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Economic Research Service | Situation and Outlook Report

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Feed Outlook

Tom Capehart

In this report:

Corn Area Reduced from March Intentions, June 1 Stocks Exceed Expectations

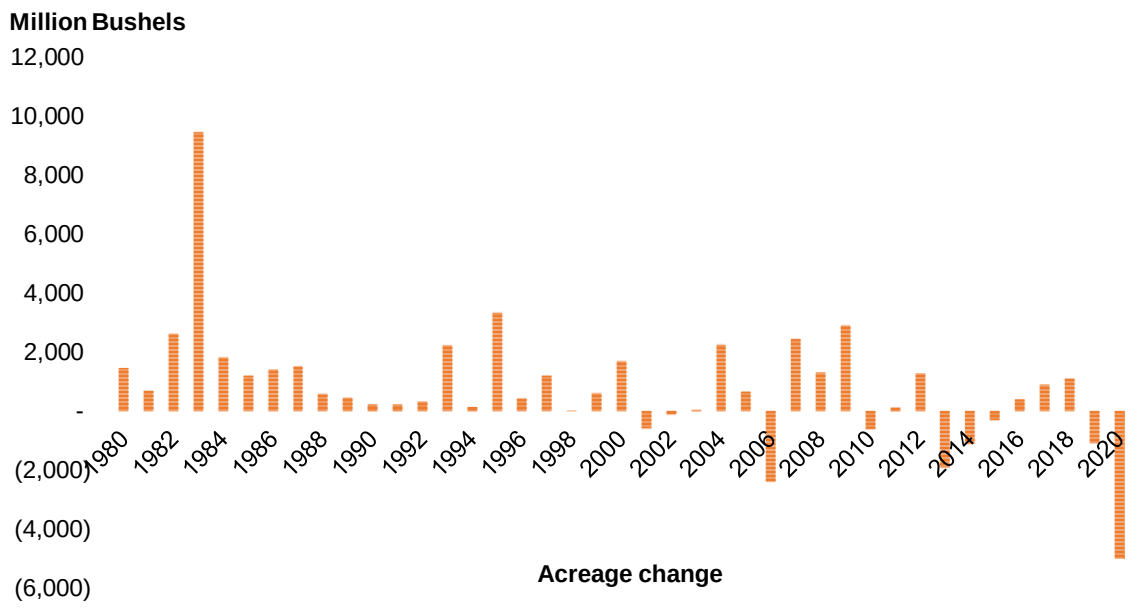
Lower corn harvested area forecast for 2020/21 in the *Acreage* report lowered forecast production nearly 1 billion-bushels to 15 billion bushels, the second highest behind 2016/17. Supplies are projected down 850 million bushels to 17.3 billion. On the demand side, lower feed and residual use partially offset by a small increase in food, seed, and industrial (FSI) use lowered total disappearance and left carryout down 0.7 million bushels. Projected price is up $0.15 per bushel this month ending at $3.35.

Lower 2020/21 foreign coarse grain supplies combine with higher use to reduce projected foreign ending stocks. The apparent reversal of the initial decline in meat consumption observed in China because of COVID-19 and African Swine Fever boosts its feed consumption; also, competitive relative prices for corn and barley in the EU limit wheat feeding there while encouraging higher corn and barley feeding. Corn trade for 2019/20 involves two offsetting changes, with higher Argentine and lower Brazilian exports. Projections for U.S. exports are unchanged.

Approved by USDA's World Agricultural Outlook Board

Figure 1

Corn acreage change from March Prospective Plantings to June Acreage Report



Source: National Agricultural Statistics Service Prospective Plantings and Acreage, various issues.

Domestic

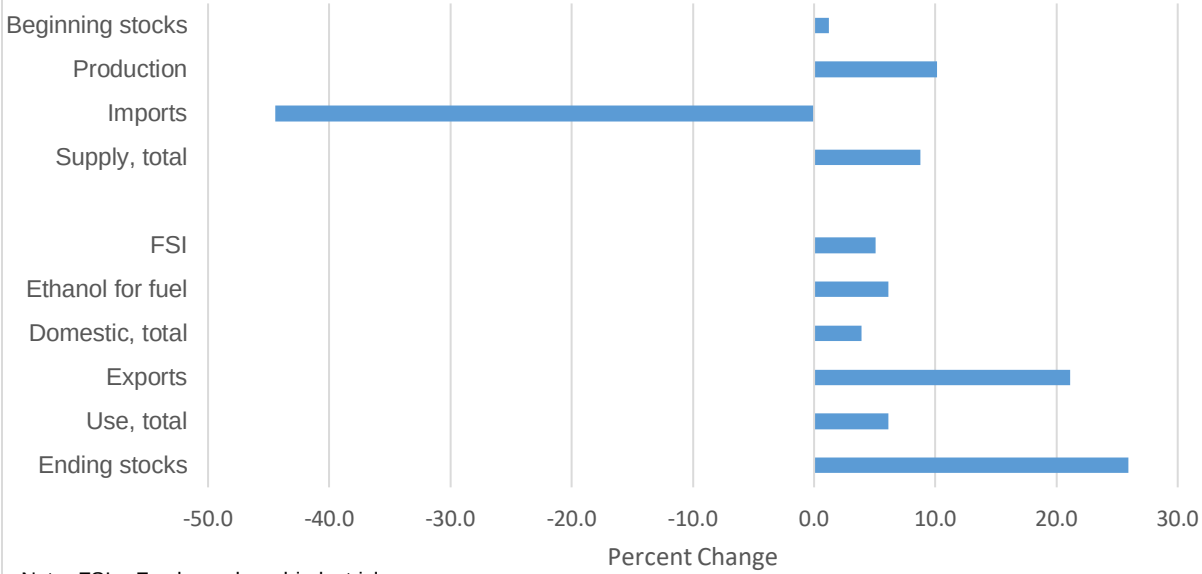
Tom Capehart
David Olson

Corn Supply Sharply Reduced

Projected 2020/21 corn supply is reduced 850 million bushels to 17,273 million this month, still a record high level besting 2016/17's 16,942 million. Lower corn acreage reported in the National Agricultural Statistics Service (NASS) *Acreage* report highlights a 5.0-million-acre decline in planted acreage and a 5.6-million decrease in forecast harvested acreage. North Dakota leads year-over-year area reductions with a 1.1-million decline in planted acreage. While Kansas and Nebraska follow with 0.3 million less for each State. Acreage gains were seen in South Dakota, which nearly made up for the loss in its norther neighbor with a 1,050-million-acre increase. Compared with total principal crop acreage 2019/20, North Dakota area planted to all crops declined 5 percent while South Dakota's increased by 21 percent. The Eastern Corn Belt saw acreage gains in Ohio, Iowa, Indiana, Illinois, Missouri, Minnesota, and Michigan. The decline in corn planted acres from the *Prospective Plantings* to the *Acreage* report is the largest in both absolute value and absolute percentage terms since the Payment In Kind program year of 1983.

