

Webinar Transcript: [Farm Income and Financial Forecasts February 2022 Update](#)

Good afternoon, everyone, and welcome to our webinar: *Farm Income and Financial Forecasts February 2022 Update*. My name is Ashley Murdie and I'll be your host today. As a reminder, this webinar is being recorded and will be posted on the ERS website next week. If at any time during the webinar you have questions, please enter them into the chat feature at the bottom left-hand corner of the screen and our speaker will answer them at the end of today's presentation. Today our presenter is Carrie Litkowski. Carrie is a Senior Economist and Farm Income team leader at USDA's Economic Research Service. She is responsible for developing sector-wide measures of farm income, value added, and the aggregate farm factor balance sheet. Previously, Carrie served as an Economist at the Bureau of Economic Analysis where she was responsible for the production of farm income and employment statistics nationwide. All right, I think we're ready to go ahead and get started, Carrie, the floor is yours.

Thank you, Ashley, and thank you everyone for joining me here today as I present the latest USDA data on U.S. Farm Sector Income and Wealth. I really do appreciate this opportunity to make this presentation and your interest in our work and our data. The ERS farm income and finance program measures, forecasts, and explains, indicators of economic performance for the U.S. farm sector. And it can be used to gauge the health of the of the sector, or the financial health, specifically. We release forecasts three times a year. With today's release, we're putting out our first calendar year forecast for 2022 and we're updating our forecast for 2021 to include some new and updated information as it has become available since our last release on December 1<sup>st</sup>. But I'm going to be focusing a little more on the new 2022 forecasts in this presentation.

So, what does our forecast cover? First, we have data that covers the farm sector as a whole. Which is comprised of two million farms who operate about 900 million acres of land. About half of those farms are what we consider to be farm businesses, which are larger farms and those where the principal occupation of the operator is farming. These farms account for about 90 percent of the total value of agricultural production in the U.S. and we have some additional forecasts and data on their finances. Lastly, we're going to look a little at the well-being of the nearly five million people who live in households attached to a farm.

We're forecasting farm sector income to have increased in 2021 because of strong growth in commodity receipts, or cash receipts, or sales. And this slide presents an overview of what we're forecasting for 2022. So, to start off net cash farm income for 2022 is forecast to increase 1.4 percent relative to 2021. And net farm income is forecast to decline 4.5 percent. Now note, none of the values on this slide are adjusted for inflation. At the bottom here, in red, on this page, we have that we're expecting inflation to be about 4.1 percent in 2021 and then 3.6 percent in 2022. So, this nominal increase of 1.4 percent in net cash farm income is not enough to offset expected higher inflation. So, when inflation is adjusted, net cash farm income is also forecast to decline. But I'm going to talk about that more in the next slide. But let's continue with the nominal discussion and one growth that is expected to keep up with inflation, or exceed the inflation rate,

are cash receipts. Their forecast to continue to increase in 2022 but not as much as they did in 2021. Specifically, their forecast to increase about 6.8 percent in 2022. But there are some drivers pulling down income in 2022. Direct government payments are forecast to decrease 15.5 billion, or 57 percent, in 2022. And total production expenses are forecast to increase 20 billion or 5 percent. On the farm sector balance sheet farm sector assets, debt, and equity, are each forecast to increase slightly. You know, one to three percent each. But that's less than the forecasted rate of inflation. So, when you inflation adjust them those are all forecasts to decline in 2022. Average net cash farm income for farm businesses, so those are those larger farms or where the principal occupation of the operator is farming, is forecast to increase 1.8 percent to \$91,500, that's the average. For those households that operate a farm median total household income for the- for the farm household is forecast to increase nearly six percent to just a little above \$88,000 in 2022.

We have two primary measures of farm sector income, or profits, as shown in this chart. The yellow line is net cash farm income which includes cash receipts from farming, or sales of farm commodities, as well as cash farm-related income, and government payments to farm operators, less cash expenses. So those are the costs or the expenses that farmers incur to produce their commodities. And by cash I just mean there's a market transaction. Net farm income is the blue line and is a broader measure of income that also incorporates non-cash items, like economic depreciation, and it accounts for changes in inventory. Now in this chart it is an inflation-adjusted dollars, specifically 2022 dollars. So, I'm adjusting prior years to account for inflation, and this allows for a better comparison of income levels over time. For both measures, we're forecasting net income to fall in 2022, when inflation adjusted. And that's after forecasted increases in 2021. Net cash farm income is forecast to decrease about two percent relative to 2001 and net farm income is forecast to decrease 7.9 percent. Despite these declines, both measures in 2022 are forecast to be above their 2020 level and above their average from 2001 to and 2020, so their 20 year average. Specifically, net cash farm income at, 136.1 billion, would be nearly 14 percent above its 20-year average and net farm income, at 113.7 billion, would be 15 percent above its 20-year average.

