Feed Outlook

Corn Crop Reduced by 379 Million Bushels

As a result of a re-survey of harvested corn acres in Iowa, the National Agricultural Statistics Service’s (NASS) September Crop Production drastically lowered expectations for the 2020/21 corn crop. U.S. production is lowered 379 million bushels, resulting in a U.S. crop of 14.9 billion bushels. Yield is lowered 3.3 bushels per acre to 178.5 bushels. Feed and residual and food, seed and industrial (FSI) use are each reduced by 100 million bushels, while exports are raised 100 million. The projected price is raised $0.40 per bushel this month to $3.50.

A shift in corn exports is projected for Ukraine, the EU (mainly by Romania), and Russia in favor of the United States and Brazil. For the United States, corn exports projections for 2020/21 got a boost, despite lower supplies, based on price-competitiveness going forward, reduced supplies in competitor countries, and high outstanding sales. U.S exports are reduced for 2019/20, reflecting a slowdown in sales in August.

While coarse grain output is reduced for the United States, foreign coarse grain production is projected 5.5 million tons higher. Much of the increase is for Brazilian corn and Russian barley. Partly offsetting corn are reductions for the European Union (EU), Ukrainian, Canadian, and Russian. The Chinese hog industry continues to recover, thereby expanding its demand for corn. A torrid pace of meat exports to China boosts Brazilian livestock sector demand for corn animal feed. Global and foreign corn stocks are reduced, although foreign corn stocks less China are slightly up.
Domestic Outlook

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Projected 2020/21 Corn Crop Slashed Due to Derecho Damage in Iowa

The 2020/21 U.S. corn crop is projected 378.6 million bushels lower due to damage caused by the severe thunderstorm derecho, which tore through Iowa on August 10. A re-survey of harvested acres by NASS to access conditions as of September resulted in a 550 million-acre reduction in projected corn harvested acres to 83.5 million acres. Yields are lowered 11 bushels per acre to 191.0 bushels. The production forecast for the largest corn producing State in the nation is lowered 254 million bushels to 2.483 million, the lowest since 2009. In addition to wind damage, extremely dry August weather affected large parts of the southern corn belt. This includes Iowa, where the drought is the worst since September 2013 and has forced producers to harvest corn earlier than optimal.

![Figure 1](image)

Nationally, the National Agricultural Statistics Service (NASS) *Crop Production* projects 2020/21 corn yields at 178.5 bushels per acre, 3.3 bushels below last month’s forecast. States in the upper Midwest (Minnesota, North Dakota, South Dakota, and Wisconsin) saw yield increases,
while most other major corn-producing States have declining yields. Production is projected lowered 378.6 million bushels from last month to 14,900 million bushels.

Figure 2

**U.S. corn harvested area and yield**

<table>
<thead>
<tr>
<th>Harvested area (left axis)</th>
<th>Yield (right axis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Million acres</td>
<td>Bushels/acre</td>
</tr>
</tbody>
</table>

Note: Marketing year 2019/20 and 2020/21 are projected.

With carryin up 25 million bushels on lower 2019/20 use (mostly due to a lower export forecast), total supplies are projected at 17,178 million bushels, 353.6 million below last month. With less corn to go around, use is projected down 100 million bushels. Feed and residual are lowered based on the smaller crop and higher expected prices. Corn for ethanol is lowered on reduced prospects for a revival of gasoline consumption in 2020/21. Exports are projected up 100 million, based on opportunities due to reduced supplies in competitor producers. As a result, total disappearance is lowered 100 million bushels to 14,675 million bushels and ending stocks are lowered 253.6 million bushels to 2,502.6 million.
Corn Season Average Price Gets a 40-Cent Boost

The tight balance sheet lifts the projected corn season average price by $0.40 per bushel to $3.50, as the stocks-to-use ratio falls from 18.7 to 17.1.

Grain consuming animal units (GCAUs) are projected 0.4 million units lower this month at 102.1 million, as higher cattle on feed is more than offset by lower broiler numbers.
Feed and Residual for the Four Feed Grains and Wheat
Projected Lower

Feed and residual for the four feed grains (corn, sorghum, barley, and oats) and wheat is projected lower for 2020/21 at 154.6 million tons, down from 157.1 million tons. The smaller crop is the main cause for the decline.

