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Feed Outlook

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March 1 Corn Stocks Exceed Expectations

The National Agricultural Statistics Service (NASS) *Grain Stocks* report estimated March 1 corn stocks at 5,399 million bushels, sending futures down more than \$1.00 per bushel in the week following the release. NASS also released the *Prospective Plantings* report on March 28, which indicated that, as of March 1, producers expected to plant 97.3 million acres, up slightly from last year's actual plantings. Forecast 2012/13 feed and residual use of corn is lowered 150 million bushels and ending stocks are increased 125 million bushels to 757 million, compared to last month's projections. In addition, exports are forecast down 25 million bushels and corn used for ethanol is increased 50 million bushels. Higher ending stocks and recent declines in cash prices result in a 20-cent reduction in the midpoint of the corn price forecast to \$6.90 per bushel. Global coarse grain supplies for 2012/13 are increased this month, supported by Brazil's increased corn production prospects. Projected world coarse grain use is cut with reduced growth in China's meat production and consumption. Forecast world coarse grain ending stocks are increased 5 percent this month.

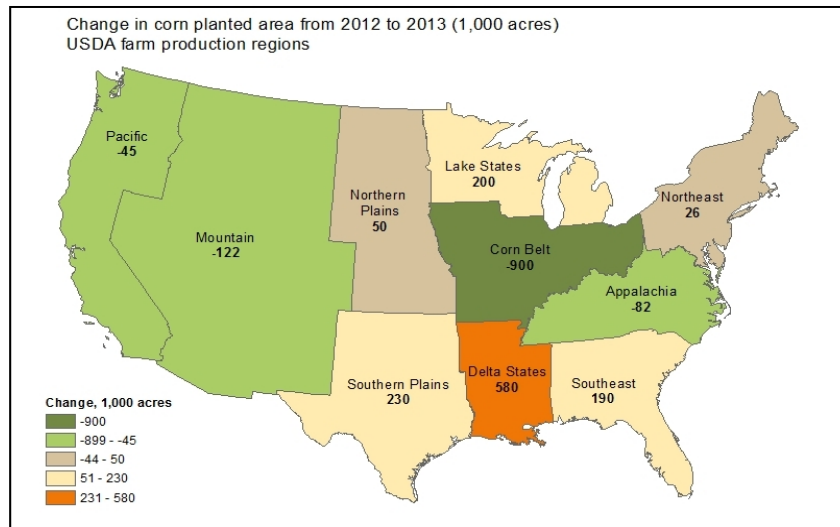
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Domestic Outlook

Stocks Report Indicates More Corn Than Expected

In the March 28 *Grain Stocks* report, March 1 corn stocks were estimated at 5.4 billion bushels, 10 percent below March 1, 2012, yet higher than most analysts expected. The impact of the unanticipated additional stocks was apparent nearly immediately in the futures market where the May corn futures price slipped by more than \$1.00 per bushel within days of the *Grains Stocks* report release. A total of 2.67 million bushels of corn was reported to be stored onfarm and 2.73 million bushels were stored at commercial facilities. The share of corn held on farms was very low, at 49 percent, compared with an average of 57 percent for the previous 10 years. The share of corn being used for ethanol likely played a factor as ethanol mills take delivery very shortly before use, whereas export and feed markets tend to have more corn on hand or in transit.

Projected U.S. feed grain supplies for 2012/13 at 318.9 million metric tons are up slightly from last month, with small increases projected for barley and sorghum imports. Supplies for 2012/13 are 11 percent below last year's 358.5 million tons. Total use of the four feed grains is expected to be 297.1 million tons, 2.8 million tons below last month's forecast. This will be the third consecutive year that total use declines, unprecedented since at least 1975/76.

The 2012/13 feed and residual use projection for the four feed grains plus wheat is lowered by 1.5 million tons from last month due to lower forecast feed corn and wheat use. At 124.9 million tons, it is projected 5.6 million below the 2011/12 total of 130.6 million. Grain consuming animal units (GCAUs) in 2012/13 are projected at 92.07 million units, less than a unit above last month's projection. Feed and residual use per animal unit is 1.36 tons, slightly less than last month's 1.41 tons and 0.05 tons per unit less than the 2011/12 marketing year, mostly due to lower residual use with the smaller crop.

Ethanol Boosts Corn Food, Seed, and Industrial Use

Food, seed, and industrial use (FSI) for 2012/13 is raised 50 million bushels with an increase in the projection for corn used for ethanol. The increase to 4,550 million bushels was based on year-to-date ethanol production and the prospect of lower corn prices contributing to already favorable margins for ethanol producers, spurring additional production. In spite of the projected increase, the implications of lower gasoline consumption and implicit restrictions in the volume of ethanol that can be blended into gasoline continue to constrain growth in ethanol production. On April 8, the Energy Information Agency (EIA) predicted gasoline production for the 2012/13 crop-year period at 133.0 billion gallons, compared with 133.2 billion for the 2011/12 crop year. EIA also forecast the lowest summer gasoline use in 12 years. However, weekly ethanol production during March advanced relative to previous months, indicating improved margins may be impacting production, and therefore, corn used for fuel.

Forecast Corn Exports Lowered, Brazil Exports Exceed U.S. Volumes

Sluggish sales and competitive corn prices in South America result in a 25-million-bushel decline in the corn export projection. U.S. corn prices, even at the reduced

forecast, are still relatively high compared to trade competitors. In particular, March shipments from Brazil were strong, and shipments from Brazil and the Ukraine have proved competitive. In fact, Brazil corn exports are projected 14 percent higher than U.S. exports for the 2012/13 October-September trade year. Prospects for improved U.S. exports are limited by tight corn supplies that are diffused over a large area, which make it difficult to assemble exportable volumes.

Corn Feed and Residual Use Shrinks for Second Half of Marketing Year

Feed and residual use in the second half of the marketing year (March-August) is projected to be 1.2 billion bushels, which would represent 28.7 percent of the 4.4-billion-bushel marketing year total. In April 2012, USDA projected second-half feed and residual disappearance for 2011/12 at 26.3 percent of the marketing-year total and below trade expectations at that time. Once September 1 stocks and final use for other categories were known, second-half 2011/12 feed and residual use fell to 26.0 percent of the marketing-year total. This compares with 24.3 percent in 2010/11, the lowest share since at least 1975. Second-half feed and residual is projected at 1,264 million bushels, compared with 1,180 million last year.

In absolute terms, feed and residual use in the second half of the 2012/13 marketing year is expected to be 807 million bushels less than the 10-year average, and the fourth lowest since 1975, behind last year, 2010/11, and the drought year of 1983.

Ending stocks for 2012/13 are projected at 757 million bushels, 125 million above last month's forecast and 232 million below 2011/12. The stocks-to-use ratio is now projected at 6.8, compared with 5.6 last month and 7.9 in 2011/12.

Corn Price Projection Slips on Higher March 1 Stocks

The forecast average price received by farmers for 2012/13 was lowered by 30 cents on the high end of the range and 10 cents on the low end of the range for a midpoint of \$6.90 per bushel. Current planting progress indicates that last year's early harvest will not be repeated this season. However, prospects for yields closer to trend and fewer acres used for silage or abandoned are expected to result in expanded production in 2013/14, relative to the current crop-year estimate. Expectations for a comparatively abundant new-crop corn harvest, in combination with March 1 stocks that were higher than market expectations, created downward pressure on old-crop prices and provides support for a downward adjustment in the projected season-average farm price.

Planting Intentions Signal Steady Acreage for 2012/13

According to the USDA-NASS *Prospective Plantings* report, as of March 1 U.S. farmers intend to plant 97.3 million acres of corn in 2013, an increase of 127,000 acres from last year. If realized, this will represent the highest planted acreage in the United States since 1936 when an estimated 102 million acres were planted.

