

Agriculture By the Numbers

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Strong Crop Basis Levels

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Significant Increase in Net
Farm Income for 2021

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Record Exports Including
China

There is A Lot More to
Carbon than Offsets

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Understanding Today's Strong Crop Basis Levels

By Frayne Olson, NDSU Extension Crop Economist/Marketing Specialist

Basis levels for North Dakota crops are exceptionally strong for this time of year. Typically, harvest basis values for wheat, corn and soybeans are minus \$0.70 to minus \$1.10 per bushel. Current basis levels are between minus \$0.20 and minus \$0.40 per bushel. There are reasons why this is occurring.

Before going into detail to explain these unusually strong seasonal levels, let's review what basis represents and how to correctly interpret the information. Mathematically, basis equals the local cash price for a specific location and delivery period minus the corresponding futures market price. It is the price difference between two markets, cash and futures, for the same commodity. Theoretically, basis represents the difference in local supply and demand conditions for a crop and the expected national supply and demand conditions, reflected in the futures market price.

Operationally, basis is the local cash market trying to regulate the flow of grain over time and across location. For example, assume the local basis levels are weaker, or more negative, for delivery today but are stronger, or less negative, for delivery in three months. In this case, the local cash market is discouraging deliveries today and encouraging deliveries in the future. There is an incentive for farm managers to store their grain and deliver in the future. In contrast, if the local basis levels are stronger, or less negative today, and weaker or more negative in three months, the cash marketing is trying to encourage more deliveries today relative to three months from now.

Today, local basis levels are stronger than normal for this time of year. This is signaling that the inflow of grain should increase, because there is a strong outflow of grain. A review of basis levels at several grain elevators across North Dakota shows that basis bids remain strong into January 2022.

A combination of four key factors are creating the current strong basis levels. They are lower than normal crop production within the region, strong export demand for soybeans and corn, damage

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from Hurricane Ida to the export grain terminals in the Louisiana Gulf ports and very high ocean freight rates. Let's evaluate each of these factors individually.

Severe drought conditions have reduced yields and total crop production in North Dakota, South Dakota, Montana and Minnesota. Even though crop prices have increased because of the lower production, many farm managers have been hesitant to pre-sell their grain until they know how many bushels will be available. Harvest deliveries and selling has been lower than normal.

At the same time, U.S. corn and soybean export sales and deliveries have been strong this fall. Many international buyers pre-purchased grain for delivery at harvest when crop prices are typically low. Grain export terminals are designed to rapidly receive, grade and accumulate inbound grain from country elevators, either delivered by railroad or barge, so ocean vessels can be loaded quickly once they arrive. These export terminals do not want to store inventory longer than necessary and are charged additional fees, called demerge, if the vessel loading takes longer than allowed. Coordinating the flow of grain to minimize transportation, storage and loading costs is critical to the profitability of export terminals. Basis bids for future delivery periods are the signaling system that helps with this coordination.

Tight scheduling for grain flows creates cost efficiencies, but any unexpected disruptions in the system can also result in significant challenges. This is what happened when Hurricane Ida hit the Louisiana coast causing flooding, power outages and damage to homes and businesses, including grain export terminals in the New Orleans area. Even though the hurricane had been forecasted for several days and preparations had been made, damage to the electrical power supplies and grain export system was greater than expected.

U.S. grain supply chains were forced to quickly adapt. Some grain loadings were shifted from

