United States Department of Agriculture

Economic Research Service

Situation and Outlook

FDS-15h

August 14, 2015

Feed Outlook

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Corn Yield Increase Boosts Supply

Special Article: Sorghum Markets in Transition: Trade Policies Drive Export Volumes

Feed Chart Gallery will be updated on August 18, 2015

The next release is September 15, 2015

Approved by the World Agricultural Outlook Board.

The August survey-based corn yield forecast is 2.0 bushels per acre above the July trend-based projection. Corn production for 20156/16 is forecast at 13.7 billion bushels, up 156 million this month. Sorghum, barley, and oats production is also increased this month. Projected 2015/16 corn domestic use is increased, with food, seed, and industrial use up 40 million bushels and feed and residual up 25 million. This is partly offset by a 25-million-bushel reduction in export prospects caused by increased competition. U.S. corn ending stocks are forecast up 115 million bushels to 1,713 million. The season-average farm price is projected down 10 cents this month, with a midpoint 10 cents lower than the forecast for 2014/15.

World 2015/16 coarse grain production is projected slightly higher this month, with a small reduction in global corn output more than offset by increased sorghum and barley harvests. Projected global coarse grain use is little changed, leaving 2015/16 ending stocks up 5.4 million tons to 227.4 million.

Recent *Feed Outlook* Special Articles

"Boutique Brews, Barley, and the Balance Sheet," pdf pages 18-23 of the January 2015 *Feed Outlook* report (http://www.ers.usda.gov/publications/fds-feed-outlook/fds-15a.aspx).

"World Corn Use Expands Despite High Prices in 2012/13," pdf pages 17-22 of the June 2013 *Feed Outlook* report (http://www.ers.usda.gov/publications/fds-feed-outlook/fds-13f.aspx).

"Animal Unit Calculations—First Projections for the 2013/14 Crop Year," pdf pages 25-30 of the May 2013 *Feed Outlook* report (http://www.ers.usda.gov/publications/fds-feed-outlook/fds-13e.aspx).

Domestic Outlook

Feed Grain Supply Advances to Record on Higher Yields

The USDA National Agricultural Statistics Service (NASS) *Crop Production* report, released on August 12, provided the first survey-based yield forecast for the 2015/16 corn crop. At 168.8 bushels per acre, the forecast is up 2.0 bushels per acre from the trend-based projection in USDA's July 10 *World Agricultural Supply and Demand Estimates* report. The increase reflects excellent growing conditions in much of the growing area, with the exception of some areas of Illinois, Indiana, and Missouri, where excessive rainfall in June and early July adversely affected crops. This season's forecast yield is 2.2 bushels per acre below the record yield last season of 171.0 bushels per acre. If realized, production on the 81.1 million acres expected to be harvested will reach 13,686 million bushels, 5,329 million bushels below last season's estimated record crop of 14,216 million bushels. Area harvested for grain is unchanged from the June 30 NASS *Acreage* report estimate but is down 2.0 million acres from 2014/15.

Arkansas, Nebraska, Minnesota, Mississippi, and Iowa are forecast to have the highest yields of the top 20 corn-producing States in 2015/16 at 195, 187, 184, and 184 bushels per acre, respectively. Iowa, Illinois, Nebraska, and Minnesota are forecast to be the top corn producers, with production in each State exceeding 1.4 billion bushels. These four States are also expected to account for 34 percent of U.S. corn production.

The NASS August 11 *Crop Progress* report indicated that 70 percent of the corn crop was rated good to excellent, compared with 73 percent last year at this time. Among major producing States, Illinois had 56 percent, compared to 82 last year, and Iowa had 83 percent in the good-to-excellent range, compared with 76 percent last year.

Projections for 2015/16 production of sorghum, barley, and oats are also raised this month, boosting feed grain supplies to a record 418.8 million tons. Corn beginning stocks for 2015/16 are forecast down 6 million bushels, based on revised 2014/15 domestic use. An increase in projected 2015/16 corn imports is mostly offset by a reduction in barley imports.

Feed and Residual up 1.0 million Metric Tons

The 2015/16 feed and residual use for the four feed grains plus wheat on a September-August year is projected at 144.5 million tons, compared with 143.1 million forecast last month. The increase is due to increased feed and residual for corn, sorghum, and barley. For 2014/15, the four feed grains plus wheat feed and residual estimate was nearly steady at 144.5 million tons from last month. Total grain consuming animal units (GCAUs) for 2015/16 are projected at 95.2 million units, slightly higher than last month. GCAUs per ton of feed and residual are projected at 1.52 tons per GCAU in 2015/16, up 0.01 tons from last month but down 0.03 tons from 2014/15.

Corn for Sweeteners Boosts 2014/15 FSI Use

Food, seed, and industrial (FSI) use for 2014/15 is raised 9 million bushels to 6,555 million this month. Corn used for sweeteners is increased based on year-to-date trends. High fructose corn syrup (HFCS) is forecast up 20 million bushels to 470 million. Glucose and dextrose is forecast unchanged from last month. Based on year-to-date pace of production, corn used for starch is forecast down 10 million bushels to 220 million. Forecast corn use for ethanol is unchanged, based on Energy Information Administration data on projected gasoline and ethanol production. There were minor changes in use for beverage and industrial products and for cereals.

For 2015/16, FSI use is raised 40 million bushels to 6,625 million. A 25-million-bushel gain in projected corn use for ethanol production is supported by low gasoline prices and improved economic conditions. These changes offset increasing vehicle efficiency to raise prospects for gasoline consumption for the 2015/16 marketing year months. The increased gasoline use boosts corn use for ethanol by 25 million bushels to 5,250 million. Corn for HFCS is raised 25 million bushels, reflecting an expected year-to-year increase from 2014/15, and corn use for starch is lowered 10 million bushels, reflecting the lower expected use for starch in 2014/15.

Feed and Residual Use for 2015/16 Expected Higher

Projected corn feed and residual use for 2015/16 is 5,300 million bushels, up 25 million from last month, bringing it to the same level as last season. The larger forecast crop increases the residual component of feed and residual use. Feed and residual use for 2014/15 is unchanged from last month at 5,300 million bushels.

Projected Exports Lowered 25 Million Bushels for 2015/16

U.S. corn exports for 2015/16 are projected 25 million bushels lower to 1,850 million. Higher South American supplies, with increased production projected for Brazil and Argentina, will compete with U.S. corn in world markets. Exports for the 2014/15 marketing year are unchanged.

With 2015/16 U.S. corn supplies projected at a record 15,488 million bushels and projected total use at 13,775 million, carryout is expected to rise to 1,713 million, 115 million over last month's projection.

Back-Year Adjustments Made

Several minor changes to back-year corn imports, exports, and feed and residual use are made this month following revisions to official trade data for calendar years 2012 through 2014 by the U.S. Census Bureau. Revised trade data for the 2011/12 through 2014/15 marketing years resulted in adjustments to imports and exports for some quarters and corresponding changes in feed and residual use in those same quarters.

Corn Prices Slip on Higher 2015 Yield Forecast

The projected U.S. season-average farm price for corn is lowered 10 cents at both ends of the range to $3.35 to $3.95 per bushel. At the midpoint of $3.65 per bushel, farm prices are expected to be the lowest since the 2009/10 marketing year when corn averaged $3.55 per bushel. The price range for the 2014/15 crop is tightened this month by $0.05 on the low and high end of the range to $3.65 and $3.75 per bushel.

Record Yields and Record High Exports for Sorghum

The first survey-based yield forecast of the season indicates that producers can expect to harvest 7 more bushels per acre in 2015/16 than in 2014/15. At 74.6 bushels per acre, the current yield forecast is record high, surpassing the previous record set in 2007 by 1.4 bushels. Projected yields in Kansas and Texas are both up year-to-year but are not record high. In Kansas, ample moisture, despite recent above-average temperatures, has supported sorghum development. In Texas, where weather, soil moisture conditions, and pest pressure are varied, yield gains are unevenly distributed. Arkansas, Illinois, and Mississippi are expected to realize record sorghum yields.

Historic-high sorghum yields combine with a 20-percent year-to-year increase in forecast area harvested to support a production forecast of 573 million bushels. Production is up 68 million bushels from the July estimate and is now the highest U.S. production total since the 1999/2000 marketing year. Projected area harvested for sorghum is down slightly this month based on revisions to the June 30 NASS *Acreage* report and following re-sampling of respondents located in major sorghum States, including Arkansas, Kansas, Missouri, and Texas.

While producers are enjoying favorable growing conditions, on the whole, the Nation's sorghum crop is later-maturing relative to the pace of the 2014/15 crop. For the week ending August 9, 32 percent of the U.S. sorghum crop was at or beyond the coloring stage, down from 38 percent in 2014. In Texas, where approximately 45 percent of the crop was harvested through the first week of August last year, just 33 percent of the crop was out of the field in the week ending August 9, 2015. A wet spring led to postponed plantings and later maturation of the Texas crop. Consequently, the volume of Texas sorghum that will be available for export prior to the beginning of the new marketing year is expected to be 5 to 10 percent smaller than was harvested by the same time in 2014.

Despite delays in the maturation of the Texas crop and reduced early-crop availability, the sizable U.S. sorghum crop supports a 40-million-bushel month-to-month increase in projected 2015/16 exports. At 430 million bushels, the 2015/16 sorghum export forecast would be record high and exceed the record 2014/15 marketing year by 80 million bushels. The third-highest level of exports occurred over the 1979/80 marketing year, when close to 330 million bushels of sorghum were exported. In that marketing year, Mexico and Japan were the primary destinations for U.S. sorghum. More recently, as demand from China has grown, Mexico and Japan have become less common destinations for U.S. sorghum.

This month's special article, *U.S. Sorghum Markets in Transition: Trade Policies Drive Export Volumes*, examines the evolution of the U.S. sorghum export market and underscores its volatility. Indeed, while China is currently the primary destination for U.S. sorghum, scrutiny of grain imports has been stepped up via new exporter reporting and grain certification requirements. However, even as the depth of grain trade monitoring appears to be intensifying, sorghum shipments to China continue to match expectations and support the robust export projection.