Figure 5
U.S. sorghum for ethanol use by month
Million bushels

Note: Months for which data were withheld to avoid disclosure are shown as null.

Brazilian Tariff Rate Quota (TRQ) on U.S. Ethanol Imports

The United States exported 1.5 billion gallons of ethanol, valued at $2.4 billion, in 2019. This was a 13 percent decline from the record 1.7 billion gallons set in 2018, and the first annual volume decline since 2013. Export value dropped a similar percentage with little change in prices. With no change in exportable supply in 2019, weaker Brazilian demand and higher China tariffs accounted for most of the 2019 export decline.
Brazil is the main market for U.S. ethanol exports. Under the tariff rate quota currently in place, Brazil allows duty-free entry of 750 million liters (200 million gallons) of ethanol from the United States. A 20 percent tariff is applied to volumes above that level. The TRQ is set to expire in September and Brazilian officials have suggested it should be extended, to the detriment of U.S. export competitiveness. Shipments from the U.S. to Brazil go generally to the northeast part of the country, where seasonal shortages of ethanol often occur. As of September 14, Brazil extended the tariff free regime for 90 days, limited to 187.5 million liters of U.S. ethanol imports.

At the same time, Brazilian shipments of ethanol to California have surged. Brazilian ethanol meets California’s low carbon fuel standard and enters the U.S. duty free. During the first half of 2020, ethanol imports from Brazil reached 176 million liters, slightly ahead of the same period in 2019, but 30 times higher than the same period in 2018.
Larger Stocks and Higher Prices Projected in 2020/21 for Sorghum

Sorghum production is lowered 13 million bushels to 358 million on a lower yield forecast. Total supply is down month over month by 8 million bushels, due to a partly offsetting increase of 5.0 million bushels in beginning stocks. Sorghum, commonly used as an alternative to corn, is projected to have an average farm price for the season of $3.50 per bushel. This price is up $.40 per bushel over prior estimates and equal to the season-average price received for corn, based on expectations of strong demand from China.
Crop progress, as reported by NASS in the September 8 crop progress report, is in line with the five-year average for coloring, and slightly ahead of last year. The six-states surveyed include Colorado, Kansas, Nebraska, Oklahoma, South Dakota, and Texas—which account for 100% of the 2019 sorghum acres. When it comes to the percentage of the crop that is mature, NASS reports that 29% of the crop, on average across the six states as of September 6, is mature. Texas has already harvested 73% of their sorghum acres and Oklahoma has harvested 1%. This results in 21% of the total sorghum acreage for 2020/21 being harvested as of September 6.
Barley harvest slightly ahead of last year

NASS reports in their September 8th Crop Progress Report that 85% of the barley harvest is complete as of September 6. This takes into consideration the five states which accounted for 85% of the 2019 barley acreage: Idaho, Minnesota, Montana, North Dakota, and Washington. NASS reported that 79% of the crop was harvested last year at this time, with 90% being harvested in the five-year average, suggesting that 2020 production is ahead of last year and slightly behind the average.
Oat Harvest Slightly Ahead of Last Year, in Line with Five-Year Average

NASS estimates that 96% of the oat harvested acres in the nine states surveyed (Iowa, Minnesota, Nebraska, North Dakota, Ohio, Pennsylvania, South Dakota, Texas, and Wisconsin) have been harvested. These nine states represent 74% of the 2019 oat acreage. Last year at this time, NASS reported 88% being harvested, while the five-year average for the states is 94%. This suggests that harvesting is marginally ahead of last year and the average.
International Outlook

Olga Liefert

United States Drives Coarse Grain Global Production Down while Foreign Output Projected Higher

Global coarse grain output in 2020/21 is projected 4.4 million tons lower this month, driven by an almost 10-million-ton reduction for the U.S. forecast, with its corn production prospects declining 9.6 million tons and sorghum 0.3 million tons. World corn production is projected down 8.7 million tons to 1,162.4 million, driven mostly by a reduction for the United States. Output of barley and oats are up this month, while sorghum and rye are slightly reduced.

Foreign coarse grain production is projected 5.5 million tons higher this month. Much of the increase is for Brazilian corn and Russian barley, while smaller growth is projected for Australian barley and sorghum, as well as for Indian and Nigerian corn. Partly offsetting are reductions for the European Union (EU), Ukrainian, Canadian, and Russian corn.

