The Feed Farmer Mac's Quarterly Perspective on Agriculture

Summer 2018



FINANCING RURAL AMERICA

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ABOUT THE FEED

The Feed is a quarterly economic outlook for current events and market conditions within agriculture. The report is broad-based, covers multiple regions and commodities and incorporates data and analysis from numerous sources to present a mosaic of the leading industry information, with a focus on the latest information from the United States Department of Agriculture and their Economic Research Service. There are several regularly included sections like weather and major industry segments, but the authors rotate through other industries and topics as they become relevant in the seasonal agricultural cycle. Where the report adds value to readers is through its unique synthesis of these multiple sources into a single succinct report. Please enjoy.

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A MESSAGE FROM CURT COVINGTON

"Big Data" and "Disruption" are terms heard and used on a daily basis in today's business culture. But, they have also been prevalent in agriculture for quite some time. The industry has grown reliant on big data sources to make assessments and develop outlooks on the health of the farm economy. Farm surveys, equipment data streams, real-time sales information, satellite imagery, and government data releases all play a role in predicting the future of agriculture. However, big data isn't the only factor that should be used in measuring the strength of farming. If it was, we would have already seen the collapse of the farm economy, particularly in the Corn Belt when corn and soybeans prices cratered four years ago. Surely, the gathered data validated what most thought might happen – that there would be a significant and negative disruption to the farm economy. Ultimately, conditions on the farm today, while not as rosy as we'd like it to be, are perhaps not as bad and disruptive as once thought.

So, what happened? What did big data fail to capture? Quite simply - the resilience and fortitude of American farmers. Farmers possess an "X-Factor" that can't be captured in complicated excel spreadsheets and forecasting models. Here are two dynamics that I believe are firmly at play in explaining the better-than-expected performance in agricultural lending:

- 1) Most farmers knew when to tighten their belts, and their farm balance sheets came into the downturn in excellent shape.
- 2) Lenders didn't panic. They maintained constant communication with their farm customers, their institution's leadership and colleaugues, and they adhered to their tried and true underwriting standards during the good times to be able to be supportive during the bad times.

The collapse of the farm economy in the 1980s came fast, hard, and was beyond disruptive. Those of us who were around remember. That experience may have served us and the younger generation of bankers well today. Pragmatism ruled the day during the run-up in Midwest land prices in 2012/13. The same kind of common sense mixed with a degree of patience seems to be paying off today.

This confluence of factors, along with relatively low-interest rates that continue to support higher farmland prices, may help us explain why agricultural loan delinquency and loss rates remain much better than expected. And while past performance is not necessarily indicative of future performance, the ability of America's farmers and ranchers to weather the recent volatility in the agricultural economy is downright impressive.

A happy and healthy summer to all,





AGRICULTURAL ECONOMY UPDATE (resource 1, 2, 3)

By Mitch Morehart, Authoritative Analytics

Key Highlights

Based on May 2018 data releases from the USDA, net cash farm income appears stable in 2017 and 2018.

Farmland values are forecast to increase modestly in 2018, but total sector assets and equity are down from cyclical peaks.

Debt and interest expense to earnings levels are rising at a rapid pace, though interest expense remains a fraction of what the sector experienced in the 1980s.

May provides a unique opportunity to evaluate the financial outlook for U.S. agriculture. It represents the beginning of the USDA's World Agricultural Supply and Demand Estimates (WASDE) forecasting cycle for the new crop marketing year. Many prior year commodity sales data are also published during the April-May time frame, further reducing uncertainty about recent financial circumstances. However, USDA will not update its 2018 farm income forecast or publish official 2017 estimates until August. Authoritative Analytics publishes farm income and balance sheet forecasts monthly to incorporate the most updated data on the health of the ag economy.

Authoritative Analytics May forecast for 2017 commodity receipts (with 90 percent of actual results being reported) is more than \$1.8 billion higher than what was forecast in April. Higher soybean receipts (up \$1.3 billion) offset lower revenues for most other major crop categories. Total livestock receipts are forecast nearly \$1.9 billion higher,



Figure 1: Net Cash Farm Income Expected to Remain Below

1970 1974 1978 1982 1986 1990 1994 1998 2002 2006 2010 2014 2018F Source: Authoritative Analytics forecast and historical data from USDA, Economic Research Service.

led by a \$1 billion increase in cattle revenues and small increases for most other major animal product categories. With total cash expense forecast at \$306.3 billion in 2017, Authoritative Analytics projects the sector's 2017 net cash income at \$104.5 billion.

