

Agriculture By the Numbers

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NDSU Extension Agribusiness and Applied Economics

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Expected Brazilian Production Already Impacting Soybean Market Psychology

Greetings from your Newly-Hired Extension Livestock Development Specialist

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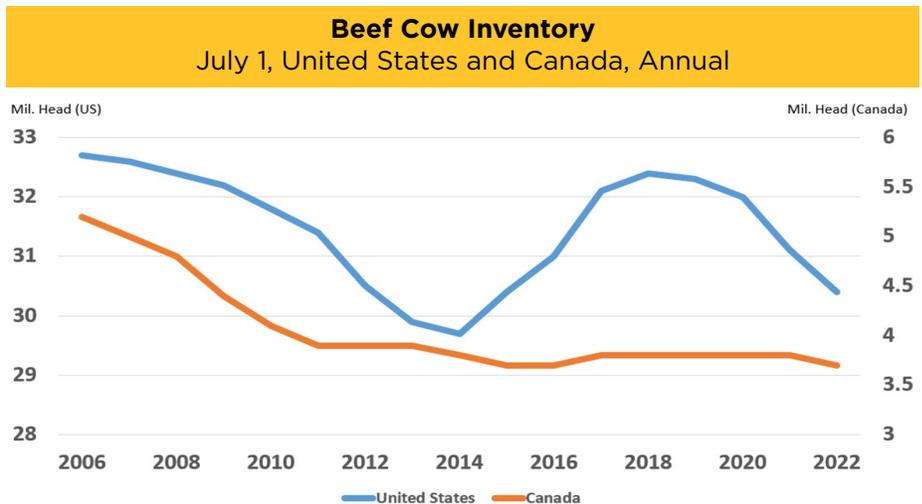
Declining U.S. and Canadian Beef Cow Inventories Support Prices

Tim Petry, Extension Livestock Marketing Economist

The USDA-National Agricultural Statistics Service (NASS) released the semi-annual *United States and Canadian Cattle* inventory report on Aug. 24. It is available at: <https://usda.library.cornell.edu/concern/publications/474299142>

Due to North Dakota's close proximity to Canada, it is interesting to compare beef cow numbers between the two countries. Inventory numbers for both countries were reported as of July 1, 2022.

U.S. beef cows on July 1, 2022 at 30.35 million head were down 750,000 from the 31.1 million on July 1, 2021. That was a cyclical decline of 2.05 million head or 6.3% in the past four years, but it followed a 2.65 million head cyclical increase from 2014 to 2018.



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A number of factors led to the decline in U.S. beef cows during 2021 and 2022. Drought spread into much of the Western U.S., including North Dakota. Fewer U.S. beef replacement heifers entered the herd, and beef cow slaughter was up 15% in the first half of 2022 following a 9% increase in 2021. Severe spring blizzards in the northern Plains and narrowing cow-calf profit margins also contributed to the liquidation.

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Declining U.S. and Canadian Beef Cow Inventories Support Prices

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Canadian beef cows on July 1, 2022 at 3.714 million head were down 62,500 head from the 3.776 million on July 1, 2021. That decline followed a general decline since 2006. The 2022 number was the lowest since the 3.702 million head in 1990.