Projected corn yield is unchanged for 2020/21 at 178.5 million bushels.

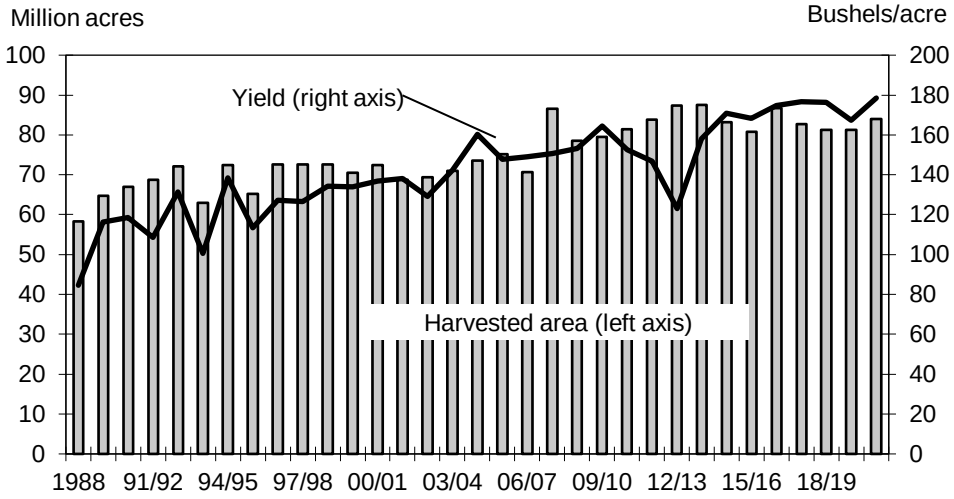
Figure 2
Corn supply and use: percent change from last month's forecast (2019/20)



Note: FSI = Food, seed, and industrial.
Source: USDA, Economic Research Service *Feed Grain Database*.

Total supply is projected 850 million bushels lower at 17,273 million. The decline in production is offset by a 145-million bushel increase in carryin from 2019/20.

Figure 3
U.S. corn harvested area and yield

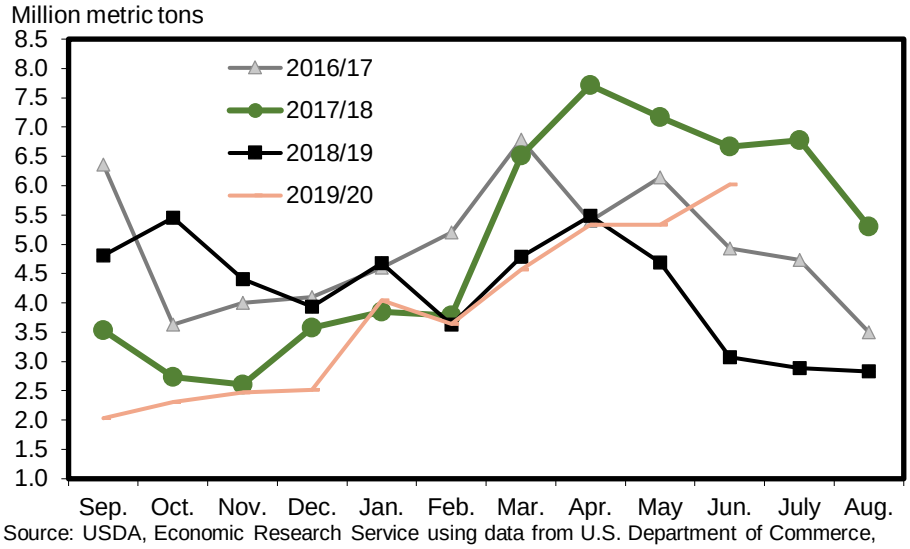


Note: Marketing year 2019/20 and 2020/21 are projected.
Sources: USDA, Economic Research Service with data from National Agricultural Statistics Service, QuickStats, and USDA, World Agricultural Outlook Board.

Use, Ending Stocks Projected Lower for 2020/21

Total 2020/21 corn disappearance is projected 175 million bushels lower at 14,625 million. Feed and residual use is reduced 200 million bushels to 5,850 million, based on expected higher prices and a smaller crop. Food, seed, and industrial use is raised 25 million on an expected continuation of trends for increased beverage and manufacturing use. This is due to increased prospects for products such as hand sanitizer and increased in corn used for glucose, dextrose, and starch. Exports are unchanged at 2,150 million bushels. Corn ending stocks for 2020/21 are projected 675-million bushels lower at 14,625 million, still the largest since 1987/88 and 400-bushels higher than last year.

