



Feed Outlook

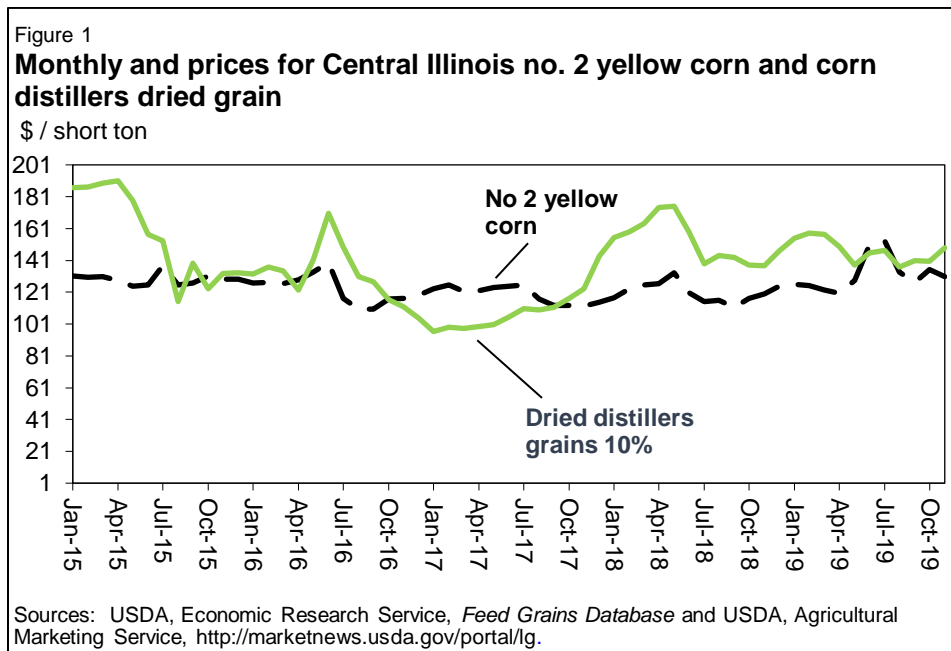
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No Changes to This Month’s Domestic Projections

With no new data from the National Agricultural Statistics Service this month, and steady demand from exports, food, seed, and industrial use, and feed and residual use, there were no balance sheet changes this month to corn, sorghum, or oats. Projected prices are unchanged for corn and sorghum and lowered 5-cents per bushel for barley and oats.

The global production of coarse grains is expected to expand month over month by 6.81 million metric tons. This revision is driven by record Chinese corn yields, which increased their total supply by 6.77 million tons and is expected to increase carryout in 2019/20. This change more than offsets reductions in Australian coarse grains production due to continued drought, amongst other small revisions.



Domestic Outlook

Corn, Sorghum, and Oats Balance Sheets Unchanged From Last Month

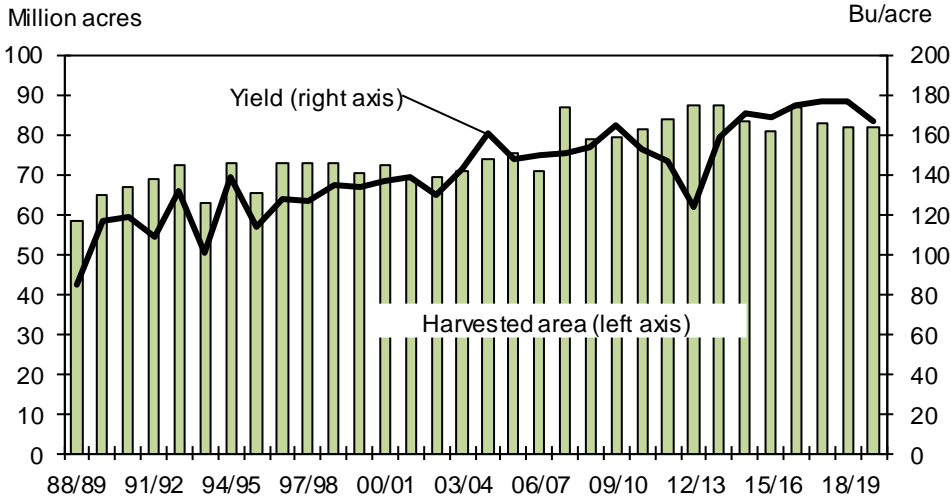
The 2019/20 balance sheets for corn, sorghum, and oats are unchanged this month. With no new National Agricultural Statistics Service (NASS) data, and demand factors steady; eyes are already on the January WASDE report which will reveal first-quarter feed and residual based on December 1 grain stocks, and objective yield and farmer reported survey results-based acreage and yield data for the four feed grains and first-quarter data on food seed, and industrial (FSI) use.