U.S. sorghum supply is augmented slightly by a revision to 2015/16 beginning stocks on higher reported 2014/15 imports. Total supply of 589 million bushels is allocated across use and stocks categories. This month, projected feed and residual use is increased 15 million bushels to 105 million, up from 85 million in 2014/15. After accounting for the 40-million-bushel increase in exports, ending stocks are increased by 13 million bushels to 39 million. If realized, the stocks projection for 2015/16 is more than twice as large as that for 2014/15 and is the largest since 2009/10, when carryout totaled 41 million bushels.

In accordance with the significant increase in both corn and sorghum production, the sorghum season-average price is trimmed this month. At the midpoint, the projected sorghum farm price is $3.90 per bushel, a 15-cent decrease from the July estimate and 10 cents lower than the 2014/15 season-average farm price. On both ends of the range, the sorghum price is lowered 15 cents per bushel. The 2015/16 average sorghum price is now projected at approximately 107 percent of the comparable corn price; down from 108 percent projected in the previous month.

Barley Imports Fall on Lowered Canadian Production Prospects

The 2015/16 total supply of barley in the U.S. is lowered this month, despite a slight yield increase from the July forecast, due to a more-than-offsetting reduction in imports. Imports are projected down 5 million bushels to 20 million; lower U.S. imports reflect anticipated reductions in the supply of Canadian barley. U.S. feed and residual use is lowered by 5 million bushels due to tighter supplies. U.S. export prospects are raised 5 million bushels, mostly due to reduced supplies in Canada. The net effect is to cut anticipated carryout 3 million bushels to 80 million.

Back-year Census trade revisions are noted for 2013/14 and 2014/15 imports and exports. For 2013/14, imports and exports are now estimated at 18.748 million bushels and 14.273 million, respectively. The same figures are now 23.581 million bushels and 14.339 million for 2014/15. Feed and residual use estimates for both years are adjusted to reflect the net change in trade volumes.

The combination of reported high prices for feed barley in the West and tightened supplies due to reduced import prospects serves to provide support for the all barely price, which is unchanged this month. The midpoint all barley price is $4.60 per bushel, with a range of $4.20 on to $5.00 per bushel.

Oats Production Nudged Upward

Alongside other small grains, U.S. oats have benefited from favorable weather conditions that nudged yield forecasts upward. This month, the 2015/16 oats yield

projection is increased by 1.4 bushels to 70.0 bushels per acre. With harvested area anticipated at 1.2 million acres, U.S. oats production is projected to reach 85 million bushels, the highest level since 2009/10 when 91 million bushels were harvested. The ratio of area harvested-to-planted is also expected to be higher in 2015/16 at 0.398, up from 0.378 in 2014/15, indicating that producers intend to use proportionally more of the oats for grain and seed this year.

With no changes to stocks or imports, total oats supply increases by 2 million bushels to 234 million bushels. Slight back-year revisions to oats imports are noted for 2013/14 and 2014/15, now estimated at 97.119 and 107.454 million bushels, respectively. Back-year Census revisions to exports for the same years result in new estimates of 1.582 million bushels for 2013/14 and 1.795 million for 2014/15. Feed and residual use estimates for the same years are revised to 98.495 and 69.373 million bushels, respectively.

The midpoint of the 2015/16 oats season-average farm price is projected at $2.35 per bushel with a range of $2.05 to $2.65 per bushel. This is reduced 5 cents per bushel on the low and high end from the July projection. The current oats price projection is 86 cents lower at the midpoint than the 2014/15 season average price and would be the lowest oats price since 2009/10, when prices were $2.02 per bushel.

Alfalfa, Other Hay Yields, and Production up Slightly

Forecast 2015 U.S. production of alfalfa and alfalfa mixtures, as well as other hay, are up a combined 2 percent relative to 2014 estimates. Based on August 1 conditions, yields for the two categories of hay are expected to average 3.39 and 2.09 tons per acre, respectively. The yield forecast for other hay would be record high and supports the third largest production on record; behind 2003 and 2004. Harvested alfalfa and alfalfa mixture hay area is down slightly from 2014 and is forecast at 18.3 million acres; other hay harvested area is projected at 38.2 million acres, a 1-percent decline relative to 2014. In aggregate, total hay production is forecast at 142.1 million tons and compares to the 139.8 million tons harvested in 2014. The current production forecasts will be updated in the NASS October 9 *Crop Production* report.

With the exception of areas of Western States, including California, Oregon, and Washington, which are experiencing a second year of dry conditions, most hay-growing areas have received ample moisture, which supports improved cultivation conditions and higher production. According to the August 12 NASS *Crop Production* report, Arizona is expecting a record alfalfa yield, while yields of other hay are anticipated to be record high in Missouri, Montana, and Nebraska.

Nationwide, pasture and range conditions for the week ending August 9 indicate that fully 55 percent of acres were rated as "good" to "excellent," an increase of 5 percent over the previous year. A smaller proportion of acres, 14 percent, are rated as "very poor" to "poor" in the most recent *Crop Progress* report. In 2014, 18 percent of acres were rated "poor" or "very poor" for the same week. The improved condition of the Nation's pastures and ranges provides validation for the projected hay yield increases for 2015. Notably, in drought-affected California, Oregon, and

Washington, just 25, 9, and 27 percent of pastures and ranges are rated as "good" to "excellent." In 2014 and in the same States, the percent rated "good" to "excellent" in the comparable week was 15, 24, and 29 percent, respectively.

The June all-hay price, at $162 per ton, was markedly lower than the $197 per ton growers received in June 2014. The year-to-year decline in the all-hay monthly price is primarily driven by sizable reductions in alfalfa hay prices. In June 2014, the average price of alfalfa was $222 per ton; in 2015, the price was 20 percent lower at $178 per ton.

International Outlook

Increased Coarse Grain Production Prospects for 2015/16

Early August is a crucial time for gathering information about global grain production prospects. In the Northern Hemisphere, winter grain harvests are being counted while summer crops like corn have just passed or are passing through critical reproductive growth stages. Some Southern Hemisphere crops are still being harvested or more complete statistics reported, while others await planting. This month, a number of key grain-producing countries are reporting generally above-trend yields, such as the United States, Ukraine, and Brazil, and others have reduced yield prospects, such as the EU, China, and Canada. While U.S. 2015/16 coarse grain production is projected up 5.7 million tons this month, it is mostly offset by a reduction of 4.0 million for foreign prospects.

World coarse grain production in 2015/16 is projected up 1.8 million tons this month to 1,276.7 million. Global corn production is cut 1.5 million tons to 985.6 million, but increased barley and sorghum production is more than offsetting. World barley production prospects are up 1.6 million tons this month to 139.4 million, and sorghum is increased 1.9 million to 69.0 million. World rye is projected down 0.2 tons million to 13.8 million, but oats are increased slightly with no changes this month to prospects for millet or mixed grain.

China's 2015/16 corn production is forecast to reach a record 225.0 million tons, but some dry conditions there reduced prospects by 4.0 million this month. July heat and dryness in Liaoning, Jilin, Shandong, and across some other parts of the North China Plain and the Northeast have stressed reproductive corn, and conditions no longer support prospects for a record corn yield in 2015/16. However, the year-to-year increase in area combined with the second-best national average yield still supports record corn production. The combination of area expansion and yield growth has supported record corn production in China for 8 of the last 10 years.

EU 2015/16 corn production is forecast down 3.5 million tons to 62.3 million, devastated by searing high temperatures during tasseling and silking as well as extended dryness across most of the southern EU this summer. Damage in France, Italy, and Spain is limited by irrigation, but even irrigated corn is susceptible to damage caused by high temperatures during pollination. To the east, Hungary and Romania had better spring and early summer rains, but recent dryness and hot temperatures affected those crops as well. Rye yield prospects are also reduced, trimming EU production 0.2 million tons to 8.3 million, and there is a small decline in barley prospects. Corn statistics for EU 2014/15 production are raised 0.1 million tons this month to 75.1 million.

Serbia suffered from severe temperatures and drought at least as bad as or worse than that which struck its EU neighbors. Corn production prospects there are cut 1.0 million tons to 5.7 million. On the other side of Romania, Moldova also suffered from drought, slashing corn yields and dropping production 0.2 million tons to 1.0 million.

Canada suffered from spotty rainfall this year, with eastern parts of Alberta especially dry. These include key barley areas, dropping yield prospects and cutting

projected production 1.0 million tons to 6.5 million. This is the lowest Canadian barley crop since 1967/68, despite some expansion in planted area for 2015/16.

Ukraine's 2015/16 coarse grain production prospects are raised 3.3 million tons this month to 36.4 million. Barley production is forecast up 2.3 million tons, with area and yield prospects increased based on harvest reports. While not a record barley yield, it is the third highest for Ukraine in the last 20 years. The corn crop is projected up 1.0 million tons to 27.0 million. While conditions are not good everywhere, with dryness in some western and southern districts, rainfall has been above normal and temperatures have been near normal through the center of the country, including the most important corn areas. Satellite imagery confirms prospects for above-trend yields.

Brazil's corn production forecast for 2014/15 and projected for 2015/16 are each raised 2.0 million tons to 84.0 million and 79.0 million, respectively. The Brazilian Ministry of Agriculture, CONAB, published survey-based production estimates that confirmed larger harvested area for 2014/15 second-crop corn, currently in the midst of harvest, with record yields confirmed. The corn area decline for the 2014/15 year was less than expected, with declining first-crop area mostly offset by increased second-crop corn. This pattern is likely to persist in 2015/16, limiting the decline in corn area despite prices for corn that are not as attractive as for some competing crops. While corn production in 2015/16 is expected to decline from the previous year's record, area is projected down just 1 percent, supporting large production. Harvest of Argentina's 2014/15 corn crop is also nearly complete, and area harvested for grain is larger than previously expected, boosting production 1.5 million tons to 26.5 million. These larger Southern Hemisphere 2014/15 corn crops will compete in international markets mostly during the first half of the 2015/16 October-September trade year.

Russia's 2015/16 coarse grain crop is forecast up 0.5 million tons to 39.3 million, supported by corn yield prospects. Favorable rain and moderate temperatures in crucial parts of the Southern District are supported by satellite imagery that indicates above-trend yield prospects and a record production of 13.5 million tons.

