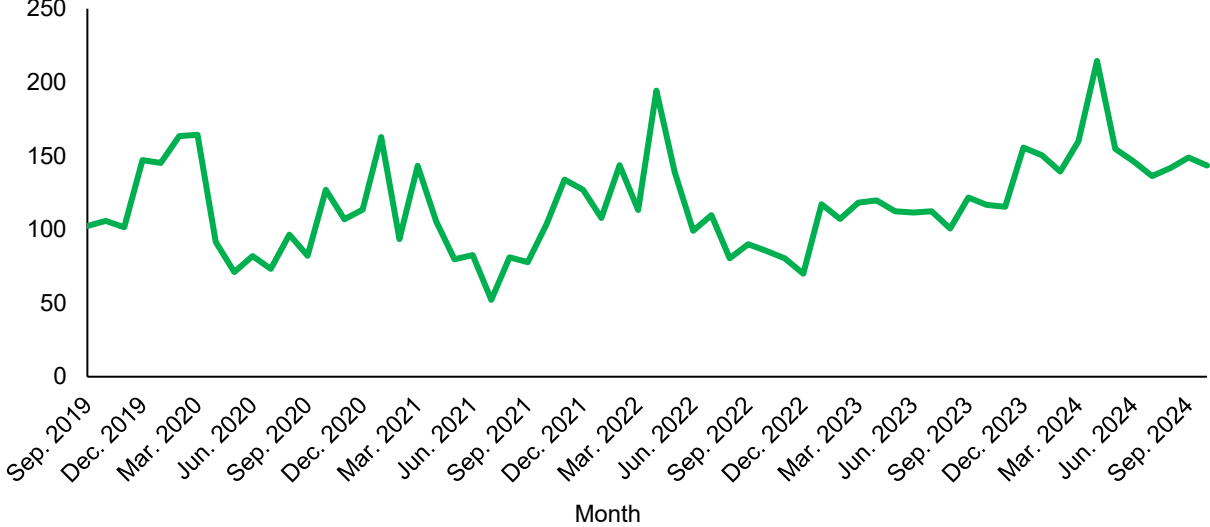
Total first quarter U.S. corn export inspections by major importers



Source: USDA, Economic Research Service using data from USDA, Agricultural Marketing Service, *Federal Grain Inspection Service*.

Estimated food, seed, and industrial corn use for 2024/25 is raised 50 million bushels this month to 6.89 billion, on higher corn used for ethanol—estimated at 5.5 billion bushels. Weekly gasoline demand has remained relatively elevated (but stable) through the end of 2023/24 and into the early part of 2024/25, much like ethanol export volumes. In fact, data from USDA, National Agricultural Statistics Service (NASS) *Grain Crushings and Co-Products Production* report and the U.S. Department of Energy, Energy Information Agency (EIA) weekly ethanol production for November imply first-quarter corn use for ethanol was the highest since 2017. In part, this is supported by ethanol exports. Utilizing EIA and U.S. Department of Commerce, Bureau of the Census trade data suggest ethanol exports eclipsed 290 million gallons through October, up approximately 23 percent from last marketing year during the same period.

Figure 3
U.S. ethanol exports
 Million gallons



Note: Data are through October 2024. Trade data obtained from the U.S. Department of Commerce, Bureau of Census are used as a proxy for the October export estimate.
 Source: USDA, Economic Research Service using data from U.S. Department of Energy, Energy Information Agency, *Fuel Ethanol Exports by Destination* and U.S. Department of Commerce, Bureau of the Census.

With corn use rising and supply unchanged, ending stocks are lowered this month to 1.74 billion bushels, down 200 million from November, just below 2023/24 levels. The season-average price forecast for corn remains unchanged this month at \$4.10 per bushel.

Oats Prices See Downward Pressure in December

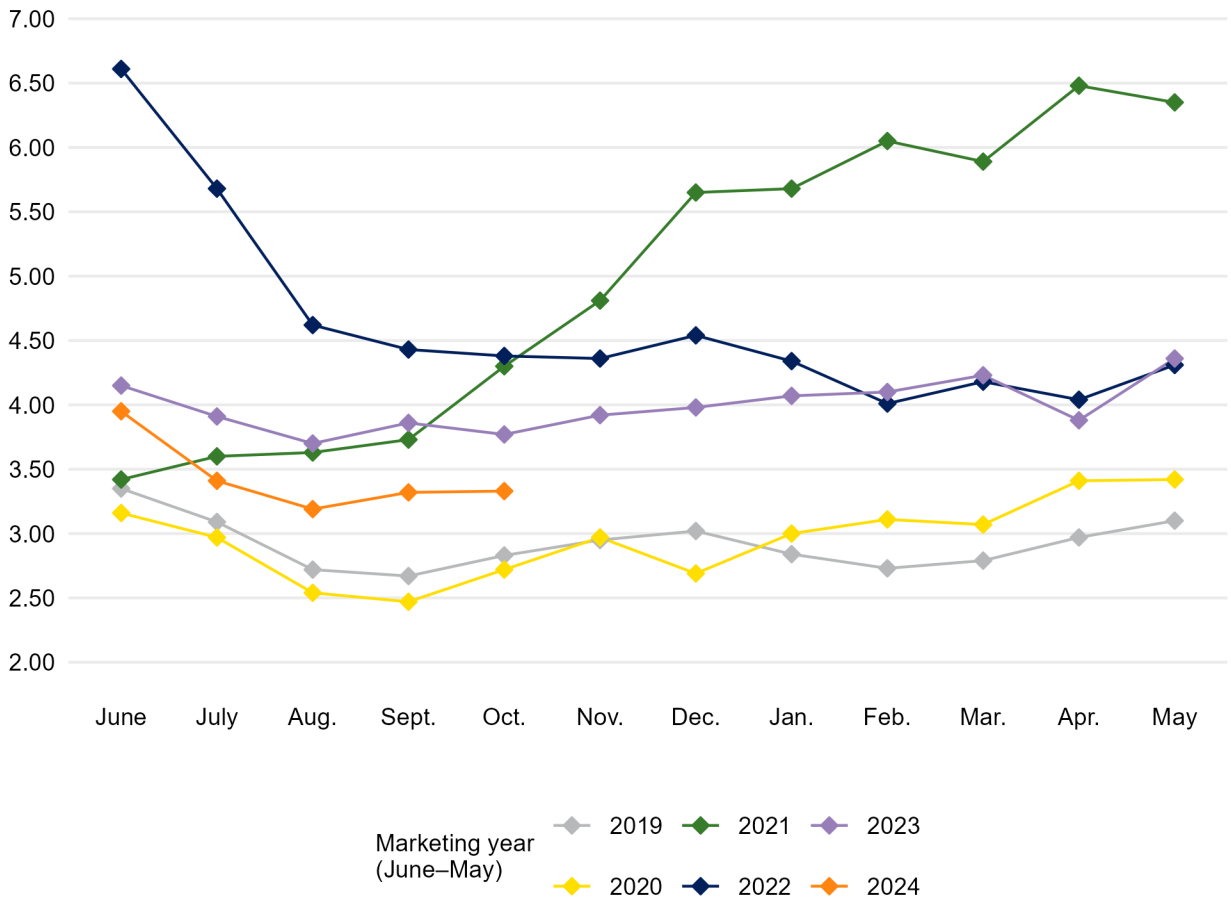
Driven by overall weakness in the global grains complex (at a time when most of the U.S. oats crop is marketed), the average price for oats across the first 5 months of the 2024/25 marketing year (of \$3.44 per bushel) was the lowest price reported by NASS since the same period in

2020/21. This captures a trending softness in oats prices, which have declined from \$3.95 per bushel in June (the start of the marketing year) to \$3.33 per bushel in October (the most recent period of data reported by NASS). Consequently, the projected 2024/25 season-average price received by oats farmers is lowered \$0.10 this month to \$3.40 per bushel.

Figure 4

Price received for oats, by month, marketing years 2019–24

U.S. dollars per bushel



Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service.

International Outlook

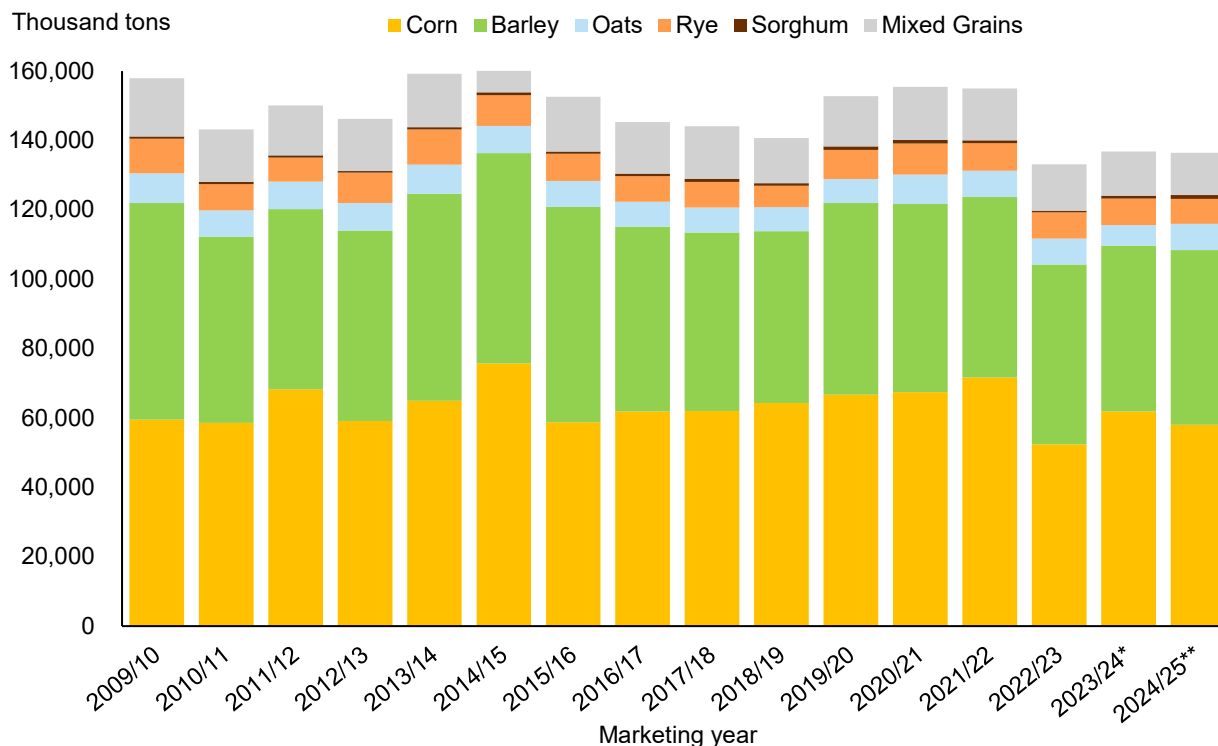
2024/25 Foreign Corn Output Is Lower

Global coarse grains production for 2024/25 is projected 0.6-million tons lower this month, to 1,499.1 million tons. With no changes in **U.S.** coarse grain output this month, the decrease is in **foreign** coarse grain output (global minus U.S. output). A 1.5-million-ton lower foreign corn output is partially offset by higher foreign barley, oats, and rye output.