The corn harvest is still underway, with 92 percent of the crop harvested as of December 8 as reported by the NASS *Crop Progress* report. This is a significant shortfall compared with last year's pace at this point. Typically, the harvest is complete by this time. North Dakota, Michigan, and Wisconsin were the furthest behind. Many acres will likely be left in the field over the winter for harvest in early spring, if possible. Of the 18 States surveyed, only 5 (Kansas, Kentucky, North Carolina, Tennessee, and Texas) had completed their corn harvest.

Grain-Consuming Animal Units

Grain-consuming animal units (GCAU) for 2019/20 are projected at 102.6 million units, up 0.1 million from last month. Inventory rose for broilers and layers but declined for beef cattle.

Figure 2
U.S. corn harvested area and yield

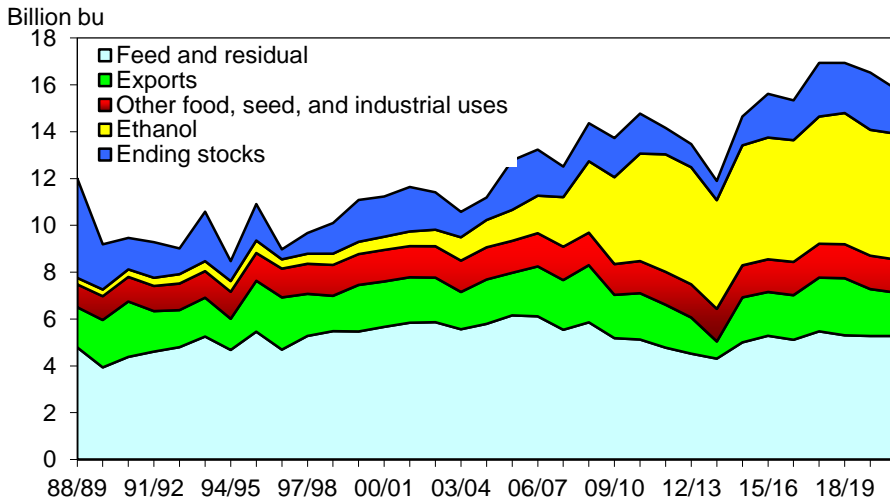


Sources: USDA, Economic Research Service with data from National Agricultural Statistics Service, QuickStats, and USDA, World Agricultural Outlook Board, Crop Projections, 2019.

Feed and Residual Use: Four Feed Grains and Wheat

Feed and residual use for the four feed grains (corn, sorghum, barley, and oats) and wheat on a September-August marketing year basis for 2019/20 is projected at 144.1 million tons, unchanged from last month. A few minor offsetting quarterly changes in quarterly wheat feed and residual were offsetting. Feed and residual per GCAU is steady.

Figure 3
U.S. corn utilization



Note: Marketing year 2018/19 and 2019/20 are projected.
 Source: USDA, World Agricultural Outlook Board, WASDE.

2019/20 Use Unchanged

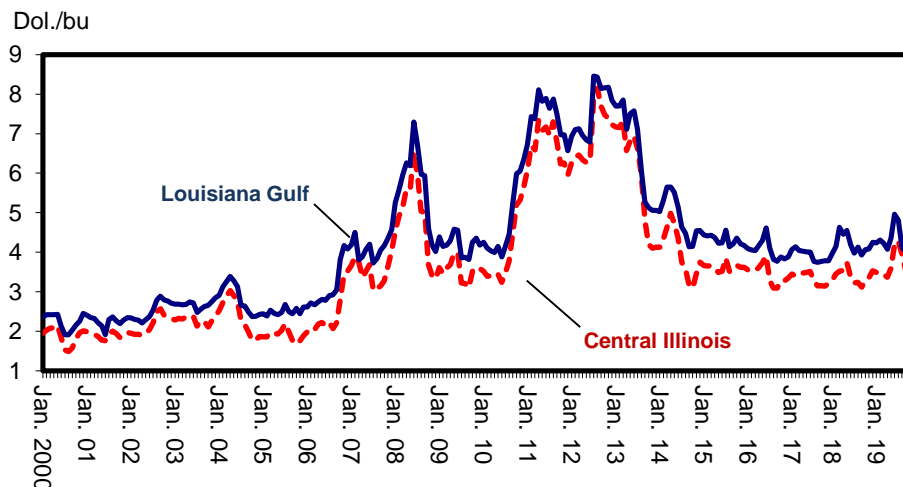
Feed and residual for 2019/20 is projected at 5,275 million bushels, unchanged from last month. Export prospects for 2019/20 are unchanged this month at 1,850 million. Shipments for the month of October reached 90.9 million bushels, 10.8 higher than the previous month. Export inspection data for the month of November, while down nearly 50 percent from a year ago, is up nearly 30 percent relative to October. Moreover, the U.S. export price competitiveness has improved substantially over the past month, and this should support greater sales and shipments in the coming months.