Morocco's 2015/16 coarse grain production is projected up 0.3 million tons this month to 3.8 million, with the harvested barley crop reaching 3.5 million. Harvest reports reduced area harvested but highlighted record yields. Smaller production changes include increases for Uruguay but small reductions for Venezuela and Bosnia-Herzegovina.

Increased Beginning Stocks Contribute to 2015/16 Supplies

World coarse grain beginning stocks for 2015/16 are forecast up 3.0 million tons this month to 232.3 million. Combined with the modest increase in projected production, 2015/16 global supplies are up 4.8 million tons this month to 1,509.0 million.

The largest increase in 2015/16 beginning stocks is for China, up 1.3 million tons based on increased corn imports for 2014/15. The imported corn is expected to displace domestic corn in animal feed, leaving government stocks at a higher level.

Brazil's corn beginning stocks for 2015/16 are increased 1.0 million tons based on increased second-crop 2014/15 corn harvested in the latter half of the local marketing year. Three consecutive corn crops over 80 million tons from 2012/13 through 2014/15 are expected to boost 2015/16 beginning stocks to a record 19.8 million.

Mexico's coarse grain beginning stocks for 2015/16 are forecast up 0.6 million tons, mostly due to increased 2014/15 corn production and imports more than offsetting a reduction in sorghum production. South Korea's 2015/16 beginning stocks are up 0.4 million tons this month supported by increased 2014/15 imports. Partly offsetting is a reduction of 0.5 million tons in Saudi Arabia's barley beginning stocks caused by increased consumption for 2013/14 barley feed.

Smaller changes to forecast 2015/16 beginning stocks include increases for Iran, Canada, Uruguay, Argentina, Indonesia, Moldova, and Morocco but reductions for the EU, the United States, Venezuela, and Chile.

Projected World Coarse Grain Use Virtually Unchanged

Global coarse grain use in 2015/16 is projected down slightly this month but still rounds to 1,282 million tons. However, this stability in world consumption hides numerous offsetting changes. World food, seed, and industrial use (FSI) is increased 0.6 million tons, mostly due to higher projected U.S. corn use for ethanol production. The U.S. increase is partly offset by reduced FSI for Japan, Venezuela, and Ukraine but a small increase for Uruguay.

The largest change to 2015/16 feed and residual disappearance is for the EU, down 2.0 million for corn due to sharply reduced production. Ukraine corn feed and residual is cut 0.9 million tons based on reports of stagnating meat production. Venezuela's corn feed use is trimmed 0.3 million tons for both 2014/15 and 2015/16 as macro-economic problems stifle poultry production. There are smaller changes for Canada, Indonesia, South Korea, Moldova, Uruguay, Bosnia-Herzegovina, Colombia, and Argentina.

Global Ending Stocks Forecast Higher

World 2015/16 coarse grain ending stocks are projected up 5.4 million tons to 227.4 million, with most of the increase in the United States, leaving foreign stocks up 2.2 million tons this month.

The largest increase is for Brazil, up 2.0 million tons. Continued large second-crop corn production is expected to limit the declines in stocks that can be achieved by the end of 2015/16.

Mexico's 2015/16 ending stocks of coarse grain are forecast up 0.6 million tons this month based on a higher level of stocks likely to be on hand at the end of the year. With relatively modest price levels, it is less expensive to hold stocks. South Korea's 2015/16 ending stocks are projected up 0.5 million tons, also maintaining a higher level. Morocco's barley ending stocks are up 0.4 million tons, supported by increased production. Indonesia's government limits on corn imports is expected to limit corn use and increase stock holding, boosting projected stocks 0.3 million

tons. Argentina's large 2014/15 corn crop contributes to an increase in 2015/16 ending stocks of 0.3 million tons. Smaller increases are expected for Ukraine, Iran, and Uruguay. Reduced 2015/16 coarse grain ending stocks are forecast for the EU, down 0.4 million to 13.6 million due to sharply reduced corn production. Small reductions in ending stocks are forecast for Venezuela and Moldova.

World Corn Trade Increased for 2014/15 and 2015/16

Global corn trade for 2014/15 (October-September trade year) is increased 2.5 million tons this month to 125.1 million based on recent sales and shipments. China's import data indicate larger shipments received from Ukraine than expected, boosting projected imports 1.3 million tons to 4.3 million. The EU has picked up the pace of corn imports as production problems have become manifest, increasing forecast imports 0.5 million tons to 9.0 million. South Korea has been buying aggressively, increasing expected imports 0.4 million tons to 10.0 million. Mexico has also purchased more corn than expected, increasing forecast imports 0.3 million tons to 10.3 million. There are small increases to forecast imports based on the pace of purchases for the United States and Bosnia-Herzegovina. Venezuela's corn import prospects are cut 0.4 million tons to 2.0 million based on the slow pace of purchases and ongoing economic problems. Japan's imports are trimmed 0.1 million tons to 14.9 million.

Corn exports in 2014/15 are forecast higher for Ukraine, up 1.0 million tons to 19.0 million, based on strong shipments, especially to China. Argentina's corn exports are also forecast up 1.0 million tons this month to 19.0 million. Argentina's corn crop is raised, providing ample supplies for export, and Argentina's corn has been priced at a discount to competitors' offers, maintaining stronger-than-expected shipments, despite some uncertainty about the allocation of export quotas. There are also smaller increases in exports based on the pace of shipments for the EU, up 0.3; Russia, up 0.1; and Bosnia-Herzegovina and Moldova, up by small amounts.

U.S. 2014/15 corn export forecasts are unchanged this month at 46.0 million tons for the October-September trade year and 1,850 million bushels for the September-August marketing year. Trade year Census data for October through June are 34.3 million tons, down about 10 percent from a year earlier. July 2015 inspections at 4.6 million tons are slightly above a year ago, but outstanding sales and low-priced corn from South America indicate slowing U.S. export shipments for the coming months.

World corn trade for 2015/16 is projected up 1.5 million tons this month to 126.8 million. The EU is expected to increase corn imports due to production shortfalls, becoming the world's largest importer, as was the case in 2013/14. EU imports are raised 1.0 million tons this month to 15.0 million. There are small increases this month for Chile and the United States. Partly offsetting are reductions for Venezuela, down 0.3 million tons, and Japan, trimmed 0.2 million.

Export competition is expected to be intense in 2015/16, with competitive pricing playing a critical role in determining export shares. While Ukraine's export quotes are not the lowest, it enjoys special trade relations with both the EU and China, allowing preferential access. With a large increase in projected production, Ukraine's exports are forecast up 1.5 million tons this month to 17.5 million.

Brazil's corn export prospects are also raised 1.5 million tons this month, reaching a record 28.0 million. Increased 2014/15 second-crop corn will mostly be shipped early in trade year 2015/16, and increased 2015/16 production prospects portend strong exports at the end of the trade year. Argentina's 2015/16 trade year exports are projected up 0.5 million tons to 15.5 million, as some of the increased 2014/15 production is expected to be exported in trade year 2015/16. Russia's corn export prospects are up 0.5 million tons to 4.0 million based on increased production. Partly offsetting these increases are reduced export prospects for Serbia, down 1.0 million tons to 1.8 million, and for the EU, down 0.5 million to 2.0 million.

U.S. 2015/16 corn export prospects are reduced 1.0 million tons to 47.0 million (down 25 million bushels to 1.85 billion for the September-August local marketing year). While U.S. corn supplies are ample, export prices are significantly lower for Argentina and Brazil. At the end of July 2015, U.S. outstanding export sales for the next marketing year were only 4.6 million tons, down sharply from 7.7 million a year ago.

U.S. Sorghum Export Prospects Increase

Increased U.S. 2015/16 sorghum production is expected to boost supplies available to export, with China continuing to bid sorghum export prices above corn. U.S. exports are projected up 1.0 million tons to a record 11.0 million (up 40 million bushels to 430 million bushels for the September-August local marketing year). World sorghum trade in 2015/16 is projected up 0.8 million tons to 13.9 million. Argentina's 2015/16 trade year export prospects are trimmed 0.2 million tons to 1.5 million, reflecting reduced imports by Chile, down 0.1 million; Mexico, reduced 0.05 million; and Colombia, down 0.05 million. These countries' imports are reduced by the same amounts for 2014/15, and Argentina's 2014/15 exports are forecast down 0.3 million tons to 1.2 million. U.S. sorghum export forecasts for 2014/15 are unchanged supported by trade data. The pace of shipments has slowed in recent months with tight U.S. supplies of old-crop sorghum and limited new-crop sorghum available for shipment before September 1, 2015.

World Barley Trade Projected Higher

Global barley trade in October-September 2015/16 is projected up 1.3 million tons this month to 25.0 million. Saudi Arabia's imports are forecast up 0.5 million tons to 7.0 million, as increased imports are needed to maintain reasonable stock levels. There are smaller increases in projected imports for Canada and the EU. Ukraine, with sharply increased production, is projected to increase barley exports, up 2.0 million tons this month to 4.0 million. Export prospects for the EU and Canada are reduced 0.5 million tons and 0.3 million, respectively. With reduced Canadian production, U.S. barley exports are projected slightly higher.

World barley trade for 2014/15 is forecast up 1.1 million tons this month to 27.4 million. Shipment data and sales indicate Ukraine's exports up 0.8 million tons to 3.5 million, EU's exports up 0.2 million to 9.0 million, and U.S. exports up by a small amount. Imports are raised for China, Iran, Saudi Arabia, Uruguay, Canada, and the EU but are reduced for Morocco and the United States.