For 2019/20 projection, coarse grain output is up 0.8 million tons. This increase is mainly on account of higher Brazilian corn output—but also because of upward revisions for Vietnam, Uruguay, Canada, and Burma, with partly offsetting changes for Thailand and Chile.

Record Corn Prices Incentivize Planting in Brazil

The largest change in coarse grain output this month comes from a boost to corn area and output in Brazil for both 2020/21 and 2019/20. Area for corn expansion is virtually unlimited in the Center-West region of Brazil, and producer prices are a good predictor for area prospects. Brazil grows corn in two distinct areas: 1) the Southern and Southeastern regions, where first crop – winter corn – can be grown, and 2) the Center-West agricultural frontier (Cerrados ecological zone) where land is abundant and less expensive. The adaptation of technologies for acidic soils has made the agricultural development of the vast amount of land in Cerrados, once regarded as an unproductive region, well suited to high-yielding second-crop corn production. Since the beginning of the 2000s, corn area has been expanding in Cerrados, while also shifting from the formerly traditional first-crop corn in the South-Southeast regions. While total corn area in Brazil has increased by about 60 percent since 2001, second-crop corn area has expanded 5-fold (though from a low base of less than 3 million hectares) and is now more than three times larger than the first-crop corn planting.
Corn domestic producer (nominal) prices for many states in Brazil are currently the highest in 5 years (see figure 10), while real prices are the highest since 2016. According to data from Brazil’s National Supply Company (CONAB), second-crop corn area went up by almost 15 percent in 2016. For the upcoming 2020/21, second-crop corn area planting is projected to expand moderately relative to a year ago. Total corn area is projected up 600 hectares, reaching 19.5 million (more than half of U.S. corn acreage), and production 3.0 million tons higher to reach 110.0 million.

For the current year (2019/20), area is revised up 100 hectares—reflecting new CONAB information—with an additional 1.0 million tons of production to reach 102.0 million. For both 2019/20 and 2020/21, production is projected at successive records.

Figure 11  
**Producer corn prices in Parana, Brazil, are at record-high**

Brazilian Real per bag (60 kilogram)

An increase in projected Brazilian corn output is partly offset by the two major reduction for the **EU** and **Ukraine**. An output reduction for the **EU** this month, down 1.5 million tons to 66.3 million, is largely due to continued deteriorating conditions in **Romania**, where prolonged dryness and high temperatures are projected to limit corn yield prospects. Romania is one of the two largest corn producers and exporters in the EU (along with France), with output projected at 11.6 million tons, down 1.3 million month-over-month. Corn production is also reduced for **Germany** and **Bulgaria**.

Another important reduction in corn production this month is for **Ukraine**, down 1.0-million-tons, though still a record at 38.5 million. Ukrainian corn grows primarily in the north-central part of the country, although some is cultivated in the south-west. While its southern and south-western
corn areas were affected by dryness already in August, precipitation in the major corn areas during most of the reproductive period (July through early August) was favorable. However, in the second part of August, in the late filling stage of the corn crop, the weather turned dry—although the heat stayed mostly to the west and south of the major corn areas. The Vegetation Health Index (VHI)—which indicates yield potential—dropped markedly from the excellent level at the beginning of August to a lower reading in September, suggesting yield reduction.

Although the Ukrainian corn yield is currently projected slightly lower than a year ago, given higher corn area, production for 2020/21 is expected to exceed last year’s record.

Corn output is also projected lower for Russia this month, down 0.3 million tons to 15.0 million. Corn is grown in two large areas of the country—the Southern district that borders southeastern part of Ukraine and is an exports hub for the country, and the Central district located further to the north. The Southern district was hot and dry throughout August, but conditions in the Central district were favorable and its output is expected to partly offset the losses in the south. Canadian corn prospects are slightly reduced by 0.3 million tons to 14.0 million, reflecting dryness in portions of Ontario and Quebec.

Other corn production changes include a 0.5-million-ton increase for each, Nigeria and India. Nigeria enjoyed excellent precipitation in its major corn areas during the reproductive period of the crop, and India had higher projected area (reflecting official estimates). Smaller changes are made for several countries. For a visual display of production changes for corn, see map A.