Corn used to produce fuel ethanol, as reported in the NASS *Grain Crushings and Co-Products Production* report, gained 8 percent in October relative to September and Energy Information Administration weekly production figures for November indicate production for the month rose relative to the month of October. Expectations are for the amount of corn used to produce ethanol to show a further uptick during the second quarter and forward, thus projected corn for ethanol is unchanged from last month's forecast. There are no changes in other FSI categories. Total FSI use is projected at 6,790 million bushels.

Barley Exports Raised

Projected 2019/20 barley exports are raised 1 million bushels to 4 million, based on year-to-date pace. As a result, ending stocks are lowered 1 million bushels to 92.1 million.

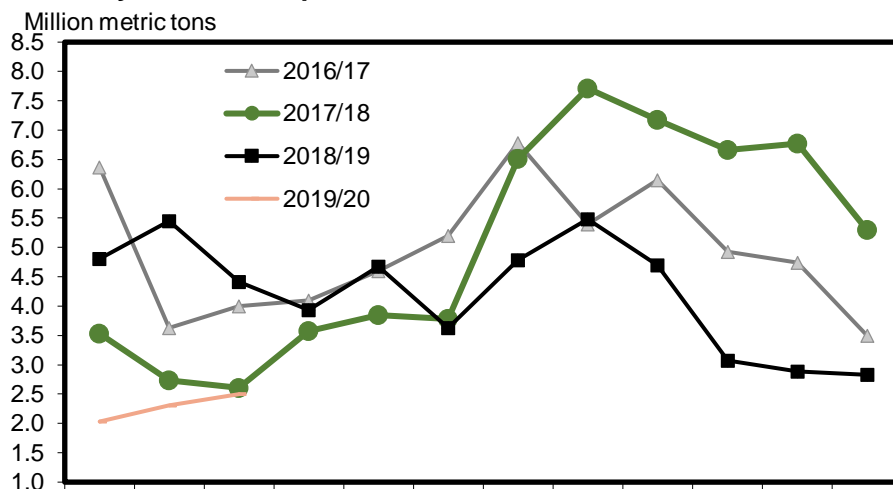
Figure 4
Monthly corn (yellow #2) prices for Central Illinois and Louisiana Gulf



Sources: USDA, Economic Research Service, *Feed Grains Database* and USDA, Agricultural Marketing Service, <http://marketnews.usda.gov/portal/lg>.

Figure 5

Monthly U.S. corn exports



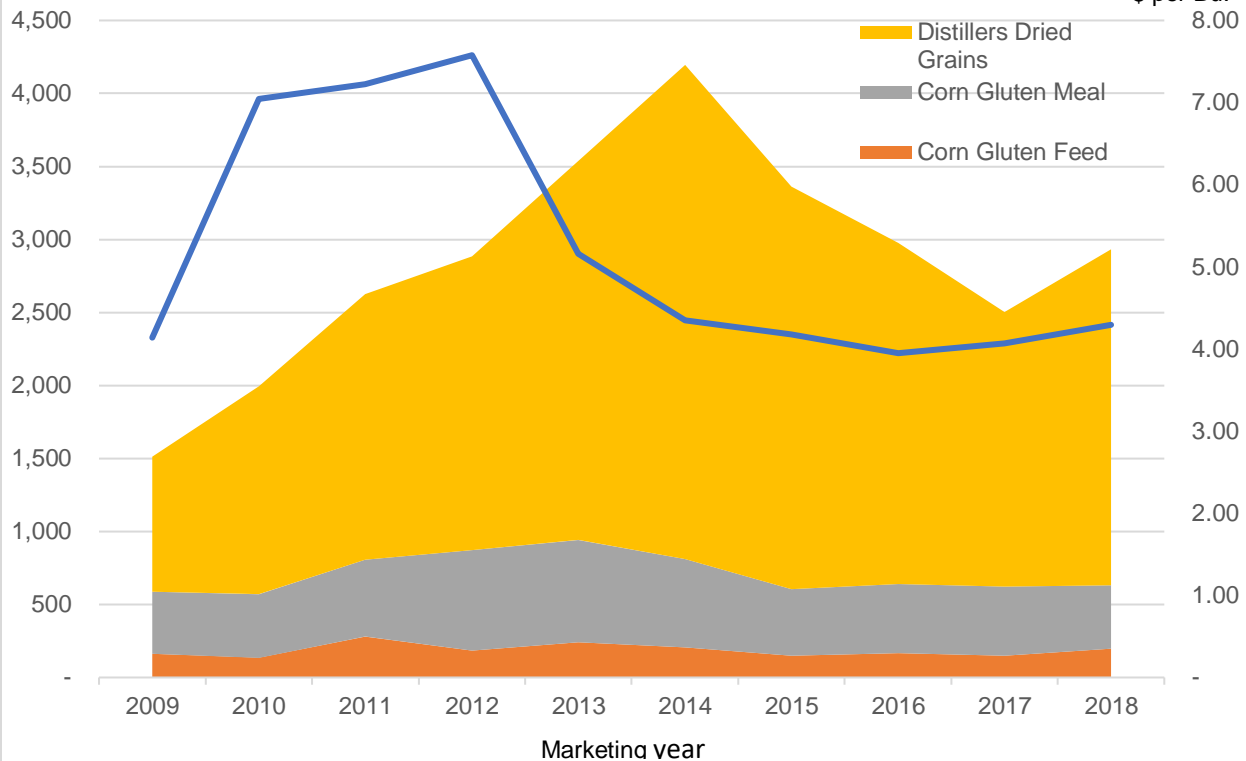
Sep. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May Jun. July Aug.