2024/25 **corn** and **barley** output are reduced for the **European Union**, following more complete harvest reports from the EU countries. EU corn area and yields are reduced, as well as EU barley area. The largest changes are a 0.5-million-ton cut in **Italy's** corn production and a 0.4-million-ton cut in corn production for **Romania**, a top EU corn exporter. For both countries, area and yields are projected lower. Exceptionally dry and hot conditions during the summer growing season took a severe toll on Romania's non-irrigated corn crop. Romania's 2024/25 expected corn production stands at 7.4 million tons this month, 27.9 percent below last year's production and at its lowest level since 2012/13. A 0.5-million-ton higher corn production prospect in **Poland** partly offsets the decrease in other EU members' corn output, even though Poland's production is expected to be 4.7 percent lower than last year. A reduction in **Denmark's** barley output (on lower area and yields) drives the decrease in EU 2024/25 barley production and is partly offset by an increase in barley production for **Spain** (on higher yields). Other changes made for the individual EU country's corn and barley production are highlighted in table A2. With the previously mentioned reduction in corn and barley output, the projected EU corn (and total coarse grains) output is now at the second lowest level in the past 15 years (see figure 5). With reduced supplies, particularly for a top EU corn exporter (Romania), corn export volumes are expected to decline from last month's projection (see trade section below).

Mexico's corn output for 2024/25 is further reduced this month, with lower forecasted area for the winter crop. Drought conditions persist in northwest Mexico, namely in the state of Sinaloa where more than two thirds of the winter crop is produced and the planting window starts in November and typically ends earlier than in other states, in December. Sinaloa's reservoir levels continue to drop, with November levels recorded at 35.5 percent below last year's already low levels and are expected to impact corn area. With this month's reduction, Mexico's 2024/25 corn output projection is 0.2-million tons above last year's 10-year record low output level. The reduction in Mexico's corn production is expected to affect the country's domestic consumption, as well as imports.

Figure 5
EU coarse grains production by type



Note: EU=European Union. The marketing year is from October through September for corn; the marketing year is from July to June for barley, oats, rye, sorghum, and mixed grains.
 (*) estimate. (**) forecast.
 Source: USDA, Economic Research Service using data from Foreign Agricultural Service, *Production, Supply, and Distribution* database.

Indonesia’s corn output for 2024/25 is cut on lower area. As corn competes with rice for acres in Indonesia, a decline in corn prices (relative to rice) during plantings led to a reduction in corn area. Indonesia’s corn area is expected to be 2.7 percent below last year. Favorable growing conditions, though, pushed yields higher, limiting the decrease in corn production.

Offsetting some of this month’s foreign reduction in 2024/25 **corn** and **barley** output, **Ukraine’s** and **Canada’s** corn and barley production are projected higher this month. For both countries, a complete harvest picture shows corn yields higher than previously estimated. For Canada, the 2024/25 corn yields are at their highest historical levels, following favorable growing conditions in Ontario and Quebec. For Ukraine, corn yields improved more than expected at the end of the corn harvest (even though corn yields are expected to be 16.5 percent lower from a year ago). A larger barley output is forecast for Ukraine and Canada, following harvest results, with higher area and yields reported in each country. Canada’s 2024/25 oats and rye production are also increased, with higher area (for oats) and yields (for oats and rye).

Partly offsetting some of the increases in Canada's and Ukraine's barley production, **Australia's barley** production is projected lower. Despite improving weather conditions during the barley growing season, namely in New South Wales and western Australia, preliminary harvest reports warrant a reduction in yields from previous expectations.

China's oats production for 2024/25 is raised this month on higher area, based on provincial level data. China's oats production is revised up for the past 5 marketing years, as area and yields were underestimated. The additional oats' output is expected to elevate China's oats consumption.

Concluding the list of changes in coarse grains production, **EU 2023/24 corn** production is increased 0.4-million tons, mostly on higher corn area reported in Poland (despite lowered yields). The increase in 2023/24 EU production is estimated to be absorbed by feed domestic consumption. **Tajikistan's** corn area was raised and yields were lowered for 2024/25, as well as for the previous 5 marketing years (July to June), based on available data for production. While the net effect in Tajikistan's corn production for 2024/25 is a minor increase of 0.1-million tons, Tajikistan's corn production is raised 0.2-million tons each year for the country's past 3 marketing years.

For more information and a visual display of this month's changes in coarse grain production, see tables A1 and A2 below. 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 barley and corn production changes, see maps A and B below, respectively.

Table A1

World and U.S. coarse grains production at a glance (2024/25)

| Commodity | Region or country | 2023/24 | 2024/25 | | Month-to-month changes | | | | |
|----------------------|-------------------|------------------------------|---------|---------|------------------------|-------|-----|-----|-----|
| | | | Nov. | Dec. | MMT | | | | |
| | | Million metric tons (MMT) | | | (2.0) | (1.0) | - | 1.0 | 2.0 |
| Coarse Grains | United States | 402.9 | 397.3 | 397.3 | | | - | | |
| | Total foreign | 1,103.0 | 1,102.4 | 1,101.8 | (0.6) | | | | |
| | World | 1,505.9 | 1,499.7 | 1,499.1 | (0.6) | | | | |
| Corn | United States | 389.7 | 384.6 | 384.6 | | | - | | |
| | Total foreign | 840.0 | 834.8 | 833.2 | (1.5) | | | | |
| | World | 1,229.6 | 1,219.4 | 1,217.9 | (1.5) | | | | |
| Barley | United States | 4.1 | 3.1 | 3.1 | | | - | | |
| | Total foreign | 139.2 | 138.7 | 138.9 | | | 0.3 | | |
| | World | 143.3 | 141.8 | 142.1 | | | 0.3 | | |
| Sorghum | United States | 8.1 | 8.1 | 8.1 | | | - | | |
| | Total foreign | 50.3 | 53.7 | 53.7 | | | - | | |
| | World | 58.4 | 61.8 | 61.8 | | | - | | |
| Oats | United States | 0.8 | 1.0 | 1.0 | | | - | | |
| | Total foreign | 18.6 | 21.0 | 21.6 | | | 0.6 | | |
| | World | 19.4 | 21.9 | 22.5 | | | 0.6 | | |
| Rye | United States | 0.3 | 0.4 | 0.4 | | | - | | |
| | Total foreign | 11.4 | 10.6 | 10.6 | | | 0.1 | | |
| | World | 11.7 | 10.9 | 11.0 | | | 0.1 | | |

Note: Changes are compared to the November 2024 projections for 2024/25.

For changes and notes by country, see table A2.

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

Table A2

Coarse grains foreign production changes by country at a glance for the 2024/25 marketing year

| Country | Marketing year | Commodity | 2024/25 | | | Change in forecast* | Comments |
|----------------------------------|----------------|-----------|---------|------|------|---------------------|---|
| | | | 2023/24 | Nov. | Dec. | | |
| <i>Million metric tons (MMT)</i> | | | | | | | |
| European Union | Oct-Sep | Corn | 61.9 | 58.8 | 58.0 | -0.8 | Both EU corn area and yields are projected lower this month, based on countries' harvest reports. Yields and area are projected lower for Romania, Italy, Austria, and Slovenia. Yields are projected lower for Croatia, Germany, Hungary, and Slovakia. Yields are increased for France. Area and yields are increased for Poland and Spain. |
| | Jul-Jun | Barley | 47.8 | 50.8 | 50.4 | -0.4 | This production reduction comes mainly from lower projected barley area and yields in Denmark. Barley production is higher in Spain as higher yields offset lower area. Smaller and mostly lower changes in barley production are made for a number of EU countries. |
| Mexico | Oct-Sep | Corn | 23.5 | 24.5 | 23.7 | -0.8 | Decrease in area for the winter crop with reduction in already low reservoir levels during plantings. |
| Indonesia | Oct-Sep | Corn | 12.7 | 13.2 | 12.8 | -0.4 | Downward adjustment on area due to competition with rice at plantings. |
| Ukraine | Oct-Sep | Corn | 32.5 | 26.2 | 26.5 | 0.3 | The final weeks of corn harvest gave an improvement in corn yields outlook. |
| | Jul-Jun | Barley | 6.4 | 5.4 | 5.9 | 0.5 | Post-harvest reports show higher area and yields. |
| Canada | Sep-Aug | Corn | 15.4 | 15.2 | 15.3 | 0.1 | Post-harvest reports show the recently harvested crop had slightly higher yields than expected, aligning with Statistics Canada. |
| | Aug-Jul | Barley | 8.9 | 7.5 | 8.1 | 0.6 | Post-harvest reports show the recently harvested crop had higher area and yields than expected, aligning with Statistics Canada. |
| | Aug-Jul | Oats | 2.6 | 3.0 | 3.4 | 0.4 | Post-harvest reports show the recently harvested crop had higher area and yields than expected, aligning with Statistics Canada. |
| | Aug-Jul | Rye | 0.4 | 0.4 | 0.4 | 0.1 | Post-harvest reports show the recently harvested crop had higher yields than expected, aligning with Statistics Canada. |
| Australia | Mar-Feb | Barley | 10.8 | 12.2 | 11.7 | -0.5 | Yields are revised lower during harvest, aligning with data from Australia Bureau of Agricultural and Resource Economics and Sciences (ABARES). |
| China | Oct-Sep | Oats | 0.8 | 0.6 | 0.9 | 0.3 | Upwards revisions in area based on provincial reports. |