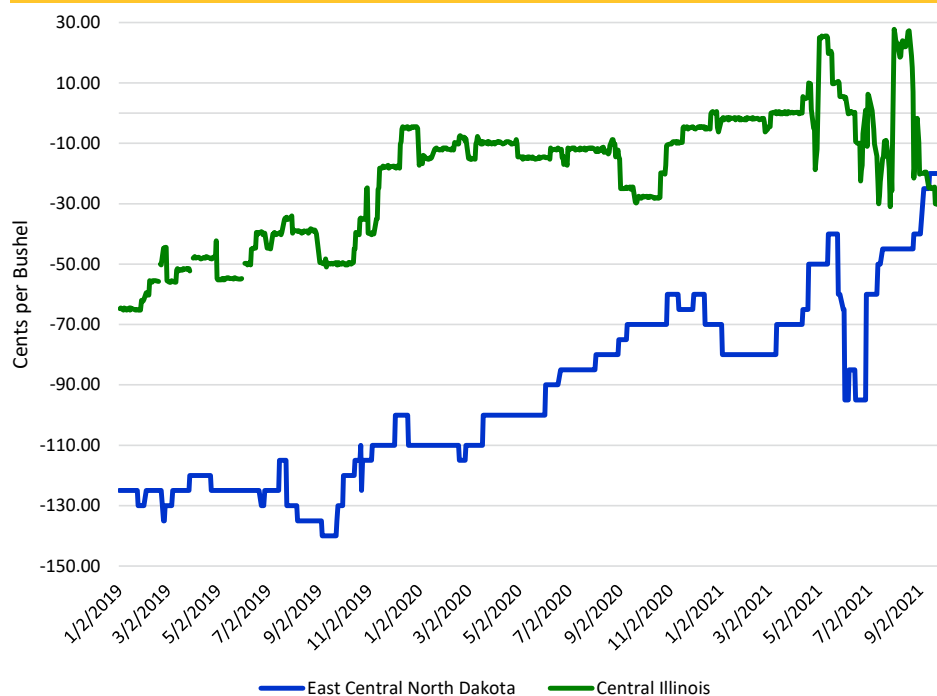
the New Orleans, Louisiana, (NOLA) ports to the Pacific Northwest (PNW) and Texas Gulf ports near Galveston and Houston, Texas. Grain basis levels along the Mississippi River terminals weakened, became more negative, signaling a need to slow deliveries into NOLA. At the same time, basis levels in the PNW strengthened signaling a need for additional deliveries into the PNW facilities.

Figure 1 shows the historical spot market soybean basis levels for selected local elevators in east central North Dakota and central Illinois. Please note the recent shifts in relative basis levels, with the North Dakota basis strengthening and the Illinois basis weakening. Central Illinois soybeans are typically exported through the NOLA ports, while North Dakota soybeans are exported through the PNW.

The NOLA grain terminals are re-opening and ocean vessel loadings are increasing. However, the damage to several terminals will take time to be repaired, and the backlog of vessels waiting to be loaded will take several weeks to work through.

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Figure 1: Spot Market Soybean Basis Levels for Selected Local Grain Elevators (01/02/2019 to 10/01/2021)