Source: USDA, Economic Research Service with data from U.S. Department of Commerce, U.S. Census Bureau, November 2019 Grain Inspections..

2018/19 Byproduct Trade Value

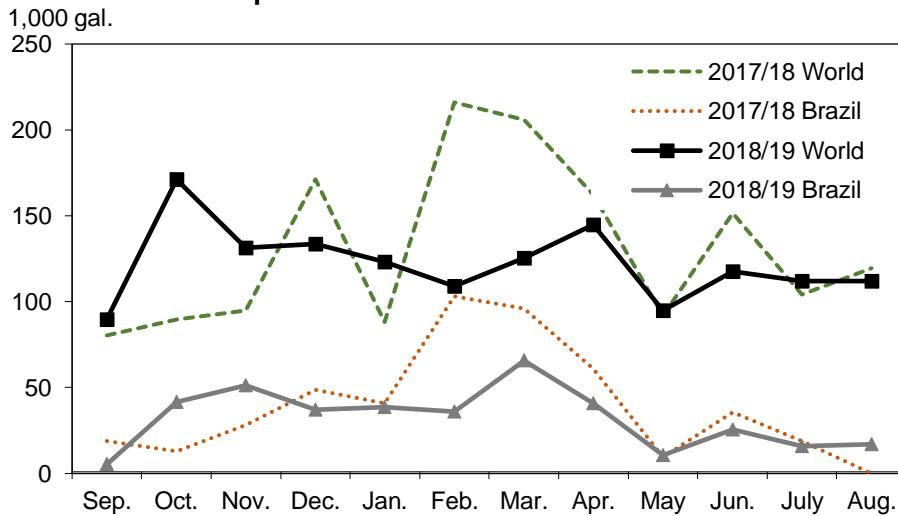
Ethanol byproducts --dried distillers grains (DDGs), corn gluten meal (CGM), and corn gluten feed (CGF)) are an important feed source both domestically and globally. The export value of ethanol byproducts reached \$3.1 billion during 2018/19. The major destinations were Mexico (12 percent), Vietnam (7 percent), Indonesia (7 percent), South Korea (7 percent) and Turkey (4 percent). Other major destinations were Canada, Ireland, Thailand, Japan, and Egypt. These ten destinations accounted for 54 percent of coproduct exports by value. DDGs made up 78 percent of byproduct export value followed by corn gluten meal at 15 percent and corn gluten feed at 7 percent. For the first two months of 2019/20, byproduct export value totaled \$484.3 million, 13 percent behind the same period in 2018/19.

Figure 6
Corn Byproduct Feed Export Value and Corn Export Price
 Mil. dollars



Source: USDA, Economic Research Service with data from U.S. Department of Commerce, U.S. Census Bureau.

Figure 7
U.S. fuel ethanol exports



Source: USDA, Economic Research Service with data from U.S. Department of Commerce, U.S. Census Bureau.

