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Feed Outlook

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Global Coarse Grains Production at Record High

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Approved by the
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Feed grain balance sheets for 2016/17 were nearly steady this month, with the most significant change a 5-million-bushel increase in sorghum used to produce ethanol and a corresponding decline in sorghum ending stocks. Season-average prices for corn are forecast 5 cents per bushel higher than last month at \$3.35, and sorghum prices are lowered 5 cents per bushel to \$3.05. The forecast season-average price for oats was raised 5 cents per bushel to \$1.90.

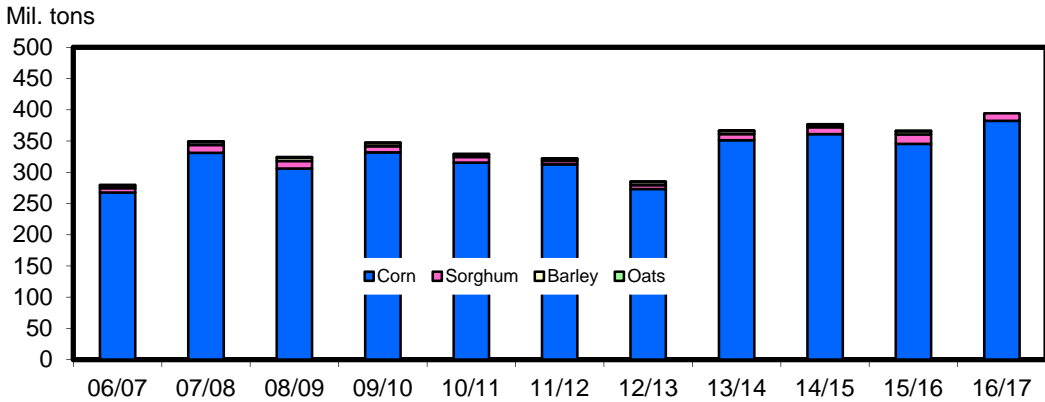
A sharp increase in corn supplies in Argentina and Brazil is expected to intensify the competition facing U.S. exports during the latter part of 2016/17. Despite strong export commitments, U.S. export prospects are unchanged, reflecting increased competitor supplies and the expectation of slower pace of sales when countries of the Southern Hemisphere start exporting new crop. With global consumption projected only marginally higher, global ending stocks rise.

Domestic Outlook

Feed and Residual Use

On a September-August basis, 2016/17 U.S. feed and residual use for the four feed grains plus wheat is projected unchanged from last month's forecast at a total of 157.1 million tons, 18.0 million above the total of 139.2 million for 2015/16. Corn is estimated to account for 91 percent of feed and residual use in 2016/17, compared with 94 percent in 2015/16.

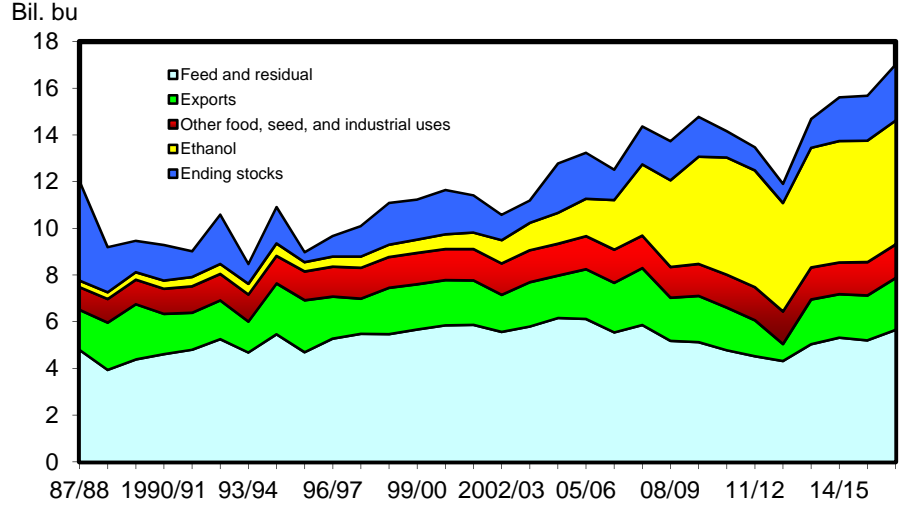
Figure 1
U.S. feed grain production



Source: USDA, World Agricultural Outlook Board, WASDE and National Agricultural Statistics Service, *Crop Production*.

The projected index of grain consuming animal units (GCAU) in 2016/17 is 94.87 million units, down from 95.49 million in November but up from 94.02 million in 2015/16. Feed and residual per GCAU for 2016/17 is estimated at 1.66 million tons, up slightly from last month and up 0.18 million from 2015/16. In the index components, GCAUs are lowered this month for beef and dairy cattle and raised for poultry.

Figure 2
U.S. corn utilization

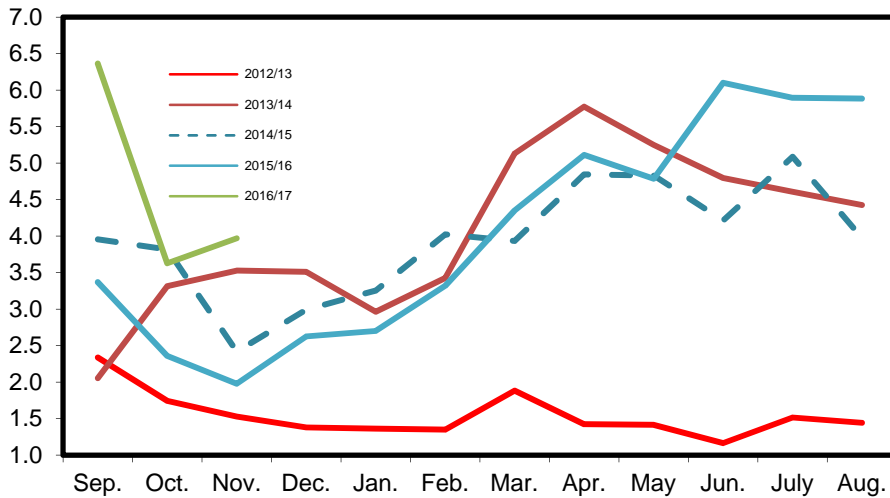


Note: Marketing years. 2015/16 and 2016/17 are projected.
Source: USDA, World Agricultural Outlook Board, WASDE.

Corn Balance Sheet Unchanged

Total corn use is unchanged from last month’s forecast at 12,385 million bushels. Feed and residual use and exports are both unchanged this month at 5,650 million and 2,225 million bushels, respectively, both unchanged from last month.

Figure 3
U.S. corn exports
 Mil. metric tons

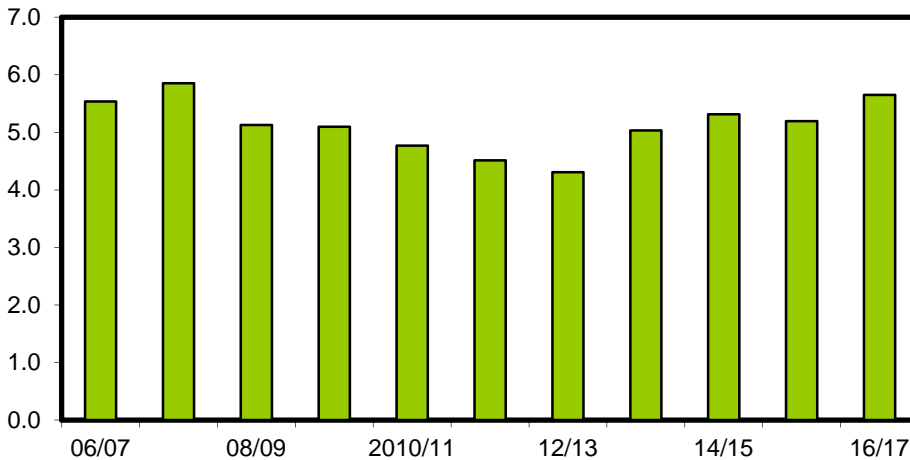


Source: USDC, U.S. Census Bureau, November 2016 *Grain Inspections*.