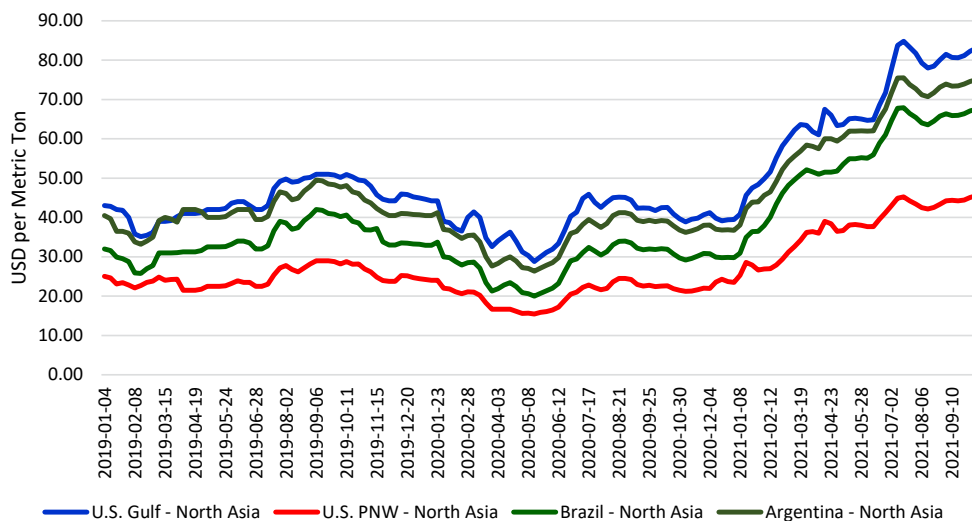
Source: DTN - ProphetX

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Finally, ocean freight rates for both bulk and container shipments have nearly doubled since the beginning of 2021. Rising ocean freight rates are also shifting the relative cost of delivering grain from major exporters to alternative importers. For example, Figure 2 shows the weekly average ocean freight rates for grain loaded at the U.S. Gulf, PNW, Brazilian Coast and Argentine river delivered to north Asia. North Asia importers include countries like China, Japan and South Korea. The shorter distance and faster transit times for grain loaded at the PNW and delivered to north Asia, relative to other loading points, has increased the demand for grain deliveries from the PNW export terminals.

The current basis bids for corn, soybean and wheat delivered to PNW facilities suggest local North Dakota basis levels will stay strong into January 2022. The grain markets know that total crop supplies in North Dakota, South Dakota, Montana and Minnesota are lower than last year, ocean freight rates are not expected to decrease for many months and U.S. export shipments are forecast to remain strong into January. Export shipments through the NOLA ports are improving and projected to return to near normal within the next few months.

Figure 2: Weekly Average Ocean Freight Rates to North Asia
(01/04/2019 to 10-04-2021)



Source: FastMarkets - AgriCensus

Cattle Prices Buoyed by Record Exports Including China

By Tim Petry, NDSU Extension Livestock Marketing Economist



Cattle prices have been generally increasing throughout 2021 after the COVID-19 depressed prices in 2020.

Fed cattle prices have been supported by strong domestic and export beef demand.

Higher fed cattle prices and a smaller calf crop have been supportive to calf and feeder cattle prices, but higher corn prices have held feeder cattle prices in check. Corn prices have declined since highs in May but are still about 70% higher than last year.

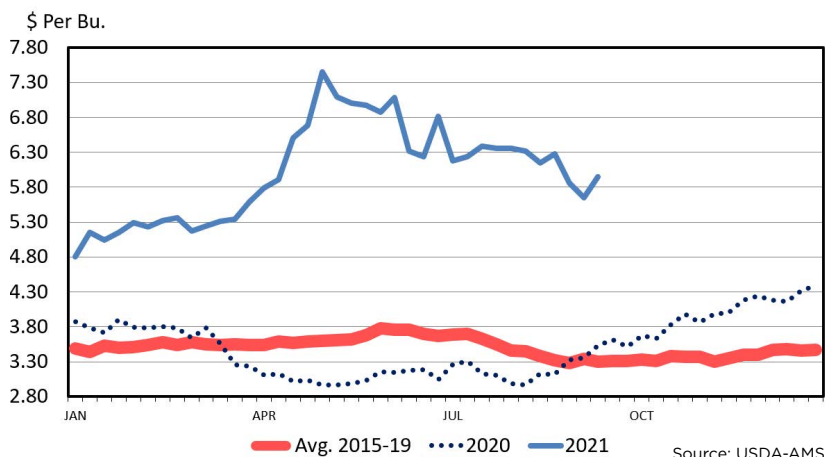
The domestic economy has improved substantially from last year. The stock market has increased throughout 2021 and reached record high levels in August, and unemployment levels continue to decline with "Help Wanted" signs prevalent in most cities.

U.S. beef exports again at record levels in 2021 have been supportive to fed cattle prices.