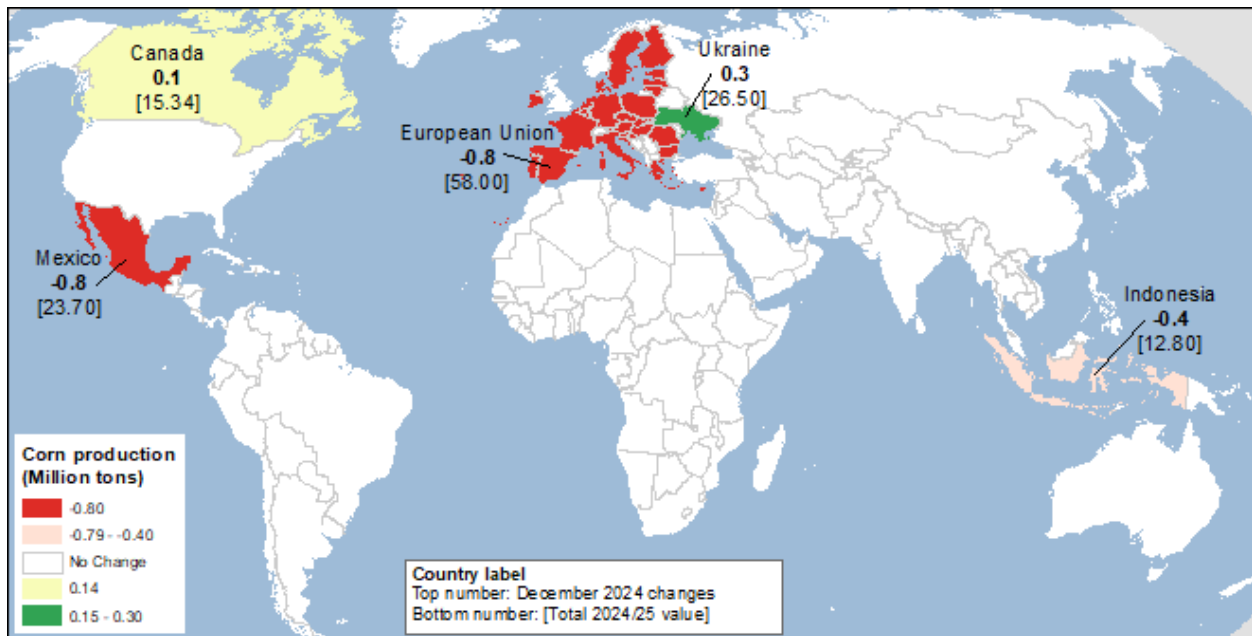
Note: * Change from previous month. Smaller changes for coarse grain output are made for several countries.

Changes less than 0.2 million metric tons may not be included.

EU=European Union, doesn't include United Kingdom (UK).

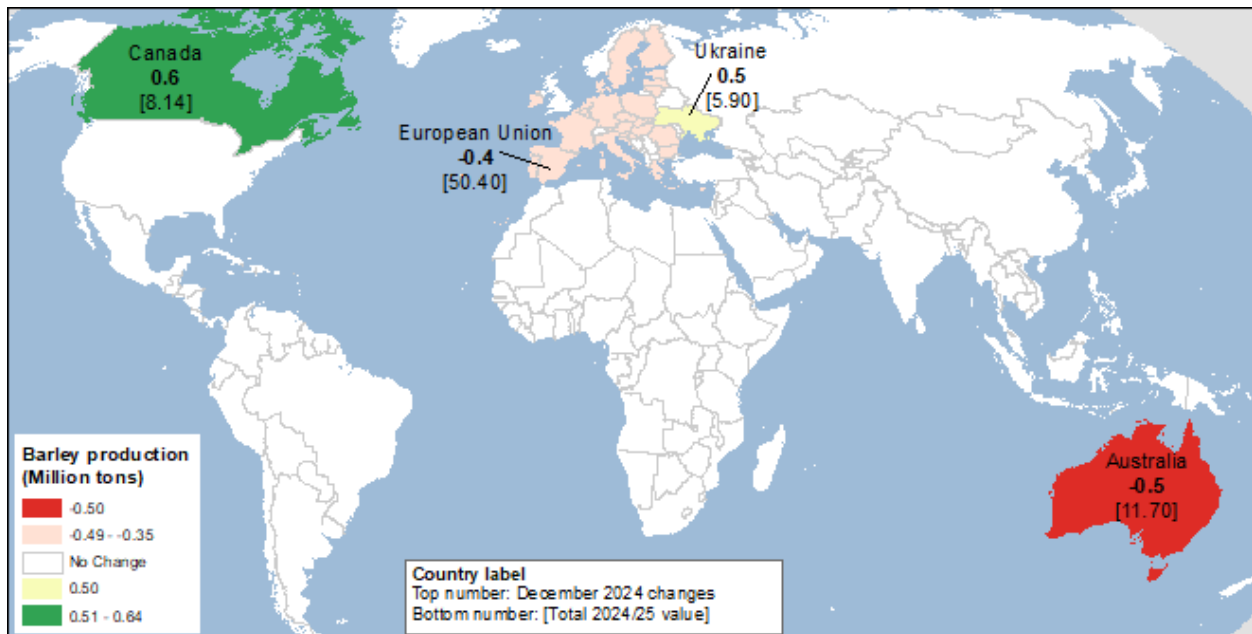
Source: USDA, Economic Research Service using data from USDA, Foreign Agricultural Service, Production, Supply, and Distribution database.

Map A – Corn production changes for 2024/25, December 2024



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

Map B – Barley production changes for 2024/25, December 2024



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

2024/25 Coarse Grains Consumption Is Projected Higher

Global coarse grains consumption for 2024/25 is projected to be 8.8-million tons higher this month, at 1,523 million tons. Part of this increase is in **U.S.** corn consumption, with higher expected corn use for food, seed, and industrial purposes (see the domestic section). The increase in **foreign** coarse grains consumption is 7.5 million tons—with higher expected corn, barley, and oats use partially offset by decreases in EU consumption of mixed grains.

Higher projected 2024/25 foreign coarse grains domestic consumption is led by an increase in **Brazil's** consumption for feed usage—as well as food, seed, and industrial usage. Brazil's corn-ethanol production continues to increase (see last month's report and this month's special article). High domestic prices support strong internal demand for corn in Brazil.

Bangladesh's 2024/25 corn consumption is raised. Bangladesh uses corn for feed mainly in the poultry sector. The increase in consumption is supported by larger imports (namely from Brazil), while India has turned to a net importer (with strong domestic demand) and is not exporting significant amounts of corn.

Iran's 2024/25 corn consumption is raised, supported by stronger than anticipated import volumes thus far (see the trade section below). Although this month's increase in consumption brings the projection closer to last year's level, it is lower (by 0.4 million tons), considering reduced supplies from Iran's corn suppliers.

This month's increases in **Ukraine's** corn and barley supplies are expected to be consumed domestically, aligning with the previous 2 years' already low consumption levels.

The 2023/24 and 2024/25 **EU** corn consumption is expected to be higher this month. For 2023/24, higher production in Poland and an upward revision in imports supported most of the 1-million-ton increase in domestic feed use. For 2024/25, the increase in domestic use comes from an upward revision in Poland's 2024/25 corn supply, despite the cut in EU 2024/25 expected output. A higher import forecast (see the trade section below) also supports the increase in 2024/25 EU corn consumption.

Offsetting some of the increases in projected foreign corn consumption, lower available domestic supplies of corn in **Mexico** are expected to weigh down on feed consumption, despite higher expected imports (see the trade section below).

Canada's higher barley and oats production are expected to be consumed domestically. Most of the increase in Canada's barley production is expected to be used by the feed industry while

the increase in oats production is expected to be more equally split between feed and food, seed, and industrial uses. For context, on average during the last 10 years, more than 80 percent of Canada's barley has been consumed as feed—compared with 50 percent for oats.

The decrease in Australia's barley production forecast is expected to result in reduced export volumes, namely to **China**, in turn lowering China's expected consumption of barley. The increase in China's oats production is expected to be used domestically for feed.

All the numbers for the 2024/25 consumption changes are presented in figure 6. Numerous smaller changes were also made to 2023/24 and 2024/25 coarse grain consumption, following production and trade changes.

Figure 6

2024/25 global coarse grains domestic consumption by commodity (local marketing year)

| Commodity | Country/ region | 2023/24 | 2024/25 | 2024/25 | Month-to-month changes | | | | |
|-----------------------------------|--------------------|------------------------------|---------|---------|------------------------|------|-------|-----|-----|
| | | Million metric tons (MMT) | | | Nov. | Dec. | (1.0) | 1.0 | 3.0 |
| Corn | Bangladesh | 5.4 | 6.4 | 7.3 | | | 0.9 | | |
| | Brazil | 84.0 | 83.5 | 85.5 | | | | 2.0 | |
| | European Union | 78.1 | 75.1 | 75.7 | | | 0.6 | | |
| | Iran | 9.9 | 9.1 | 9.6 | | | 0.5 | | |
| | Mexico | 48.1 | 48.7 | 48.5 | (0.2) | | | | |
| | Ukraine | 4.3 | 4.1 | 4.5 | | | 0.4 | | |
| | United States | 322.0 | 321.7 | 323.0 | | | | 1.3 | |
| | World | 1,222.2 | 1,223.1 | 1,228.5 | | | | | 5.5 |
| Barley | Canada | 6.3 | 6.1 | 6.6 | | | 0.5 | | |
| | China | 16.4 | 13.6 | 13.2 | (0.4) | | | | |
| | Ukraine | 3.5 | 3.6 | 3.8 | | | 0.2 | | |
| | World | 143.9 | 146.7 | 146.9 | | | 0.2 | | |
| Oats | Canada | 2.0 | 1.8 | 2.1 | | | 0.3 | | |
| | China | 1.3 | 1.0 | 1.3 | | | 0.3 | | |
| | World | 20.6 | 21.8 | 22.4 | | | 0.5 | | |
| Mixed Grain | European Union | 13.0 | 12.3 | 12.0 | (0.3) | | | | |
| | World | 13.5 | 12.8 | 12.5 | (0.3) | | | | |
| Trade-adjusted consumption | | | | | | | | | |
| Corn | World | 1,218.1 | 1,229.5 | 1,237.7 | | | | | |
| Barley | World | 142.5 | 146.0 | 146.2 | | | | | |
| Oats | World | 20.6 | 21.9 | 22.4 | | | | | |

Note: Changes are compared to the November 2024 projections for 2024/25.