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

Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution online database.
Barley Output Boosted in Russia and the EU

The change in the prospects for the largest coarse grains this month is for barley, up 4.2 million tons to 157.0 million, making it the biggest crop since 1994/95. In Russia, barley output is projected 3.0 million tons higher to reach 20.3 million based on harvest reports, with about 90 percent of the crop already harvested and yields turning out higher than expected. Barley production is also boosted for the EU, up 0.8 million tons to 63.3 million, mainly in Spain with higher area and excellent yields. With higher projected area, mainly in the eastern state of New South Wales that suffered more than other parts of the country from a drought a year ago, the Australian barley crop is also expected to increase by 0.3 million tons to 10.5 million, and 1.5 million higher than last year.

For a visual display of production changes in barley, see map B below.

Corn Feeding Projected Higher for China and Brazil

The revisions to individual countries’ 2019/20 supply and demand reduce 2020/21 coarse grain foreign beginning stocks by 4.2 million tons, partly offsetting an increase in output. Despite a resulting modest increase in supplies, foreign coarse grain use is boosted by 8.4 million tons this month to 1,460.7 million. Foreign corn use is projected 5.0 million tons higher (mainly in
China and Brazil) and barley use is boosted 3.2 million tons this month (largely for Russia). Small increases are projected for sorghum and oats, and with a fractional reduction for rye use.

Corn feed use for China is projected larger for the second consecutive year – up 3.0 million tons for 2019/20 and up 2.0 million tons for 2020/21, a 1.6 percent increase year-over-year. The robust demand for feed grains is coming from the quickly recovering hog industry recently affected by the African Swine Fever (ASF) and the COVID-19-related reduction in consumer demand. Grains such as corn, barley, wheat, sorghum, and oats have traditionally supplied energy to animal feedstock—while protein has come from meals produced from oilseeds such as soybeans. Those two components of feeding are in general highly correlated. There are current indications of higher than expected SME (soybean meal equivalent) protein consumption, suggesting augmented grain (corn) feeding.

In Brazil, corn feeding is increased for both 2019/20 and 2020/21 by 1.0 and 2.0 million tons, respectively. Compared to last year, Brazilian sales of beef, pork, and poultry to China more than doubled and are driving its livestock sector expansion—further supporting stronger demand for feeding. Higher SME protein consumption supports this increase.

A reduction in corn imports for 2019/20—and lower projected output in 2020/21 in the EU this month—combine to reduce corn feeding in both years, down 0.8 and 0.5 million tons, respectively. With higher barley availability in the EU, this month’s decline in corn feeding for 2020/21 is fully offset by barley. Given limited supplies of wheat this year in the EU, total corn feeding is still 10 percent (or roughly 6 million tons) larger than last year, as relative prices favor corn.

Russian coarse grain feeding is projected 0.7 million higher this month. With a boost to barley production in Russia this month, the country’s barley feeding is projected 0.5 million tons higher. Although Russian total corn output is reduced, the Central district—which is the part of the country that produces about half of Russia’s corn output and mostly feeds (rather than exports) its production—Is expected to have a decent harvest and feed an additional 0.2 million tons locally.

Barley feeding is also projected up 0.5 million tons for Saudi Arabia, based on increased imports from Russia.

Smaller changes in feed use are made for a number of countries; for a visual display of feed use changes in barley, see map C below.
Global corn stocks took a 3.4 percent reduction this month. This reduction is driven by a 6.4 million ton, or 9.1 percent, decline for the United States. Foreign corn stocks (global minus the U.S.) are projected 4.2 million tons lower to 243.2 million, a 1.7-percent drop. However, higher projected use in China pushed its stocks down 5.7 million tons to 117.7 million (or 4.6 percent). This leaves foreign corn stocks less China with a small increase of 0.8 million tons, up 1.4 percent, given their comparatively small size of 54.2 million tons. Changes for corn ending stocks for individual foreign countries (excluding China) are made for Nigeria, Vietnam, Thailand, India, among others—all changes being under 0.25 million tons. Changes in ending stocks for other coarse grains are small.