The May forecast is nearly \$7.5 billion above USDA's February prediction and implies that 2017 could turn out to be a stronger year financially for U.S. agriculture than expected. But the growth that reemerged for U.S. agriculture in 2017 may lose momentum in 2018. Farmers are enduring a multiyear slump in crop and livestock prices, while the costs of producing the nation's food and fiber have remained relatively high. Interest rates and energy costs are likely to increase this year, as the economy warms up, resulting in increased borrowing costs

and tighter credit conditions for farmers. Accordingly, income is likely to remain range-bound in 2018.

Gross cash income is projected to increase by less than 2 percent in 2018 and farmers are anticipated to respond by cutting costs where feasible. Accordingly, Authoritative Analytics May forecast for 2018 net cash income is \$105.1 billion, which is 0.6 percent above the 2017 forecast. In comparison with the previous ten-year average, net cash income is expected to reach a ratio of 0.89 in 2018, representing the fourth consecutive year of below 10-year average incomes (Figure 1). This reinforces the expectations for a stationary farm economy and highlights the importance of trade, which can contribute as much as a third of gross income in any given year. USDA data show total inflation-adjusted farm debt increased nearly 19 percent from 2012 to 2016. Growth has been higher for farm real estate debt, which has seen faster compound annual growth from 2012 to 2016 than the proceeding 10-year period (2003-2012). While farm real estate debt has been rising, farmland sales have declined in many areas. This could reflect farmers' interest in consolidating smaller loans and locking in fixed interest rates. Working capital constraints for some producers mean that their lenders have likely already worked with them to re-amortize loans. These trends are projected to continue in 2018, but somewhat more slowly. Total debt is forecast to increase by more than 3 percent in 2018 after a projected 4 percent rise in 2017. For 2018, non-real estate debt is forecast to increase by less than 1 percent, while real estate debt is expected to rise by more than 5 percent.

Authoritative Analytics 2018 farm asset forecasts show a decline for the first time since 2015, largely reflecting expectations of a small decline in farm real estate asset values. Per acre farm real estate values are forecast to increase slowly in 2018, while total acres operated in the sector are down nearly a million acres for the fifth consecutive year. If realized, this would be the first decline in the total value of farm real estate on the sector's balance sheet since 2009. After adjusting for inflation, farm asset and equity levels in 2018 would represent a substantive decline from cyclical peaks in 2014.

Although anticipated higher interest rates and sluggish income expectations are the main drivers for Authoritative Analytics' farm real estate value forecasts, they also incorporate regional diversity in land markets (Table 1). From 2009 to 2014, land markets in the Midwest and Plains grew quickly compared to elsewhere in the U.S., but growth has slowed since 2015. Conversely, farm real estate values have grown more quickly in the West since 2015 in comparison to the 2009 to 2014 period.

Whether these income, asset, and debt trends will lead to repayment challenges remains to be seen. Tight operating margins will likely continue to pressure an already weak liquidity situation, leading to financial adjustments for many operations and, in some cases, debt repayment challenges. A sector-level perspective of repayment ability can be gleaned from the ratio of debt to cash earnings before interest and taxes (EBIT). After surpassing 3.0 in 2016 for the first time in 32 years, farm sector debt to EBIT is expected to be just below 3.0 for the second consecutive year (Figure 3). However, the ratio of interest expenses to EBIT show how beneficial the recent period of unusually low interest rates has been to debt repayment. Interest to EBIT rose dramatically during the mid-1970s to the early 1980s reaching a peak of 0.349 as interest rates rose and revenues fell. Although this ratio has risen since reaching an all-time low in 2013, the 2018 forecast value is 0.14, indicating that interest payments remain a relatively low share of earnings.

Table 1: Regional Farmland Value Trends

Period	l Atla	antic Sou	th Midw	vest Plair	ns West	: U.S.	
2003-0	8 9.1	L4% 10.8	3% 12.0	9% 13.37	7% 13.449	% 11.81%	
2009-1	4 0.7	76% 1.05	5% 11.5	2% 11.23	3% 2.47%	6.86%	
2015-18	3F 1.1	15% 2.26	5% 1.42	2% 1.87	% 4.01%	<mark>، 1.38%</mark>	
Source: Authoritative Analytics forecast and historical farm real estate value per acre from USDA NASS							

Figure 2: Interest Expenses to Earnings Remains Relatively Low, Despite Higher Debt to Earnings Levels



CHINESE AGRICULTURAL TRADE

(resource 4.5)

Key Highlights

China's food imports have grown tremendously in the last 10 years and currently represent around 10 percent of all world agricultural trade.

Newly proposed tariffs would affect a small portion of the U.S. to China food trade, but soybeans, pork, wheat, and some nut products may be the most vulnerable to disruptions.