Changes less than 0.2 million metric tons are not included.

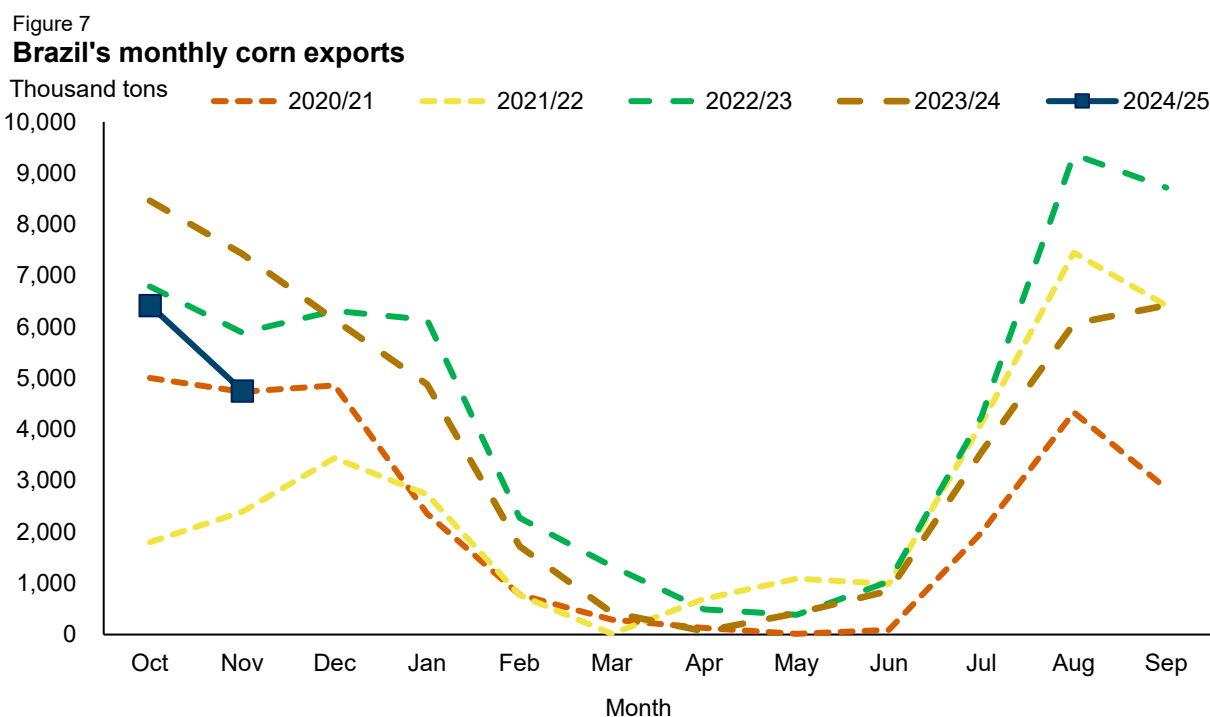
Trade-adjusted consumption is slightly different than the sum of all countries' consumption because the consumption accounts for the difference between marketing year export and import figures. These figures are the global statistics that match the data presented in the *World Agricultural Supply and Demand Estimates (WASDE)*.

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

Higher U.S. Corn Exports Are Partly Offset by a Decline in Foreign Trade

World corn trade for the 2024/25 October-September trade year (TY) is projected slightly higher this month, up 0.4 million tons to 190.7 million tons. A 3.5-million-ton increase in **U.S.** corn exports is partly offset by a 3.1-million-ton decrease in **foreign** corn exports.

For the October-September TY, **Brazil's corn** exports are further reduced this month, by 2.5 million tons to 46 million tons. The decrease comes from a reduced export forecast for Brazil's 2023/24 local marketing year (MY), that started in March 2024 and will end in February 2025. October-November exports were almost 30 percent below last year (see figure 7) and lower levels of export activities continue. Brazil's corn exports in October and November are part of the (March-February) MY 2023/24 and the (October-September) TY 2024/25 and affect exports for both. **China's** corn imports on the 2024/25 TY basis (which is also their MY) are reduced further this month, reflecting a smaller Brazil export forecast and a continued lack of corn buying from other major suppliers. China's 2024/25 **barley** imports are also reduced, based on lowered available barley supply from Australia. All the numbers for the 2024/25 TY related changes are presented in figure 8.



Source: USDA, Economic Research Service using data from *Trade Data Monitor*.

EU 2024/25 corn exports are also projected lower this month and EU corn imports are projected higher. The decrease in EU corn exports mainly reflects lower projected corn output, namely in Romania (see the above production section). Furthermore, EU customs surveillance data show a significantly lower level of EU corn exports than last year. EU 2024/25 corn imports are raised this month, to support stronger than anticipated domestic demand, amidst an underperforming crop. This increase is supported by higher imports than a year ago, per the EU customs surveillance data. EU corn imports for 2023/24 were increased based on available trade data.

Lower corn exports from Brazil and the European Union are offset by higher projected exports from the **United States** and—to a smaller extent—from **Canada**. Canada's corn export forecast is raised on higher available supplies. The U.S. corn export projection is raised following another large export month in October (reported by the U.S. Department of Commerce Census data) and is supported by large shipments, inspections, and sales from the United States at the end of November (see the domestic section).

Mexico's corn imports for 2024/25 are increased, reflecting tighter domestic supplies and continuing record levels of imports from the United States, with competitive U.S. prices to Mexico. U.S. October 2024 corn exports to Mexico were 2.1 million tons, 0.4 million tons above October last year.

Bangladesh's 2024/25 corn imports are increased and supported by trade data. **Iran's** corn imports are increased. Lower projected volumes of corn imports for China are expected to result in higher available exports for Iran, as both countries share the same suppliers.

World 2024/25 coarse grain ending stocks are forecast down 6.6-million tons. The lower ending stocks are driven by a reduction of 5.1-million tons in U.S. corn stocks—following increased forecasts for food, domestic, and industrial corn use and exports—and a 2-million-ton reduction in China's corn stocks, following a lower level of projected imports.

Figure 8

2024/25 global coarse grains exports and imports by commodity (trade year)

| Commodity | Trade year (TY) attribute | Country/ region | 2023/24 | 2024/25 | 2024/25 | Month-to-month changes | | | | | | | | | | |
|-----------|---------------------------------|--------------------|------------------------------|---------|---------|------------------------|-------|-------|-------|-------|---|-----|-----|-----|-----|-----|
| | | | Million metric tons (MMT) | | | Nov. | Dec. | (3.0) | (2.0) | (1.0) | - | 1.0 | 2.0 | 3.0 | 4.0 | |
| Corn | TY Imports | Bangladesh | 0.9 | 0.8 | 1.5 | | | | | | | | | | 0.7 | |
| | | China | 23.4 | 16.0 | 14.0 | (2.0) | | | | | | | | | | |
| | | European Union | 19.8 | 19.0 | 19.5 | | | | | | | | | | | 0.5 |
| | | Iran | 8.5 | 7.6 | 8.1 | | | | | | | | | | | 0.5 |
| | | Mexico | 24.8 | 24.0 | 24.5 | | | | | | | | | | | 0.5 |
| | | World | 199.6 | 183.8 | 184.2 | | | | | | | | | | | 0.4 |
| | TY Exports | Brazil | 46.5 | 48.5 | 46.0 | (2.5) | | | | | | | | | | |
| | | Canada | 2.2 | 1.9 | 2.1 | | | | | | | | | | | 0.2 |
| | | European Union | 4.4 | 3.3 | 2.5 | | (0.8) | | | | | | | | | |
| | | United States | 59.3 | 59.0 | 62.5 | | | | | | | | | | | 3.5 |
| World | | 197.9 | 190.3 | 190.7 | | | | | | | | | | | 0.4 | |
| Barley | TY Imports | China | 15.9 | 10.5 | 10.0 | | (0.5) | | | | | | | | | |
| | | World | 32.7 | 25.8 | 25.3 | | (0.5) | | | | | | | | | |
| | TY Exports | Australia | 7.9 | 6.7 | 6.2 | | (0.5) | | | | | | | | | |
| | | World | 31.9 | 26.5 | 26.0 | | (0.5) | | | | | | | | | |

Note: Changes are compared to the November 2024 projections for 2024/25. Changes less than 0.2 million metric tons are not included.

The trade year is October-September for coarse grains, corn, barley, sorghum, oats, and rye.

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

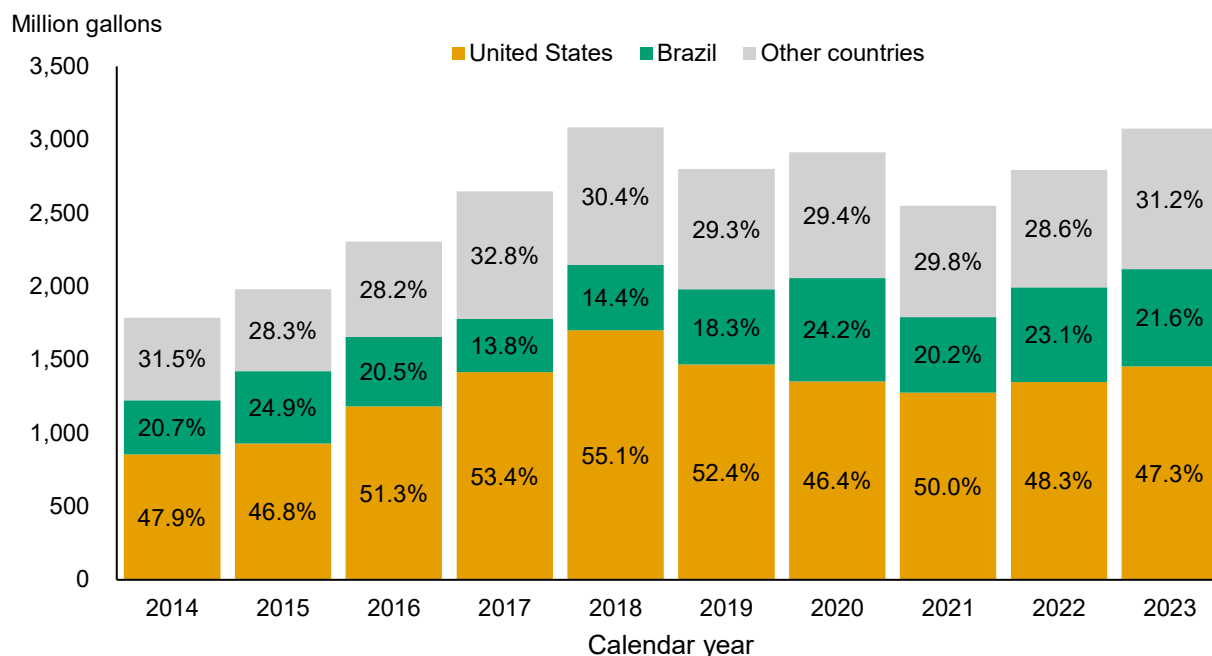
Special Article: *U.S. Ethanol Exports Grow and Evolve*

Christele Marsh

The United States Increases Ethanol Exports and Gains World Market Share, After Brazil Ends U.S. Imports

With the largest ethanol production in the world, the United States plays a pivotal role in world ethanol exports. Over the last 10 years, the United States accounted for approximately half of global ethanol exports each year (see figure 1sa). During the same period, Brazil's share of world ethanol exports was second to the United States.