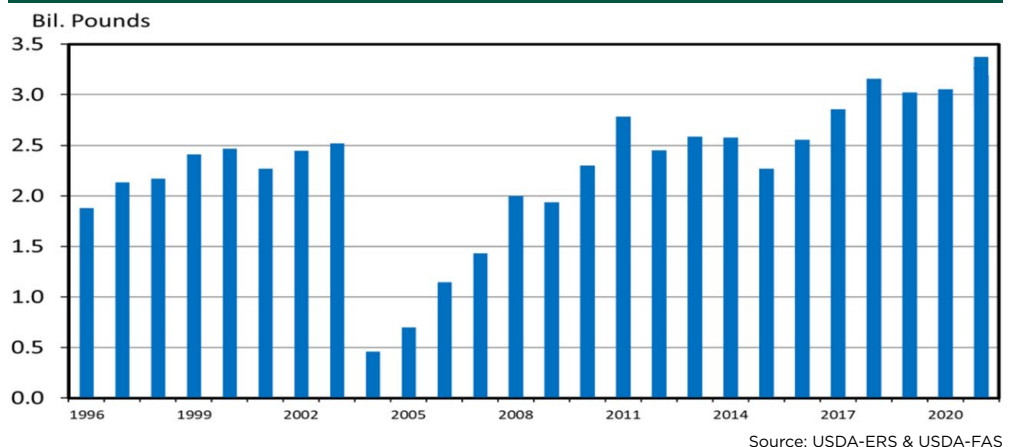
Previous annual record beef exports occurred in 2018. Record exports were expected in 2019. However, trade agreement negotiations with our top four foreign customers, Japan, South Korea, Mexico and Canada, caused exports to underperform. With the ratification of new, favorable trade agreements with each of those countries in 2020, record beef exports were again predicted. But the COVID-19 pandemic severely impacted U.S. and foreign economies and beef exports waned again.

The U.S. Department of Agriculture (USDA) Economic Research Service (ERS) publishes monthly U.S. livestock and meat trade data by country. That report with historic data back to 1989 is available at: www.ers.usda.gov/data-products/livestock-and-meat-international-trade-data

Omaha Corn Prices
Weekly



U.S. Beef and Veal Exports
Carcass Weight, Annual



The most recent report was issued on September 3 for trade data through July of 2021. The next report will be available on October 6.

ERS reported 2021 beef exports continuing at a record pace.

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Cattle Prices Buoyed by Record Exports

Including China – continued from page 4

U.S. beef exports were 297.3 million pounds in July, which is 17.9% above last year and the highest export level for July on record. Through the first seven months of 2021 beef exports were 21% above the same period from a year ago. The strong pace of shipments was attributable to growing export levels to South Korea (up 7.9%) and Mexico (up 17.4%).

Despite the strong pace of beef shipments, year-to-date exports to Japan and Canada were down 4.2% and 7.5%, respectively. Fortunately that decline has been offset by significant increases to China.

The signing of the Phase One trade agreement with China on Jan. 15, 2020, has helped buoy beef exports to that country. Beef exports to China totaled 51 million pounds in July, a record level and more than eight times the amount shipped last year.

Prior to 2020 China did not purchase beef from the U.S., but now China has moved up to our third best customer.

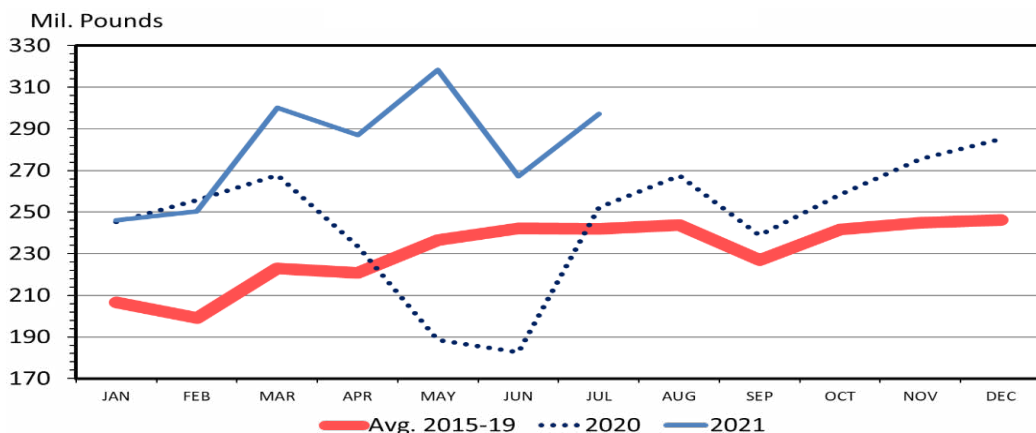
In the last decade China has grown from importing very little beef to the largest beef importer in the world. The USDA estimates that China will import 6.6 billion pounds of beef in 2021 compared to only about 60 million pounds in 2011.