Despite recent tensions, economic and population growth in China make it one of the most attractive future markets for **U.S. agriculture.**

Over the last several months, U.S. agricultural producers have faced increasing uncertainty over their ability to export to key markets. Continued NAFTA negotiations helped fuel that uncertainty, as we covered in last year's summer issue of The Feed. And recent proposed changes by U.S. and Chinese policymakers have led to new, rising concerns about the U.S agricultural industry's largest export market - the People's Republic of China. In this article, we explore China's agricultural trading history and take a closer look at which commodities are being affected by the recent disputes.

CHINA HAS BECOME A KEY MARKET FOR AGRICULTURAL **COMMODITIES**

Since becoming a member of the World Trade Organization The changing food demands of its growing middle class (WTO) in 2001, China has been an increasingly important participant in the world market for agricultural agricultural imports. As incomes rise in developing



commodities (Figure 3). Between 2001 and 2016, China's agricultural imports increased by more than 600 percent, from \$18 billion to \$127 billion. China's growing appetite for foreign agricultural products has led its share of global agricultural imports to rise above 10 percent.

Growing demand for feed explains part of China's rise as an agricultural importer. China has a large and growing population that increasingly demands a protein-rich diet. The limited agricultural land base relative to the population growth forces China to import feed grains and soybeans to quite literally feed their meat industry. Accordingly, China has emerged as a large importer of soybeans and a net importer of grains. Soybeans and coarse grains have represented nearly 30 percent of China's annual ag imports in recent years. With its abundant land resources, the United States is a natural supplier of these types of bulk agricultural commodities. For the last 15 years, U.S. farmers have supplied just over 31 percent of China's bulk agricultural imports; for both soybeans and sorghum, China represents the largest U.S. export market.

have also played an important role in China's growing

countries, consumers often demand additional protein and value-added food products. China's imports of consumeroriented agricultural products have surged in recent years, reaching \$55 billion in 2016 and outstripping bulk agricultural imports for the first time. U.S. producers have seen exports of tree nuts, pork, wine and beer, beef, dairy, and fruit rise dramatically.

CHINA/U.S. AG IMPORTS AND NEW TARIFF REGIMES

The U.S. and China have been important trading partners, but trade tensions have arisen in recent months. The U.S. announced steel and aluminum tariffs in March 2018, and the Chinese Ministry of Finance responded by removing existing tariff reduction obligations. The removal of reductions caused tariffs to go up on over 120 different U.S. products imported into China. In general, the move increased tariffs by 25 percent across a wide range of agricultural products, including fresh and frozen pork products, beef products, fruits, nuts, and ethanol, among many others.

Although rising tariffs have the potential to impact Chinese demand for these products, the impacted tariffs have generally represented relatively small markets for U.S. producers. The largest individual commodity

affected, pork, represents roughly \$1 billion a year in Chinese exports for U.S. producers. However, following the announcement that the U.S. Trade Representative was authorized to place additional tariffs on Chinese exports to the United States, the Chinese Ministry of Finance announced another round of proposed tariffs on an additional 90 products in early April. This second list includes more impactful U.S. export markets such as soybeans (\$13 billion per year), sorghum (\$2 billion per year), and wheat (\$200 million per year).

But there remains uncertainty around the enactment of the latest tariff propositions. Except for sorghum, the Chinese Ministry of Finance did not immediately enact additional taxes on the second set of products. Instead, officials tied these tariffs to any future U.S. tariff action. Because the U.S. left future action open until the end of May, many U.S. grain producers were left wondering what to make of all this tariff talk. Diplotmatic negotiations continued between policymakers into mid-May, and tensions eased considerably when China dropped its U.S. sorghum dumping probe as a result of the talks.

When considering the full impacts of trade restrictions, it helps to understand just how much U.S. producers of impacted products rely on the Chinese market and, conversely, how much the Chinese importers rely on U.S. producers. Figure 4 segments U.S. agricultural exports by the percent of total U.S. exports that go to China, the percent of total Chinese imports from U.S. sources, and the relative size of the market (based on the average value of imports between 2015 and 2016). The graph also separates commodities that are already affected by increased trade restrictions, those that have been proposed, and those that remain unchanged. Most commodities exported to China are unaffected by the recent trade disputes (the gray dots representing more than 1,500 different commodity categories). Of those affected, soybeans are the standout: the market size is large, the percentage of U.S. exports going to China is high (roughly 63 percent), and the percentage of imports coming from the U.S. is moderate (roughly 38 percent). Sorghum is the other highly impacted grain market, but Chinese importers of the grain are highly reliant on U.S. markets, so in cases where substitutes aren't available or feasible the price increases could be passed on to Chinese producers.