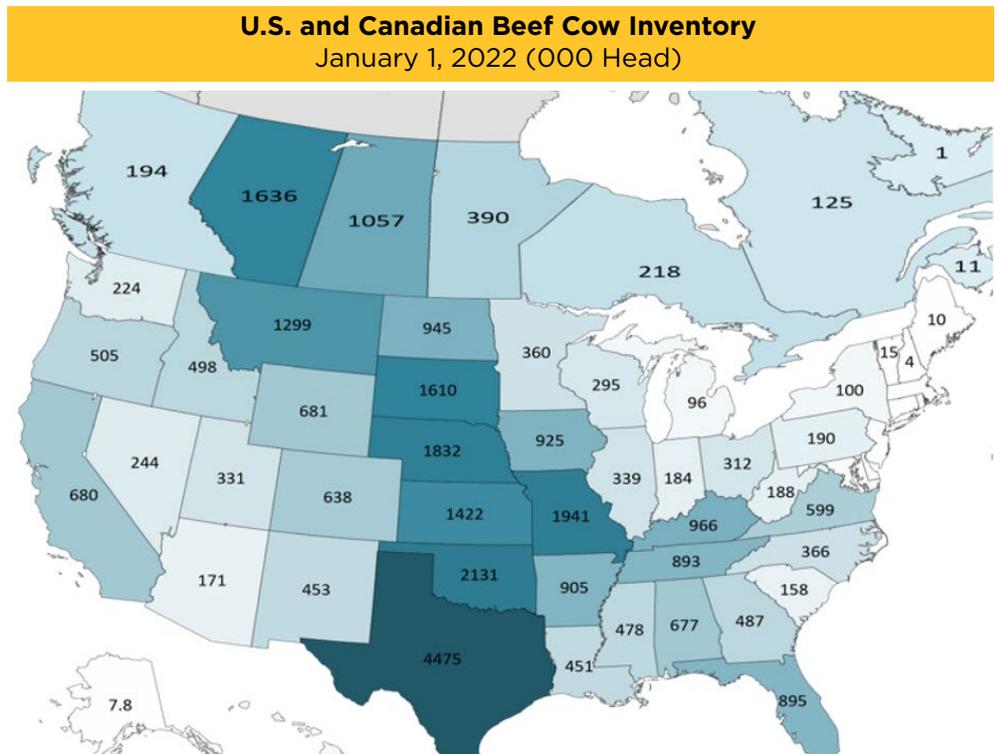
Canadian beef cow numbers recorded an all-time record high in 2005 at 5.436 million head. Numbers were high in 2004 to 2006 due to the discovery of bovine spongiform encephalopathy (BSE) in a Canadian cow in May 2003. Prior to BSE, many cull cows were shipped to the U.S. for slaughter, but the U.S. prohibited Canadian cow imports, which caused very low Canadian prices with limited markets available. So, many cull cows remained on farms and ranches.

The U.S. beef cow herd peaked in 1975 at 45.7 million head.

Canada's beef cow herd is much smaller than in the U.S. NASS does not report state and provincial cattle numbers in the July cattle inventory report, but they are reported in the January report. Texas alone had 4.475 million beef cows in January 2022 compared to 3.653 million in Canada. North Dakota's beef cow herd was 945,000 head compared to neighboring Manitoba at 390,100, Saskatchewan at 1,056,700 and Alberta at 1,635,800.

The recent V-shaped cyclical U.S. beef cow numbers are evident on the chart. The normal cyclical four-year liquidation from 2006 through 2009 should have ended. However, the severe drought in the southern Plains caused an additional four-year forced liquidation ending with the July 1, 2014 inventory at 29.75 million head.

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NDSU Photo

Declining U.S. and Canadian Beef Cow Inventories Support Prices — continued from page 2

That decline was one reason for record high cattle prices in 2014 and 2015.

Beef replacement heifers on July 1 in the U.S. at 4.15 million head were down 3.5% from 2021, and the lowest number since July 1 records began in 1973. Beef replacement heifers in Canada at 622.1 thousand were down 7.4%, and the lowest number since 2010.

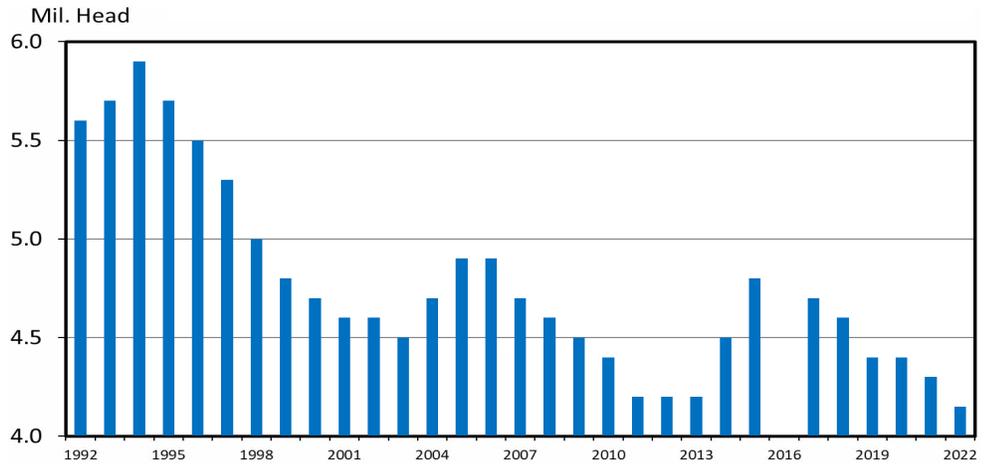
So, Jan. 1, 2023 beef cow numbers in both countries will likely be down again.