Corn acreage is expected to increase the most in North Dakota, where producers intend to add 500,000 acres to last year's record plantings. Record-high corn acreage is also expected in Arizona, Idaho, Minnesota, Nevada, and Oregon. Area in both Kansas and Nebraska, however, is expected to be down 100,000 acres.

Most States in the Corn Belt, which experienced severe drought in 2012, are expected to plant less corn. In the Corn Belt States (Illinois, Indiana, Iowa, Missouri, and Ohio), area is expected to be down 900,000 acres. Prospective plantings in Illinois were 600,000 acres below last season's final plantings, and South Dakota and Missouri are expected to lose 250,000 and 200,000 acres, respectively. Indiana producers intend to plant 150,000 acres less than last year.

Sorghum Ending Stocks Lowered, Prices Reflect Corn's Decline

U.S. 2012/13 sorghum supplies are expanded by 2 million bushels this month to 273 million, due to an equivalent increase in expected imports, primarily from Argentina. Sorghum feed and residual use is up 5 million bushels to 95 million, raising domestic use by the same amount. In response to high corn prices and scarce supplies, some livestock operations are augmenting feed rations to include more grain sorghum. Ending stocks are reduced by 3 million bushels, a reflection of adjustments in the feed/residual and import categories.

The USDA-NASS *Grain Stocks* report, released on March 28, indicates that 92 million bushels of grain sorghum were stored in all positions on March 1, 2013. This is a 15 percent decline relative to the March 1, 2012 figure and is further indicative of the tight stocks situation for feed grains. Disappearance from December 2012 to February 2013 was up 13 percent compared to the same period a year previous, reflecting strengthened demand for sorghum in export, livestock feed, and industrial markets.

Despite a reduction in on- and off-farm stocks, sorghum prices have followed corn's lead and declined subsequent to the release of the *Grain Stocks* report. Prices received by sorghum farmers in 2012/13 are expected to average \$6.60 to \$7.10 per bushel, compared with \$6.70 to \$7.40 last month. The season-average midpoint price, at \$6.85, remains the highest sorghum price on record and is well above the 2011/12 price of \$5.99 per bushel.

Barley Use Prospects Raised Slightly

At 220 million bushels, domestic use is forecast to be up slightly (5 million bushels) relative to the March forecast. The rise is attributable to an expansion in third quarter barley feed and residual disappearance. Domestic supply is boosted by 3 million bushels due to higher estimated third-quarter imports and projected fourth-quarter shipments. Ending stocks are drawn down slightly to 75 million bushels. Barley FSI and export categories are unchanged this month and are set at 155 million and 8 million bushels, respectively.

On March 1, 2013 on- and off-farm barley stocks totaled 116 million bushels, up 24 percent relative to the March 1, 2012 estimate, reflecting the larger production year to year. December 2012-February 2013 disappearance was 8 percent below the same period a year ago but higher than previous expectations, boosting projected 2012/13 feed and residual use.

The midpoint barley price forecast of \$6.40 per bushel is unchanged this month while the price range is narrowed by \$0.05 on both ends to \$6.30-\$6.50 per bushel.

Oats Feed and Residual Use Increased

Total use in 2012/13 is forecast at 177 million bushels, an increase of 10 million from last month. The rise is attributable to increased December-February feed and residual disappearance, which likely reflects greater use of oats in livestock rations. Ending stocks are projected down 10 million bushels, at 32 million; carryout is forecast at the lowest level on record. Prices received by farmers are projected at \$3.75 to \$3.85 per bushel with a midpoint of \$3.80. These prices compare with last month's \$3.70-\$3.90 per bushel and \$3.49 in 2012/13.

Significant Increase in Sorghum Seeded Area Expected in 2013

According to the USDA-NASS *Prospective Plantings* report, U.S. farmers plan to increase seedings of sorghum by 22 percent in 2013 to 7.62 million acres. This increase comes despite concerns over seed availability following successive years of drought-diminished seed-sorghum crops.

Similar to previous seasons, Texas and Kansas collectively account for the majority of planted acres. For 2013, Texas and Kansas are expected to plant fully 77 percent of the sown sorghum area, nearly identical to 2012. Concerns over water availability in both States linger, favoring sorghum cultivation compared to most alternative crops. Export, feeding, and industrial use prospects—as well as the relative drought-hardiness of sorghum—have expanded the crop's appeal in both States. In Texas, sorghum acres have increased at the expense of cotton acres. In Kansas, farmers are expected to shift some acres out of relatively water-intensive corn production in favor of sorghum.

Barley planted acreage is projected to remain at roughly 2012 levels, with 3.634 million acres expected to be seeded in 2013. This compares to 3.637 million acres planted in 2012. Of note is a 10-percent decline in North Dakota acres as farmers expand corn area. In Montana, an additional 100,000 acres of barley are expected to be seeded.

Acres seeded to oats in 2013 are expected to be up 5 percent to 2.901 million acres. Despite the year-to-year expansion in planted area, the projected figure is the third lowest on record and reflects record-low intended plantings in a number of States. If realized, this would be the second consecutive year of increases in oats planted acres, following record-low plantings of 2.496 million acres in 2011.

High hay prices during the 2012/13 crop year have not raised farmers' intentions to harvest significantly more acres for the 2013/14 marketing year. Producers expect to harvest only about 160,000 more acres in the coming year, or about 0.5 percent more than last year. Concerns about water availability and competition from other crops contribute to a reduction in harvest area in several New England and Midwestern States, among others. These declines are offset by primarily modest expansions in harvested area in Arkansas, Wyoming, Illinois, Missouri, Montana, North Dakota, Delaware, Texas, and Washington. Soil moisture and precipitation levels will impact final harvested acreage figures as producers adapt plantings, cuttings, and harvest to changing production conditions.

Brazil and EU Corn Boost Global 2012/13 Production

World coarse grain production in 2012/13 is forecast up 1.1 million tons this month to 1,124.5 million, with increases for corn more than offsetting reduced prospects for sorghum and barley.

Brazil's corn production is projected up 1.5 million tons to 74.0 million. The first-crop corn harvest is ongoing, while second-crop planting is basically complete. On April 9, the Brazilian Government reported a reduction in first crop corn area harvested, with an increase in yields that boosted first-crop production. Also, second-crop corn area was increased, basically offsetting the first crop area reduction. Good moisture conditions were generally prevalent for second-crop plantings, with favorable early seeding in Mato Grosso Do Sul. However, the normal rainfall pattern across much of the second crop corn area, especially in Mato Grosso and Goias, is for a sharp drop in rainfall sometime during April or early May, truncating corn yields. This month the USDA forecast of Brazil's corn yields are increased to reflect the first-crop yields revealed in Brazil's Government surveys and confirmed by weather data and satellite imagery. However, average corn yields are projected to remain below a year earlier, when exceptionally good late rains boosted second crop yields to record levels.

Late upward revisions to 2012/13 corn production estimates for several EU countries boosted production 1.4 million tons this month to 56.1 million. Spain reported corn production up 0.5 million tons to 4.1 million, with harvested area 10 percent above the previous estimate and average yield boosted 4 percent. Hungary also reported corn production up 0.5 million tons from earlier estimates based on increased area harvested for grain and less for silage. Poland's corn production is reported up 0.4 million tons to a record 4.0 million based on increased reported yields.

Russia's corn production is boosted 0.2 million tons to a record 8.2 million based mostly on higher area included in final harvest reports. Ecuador's corn production is up 0.1 million tons to 1.0 million, due more to area (up 9 percent) than yield (up 3 percent). Increased reported corn area boosted Thai corn production 0.1 million tons to 4.6 million. For Indonesia, good reported yields increased corn production 0.1 million tons to 9.0 million.