Price Changes for 2019/20 Barley and Oats

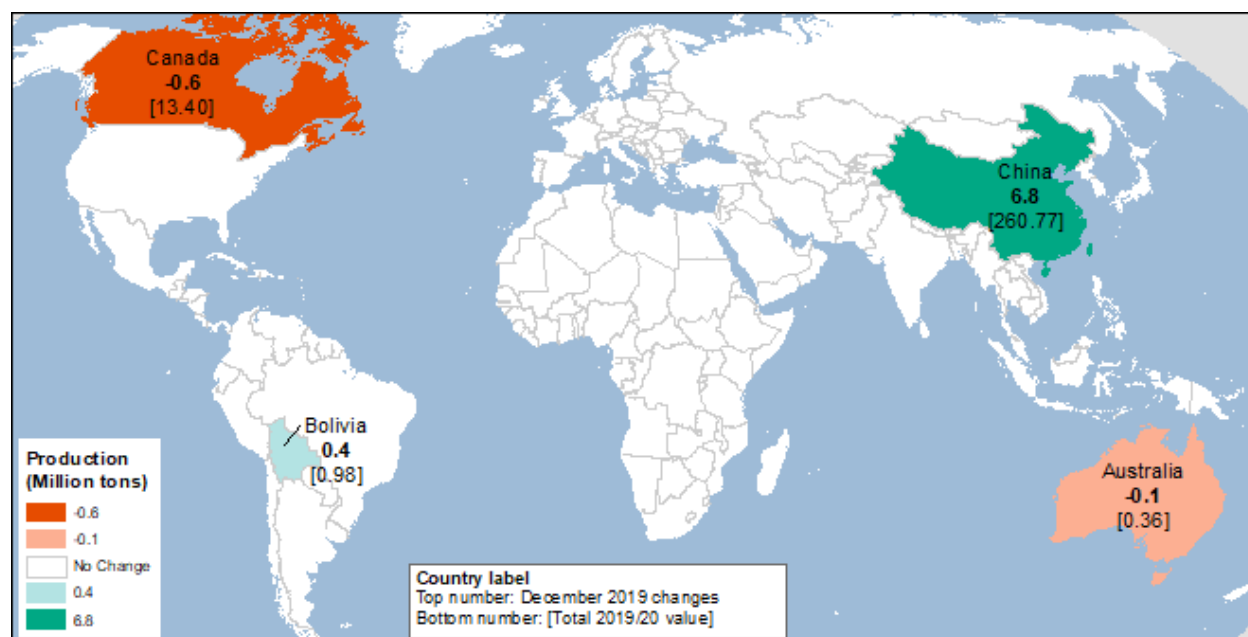
The projected 2019/20 season average price (SAP) received by farmers for barley is lowered \$0.05 per bushel to \$4.65 reflecting lower malt and feed barley prices to date. The projected oats SAP was also lowered \$0.05 per bushel to \$2.90 based on observed prices to date.

International Outlook

Chinese corn production increases on record yield, pulls up global coarse grain forecast for 2019/20

Aggregate global production of coarse grains is revised up by 6.81 million metric tons in December to 1,401.7 million tons—3.42 million tons or 0.24 percent over last year. The majority of the month-to-month increase comes from China, which reported a larger than expected corn harvest. Additionally, barley revisions from Canada and the European Union more than offset lower production of sorghum in Australia.

Map A1 – Corn production changes, December 2019



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

Global corn production is revised up 6.46 million metric tons this month to 1,108.62 million tons. Although this increase in production is equivalent to a revision of 0.59 percent, in 2019 production is projected down 15.87 million tons from the previous year. China boosted production 6.77 million tons, more than offsets the downward revision for Australian and

Canadian corn production. China's production in 2019/20 is now estimated at 260.77 million tons with a record yield of 6.31 metric tons per hectare. Australian corn continues to struggle due to dryness and drought throughout the main growing regions of Western Australia, central Queensland, and in the northern area of New South Wales. Canadian corn production is also reduced based on a lower than expected yield as the harvest continues at a historically delayed pace.

Barley production is revised up by nearly one million metric ton this month to 156.8 million tons. If realized, this will be the highest global output of barley since 1994/95. Revisions to Canada and the European Union's production account for this increase. Canadian production increases of 0.5 million tons brings their production to 10.40 million tons, nearly offsetting downward corn production revisions. The European Union's revision is based on the United Kingdom's recent data releases from their state statistical agency showing higher yields than previously forecast.

Sorghum production in 2019/20 is revised down by 0.63 million metric tons, a 3.2 percent decrease over last year's production. Most of the month-to-month decline is due to production being slashed in Australia. This reduction in production is due to continued drought throughout the growing regions of Western Australia, central Queensland, and in the northern area of New South Wales. If realized this would be the lowest level of production for Australia since 1969. This downward revision represents a 63.6 percent reduction from last month's forecast.

Global oat production in 2019/20 is revised up by 0.09 million tons to 22.5 million. This revision accounts for a 0.16-million-ton increase in Canadian production to 4.16 million tons. Between this revision in oats and the revision in barley, Canadian total coarse grains output for 2019/20 is up marginally over last month. The Canadian revisions more than offset a small reduction in our Australian oat production forecast, which is due to continued drought.

Table A below displays this month's foreign major coarse grain production changes by country for November.