The Canadian beef cow decline and cyclically declining U.S. beef herd will be supportive to cattle prices for the next several years and may challenge the 2014 historical price highs.

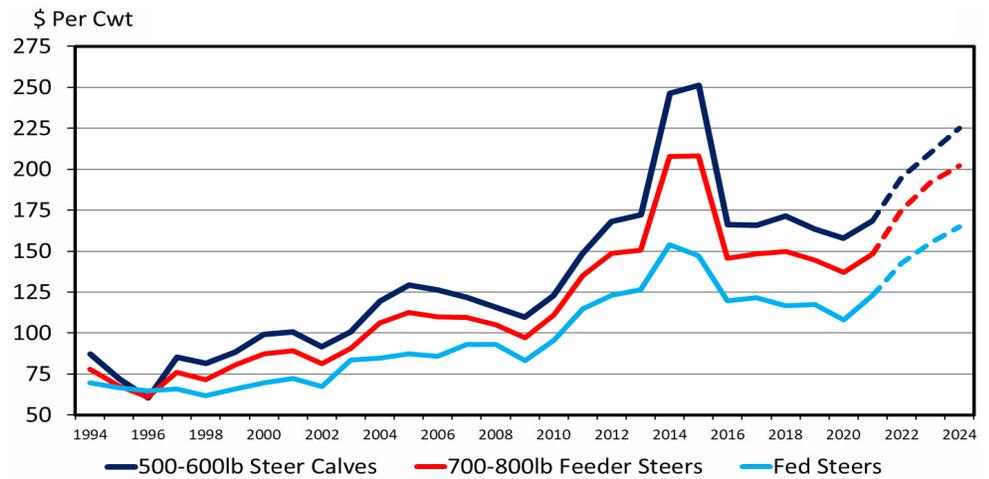
Currently, fed steer prices in the U.S. are averaging \$143/hundredweight (cwt) compared to \$125 at this same time last year. 2023 Live cattle futures prices are trading in the mid to upper \$150/cwt.

Alberta, Canada fed steer prices on a \$U.S. basis are at \$138/cwt compared to \$125 last year.

Heifers Held as Beef Cow Replacements — July, U.S.



U.S. Average Annual Cattle Prices





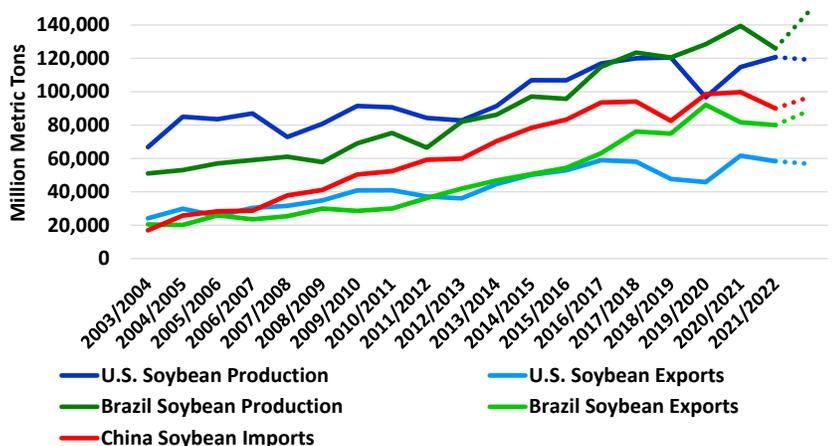
Expected Brazilian Production Already Impacting Soybean Market Psychology

Frayne Olson, NDSU Extension Crop Economist/Marketing Specialist

The U.S. soybean harvest is just beginning, but the forecast for record large Brazilian soybean production is already impacting market expectations and futures prices. The U.S. Department of Agriculture is projecting total Brazilian soybean production to be 6.8 % higher than their previous record. The USDA currently projects Brazilian soybean production will reach 149 million metric tons (mmt), which is similar to industry estimates. Their previous record was 139.6 mmt in the 2020-21 marketing year.