CONCLUSION

For many reasons that are beyond the scope of this article, trade relations between the U.S. and China remain uneasy. In the short-run, this uncertainty risks disrupting existing trade flows between two countries who are natural trading partners of agricultural products. However, China's market still presents a long-run upside for U.S. agriculture. China has cemented itself as one of the world's largest economies and is expected to continue growing relatively rapidly. Some projections indicate that China could add another 350 million middle-income consumers by 2022. This should only further the demand for foreign food products, and the high-quality, cost-effective U.S. agricultural value chain will remain a natural partner for years to come.

Figure 3: Historical Chinese Agricultural Import Levels and U.S. Market Share



Figure 4: U.S. Agricultural Exports to China by Average 2015/16 Value and Market Share

Tariff Category

New Tariff In Place

New Tariff Proposed

No Change



U.S. MACROECONOMIC UPDATE

(resource 3. 6. 7. 8. 9)

Key Highlights

Tax reform and increased federal spending are expected to boost U.S. economic growth in 2018 and 2019.

The Federal Reserve is expected to continue raising interest rates gradually, but improving economic conditions may result in increases at a quicker pace.

Increased economic growth should provide support for agricultural commodity prices, but producers will also have to plan for rising input costs.

Inflation-adjusted gross domestic product (GDP) rebounded in 2017, growing by 2.3 percent compared to 1.5 percent in the prior year. Recent economic data and policy developments suggest that the U.S. economy is likely to continue strengthening in 2018 and 2019. Many economists expect the passage of the Tax Cut and Jobs Act of 2017 to lead to tax savings for many individuals and enterprises. The economy should also receive a shortterm boost from the \$1.3 trillion 2018 government budget passed in March 2018.

Unsurprisingly, forecasters surveyed for the Wall Street Journal's Economic Forecasting Survey have revised their outlooks for U.S. GDP growth upward for 2018 and 2019 following the passage of tax reform and the fiscal year 2018 spending bill (Figure 5). The average forecast for inflation-adjusted GDP growth in November 2017 was 2.4 percent in 2018 and 2.1 percent in 2019; however, as of April 2018, the average forecast rose to 2.8 percent in 2018 and 2.5 percent in 2019.



Figure 5: Forecasted Real U.S. Gross Domestic Product Growth Rates

2018 2019 Source: Wall Street Journal Monthly Economic Forecasting Survey A more optimistic outlook for the U.S. economy is joined

WHAT DOES THIS MEAN FOR U.S. FARMERS?

Even though U.S. consumers tend to spend only a small portion of their additional income on food, improving economic conditions should result in some additional demand. The International Monetary Fund (IMF) has also upgraded its outlook for growth in developing countries, who tend to spend more of their additional income on food, which should provide further support to agricultural commodity prices.

2020

Whether the strengthening macroeconomy is a net positive for U.S. agriculture will also depend on how the costs of inputs are impacted. The USDA currently projects fuel and oil, fertilizer, labor, and interest expenses to increase in 2018, and the cost of each of these inputs is tied at least in part to the macroeconomic environment. As macroeconomic conditions continue to evolve, producers will need to continue to evaluate how the effects on input and output prices are likely to affect their operations.

by improved expectations for key labor and housing market indicators. Unemployment fell to 3.9 percent in April 2018, while average hourly earnings have steadily increased at an annualized rate between 2.6 and 2.8 percent in recent months. Meanwhile, the housing market continues to rebound. Major housing price indices continue to show home prices growing at an annualized rate north of 5 percent. New construction has also picked up and is now hovering near post-recession highs thus far in 2018.

1.00%

0.50%

0.00%

Given the increased expectations for the U.S. economy, attention has now turned to whether the Federal Reserve Board of Governors (FRB) will respond by raising interest rates more quickly. The FRB is still expected to raise interest rates gradually, despite a change in leadership, and two additional 25 basis point rate increases look likely in 2018. But the probability of an additional rate increase has grown as expectations about the economy have improved throughout the year.

(resource 10, 11)

Key Highlights

Conditions throughout the Midwest over the summer are likely to be conducive to crop development.

Drought conditions are likely to persist in the southern Plains.

Throughout the central and eastern Corn Belt, precipitation and soil moisture levels are expected to be reasonably normal heading into this summer which should bode well for yields in the 2018 grain crop. Little relief in drought conditions from Texas through Nebraska is anticipated through this summer, which will continue stress for crop and livestock producers in the region. Late spring rains have erased many drought patches in Eastern areas from the Gulf Coast through the Northeast, and this relatively moist pattern should result in seasonally normal amounts of precipitation over the summer.

The 2017-18 Western rainy season varied greatly across the region. Northern areas saw significant precipitation, while it was rather dry from California through the southern Rockies. Fortunately, the exceptional precipitation of the 2016-17 rainy season left reservoirs in a much better position to withstand a drier than normal season. As a result, many reservoirs remain close to seasonal average levels; however, irrigation water allocations are generally lower than last year.