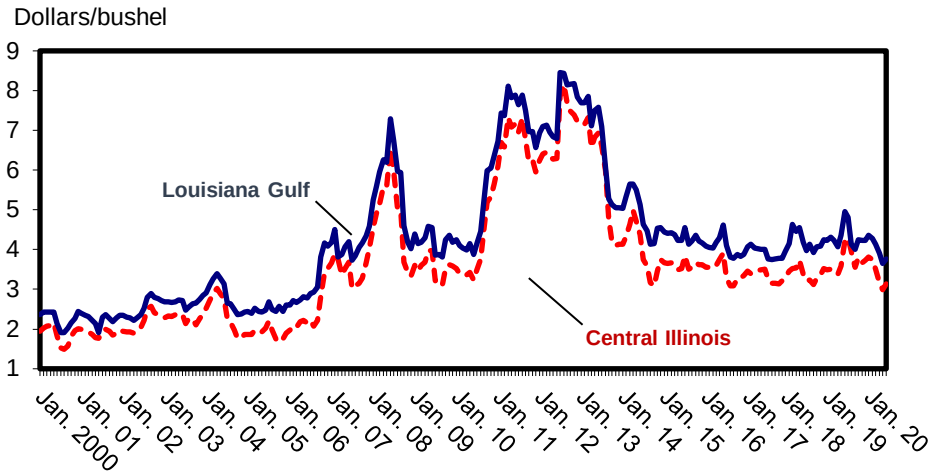
Figure 4
Monthly U.S. corn exports



Source: USDA, Economic Research Service using data from U.S. Department of Commerce, Bureau of the Census, January 2020 Grain Inspections.

The stocks-to-use ratio is projected at 18.1 percent, compared with 22.5 projected last month. The season average price received by farmers is raised 15-cents per bushel to $3.35, based on stronger cash markets and a lower carryout relative to use.

Figure 5
Monthly corn (yellow #2) prices for Central Illinois and Louisiana Gulf



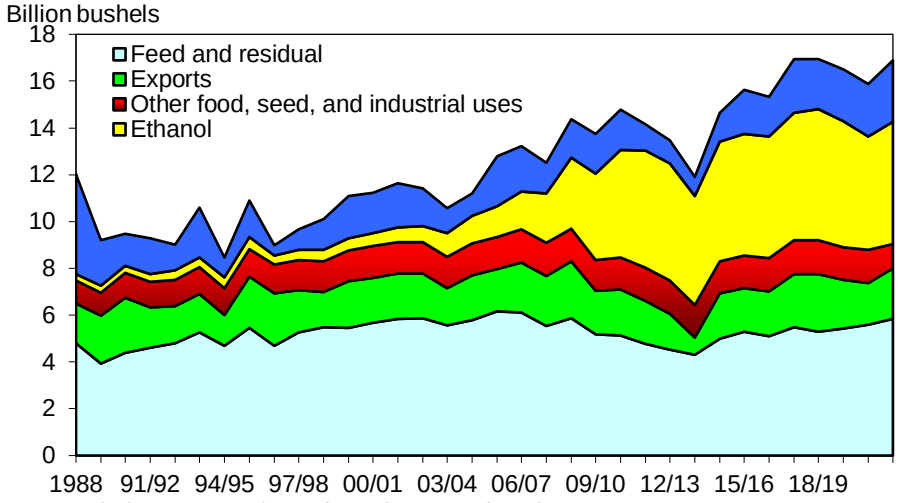
Sources: USDA, Economic Research Service, *Feed Grains Database* and USDA, Agricultural Marketing Service.

June 1 Stocks Indicate Lower than Expected Use in 2019/20

June 1 corn stocks as reported in NASS's *Grain Stocks* were higher than expected, indicating lower total use for the first three quarters of 2019/20. At 5,224 million bushels, June 1 stocks are

slightly higher than a year earlier and pegged September-May total disappearance at 10.651billion bushels compared a year ago at 11.300 billion. Thus, feed and residual for 2019/20 is projected down 100 million bushels. September-May feed and residual is 4,724 million bushels compared with 4.517 million a year earlier.

Figure 6
U.S. corn utilization

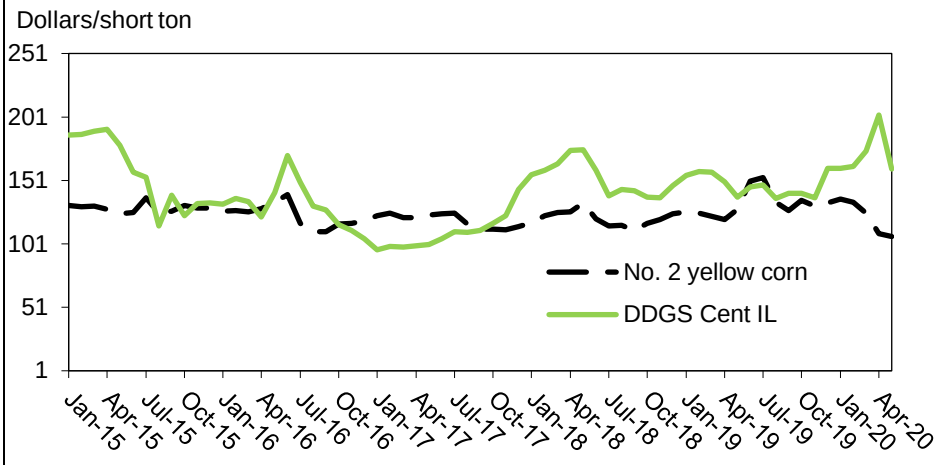


Note: Marketing year 2019/20 and 2020/21 are projected.
Source: USDA, World Agricultural Outlook Board, World Agricultural Supply and Demand Estimates.

Since March, a cumulative 575-million reduction in projected corn for ethanol the major factor in lower disappearance for 2019/20. Corn for ethanol is projected at 4,850 million bushels based on data from the NASS *Grain Crushing and Co-Products Production* report and Energy Information Administration (EIA) weekly data through early July. Based on year-to-date pace, corn for high fructose corn syrup is lowered 5 million bushels to 405 million, and use for starch and glucose and dextrose are each raised 5 million bushels to 230 and 355 million bushels respectively.

Total disappearance for 2019/20 is projected at 13,635 million bushels, 145 million below last month's projection. There was no change in projected exports. Ending stocks are pegged at 2,248 million bushels, 145 above last month's projection. The stocks-to-use ratio is raised month-to-month from 15.3 to 16.5. There is no change in the forecast season average price received by farmers which stands at $3.60 per bushel.

Figure 7
Monthly prices for Central Illinois no. 2 yellow corn and corn distillers dried grain



Source: USDA, Economic Research Service (ERS) using data from the ERS Feed Grains Database and USDA, Agricultural Marketing Services.