Higher production levels lead to the potential for increased exports and added competition for U.S. soybean exports. Figure 1 shows historical and projected production and export amounts for Brazil and the U.S., and total Chinese soybean imports. The dashed portion of each line is the current USDA forecast for the 2022-23 marketing year.

Figure 1: U.S. and Brazilian Soybean Production and Exports and Chinese Soybean Imports.



USDA PSD Online

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Expecting Brazilian Production Already Impacting Soybean Market Psychology

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These forecasts show the continued growth in Brazilian soybean production and exports and the recent stabilization of Chinese import levels. The decrease in soybean imports during the 2018-19 marketing year was due to an outbreak of African swine fever (ASF) and the U.S.-China trade war. Even though the Chinese hog herd is recovering, hog and pig numbers have not returned to the pre-ASF levels.

The Chinese government is also pushing hog producers to reformulate their rations to use soybean meal more efficiently. The national soybean meal inclusion rates have dropped from 17.8% in 2017 to 15.3% today. New Hope Liuhe Co. reports their soybean meal inclusion rate at 10.7% ratio and Muyuan Foods Co. at 6.9% ratio.

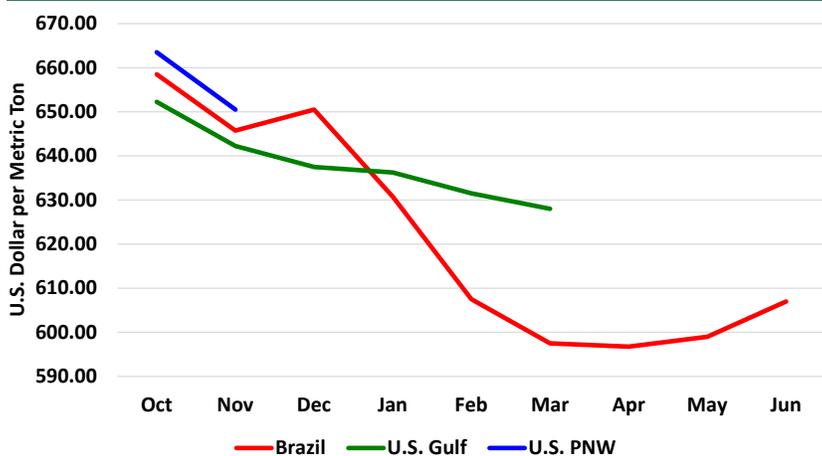
The combination of increasing Brazilian soybean production and export levels and a leveling of Chinese soybean imports will likely lead to increased global competition and lower prices. Figure 2 shows the forward price offers for soybeans delivered to north Asia from selected ports. These offers include the cost of the soybeans plus the ocean freight fees. North Asia delivery locations would include China, Japan and South Korea.

The current offers indicate that soybeans delivered from the U.S. Gulf have a cost advantage over Brazilian soybeans into January 2023. However, once Brazilian soybeans can be harvested and delivered for export, the price advantage shifts to Brazil. This suggests that U.S. soybean exports could remain strong for the next several months but may weaken in January.

The forward offers in Figure 2 represent prices based on the information currently available and trader's expectations about the future. Both prices and expectations can change quickly when conditions change or new information is available. Uncertainty about weather and geo-political conditions are typically the cause for significant shifts in expectations.

Current soil moisture conditions in the northern Brazilian growing regions of Mato Grosso and Goias are slightly below normal, but this may allow earlier planting and quick planting progress. The southern growing regions, like Parana and Mato Grosso De Sul currently have adequate soil moisture. As always, growing season weather will impact final yields and will be watched closely by the markets.

Figure 2: Price for Soybeans Delivered to North Asia



AgriCensus - 09-26-22. Does not include insurance cost.

Greetings from your Newly-Hired Extension Livestock Development Specialist

By Jon T. Biermacher, Ph.D., Extension Livestock Development Specialist

Hello, North Dakota! I wanted to take a few minutes and introduce myself to the agricultural community of this great state. I am your brand-new Extension livestock development specialist in the Department of Agribusiness and Applied Economics at North Dakota State University. Like all of my colleagues who work in Extension throughout the state, my goal is to work to improve the lives of North Dakotans. More specifically, though, I aim to focus my extension, research and outreach efforts by working collaboratively with the agricultural community to better understand the economic tradeoffs (benefit/cost relationships) that are associated with alternative livestock production systems and enterprises that are being developed for various species (beef cattle, swine, sheep, goats and poultry) by livestock and forage production scientists and specialists on campus and at research stations located across the state. In addition, I also will be developing needs-based educational programming to stakeholders in the agricultural community that are focused to address current livestock-oriented issues.