CORN AND SOYBEANS

(resource 12, 13, 14, 15, 16, 17)

Key Highlights

March 2018 corn and soybean supplies are elevated but still within historical norms.

Soybean exports slowed in April, but the reduction is a typical seasonal pattern and likely not a signal of policy shifts in China.

Early indications from the Farm Bill negotiations show little changes for key programs like federal crop insurance, the Agricultural Risk Coverage (ARC) program, or the Price-Loss Coverage (PLC) program.

U.S. corn and soybean growers continue to cope with rising grain supplies. In 2017, America's farmers produced the largest soybean crop and the second-largest corn crop in U.S. history, after another incredible production year in 2016. The USDA measures grain in storage at four points during the year: the firsts of December, March, June, and September, with stocks the highest in December after the harvest and stocks the lowest in September before the next harvest. As a percentage of total marketing year production, the stocks of both corn and soybeans increased significantly in March 2018 (see Figure 8). Both the corn and soybean crops in storage at March 1, 2018, set records at 8.9 billion bushels and 2.1 billion bushels, respectively. However, as a percentage of production, the amount of grain in storage in early 2018 is in line with historical averages. Corn stocks are slightly higher than average at 61 percent of production, but soybean stocks are right on top of the historical average of 48 percent. So, while grain supplies have risen in recent years, they remain within historical boundaries. Global supplies for

Figure 8: Quarterly Corn and Soybean Stocks as a Percentage of Production

Corn Stocks as a % of Prior Year's Production





both corn and soybeans remained high heading into 2018, but the USDA projects some small improvement in stocks by August 2018 due to lower-than-expected production in the current marketing year. Poor weather conditions in Argentina and parts of Brazil are the cause for the expected decline in world production.

Grain demand is keeping pace with recent history, but certainly not outrunning it. Demand for animal feed has been strong in early 2018 as the inventory of hogs and cattle on grain ticked up. Poor weather conditions in cattle country forced more producers to place animals into feedlots, driving up feed use in March and April. Through the end of April, U.S. ethanol production kept pace with 2017 in the first quarter as ethanol producers experienced good fundamentals in rising oil prices and strong export demand. Grain exports are trailing behind levels experienced in 2017, but they are well ahead of five-year averages for both corn and soybeans (see Figure 9). News reports circulated in early May stating that China had stopped purchasing U.S. soybeans; however, according to USDA export data, China seasonally slows its soybean purchases from the U.S. in April and May when the Brazilian crop is harvested and put to market. In fact, in an average marketing year, only 6 percent of soybean exports to China occur between May and August. The reports of halted sales may simply be related to the availability of cheaper grain in other markets.

The supply and demand forces combine for a slightly positive, but still uncertain, story for the U.S. grain markets heading into the summer months. A strong demand coupled with the weather concerns in South America caused a winter and spring price rally. Cash corn prices ended the first quarter approximately \$0.50 per bushel higher than they ended 2017. Soybean producers also experienced a significant increase of more than \$1.00 per bushel to just above \$10.00 per bushel before falling back to \$9.50 in May on China trade concerns. The timing of the price increase could not have been better, considering the large 2017 crops and the large financial obligations that producers face each winter to service debts. There was some additional ambiguity in April and May for U.S. producers resulting from some trade disputes with China and NAFTA partners. The timing of these issues was quite poor as producers still had planting decisions to make in the face of increased uncertainty. But producers did receive some good news: a first look at the House of Representatives version of the 2018 Farm Bill suggests that most price support programs will be largely unchanged. Even though the bill was defeated on the House floor, it is a good signal to producers that they will not face significant program payment cuts in 2018. Ultimately, the USDA projects that market prices will hold at levels at or slightly above 2017 levels, which could provide some much-needed stability for producers, after several years of declining revenues.



Figure 9: Cumulative Bulk Grain Exports by Week

(resource 16, 17, 18)

Key Highlights

U.S. wheat crops are behind schedule and are at below-average quality, due to difficult spring weather conditions.

Demand for wheat is holding steady providing support for wheat prices.

Wheat prices have rallied significantly in the face of tighter supplies, and the prices look to hold through the remainder of 2018.

The wheat supply picture continues to improve for U.S. producers. A difficult crop year in 2017, followed by relatively poor conditions in the winter wheat crop in 2018, has caused a significant decline in production. Drought conditions in Kansas, Oklahoma, and Texas have hurt winter wheat yields, while cold, dry conditions in North Dakota and Montana have hurt winter wheat conditions and delayed spring wheat planting. Growers in Washington state faired the best this growing season, with high quality reported for both spring and winter wheat varieties. Producers indicated to the USDA their intent to plant more acres in the spring, but the long winter may prevent some of those acres from being planted. Global wheat producers are also experiencing difficult growing conditions, most notably in Russia and the Black Sea region, where a frigid spring has hurt winter crops and delayed spring planting.