Figure 1sa
World ethanol exports



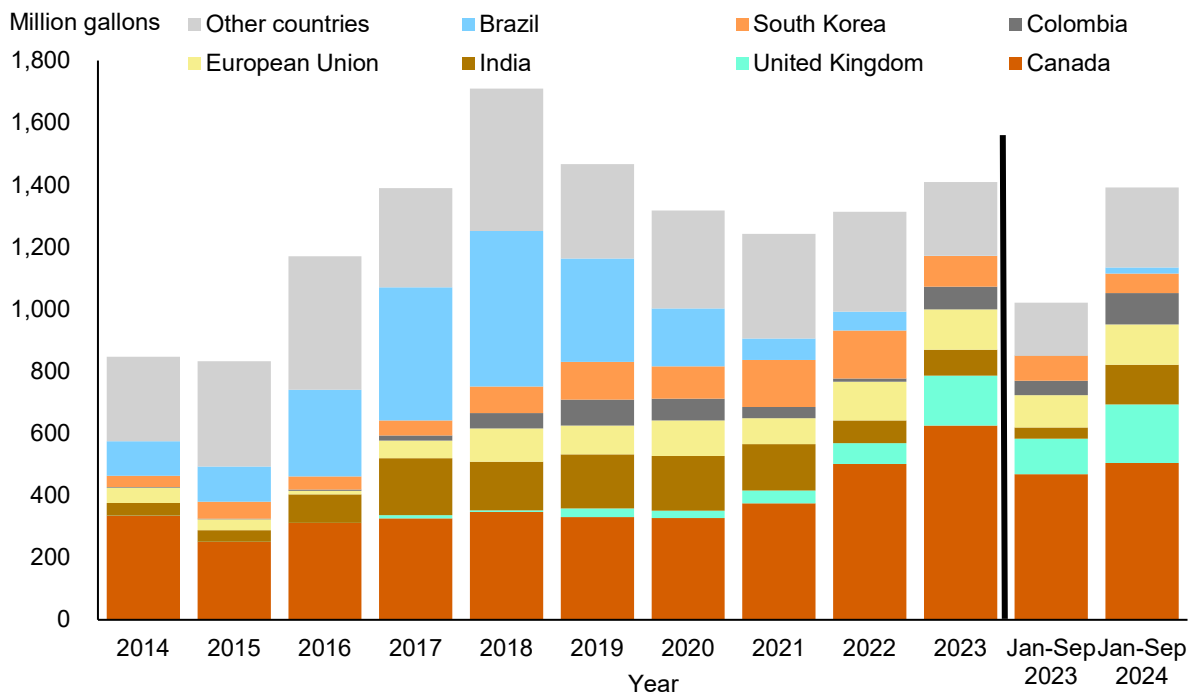
Note: Trade Data Monitor ethanol exports data include ethanol exports for beverage. U.S. ethanol exports for beverage are estimated to be less than 1 percent of total ethanol exports reported by Trade Data Monitor.
Source: USDA, Economic Research Service calculations using data from *Trade Data Monitor*.

The United States and Brazil have been ethanol trade partners, exporting and importing ethanol from each other for the last 10 years. As such, Brazil used to be the main importer of U.S. ethanol between 2017 and 2019. After Brazil stopped importing large volumes of U.S. ethanol in 2020, the level of U.S. ethanol exports grew to Canada, emerged to the United Kingdom and slightly increased to the European Union. Other countries (in particular India, Colombia, and

South Korea) have remained U.S. ethanol importers during the last 10 years, albeit with volumes fluctuating (see figure 2sa).

Figure 2sa

U.S. ethanol exports by destinations, by calendar years (2014 to 2023) and January through September (2023 and 2024)



Note: The United Kingdom was excluded from the European Union prior to Brexit.
 Source: USDA, Economic Research Service using data from U.S. Department of Energy, Energy Information Administration (EIA), *U.S. Exports of Fuel Ethanol* November 29, 2024 report. EIA ethanol exports data reflect total exports from the United States (the 50 States and the District of Columbia) to foreign countries and U.S. possessions reported by the U.S. Department of Commerce, Bureau of the Census.

U.S. ethanol exports play an important role in supporting U.S. ethanol production and in turn corn usage for food, industrial, and seed purposes. During the September 2023 through August 2024 U.S. corn marketing year (MY), U.S. ethanol exports increased by 43 percent year over year and reached a MY record of 1.75 billion gallons. The United States processed close to 600 million bushels of corn to produce the amount of exported ethanol gallons. U.S. ethanol exports rose on a combination of demand in countries with biofuels blending mandates with competitive U.S. ethanol prices. This special article looks at ethanol production, policies, and trends at U.S. current main destination markets and Brazil, over the last decade, and how they have impacted U.S. ethanol exports.

Brazil’s Ethanol Market Is Changing

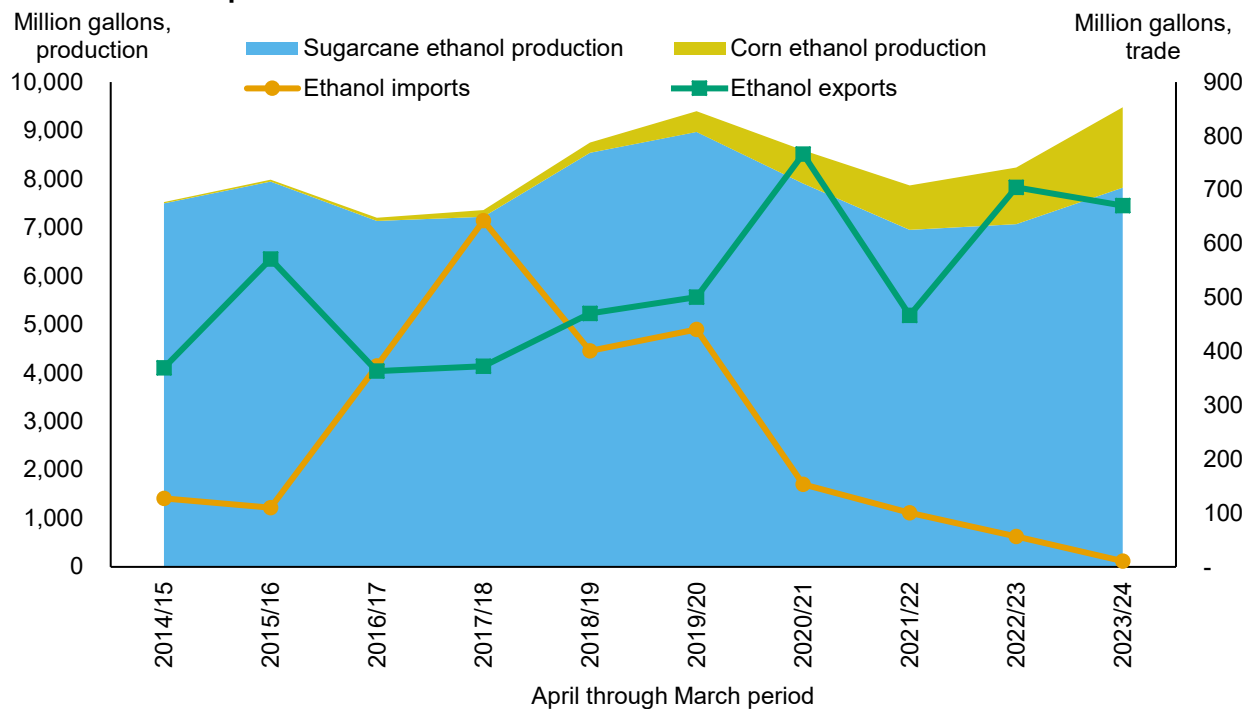
Ethanol imports by Brazil, a majority from the United States (80 percent or more from 2017 through 2020), progressively declined between 2019 and 2022 as Brazil ended its tariff-free

ethanol import quota in February 2023 (the import tariff is currently 18 percent). While sugarcane remains the primary feedstock for ethanol production in Brazil, during that time, Brazil's corn-ethanol production increased (see figure 3sa). Brazil's corn-ethanol production rapidly increased in Mato Grosso since 2017/18 (Brazil's ethanol marketing year, April to March) and, to a smaller extent, Goiás. Corn-ethanol capacity and production was also added in Mato Grosso do Sul between April 2022 and March 2024 (see figure 4sa).

The added production of corn ethanol in the northern part of Brazil's Central-South region helped decentralize the production and distribution of ethanol, even though Sao Paulo remains the primary Brazilian state for ethanol production (with a large sugarcane industry). Furthermore, high world sugar prices incentivized a higher output of sugar in Brazil's sugarcane refineries and a lower ethanol output from sugarcane. Concurrently, lower world corn prices supported already planned corn-ethanol capacity to come online. USDA's Foreign Agricultural Service (FAS) Global Agricultural Information Network (GAIN) report from August 31, 2024 (titled *Brazil: Biofuels Annual*) provides further information on Brazil's current biofuels situation.