Major beef suppliers to China include Brazil, Argentina and Uruguay in South America, and Australia and New Zealand.

Recent developments in some of those countries, along with China's interest in finding additional suppliers for all agriculture products, have opened the door for U.S. beef.

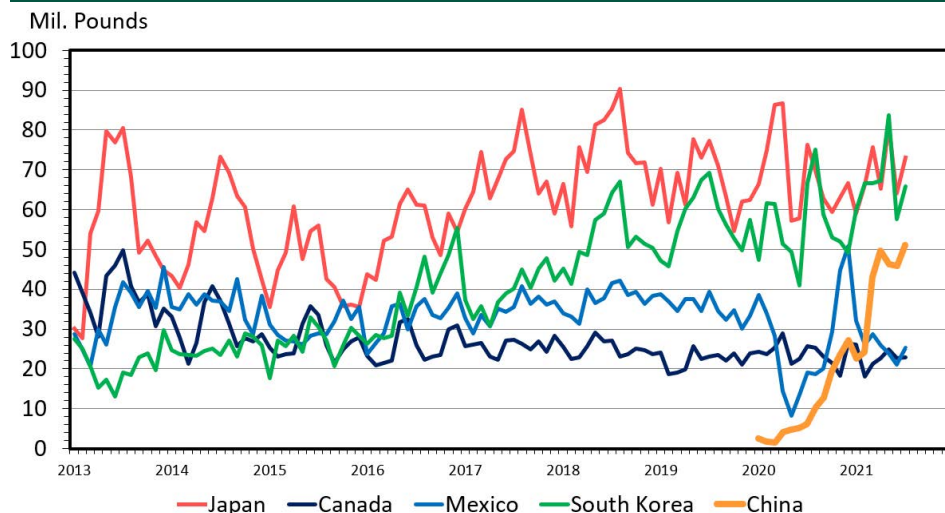
Brazil confirmed two new cases of BSE in September and temporarily ceased exports to China. In June, Argentina imposed beef export limits to try to stem

U.S. Beef and Veal Exports
Carcass Weight, Monthly



Source: USDA-ERS & USDA-FAS

U.S. Beef Exports to Major Markets
Carcass Weight, Monthly



Source: USDA-ERS & USDA-FAS

domestic beef price inflation. Australia is rebuilding the beef herd after several years of drought, so beef production and exports have declined.

Not only did the U.S. export a record volume of beef in July, but the value also surpassed previous amounts. Due to higher wholesale beef prices, the value of exports was \$850 million -- almost 50% higher than last year.

There is A Lot More to Carbon than Offsets

By David Ripplinger, NDSU Extension
Bioproducts/Bioenergy Economics Specialist

While a great deal of attention has been given to carbon offsets in agriculture in the last year, it is important to note that they are not the only opportunity or threat to U.S. farmers as society works to decarbonize. At the same time, targeted practices like planting cover crops and conservation tillage also are not the only way to reduce agricultural carbon emissions.

Carbon offsets are reductions in emissions used to offset emissions made elsewhere in the economy. They have become well-known especially in the last year as a number of businesses have begun engaging with farmers at a large scale to adopt new production practices and sell the resulting offset for the carbon captured to other businesses.

The demand for carbon offsets is driven in large part by pledges of corporations to achieve a reduction in emissions by a target date. For example, Microsoft has stated that it will be carbon negative by 2030.