Table A1 - World and U.S. coarse grain production at a glance (2019/20), December 2019

	Region or country	Production	Change from previous month ¹	YoY change ²	Comments
<i>Million tons</i>					
Coarse grain production (total)					
↑	Coarse grains	1401.70	+6.81	+3.42	Changes driven by large revisions upward for Chinese and European Union production more than offsetting downward revisions in Canadian production.
↑	Foreign	1040.87	+6.81	+3.45	
	United States	360.82	No Change	-19.11	No change estimates in December.
World production of coarse grains by type of grain					
Corn					
↑	Corn	1,108.62	+6.46	-15.87	Bolivia and China upward revisions more than offset losses in Canada with a significantly delayed harvest.
↑	Foreign	761.61	+6.46	+6.46	Overwhelmingly this is due to the increased Chinese production on record yield.
	United States	347.01	No Change	-19.28	No change estimates in December.
Barley					
↑	Barley	156.80	+0.96	+17.21	Increased barley production in Canada and the European Union puts global output at its highest levels since 1994/95.
↑	Foreign	153.11	+0.964	+16.86	
	United States	3.69	No Change	+0.35	No change estimates in December.
Sorghum					
↓	Sorghum	57.90	-0.63	-1.91	Production is down on poor Australian conditions, fractionally offset by a small upward revision for Bolivian production.
↓	Foreign	48.82	-0.63	-1.73	
	United States	9.08	No Change	-0.19	No change estimates in December.
Oats					
↑	Oats	22.51	+0.09	+0.59	Canadian oat production increases, based on yield, more than offset small revisions in other countries.
↑	Foreign	21.74	+0.09	+0.64	
	United States	0.77	No Change	-0.04	No change estimates in December.
¹ Change from previous month. ² YoY: year over year changes.					
For changes and notes by country, see table A2.					
Source: USDA, Foreign Agricultural Service, Production, Supply and Distribution online database.					

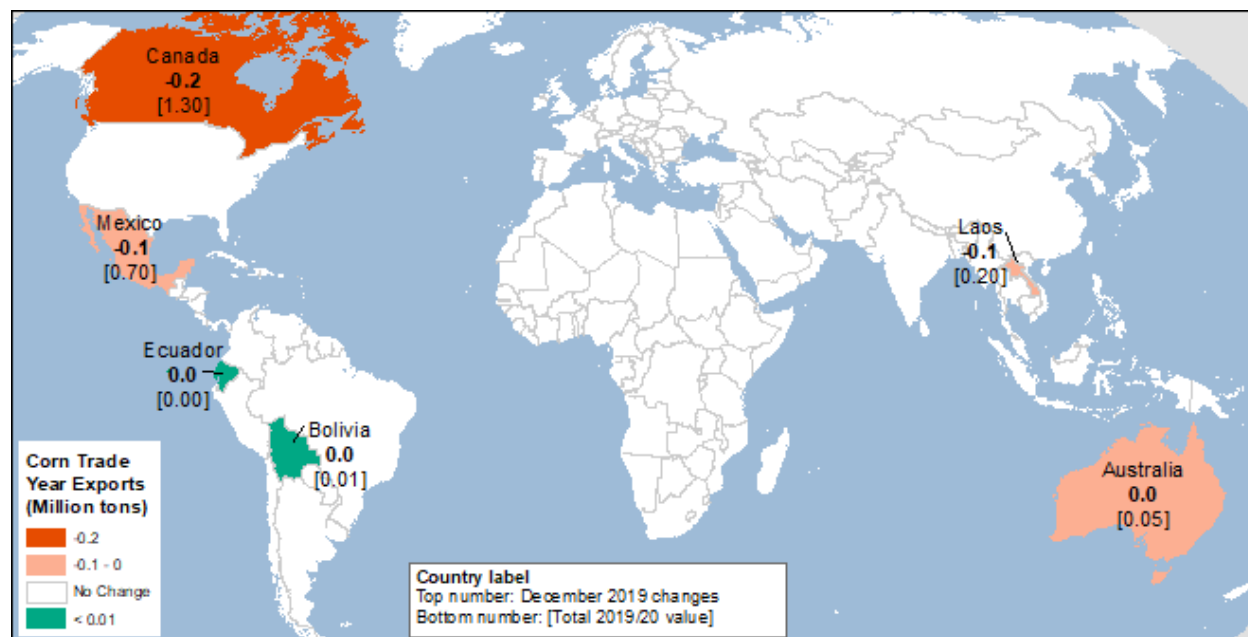
Table A2 - Coarse grain foreign production by country at a glance, December 2019