Demand for wheat looks to improve slightly in 2018. The USDA projects rising demand for all categories of usage, including food, feed and residual, and exports. Lower corn and soybean product costs diminished the use of wheat as a feedstock alternative, but rising grain prices in the first quarter helped establish a base for wheat feed



usage. Globally, the EU is likely to benefit the most from production challenges in the Black Sea region, but the U.S. could pick up additional overseas export demand. Importers in Japan have increased U.S. wheat purchases in the first quarter of 2018 by nearly 20 percent from 2017 levels.

The supply and demand pictures combine for a reasonably good outlook for wheat producers. Wheat ending stocks tightened in 2018 and may tighten further in 2019. Average wheat cash prices (i.e., all-wheat prices) are up nearly \$1.60 per bushel since bottoming out in early 2016, and almost all major wheat-producing states have experienced healthy price appreciation in the spring months (see Figure 10). The USDA projects an average farm price of \$4.70 per bushel in 2018 and a midpoint projected price of \$5.00 per bushel in 2019. Production and crop quality challenges may limit the extent to which a single U.S. producer can take advantage of these higher prices. The benefits of improved markets are likely to be highly regionalized and based on local growing conditions.

CATTLE AND HOGS

(resource 12, 13, 19, 20, 21)

Key Highlights

U.S. beef and pork production continues to increase.

Strong domestic and foreign demand helped support market prices in the first half of 2018.

Production could pick up during the second half of the year, putting downward pressure on prices.

The U.S. cattle and hog industry remained in expansion mode throughout 2017, with beef and pork production up 3.8 and 2.6 percent, respectively. But U.S. cattle and hog producers both benefited from strong demand, allowing prices and profitability to remain higher than was expected at the start of 2018. The result has been farm-gate prices near or above last year's levels throughout much of the first quarter. While higher animal and feed input costs have hampered profitability in March and April, returns along the cattle and hog supply chains have been positive for the last 18 months (Figure 11). Accordingly, producers continue to receive the signal to expand, and the USDA expects annual 2018 beef and pork production to rise more quickly than last year (3.9 and 4.6 percent in 2018, respectively).

Robust demand is likely to continue to help offset growing supplies in 2018. Over the past two years, retail beef and pork prices have declined more quickly than poultry, making it more affordable for U.S. consumers to choose



red meats at the grocery store. Continued economic expansion and a rise in take-home pay from the recent U.S. tax reform should also give consumers more income for the summer barbecue season. Even with this economic expansion in the U.S., expanding export markets remain a key to future growth, as they provide U.S. producers access to 95 percent of worldwide consumers outside of the United States. Foreign demand has been a boon for beef and pork industries over the past year. U.S. beef

> exports jumped 14 percent in 2017, largely on increased demand from Asia. Meanwhile, pork exports rose just over 9 percent on the strength of rising demand from Mexico, South Korea, Japan, and South America. Exports of beef

and pork have remained elevated thus far in 2018, despite a pull-back in beef exports to Japan and pork exports to China and Hong Kong.

While supply and demand have been fairly balanced thus far in 2018, several factors may pressure prices in the second half of the year. Drought conditions have intensified across the Southern Plains, which could slow the beef herd expansion and increase marketings. Likewise, low milk prices could increase the rate of culling from the dairy herd, which could mean more beef production. Pork producers continue to respond to the growth in slaughter capacity by raising more pigs. The pig crop for December through February was up 4 percent, and producer intentions suggest additional growth in the second quarter of 2018. The additional hogs should hit the market in the second half of the year. Even with high levels of demand, the USDA expects that the additional beef and pork production will drive prices below 2017 levels by December.

Figure 11: Cattle and Hog Feeder Returns Over Operating Costs

Key Highlights

U.S. milk and dairy product supplies increased again in the first quarter 2018.

Healthy global demand and lower U.S. prices relative to foreign competitors boosted dairy product exports in the first quarter 2018.

Commodity futures prices in May imply income over feed costs will rebound to historical averages in the summer months.

Milk production picked up in early 2018 after a profitable 2017. U.S. production increased 1.5 percent over 2017 during the first quarter 2018, driven by a larger herd and by better milking efficiency per cow. Production picked up in California, Idaho, and Texas, but moderated in Wisconsin, New York, and Pennsylvania. Stocks of milk-fat products such as butter and cheese rose in early 2018, and global producers in the EU and Australia are once again ramping up production. Feed component costs rose substantially in the early months of 2018, and May commodity futures prices indicate that they could continue to stay elevated through much of 2018.