Tables

Table 1--Feed grains: U.S. quarterly supply and disappearance (million bushels), 8/14/2015

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)
Corn	2012/13	Sep-Nov	989	10,755	35	11,779	1,466	2,060	221	3,746	8,033	6.87
		Dec-Feb	8,033		45	8,078	1,430	1,087	161	2,678	5,400	6.95
		Mar-May	5,400		40	5,440	1,567	921	186	2,674	2,766	7.04
		Jun-Aug	2,766		40	2,806	1,575	247	162	1,985	821	6.67
		Mkt yr	989	10,755	160	11,904	6,038	4,315	730	11,083	821	6.89
	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	1,607	1,454	390	3,451	7,008	4.40
		Mar-May	7,008		9	7,017	1,668	861	636	3,165	3,852	4.63
		Jun-Aug	3,852		6	3,858	1,679	403	544	2,626	1,232	4.06
		Mkt yr	821	13,829	36	14,686	6,503	5,030	1,920	13,454	1,232	4.46
	2014/15	Sep-Nov	1,232	14,216	5	15,452	1,610	2,230	401	4,241	11,211	3.55
		Dec-Feb	11,211		6	11,217	1,623	1,440	404	3,467	7,750	
		Mar-May	7,750		10	7,760	1,663	1,114	536	3,313	4,447	
		Mkt yr	1,232	14,216	30	15,477	6,555	5,300	1,850	13,705	1,772	3.65-3.75
	2015/16	Mkt yr	1,772	13,686	30	15,488	6,625	5,300	1,850	13,775	1,713	3.35-3.95
Sorghum	2012/13	Sep-Nov	22.95	247.74	1.09	271.78	24.92	79.68	27.34	131.94	139.85	6.86
		Dec-Feb	139.85		0.06	139.91	24.92	4.31	19.15	48.37	91.54	6.76
		Mar-May	91.54		5.52	97.06	25.90	16.46	13.59	55.95	41.11	6.67
		Jun-Aug	41.11		2.91	44.01	19.60	-6.96	16.22	28.86	15.15	5.30
		Mkt yr	22.95	247.74	9.57	280.27	95.34	93.48	76.30	265.11	15.15	6.33
	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	4.19	41.48	55.67	175.73	4.22
		Mar-May	175.73		0.01	175.74	12.01	2.58	68.72	83.32	92.42	4.68
		Jun-Aug	92.42		0.07	92.49	2.88	-11.92	67.51	58.46	34.03	4.11
		Mkt yr	15.15	392.33	0.09	407.57	69.89	92.56	211.10	373.54	34.03	4.28
	2014/15	Sep-Nov	34.03	432.58	0.21	466.82	10.36	150.23	83.64	244.23	222.59	3.62
		Dec-Feb	222.59		0.12	222.71	2.88	2.62	97.36	102.86	119.86	
		Mar-May	119.86		0.00	119.86	1.05	-16.02	101.63	86.66	33.21	
		Mkt yr	34.03	432.58	0.38	466.98	15.21	85.00	350.00	450.21	16.78	3.95-4.05
	2015/16	Mkt yr	16.78	572.66		589.43	15.00	105.00	430.00	550.00	39.43	3.50-4.30

Table 1--Feed grains: U.S. quarterly supply and disappearance, cont. (million bushels), 8/14/2015

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	2012/13	Jun-Aug	60	219	5	284	38	45	3	86	198	6.40
		Sep-Nov	198		6	204	36	6	3	46	158	6.46
		Dec-Feb	158		6	164	35	11	1	47	117	6.44
		Mar-May	117		6	123	38	3	1	42	80	6.42
		Mkt yr	60	219	23	302	147	66	9	222	80	6.43
	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	177	7	266	39	43	4	86	180	5.67
		Sep-Nov	180		4	184	38	-14	4	28	156	5.12
		Dec-Feb	156		6	163	37	5	3	44	118	
		Mar-May	118		6	124	37	4	4	45	79	
		Mkt yr	82	177	24	283	151	38	14	204	79	5.30
	2015/16	Mkt yr	79	210	20	308	153	60	15	228	80	4.20-5.00
Oats	2012/13	Jun-Aug	55	61	29	146	17	43	0	61	85	3.76
		Sep-Nov	85		27	112	18	21	0	39	73	3.84
		Dec-Feb	73		17	90	17	20	0	38	53	4.02
		Mar-May	53		20	72	24	12	0	36	36	4.35
		Mkt yr	55	61	93	209	76	96	1	173	36	3.89
	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	121	18	29	1	47	74	3.38
		Sep-Nov	74		24	99	18	13	0	32	67	3.13
		Dec-Feb	67		32	99	17	22	0	39	59	
		Mar-May	59		24	84	24	5	0	30	54	
		Mkt yr	25	70	107	202	77	69	2	148	54	3.21
	2015/16	Mkt yr	54	85	95	234	77	95	2	174	60	2.05-2.65

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: 8/13/2015

Table 2--Feed and residual use of wheat and coarse grains, 8/14/2015

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
2013/14	Q1 Sep-Nov	58.7	2.5	-0.2	0.4	61.4	-4.6	56.8		
	Q2 Dec-Feb	36.9	0.1	0.2	0.3	37.6	-0.1	37.5		
	Q3 Mar-May	21.9	0.1	0.1	0.4	22.4	-0.7	21.7		
	Q4 Jun-Aug	10.2	-0.3	0.9	0.5	11.4	6.9	18.3		
	MY Sep-Aug	127.8	2.4	1.1	1.6	132.8	1.5	134.3	91.0	1.5
2014/15	Q1 Sep-Nov	56.6	3.8	-0.3	0.3	60.4	-2.6	57.8		
	Q2 Dec-Feb	36.6	0.1	0.1	0.4	37.1	0.2	37.3		
	Q3 Mar-May	28.3	-0.4	0.1	0.1	28.1	-1.4	26.8		
	MY Sep-Aug	134.6	2.2	0.9	1.5	139.2	5.4	144.5	93.2	1.6
2015/16	MY Sep-Aug	134.6	2.7	1.2	1.6	140.1	4.4	144.5	95.2	1.5

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, 8/14/2015

Mkt year and month 1/	Corn, No. 2 yellow, Central IL (dollars per bushel)			Corn, No. 2 yellow, Gulf ports, LA (dollars per bushel)			Sorghum, No. 2 yellow, Gulf ports, LA (dollars per cwt)		
	2012/13	2013/14	2014/15	2012/13	2013/14	2014/15	2012/13	2013/14	2014/15
Sep	7.70	4.78	3.16	8.15	5.27	4.14	12.97	9.84	7.91
Oct	7.48	4.20	3.09	8.16	5.13	4.15	13.20	9.31	8.52
Nov	7.39	4.10	3.45	8.18	5.06	4.54	13.10	8.86	9.04
Dec	7.23	4.13	3.75	7.85	5.06	4.55	13.14	9.34	9.85
Jan	7.17	4.13	3.67	7.70	5.03	4.44	13.13	9.77	10.41
Feb	7.15	4.33	3.65	7.70	5.32	4.41	13.12	10.16	10.70
Mar	7.33	4.64	3.66	7.85	5.65	4.43	13.32	10.57	
Apr	6.57	4.98	3.59	7.11	5.65	4.38	12.18		9.97
May	6.83	4.72	3.49	7.50	5.51	4.23	12.42		7.44
Jun	6.94	4.37	3.52	7.58	5.14	4.24			
Jul	6.61	3.74	3.87	7.10	4.64	4.56			
Aug	5.98	3.59		6.07	4.48		10.01	8.41	
Mkt year	7.03	4.31		7.58	5.16		12.66	9.53	

	Barley, No. 2 feed, Minneapolis, MN (dollars per bushel)			Barley, No. 3 malting, Minneapolis, MN		Oats, No. 2 white heavy, Minneapolis, MN (dollars per bushel)		
	2013/14	2014/15	2015/16	2013/14	2014/15	2013/14	2014/15	2015/16
Jun	5.01	3.49	2.59	6.88	5.71	4.21	3.88	2.89
Jul	4.66	3.01	2.71	6.79	5.62	3.84	3.85	2.82
Aug	4.03	2.58		5.88	5.79	3.78	3.83	
Sep	3.48	2.30		5.41	5.98	3.40	3.86	
Oct	3.39	2.44		5.50	7.28	3.57	3.68	
Nov	3.46	2.48		5.46	7.35	3.79	3.53	
Dec	3.52	2.68		5.77	7.35	3.80	3.49	
Jan	3.65	2.79		5.72	7.10	4.30	3.26	
Feb	3.70	2.73		5.64	6.75	4.64	3.11	
Mar	3.87	2.75		5.97		4.66	3.14	
Apr	3.95	2.81		6.24	6.35	4.58	2.94	
May	3.96	2.76		6.10	6.23	4.03	2.75	
Mkt year	3.89	2.74		5.95		4.05	3.44	

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: 8/13/2015

Table 4--Selected feed and feed byproduct prices (dollars per ton), 8/14/2015

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		
	2012/13	2013/14	2014/15	2012/13	2013/14	2014/15	2012/13	2013/14	2014/15	2012/13	2013/14	2014/15
Oct	488.46	443.63	381.50	343.00	355.00	346.88	226.50	157.50	90.13	753.50	601.25	549.38
Nov	466.16	451.13	441.40	376.88	345.00	313.13	209.75	158.38	105.13	716.25	631.25	581.88
Dec	460.09	498.31	431.74	345.00	401.88	334.38	203.34	168.00	143.30	673.34	638.13	613.50
Jan	431.39	479.54	380.03	327.50	378.34	313.75	204.10	165.00	135.25	599.50	625.00	632.50
Feb	440.67	509.25	370.39	279.38	388.75	302.50	209.88	167.50	117.25	584.38	668.13	631.25
Mar	437.33	497.82	357.83	301.88	401.25	310.50	204.13	177.63	107.20	581.88	744.38	613.00
Apr	422.07	514.01	336.61	314.50	405.50	288.13	176.70	166.60	83.13	540.50	784.00	575.63
May	465.72	519.38	320.23	311.88	416.88	274.38	157.25	157.00	72.25	480.63	761.25	549.38
Jun	496.78	501.72	335.03	329.38	412.50	281.00	151.00	131.88	74.40	550.00	694.50	571.60
Jul	544.59	450.79	375.48	344.50	359.50	299.38	140.60	113.70	91.25	591.00	574.00	560.00
Aug	464.91	490.33		330.00	310.00		123.13	109.25		565.63	572.88	
Sep	500.39	525.72		374.38	360.63		135.50	98.70		573.75	587.50	
Mkt yr	468.21	490.13		331.52	377.93		178.49	147.59		600.86	656.86	