	Type of crop	Production	Change in forecast ¹	YoY change ²	Comments
		<i>Million tons</i>			
Coarse grain production by country and by type of grain (2019/20)					
World					
↑	Coarse grains	1,401.70	+6.81	+3.42	Changes driven by large revisions upward for Chinese and European Union production more than offsetting downward revisions in Canadian production.
↑	Corn	1,108.62	+6.46	-15.87	Bolivia and Chania upward revisions more than offset losses in Canada with a significantly delayed harvest.
↑	Barley	156.80	+0.96	+17.21	Increased barley production in Canada and the European Union puts global output at its highest levels since 1994/95.
↑	Oats	22.51	+0.09	+0.59	Canadian oat production increases, based on yield, more than offset small revisions in other countries.
↓	Sorghum	57.90	-0.63	-1.91	Production is down on poor Australian conditions.
Australia					
↓	Sorghum	0.40	-0.70	-0.88	Sorghum production is slashed from prior estimates due to continued drought in the major growing regions of the northern regions of Western Australia, Central Queensland, and Northern area of New South Wales. This revised estimate would result in the lowest sorghum production since 1969 if realized. This reduction represents a decrease of 63.6 percent from last month and 68.7 percent from last year's projections.
↓	Corn	0.36	-0.07	-0.03	Corn is grown through the eastern states of Queensland, New South Wales, and Victoria, placing it in the same general vicinity as the sorghum crop. Although corn is not the primary grain grown in Australia, this change further highlights the continued poor growing conditions. This is a 16.3 percent reduction month over month, and down 8.2 percent from last year.
↓	Oats	0.94	-0.07	+0.05	Due to poor growing conditions throughout oat growing regions. This is a 6.5 percent reduction month over month, however up over last year's historically poor harvest by 5.3 percent.
Canada					
↑	Oats	4.16	+0.16	+0.72	Oat production is revised slightly upward due to a better than expected yield.
↓	Corn	13.40	-0.60	-0.49	Corn projections are reduced on a lower than anticipated yield.
↑	Barley	10.40	+0.50	+2.02	This change is entirely driven by higher yield expectation month over month as harvest information becomes available.
China					
↑	Corn	260.77	+6.77	+3.44	Estimates are revised up on better than expected area and yield. Yield estimates at 6.31 MT/ha, if realized, would be a record.
European Union					
↑	Barley	62.25	+0.45	+6.35	UK yield revisions result in a larger production than previously forecast.
¹ Change from previous month. Smaller changes are made for several countries, see map A for changes in corn production.					
² YoY: year over year changes.					
Source: USDA, Foreign Agricultural Service, Production, Supply and Distribution online database.					

Global coarse grain ending stocks forecast higher

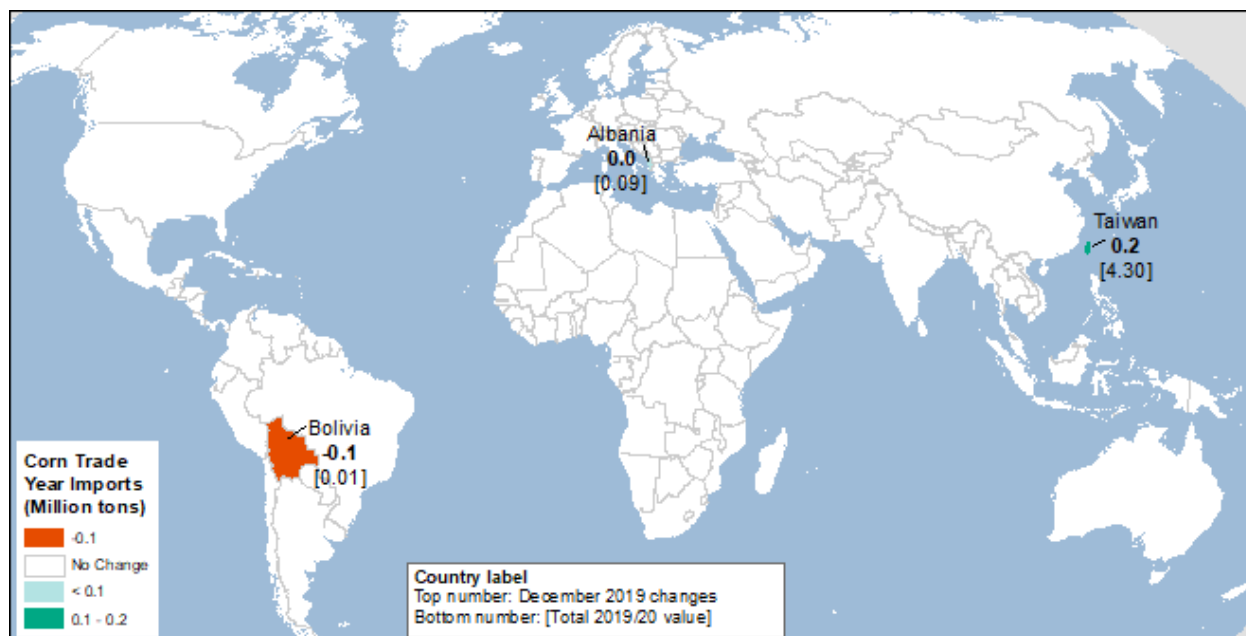
No changes are expected for the U.S. coarse grains supply and use in 2019/20. Canada is expected to consume more coarse grains domestically both as feed and in food, seed, and industrial uses, with a 0.37 million ton increase over last month. It is also expected that Canada will shift away from corn feeding to barley, in line with their production changes. Mexican domestic feed disappearance is projected up by 0.20 million tons based on larger corn and sorghum beginning stocks and less being exported. Similarly, Taiwan's feed use is also increased by 0.20 million tons on larger volumes of corn being imported and a higher than previously anticipated level of beginning stocks. Bolivian use is projected to increase by 0.28 million tons, based on corn production and beginning stocks both being higher than previously expected. Finally, Australian grain use is reduced by 0.55 million tons, based on the terrible conditions faced by the sorghum crop. Australian use is down with 0.30 million tons for feed, 0.10 million tons on food, seed, and industrial use, and the amount remaining (0.15 million tons) is not being exported.