Corn Price Raised

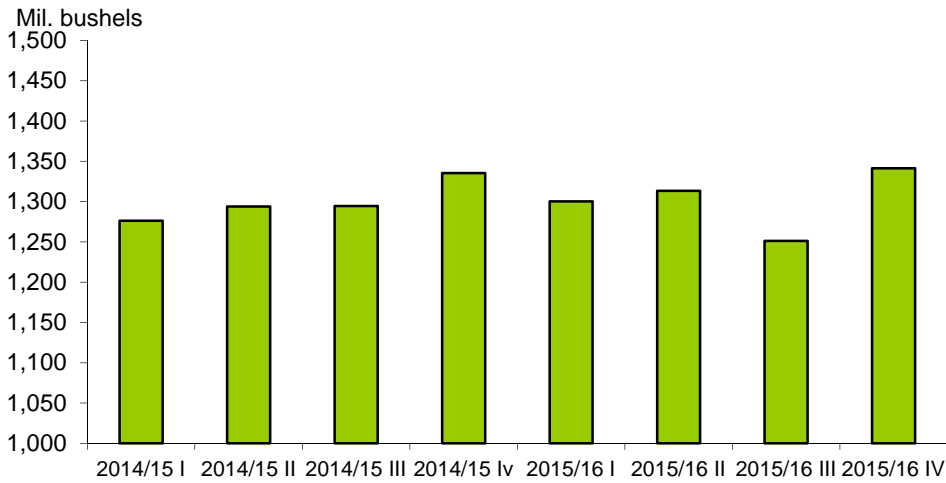
The forecast average price received by producers for 2016/17 is raised 5 cents on both the low and high ends of the range to \$3.05 to \$3.65 per bushel, for a midpoint of \$3.35 per bushel, up 5 cents from the previous forecast. The corn price increase reflects higher sales year-to-date.

Figure 4
U.S. corn feed and residual use
 Billion bushels



Sources: USDA, Economic Research Service, *Feed Grains Database* and USDA, World Agricultural Outlook Board, *WASDE*.

Figure 5
U.S. corn for ethanol use by quarter

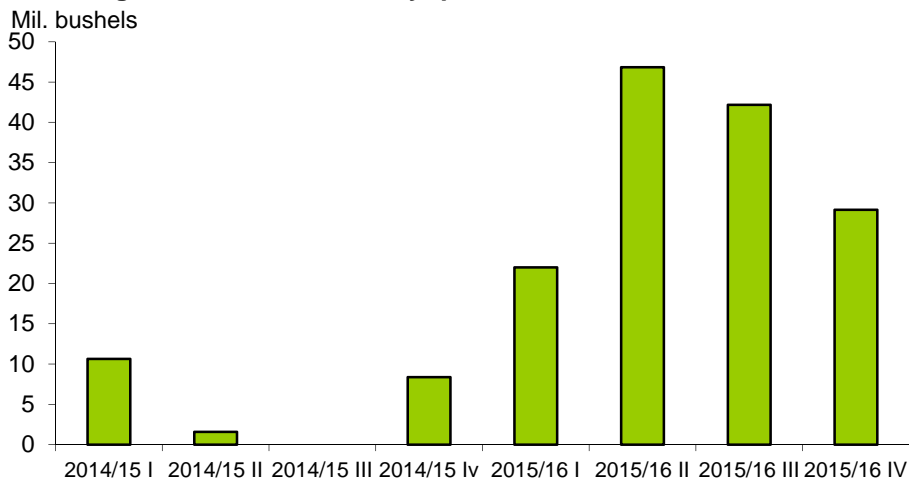


Source: USDA, National Agricultural Statistics Service, *Grains Crushings and By-Products Production*.

Sorghum for Ethanol Use Raised This Month

Sorghum supply for 2016/17 was unchanged this month at 499.8 million bushels, 19 percent below last year’s supply of 619.7 million. On the demand side, the only change is a 5-million-bushel increase in sorghum used to produce ethanol. USDA’s National Agricultural Statistics Service (NASS) *Grains Crushing and Co-Products Productions* report indicated higher-than-expected sorghum used for ethanol in October, resulting in the increase. As a result, 2016/17 sorghum ending stocks are projected 5 million bushels lower at 34.8 million, 2 million below last year.

Figure 6
U.S. sorghum for ethanol use by quarter



Note: 2014/15 II and III contain months for which was withheld to avoid disclosing data for individual operations.

Source: USDA, National Agricultural Statistics Service, *Grains Crushings and By-Products*

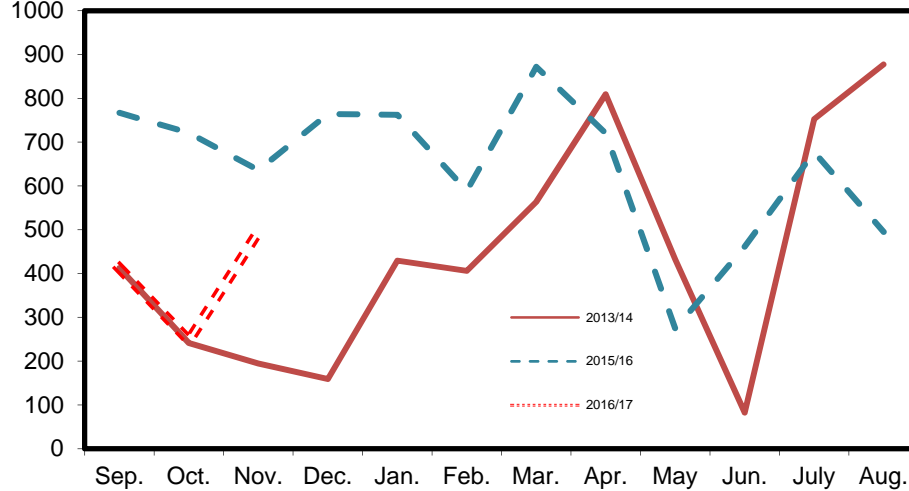
Sorghum Price Lowered

The forecast average price received by producers for 2016/17 is lowered 10 cents on the high end of the range to \$2.80 to \$3.30 per bushel, for a midpoint of \$3.05 per bushel, 5 cents lower than last month's forecast, reflecting lower bids for recent sales out of Western Kansas.

Figure 7

U.S. sorghum exports

1,000 metric tons



Source: USDC, U.S. Census Bureau, November 2016, *Grain Inspections*.

Barley and Oats

Both the barley and oats balance sheets are unchanged this month. The forecast average price received by producers for 2016/17 oats is raised 5 cents on both the low and high ends of the range to \$1.75 to \$2.05 per bushel, for a midpoint of \$1.90 per bushel, up 5 cents from the previous forecast. The price increase reflects recent market activity.

International

Production Is Boosted to a New Record High

Global coarse grain production in 2016/17 is forecast to increase sharply by 9.7 million tons this month to a new record of 1,329.4 million. This is almost 80 million tons higher than in 2015/16 and 23 million above the previous record in 2014/15. The largest increases are for China (based on the latest information released by China's National Bureau of Statistics (NBS)), up 3.7 million tons, and Brazil, up 3.0 million tons (based on both area and yield increases, see below). Coarse grain output is also boosted for Canada, Russia, and Indonesia.

A remarkable increase in Brazil's corn production over the past decade has made the country the world's second largest corn exporter, moving ahead of Argentina since 2011 (with the exception of a disastrous 2015/16 local marketing year). Brazil is a major competitor of the United States in the global corn market, and an increase in its already large second-crop corn is expected to provide stiff competition for U.S. exports late in 2016/17. See the discussion below on Brazil related to this month's changes.

COUNTRY FOCUS - BRAZIL

Second Crop Corn Area Expansion and Rising Yields Continue To Boost Brazilian Exports

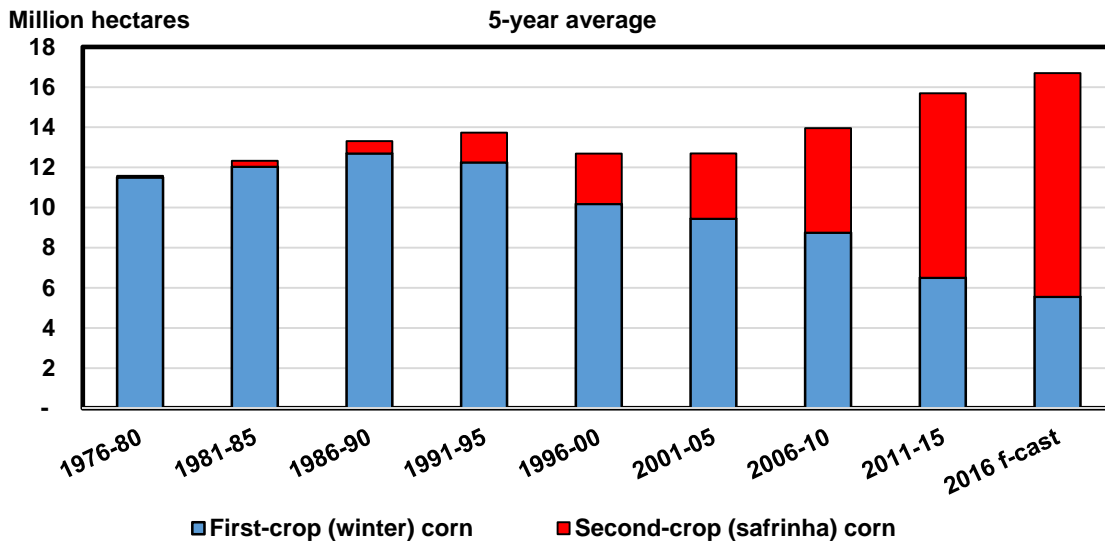
(This piece draws in part from "Brazil's Corn Industry and the Effect on the Seasonal Pattern of U.S. Corn Exports," by Edward Allen and Constanza Valdes, AES-93, ERS, USDA, June 2016.)