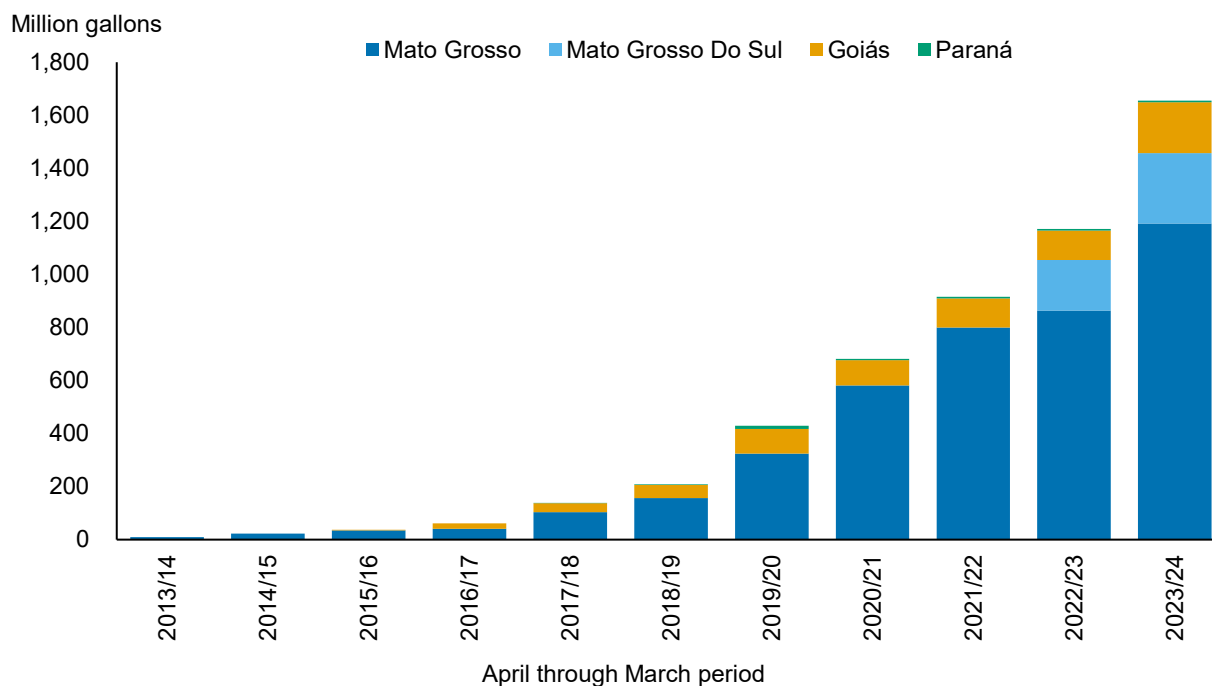
Corn-ethanol production keeps growing in Brazil's South-Central region, with additional corn-ethanol production capacity commissioned and built. Brazilian Sugarcane Industry and Bioenergy Association (UNICA) data between April and October 2024 show that corn-ethanol production is 1,185.6 million gallons. This volume is well above the 927.7 million gallons produced during the same period last year, and the increased capacity supports the continued growth of Brazil's domestic corn-ethanol production.

Figure 3sa
Brazil's ethanol production and trade



Source: USDA, Economic Research Service using data from the Brazilian Sugarcane Industry and Bioenergy Association (UNICA) and *Trade Data Monitor*.

Figure 4sa
Brazil's corn-ethanol production growth by state



Source: USDA, Economic Research Service using data from the Brazilian Sugarcane Industry and Bioenergy Association (UNICA).

Canada's Biofuels Mandates Support U.S. Ethanol Imports

With the decline in U.S. ethanol exports to Brazil, Canada (a long-time ethanol trade partner with the United States) became the top U.S. ethanol export destination starting in 2020. In a 3-year period, U.S. ethanol exports to Canada increased by more than 90 percent, reaching nearly 626 million gallons in calendar year 2023, as reported by the U.S. Department of Energy, Energy Information Administration. Between January and September 2024, U.S. ethanol exports to Canada were 35.7 million gallons above a year ago, supporting continuing demand needs. As ethanol production in Canada has remained constant, ethanol imports have increased with higher blending of ethanol into gasoline (see figure 5sa). Canada's Clean Fuel Regulation (CFR), that became official on July 6, 2022, drove the increase in blending and ethanol imports.

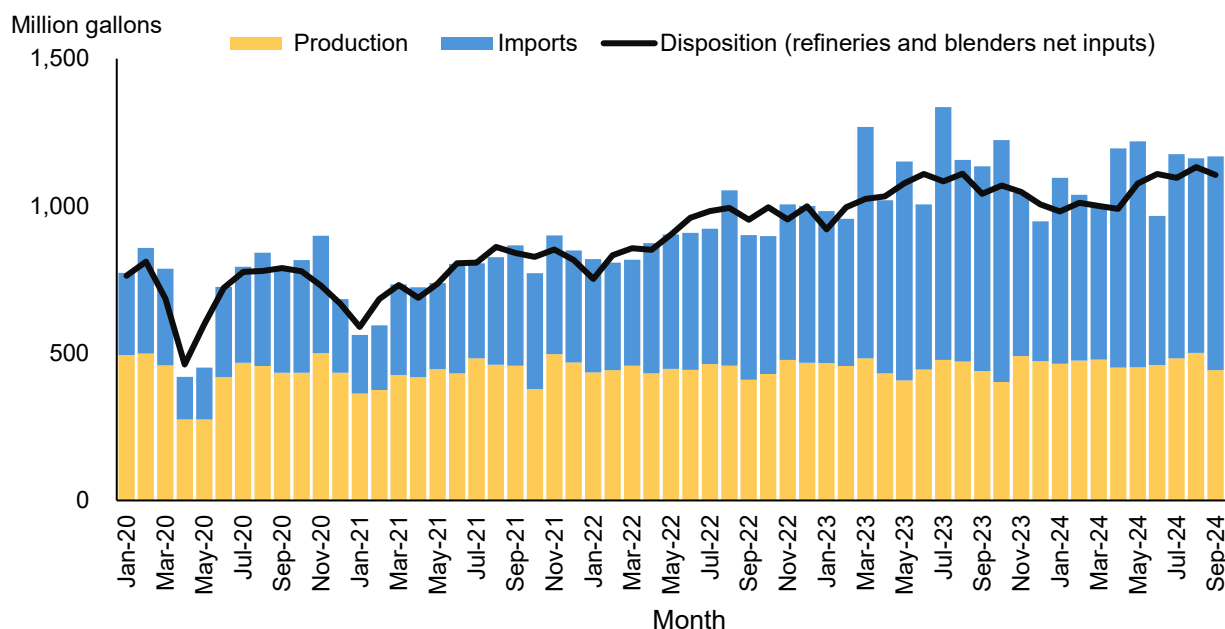
Canada's CFR expanded demand for low carbon intensity fuels by limiting the Carbon Intensity (CI) of transport to be of lower value for each compliance year (calendar year). In anticipation of the Federal CFR, most of Canada's provinces—namely Alberta, British Columbia, Manitoba, Ontario, Quebec, and Saskatchewan—put their low carbon fuel policies in place. These policies included a renewable fuel mandate or a clean fuel standard. For context, those 6 provinces accounted for more than 90 percent of Canada's gasoline net sales in 2023, while Ontario and Quebec represented 59 percent of gasoline sold nationally in 2023. As these two provinces account for a large proportion of gasoline sales in Canada, their biofuel policies drive overall ethanol needs of Canada. The Ontario's Cleaner Transportation Fuels regulation, enacted in November 2020, currently requires that fuel suppliers blend 10 percent of renewable content in gasoline from 2020 to 2024. The renewable content requirement increases to 11 percent in 2025, 13 percent in 2028, and 15 percent in 2030. Quebec has required a 10-percent low-carbon fuel content in gasoline since 2023 and is increasing the requirement to 15 percent by 2030. Other Canadian provinces' mandates include a requirement of a 10-percent ethanol content into gasoline by Manitoba's Ethanol Mandate. British Columbia mandates a 5-percent ethanol content in gasoline. This Canadian province also has a Low Carbon Fuel Standard which aims to achieve a 20-percent reduction in fuel intensity by 2030. Saskatchewan has a 7.5-percent ethanol mandate and Alberta's Renewable Fuels Standard requires a minimum annual average of 5-percent renewable alcohol in gasoline.

With no additional capacity expected to come online for ethanol production in Canada at the current time, all the above-mentioned renewable fuel mandates and clean fuel standards are supportive for U.S. ethanol exports to Canada. U.S. ethanol exports to Canada are expected to

continue at their current level, assuming stable gasoline demand in Canada, and potentially grow as higher blends develop and materialize in Ontario and Quebec.

Figure 5sa

Canada's annualized ethanol production, imports, and disposition



Source: USDA, Economic Research Service using data from the Government of Canada, Statistics Canada, *Petroleum products by supply and disposition, monthly* November 28, 2024 report.