Feed and Residual Use for Feed Grains and Wheat

On a September-August year, 2020/21 feed and residual for the four feed grains and wheat is projected at 155.4 million metric tons, 5.0 million below last month's forecast. Declines in corn and sorghum were offset by higher barley feeding. For 2019/20, feed and residual are projected at 148.7 million tons. 4.6 million below last month's forecast. All categories except barley declined.

Grain Consuming Animal Units Decline for 2020/21

Grain consuming animal units (GCAUs) for 2020/21 are projected down 0.03 million units to 102.40 units compared with last month's forecast. The small decline is due to lower beef cattle, and turkey inventories, largely offset by higher hog and broiler components.

Total Feed Grain Use Lowered for 2020/21

U.S. feed grain (corn, sorghum, barley, and oats) is projected 5.3 million metric tons lower this month at 386.3 million tons. Lower forecast feed and residual was slightly offset by increased FSI use driven by the corn balance sheet. Compared with 2019/20 use is projected up 24.1 million tons.

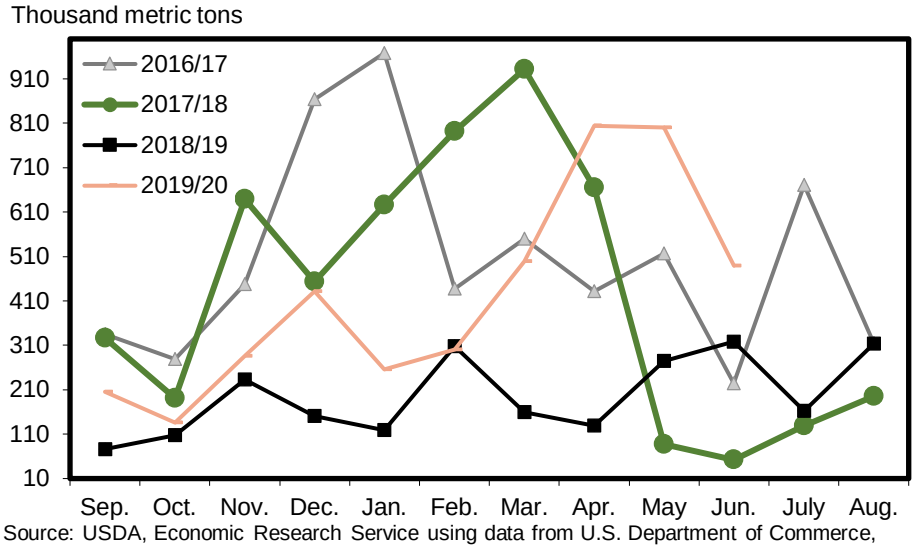
Sorghum Supplies Lowered for 2020/21

The June 30 NASS *Acreage* report indicates a a 355,000 acre decline in sorghum harvested area from the March *Prospective Plantings* report. Accompanied by a 200,000-acre reduction in planted area and no change in forecast yield, production is pegged at 327 million bushels, down 24 million from last month's forecast. With no change in carryin, total supply is lowered the same amount to 357.2 million bushels. Supply is 48 million bushels smaller than last year's.

Sorghum Use Lowered for 2020/21

Projected sorghum feed and residual use is lowered 15 million bushels to 70 million, reflecting the smaller expected crop. FSI is reduced 5 million bushels to 45 million, as prospects for sorghum use for ethanol dim due to export competition. With no change in projected exports, total use is 335 million bushels, 40 bushels less than 2019/20.

Figure 8
Monthly U.S. sorghum exports

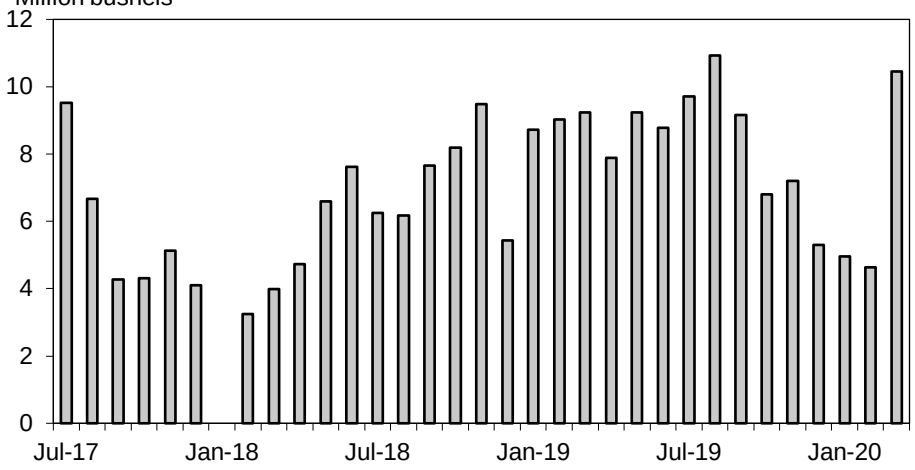


Source: USDA, Economic Research Service using data from U.S. Department of Commerce, Bureau of the Census, January 2020 Grain Inspections.

Resulting ending stocks of 22.2 million bushels are down 4 million from last month's projection due to lower production, mostly offset by a decline in use. The projected season average price for sorghum in 2020/21 is projected $0.15 higher at $3.35 per bushel.

Figure 9

U.S. sorghum for ethanol use by month



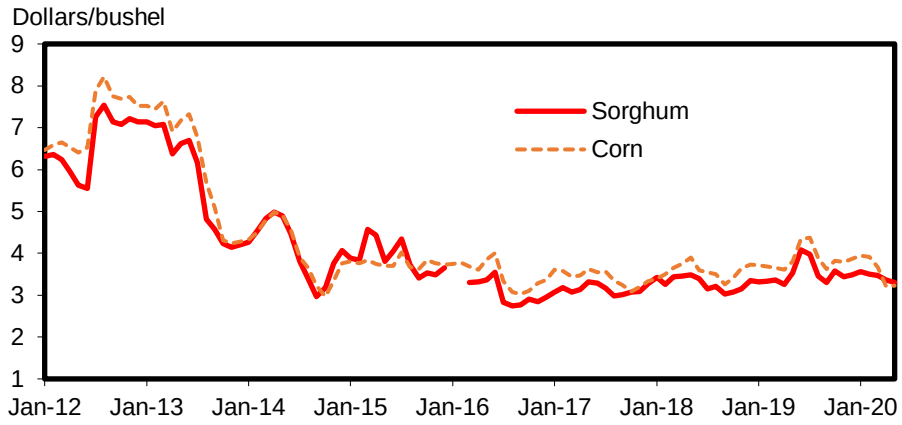
Note: Months for which data were withheld to avoid disclosure are shown as null.
Source: USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, *Grains Crushings and Co-Products*.