Map of Brazilian states (in black) and ports (in red)



Brazil grows corn in two distinct places: the traditional Southern and Southeastern regions (the States of Minas Gerais and Paraná), where first-crop (winter) corn is grown, and the Center-West agricultural frontier (the State of Mato Grosso), where land is abundant and less expensive and the second-crop (safrinha) corn is cultivated. Since the beginning of the 2000s, total corn area in Brazil has been increasing, shifting from the traditional South-Southeast regions (first, or winter crop) to the frontier Center-West, where area for second-crop corn (also known as safrinha, or “little harvest” in Portuguese, though now it is more than 60 percent of the total corn crop) has more than tripled since 2001 (see fig. 1).

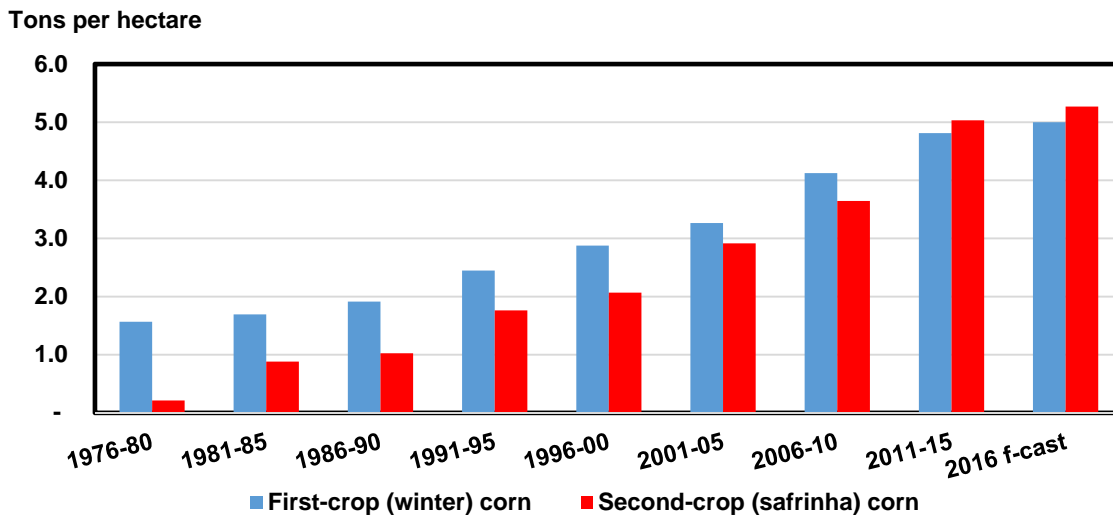
Figure 1 -- Second-crop corn area in Brazil is expanding faster than the first-crop area falls



Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution online database; Companhia Nacional de Abastecimento, CONAB.

Furthermore, safrinha corn yields grew 73 percent from 2001-05 to 2011-15 (5-year average), while first-crop yields increased 47 percent over the same period (see fig. 2). Historically, yields for winter (or first-crop) corn were much higher than for safrinha corn, as winter corn is grown in the most productive regions of the country. However, advances in soil management and improvements in hybrid seed varieties of faster maturity soybeans that allow earlier planting of safrinha crop, thus boosting its yields, generated notable gains in safrinha corn yields. Nonetheless, record-high yields in the latest 5-year period were largely weather related (see fig. 2).

Figure 2 -- Second-crop corn yields in Brazil have caught up with the first-crop

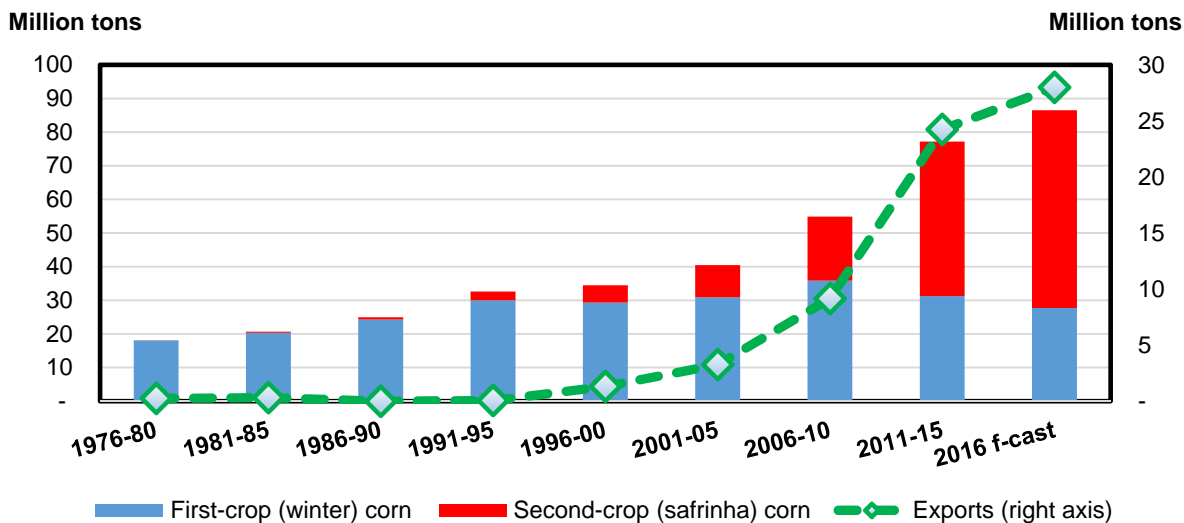


Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution online database; Companhia Nacional de Abastecimento, CONAB.

Though the trend for the second-corn (safrinha) crop yields is positive, in general, safrinha yields are much more vulnerable to weather fluctuations than the first crop. Safrinha crop planting follows soybean harvesting. In the years when soybeans are harvested late and therefore planting of the second-corn crop is delayed, the likelihood of corn getting insufficient moisture during its growing period increases exponentially, as rains usually stop in Brazil around April. Farmers will likely continue to expand second-crop corn area given that the government has a minimum price guarantee program (PEP and PEPRO). On the other hand, early planting motivates higher expected area and generates good yields.

With both area and yield expansion, Brazilian corn output skyrocketed, and the share of second-crop corn in total corn output reached 60 percent on average in 2011-15. It is primarily the expansion of safrinha output that boosted Brazilian corn exports, increasing its export market share from about 4 percent in 2001-05 to an average of 20 percent in 2011-15. Brazil tends to use most of the first-crop corn (harvested primarily during February-April) domestically because it is grown near the poultry and pork enterprises in the South. For the second-crop corn (harvested in June-August), transport costs are about the same for the interior/poultry areas in the South and the ocean ports, and therefore second-crop corn has been heavily exported. An additional benefit for exporting second-crop corn out of Brazil is that it becomes available just as the peak soybean export period ends, freeing up port capacity and thereby facilitating its export (see fig. 3).

Figure 3 – Rising safrinha corn output is driving a surge in Brazilian exports



Source: USDA, Foreign Agricultural Service, Production, Supply and Distribution online database; Companhia Nacional de Abastecimento, CONAB.

The 2015/16 and 2016/17 Brazilian corn crops provided a perfect illustration for the above developments. In 2015/16, the second safrinha corn sustained serious damage: yields dropped more than 30 percent and production declined by almost 14 million tons on the year (by about 25 percent). It was a textbook example of the combination of late planting and early ending of the rains in important producing areas (Mato Grosso and Goias). The first corn crop in 2015/16 could not compensate for the loss because of declining area (see fig. 1) and average yields. Local 2015/16 marketing year corn exports (March-February) sustained even a larger drop than output, down almost 18 million tons, absorbing all the decline in safrinha production while supporting internal feed demand in a market with skyrocketing prices. In 2016/17, those high corn prices encouraged planting of the first-corn crop, and its area is

projected to increase (though marginally, by about 3-4 percent) for the first time since 2007. Weather conditions benefited soybeans this year with good precipitation in Mato Grosso, Parana, and Goias encouraging early soybean planting and harvesting and setting the stage for a favorable growing season for corn. Safrinha corn area that will be planted in January is expected to rise year-to-year by more than 5 percent, and if planted early, the crop has good prospects of healthy yields.