Demand for U.S. dairy remains strong, rebounding particularly well in foreign markets. Domestic demand has been reasonable in the early months of 2018. World prices have caught up to or exceeded U.S. prices in early 2018, meaning greater competitiveness for U.S. products. Through the first quarter of 2018, dairy exports are up 5 percent over 2017 with lower prices spurring greater sales volumes. The volume of U.S. dairy exports in March set a new monthly record, with very high sales of nonfat dry milk and skim milk powder to Southeast Asia. Exports to







Source: University of Wisconsin Understanding Dairy Markets, Authors Calculations.

China are up 18 percent annually, and exports to Mexico are up 20 percent. Mexico remains the largest market for U.S. dairy, highlighting the importance of NAFTA trade to the U.S. dairy sector.

The available toolkit for dairy risk management was meaningfully enhanced after the U.S. Congress passed the Bipartisan Budget Act of 2018. This legislation improved features of the Margin Protection Program for Dairy, including reducing premium levels, increasing the first-tier coverage level to five million pounds of milk production, waiving the administration fee for more producers, and making margin evaluations monthly instead of bi-monthly. All of these improvements upgrade the effectiveness and appropriateness of the program for dairy producers. The increasing competitiveness of U.S. dairy products in foreign dairy markets will likely have a positive effect on U.S. milk prices for the remainder of 2018. In May, the USDA projected a Federal Class III milk price of \$15.05 in 2018, a \$0.60 per hundredweight increase from April. Based on inflation-adjusted income over feed costs (IOFC, defined as Class III Federal milk price less average 16 percent feed ration cost normalized to 30-day months), dairy producers began 2018 with below-average cash flow, with levels like those experienced in 2016 (Figure 12). Corn, soybean meal, and milk price futures contracts indicate improving conditions throughout 2018, but trade disruptions or a stronger U.S. dollar could limit the upside, especially if dairy exports slow. (resource 24, 25, 26, 27, 28

Key Highlights

U.S. farmers increased cotton plantings by four million acres between 2015 and 2017, and planting intentions suggest additional acreage is likely in 2018.

High demand has helped to keep prices in a tight range, despite rising production.

Cottonseed regained eligibility for ARC and PLC payments as a result of U.S. Congressional budget negotiations.

Farmers planted more cotton in 2017 because of improving profitability of producing the commodity compared to alternatives. Since U.S. cotton acres bottomed out in 2015, U.S. farmers have planted an additional four million acres. The USDA March planting intentions survey suggests that the trend is likely to continue in 2018. U.S. farmers are expected to plant nearly 7 percent more cotton acres in 2018, for a potential total of 13.5 million acres. If realized, that would be the highest acreage since 2011, and the expected 8.1 million acres planted in the Southwest would be that region's most cotton acres since the 1980s.

As farmers have planted more cotton, efficiency has also increased. The USDA's final estimate of the 2017 cotton yield came in at a record 905 pounds per acre, and overall production jumped nearly 24 percent compared to 2016. With total use expected to be flat, marketing year-end U.S. cotton stocks are likely to double from 2017 to 2018. However, farmers who chose to plant cotton have generally been rewarded. The USDA's initial projections for the 2017 crop suggested that the farm-level upland cotton marketing year average price could fall between \$0.54-\$0.74 per pound, and the USDA's current expectations suggest it is likely to be at the upper end of that range.





The U.S. cotton industry also received welcome news in the form of the Bipartisan Budget Act of 2018 (BBA), which eliminated the Stacked Income Protection Plan (STAX) program and reinstated cottonseed's eligibility for government ARC and PLC payments starting in 2018. Producers with generic base acres will be able to reassign acreage to seed cotton, and will be eligible for PLC payments if their effective seed cotton price falls below the program's \$0.367 reference price. Based on analysis from the Congressional Budget Office (CBO), this could mean an additional \$3.2 billion in available program payments for cotton producers spread across 2018-2027 (Figure 13).

Rising demand looks like it could be a bright spot for the industry in the 2018/19 marketing year. Changes in world cotton consumption tend to track very closely with world GDP growth, and the global economy looks poised for strong growth. Increased global growth helped oil prices

to rise in 2017, and the U.S. Energy Information Agency expects prices to stay near today's levels into 2019. Since this impacts the cost of human-made fibers like polyester, this should help push demand toward cotton products at the margin.

However, several longer-run challenges remain that could keep cotton prices from rising. Excess global cotton supplies have weighed on cotton markets for the last several years, and world production looks to increase in 2018. China's massive stockpile has been dwindling, but its stocks-touse ratio remains relatively high. Additionally, cotton's market share in the fiber market has declined over time, and the industry continues to deal with the ongoing trend toward "athleisure" clothing, typically produced from artificial fibers.