South Africa's corn production prospects for 2012/13 are cut 0.5 million tons to 12.5 million. Persistent heat and below-normal rainfall in western and central corn areas more than offset increased irrigation in several States and favorable rains to the east. Based on information from the Foreign Agricultural Service (FAS) Post, Vietnam's 2012/13 corn production is reduced 0.5 million tons to 4.8 million, with almost as large a reduction for 2011/12. Lower area and yields are reported for both years. Serbia's 2012/13 corn crop is reduced 0.3 million tons to 3.5 million as damage caused by last summer's drought is reportedly more severe than previously thought. Chile reported 2012/13 corn yields only matching the previous year, trimming production 0.1 million tons. The Philippines and Colombia have corn area down slightly, lowering production nearly 0.1 million tons each. There is a smaller decline reported for corn production in Japan.

World sorghum production for 2012/13 is reduced 0.6 million tons this month to 58.2 million tons. China's sorghum area for 2011/12 and 2012/13 is down significantly from previous estimates, and yields are also reduced, cutting production in 2012/13 by 0.65 million tons to 2.0 million. There is also a small increase in area and production for Mexico. Global 2012/13 barley production is reduced slightly due to a 0.2-million-ton decline for Algeria and a small reduction for Serbia.

Increased Beginning Stocks Help Boost Supplies

World 2012/13 coarse grain supplies are forecast up 1.6 million tons this month, supported by a 0.5-million-ton increase in beginning stocks. South Africa's corn beginning stocks are up 0.3 million tons to 3.7 million as 2011/12 corn exports failed to reach previous expectations. For Serbia, increased 2011/12 corn production and reduced industrial and food use combine to boost 2012/13 beginning stocks 0.2 million tons. Colombia's corn imports are revised up slightly each year back to 2006/07, reflecting Paraguay's export data and boosting 2012/13 beginning stocks 0.1 million tons. Turkey's 2011/12 corn feed use is trimmed 0.1 million tons, boosting stocks. There are smaller increases in 2012/13 beginning stocks for Argentina, Chile, Venezuela, and Paraguay. Partly offsetting these increases are reduced 2012/13 beginning stocks for China's sorghum, Vietnam's corn, and Brazil's corn.

Corn Leads Drop in Projected Coarse Grain Use

Global 2012/13 coarse grain disappearance is projected down 5.9 million tons this month to 1,135.9 million. While the drop in forecast U.S. corn feed use is the largest single change, it is partly offset by increased U.S. industrial use prospects. The combined cuts in foreign countries' coarse grain consumption total 3.8 million tons, with the reduction in China's use prospects bigger than the U.S. change.

China's 2012/13 coarse grain use is forecast down 3.3 million tons this month to 215.7 million tons. Food, seed, and industrial (FSI) use is cut 1.7 million tons, with sorghum reduced 0.7 million tons due to lower production and supply, and corn down 1.0 million tons, reflecting the Beijing FAS Post's analysis of China's demand. China's projected coarse grain feed and residual use is down 1.6 million tons (1.5 million corn and 0.1 million sorghum) due to slowing growth in production and demand for meat in China. Problematic disposal of pigs killed by disease and a new avian influenza are reducing meat demand and meat prices, making feeding corn to pigs and poultry less profitable.

Corn feed use in Egypt is cut 0.5 million tons to 8.7 million because tight foreign exchange is limiting imports. Mexico's coarse grain feed use is trimmed 0.4 million tons as the slow pace of corn imports is only partly offset by increased sorghum feed use. Serbia's corn feed use is forecast down 0.4 million tons because of lower production and a smaller decline in projected ending stocks for 2012/13. India's sorghum feed use is trimmed 0.2 million tons due to increased exports. There are reductions this month of 0.1 million tons in forecast 2012/13 corn feed use for Ukraine and Vietnam, with FSI down 0.2 million tons for Ukraine and 0.1 million tons for Vietnam.

EU 2012/13 coarse grain consumption is projected up 0.75 million tons this month to 151.3 million. Corn feed use is up 1.5 million tons, supported by increased reported production and reduced wheat and barley feeding. Expected barley feed use is cut 0.9 million tons to support strong exports, limit the drop in ending stocks, and boost barley FSI 0.1 million. There is also a small increase this month for EU sorghum imports and feed use.

There is a small increase (up 0.15 million tons) in projected corn use for Turkey, with smaller increases for Argentina and Chile.

Increased Supply and Lower Use Boost Projected Ending Stocks

With forecast 2012/13 global coarse grain supplies up 1.6 million tons and projected use down 5.9 million, ending stocks are expected to reach 153.3 million, up 7.6 million this month. World corn stocks are up 7.8 million tons to 125.3 million, but oats are down 0.2 million tons, mostly in the United States.

The increase in projected foreign corn ending stocks is 4.6 million tons, with China up 3.2 million to 63.3 million. This leaves China with more than half the world's projected corn ending stocks. It is not clear which entities in China are holding what portions of these corn stocks, nor is it clear under what conditions the stocks would move into use and be reflected in prices. Corn market prices in China are generally above prices in the rest of the world, leaving the size of China's corn stocks without much influence on prices outside China.

Brazil's corn ending stocks are forecast up 0.9 million tons to 11.5 million as production increases are much larger than growth in domestic use. Port congestion and priority given to soybeans are limiting corn exports from the world's top exporter. When and under what conditions Brazil's corn will move into the export market will be important for global price discovery.

Corn stocks are projected up 0.3 million tons in Indonesia, as increased imports and production are expected to maintain corn ending stocks at near the level of beginning stocks.

Corn ending stocks for South Africa are up 0.3 million and for Serbia up 0.2 million as these exporters limit stock reductions during the year, despite production problems. Turkey's corn stocks are up 0.2 million tons as imports increase to maintain stock levels. Smaller increases in several countries' forecast corn stocks and reductions for other countries are mostly offsetting.

U.S. Corn Export Prospects Erode

U.S. export prospects for the October-September 2012/13 trade year are reduced 0.5 million tons this month to 22.0 million (down 25 million bushels to 800 million for the September-August marketing year). While projected world corn trade is virtually unchanged this month at 96.4 million tons, the U.S. share is reduced. U.S. sales and shipments remain sluggish despite recent dramatic declines in domestic corn prices. While U.S. corn prices have dropped some compared to competitors, Argentina's export quotes remain significantly lower than U.S. prices. Census corn export data for October 2012 through February 2013 total 7.4 million tons, only 40

percent of the previous year's level. March 2013 corn export inspections were 1.8 million tons, down 41 percent from a year ago. At the end of March outstanding export sales were 4.3 million tons, only 43 percent of a year earlier. Trade-year exports for 2012/13 are forecast at 57 percent of the previous year, so an increase in sales and shipments of U.S. corn is expected in coming months as Brazilian exporters shift from corn to soybeans.

There are several significant offsetting changes to forecast corn imports and exports for 2012/13. Brazil's corn exports for the trade year are increased 0.5 million tons to a record 25.0 million. Corn production prospects are increased, corn prices in Brazil are relatively low, and export shipments of corn in March 2013—at 1.6 million tons—were larger than expected. At this time of year, soybean shipments are expected to get priority at ports, limiting corn exports into the coming months. However, Brazil's corn exports are expected to pick up again in July, August, and September.

Ukraine's 2012/13 corn exports are projected up 0.5 million tons to 13.5 million based on the strong pace of shipments to the EU and other markets. Serbia's exports are forecast up 0.1 million to 0.5 million. Despite drought devastated production, shipments to the EU have exceeded previous expectations.

South Africa's corn export prospects are cut 0.5 million tons to 2.0 million due to reduced production. The pace of China's corn shipments to neighboring countries that show up in trade statistics has been sluggish recently, reducing 2012/13 forecast exports 0.15 million tons to 0.05 million.