For at a glance information and specific causes of the revisions and details of this month's changes in coarse grain production, see tables A1 and A2 and map A. Changes in total 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. Map A displays this month's changes in corn production.

Table A1 - World and U.S. coarse grain production at a glance (2016/17), December 2016

	Region or country	Production	Change ¹	Comments
		<i>Million tons</i>		
Coarse grain production (total)				
↑	World	1,329.4	+9.7	
↑	Foreign	925.3	+9.7	
	United States	404.1	No change	
World production of coarse grains by type of grain				
CORN				
↑	World	1039.7	+9.2	
↑	Foreign	653.0	+9.2	Higher corn production in China, Brazil, Russia, Canada, Indonesia, and European Union. See table A2.
	United States	386.8	No change	
SORGHUM				
↓	World	63.7	-0.5	
↓	Foreign	52.0	-0.5	A reduction in Australia that is only partly offset by higher production in Argentina and China. See table A2.
↓	United States	11.7	No change	
BARLEY				
↑	World	144.7	+0.7	
↑	Foreign	140.4	+0.7	Increases in Australia and Canada are partly offset by a decline in Argentina. See table A2.
	United States	4.3	No change	
OATS				
↓	World	22.8	+0.2	
↓	Foreign	21.8	+0.2	An increase in Australia. See table A2.
	United States	0.9	No change	
¹ Change from previous month. For changes by country, see table A2.				
Source: USDA, Foreign Agricultural Service, Production, Supply and Distribution online database.				

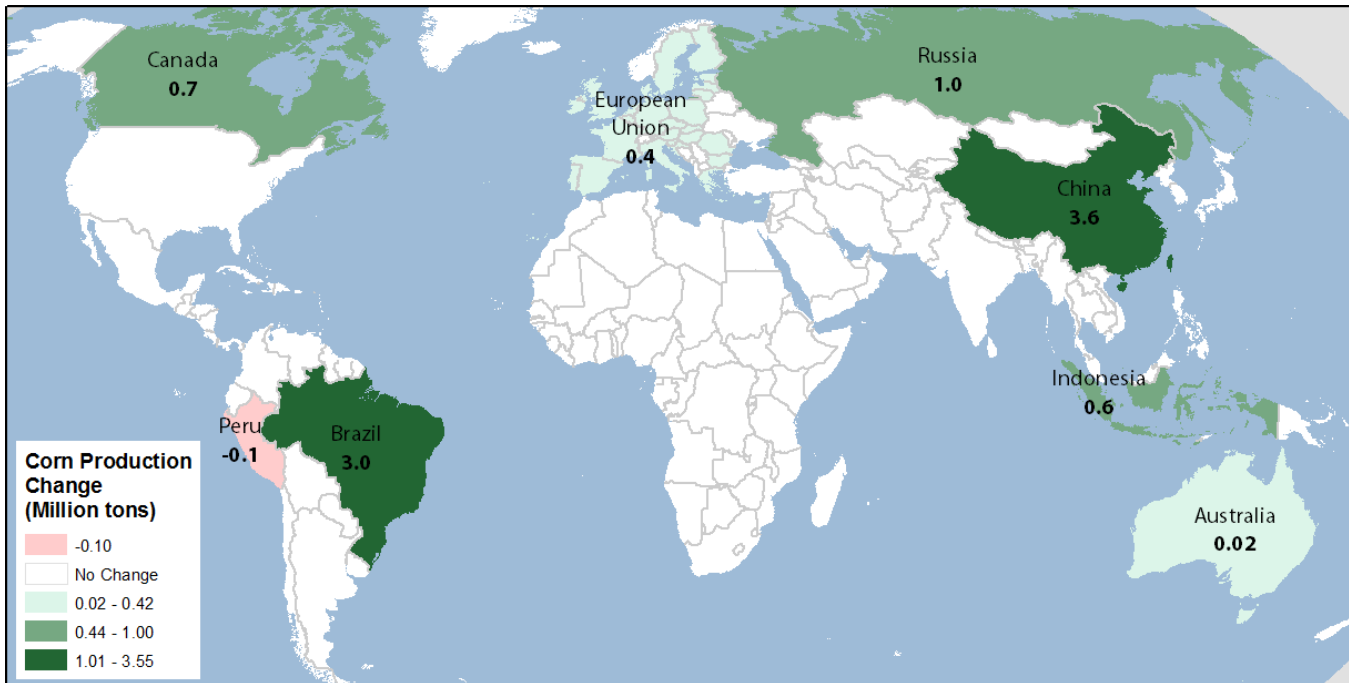
Table A2 - Coarse grain production by country at a glance, December 2016

	Type of crop	Crop year	Production	Change ¹	Comments
			<i>Million tons</i>		
Coarse grain production by country and by type of grain (2016/17)					
CHINA					
↑	Corn	Apr-Mar	219.6	+3.6	The increase in production based on the latest information released by the National Bureau of Statistics (NBS).
↑	Sorghum	Oct-Sep	3.3	+0.1	The increase in production based on the latest information released by the National Bureau of Statistics (NBS).
BRAZIL					
↑	Corn	Mar-Feb	86.5	+3.0	Both corn area and yields are projected higher. For discussion, see "COUNTRY FOCUS - BRAZIL" in the report.
RUSSIA					
↑	Corn	Oct-Sep	15.5	+1.0	Corn yields in Russia are increased based on the latest harvest reports, with almost 90 percent of the crop being harvested.
CANADA					
↑	Corn	Sep-Aug	13.2	+0.7	The latest Statistics Canada survey that provides production estimates for 2016/17 reported that corn yields were well above average.
↑	Barley	Aug-July	8.8	+0.3	The latest Statistics Canada survey that provides production estimates for 2016/17 reported record-high barley yields.
AUSTRALIA					
↑	Barley	Nov-Oct	10.6	+0.7	The Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) raised its forecasts, with record yields for the winter crops in the current 2016/17 year.
↑	Oats	Nov-Oct	1.8	+0.2	The same as above. Oats are winter crop.
↓	Sorghum	Mar-Feb	1.5	-0.7	Lower projected area for this summer crop in favor of cotton which has higher expected returns. As most irrigated lands move away from sorghum to cotton, sorghum yields are also projected lower.
INDONESIA					
↑	Corn	Oct-Sep	10.2	+0.6	Government quarterly forecast shows a robust increase in corn area. See explanation for this area increase in the table below (Indonesia for 2015/16).
EUROPEAN UNION					
↑	Corn	Oct-Sep	60.7	+0.4	Additional harvest results in Hungary (excellent cumulative precipitation) suggest an upside adjustment in corn production estimates, which are partly offset by lower projections for France, Poland, and Bulgaria.
ARGENTINA					
↑	Sorghum	Mar-Feb	3.6	+0.2	Higher projected planted area.
↓	Barley	Dec-Nov	3.3	-0.3	Lower barley yield is projected as dry conditions have been persisting since October. Recent freezes are also expected to be harmful to barley.
Coarse grain production by country and by type of grain (2015/16)					
INDONESIA					
↑	Corn	Oct-Sep	10.5	+1.2	The Government aims to reach self-sufficiency in corn by setting high reference prices that increased farmer's incentives to plant corn. The Government is also allowing corn to be planted for a few years on forest land that is recovering from recent logging and being reforested. See also "COUNTRY FOCUS: INDONESIA" in the text.

¹Change from previous month. Tiny changes for corn, sorghum, and barley are made for a number of countries, for corn changes see map A.

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

Map A – Corn production changes for 2016/17, December 2016



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

World Coarse Grain Use Projected Higher This Month

Global coarse grain domestic consumption in 2016/17 is projected up 4.7 million tons this month to 1,319.2 million, with multiple changes mainly across corn-importing countries (all of them lower than 1.0 million tons). Global feed and residual use of corn is raised 2.0 million tons, the largest increase being for Indonesia, where coarse grain (exclusively corn) feeding is projected up 0.9 million tons based on domestic area and production expansion. See below for discussion about Indonesia related to this month's changes.

COUNTRY FOCUS: INDONESIA

Consumers' Access to Low-Cost Broiler Meat May Be Limited

(Submitted by John Dyck, ERS/USDA)

Indonesia, the world's fourth-largest country by population, has the fifth-largest economy in Asia, after China, Japan, India, and Korea. Growing at about 5 percent annually (in real terms), the country's gross domestic product is now about \$1 trillion—roughly \$4,000 per person. Like that of other rapidly developing economies, consumption in Indonesia is shifting toward more vegetable oils, dairy products, and meats.