A bit of background about myself: I am a native of the southern part of Illinois (Marion) and grew up on a small, multi-enterprise farm comprised of mostly beef cattle but also chickens, pigs, goats and a small rabbitry. In addition, we custom cut, raked, baled, hauled and stacked small square hay bales during the summer months. I attended John A. Logan College in Carterville, Illinois, where I received an A.A. in Business Economics in 1994. In 2007, I earned a B.S. in Agribusiness Economics, and in 2000 an M.S. in Agricultural Economics from Southern Illinois University Carbondale. My graduate thesis focused on rural economic development associated with understanding the regionwide economic net benefits from the widespread adoption of genetically-enhanced corn varieties. I then moved to Stillwater, Oklahoma, and earned a Ph.D. in Agricultural and Applied Economics from Oklahoma State University in 2005. My dissertation research focused on the economic evaluations of site-specific variable rate precision nitrogen fertilizer application technology for a winter wheat production enterprise.

After my tenure at Oklahoma State University, I accepted a position as an assistant professor and economist at the Samuel Roberts Noble Foundation (now known as the Noble Research Institute) in

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Ardmore, Oklahoma. During my 16-year tenure at Noble, I focused my efforts on conducting economics assessments of alternative forage-based beef production systems at the farm and ranch level. Some of the specific areas of this research included the economics of new forage traits, tillage methods, cow-herd feed efficiency, cull cow retained ownership, summer cover crop grazing systems, regenerative cropping and soil health systems, annual and perennial cow/calf and stocker cattle forage grazing systems, forage insurance programs, pecan orchard production and management systems, prescribed fire, and feral swine mitigation technologies to name a few. This work allowed me to help farmers and ranchers understand the economic potential of new technologies and production systems that were being developed through scientific on-farm-and-ranch research conducted by production scientists at NRI.

Some of my hobbies include fresh and salt water fishing, upland game bird and waterfowl hunting, and playing golf (badly). As such, any invitations to fish, hunt or play golf will be met with much delight and appreciation.

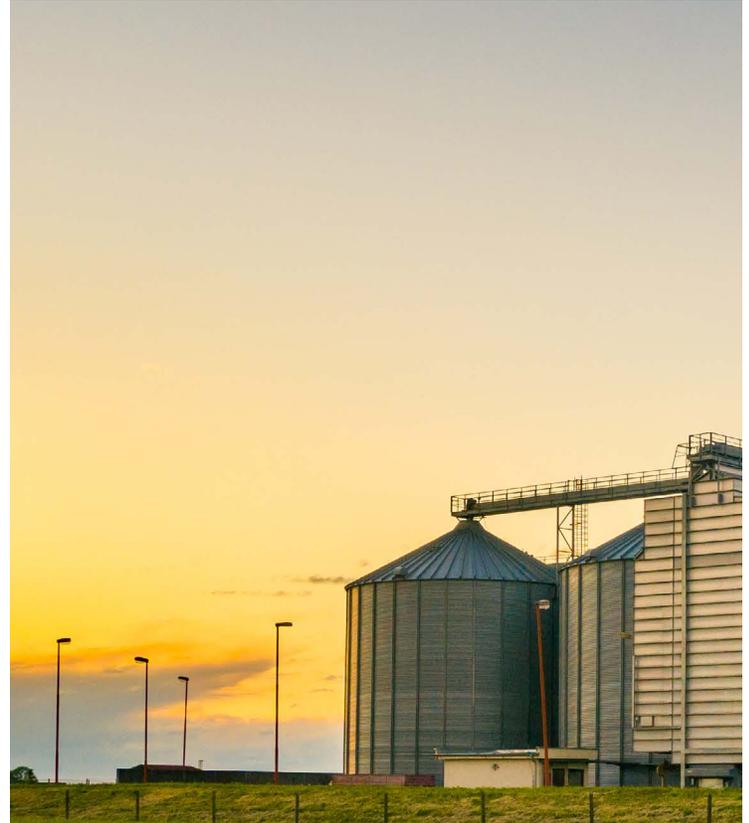
Please feel free to contact me with any questions or ideas you might have about this new livestock development position at NDSU or my program.