Corn import prospects for 2012/13 are cut 0.5 million tons to 4.0 million for Egypt as economic problems and foreign exchange difficulties limit corn imports. Mexico's corn imports are forecast down 0.5 million tons to 8.0 million based on the pace of imports, purchases, and sluggish meat production. Colombia's corn import prospects are trimmed 0.3 million tons to 3.2 million mostly because increased sorghum imports are replacing some corn imports. Russia's corn imports are cut 0.15 million tons to 0.05 million due to record production and the very sluggish pace of imports. Corn import forecasts are trimmed 0.1 million tons each for Ecuador, due to increased production, and for the Philippines because of the slow pace of purchases.

China's 2012/13 corn imports are boosted 0.5 million tons to 3.0 million based on the pace of imports and purchases. Corn prices in China are far enough above world prices to encourage imports from the United States. Vietnam's corn import prospects are up 0.3 million tons this month because of reduced production and stocks. Chile's corn import prospects are boosted 0.25 million tons to 0.8 million due to reduced production. Indonesia's corn imports are raised 0.2 million tons to 1.7 million as imports are on a pace to maintain normal stock levels. Turkey's corn imports are raised 0.2 million tons to 0.7 million, reflecting increased feed demand.

While 2012/13 world corn trade is virtually unchanged this month, coarse grain trade is up 0.6 million tons to 124.7 million, with increases for barley and sorghum. Global barley trade is up 0.3 million tons to 18.8 million, with EU exports up 0.2 million tons to 4.0 million and India's up 0.1 million to 0.2 million; while barley imports are raised slightly for Algeria, Tunisia, the United States, and Uruguay.

World sorghum trade in 2012/13 is forecast up 0.3 million tons this month to 6.9 million. Export prospects are increased 0.2 million tons for Argentina and slightly for India based on the pace of shipments. Colombia's imports are boosted 0.2 million tons to 0.8 million based on purchases from Argentina. U.S. and EU sorghum imports are raised slightly. U.S. sorghum imports for the trade year are forecast at a record 0.1 million tons, based on imports to date and additional shipments leaving Argentina. In the past, U.S. sorghum imports were so small and occasional that they were not forecast before they occurred.

Contacts and Links

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Tables

Table 1--Feed grains: U.S. quarterly supply and disappearance (million bushels), 4/12/2013

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	2009/10	Sep-Nov	1,673	13,092	1	14,766	1,382	2,015	467	3,864	10,902	3.56	
		Dec-Feb	10,902		1	10,904	1,447	1,341	422	3,210	7,694	3.61	
		Mar-May	7,694		3	7,697	1,565	1,273	549	3,387	4,310	3.48	
		Jun-Aug	4,310		3	4,313	1,567	495	543	2,605	1,708	3.52	
		Mkt yr	1,673	13,092	8	14,774	5,961	5,125	1,980	13,066	1,708	3.55	
	2010/11	Sep-Nov	1,708	12,447	5	14,160	1,582	2,067	454	4,103	10,057	4.30	
		Dec-Feb	10,057		8	10,065	1,577	1,562	403	3,542	6,523	5.07	
		Mar-May	6,523		10	6,534	1,638	715	511	2,864	3,670	6.01	
		Jun-Aug	3,670		4	3,673	1,628	451	467	2,546	1,128	6.51	
		Mkt yr	1,708	12,447	28	14,182	6,426	4,795	1,834	13,055	1,128	5.18	
	2011/12	Sep-Nov	1,128	12,360	4	13,491	1,613	1,825	406	3,844	9,647	5.87	
		Dec-Feb	9,647		4	9,651	1,641	1,540	446	3,627	6,023	6.06	
		Mar-May	6,023		11	6,034	1,630	858	398	2,886	3,148	6.34	
		Jun-Aug	3,148		10	3,159	1,555	322	293	2,170	989	7.02	
		Mkt yr	1,128	12,360	29	13,516	6,439	4,545	1,543	12,527	989	6.22	
	2012/13	Sep-Nov	989	10,780	29	11,798	1,482	2,063	221	3,766	8,033	6.89	
		Dec-Feb	8,033		51	8,084	1,449	1,073	163	2,685	5,399	6.95	
		Mkt yr	989	10,780	125	11,894	5,937	4,400	800	11,137	757	6.65-7.15	
	Sorghum	2009/10	Sep-Nov	54.71	382.98		437.70	25.00	115.71	46.23	186.94	250.76	3.16
			Dec-Feb	250.76		0.01	250.76	25.00	7.04	43.17	75.21	175.55	3.19
Mar-May			175.55			175.55	25.60	15.15	46.94	87.69	87.86	3.12	
Jun-Aug			87.86			87.86	14.40	2.77	29.46	46.62	41.24	3.39	
Mkt yr			54.71	382.98	0.01	437.70	90.00	140.67	165.79	396.46	41.24	3.22	
2010/11		Sep-Nov	41.24	345.63	0.01	386.87	23.60	89.69	35.91	149.21	237.67	4.43	
		Dec-Feb	237.67		0.02	237.69	24.85	16.21	25.58	66.64	171.05	5.21	
		Mar-May	171.05		0.00	171.05	26.79	12.90	51.32	91.02	80.03	6.32	
		Jun-Aug	80.03			80.03	9.76	3.94	38.88	52.58	27.45	5.90	
		Mkt yr	41.24	345.63	0.03	386.90	85.00	122.74	151.70	359.45	27.45	5.02	
2011/12		Sep-Nov	27.45	214.44	0.00	241.89	24.50	44.31	22.13	90.94	150.95	5.98	
		Dec-Feb	150.95		0.05	151.00	25.51	5.70	11.72	42.93	108.07	5.97	
		Mar-May	108.07		0.05	108.12	26.51	15.35	7.73	49.59	58.53	6.00	
		Jun-Aug	58.53		0.01	58.53	8.47	5.29	21.81	35.58	22.95	6.02	
		Mkt yr	27.45	214.44	0.11	242.00	85.00	70.65	63.40	219.05	22.95	5.99	
2012/13		Sep-Nov	22.95	246.93	1.09	270.97	25.06	78.73	27.34	131.13	139.85	6.86	
		Dec-Feb	139.85		0.06	139.91	20.06	9.61	18.85	48.51	91.39	6.78	
		Mkt yr	22.95	246.93	3.00	272.88	80.00	95.00	80.00	255.00	17.88	6.60-7.10	

Table 1--Feed grains: U.S. quarterly supply and disappearance, cont. (million bushels), 4/12/2013

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	2009/10	Jun-Aug	89	227	6	322	43	38	2	83	239	5.05
		Sep-Nov	239		4	244	43	-7	1	37	206	4.58
		Dec-Feb	206		3	209	41	10	1	52	157	4.59
		Mar-May	157		4	161	37	7	1	45	115	4.19
		Mkt yr	89	227	17	333	164	48	6	217	115	4.66
	2010/11	Jun-Aug	115	180	3	299	42	33	1	75	224	3.71
		Sep-Nov	224		3	227	40	2	5	46	180	3.72
		Dec-Feb	180		2	182	35	7	1	44	138	3.89
		Mar-May	138		2	140	41	8	1	50	89	4.30
		Mkt yr	115	180	9	305	159	50	8	216	89	3.86
	2011/12	Jun-Aug	89	156	1	246	41	26	3	71	175	5.14
		Sep-Nov	175		4	179	39	-2	3	40	139	5.46
		Dec-Feb	139		7	145	38	12	1	52	94	5.44
		Mar-May	94		5	99	37	1	1	39	60	5.52
		Mkt yr	89	156	16	261	155	38	9	201	60	5.35
	2012/13	Jun-Aug	60	220	5	285	40	45	3	89	197	6.26
		Sep-Nov	197		6	203	38	3	3	45	158	6.44
		Dec-Feb	158		6	164	37	10	1	48	116	6.44
		Mkt yr	60	220	23	303	155	65	8	228	75	6.30-6.50
		Oats	2009/10	Jun-Aug	84	93	27	204	17	59	1	76
Sep-Nov	128				22	150	17	21	1	39	111	1.91
Dec-Feb	111				25	136	17	21	0	38	98	2.24
Mar-May	98				21	119	24	14	1	39	80	2.26
Mkt yr	84			93	95	272	74	115	2	192	80	2.02
2010/11	Jun-Aug		80	81	24	186	18	50	1	69	117	2.10
	Sep-Nov		117		24	140	18	21	1	39	101	2.59
	Dec-Feb		101		19	120	17	16	1	34	86	3.13
	Mar-May		86		18	105	22	15	1	37	68	3.44
	Mkt yr		80	81	85	247	74	102	3	179	68	2.52
2011/12	Jun-Aug		68	54	18	139	17	43	1	61	78	3.27
	Sep-Nov		78		36	114	18	17	1	35	79	3.62
	Dec-Feb		79		24	103	17	11	0	29	75	3.53
	Mar-May		75		16	91	25	11	0	36	55	3.95
	Mkt yr		68	54	94	215	76	82	2	160	55	3.49
2012/13	Jun-Aug		55	64	29	148	17	46	0	63	85	3.77
	Sep-Nov		85		27	112	18	21	0	39	73	3.85
	Dec-Feb		73		17	90	17	21	0	38	53	4.02
	Mkt yr		55	64	90	209	76	100	1	177	32	3.75-3.85