Map A2 – Corn trade year exports changes, December 2019



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

Map A3 – Corn trade year imports changes, December 2019



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

Global coarse grain ending stocks up on China's increased corn production

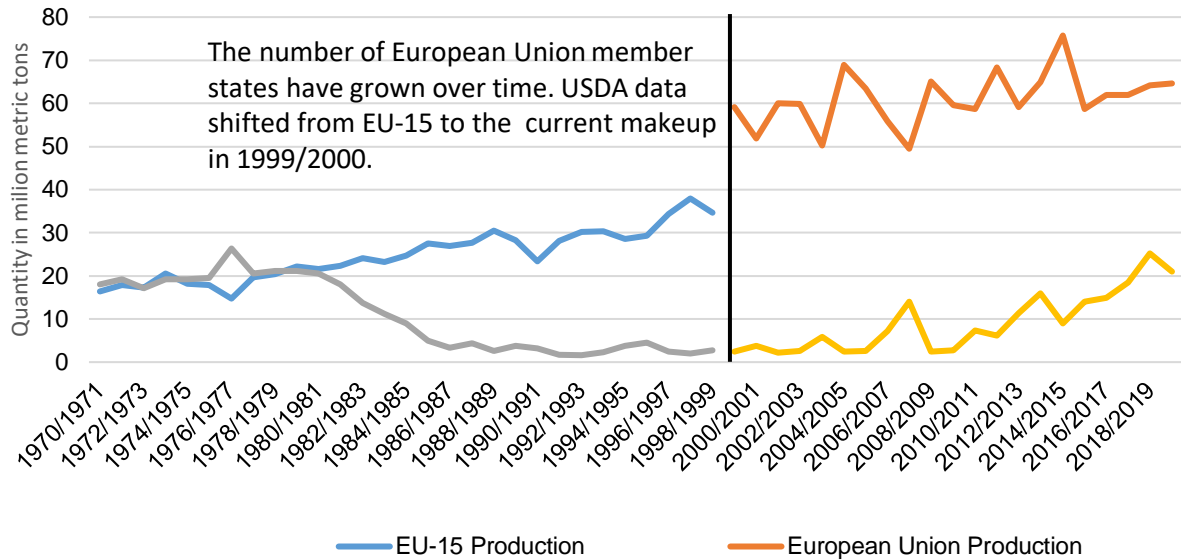
Global coarse grains ending stocks for 2019/20 are expected to be 4.65 million metric tons higher than last month at 331.48 million tons. This revision primarily comes from China with a 5.77 million ton increase in their expected ending stocks since last month. The Chinese change is driven by their revised corn production, with a majority of the change being held in stocks. Additional large revisions include a 0.77-million-ton decrease in the expected ending stocks for Canada and a decrease of 0.17 million tons for Australian coarse grains due to their struggles with lower corn and sorghum production.

European Union imports of corn at highest level since 1976 in 2018/19

There are relatively few meaningful changes in 2019/20 with respect to trade. On the import side, Taiwan's corn imports are projected to be up to 0.2 million metric tons over last month's projections to 4.40 million tons. The EU is expected to export 0.40 million tons more of barley this month than was projected previously and is now at 6.00 million tons. This increase in the barley trade more than offsets the Australian revision in their expected barley export figure which is down 0.3 million tons from last month. Similarly, for Australian sorghum, there is an expected 0.15-million-ton downward revision in December on lower production.

For 2018/19, the European Union imported more grain than initially expected with a 0.41 million metric ton increase in their coarse grain imports. This primarily is due to a larger volume of corn imports. This is the highest level of corn imports since 1976, when the European Union had 15 member states. From a global perspective, imports in 2018/19 are revised up by 0.81 million tons to 192.63 million tons.

Figure 8
European Union corn production and imports



Source: USDA Economic Research Service with data from Foreign Agricultural Service, Production, Supply and