Price Competitiveness and Reduced Supplies in Competitor Countries Boost U.S. Corn Exports

The September forecast for world corn exports for the international trade year (October-September) 2020/21 is 0.3 million tons higher than in August and 9.8 million tons above last year’s trade. A shift in exports is projected from Ukraine, the EU (mainly from Romania) and Russia (with a production cut in the Southern export hub of the country) in favor of the United...
States and Brazil. With a hefty boost in corn supplies, Brazilian exports are projected 1.0-million-ton higher and are capturing a bigger share of the record global corn trade.

Despite a 2-percent-lower projection for the 2020/21 corn crop, U.S. exports are boosted 1.5 million tons this month to reach 58.0 million for the October-September international trade year. For the local September-August marketing year, the increase is even larger—up 100 million bushels to 2,325 million, or about 2.5 million tons higher to 59.1 million—with the assumption that in the current September of 2020, the United States will export more corn than in September of 2021. The reasons behind these increases are the price-competitiveness of U.S. corn going forward through January 2021, reduced supplies in competitor countries, and record-high outstanding sales.

On September 3, 2020, outstanding sales for 2020/21 were at the historical high of 18.6 million tons, up from 6.8 million tons a year ago. 8.8 million tons of sales are booked for China, an amount that exceeds the existing Chinese corn tariff-rate quota (TRQ) of 7.2 million. Neither China’s National Development and Reform Commission nor any other Chinese government entity has made any public statements that would indicate additional corn import quota has been allocated. Assuming current policy in place, the USDA forecast for Chinese corn imports is expected to remain unchanged until we observe a policy change or shipment data (as opposed to sales) that indicate China’s intentions to exceed its WTO committed level.

Typically, outstanding sales at the start of the marketing year are a decent predictor for the first several months of exports. However, given that record-large outstanding sales to China are on the books for 2020/21, but not yet realized, the total outstanding sales less some of them booked for China look more like an average for a reasonably good year.

For a visual display of the changes in corn trade year exports, see map D below.
The 2019/20 October-September trade year is in its final month. For many countries, enough data are available to fine tune forecast trade, which is now projected slightly lower, down 0.3 million tons to 175.2 million. The pace of EU corn imports has been slow in recent months. This slowdown is shown by EU customs data, reducing 2019/20 imports 1.0 million tons to 19.5 million, the lowest in three years. Two other sizeable trade reductions are for Iran and Turkey. Both Iran and Turkey’s trade reductions are down 0.5 million tons, based on the pace of shipments from Brazil to Iran and from Ukraine and Romania into Turkey. Partly offsetting are higher corn imports forecasts for Vietnam, Venezuela, Chile and Canada, each boosted in the range of 0.2-0.5 million tons.

Trade year corn exports for 2019/20 are increased 0.5 million tons for Argentina to 38.5 million. Exports are reduced 0.5 million for Ukraine to 30.5 million, with small increases for Mexico and Burma.

U.S. export prospects for the 2019/20 October-September trade year are reduced 0.5 million tons to 47.0 million tons, based on the pace of recent shipments. Census data for October 2019 through July 2020 reached 38.5 million tons—and August 2020 grain inspections were 3.9 million, lower than expected. Census data are more complete than inspections data, and the August Census is expected to be higher than inspections – a regular discrepancy mainly because of railroad and truck shipments to Mexico and Canada that are by law exempted from...
inspections. Thus, corn shipments of under 4.5-million-tons assumed for September, based on robust outstanding sales, are expected to take exports to the new lower trade-year forecast.

U.S. corn exports for the 2019/20 September-August local marketing year are done, but the Census data for August are not yet available. Based on the adjusted August grain inspections, U.S. corn exports are estimated at 1,765 million bushels, down 30 million this month.

World Barley Trade Projected Higher

World barley trade for the October-September 2020/21 trade year is increased 1.7 million tons this month to a record 27.0 million. EU exports are raised 0.5 million tons to 9.5 million, making the EU by far the largest exporter. Russia is expected to export 50 percent of a hefty increase of 3.0 million tons in barley production, boosting exports 1.5 million tons to 5.1 million.

Australian exports are up 0.2 million tons to 4.4 million, supported by improved production prospects. Iranian and Saudi Arabia's barley import prospects are increased 0.6 and 0.5 million tons, respectively, due to higher Russian barley supplies and the expected increase in price competitiveness of barley.
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