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: 4/11/2013

Table 2--Feed and residual use of wheat and coarse grains, 4/12/2013

Market year and quarter 1/	Corn	Sorghum	Barley	Oats	Feed grains	Wheat	Energy feeds	Grain consuming	Energy feeds per grain
	(million metric tons)	(million metric tons)	(million metric tons)	(million metric tons)	(million metric tons)	(million metric tons)	(million metric tons)	animal units (millions)	consuming animal unit (tons)
2010/11 Q1 Sep-Nov	52.5	2.3	0.0	0.4	55.2	-1.7	53.5		
Q2 Dec-Feb	39.7	0.4	0.2	0.3	40.5	-0.1	40.5		
Q3 Mar-May	18.2	0.3	0.2	0.3	18.9	-1.7	17.3		
Q4 Jun-Aug	11.5	0.1	0.6	0.7	12.8	5.6	18.4		
MY Sep-Aug	121.8	3.1	0.9	1.6	127.4	2.1	129.6	92.4	1.4
2011/12 Q1 Sep-Nov	46.4	1.1	-0.0	0.3	47.8	-0.4	47.3		
Q2 Dec-Feb	39.1	0.1	0.3	0.2	39.8	1.2	41.0		
Q3 Mar-May	21.8	0.4	0.0	0.2	22.4	-1.9	20.5		
Q4 Jun-Aug	8.2	0.1	1.0	0.7	10.0	11.7	21.7		
MY Sep-Aug	115.5	1.8	1.2	1.5	120.0	10.6	130.6	92.6	1.4
2012/13 Q1 Sep-Nov	52.4	2.0	0.1	0.4	54.9	-0.8	54.0		
Q2 Dec-Feb	27.2	0.2	0.2	0.3	28.1	0.2	28.3		
MY Sep-Aug	111.8	2.4	1.3	1.8	117.3	7.7	124.9	92.1	1.4

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, 4/12/2013

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, Plainview to Muleshoe, TX		Sorghum, No. 2 yellow, Gulf ports, LA (dollars per cwt)		
	2010/11	2011/12	2012/13	2010/11	2011/12	2012/13	2010/11	2011/12	2010/11	2011/12	2012/13
Sep	4.51	6.77	7.70	5.23	7.50	8.15	7.74	11.48	9.79	12.88	12.97
Oct	5.19	6.23	7.48	5.99	6.98	8.16	8.54	10.73	10.40	12.08	13.20
Nov	5.33	6.26	7.39	6.05	6.97	8.18	8.78	10.96	10.75	12.44	13.10
Dec	5.65	5.96	7.23	6.36	6.57	7.85	9.62	10.50	11.10	11.82	13.14
Jan	6.10	6.25	7.17	6.73	6.94	7.70	10.46		11.91	12.20	13.13
Feb	6.69	6.41	7.15	7.44	7.10	7.70	11.42		12.63	12.09	13.12
Mar	6.59	6.46	7.33	7.38	7.13	7.85	11.45		12.64	12.04	13.32
Apr	7.33	6.34		8.11	6.96		12.78		13.68	11.94	
May	7.08	6.27		7.82	6.84		12.22				
Jun	7.17	6.30		7.89	6.79		12.21				
Jul	6.96	7.85		7.64	8.46		10.69		12.65		
Aug	7.30	8.15		7.88	8.44		11.47		13.71	13.47	
Mkt year	6.33	6.60		7.04	7.22		10.62	10.92	11.92	12.33	
	Barley, No. 2 feed, Minneapolis, MN (dollars per bushel)			Barley, No. 3 malting, Minneapolis, MN (dollars per bushel)			Oats, No. 2 white heavy, Minneapolis, MN (dollars per bushel)				
	2010/11	2011/12	2012/13	2010/11	2011/12	2012/13	2010/11	2011/12	2012/13		
Jun	2.23	5.06	5.15	3.20	7.40	7.03	2.39	3.68	3.37		
Jul	2.06	5.18	5.52		7.72	6.89	2.58	3.68	3.95		
Aug	2.54	5.25	5.78		7.83	6.95	2.69	3.69	3.99		
Sep	2.99	5.14	5.58		7.76	6.99	3.14	3.72	3.89		
Oct	3.32	5.16	5.51		7.64	7.11	3.56	3.51	3.98		
Nov	3.57	5.29	5.49	4.70	7.60	7.23	3.54	3.36	3.85		
Dec	3.89	5.17	5.29	5.16	7.32	7.22	3.88	3.30	3.94		
Jan	4.15	5.24	5.08	5.58	7.20	7.09	3.93	3.16	3.79		
Feb	4.62	5.26	5.16	5.91	7.07	7.04	4.08	3.46	4.07		
Mar	4.74	5.37	5.22	5.92	7.05	6.87	3.55	3.48	4.26		
Apr	5.05	5.18		6.20	7.03		3.83	3.55			
May	4.83	5.21		6.43	7.00		3.55	3.48			
Mkt year	3.67	5.21		5.39	7.38		3.39	3.50			

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>.