	Meat and bone meal, Central US			Distillers dried grains, Central Illinois, IL			Wheat middlings, Kansas City, MO			Alfalfa hay, weighted-average farm price 2/		
	2012/13	2013/14	2014/15	2012/13	2013/14	2014/15	2012/13	2013/14	2014/15	2012/13	2013/14	2014/15
Oct	463.59	385.53	385.00	278.00	216.50	96.00	208.57	153.37	111.48	212.00	193.00	194.00
Nov	380.38	410.95	383.79	259.00	217.13	113.13	193.60	138.69	106.87	215.00	188.00	184.00
Dec	320.42	459.57	424.22	261.67	220.50	159.30	217.37	198.00	135.83	217.00	186.00	183.00
Jan	338.16	456.88	382.49	264.90	200.00	186.50	196.38	151.62	140.93	217.00	186.00	174.00
Feb	410.39	438.75	370.63	271.13	214.38	187.13	197.47	150.24	124.85	218.00	190.00	172.00
Mar	474.92	501.25	376.00	270.88	245.00	189.50	196.93	156.62	1,118.55	219.00	193.00	172.00
Apr	424.37	560.00	390.63	242.40	243.50	191.00	183.64	133.38	81.93	213.00	207.00	184.00
May	387.05	516.25	368.75	229.00	222.75	178.50	138.75	131.07	64.25	219.00	225.00	192.00
Jun	413.74	506.88	313.50	235.88	184.50	157.50	147.13	102.43	60.27	218.00	222.00	178.00
Jul	481.53	489.83	333.75	240.20	148.00	153.50	138.30	70.36	77.96	206.00	216.00	
Aug	461.38	464.37		232.13	116.88		120.91	81.24		199.00	209.00	
Sep	450.82	435.00		230.13	123.00		140.35	106.62		194.00	197.00	
Mkt yr	417.23	468.77		251.27	196.01		173.28	131.14		211.00	199.00	202.00

1/ October 1-September 30 except for hay. Simple average of monthly prices for the marketing year except for hay.
2/ May 1-April 30 marketing year. U.S. season-average price based on monthly price received by farmers weighted by monthly marketings.

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), 8/14/2015

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
2013/14	Q1 Sep-Nov	113.44	74.07	62.15	1,215.75	34.59	49.95	0.00	1,549.95
	Q2 Dec-Feb	110.11	74.33	60.76	1,275.53	36.26	49.82	0.00	1,606.81
	Q3 Mar-May	125.28	79.10	50.97	1,302.76	37.93	50.34	21.71	1,668.08
	Q4 Jun-Aug	128.53	80.89	44.85	1,339.96	32.78	50.41	1.22	1,678.65
	MY Sep-Aug	477.36	308.39	218.73	5,134.00	141.56	200.51	22.93	6,503.49
2014/15	Q1 Sep-Nov	115.54	74.62	62.33	1,272.82	34.52	50.11	0.00	1,609.93
	Q2 Dec-Feb	109.15	69.56	61.03	1,297.50	36.18	49.95	0.00	1,623.37
	Q3 Mar-May	123.32	79.93	51.10	1,298.91	37.85	50.47	21.42	1,663.00
	MY Sep-Aug	470.00	300.00	220.00	5,200.00	141.27	201.21	22.52	6,555.00
2015/16	MY Sep-Aug	475.00	300.00	230.00	5,250.00	144.00	203.10	22.90	6,625.00

1/ September-August. Latest data may be preliminary or projected.
Source: Calculated by USDA, Economic Research Service.

Date run: 8/13/2015

Table 6--Wholesale corn milling product and byproduct prices, 8/14/2015

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)	
	2013/14	2014/15	2013/14	2014/15	2013/14	2014/15	2013/14	2014/15	2013/14	2014/15
Sep	27.17	17.32	28.82	18.99	21.04	14.14	35.35	34.50	25.88	21.25
Oct	26.47	17.44	28.10	19.11	18.55	13.30	35.35	34.50	25.88	21.25
Nov	26.22	18.44	27.95	20.14	15.64	12.91	34.10	34.50	24.38	21.25
Dec	26.26	18.89	27.89	20.56	14.98	13.90	32.85	34.50	22.88	21.25
Jan	24.69	18.94	26.44	20.61	14.41	14.11	29.62	37.00	20.79	23.25
Feb	21.66	18.71	23.36	20.39	14.44	13.93	30.50	37.00	21.25	23.25
Mar	21.50	18.51	23.24	20.06	14.68	13.90	30.50	37.00	21.25	23.25
Apr	21.08	17.90	22.75	19.57	14.98	14.08	30.50	37.00	21.25	23.25
May	20.21	17.62	21.88	19.29	15.64	14.50	30.50	37.00	21.25	23.25
Jun	19.92	17.81	21.59	19.48	15.88	14.50	32.17	37.00	21.25	23.25
Jul	18.56	18.40	20.23	20.07	15.49	14.41	34.50	37.00	21.25	23.25
Aug	18.09		19.76		14.86		34.50		21.25	
Mkt year 2/	22.65		24.33		15.88		32.54		22.38	

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: 8/13/2015

Table 7--U.S. feed grain imports by selected sources (1,000 metric tons) 1/, 8/14/2015

Import and country/region		2013/14 Mkt year	2013/14 Jun	2014/15 Mkt year	2014/15 Jun	2015/16 Jun
Oats	Canada	1,503	57	1,707	133	123
	Sweden	99		72		
	Finland	66		62	18	
	All other countries	6	0	12	3	0
	Total 2/	1,674	57	1,852	154	123
Malting barley	Canada	242	5	334	40	17
	All other countries			28	0	
	Total 2/	242	5	362	40	17
Other barley 3/	Canada	162	9	147	20	15
	All other countries	4	0	4	1	1
	Total 2/	166	9	151	20	15

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: 8/13/2015

Table 8--U.S. feed grain exports by selected destinations (1,000 metric tons) 1/, 8/14/2015

Export and country/region		2012/13 Mkt year	2012/13 Sep-Jun	2013/14 Mkt year	2013/14 Sep-Jun	2014/15 Sep-Jun
Corn	Japan	6,865	5,723	11,939	9,528	9,759
	Mexico	4,581	3,636	10,490	8,661	8,997
	China (Mainland)	2,390	2,389	2,732	2,706	487
	Venezuela	1,070	816	1,128	978	485
	China (Taiwan)	530	459	1,780	1,659	1,516
	Canada	468	386	479	290	1,252
	South Korea	451	447	4,961	3,308	3,071
	Saudi Arabia	346	276	1,031	888	939
	Cuba	274	249	137	137	26
	Jamaica	243	206	283	235	234
	Guatemala	220	177	753	631	645
	Honduras	206	165	375	295	335
	Colombia	155	129	3,562	3,224	3,810
	El Salvador	142	98	409	304	427
	Panama	130	99	333	275	349
	Costa Rica	122	73	593	504	649
	Trinidad And Tobago	81	62	86	75	59
	Dominican Republic	59	24	596	469	523
	Nicaragua	38	33	121	94	166
	Sub-Saharan Africa	29	19	35	34	29
	Barbados	24	18	35	30	26
	Guyana	20	17	24	18	15
	European Union-27	20	16	1,263	777	151
	Hong Kong	15	13	22	18	31
	Other Europe	9	8	0.043	0.022	0.066
	All other countries	56	50	5,615	4,610	4,315
	Total 2/	18,545	15,587	48,783	39,749	38,296
Sorghum	Mexico	1,448	1,154	251	242	19
	Japan	209	160	293	290	72
	Sub-Saharan Africa	184	174	444	421	430
	European Union-27	81	81	25	25	2
	All other countries	15	11	4,349	2,753	6,843
	Total 2/	1,938	1,580	5,362	3,730	7,365

		2013/14 Mkt year	2013/14 Jun	2014/15 Mkt year	2014/15 Jun	2015/16 Jun
Barley	Japan	169	0.701	90	4	0.896
	Mexico	93	0.508	100	11	16
	Libya	21				
	China (Taiwan)	11	4	32	2	1
	All other countries	17	0.973	90	3	13
	Total 2/	311	6	312	20	31

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.

Date run: 8/13/2015

United States Department of Agriculture

Economic Research Service

Situation and Outlook

FDS-15h-SA

Aug. 14, 2015

Feed Outlook: Special Article

U.S. Sorghum Markets in Transition:
Trade Policies Drive Export Volumes

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Approved by the World Agricultural Outlook Board

This report examines the evolution of U.S. sorghum trade relationships with key partners Mexico, the EU, and China and explores the influence of partner country trade policies on sorghum export volumes and baseline forecasts. Projected U.S. sorghum shipments for the 2014/15 marketing year are on track to reach record-high volumes. Much of this volume is destined for China, which began a dramatic expansion of imports of U.S. sorghum in late 2013 following a temporary ban on imports of U.S. corn. China's ascension to principal buyer of U.S. sorghum has displaced Mexico, the EU, and Japan from their previously held roles as prominent export destinations and marks a significant refocusing and narrowing of the U.S. sorghum export market. The recent transformation of the sorghum market is largely driven by the implementation of bilateral trade policies of partner nations. A review of U.S. sorghum export history with Mexico, the EU, and China indicates that these partnerships are sensitive to domestic and multilateral policies that influence trade activities.

Acknowledgments

The authors would like to thank USDA's Interagency Commodity Estimates Committee (ICEC) for Feed Grains and Jerry Norton, ICEC Feed Grains and Wheat Chair, in particular for sharing their insights and fostering informative discussion on the topic. This report benefited from reviews by Linwood Hoffman (USDA, Economic Research Service (ERS)), Mark Jekanowski (USDA, ERS), Rick O'Meara (USDA, Foreign Agricultural Service (FAS)) and Lisa Bennett (USDA, FAS). We are especially appreciative of the editorial and design services provided by John Weber and Cynthia A. Ray (USDA, ERS).