Sorghum Use Unchanged in 2019/20

For 2019/20, projected feed and residual use is lowered 5 million bushels due to indicated disappearance to date, while sorghum FSI is raised 5 million on higher than expected sorghum use for ethanol reported in the NASS *Grain Crushings and Co-Products Production*. Total use is projected at 375 million bushels, unchanged.

Figure 10

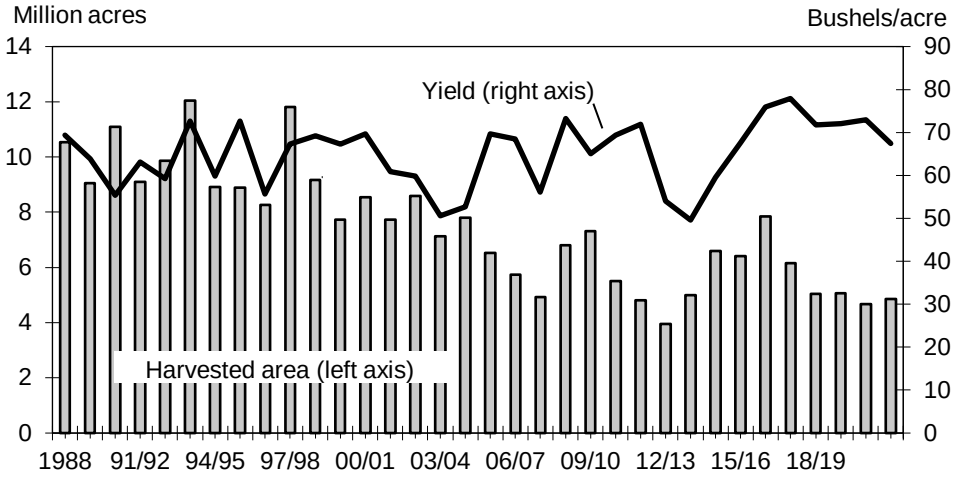
Monthly #2 grain sorghum and yellow corn prices for Kansas City



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

June 1 sorghum stocks, as reported in the NASS *Grain Stocks* report, indicate September-May disappearance of 332.6 million bushels. This is lower than the 5-year average of 401.5 million, but higher than last year's disappearance of 282.4 for the same period.

Figure 11
U.S. sorghum harvested area and yield



Sources: USDA, Economic Research Service with data from USDA, National Agricultural Statistics Service, *Quick Stats* and USDA, World Agricultural Outlook Board*, World Agricultural Supply and Demand Estimates.*

Less Barley Production and Higher Prices Forecast

Barley production is projected at 170.0 million bushels compared with 182.0 last month. This is due to a 0.1 million acre decrease in the area planted and a 0.2 million acre decrease in the forecast area harvested. These decreases are partially offset by a slight bump in yield, now projected at 76.1 bushels per acre. Beginning stocks are also reduced by 12.0 million bushels from 92.0 to 80.0 million bushels based on stocks reported in the June 30 *Grain Stocks* report. These changes result in a total supply of 257.0 million bushels compared to last month's projection of 281.0. Feed use is cut by 15.0 million bushels, from 40.0 to 25.0, in line with the supply reduction. The ending stocks are also projected down month over month to 84.0 million bushels. The forecast season average farm price is up $.15 per bushel to $4.45.

According to the crop progress report for July 5, states which account for 81 percent of barley production in 2019 (Idaho, Minnesota, Montana, North Dakota, and Washington) reported a barley headed rate of 60 percent compared to 48 percent the same time last year. This suggests that the crop is developing in line with the historical average, but slightly ahead of last year's progress. The crop condition is in line with previous years conditions and will be contingent on the weather throughout the rest of the growing season.

Fewer Acres for Oats and Less Production Leads to Higher Prices in 2020/21

Like barley, oat area is projected down 0.1 million acres for both the area planted and area harvested. Area harvested is now forecast at 1.0 million acres. Also reducing production is a forecast decrease in yield now projected to be 65.2 bushels per acre. However, total supply remains virtually unchanged month over month at 198.0 million bushels due to an increase in the beginning stocks of 8.0 million bushels, now estimated to be 37.0 million bushels based on the June 30 *Grain Stocks* report. No use changes our forecast this month leaving total use unchanged at 156.0 million bushels. The season average farm price is up $.20 per bushel this month and is now forecast a $2.70 per bushel.

The July crop progress report for the nine states which accounted for 71 percent of the outcrop in 2019 (Iowa, Minnesota, Nebraska, North Dakota, Ohio, Pennsylvania, South Dakota, Texas, and Wisconsin) reported an 85 percent oat headed rate as of 5 July. This is in line with the five-year average from 2015 to 2019 of 86 percent for this week. This is above last year's percentage of 69 percent, suggesting that the crop is developing slightly ahead of last year. The crop condition is in line with previous years conditions and will be contingent on the weather throughout the rest of the growing season.

International

Olga Liefert

United States Drives Global Production Down; Foreign Coarse Grain Output Changes are Fractional

Foreign coarse grain production (global minus U.S. output) is virtually unchanged this month at a projected 1,064.1 million tons in 2020/21, while the ***United States*** coarse grain output took a hit with a downward area revision, mostly for corn. The largest offsetting changes this month are higher corn output projected for ***Russia*** along with lower coarse grain production for ***Canada*** (lower corn output partly offset by higher barley and rye) and the ***European Union (EU)*** (lower barley production with a slight offset by increased rye output).