USDA Expects Net Farm Income in 2022 to Exceed 2021 Despite Higher Costs

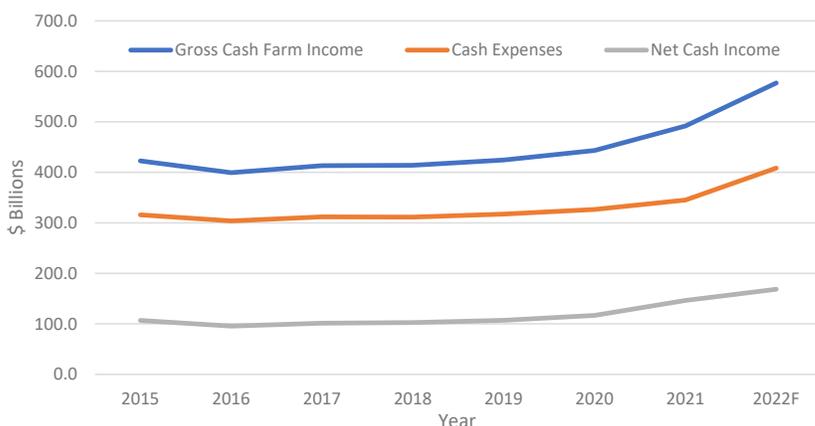
By Bryon Parman, Assistant Professor/Agricultural Finance Specialist

Major concerns surrounding high agricultural production costs and supply chain issues began well before the start of 2022. Then, a major conflict between Russia and Ukraine exacerbated the issue, especially as it pertains to energy and fertilizer, since the countries involved are major exporters of either fertilizers or the raw materials (natural gas) used in making fertilizer. However, commodity prices for many major agricultural products have remained elevated, allowing farmers and ranchers opportunities to market their commodities at relatively high prices.

Indeed, the U.S. Department of Agriculture is projecting that 2022 will have a net farm income of \$147.7 billion dollars, which is an increase of \$7.3 billion over 2021 at \$140.4 billion. Both crops and cash receipts from animal products are contributing to the increase, with crop receipts increasing 15.3% from 2021 to 2022 and animal product receipts increasing 28.3% during that same period. However, federal government direct farm program payments are expected to drop 49.7% from \$25.8 billion in 2021 to \$13 billion in 2022. (Note that 2021 came after a record high in 2020 of federal assistance at \$45.5 billion).



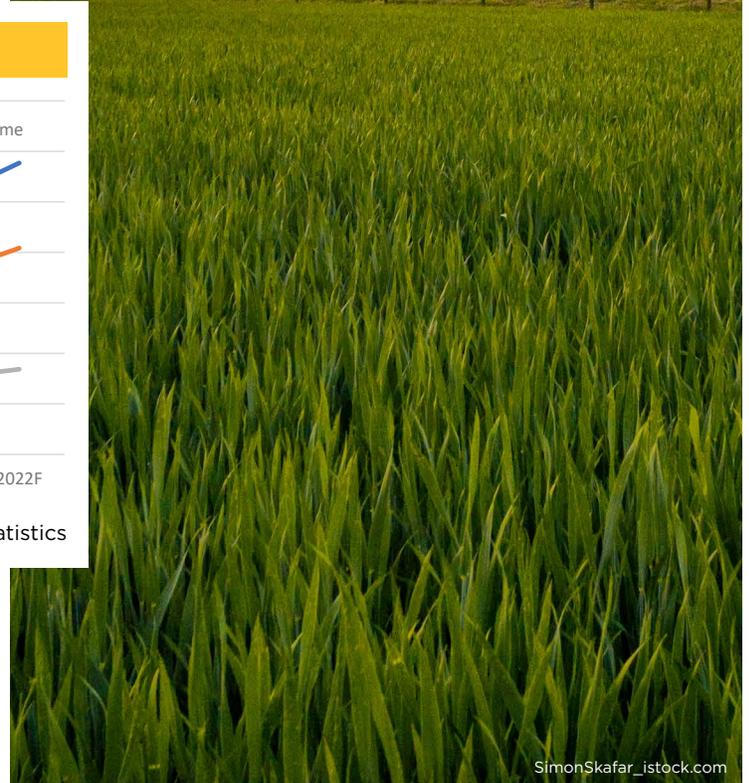
Gross Cash Farm Income and Cash Expenses