Data run: 4/11/2013

Table 4--Selected feed and feed byproduct prices (dollars per ton), 4/12/2013

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		
	2010/11	2011/12	2012/13	2010/11	2011/12	2012/13	2010/11	2011/12	2012/13	2010/11	2011/12	2012/13
Oct	321.92	301.45	488.46	225.31	255.63	343.00	129.75	173.75	226.50	501.88	524.38	753.50
Nov	341.78	292.22	466.16	235.00	240.50	376.88	141.80	168.20	209.75	518.00	487.00	716.25
Dec	351.93	281.66	460.09	240.63	220.63	345.00	136.25	155.00	203.34	520.00	441.25	673.34
Jan	368.54	310.65	431.39	245.63	213.00	327.50	138.88	138.00	204.10	524.06	433.50	599.50
Feb	358.59	330.37	440.67	258.75	190.00	279.38	149.25	133.75	209.88	533.75	448.75	584.38
Mar	345.43	365.96	437.33	256.50	225.00	301.88	150.10	129.38	204.13	543.30	487.50	581.88
Apr	335.87	394.30		240.00	240.63		151.13	128.75		556.25	498.75	
May	342.30	415.17		275.50	270.00		149.40	137.80		556.00	533.00	
Jun	347.45	422.60		307.50	294.38		149.75	138.00		567.50	579.00	
Jul	346.52	515.83		313.13	350.50		148.89	192.20		556.25	629.00	
Aug	349.60	564.69		342.50	407.50		160.60	252.50		559.00	718.75	
Sep	336.32	529.37		345.63	393.75		183.25	243.38		550.63	721.88	
Mkt yr	345.52	393.69		273.84	275.13		149.09	165.89		540.55	541.90	
				Distillers dried grains, Lawrenceburg, IN			Wheat middlings, Kansas City, MO			Alfalfa hay, weighted-average farm price 2/		
	2010/11	2011/12	2012/13	2010/11	2011/12	2012/13	2010/11	2011/12	2012/13	2010/11	2011/12	2012/13
Oct	293.26	299.02	463.59	120.00	212.00	134.69	185.69	208.57	118.00	204.00	212.00	
Nov	314.64	284.24	380.38	150.40	202.00	141.88	198.55	193.60	117.00	193.00	215.00	
Dec	304.05	280.76	320.42	158.00	200.00	164.31	196.24	217.37	121.00	195.00	217.00	
Jan	304.39	285.08	338.16	174.50	200.00	157.33	138.58	196.38	121.00	193.00	217.00	
Feb	317.37	289.60	410.39	185.00	200.00	145.13	136.35	197.47	129.00	194.00	218.00	
Mar	354.50	337.49	474.92	195.00		151.35	126.71	196.93	142.00	200.00	219.00	
Apr	405.38	421.08		205.00		151.38	108.05		161.00	210.00		
May	429.50	439.82		205.00		171.31	136.28		191.00	217.00		
Jun	395.05	393.29		210.00		158.80	144.36		185.00	201.00		
Jul	367.30	414.07		210.00		174.80	212.28		198.00	198.00		
Aug	337.26	444.80		214.00		199.93	256.13		196.00	203.00		
Sep	333.17	490.16		215.00		219.69	216.21		198.00	205.00		
Mkt yr	346.32	364.95		186.83	202.80	164.22	171.28		123.00	196.00	211.00	

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/ig>, 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), 4/12/2013

Mkt year and qtr 1/		High-fructose corn syrup (HFCS)	Glucose and dextrose	Starch	Alcohol for fuel	Alcohol for beverages and	Cereals and other products	Seed	Total food, seed, and industrial use
2010/11	Q1 Sep-Nov	126.25	65.11	66.29	1,242.66	33.02	49.12	0.00	1,582.44
	Q2 Dec-Feb	116.28	59.71	62.69	1,254.87	34.59	48.58	0.00	1,576.71
	Q3 Mar-May	138.90	70.83	64.58	1,257.79	36.16	49.66	20.24	1,638.17
	Q4 Jun-Aug	139.62	76.71	64.82	1,263.42	31.23	49.66	2.76	1,628.21
	MY Sep-Aug	521.05	272.36	258.38	5,018.74	135.00	197.00	23.00	6,425.52
2011/12	Q1 Sep-Nov	119.64	77.97	64.65	1,266.69	33.30	50.73	0.00	1,612.98
	Q2 Dec-Feb	115.00	73.34	62.03	1,304.81	34.93	50.73	0.00	1,640.83
	Q3 Mar-May	136.83	72.98	62.14	1,247.78	36.59	50.53	23.57	1,630.40
	Q4 Jun-Aug	141.89	72.33	65.15	1,191.75	31.68	51.23	0.96	1,555.01
	MY Sep-Aug	513.36	296.61	253.97	5,011.03	136.50	203.23	24.53	6,439.22
2012/13	Q1 Sep-Nov	122.76	70.37	63.79	1,141.52	32.94	50.30	0.00	1,481.68
	Q2 Dec-Feb	113.44	65.35	58.68	1,127.03	34.55	50.19	0.00	1,449.24
	MY Sep-Aug	495.00	280.00	250.00	4,550.00	135.00	202.00	25.00	5,937.00

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

Source: Calculated by USDA, Economic Research Service.

Date run: 4/11/2013

Table 6--Wholesale corn milling product and byproduct prices, 4/12/2013

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)	
	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13	2011/12	2012/13
	Sep	27.99	29.21	30.30	31.03	23.26	24.22	30.85	34.85	21.38
Oct	26.78	28.56	29.09	30.39	22.63	23.05	30.85	34.85	21.38	23.38
Nov	26.90	28.34	29.20	30.17	20.05	22.24	30.85	35.35	21.38	23.38
Dec	25.74	28.01	28.05	29.84	20.89	22.27	30.85	35.10	21.38	23.38
Jan	24.86	27.93	26.56	29.76	19.90	22.78	34.85	35.35	23.38	25.88
Feb	26.40	27.63	30.37	29.46	21.40	22.27	33.85	35.35	23.38	25.88
Mar	26.17	27.70	27.92	29.53	21.79	22.81	35.85	35.35	23.38	25.88
Apr	25.52		27.55		22.09		34.85		23.38	
May	24.49		26.77		21.34		34.85		23.38	
Jun	24.30		26.00		21.25		34.85		23.38	
Jul	28.35		30.05		20.65		35.35		23.38	
Aug	29.86		31.56		24.10		34.85		23.38	
Mkt year 2/	26.44		28.62		21.61		33.56		22.71	

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: 4/11/2013

Table 7--U.S. feed grain imports by selected sources (1,000 metric tons) 1/, 4/12/2013

Import and country/region	----- 2010/11 -----		----- 2011/12 -----		2012/13	
	Mkt year	Jun-Feb	Mkt year	Jun-Feb	Jun-Feb	
Oats	Canada	1,393	1,080	1,556	1,277	1,260
	Finland	74	74	35	35	
	Jamaica	0	0	0	0	
	All other countries	0	0	30	29	1
	Total 2/	1,468	1,154	1,621	1,341	1,262
Malting barley	Canada	175	156	264	171	271
	All other countries	0	0	0	0	0
	Total 2/	175	156	264	171	271
Other barley 3/	Canada	31	15	89	67	112
	All other countries	1	1	1	1	2
	Total 2/	32	16	90	68	114

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: 4/11/2013

Table 8--U.S. feed grain exports by selected destinations (1,000 metric tons) 1/, 4/12/2013

Export and country/region		----- 2010/11 -----		----- 2011/12 -----		2012/13
		Mkt year	Sep-Feb	Mkt year	Sep-Feb	Sep-Feb
Corn	Japan	14,014	6,669	11,503	6,214	3,455
	Mexico	7,484	2,827	10,133	5,039	2,023
	South Korea	6,123	3,180	3,601	2,471	384
	Egypt	3,405	1,809	495	350	0.221
	China (Taiwan)	2,737	1,246	1,554	957	277
	European Union-27	1,008	327	9	6	10
	China (Mainland)	980	314	5,146	2,678	1,952
	Syria	960	678	0.114		
	Canada	958	444	870	476	206
	Venezuela	856	223	1,336	532	386
	Israel	804	404	57	28	0.220
	Dominican Republic	756	356	363	321	8
	Costa Rica	712	349	575	356	48
	Guatemala	687	324	591	345	101
	Saudi Arabia	576	391	362	253	205
	Indonesia	548	302	42	42	
	Colombia	506	220	274	168	95
	El Salvador	491	202	381	267	53
	Cuba	454	136	478	320	197
	Honduras	443	149	359	170	78
	Jamaica	283	139	253	123	137
	Panama	263	127	209	175	23
	Lebanon	249	128	0.003		0.010
	Ecuador	214	183	30	30	0.043
	Morocco	182	127	59	59	0.065
	All other countries	899	506	505	273	120
Total 2/	46,590	21,763	39,184	21,653	9,759	
Sorghum	Mexico	2,383	667	1,168	588	929
	European Union-27	628	290	4	2	38
	Japan	340	233	96	78	109
	Sub-Saharan Africa	252	221	335	188	92
	All other countries	250	151	8	4	6
	Total 2/	3,853	1,562	1,610	860	1,173
		----- 2010/11 -----		----- 2011/12 -----		2012/13
		Mkt year	Jun-Feb	Mkt year	Jun-Feb	Jun-Feb
Barley	Tunisia	61	61			
	Canada	38	19	26	25	5
	Mexico	34	30	56	35	25
	Morocco	12	12	25	25	
	All other countries	20	18	86	83	136
	Total 2/	165	140	192	168	165

1/ Grain only. Market year (September-August for corn and sorghum, June-May for barley) and market year to date.