Consumption of broiler meat in Indonesia doubled from 2000 to 2015. However, at 6.3 kg per person, it remains low by world standards. Most Indonesians eat poultry meat, beef, and fish, but only a minority of about 10 percent eat pork. Beef production in Indonesia is relatively small, and expansion is difficult. Thus, poultry meat and fish are the two major sources of animal protein in the country.

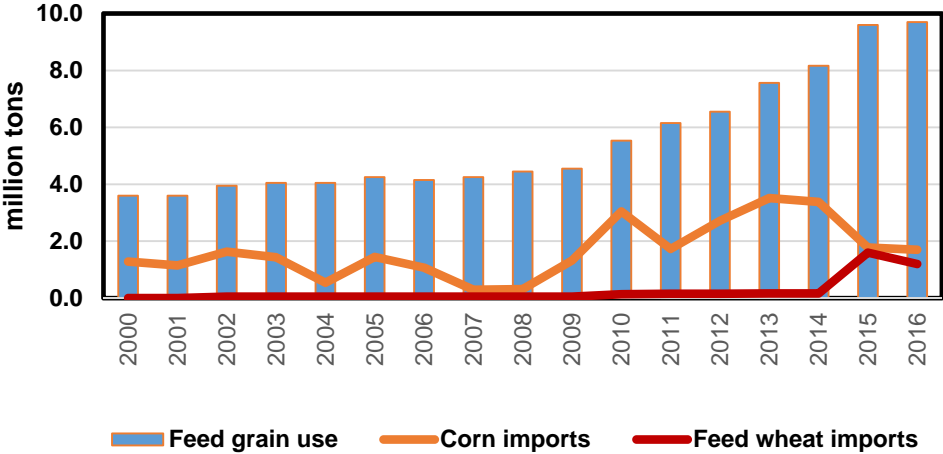
Indonesia has refused to allow imports of frozen chicken cuts for some time; the last significant imports were in 2000. The government does not issue the import permits necessary to import the meat. As a result, Indonesian consumption depends solely on domestic output. Production of broiler meat has doubled since 2000, mostly organized by large feed mill corporations using domestic and foreign investment.

Corn to feed the broiler operations comes primarily from Indonesian output, which has grown by about 50 percent since 2003, almost solely because of yield growth. However, feed mill demand has consistently outstripped domestic corn supply, and imports reached 3.5 million tons in 2014. Late in 2015, the Indonesian government began requiring import permits before contracts to import corn could be made. Early in 2016, a new regulation reserved all corn imports for feed use to the state-trading company, BULOG. Since permits for feed use were not issued, Indonesia’s corn imports in June and July 2016, at 23,000 tons, were far below those in June-July 2015, 40,000 tons.

As in Thailand and the Philippines, which also protect domestic corn production by limiting corn imports, feed mills turned to feed wheat imports as an alternative to corn. Indonesian feed use of wheat soared from 165,000 tons in 2014 to 1.6 million tons in 2015 (see figure). In June 2016, the Indonesian government stopped issuing licenses for feed wheat imports with a projected decline in feed use of wheat to 1.2 million tons in 2016/17.

By blocking imports of broiler meat and the main feed source used by domestic broiler farms, Indonesia may be limiting consumers’ access to low-cost broiler meat. Reducing access to imported corn is likely to raise the price of corn in Indonesia and expand the incentive to increase the area planted—Indonesia’s government encourages field crop production in new farming areas outside Java and southern Sumatra.

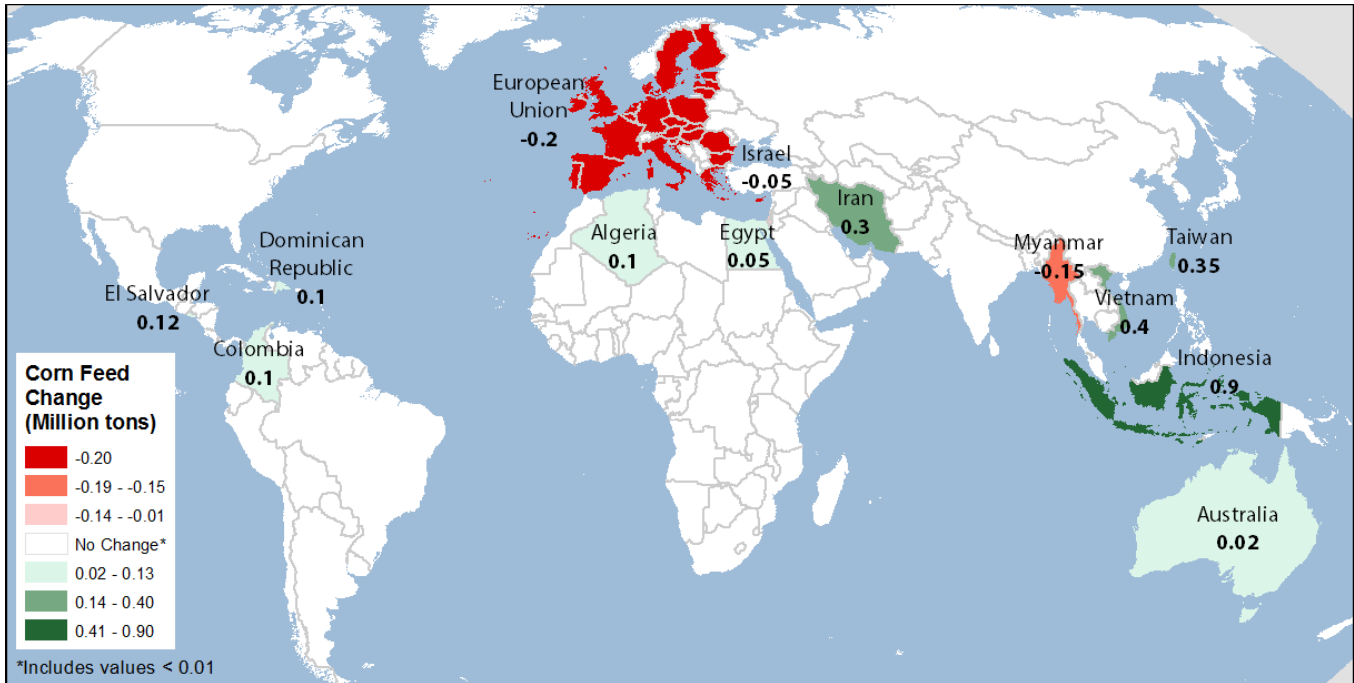
Indonesia: grain feed use and imports



Notes: Feed grain use is the sum of feed and residual use of corn and wheat. Feed wheat imports are equal to PS&D feed use. Indonesia imports all wheat.
 Source: USDA, Economic Research Service, using data from USDA, Foreign Agricultural Service, Production, Supply, and Distribution online database.

All other country changes are 400,000 tons or smaller. For a visual display of this month’s changes in corn feed and residual use, see map B.