Evolving Trade Policies Signal Change for U.S. Sorghum Exports

At 350 million bushels, projected U.S. sorghum shipments for the 2014/15 marketing year are on track to achieve record volumes, well above earlier highs observed for marketing years 1989/90 (307.069 million bushels) and 1979/80 (330 million bushels). In these earlier peak years, Mexico and Japan were the dominate importers of U.S. sorghum; in the 1989/90 marketing year, Japan and Mexico's combined imports totaled 247.8 million bushels, more than 80.7 percent of all U.S. sorghum exports. In contrast, U.S. sorghum sales to Mexico and Japan totaled just 20.322 million bushels in the 2013/14 marketing year, a relatively small share of the 211.782 million bushels in total U.S. sorghum exports.

Despite the drop in sorghum imports by Mexico and Japan, feed grain demand from the two countries is not waning, as each country is buying large amounts of corn. Recently, however, China has been bidding sorghum away from Mexico and Japan—and other potential buyers of U.S. sorghum—both domestic and international. Indeed, China has emerged as the most significant sorghum buyer in the world, with imports of U.S. sorghum totaling nearly 281.77 million bushels in the first 9 months of the 2014/15 marketing year. Prior to 2013, China's sorghum imports were infrequent and negligible, putting it well out of the top 10 U.S. sorghum customers.

Table 1: Top 10 destinations for U.S. sorghum exports 1/

1989/90		2013/14		Sep-June, year to date 2013/14		2014/15
	--Mil. bu.--		*--Mil. bu.--*		*--Mil. bu.--*	
Japan	126.42	China	168.00	China	49.81	263.85
Mexico	121.35	Japan	11.49	Japan	7.14	2.43
Israel	14.30	Mexico	8.83	Mexico	7.62	0.06
Jordan	11.41	Sudan	6.64	Sudan	3.87	9.14
Spain	9.18	Kenya	4.15	Kenya	1.99	2.27
Norway	4.18	Djibouti	3.94	Djibouti	2.46	0.20
Venezuela	4.09	Taiwan	2.62	Taiwan	0.02	0.03
Tunisia	3.35	South Africa	1.62	South Africa	1.62	0.20
Turkey	2.05	Somalia	0.49	Somalia	0.00	0.00
South Korea	1.50	Ethiopia	0.21	Ethiopia	0.14	2.20
World	307.069	World	211.782	World	75.93	281.77

1/ September - August marketing year. Includes seed.

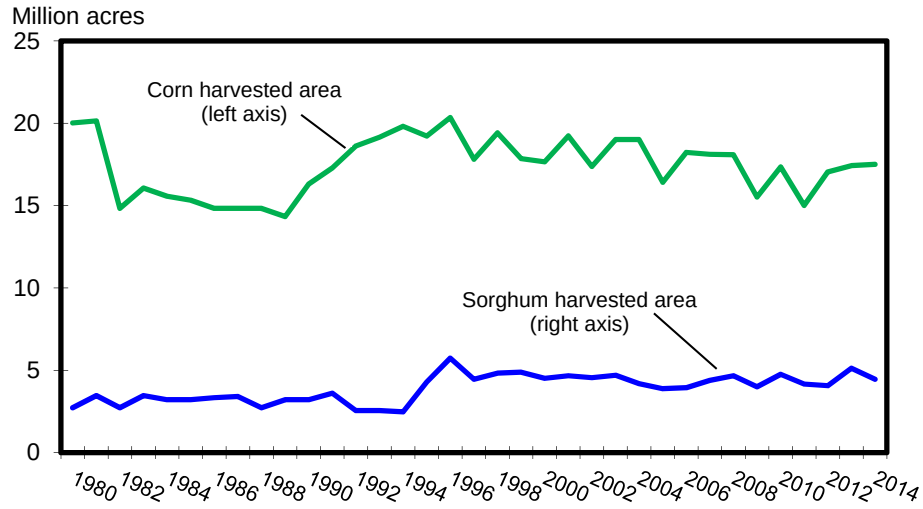
Source: USDA, Foreign Agricultural Service, Production, Supply, and Distribution Database (PS&D)

In late 2013, China purchased sizable volumes of U.S. sorghum, the beginning of what has become a dramatic ramping up of imports. As volume surged, China ascended to the position of principal buyer of U.S. sorghum, displacing Japan and Mexico from their previously held roles of leading U.S. export destinations. The transition marks a significant refocusing and narrowing of the U.S. sorghum export market. As has been the case historically, the recent transformation of the sorghum market is largely driven by the implementation of the trade policies of partner nations. Among the nations with notable, policy-driven swings in U.S. sorghum purchases are Mexico, the EU, and, most recently, China.

Mexico's Sorghum Market and NAFTA

The seeds of significant export market transition in Mexico were sown in 1994 with the implementation of the North American Free Trade Agreement (NAFTA). When NAFTA went into effect on January 1, 1994, the United States eliminated all tariffs on Mexican sorghum, and Mexico reciprocated by terminating a 15-percent seasonal tariff on U.S. sorghum (Zahniser et al., 2015; Zahniser, 2002). In the absence of other market and production influences, these changes could have resulted in increased U.S. exports of sorghum to Mexico. However, in the early 1990s, the Mexican Government attempted to bring domestic corn prices into greater alignment with international prices by reducing domestic price supports. Previously, the price support program had encouraged corn planting. When the support program ended, more arable land became available to cultivate other crops and, subsequently, sorghum harvested area increased significantly in Mexico. In conjunction with relaxed restrictions on corn imports from the United States, these policy changes in Mexico influenced a decline in sorghum imports between 1994 and 1996.

Mexican corn and sorghum harvested area



Source: USDA, Foreign Agricultural Service, Production, Supply & Distribution Database *(PS&D)*.

Although corn is generally considered to be a more efficient and nutritious animal feed, livestock rations in Mexico are estimated to have contained between 60 and 80 percent sorghum through the early 1990s, with the U.S. providing a significant volume to supplement domestic production (Garcia-Vega and Williams, 1996). The high proportion of sorghum in Mexican livestock rations and, thus, the strong demand for imported sorghum, was stimulated, in part, by the artificially high domestic corn price, which made sorghum a more economical feed ingredient. An official government ban on feeding corn, or masa, to livestock, then considered to be a staple human food, also discouraged corn use in livestock feed (Zahniser, 2002). This ban was lifted in the 1990s, concurrent with increased access to U.S. corn via NAFTA and the noted modifications of Mexican agricultural policy. Until 1997, the net effects of increased use of imported corn in livestock rations and expanded Mexican sorghum production served to reduce Mexican imports of U.S. sorghum (Zahniser et al., 2015).

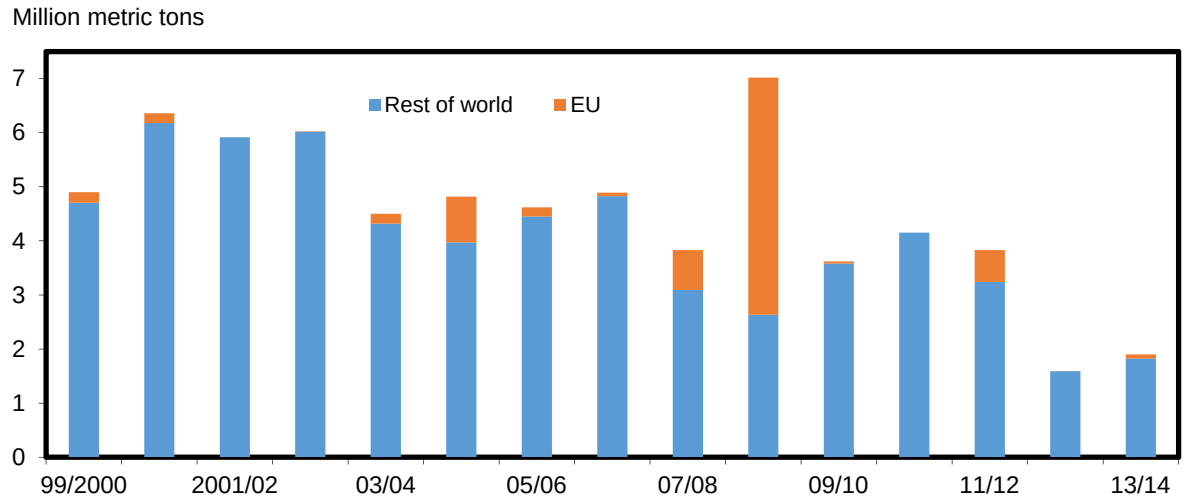
By 1997, the relative price of U.S. sorghum to corn had dropped such that it supported expanded exports to Mexico. The U.S. sorghum/corn price ratio became the key to Mexico's sorghum imports, with Mexican feed compounders willing to pay more for sorghum than most U.S. feed compounders. More than 189.6 million bushels of U.S. sorghum was exported to Mexico in the 1999/2000 marketing year, an increase of approximately 106.7 million

bushels over the volume exported in 1996/97. U.S. sorghum exports to Mexico peaked at 193.8 million tons in 2000/01 and then began a downward trend that has persisted for 13 years as Mexico has increasingly sourced lower priced sorghum from South America, including Argentina (Zahniser et al., 2015). Until recently, U.S. exports of sorghum to Mexico and other trade partners have been limited and correlated with the contraction of U.S. sorghum production.

EU Biotech Trade Policy Temporarily Lifts Sorghum Import Volumes

Beginning in 2006/07 and through the 2007/08 sorghum marketing year, the European Union (EU)--chiefly Spain--emerged as the largest importer of U.S. sorghum. The surge in deliveries to a heretofore relatively minor sorghum trade zone was precipitated by the detection of nonapproved genetically modified organism (GMO) genes in samples of U.S. corn taken at EU ports. This triggered a de facto embargo of U.S. corn exports to EU countries as shipments failed to clear customs. Consequently, demand for U.S. sorghum, a non-GMO substitute for corn in feed rations, rose significantly. Strong EU sorghum demand, caused by trade policies that limited corn imports, had the effect of bidding up prices above those which more frequent trade partners (e.g., Mexico and Japan) were willing to pay. U.S. sorghum prices remained relatively high for a year and a half starting in 2006/07, when the EU was the primary destination for U.S. sorghum exports.

U.S. sorghum exports to the EU surged, then nearly vanished 1/



1/ Presented data are on a sorghum marketing year basis (Sept-August).
Source: USDA, Foreign Agricultural Service, Global Agriculture Trade Database.