Data Source: USDA ERS Farm and Wealth Statistics

Overall cash receipts are projected to increase 17.3% from \$491.7 billion to \$576.9 billion from 2021 to 2022. However, cash expenses are also expected to increase 18.3% from 2021 to 2022, from \$345.3 billion to \$408.5 billion. However, it is

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USDA Expects Net Farm Income in 2022 to Exceed 2021 Despite Higher Costs — continued from page 6

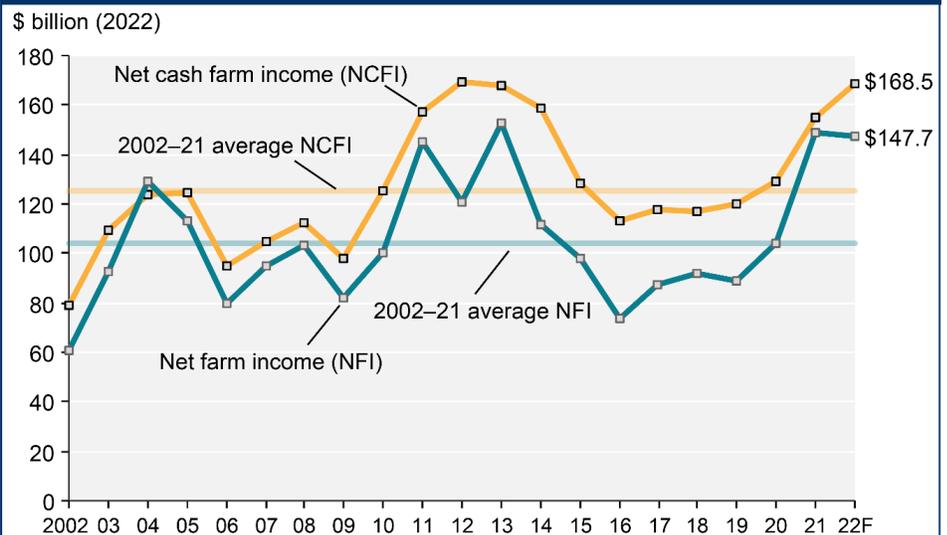
important to note that farm cash expenses do not include farm household expenses such as food, housing, health insurance, etc. Additionally, the inventory adjustment is projected to be larger in 2022 from -\$0.9 billion in 2021 to -\$15.7 billion in 2022. With all expenses considered, total expenses are projected to increase 17.8% from \$371.2 billion to \$437.3 billion.

While 2022 is projected to be one of the strongest years on record with respect to net farm income, things can change quickly should commodity prices fall. From late 2010 through the spring of 2013, corn prices in the U.S. ranged from \$5.50 per bushel to as much as \$8.00 per bushel. From 2011 to early 2014, soybeans were trading from \$12.00 per bushel to as much as \$17.50 per bushel and wheat from \$6.00 per bushel to nearly \$9.00 per bushel. However, by summer of 2014, many commodities had fallen dramatically, and from 2015 to 2018, most of the major U.S. crop commodities were 50% lower than highs seen in the years prior. Were it not for record cattle prices in 2014, net farm income and net cash income would have been substantially lower than the chart shown to the right.

In the coming years, including 2023 and beyond, the outlook for net farm incomes hinge heavily on commodity prices staying elevated. While prices and yields are always key to how well farmers and ranchers perform financially, as costs have risen in 2022, a return to commodity prices that prevailed from mid-2014 through 2018 would lead to a precipitous drop in net farm incomes and cash incomes. Costs such as new farm equipment, cash rents, labor, seed and chemicals tend to be sticky and often do not come down as quickly as commodity prices do. Some costs, such as new equipment, often do not tend to come down at all (though used equipment prices have come down in the past after a sustained drop in prices). It also does not appear that fertilizer costs are ready to fall anywhere near the five-year average by the time planting begins in 2023.

USDA Net Cash Income and Net Farm Income

U.S. net farm income and net cash farm income, inflation adjusted, 2002–22F



Note: F = forecast. Values are adjusted for inflation using the U.S. Bureau of Economic Analysis Gross Domestic Product Price Index (BEA API series code: A191RG) rebased to 2022 by USDA, Economic Research Service.
Source: USDA, Economic Research Service, Farm Income and Wealth Statistics.
Data as of September 1, 2022.