Map B – Corn feed and residual use changes for 2016/17, December 2016

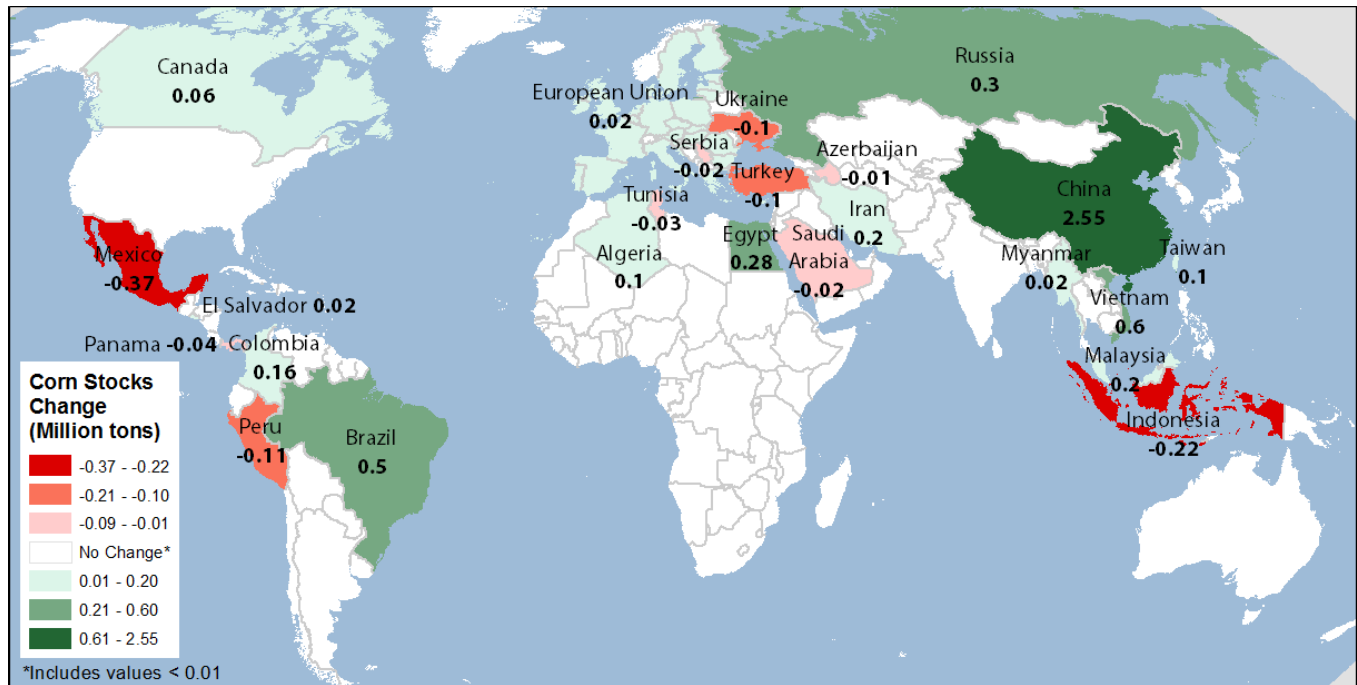


Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution online database.

Coarse Grain Stocks Are Up

World coarse grain ending stocks for 2016/17 are projected up 4.5 million tons this month to 254.9 million, with a very small reduction in U.S. sorghum stocks. The largest change is a projected increase in coarse grain stocks for China, up 2.6 million tons to 107.1 million (or 42 percent of world stocks), due to increased corn production. All other country changes are much smaller, the largest being increases for Vietnam, up 0.6 million tons reflecting higher projected imports, and for Brazil, up 0.5 million tons (see map C).

Map C – Corn ending stocks changes for 2016/17, December 2016



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

World Corn Trade Expanded Further

Projected 2016/17 world coarse grain trade for the international trade year (October-September) is up by 1.4 million tons to 179.1 million this month. Export prospects for Brazilian and Russian corn are revised up to reflect changes in supplies and competitiveness. Brazil is expected to export an additional 2.5 million tons of corn in its local March-February marketing year. But because it will accelerate its export pace only after the second-corn crop is harvested, and until then the country does not have much in the way of additional supplies after the poor 2015/16 corn harvest, Brazilian exports for the 2016/17 international trade year that will end in September 2017 are projected up 1.0 million tons only. Corn imports are raised in the countries that import mostly from Southern Hemisphere countries Argentina and Brazil. These include Vietnam, Iran, Taiwan, Egypt, and Algeria. Corn import projections are reduced for countries with higher projected output.

For information on this month's main changes in 2016/17 corn trade with country-specific details, see table D.

Table D - Corn trade at a glance (2016/17), December 2016

	Country or region	Trade	Change ¹	Comments
		<i>Million tons</i>		<i>October-September international trade year</i>
↑	World	141.7	+2.0	
↑	Foreign	85.2	+2.0	
Corn Exports (2016/17)				
↑	Brazil	22.0	+1.0	Substantial increase in corn production. Exports are projected 2.5 million tons higher to 28.0 million on the March-February local marketing year. See also "COUNTRY FOCUS - BRAZIL" in the report.
↑	Russia	5.3	+0.6	Higher projected corn output.
↑	European Union	1.8	+0.1	Higher projected corn output.
↑	Canada	0.7	+0.1	Higher projected corn output.
↑	Burma	1.1	+0.2	Series revision back to 2012.
Corn Imports (2016/17)				
↑	Vietnam	7.5	+1.0	High pace of corn imports, mainly from Brazil and Argentina. As Vietnamese feed and residual use are projected higher than expected, it should be noted that the feed and residual use category by definition includes unaccounted for corn sent to neighboring countries.
↑	Iran	7.0	+0.5	Further increase in projected imports. Expansion of poultry and dairy cattle sector that increases feed demand for corn, high domestic corn prices, and swift pace of corn imports support the increase. Iran is the top importer of Brazilian corn.
↑	Taiwan	4.6	+0.4	High pace of corn imports. As one of the top importers from Brazil, the country is expected to benefit from high Brazilian supplies of corn.
↑	Egypt	9.0	+0.3	High pace of corn imports. As one of the sizeable importers from Brazil and Argentina, the country is expected to benefit from high supplies of corn.
↑	Colombia	4.8	+0.3	High pace of corn sales and shipments from the United States.
↑	Algeria	4.5	+0.2	High pace of corn imports from Argentina and Brazil.
↑	Malaysia	3.8	+0.2	High pace of corn imports from Argentina.
↓	Canada	1.0	-0.5	Higher corn output.
↓	European Union	13.1	-0.4	Higher corn output.
↓	Indonesia	1.7	-0.3	Higher corn output. Government regulations. See also "COUNTRY FOCUS - INDONESIA" in the report.

¹Change from previous month. Smaller corn import changes of less than 0.2 million tons are made for several more countries.

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

The U.S corn export forecast for 2016/17 is unchanged this month at 56.5 million tons, the highest level since 2007/08, and more than 5 million tons ahead of last year's exports. Outstanding sales at the beginning of December are more than 70 percent higher than those of last year, and November inspections are more than double those of 2015. A sharp increase in corn supplies in both Argentina and Brazil is expected to intensify competition facing U.S. exports during the latter part of 2016/17, when Southern Hemisphere countries start exporting new crop.

Contacts and Links

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Data

Feed Grains Database (<http://ers.usda.gov/data-products/feed-grains-database.aspx>) is a queryable database that contains monthly, quarterly, and annual data on prices, supply, and use of corn and other feed grains. This includes data published in the monthly Feed Outlook and the annual Feed Yearbook reports.

Related Websites

Feed Outlook
(<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1273>
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Table 1--Feed grains: U.S. quarterly supply and disappearance (million bushels), 12/13/2016

Commodity, market year, and quarter 1/		Beginning stocks	Production	Imports	Total supply	Food, seed, and industrial use	Feed and residual use	Exports	Total disappearance	Ending stocks	Farm price 2/ (dollars per bushel)		
Corn	2013/14	Sep-Nov	821	13,829	15	14,665	1,550	2,312	350	4,212	10,453	4.66	
		Dec-Feb	10,453		7	10,459	1,602	1,459	390	3,451	7,008	4.40	
		Mar-May	7,008		9	7,017	1,684	845	636	3,165	3,852	4.63	
		Jun-Aug	3,852		6	3,858	1,696	385	544	2,626	1,232	4.06	
		Mkt yr	821	13,829	36	14,686	6,532	5,001	1,921	13,454	1,232	4.46	
	2014/15	Sep-Nov	1,232	14,216	5	15,452	1,615	2,225	401	4,241	11,211	3.57	
		Dec-Feb	11,211		6	11,217	1,622	1,445	400	3,468	7,750	3.80	
		Mar-May	7,750		10	7,760	1,675	1,092	540	3,307	4,453	3.75	
		Jun-Aug	4,453		11	4,464	1,690	517	526	2,733	1,731	3.69	
		Mkt yr	1,232	14,216	32	15,479	6,601	5,280	1,867	13,748	1,731	3.70	
	2015/16	Sep-Nov	1,731	13,601	13	15,345	1,631	2,175	301	4,107	11,238	3.65	
		Dec-Feb	11,238		18	11,256	1,652	1,445	340	3,437	7,819	3.64	
		Mar-May	7,819		20	7,838	1,645	920	561	3,126	4,713	3.60	
		Jun-Aug	4,713		17	4,730	1,706	590	695	2,992	1,738	3.55	
		Mkt yr	1,731	13,601	67	15,400	6,635	5,130	1,898	13,662	1,738	3.61	
	2016/17	Mkt yr	1,738	15,226	50	17,013	6,735	5,650	2,225	14,610	2,403	3.05-3.65	
	Sorghum	2013/14	Sep-Nov	15.15	392.33	0.01	407.49	45.00	97.71	33.39	176.10	231.39	4.28
			Dec-Feb	231.39		0.01	231.40	10.00	6.52	39.15	55.67	175.73	4.22
			Mar-May	175.73		0.01	175.74	12.01	0.25	71.05	83.32	92.42	4.68
			Jun-Aug	92.42		0.07	92.49	2.88	-11.81	67.39	58.46	34.03	4.11
Mkt yr			15.15	392.33	0.09	407.57	69.89	92.67	210.98	373.54	34.03	4.28	
2014/15		Sep-Nov	34.03	432.58	0.21	466.82	10.60	149.98	83.64	244.23	222.59	3.63	
		Dec-Feb	222.59		0.12	222.71	1.80	2.37	98.69	102.86	119.86	4.17	
		Mar-May	119.86		0.00	119.86	1.43	-14.99	99.13	85.57	34.29	4.41	
		Jun-Aug	34.29		0.04	34.33	1.18	-55.54	70.28	15.92	18.41		
		Mkt yr	34.03	432.58	0.38	466.98	15.01	81.82	351.75	448.57	18.41	4.03	
2015/16		Sep-Nov	18.41	596.75	3.60	618.76	22.14	159.96	114.44	296.54	322.22	3.54	
		Dec-Feb	322.22		0.98	323.20	47.05	-11.34	86.33	122.05	201.15	3.17	
		Mar-May	201.15		0.01	201.15	42.75	-5.44	73.47	110.79	90.37	3.10	
		Jun-Aug	90.37		0.01	90.37	29.75	-40.36	64.35	53.73	36.64	3.33	
		Mkt yr	18.41	596.75	4.59	619.75	141.70	102.83	338.59	583.11	36.64	3.31	
2016/17		Mkt yr	36.64	462.17	1.00	499.80	125.00	90.00	250.00	465.00	34.80	2.80-3.30	