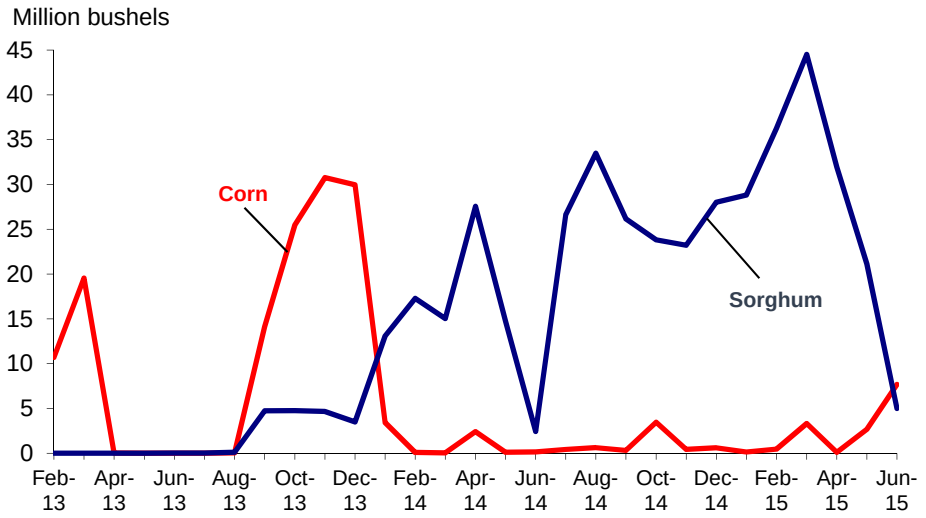
Following the 2007/08 marketing year, a combination of factors caused several EU member countries to shift away from importing large quantities of U.S. sorghum. Increasing amounts of non-GMO corn became available from Serbia and Ukraine, which reduced the need to import U.S. sorghum to supplement feed rations. EU policy also adjusted, such that certain GMO events or traits were approved, which increased the ease of importing grain from South America, especially Brazil and Argentina. Increased imports from South American put downward pressure on demand for U.S. sorghum. The combination of these factors returned U.S. sorghum exports to EU countries, including Spain, France, Italy, Denmark, and the Netherlands, to pre-2006/07 levels.

GMO Corn Ban Opens Door for U.S. Sorghum Exports to China

Under circumstances similar to those that previously led the EU to increase U.S. sorghum imports, the detection of a nonapproved genetic trait led Chinese officials to reject significant volumes of corn and dried distillers' grains with solubles (DDGS) in fall 2013 (USDA-FAS, 2014b). Rejected shipments contained a corn variety known as Agrisure Viptera, also referred to as MIR 162, which is approved for import by a number of key U.S. trade partners, including Japan, Korea, and Mexico. However, the variety was not officially accepted for distribution to China at the time MIR 162 was detected in fall 2013. Subsequently, in late 2014, China officials approved MIR 162 for import and for domestic consumption; on March 26, 2015, a sale of 60,000 tons of U.S. corn to China was reported. There are other varieties of GMO corn grown in the United States that have yet to be approved by China and the risk of custom clearing problems for U.S. corn persist.

In early fall 2013, and slightly ahead of the dramatic reduction in U.S. shipments of corn to China, U.S. sorghum exports to China began to ramp up to unprecedented levels. From January to July of 2013, U.S. sorghum exports to China totaled just 728 metric tons; in August, shipments began to perk up and totaled 2,648 tons. By September, shipments had surged to 119,938 metric tons (4.7 million bushels). Shipments in the last 3 months of 2013 averaged 107,247 metric tons (4.2 million bushels) before rising to still higher levels by early 2014. In January 2014, U.S. sorghum exports to China totaled 330,163 metric tons (13.0 million bushels) and reached the 2013/14 marketing year peak of 31.3 million bushels in August 2014. After declining some through the first 2 months of the second quarter (December-February) of the 2014/15 marketing year, exports began to rise again, triggering multiple monthly revisions to the sorghum export projection in USDA's *World Agricultural Supply and Demand Estimates (WASDE)* report. Shipments for March 2015, at 1,131,738 metric tons, or 45.5 million bushels, are the highest yet recorded since the export rally began in fall 2013.

Monthly U.S. corn and sorghum exports to China 1/



1/ Includes seed. Source: USDA, Foreign Agricultural Service, Global Agriclture Trade Database.

The sustained sorghum export surge has been supported by Chinese limitations on the import of genetically modified corn and corn products, as well as differences in how corn versus sorghum can enter importing countries. Corn exports to China are governed by a tariff-rate quota (TRQ), under which in-quota imports are subject to lower tariff rates. Unlike corn, wheat, and several other agricultural products, Chinese sorghum imports are not subject to a

TRQ. The absence of a TRQ makes it possible for any grain user in China to import sorghum with a relatively low (non-TRQ) tariff.

The American Farm Bureau Federation estimates that in-quota duties for most Chinese imports of agricultural goods range between 1 and 15 percent, with an average of 4.8 percent (Nigh, 2013). Duties on out-of-quota imports (e.g., volumes of goods in excess of the in-quota limit) by China are subject to an average 50.4 percent duty (Nigh, 2013). Out-of-quota imports by China may not be competitively priced with domestically grown Chinese corn and are thus limited, despite China's minimum price policy for corn, which supports high in-country grain prices. It should be noted that the importing country (in this case, China) has the option of not charging the higher out-of-quota rate. Further, TRQs are a flexible policy tool that permits Chinese officials to allocate a relatively smaller portion of the import quota to the private sector and a larger portion to state-owned companies. For a variety of reasons, the net effect of this distribution arrangement is to further limit corn imports.

The report *USDA Agricultural Projections to 2024* (USDA-OCE, 2015) notes that commodities that are not restricted by TRQs are less likely to be subject to policy interventions. The relatively lower risk of trade disturbances associated with clearing sorghum through customs combines with the broadened pool of potential importers to support the price premiums observed at U.S. export ports (USDA-AMS, 2015). This premium is a logical extension of market economics: Chinese feed grain importers, who would otherwise have had to purchase corn that was subject to a price-increasing TRQ, are willing to pay higher prices than in previous years for sorghum that does not have TRQ restrictions.

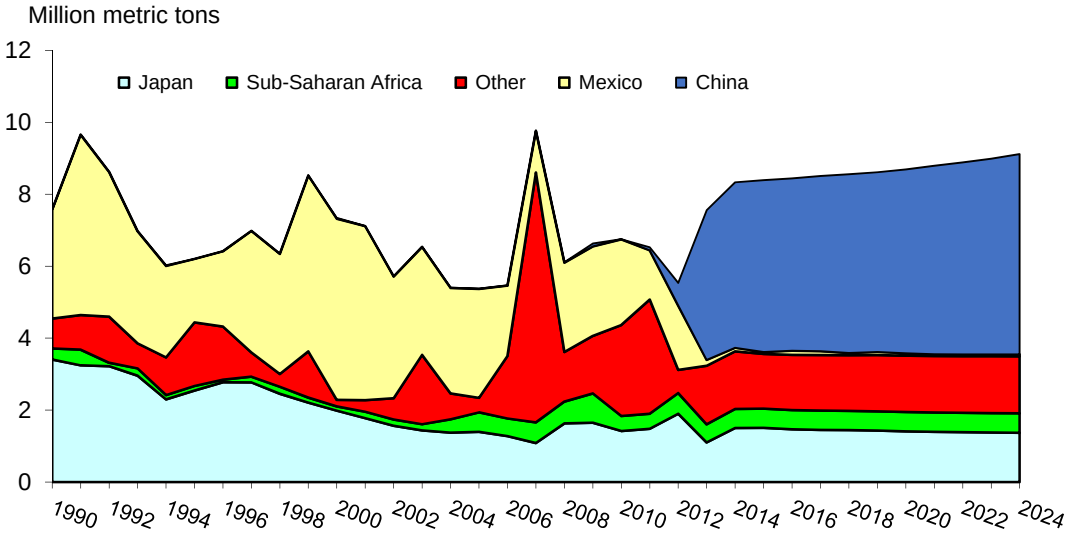
Market Evolution Impacts Baseline Sorghum Forecasts

In the span of 2 years, the U.S sorghum export market has undergone major changes: China emerged as the leading sorghum-importing nation while previously substantial shipments to NAFTA-partner Mexico plummeted. These key shifts serve to underscore the difficulty in predicting long-term sorghum trade patterns. *USDA Agricultural Projections to 2024* (commonly referred to as Baseline Projections) assumes current trade policy persists unless some alternative is clearly more likely. The most recent baseline sorghum trade projections, released in February 2015, assume that China will remain a significant sorghum importer into 2024.

As noted, the absence of a TRQ makes it easier for a broad cross-section of feed compounders in China to import sorghum. The relative ease of importing sorghum is expected to persist even as import policy changes allow corn imports to grow. High domestic support prices for corn in China and relatively low world prices for grain provide further support for the preservation of high volumes of sorghum imports, now forecast to grow by 1.7 percent annually for the next 10 years (USDA-OCE, 2015). However, the level of U.S. sorghum exports to China are not expected to grow significantly beyond currently projected levels due to limits on U.S. sorghum production, which is inhibited by the relatively low returns.

Chinese demand for sorghum has supported price premiums that cause the grain to be less competitive than U.S. corn in Mexican markets. Consequently, Mexico's imports of sorghum are expected to remain low through 2024 (USDA-OCE, 2015). After China, Japan is the world's second-largest importer of sorghum. Japanese imports are projected to stabilize at about 1.4 million metric tons (59 million bushels) per year after oscillating between 1.2 million and 0.2 million metric tons, and generally trending slightly downward, over the past decade. The United States is expected to supply some of the forecast Japanese demand for sorghum, though the relative prices of both corn and sorghum from South America and Australia will continue to determine volumes.