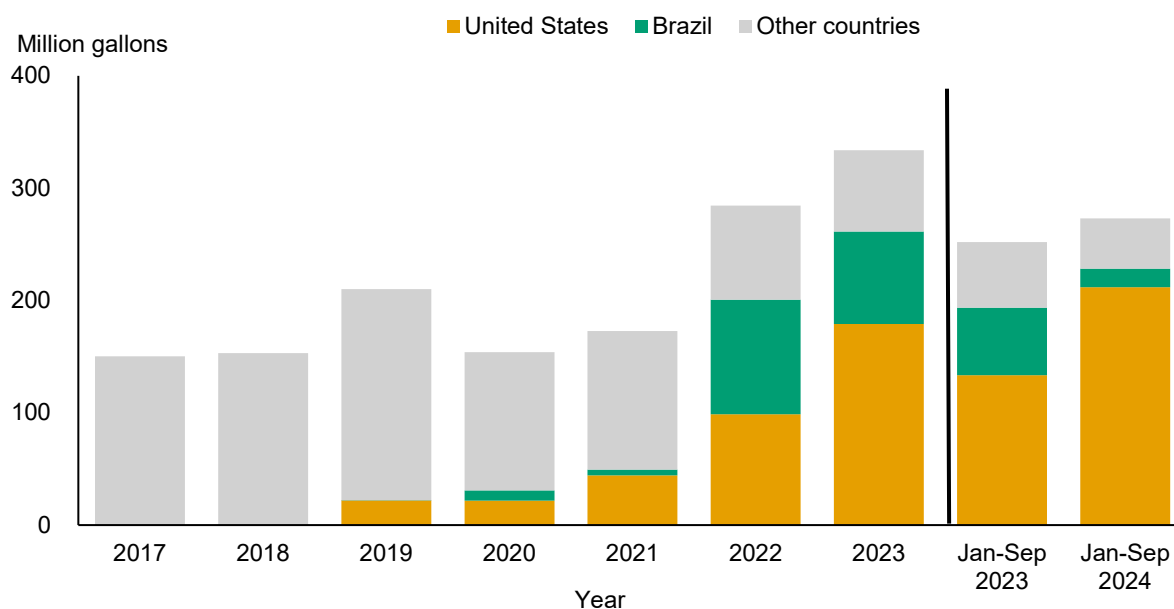
U.S. Ethanol Exports Gain Market Share in the UK Fuel Market, Post Brexit

In addition to the growth of ethanol exports to Canada, U.S. ethanol exports to the United Kingdom also grew rapidly since calendar year 2021 (see figure 2sa). U.S. ethanol exports to the United Kingdom more than tripled between 2021 and 2023. The United Kingdom placed second for U.S. ethanol export destinations in calendar year 2023, with 160.1 million gallons exported, and thus far in 2024, with close to 188 million gallons exported between January and September 2024.

The United Kingdom began expanding its ethanol blend rate into gasoline from a 5-percent blend to a 10-percent blend starting in September of 2021. The increase in ethanol usage was a way to meet the increasing renewable fuel targets from the UK Renewable Transport Fuels Obligation program. The United Kingdom produces ethanol domestically, using mostly wheat as feedstock. However, domestic ethanol production is insufficient to fulfill the UK fuel ethanol needs. Therefore, with the move to a 10-percent ethanol blend into gasoline, total UK ethanol

imports have almost doubled during the last 3 years (see figure 6sa). As such, the UK Government estimates that only 33.4 percent of ethanol used for road transport came from UK production in 2022 (the latest data were published on June 27, 2024). Furthermore, after leaving the European Union in January 2020, the United Kingdom sourced some of its agricultural and related imports (such as ethanol) outside of the European Union (Jelliffe et al., 2023). The combination of a higher blend (10 percent ethanol) with Brexit drove a substantial increase in ethanol imports from the United States and Brazil. Thus far in 2024, U.S. ethanol exports to the United Kingdom have taken market share from Brazil, with competitive prices for U.S. corn-based ethanol.

Figure 6sa
UK ethanol imports, by calendar years (2017 to 2023) and January through September (2023 and 2024)



Note: UK=United Kingdom.
 Source: USDA, Economic Research Service using data from *Trade Data Monitor*.

U.S. Ethanol Exports Increased Slightly to the European Union

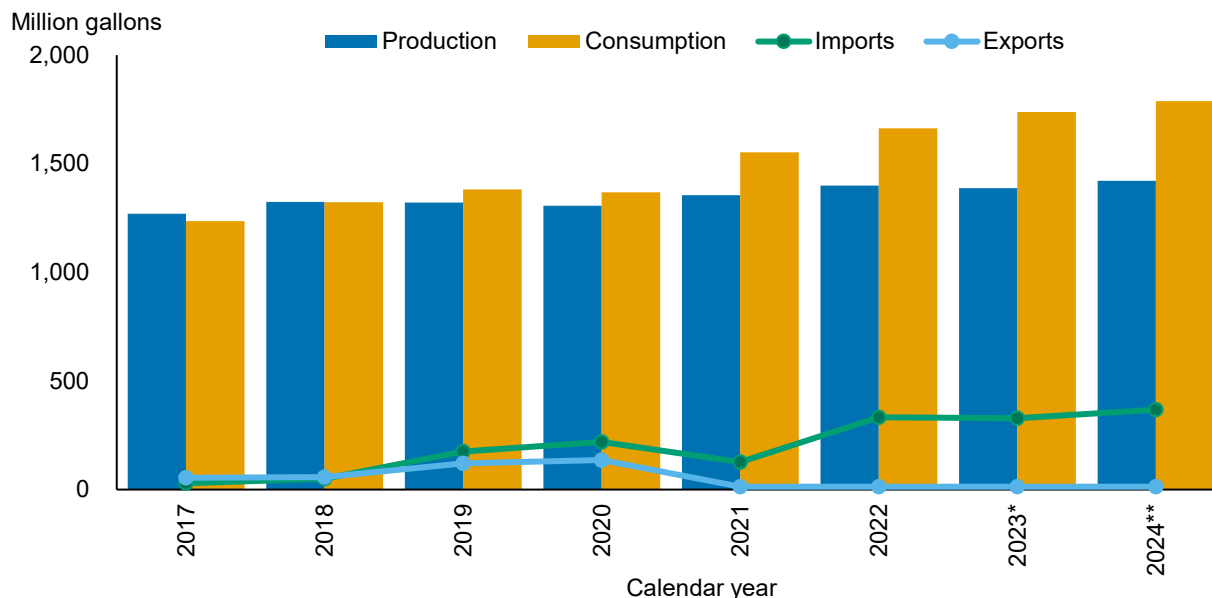
The United States exported nearly 130 million gallons of ethanol to the European Union during calendar year 2023. U.S. ethanol exports to the European Union stand at close to 130 million gallons thus far between January and September 2024, more than 25 million gallons above the same period last year. Compared to Canada and the United Kingdom, U.S. ethanol exports to the European Union have marginally increased over the last 5 years (considering that gasoline

demand dropped during the COVID-19 pandemic and particularly affected gasoline and ethanol demand in 2020 and 2021).

According to USDA’s FAS Global Agricultural Information Network (GAIN) report from August 13, 2024 (titled *European Union: Biofuels Annual*), ethanol consumption for fuel use has been increasing more rapidly than domestic-fuel ethanol production (see figure 7sa). The 2024 EU ethanol-for-fuel consumption level is expected at 50.2 million gallons above 2023, growing 29.4 percent (more than 400 million gallons) since 2019. The overall blend rate for ethanol into EU gasoline is forecast at 6.4 percent in 2024, which is a similar level as the last 3 years. For further context, blend rates for ethanol into fuel vary by EU country members and 10 percent ethanol blend is not widely available or consumed. France, a net consumer of bioethanol, has been embracing E10 (10 percent blend) and E85 (85 percent ethanol blend used in flex-fuel vehicles). At the same time, the expansion of E10 remains incremental in countries such as Poland and Germany. In addition, some EU countries (namely Sweden) have reduced blending mandates in 2024.

Figure 7sa

EU fuel ethanol production, consumption, imports and exports



Note: EU=European Union. (*) denotes estimate, (**) denotes forecast.

Source: USDA, Economic Research Service using data from from USDA, Foreign Agricultural Service, Global Agricultural Information Network (GAIN), August 13, 2024 Attaché Report, *European Union: Biofuels Annual*.

Since 2019, the increase in EU fuel-ethanol consumption has been met with limited expansion of the EU domestic ethanol production. There are currently 55 first generation¹ plants in the European Union producing ethanol. The number of EU refineries producing first generation

¹ First generation biofuels are produced with feedstock that are feed, food, and crop-based.

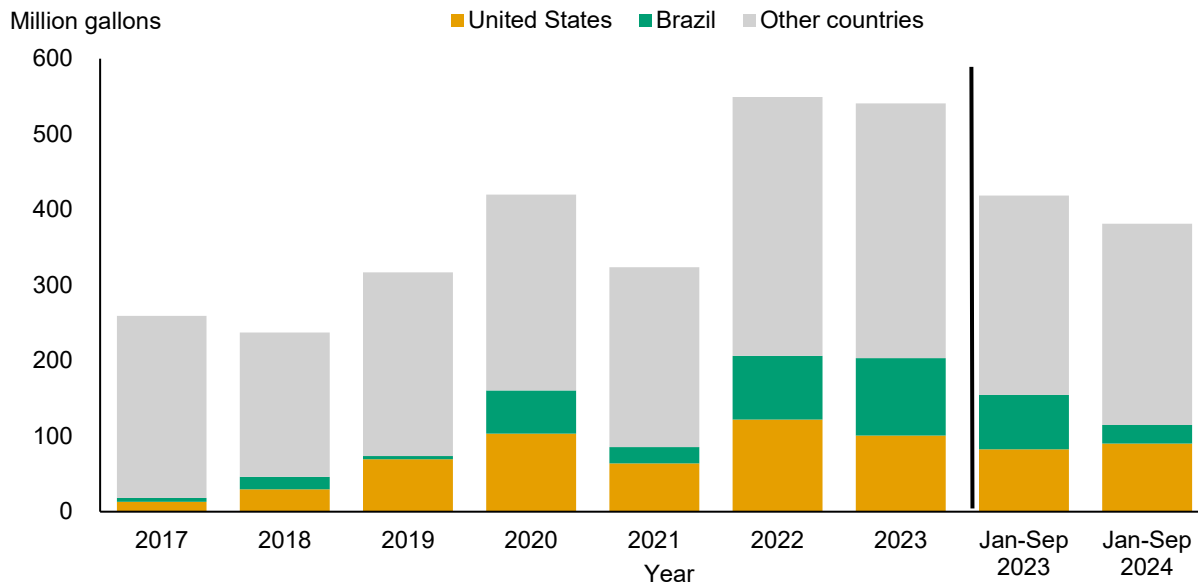
ethanol, as well as their capacity utilization rate, has remained rather constant in the last 10 years—ranging between 59 and 69 percent and projected at 65 percent in 2024 in the 2024 FAS *European Union: Biofuels Annual*. Furthermore, the European Union produces ethanol from a large variety of feedstocks—corn, sugar beets, wheat, triticale (a hybrid of wheat and rye), barley, and rye, in respective order of quantities used. The choice of feedstocks largely depends on supplies available near the ethanol refineries. For instance, wheat is predominantly used in Germany and France, while corn is used in Hungary and Poland. Corn is also used in the Netherlands, Spain, and Belgium due to ethanol plants located at seaports benefiting from imported corn. Thus far, EU ethanol production has not met the EU ethanol consumption needs. Therefore, EU ethanol imports have supplemented the EU ethanol demand needs.