Table 1--Feed grains: U.S. quarterly supply and disappearance, cont. (million bushels), 12/13/2016

Commodity, market year, and quarter 1/			Beginning stocks	Production	Imports	Total supply	Food, seed, and industrial use	Feed and residual use	Exports	Total disappear- ance	Ending stocks	Farm price 2/ (dollars per bushel)	
Barley	2013/14	Jun-Aug	80	217	2	299	40	61	3	103	196	6.22	
		Sep-Nov	196		5	201	39	-11	3	31	169	5.98	
		Dec-Feb	169		4	173	37	10	4	52	122	6.03	
		Mar-May	122		8	129	37	6	4	47	82	5.93	
		Mkt yr	80	217	19	316	153	66	14	234	82	6.06	
	2014/15	Jun-Aug	82	182	7	271	39	48	4	91	180	5.69	
		Sep-Nov	180		5	184	38	-14	4	28	156	5.25	
		Dec-Feb	156		6	163	37	5	3	44	118	5.07	
		Mar-May	118		6	124	37	4	4	45	79	4.86	
		Mkt yr	82	182	24	287	151	43	14	209	79	5.30	
	2015/16	Jun-Aug	79	218	4	301	40	38	3	82	219	5.39	
		Sep-Nov	219		4	223	38	0	4	42	181	5.52	
		Dec-Feb	181		7	188	37	10	3	50	138	5.66	
		Mar-May	138		4	141	38	1	1	39	102	5.43	
		Mkt yr	79	218	19	315	153	50	11	213	102	5.52	
	2016/17	Jun-Aug	102	199	2	304	40	33	1	74	230	4.99	
		Mkt yr	102	199	18	319	153	60	8	221	98	4.55-5.15	
	Oats	2013/14	Jun-Aug	36	65	17	118	17	37	0	55	63	3.72
			Sep-Nov	63		28	91	18	25	1	43	48	3.56
			Dec-Feb	48		20	68	16	16	0	33	35	3.71
Mar-May			35		32	67	22	20	0	43	25	4.03	
Mkt yr			36	65	97	198	73	98	2	173	25	3.75	
2014/15		Jun-Aug	25	70	27	122	18	30	1	48	74	3.34	
		Sep-Nov	74		25	99	18	14	0	32	67	3.16	
		Dec-Feb	67		32	99	17	22	0	40	59	3.08	
		Mar-May	59		25	84	24	6	1	31	54	2.89	
		Mkt yr	25	70	109	204	77	71	2	150	54	3.21	
2015/16		Jun-Aug	54	90	18	161	18	49	0	68	94	2.15	
		Sep-Nov	94		26	120	18	18	1	37	83	2.08	
		Dec-Feb	83		25	108	17	15	0	33	75	2.09	
		Mar-May	75		16	91	24	10	1	34	57	2.11	
		Mkt yr	54	90	86	229	77	93	2	172	57	2.12	
2016/17		Jun-Aug	57	65	21	142	18	45	1	64	79	1.86	
		Mkt yr	57	65	90	212	78	85	2	165	47	1.75-2.05	

Latest market year is projected; previous market year is estimated. Totals may not add due to rounding.

1/ Corn and sorghum, September 1-August 31 marketing year; Barley and oats, June 1-May 31 marketing year.

2/ Average price received by farmers based on monthly price weighted by monthly marketings. For the latest market year, quarterly prices are calculated by using the current monthly prices weighted by the monthly marketings for those months for the previous 5 years divided by the sum of marketings for those months.

Source: USDA, World Agricultural Outlook Board, World Agricultural Supply and Demand Estimates and supporting materials.

Data run: 12/13/2016

Table 2--Feed and residual use of wheat and coarse grains, 12/13/2016

Market year and quarter 1/		Corn (million metric tons)	Sorghum (million metric tons)	Barley (million metric tons)	Oats (million metric tons)	Feed grains (million metric tons)	Wheat (million metric tons)	Energy feeds (million metric tons)	Grain consuming animal units (millions)	Energy feeds per grain consuming animal unit (tons)
2014/15	Q1 Sep-Nov	56.5	3.8	-0.3	0.3	60.3	-2.5	57.8		
	Q2 Dec-Feb	36.7	0.1	0.1	0.4	37.3	0.2	37.5		
	Q3 Mar-May	27.7	-0.4	0.1	0.2	27.6	-1.6	26.0		
	Q4 Jun-Aug	13.1	-1.4	0.8	0.8	13.3	8.1	21.4		
	MY Sep-Aug	134.1	2.1	0.7	1.6	138.5	4.2	142.7	92.4	1.5
2015/16	Q1 Sep-Nov	55.2	4.1	0.0	0.3	59.6	-2.9	56.7		
	Q2 Dec-Feb	36.7	-0.3	0.2	0.3	36.9	-0.0	36.9		
	Q3 Mar-May	23.4	-0.1	0.0	0.2	23.4	-1.0	22.4		
	Q4 Jun-Aug	15.0	-1.0	0.7	0.7	15.4	7.7	23.1		
	MY Sep-Aug	130.3	2.6	1.0	1.5	135.4	3.7	139.2	94.0	1.5
2016/17	MY Sep-Aug	143.5	2.3	1.5	1.4	148.7	8.4	157.1	94.9	1.7

1/ Corn and sorghum, September 1-August 31 marketing year; Barley and oats, June 1-May 31 marketing year.

Source: USDA, World Agricultural Outlook Board, World Agricultural Supply and Demand Estimates and supporting materials.

Table 3--Cash feed grain prices, 12/13/2016

Mkt year and month 1/	Corn, No. 2 yellow, Central IL (dollars per bushel)			Corn, No. 2 yellow, Gulf ports, LA (dollars per bushel)			yellow, Gulf ports, LA (dollars per cwt)		
	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17	2014/15	2015/16	
Sep	3.16	3.55	3.09	4.14	4.22	3.78	7.91	8.08	
Oct	3.09	3.67	3.27	4.15	4.36	3.88	8.52	8.23	
Nov	3.45	3.62	3.28	4.54	4.22	3.84	9.04	7.89	
Dec	3.75	3.62		4.55	4.17		9.85		
Jan	3.67	3.55		4.44	4.09		10.41		
Feb	3.65	3.56		4.41	4.06		10.70		
Mar	3.66	3.54		4.43	4.05				
Apr	3.59	3.61		4.38	4.17		9.97		
May	3.49	3.74		4.23	4.30		7.44		
Jun	3.52	3.91		4.24	4.62				
Jul	3.85	3.28		4.56	4.11				
Aug	3.51	3.09		4.14	3.82		8.09		
Mkt year	3.53	3.56		4.35	4.18		9.10	8.07	
	Barley, No. 2 feed, Minneapolis, MN (dollars per bushel)			malting, Minneapolis, MN (dollars per bushel)			Oats, No. 2 white heavy, Minneapolis, MN (dollars per bushel)		
	2014/15	2015/16	2016/17	2014/15	2015/16	2014/15	2015/16	2016/17	
Jun	3.49	2.59	2.36	5.71		3.88	2.89	2.58	
Jul	3.01	2.70	2.33	5.62		3.85	2.82	2.61	
Aug	2.58	2.41	2.08	5.79		3.83	2.63	2.34	
Sep	2.30	2.39	1.95	5.98	4.95	3.86	2.70	2.29	
Oct	2.44	2.57	2.00	7.28	4.95	3.68	2.58	2.67	
Nov	2.48	2.60	2.00	7.35		3.53	2.67	2.84	
Dec	2.68	2.60		7.35		3.49	2.64		
Jan	2.79	2.58		7.10		3.26	2.60		
Feb	2.73	2.50		6.75		3.11	2.60		
Mar	2.75	2.46				3.14	2.43		
Apr	2.81	2.45		6.35		2.94	2.49		
May	2.76	2.44		6.23		2.75	2.49		
Mkt year	2.74	2.52		6.50	4.95	3.44	2.63		

1/ Corn and sorghum, September 1-August 31 marketing year; Barley and oats, June 1-May 31 marketing year. Simple average of monthly prices for the marketing year.