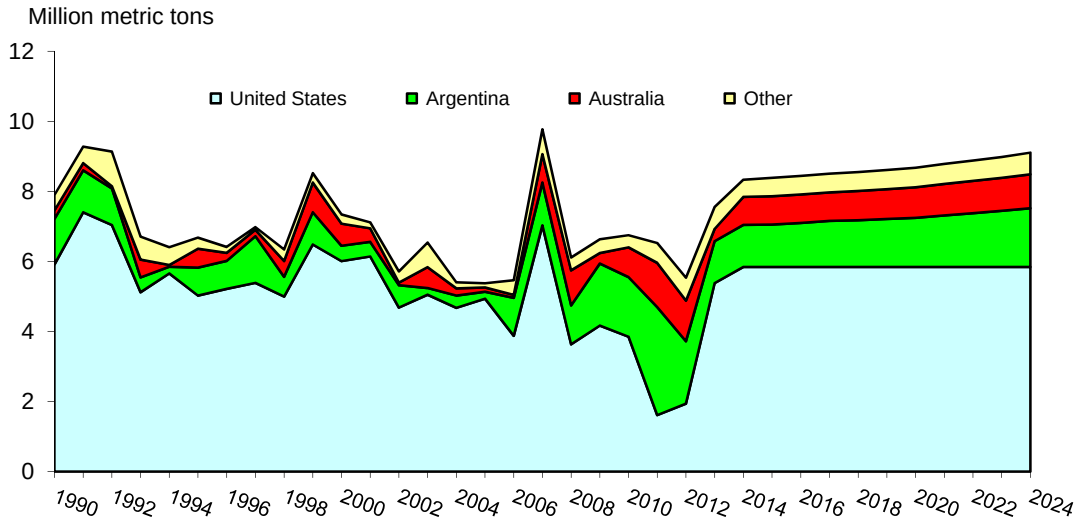
Projected sorghum imports for select countries



Source: USDA, Office of the Chief Economist, *USDA Agricultural Projections to 2024*, February 2015.

The United States has been the largest supplier of agricultural products to Japan for many years and despite the noted "web of constraints on the trade of certain commodities," U.S. sorghum and other grains have been well-positioned to compete with global suppliers (Arita et al., 2015). In their article, the authors report that Japan may not further liberalize its trade barriers, instead opting to protect the domestic agricultural sector by limiting agricultural imports. While the analysis pertains to the Japanese agricultural import sector as a whole and not specifically to sorghum, stagnated sectorial demand driven by the rapidly aging and declining Japanese population may indirectly limit demand for U.S. sorghum (USDA-OCE, 2015).

Projected sorghum exports for select countries



Source: USDA, Office of the Chief Economist, *USDA Agricultural Projections to 2024*, February 2015.

Competition from Argentina and Australia to Persist

Both Argentina and Australia are likely to continue to provide significant competition for U.S. sorghum exports, with Australia benefiting from its closer location to both China and Japan. However, low sorghum yield potential and limited returns to production are expected to constrain expansion of sorghum cultivation in both countries. Sorghum grown in Argentina tends to have a higher tannin content, reducing its palatability in feeds. In Australia, sorghum exports compete with domestic feed grain use. Limits on the production of other feed grains and imports leave meat producers with few alternatives to using sorghum.

Implications for U.S. Sorghum Markets and Producers

Since 2005, corn has accounted for an average of 96 percent of all U.S. feed grain production while average sorghum volumes have comprised less than 3 percent. Further, corn is cultivated in nearly every U.S. State, whereas sorghum is a relatively niche crop that is primarily grown in warm dry regions of the South and West, where drought hardiness is an especially valued trait. Texas and Kansas produce the vast majority of the sorghum grown in the United States, with shares of total production averaging 34 and 44 percent, respectively, over the past five seasons.

In light of the grain's relatively small share of total feed grain consumption and production, its limited range of planted area, and its tendency to sell at a discount to corn, sorghum has largely stayed out of the commodity market spotlight. However, cultivation in the major sorghum-producing States has expanded alongside the recent surge in sorghum exports. Following the drought of 2012/13, U.S. sorghum planted area increased by 29 percent, or 1.8 million acres, in 2013/14. For 2015/16, sorghum planted area is projected to rise by 124 percent, or approximately 1.7 million acres, up from a slight pullback in 2014/15 and based on the strength of surging exports to China, which have raised and sustained prices above those tendered for corn.

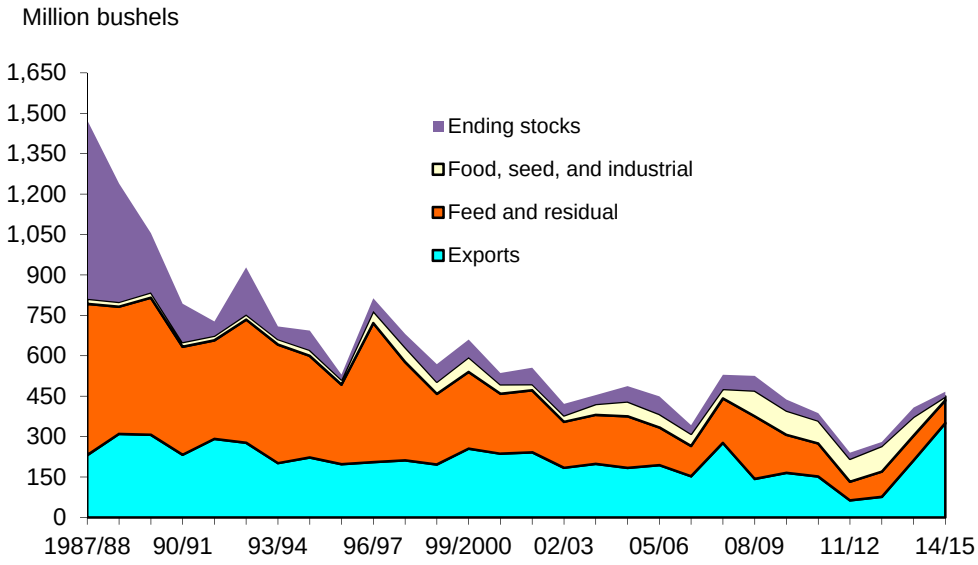
When a sorghum price premium developed in the most recent marketing year, the *Wall Street Journal* labeled sorghum the "latest hot crop" (Kesmodel, 2015). While not without precedent, a sorghum-corn price premium occurs relatively infrequently. The sorghum season-average price has exceeded the corn price just 18 times in the 96-year history of sorghum price reporting. Since 1950, the sorghum price has surpassed the corn price only five times.

Price premiums for exported sorghum have pulled supplies away from ethanol production, drawing down the 2014/15 food, seed and industrial (FSI) use category to a scant 15 million bushels, down significantly from the 70 million estimated for FSI use in 2013/14. The shift from domestic use to exports is evident when exports and total use are compared. In the drought-affected 2012/13 marketing year, just 29 percent of total sorghum use was attributable to exports. This figure compares to the 10-year average of 43 percent (2004/05-2013/14) and the record-setting 78 percent projected to be used for exports throughout the 2014/15 marketing year.

While the pull of the Chinese market on U.S. sorghum supplies is likely to have financially benefited producers via higher prices and improved margins, tight supplies limit potential gains and constrain marketing opportunities. As reported in multiple (2015) editions of the USDA-ERS *Feed Outlook* newsletter, tight current crop supplies may be alleviated, to some extent, by new crop sorghum that is available for export and other uses prior to the September 1, 2015, beginning of the 2015/16 marketing year. This early new crop sorghum is most likely to be harvested in the Coastal Bend, South Central, and Upper Coastal regions of Texas and located relatively near Gulf export ports. In 2014/15, 64 percent of sorghum grown from these and surrounding areas of Texas was harvested by week 35 (week

ending 8/31/2014) and accounted for approximately 87.8 million bushels, or 20.3 percent of the total U.S. 2014/15 sorghum crop.

U.S. sorghum utilization and ending stocks 1/



1/ 2014/15 sorghum utlization is a projection. Source: USDA, World Agricultural Outlook Board, *WASDE*.

Applying Texas-specific average yields and average percent harvested by week 35 to the 3.1 million sorghum acres under cultivation in Texas (as reported in USDA's *Prospective Plantings*) implies that up to 100 million bushels of new crop sorghum may be locally available for export prior to the official beginning of the 2015/16 marketing year. Adverse weather and the yield-sapping effects of the sugarcane aphid, known to be a problematic pest in Texas, Louisiana, and Alabama, may require later, downward revisions to the optimistic projection of available new-crop sorghum supplies.

The augmentation provided by early new crop sorghum, whether sizable or modest, will relieve tight old-crop supplies and enable both producers and exporters to capitalize on opportunities in the presently robust export market. Indeed, a 124-percent increase in year-to-year planted area indicates that U.S. producers expect prices, driven by export demand, to remain relatively strong through the 2015/16 marketing year. Expectations of sustained Chinese demand are also reflected in the 2015-24 baseline projections. However, a review of U.S. sorghum export history with Mexico, the EU, and China indicates that these partnerships are quite sensitive to domestic and multilateral policies that can, at times, vastly alter trade activities.

Summary

The sustained, brisk pace of U.S. sorghum exports to China has elevated U.S. sorghum out of corn's shadow into the feed grain spotlight. Rising prices and record-high export volumes have captured the attention of prospective growers, as evidenced by the ride in projected plantings for the 2015/16 marketing year. Elevated export volumes have also caught the interest of Chinese quarantine and inspection officials, who have been instructed to step up their supervision of sorghum imports (USDA-FAS, 2014a). To date, no sorghum shipments have been quarantined and

turned away; however, the looming potential for restrictions in access to the Chinese market is reminiscent of the multiple times in U.S. sorghum trade history when government interventions affected export opportunities.

Further raising concerns that a partner country's trade policies may again affect U.S. sorghum export prospects is the fact that in late 2014, Chinese and Argentinian officials agreed to bilateral trade protocols that result in additional competition for U.S. sorghum exports to China. However, in the months since the October announcement, U.S. exports to China have remained robust. In fact, shipment volumes in March and February 2015 were, respectively, the highest and second highest since the recent surge began. Hearty Chinese demand for U.S. sorghum notwithstanding, the market appears to be evolving and presents challenges to efforts to predict near-term fluctuations and long-term trade patterns. The noted variability of demand, combined with the fluid nature of Chinese trade policies, obliges stakeholders to frequently monitor market conditions to stay abreast of potential sorghum export market transitions.

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