2/ Totals may not add due to rounding.

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

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Feed Outlook: Special Article

High RIN Prices Signal Constraints to U.S. Ethanol Expansion

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Approved by the
World Agricultural
Outlook Board

Introduction

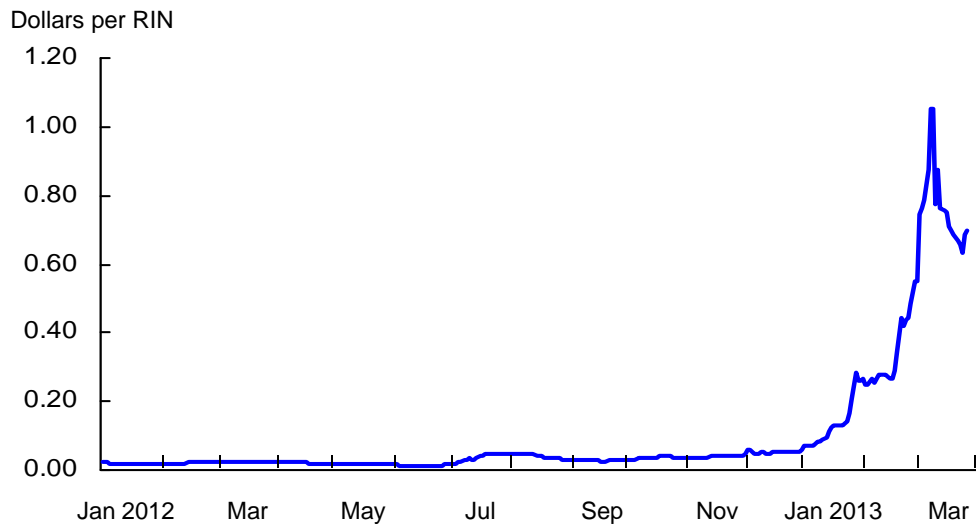
Renewable Identification Numbers (RINs) are codes assigned to batches of renewable fuel and are used in the administration of the federal Renewable Fuel Standard (RFS), an energy law that specifies minimum annual levels of biofuel consumption in the United States. Obligated parties under the RFS use RINs to report qualifying biofuel use to the U.S. Environmental Protection Agency (EPA) to demonstrate compliance with their annual RFS requirements.

After many years of relatively low prices for conventional ethanol RINs, those prices have recently risen sharply (fig. 1). As for any product, prices for RINs reflect underlying supply and demand factors. Thus, surging prices indicate an upcoming imbalance between the supply of RINs and the demand for RINs for RFS compliance. That imbalance reflects underlying conditions in the U.S. ethanol market, where RFS ethanol mandates now exceed ethanol use due to declining gasoline use and the effects of the E10 blend wall.

Nearly all retail gasoline sold in the United States currently is an E10 (10-percent ethanol) blend with gasoline. The limited ability to expand usage of higher ethanol blends (E15 and E85) creates an effective limit on the use of ethanol at near 10 percent of total gasoline consumption. Forecasts for gasoline consumption imply an E10 market that is substantially smaller than the portion of the RFS that can be met with corn-starch based ethanol, with the gap widening. This shortfall in meeting the conventional ethanol RFS will soon transmit to a shortfall in the availability of conventional RINs relative to the demand for RINs for RFS compliance, likely to occur in 2014 once carryover RINs are no longer sufficient to fill the gap. Thus, RIN prices have begun to reflect those shortfalls. Additional factors that may be affecting RIN prices include uncertainties regarding potential regulatory and legislative actions as well as uncertainties in this new and evolving RIN market with little history to guide market participants.

Figure 1

Conventional ethanol RIN prices have risen sharply in 2013



Source: Oil Price Information Service.

Note: 2012 prices are for RINs generated in 2012; 2013 prices are for RINs generated in 2013.

RFS Background

The Energy Policy Act of 2005 originated the RFS program, which initially mandated 4.0 billion gallons of renewable fuel to be blended into gasoline in 2006, growing to 7.5 billion gallons in 2012. The scope of the RFS was expanded and extended in the Energy Independence and Security Act of 2007 (EISA). The new mandates include 18.15 billion gallons of renewable fuel use in U.S. transportation fuel in 2014, growing to 36 billion gallons in 2022. Within the overall RFS, specific sub-mandates are created for various categories of biofuel: advanced biofuel, cellulosic biofuel, and biomass-based diesel (biodiesel). The latter two categories are sub-components of advanced biofuel in the RFS. The sub-mandates are defined by eligible feedstock types and lifecycle greenhouse gas (GHG) emission reductions.

Biofuel that does not qualify for these specific sub-mandates can still count toward the overall RFS. The potential annual amounts of biofuel in this last category are not specified explicitly in EISA, but are derived as the residual from the total RFS and the advanced biofuel sub-mandate. This residual category is frequently referred to as the “non-advanced” mandate or the “conventional” mandate and has typically been met with corn-starch based ethanol.

RINs Track Renewable Fuel Use

The system for Renewable Identification Numbers (RINs) was developed by EPA to ensure compliance with the RFS mandates. A RIN is a 38-character numeric code corresponding to a volume of renewable fuel produced in or imported to the United States. RINs are generated by the producer or importer of the renewable fuel. RINs must remain with the renewable fuel as the renewable fuel moves through the distribution system and ownership changes. Once the renewable fuel is blended into a motor vehicle fuel, the RIN may be separated from the renewable fuel. Then the RIN may be used for compliance, sold, or held for future compliance (subject to limits on use of RINs across years, discussed later). Those alternative uses of RINs are intended to provide some flexibility to obligated parties in meeting the RFS. If the renewable fuel is subsequently exported, the corresponding RINs will not qualify for meeting the RFS.

Obligated parties include producers or importers of gasoline and diesel in the 48 contiguous states and Hawaii. Each year, obligated parties are required to report to EPA a sufficient number of RINs to indicate compliance with the RFS. These RINs can be obtained from the ethanol purchased and blended with gasoline or can be purchased from others who may have more RINs than needed to meet their obligation if the blends in their gasoline exceeded the national average required blend rate implied by the RFS. The annual compliance period runs from January 1 through December 31. Obligated parties must report sufficient RINs to EPA by the end of February of the following year to demonstrate compliance.

RINs are valid for compliance purposes for the calendar year in which they are generated or the following calendar year. If they are used in the following year, such use is subject to a rollover cap which specifies that no more than 20 percent of a year's obligations can be met with RINs from the previous year. Also, under certain conditions, an obligated party may carry a deficit from one calendar year into the next year as long as the deficit and that following year's full obligation are met in the next year. RINs expire if unused at the end of the year following their generation.

RINs are specific to the sub-mandates of the RFS. However, RINs associated with biofuels that have higher GHG emission reduction requirements may be used for other sub-mandates with the same or lower GHG emission reduction requirements. For example, cellulosic RINs (60 percent GHG emissions reduction requirement), biomass-based diesel RINs (50 percent GHG reduction), and sugar-based ethanol RINs (which qualify for the non-specific portion of the advanced RFS that has a 50 percent GHG reduction) may be used to meet the non-advanced, conventional RFS (20 percent GHG reduction).

Nonetheless, while there is technically the potential for such spillover usage of excess RINs from those advanced biofuel categories to meet the non-advanced, conventional RFS, this is unlikely to occur in any significant degree in the short run, given the limited availability of excess biofuel in those categories relative to their own mandates and the overall advanced mandate. Thus, the non-advanced mandate will continue to fall almost entirely on conventional ethanol, most of which is corn-based ethanol.