Corn dominates global coarse grain output with about an 80 percent share, and leading corn producers and exporters are located in both the southern and northern hemispheres, such that their seasonal output largely complements each other over the course of a full year. Currently, corn in the southern hemisphere is being harvested for the 2019/20 crop year, with yields being mostly set for some time, while planting for the 2020/21 crop year is still far down the road. In the northern hemisphere, the 2020/21 crop was recently planted and corn in some countries is beginning to enter the reproductive stage of development. The probability of weather conditions to affect yields there is high, and for most of the northern hemisphere countries, the month of July will be decisive. Therefore, all changes to corn production this month are based solely on revised area estimates.

Barley is the second-largest coarse grain crop and is usually harvested at the same time or earlier than wheat. In the northern hemisphere, the crop is currently mostly going through its reproductive period, so that models based on precipitation and temperature can provide preliminary forecasts. Whereas barley is mainly cultivated in the northern hemisphere, some of it is being grown in the southern hemisphere where it is currently being planted.

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 corn and barley production changes, see maps A and B.

Table A1 - World and U.S. coarse grain production at a glance (2020/21), July 2020					
	Region or country	Production	Change from previous month[1]	YoY Change[2]	Comments
		Million tons			
Coarse grain production (total)					
↓	World	1,458.4	-26.2	+51.6	
	Foreign	1,064.1	Small change	+16.6	Changes are made for several countries and commodities. See table A2.
↓	United States	394.3	-26.2	+35.0	See section on U.S. domestic output.
World production of coarse grains by type of grain					
			CORN		
↓	World	1,163.2	-25.3	+49.6	
	Foreign	782.2	Small change	+14.5	Higher corn production in Russia and Bolivia is fully offset by a reduction for Canada. See table A2.
↓	United States	381.0	-25.3	+35.1	See section on U.S. domestic output.
			BARLEY		
↓	World	154.7	-0.6	-1.6	
↓	Foreign	151.0	-0.3	-1.6	Changes are made for Canada, EU, and Morocco. See table A2.
↓	United States	3.7	-0.3	Small change	See section on U.S. domestic output.
			SORGHUM		
↓	World	59.3	-0.5	+1.5	
↑	Foreign	51.0	+0.1	+1.9	A small increase projected for Bolivia. See table A2.
↓	United States	8.3	-0.6	-0.4	See section on U.S. domestic output.
			OATS		
↓	World	24.7	-0.1	+2.2	
	Foreign	23.7	Small change	+2.0	
↓	United States	1.0	-0.1	+0.2	See section on U.S. domestic output.
			RYE		
↑	World	13.1	+0.3	+1.0	
↑	Foreign	12.8	+0.3	+1.0	Higher projected output for Canada and the EU. See table A2.
	United States	0.3	Small upward change	Small change	See section on U.S. domestic output.

[1]Changes from previous month. Fractional changes are made for mixed grain; no production changes are made for millet this month.

[2] YoY: year over year changes. **For changes and notes for foreign countries, by country, see table A2.**

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

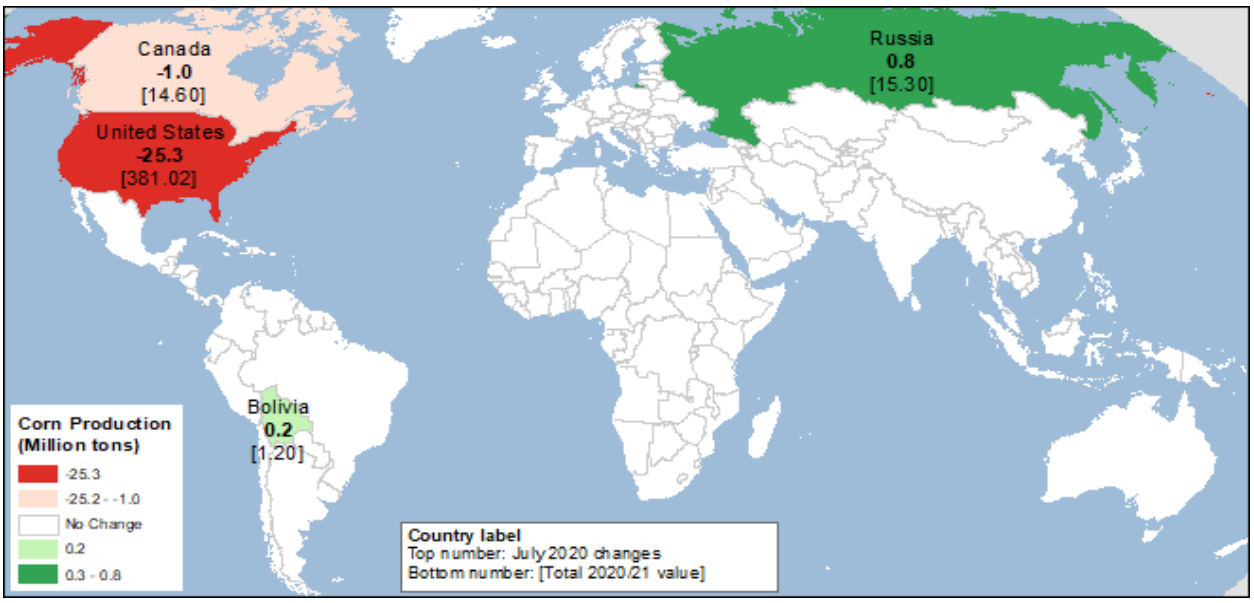
Table A2 - Coarse grain production changes by country at a glance, July 2020						
	Type of crop	Crop year	Production	Change in forecast[1]	YoY[2] change	Comments
			Million tons			
Coarse grain production changes by country and by type of grain for 2020/21						
			RUSSIA			
↑	**Corn**	*Oct-Sep*	**15.3**	**+0.8**	**+1.0**	Higher officially reported planted corn area boosts output.
			CANADA			
↓	**Corn**	*Sep-Aug*	**14.6**	**-1.0**	**+1.2**	Revised corn area is based on the June Field Crop Survey, published by Statistics Canada.
↑	**Barley**	*Aug-July*	**10.1**	**+0.4**	**-0.3**	Revised barley area is based on the June Field Crop Survey, published by Statistics Canada.
↑	**Rye**	*Aug-July*	**0.5**	**+0.2**	**+0.2**	Revised rye area is based on the June Field Crop Survey, published by Statistics Canada.
			BOLIVIA			
↑	**Barley**	*Jul-Jun*	**1.2**	**+0.2**	**Small change**	A revision based on official data of corn harvest results for several previous years supports an increase in area, while weather conditions suggest average yields.
↑	**Sorghum**	*Oct-Sep*	**1.0**	**+0.1**	**Small change**	Higher area is expected based on the previous year revision.
			EUROPEAN UNION (EU)			
↓	**Barley**	*Jul-Jun*	**63.6**	**-0.6**	**+0.6**	June dryness is expected to limit barley yields in Spain, one of the three largest producers of barley in the EU.
↑	**Rye**	*Jul-Jun*	**8.7**	**+0.1**	**+0.2**	Improved conditions in several countries support higher yield.
			MOROCCO			
↓	**Barley**	*Jul-Jun*	**0.6**	**-0.2**	**-0.6**	After several months of dry weather, yields for Moroccan barley (and wheat) were affected and are projected to be among the lowest ever, with the barley crop the lowest in 20 years, justifying the government to suspend import duties until the end of 2020.