When looking to reduce carbon emissions a business has a few options. The first to consider are referred to as scopes-which are emissions that result from a business and its supply chain. Scope 1 emissions refer to those made directly by the business. Scope 2 emissions are those associated with the energy it purchases. Scope 3 emissions are those associated with its supply chain.

As some businesses are easier to decarbonize than others, carbon offsets are being pursued. That is why businesses are coming to agriculture, and why the long-term capture of carbon in the soil using cover crops and alternative tillage is being promoted.

While some farmers have entered the carbon offset market, most have not actively considered broader implications of decarbonizing their farm or ranch. In

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NDSU Photo

There is a Lot More to Carbon than Offsets

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addition, most farmer carbon offset education has largely consisted of considerations for entering any contract. These concerns are important, but there are other, long-term, strategic considerations when entering carbon-offset contracts – especially those that are years or even decades in duration. That is why understanding other dimensions of carbon is critical.

There are two important concepts about carbon accounting and offsets that need to be understood – additionality and stacking. Additionality is the idea that only new practices that are the result of incentives should be counted. Farmers who had already adopted certain practices are part of the baseline. Stacking is the idea that carbon reductions shouldn't be double counted, although some organizations allow this. Again, the goal is for each dollar spent on carbon reductions to actually do so. An absence of stacking means that once you have sold the rights to your carbon emission reductions, they are gone. Here are a few ways that decision could be regrettable.

Undervaluation/Selling too Low. Right now, there is no single price for carbon and prices are not transparent. Carbon prices in the farm-level market range from \$5 to \$20 per metric ton. But based on the underlying dynamics – as more supply and demand come online, that price will likely change – but to what?

Alternatively, there are carbon markets where the price of carbon is much higher. California Carbon Credits that are created as part of the state's Low Carbon Fuel Standard trade have traded at \$200 per metric ton for years. Today, farmers can not directly participate in that program. There are many working to develop systems that would meet the requirements of Sacramento regulators to give farmers the ability to capture part of that \$200 per metric ton value if they marketed their crops into markets for biofuels destined for California.

At the same time, farmers are soon to be more engaged by businesses in their own supply chain such as crop marketers and processors looking to decarbonize. For these marketers and processors, crop production is a scope 3 emission. Farmers may preclude themselves from participating in markets or lose premiums as food and agribusiness companies look to decarbonize and make product claims for marketing purposes.

Taxes on Carbon. There is currently serious discussion in Washington to introduce a national carbon tax. While carbon taxes like those in Canada focus on taxing the carbon intensity of goods and services involved in transactions, it is plausible that they will eventually include emissions more generally, as is being currently considered in Washington with a methane fee for the oil and gas industry.

Subsidies. There also has been considerable discussion in Washington to create programs that incentivize farmers to use carbon reducing practices. Would these payments exceed the amount available currently in the carbon offset market? Would the concept of double counting prevent farmers from participating in new government programs if they had already sold carbon offsets for the same practice?

Mandates. Similarly, the federal or state governments could impose mandated emission ceilings or production practices removing more explicit economic incentives or disincentives.

The point is that there is a lot more to consider than just the terms of carbon offset contracts. There are also good reasons that farmers should be actively looking to participate in carbon offset agreements sooner rather than later. Some contracts are looking for farmers who would be new to certain practices. By waiting a year, a year's worth of benefit might be lost. Farmers also should be cautious about waiting until more information is available, as it will take years if not a decade or more for carbon markets and policies to mature.

If nothing else, carbon should be on the list of educational topics for farmers this winter.



USDA Forecasts a Significant Increase in Net Farm Income for 2021

By Bryon Parman, Extension Agricultural Finance Specialist

The U.S. Department of Agriculture (USDA) is projecting a significant increase in net farm incomes for 2021 relative to previous years, while median farm incomes are expected to drop. While the final calculation for net farm income in the U.S. will not be known for many months, the present forecast is for a 19.5% increase in 2021 after a projected 19.6% increase in 2020 relative to 2019. This represents the highest net cash farm income since 2014 and the highest net farm income since 2013.