Changing Market Conditions Boost Conventional RIN Prices

Prices for conventional RINs reflect the supply of RINs, generated from domestically-produced ethanol, relative to the demand for those RINs, subject to the rules established for RIN usage to demonstrate compliance with the RFS.

In 2008 through 2011, the production and use of ethanol in the United States exceeded the implicit conventional ethanol (non-advanced biofuel) mandate. The supply of RINs exceeded the demand both for current year compliance as well as for carryover usage for the following year's compliance. Prices for conventional RINs averaged 3.2 cents in 2010 and 2.6 cents in 2011.

The market for RINs began to change in 2012 when the 2012 U.S. drought pushed corn prices sharply higher, leading to a decline in ethanol production and reduced use of conventional ethanol. As a result, the available supply of 2012 conventional RINs fell short of the corresponding 2012 conventional ethanol use mandate. However, there were sufficient supplies of carryover 2011 RINs available for 2012 RFS compliance and, consequently, 2012 RIN prices remained low, averaging 2.9 cents.

A widening gap between the implicit conventional ethanol mandate and expected U.S. ethanol use over the next 2 years is now shaping the RIN market and RIN prices. Although carryover 2012 RINs appear to be sufficient to supplement RINs generated in 2013 in order to meet the 2013 mandate, the situation looks to tighten next year. For 2014, the conventional RFS is likely to exceed the supply of 2014-generated RINs by more than the available carryover of 2013 RINs. This anticipated imbalance has driven up prices for 2013 conventional RINs as obligated parties attempt to build up their holdings of RINs to meet future compliance requirements.

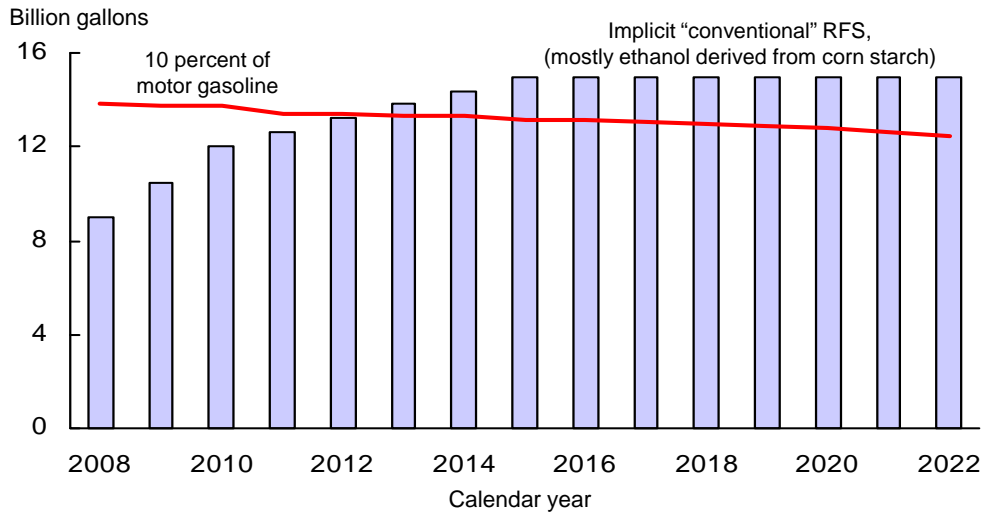
This looming shortfall in RIN availability to meet the conventional RFS relates to several medium and longer term factors:

- *Stagnating U.S. gasoline use:* Annual gasoline use in the United States has been declining since its peak of 142 billion gallons in 2007. High gasoline prices, the 2008-09 economic slowdown, and improvement in fuel-use efficiency of automobiles underlie this declining trend. Use in 2012 was below 134 billion gallons, with no growth or declines projected by the U.S. Department of Energy for the next several years.
- *E10 blend wall to be hit:* Lower gasoline use is important for ethanol market developments and prospects because the gasoline market is where fuel ethanol is used. With lower gasoline use, the E10 “blend wall” occurs at a lower level than otherwise. The blend wall represents the maximum level of ethanol use in 10-percent blends with gasoline, the predominant blend in the United States. Full market penetration of 10-percent ethanol blends would be less than 13.4 billion gallons, short of the 13.8-billion-gallon conventional ethanol RFS for 2013, the 14.4-billion-gallon conventional mandate for 2014, and the 15-billion-gallon conventional mandate for 2015 (fig. 2).
- *Limited gains expected for higher ethanol blends:* While some ethanol use above the 10-percent blend can occur, infrastructural and other constraints limit growth in the E15 (15-percent ethanol blend) and E85 (85-percent ethanol blend) markets.

As a result of these gasoline and ethanol market factors, USDA’s 2013 long-term projections as well as its short-term scenario presented at the February 2013 Agricultural Outlook Forum indicate a moderate increase in the amount of corn used to produce ethanol and by-products during the 2013/14 corn marketing year. Corn used for ethanol and by-products is expected to rise to 4.675 billion bushels from the drought-reduced level of 4.5 billion bushels projected for 2012/13.

Figure 2

E10 blend wall to constrain compliance with “conventional” Renewable Fuel Standard (RFS)



Sources: USDA-ERS calculations derived from U.S. Department of Energy, Energy Information Administration, *Annual Energy Outlook, 2013*, and the *Energy Independence and Security Act of 2007*.

RINs Intended to Provide Economic Incentives When Mandates Exceed Market Equilibrium

With the conventional mandate now exceeding the E10 blend wall quantity, the volume of ethanol produced and blended at the market equilibrium will not be sufficient to meet the mandate. The price of ethanol at this point (with no RINs) is not high enough to provide economic incentives for greater production nor is it low enough to encourage additional use. Thus, additional supplies and use beyond that market equilibrium volume require a higher price to ethanol producers and a lower price for ethanol users.

The difference between these two prices is equal to the per-unit value of RINs and represents the price gap between supply and demand at the mandated volume. RINs are intended to provide economic incentives to facilitate additional ethanol production and use when the RFS exceeds the market equilibrium. Blenders pay a higher price, including the RIN value, to ethanol producers. Once blended, a lower ethanol price is implicit in the price of the blended product and the RIN value represents the cost of compliance with the RFS mandate. How that compliance cost is split among blenders, refiners, and consumers depends on properties of supply and demand in the wholesale and retail motor-vehicle fuel markets.

Uncertainties Potentially Affecting Current RIN Prices

In addition to factors that might affect the demand for RINs for 2013 compliance, carryover provisions that allow 2013 RINs to be used for part of 2014's compliance mean that current demand and prices for 2013 RINs also reflect expectations for ethanol market prospects next year.

Typical factors that affect RIN prices are those that determine the supply and demand of ethanol. For example, prices for crude oil affect the ethanol market by changing the demand for biofuel and, potentially, the equilibrium quantities. Production costs affect the supply of ethanol, with prices for corn being the primary feedstock cost. Price expectations for crude oil and corn are thus important for shaping the ethanol market, with uncertainties regarding those factors influencing RIN prices.

Uncertainties in both the legislative and regulatory arenas also may be having a role in current RIN prices. First, there are uncertainties regarding how EPA will implement the RFS for 2014 and beyond. Second, there is uncertainty about how EPA might impose penalties for RFS compliance shortfalls if obligated parties are unable to meet their ethanol mandates or acquire sufficient RINs for their compliance requirements. Further, there is uncertainty regarding the potential for new legislation to modify the RFS to address current market constraints.

Finally, the market for RINs is relatively new. Some price effects may reflect uncertainty among participants in this evolving market regarding the operations of the market as well as the complexities of RIN market relationships to biofuel markets.

How these market factors and legislative and regulatory issues evolve will be important for shaping the ethanol market and for determining prices for RINs. But for now, as a consequence of these issues, there are uncertainties about future movements in conventional RIN prices, with both upside and downside risks.

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