ALMONDS, PISTACHIOS, AND WALNUTS (resource 4, 16, 29, 30, 31, 32, 33)

Key Highlights

U.S. almond, pistachio, and walnut acreage continue to grow.

Strong demand and weather-related production concerns have lifted almond prices.

Walnut markets are dealing with lower export demand compared to last year.

Western nut crops have become an increasingly important part of the U.S. agricultural sector in recent years. Total U.S. bearing acreage of almonds, pistachios, and walnuts – which are primarily located in California – have increased more than 60 percent since 2007 (Figure 14). As producers plant more acreage and consumer demand grows, the share of total farm sector revenues attributable to almonds, pistachios, and walnuts has doubled. Although the upward trend in acreage has been true for each of these nut commodities, the supply and demand fundamentals vary heading into the back-half of the 2017 marketing year.

ALMONDS

The USDA is currently forecasting a 7 percent increase in almond bearing acreage in 2018, but total production could increase more slowly if weather impacts yields. Inconsistent temperatures led to some concerns about lower chill hours in early 2018. In late February, a spell of freezing temperatures arrived amid the annual almond bloom, leaving buds vulnerable to damage. Despite varied reports of crop damage (the impact varies by variety and level of bud development at the time of the freeze),

Figure 14: Almond, Pistachio, and Walnut Bearing Acreage by Year



many producers continue to report relatively good crops. However, industry expectations suggest at least some impact on yields is likely.

This potentially smaller crop comes at a time when industry demand continues to run at record levels. Domestic demand for almonds continues to be strong, with California Almond Board shipment data up 6.6 percent year-to-date through March. Foreign demand has been growing even faster, with year-to-date shipments up 14 percent. Demand from India and China has been particularly robust, with exports to each market up more than 20 percent so far this marketing year. Increased trade tensions with China could dampen export demand. Almonds were one of several agricultural commodities affected by the recent Chinese tariff increases in response to proposed U.S. steel and aluminum tariffs. The industry will be keeping a close eye on whether an increase in the Chinese tariff on almonds (from 10 to 25 percent) will have a significant effect on demand.

But even if overall almond shipments from March through July slow to the pace experienced over the past few years, the stocks carried into the next marketing year as a percentage of total shipments could drop to levels last seen in 2010-2012. Paired with a potential weather-related reduction in 2018, production growth may mean fewer nuts available for shipment in 2018 and renewed support for higher prices.

PISTACHIOS

Unlike almonds, pistachios are an alternate bearing nut (i.e., the crop will have higher yields during an on-year followed by an off-year with lower yields). In 2017, the industry received somewhat of a surprise with a relatively large off-year crop estimated at 606 million pounds. The 2017 crop is a step back from the 897 million pound on-year harvest in 2016, but still represents the industry's second largest crop.

Even with the usual off-year production pull-back, pistachio shipments continue to run ahead of 2017's pace. Whereas the almond industry has seen faster production growth from foreign markets, the ramp up in pistachio demand has largely come from the domestic market. U.S shipments are up 11 percent year-over-year. However, exports remain an important source of demand. More than three out of five pistachios shipments have been to a foreign market over the last five years.

The continued ability to move additional pistachios will be important as the industry prepares for an on-year harvest in 2018. Chill hours varied throughout California, but producers seem to be optimistic about the crop's potential. Pistachio growers also largely dodged California's late February freeze because pistachios typically bloom later than almonds. With a generally-positive weather outlook, some experts contend that the industry could see its first billion-pound harvest this fall. Of course, producers will need to wait until harvest to find out the crop's true outcome. Pistachio shells harden before the nut sets, so producers can't gauge if weather and pollination conditions impacted yields until they get the nuts out of the orchards this fall.

WALNUTS

While the almond and pistachio industries have had stable-to-rising foreign demand this marketing year, walnut producers have seen a downshift in exports compared to last year. Year-to-date exports for the 2017 marketing year are down nearly 17 percent on an inshell equivalent basis. This has largely been driven by a larger decline in inshell (as opposed to shelled) export shipments. The decline in total walnut exports has been broad-based as exports are down in several major markets, including Europe, the Middle East and Africa, and Asia.

At least part of the lower export story is the somewhat smaller 2017 crop, which checked in lighter than in the prior year. Combined with the lowest carry-in stocks since 2014, this means there are almost 6 percent fewer nuts available for sale this year compared to the 2016/17 marketing year. This decrease in export demand also comes after record foreign sales in 2016, and the 2017 export shipments remain nearly 12 percent ahead of the average for the previous five years. Still, producers will look for exports to return to last year's levels, given the potential of another strong crop on the horizon in 2018.

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