Source: USDA, Agricultural Marketing Service, <http://marketnews.usda.gov/portal/lg>.

Table 4--Selected feed and feed byproduct prices (dollars per ton), 12/13/2016

Mkt year and month 1/	Soybean meal, high protein, Central Illinois, IL			Cottonseed meal, 41% solvent, Memphis, TN			Corn gluten feed, 21% protein, Midwest			Corn gluten meal, 60% protein, Midwest		
	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17
Oct	381.50	327.97	323.26	346.88	292.50	241.88	90.13	96.00	77.00	549.38	509.38	466.13
Nov	441.40	308.60	322.42	313.13	291.88	221.00	105.13	109.63	83.55	581.88	477.50	477.50
Dec	431.74	289.78		334.38	265.00		143.30	113.13		613.50	482.25	
Jan	380.03	279.57		313.75	248.75		135.25	109.63		632.50	452.50	
Feb	370.39	273.61		302.50	238.13		117.25	102.38		631.25	457.50	
Mar	357.83	276.23		310.50	216.50		107.20	87.00		613.00	445.50	
Apr	336.61	303.81		288.13	207.50		83.13	73.25		575.63	434.00	
May	320.23	376.36		274.38	242.50		72.25	87.00		549.38	464.10	
Jun	335.03	408.58		281.00	284.00		74.40	107.13		571.60	568.13	
Jul	375.48	371.49		299.38	280.00		91.25	95.01		560.00	573.13	
Aug	357.85	340.80		295.63	280.00		88.75	90.30		550.63	507.20	
Sep	333.63	337.95		293.50	285.00		95.50	85.38		525.00	469.38	
Mkt yr	368.48	324.56		304.43	260.98		100.29	96.32		579.48	486.71	
	Meat and bone meal, Central US			Distillers dried grains, Central Illinois, IL			Wheat middlings, Kansas City, MO			Alfalfa hay, weighted-average farm price 2/		
	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17	2014/15	2015/16	2016/17
Oct	385.00	291.88	237.50	96.00	123.13	116.25	111.48	105.93	79.43	193.00	155.00	135.00
Nov	383.79	266.25	229.00	113.13	132.63	111.70	106.87	106.53	85.53	182.00	147.00	
Dec	424.22	221.67		159.30	133.13		135.83	99.55		180.00	149.00	
Jan	382.49	200.13		186.50	132.50		140.93	104.16		170.00	141.00	
Feb	370.63	193.75		187.13	136.63		124.85	97.89		167.00	137.00	
Mar	376.00	261.00		189.50	134.50		1,118.55	68.64		169.00	139.00	
Apr	390.63	316.25		191.00	122.38		81.93	65.12		175.00	154.00	
May	368.75	310.10		178.50	141.10		64.25	60.72		187.00	147.00	
Jun	313.50	345.00		157.50	170.50		60.27	57.94		178.00	142.00	
Jul	333.75	381.67		153.50	149.38		77.96	61.48		172.00	140.00	
Aug	388.75	347.00		115.13	130.90		92.72	60.61		161.00	138.00	
Sep	344.00	285.63		139.30	127.75		112.67	64.43		160.00	137.00	
Mkt yr	371.79	285.03		155.54	136.21		185.69	79.42		196.00	158.00	

1/ October 1-September 30 except for hay. Simple average of monthly prices for the marketing year except for hay.

Source: USDA, Agricultural Marketing Service, <http://marketnews.usda.gov/portal/lg>, and USDA, National Agricultural Statistics Service, http://www.nass.usda.gov/Data_and_Statistics/Quick_Stats/index.asp.

Table 5--Corn: Food, seed, and industrial use (million bushels), 12/13/2016

Mkt year and qtr 1/		High-fructose corn syrup (HFCS)	Glucose and dextrose	Starch	Alcohol for fuel	Alcohol for beverages and manufacturing	Cereals and other products	Seed	Total food, seed, and industrial use
2014/15	Q1 Sep-Nov	116.78	74.64	62.41	1,276.24	34.52	50.11	0.00	1,614.69
	Q2 Dec-Feb	110.32	71.95	59.76	1,293.93	36.18	49.95	0.00	1,622.10
	Q3 Mar-May	123.73	77.43	63.20	1,294.53	37.85	50.47	27.72	1,674.93
	Q4 Jun-Aug	128.24	78.13	62.11	1,335.39	33.64	50.68	1.54	1,689.73
	MY Sep-Aug	479.08	302.14	247.48	5,200.09	142.19	201.21	29.26	6,601.44
2015/16	Q1 Sep-Nov	110.81	72.34	62.30	1,300.20	34.89	50.62	0.00	1,631.16
	Q2 Dec-Feb	115.06	76.77	59.91	1,313.32	36.58	50.43	0.00	1,652.05
	Q3 Mar-May	124.71	92.65	59.70	1,251.13	38.27	50.92	27.93	1,645.30
	Q4 Jun-Aug	127.31	88.73	61.67	1,341.42	33.27	51.13	2.63	1,706.16
	MY Sep-Aug	477.89	330.49	243.57	5,206.06	143.00	203.10	30.56	6,634.66
2016/17	MY Sep-Aug	480.00	325.00	250.00	5,300.00	146.00	204.60	29.40	6,735.00

1/ September-August. Latest data may be preliminary or projected.

Source: Calculated by USDA, Economic Research Service.

Date run: 12/12/2016

Table 6--Wholesale corn milling product and byproduct prices, 12/13/2016

Mkt year and month 1/	Corn meal, yellow, Chicago, IL (dollars per cwt)		Corn meal, yellow, New York, NY (dollars per cwt)		Corn starch, Midwest 3/ (dollars per cwt)		Dextrose, Midwest (cents per pound)		High-fructose corn syrup (42%), Midwest (cents per pound)	
	2015/16	2016/17	2015/16	2016/17	2015/16	2016/17	2015/16	2016/17	2015/16	2016/17
Sep	17.80	16.71	19.47	18.38	14.20	13.21	37.00	39.00	23.25	26.75
Oct	17.96	17.06	19.63	18.73	14.29	13.39	37.00	39.00	23.25	26.75
Nov	17.53	16.89	19.20	18.56	14.95	13.87	37.00	39.00	23.25	26.75
Dec	17.50		19.17		14.80		37.00		23.25	
Jan	17.42		19.09		14.62		39.00		26.75	
Feb	17.44		19.11		14.35		39.00		26.75	
Mar	17.13		18.92		14.71		39.00		26.75	
Apr	17.70		19.37		14.71		39.00		26.75	
May	18.21		19.88		15.10		39.00		26.75	
Jun	18.27		19.94		15.40		39.00		26.75	
Jul	17.03		18.70		15.43		39.00		26.75	
Aug	16.64		18.31		13.63		39.00		26.75	
Mkt year 2/	17.55		19.23		14.68		38.33		25.58	

1/ September-August. Latest month is preliminary.

2/ Simple average of monthly prices for the marketing year.

3/ Bulk-industrial, unmodified.

Source: Milling and Baking News, except for corn starch which is from private industry.

Date run: 12/12/2016

Table 7--U.S. feed grain imports by selected sources (1,000 metric tons) 1/, 12/13/2016

Import and country/region	----- 2014/15 -----		----- 2015/16 -----		2016/17	
	Mkt year	Jun-Oct	Mkt year	Jun-Oct	Jun-Oct	
Oats	Canada	1,731	721	1,379	606	673
	Sweden	72		62		
	Finland	62	40	34	18	10
	All other countries	12	5	0	0	0
	Total 2/	1,876	766	1,475	624	683
Malting barley	Canada	334	152	283	89	26
	All other countries	28	0	0	0	17
	Total 2/	362	152	284	89	42
Other barley 3/	Canada	147	72	116	48	31
	All other countries	4	1	4	2	1
	Total 2/	152	74	119	49	32

1/ Grain only. Market year (June-May) and market year to date.

2/ Totals may not add due to rounding.

3/ Grain for purposes other than malting, such as feed and seed use.

Source: U.S. Department of Commerce, Bureau of the Census, Foreign Trade Statistics.

Date run: 12/12/2016