The level of EU ethanol imports (including industrial use) peaked in 2022 and has stayed at those levels (figure 8sa). A portion of EU ethanol imports comes from the United States. Between January and September 2024, U.S. ethanol market share in the European Union slightly increased, accounting for 23.7 percent of the EU ethanol imports. This number is 3.9 percentage points above a year ago. Following a large increase in ethanol imports from Brazil and the United States in 2022, the European Union implemented a surveillance program for ethanol imports, written as a formal regulation on September 14, 2023. The objective of the regulation is to monitor ethanol import volumes and origins to potentially deal with the vulnerability of the EU market of ethanol for fuel.

Based on the above production and consumption factors, EU ethanol imports (namely for fuel) are expected to continue. Nonetheless, U.S. and Brazilian ethanol imports will face imports surveillance, potentially limiting their upside.

Figure 8sa

EU ethanol imports, by calendar years (2017 to 2023) and January through September (2023 and 2024)



Note: Imports data include imports for beverage consumption, estimated at 5 percent by the EU Attaché. EU=European Union. Source: USDA, Economic Research Service using data from *Trade Data Monitor*.

India’s Ethanol Imports Are Driven by Industrial Usage

India stands as one of the top destinations for U.S. ethanol exports. The United States exported nearly 129 million gallons of ethanol to India between January and September 2024, an increase of close to 92 million gallons year on year. While the level of U.S. ethanol exports to India has increased this year, it has fluctuated during the last 10 calendar years—ranging from more than 180 million gallons in 2017 to a low of just over 37 million gallons in 2015, and at nearly 84 million gallons in 2023. India’s 2018 National Biofuels Policy explains the variability in U.S. exports to India.

Per its 2018 National Biofuels Policy (amended in 2022), India aims to reach a national 15-percent blending rate during their 2023/24 Ethanol Supply Year (ESY)—from December 2023 through November 2024. India also has a target of 20-percent blending during 2024/25 ESY—from December 2024 through November 2025. According to USDA’s FAS Global Agricultural Information Network (GAIN) July 24, 2024 report (titled *India: Biofuels Annual*), ethanol for fuel blending is mandated to be supplied domestically, prioritizing sugarcane and its derivatives, and to a smaller extent rice surplus for production feedstocks. With the insufficient availability of feedstocks during ESY 2023/24 (particularly sugar feedstocks), India has fallen short of its ESY 2023/24 blending rate goal of 15 percent, while also being unable to maintain the 12-percent

blending rate achieved during their ESY 2022/23. India has then prioritized corn as a feedstock for ethanol for fuel blending. Despite the domestic ethanol production challenges to meet blend rates, India does not approve biofuels imports for the purpose of fuel blending. Ethanol imports are for industrial usage.

India's ethanol-import outlook for industrial usage is favorable to continue at current levels, while India's priority to reach ethanol-in-fuel blending targets is not met with the country's domestic ethanol production. Nonetheless, future growth of ethanol exports into India is limited by the country's industrial usage, as long as imported ethanol is not supported as fuel blend.

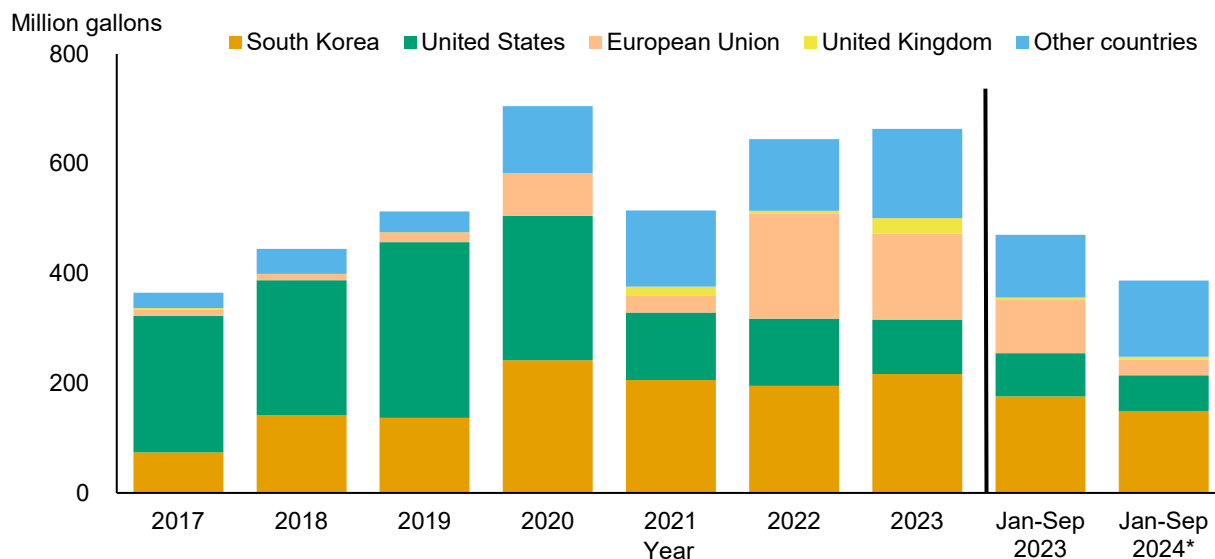
U.S. Ethanol Exports to Other Countries, While Recently Strong, Have Remained Variable

Colombia and South Korea have been notable importers of U.S. ethanol during the last decade. Like for India, the volume of U.S. exports to these destinations has fluctuated in the last 5 years. In 9 months (between January and September 2024), U.S. ethanol exports to Colombia more than doubled from the same time frame a year ago, at 100.7 million gallons. As explained in the USDA's FAS Global Agricultural Information Network (GAIN) July 28, 2024, report (titled *Colombia: Biofuels Annual*), Colombia has had a 10-percent ethanol blend mandate since 2018. However, the blend mandate has been altered and has ranged between 4 and 10 percent over the course of the last 4 years and was reinstated to 10 percent (effective February 23, 2024). At the current FAS Attaché forecast for Colombia's gasoline pool, a full 10-percent ethanol blend program would mean close to 200 million gallons of ethanol consumption for 2024.

Even though Colombia does not have enough ethanol capacity to meet a 10-percent ethanol blend mandate, capacity utilization has some upside. Ethanol production in Colombia, which uses sugarcane as a feedstock, is expected at 82 million gallons in 2024, with a capacity utilization below 50 percent during the last 2 years. All of Colombia's feedstock for ethanol is sugarcane. Domestic ethanol production is low because the domestic sugarcane supplies have been irregular, and the sugar industry has prioritized cane sugar production over ethanol due to favorable market prices in the last year. Therefore, reduced production levels—combined with low international prices for ethanol versus domestic prices—have contributed to an increase in imports to fulfill the current 10 percent blend mandate in 2024. While Colombia retains a 10-percent blend mandate into gasoline and domestic ethanol production remains constrained, U.S. ethanol exports are expected to continue to Colombia at their current level

South Korea has ranked as the main export market for Brazilian ethanol since 2021 (see figure 9sa). South Korea does not produce ethanol domestically. Brazil continues to export ethanol for industrial uses to South Korea in 2024, as South Korea does not have a mandate for ethanol-fuel blending, which limits additional market share for both Brazilian and U.S. ethanol. Further, U.S. and Brazilian ethanol export volumes (and their share of the South Korean ethanol market) may be inflated, as presented in figures 2sa and 9sa. According to USDA’s Global Agricultural Information Network (GAIN) November 23, 2024 (titled *Japan: Biofuels Annual*), some ethanol exports to Japan from Brazil and the United States are trans-shipped through warehouses in South Korea. As such, South Korea may appear as the destination of a portion of U.S. ethanol exports ultimately destined for Japan. Although this method adds a layer of ambiguity regarding final destinations of U.S. and Brazilian ethanol exports, total export volumes are fully representative. Nonetheless, this method explains some of the variability in global export data. Thus, U.S. ethanol export volumes to South Korea are expected to continue to remain variable.

Figure 9sa
Brazil's ethanol exports by destinations, by calendar years (2014 to 2023) and January through September (2023 and 2024)



(*) denotes estimate.

Source: USDA, Economic Research Service calculations using data from *Trade Data Monitor*.

A diversified existing mix of destinations and distribution channels further helps U.S. ethanol exports, along with competitive prices. Smaller existing markets (such as Mexico, the Philippines, and Peru), while not discussed in this article, also imported more U.S. ethanol thus far in 2024.

Conclusion

A combination of policy initiatives and the progression of ethanol production around the globe led to an increase in the level U.S. ethanol export markets over the last decade. The global market for ethanol continues to evolve and the United States appears set to continue to be a major supplier over the near term. The 2024/25 MY U.S. corn-use-for-ethanol production forecast of 5.5 billion bushels assumes relatively stable domestic gasoline demand, and healthy, but not overly aggressive ethanol export volumes.

While Brazil's ethanol market changed during the last decade, the country is developing and diversifying ethanol producing capacity. Shifts in Brazil's domestic ethanol production have thus far been favorable for U.S. ethanol exports. It is worth noting that Brazil may return as a larger exporter, with additional ethanol production capacity, but may also increase the blend rate of anhydrous² ethanol into gasoline in the future, consuming more ethanol domestically.

References

Government of Canada. *What are the clean fuel air regulations?* Published on July 7, 2022.

Government of Ontario, Ministry of the Environment. *Cleaner transportation fuels*. Published on July 09, 2021, and updated on November 15, 2024.

Government of the United Kingdom. *Bioenergy Crops in England and the United Kingdom: 2008-23*. Published on June 27, 2024.

Jelliffe, J., Gerval, A., Husby, M., Jarrell, P., & Williams, B. (2023). *United Kingdom Agricultural Production and Trade Policy Post-Brexit* (Report No. EIB-250). U.S. Department of Agriculture, Economic Research Service.

² Brazil consumes both anhydrous ethanol (pure ethanol used in blending with gasoline) and hydrous ethanol (ethanol with a small percentage of water for use in Flex-Fuel Vehicles). Brazil has a mandatory ethanol-use mandate into gasoline which can vary between 18 to 27.5 percent under the current legislation. The mandate is currently set at 27 percent for anhydrous ethanol into gasoline.

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