U.S. Department of Agriculture, Economic Research Service. *Farm Sector Income & Finances: Highlights from the Farm Income Forecast*, September 2, 2021. Online at: www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/highlights-from-the-farm-income-forecast/

According to USDA's projections, the additional income is coming from both common production sources including crop and livestock output. The USDA projects that crop income will increase from \$192.2 billion to \$230.1 billion while animals and animal product income will increase from \$165 billion to \$191.5 billion, which are 19.7% and 16% increases respectively.

At the same time, the USDA projects that federal government direct farm program payments will decline from \$45.7 billion to \$28 billion or a 38.6% drop in 2021 compared to 2020. Despite the decline in federal direct payments from 2020 to 2021, the

\$28 billion projected in 2021 would still be higher than 2019 which was \$22.4 billion and included the Market Facilitation 2 payments.

The majority of the increase in crop income stems from increases in commodity prices. Specifically, corn, soybeans and wheat, which have been higher in 2021 than they were for much of 2020. Income from animal products stem from increases in receipts for hogs, cattle and broilers. In fact, receipts for animal products will reach their highest level since 2014 when gross income for that category totaled \$212.3 billion and cattle prices were at record highs. Similarly, gross crop income at \$230.1 billion would be at its highest level since 2013.

At the same time, total expenses in 2021 are projected to increase 7.3% relative to 2020, from \$357.4 billion to \$383.5 billion. While this is a significant increase, it is still lower than 2014 where total expenses were \$391 billion. Additionally, cash farm related income which includes custom work and rentals, recreation, insurance indemnities and miscellaneous farm income is also projected to be up considerably, from \$34.3 billion to \$36.8 billion or 7.4%.

Another balance sheet improvement comes from a decline in total farm debt. Though the decline is modest, from 2014 to 2020 total farm debt

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USDA Forecasts a Significant Increase in Net Farm Income for 2021 — continued from page 8

increased every year with a resulting difference of \$345.2 billion in 2014 to \$444.9 billion in 2020. In 2021, the USDA projects a modest 0.2% decline in total farm debt to \$443.9 billion. The decline in total debt comes from a decrease in non-real estate debt from \$153.2 billion in 2020 to \$147.9 billion in 2021, which is a decline of 3.5%. However, real estate debt is expected to increase 1.5% from 2020 to 2021, from \$291.7 billion to \$296.1 billion.

In general, the USDA's forecast looks promising for U.S. agriculture for the remainder of the current year, showing improvement in farm balance sheets across the country. If the forecast is correct, it will also mark declines in debt-to-equity and debt-to-asset ratios for the first time in over 8 years. However, there are some key things that must occur for this to transpire. Commodity prices must remain elevated through harvest giving farmers who have unpriced grains to realize some of the benefits of the elevated prices. Additionally, with portions of the country experiencing drought, final yield information will be important in what the actual revenue in 2021 turns out to be for U.S. farmers and ranchers. Finally, global reaction to the continued pandemic and the actions of China with the current trade agreement will be big determinates of commodity prices going forward.

Deadline for the Heirs Relending Program is Approaching

The deadline to apply for the Heirs Relending Program (HRP) is October 29. What is the HRP? In many cases, farmers and ranchers lack a clear succession plan for their heirs who are actively engaged in farming. For instance, a land-owning single parent passes away unexpectedly with multiple children and no will exists detailing how the assets will be divided. Without clear ownership, a typical collateralized loan may be impossible to obtain since ownership is not detailed.

The HRP has some differences from other USDA loan programs. For instance, the USDA does not provide the loan directly to farmers and ranchers. The HRP rather is supplied to intermediary lenders such as cooperatives, credit unions and other nonprofit organizations at 1% interest with the application period being Aug. 30 to Oct. 29, 2021. The maximum amount for each loan is \$5 million, with heirs eligible for up to \$600,000 per farm or ranch.

For more information on HRP, visit: www.farmers.gov/heirs/relending.