[1]Changes from previous month. Smaller changes for coarse grain output are made for several countries, see maps A and B for changes in ***corn*** and ***barley***.

[2] YoY: year over year changes.

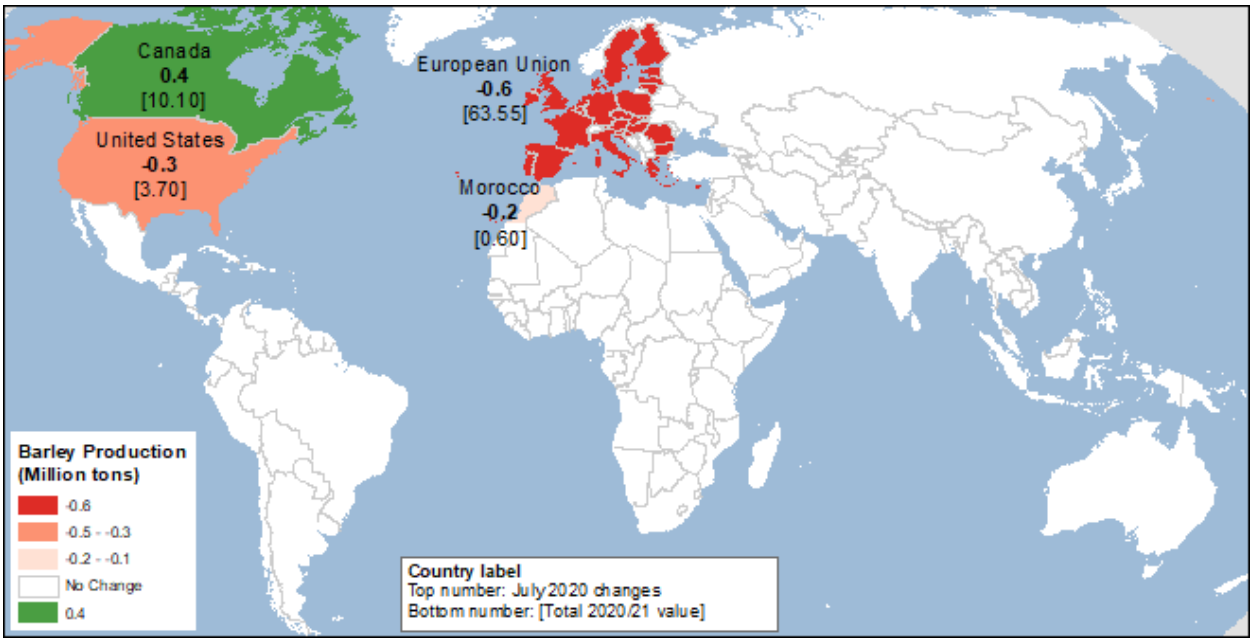
Source: USDA, Foreign Agricultural Service, Production, Supply and Distribution online database.

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



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

Map B – Barley production changes for 2020/21, July 2020



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

China Drives Foreign Coarse Grain Use Higher, Bringing Stocks Down

The revisions to 2019/20 trade and consumption reduce 2020/21 **foreign coarse grain beginning stocks** by 5.5 million tons, whereas in the United States, beginning stocks are up due to further decline in the estimates for 2019/20 domestic consumption. More than half of the decline in stocks is for ***China.*** Chinese coarse grain feed consumption in 2019/20 is projected 3.1 million tons higher and includes an additional 3.0 million tons of corn and 0.3 million tons of sorghum, though 0.2 million tons lower barley for feeding. The increase in feeding reflects the compelling evidence of higher than expected growth of soybean equivalent protein consumption and escalating domestic corn prices, both resulting from the apparent reversal of the initial decline in meat consumption observed in China after the outbreak of COVID-19 and the spread of the African swine fever (ASF). Competitive relative prices for corn and barley limited wheat feeding while encouraging higher corn and barley feed use in the ***EU***, as well as in ***Thailand***, ***Egypt***, and several other countries.

Despite reduced supplies (lower beginning stocks and virtually unchanged output), projected **foreign coarse grain use** in 2020/21 is marginally up by 1.6 million tons. (With a 5.2-million-ton decline in use projected this month for the ***United States***, global disappearance is projected 3.6 million lower.) Projected foreign feed use is up 3.3 million tons this month. Stronger corn feed use is expected to continue in ***China*** (up 1.0 million tons), approaching the pace of growth seen before ASF and COVID-19. For ***Russia***, corn feeing is up 0.8 million tons, equal to this month's production increase. It is expected that additional corn in Russia will be fed rather than exported, as the increase in area is reported to be in the Central District of Russia—which has an expanding livestock (pork and poultry) industry rather than in the Southern district that is close to ports and export infrastructure.

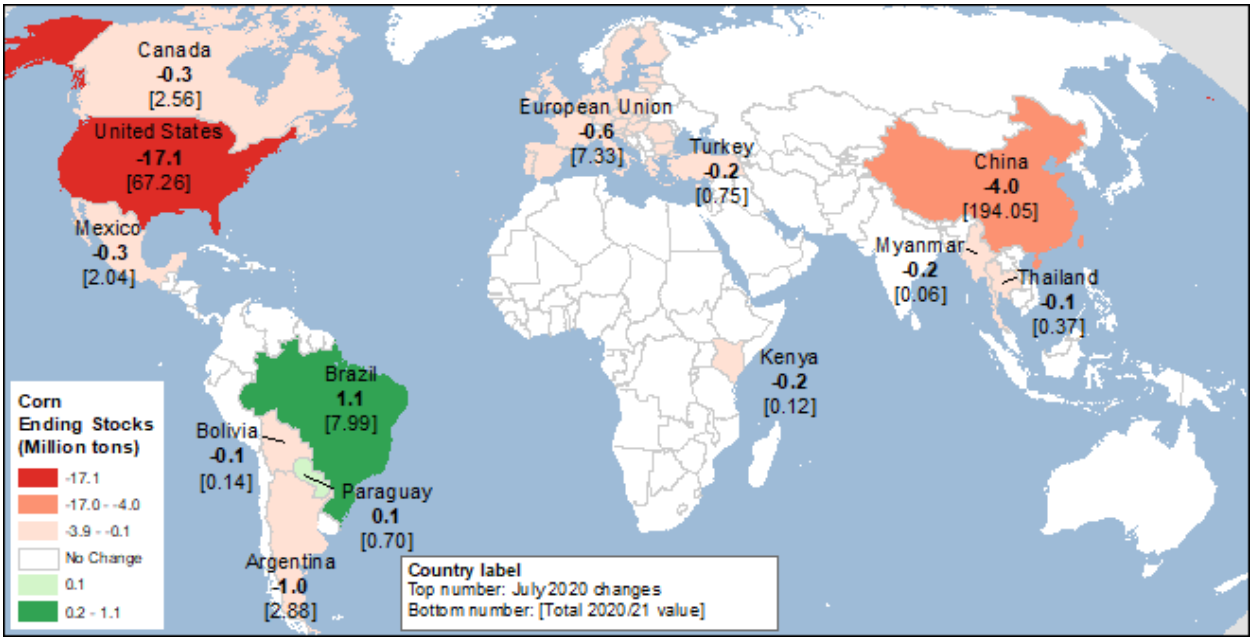
Higher corn and barley feed use is also projected for **Thailand**, which is reported to import feed barley from Australia (usually the country imports malting barley for beer production). Higher corn feeding is projected in ***Algeria***, and more barley is expected to be fed in ***Tunisia*** (both changes being supported by higher imports). Other revisions in feed use this month reflect changes in production and trade for specific countries and are largely offsetting.

Lower 2020/21 coarse grain supplies combine with higher use to reduce projected **foreign ending stocks**, 7.1 million tons to 276.3 million. Foreign corn stocks are down 5.7 million tons and foreign barley stocks are reduced by 1.3 million tons, with much smaller changes in other coarse grains. The largest change in foreign stocks is a 4.0-million-ton reduction for China,

reflecting higher feed use two years in a row (see above). For the ***EU***, higher 2019/20 corn and barley consumption and exports, as well as lower projected barley output for 2020/21, limit coarse grain ending stocks in the region, down 1.7 million tons. Two other large changes in foreign ending corn stocks this month are roughly offsetting adjustments for **Argentina** and **Brazil**. Corn stocks in Argentina are projected 1.0 million tons lower from a boost to its 2019/20 corn exports, while stocks in Brazil are projected higher 1.1 million tons this month, because of reduced 2019/20 exports. Other smaller changes are made for a number of countries.

For a visual display of the changes in corn ending stocks, see map C.

Map C – Corn ending stocks changes for 2020/21, July 2020



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

World Coarse Grain Trade Slightly Up This Month

The July forecast for world **coarse grain exports** for the 2020/21 October-September international trade year (TY) is slightly up this month at 218.8 million tons, with an increase of 0.4 million and several offsetting changes across crops and countries. **Corn TY exports** are down by less than 0.1 million tons, with just two small almost offsetting changes of 0.2 million tons for the ***EU*** and ***Burma***. **Corn TY imports** for 2020/21 are projected 0.5 million tons higher for ***Canada***, in line with production changes, while down 0.5 million tons for ***Kenya*** with lower-than-expected purchases from ***Tanzania*** that are projected to roll over the next year. Corn imports are also adjusted up 0.2 million tons for ***Algeria*** and up 0.1 million tons for ***Thailand***.

Barley TY exports are up 0.4 million tons this month, with the only change for ***Canada*** reflecting higher projected barley output this month. With its lowest barley production in 20 years, and as the country's government suspended all grain import duties, barley imports by ***Morocco*** are projected 0.3 million tons higher reaching 1.5 million tons, 50 percent higher than the previous record. Barley imports are also adjusted 0.1 million tons up for ***Tunisia*** based on the current pace of trade.

Changes in projected **corn exports** for the **2019/20** international TY, that will end in September 2020, involve two nearly offsetting changes. ***Brazilian*** corn exports have been waning for several months now, with April-June exports almost 85 percent lower than a year ago, as the country stretched its infrastructure by exporting 50 percent more soybeans to China compared to last year. Although Brazilian corn exports are expected to substantially escalate in July as the second-crop corn is harvested, the projected exports for the year are trimmed by 2.0 million tons to reach 35.0 million. In contrast, the brisk pace of ***Argentine*** corn exports, with high volumes exported in April-June, supports this month's increase. Argentina is expected to export 2.0 million tons more corn and push its record for the October-September trade year further to 38.0 million. Based on trade data, corn exports for the ***EU*** are also projected 0.5 million tons higher to reach 5.0 million, the highest exports since 1971.

U.S. corn exports in ***2019/20*** are projected to reach 47.0 million tons, unchanged from last month. A continued current reduction in domestic use of corn that freed up a higher volume of low-priced corn gave the United States the opportunity to export more than five million tons in April and May and about 5.0 million tons in June. U.S. corn exports are expected to slow down in coming months just as competitors—corn producers in the southern hemisphere and Ukraine where crops will soon become readily available—enter the market. This leaves U.S. corn exports on track to reach the forecast.

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