We derive net farm income and net cash income by first measuring its component parts, or from the bottom up. This allows us to identify what is driving the change in income from 2021. Now for this chart, I am switching back to nominal dollars, so I'm not doing an inflation adjustment. For 2022, the forecast decrease in net farm income is due to higher production expenses and lower government payments. So, in this chart, we have on the far left the net farm income forecast for 2021, at 119.1 billion, and then at the far right we have the forecast for 2022, at 113.7 billion. So, if we work our way from left to right, crop receipts, or sales, are forecast to increase about 12 billion dollars in 2022. But about 9 billion of crop sales is forecast to be from inventory. So, we remove these sales from inventories when measuring net farm income because we're trying to get at income from current production only. When we combine cash receipts with this inventory adjustment it gives us a measure of the value of crop production in 2022, which is

forecast to have increased 2.9 billion. Next animal and animal product receipts, which are labeled here as livestock receipts, are forecast to increase 17.4 billion. And there's only a small adjustment for the change in inventories. But what's nearly offsetting this growth in the value of production are production expenses, which are forecast to increase 20 billion dollars. And higher expenses would lower income. Additionally, direct government payments to farm operators are forecast to decrease by 15.5 billion. Other farm related income is forecast to increase a bit, 7.8 billion, but on the whole we're forecasting a 5.4 billion decline in net farm income, or about four and a half percent in nominal dollars.

In the previous chart, we saw that cash receipts are forecast to increase in 2022, relative to 2021. This chart, we look at why it's forecast to increase we can do a simulation that will allow us to look at whether it is due to higher prices, or higher quantities sold. So, if we start from the left, in 2022 total cash receipts are forecast to increase 4.3 billion dollars due to higher prices, that's the orange bar. And then another 14 billion dollars due to higher quantities sold, that's the blue bar. There is a portion of cash receipts for which we can't do this price and quantity effect, and that's anticipated to contribute 1.1 billion to the increase, and in total cash receipts are forecast to increase 29.3 billion dollars, that's the purple bar and this is nominal. But I think it's interesting that the driver of the growth is very different when you look at crops and livestock cash receipts separately. For crops, on net, higher quantities sold are driving the forecasted increase and prices are forecast to decline. For livestock higher prices are driving the increase in 2022.

We can also look at cash receipts by commodity. Note these are calendar year forecasts, so not crop year or marketing year forecast. And the data in this chart we're now back to using inflation-adjusted dollars. We forecast cash receipts for about 25 different crop commodities, or commodity groupings. And this chart focuses on some of the major crops. After increasing 14 percent in 2021, total crop receipts are forecast to increase 1.4 percent in 2022. Receipts for corn, soybeans, and wheat, are all forecast to continue to increase in 2022. And this is largely due to higher quantities sold. The largest dollar increase in crop cash receipts is forecast for soybeans, at about 2.7 billion dollars. Cotton receipts are forecast to see the largest percentage increase, at 29 percent. And this is following expectations for higher quantity sold and higher prices in calendar year 2022. Receipts for fruits and nuts are forecast to continue their downward trend in 2022 and this is expected to see the largest decline among these groups.

To give some additional historical perspective, this chart looks at corn and soybean cash receipts since 2001. Corn receipts in 2021 and '22 are forecast to be at their- up considerably from 2020 and would be at their highest level since their peak in 2012. Our 2022 forecast for soybean receipts would put them at their highest level ever. Now, as I said before, our forecasts are for the calendar year. So, receipts, or sales, in 2022 will come from crops harvested in 2021 but sold in 2022, and also crops harvested and sold in 2022. So, it's a kind of a combination of two crop or marketing years. For both corn and soybeans, we expect high production quantities in both- for both the 2021 crop and the 2022 crop. And forecast average prices for the 2021 crop, sorry, are for our high but are projected to fall for the crop to be harvested in 2022. But on net, this

results in higher cash receipts for corn and soybeans in both 2021 and 2022. We derive our forecasts using price and production forecasts from the January 2022 World Agricultural Supply and Demand Estimates report, the WASDE report. We get data for the 2021 crop, from that report. And for the 2022 crop, we're using projections from ERS analysts, from our agency's analysts.

Moving on to total animal and animal product cash receipts, they're forecast to increase about five percent after increasing 14 percent in 2021. Receipts for cattle-calves, dairy, broilers, are all forecast to increase in 2022 largely due to expected higher prices. The largest increase is being forecast for dairy, or milk, receipts at nearly 18 percent, which would put them at their highest level since 2014. On the flip side, receipts for hogs are forecast to decrease 13 percent in 2022 following for forecasts for lower prices in 2022. But, you can also see in this chart that this is following a pretty strong increase in hog cash receipts in 2021.

Government payments are another source of income to farmers and have been rather volatile in the last few years. We define government payments as those made directly to farm operations by the federal government without any intermediaries, and it's generally from farm programs. We record them in the year in which they were received by the farmer. Government payments reached a record high in 2020 at 45.7 billion dollars in nominal dollars, so not adjusted for inflation. In 2021, government payments are forecast to decline about 18.5 billion or 41 percent in nominal dollars and then decline another 15.5 percent billion, or 57 percent, in 2022. So, these declines largely follow lower amounts of COVID-19 related aid to farm operations based on authorized spending to date. So, on this chart, this covid related aid is shown at the top of the bars in purple, particularly the textured bars, and they're labeled as USDA and non-USDA pandemic assistance. USDA pandemic assistance includes payments from the Coronavirus-Coronavirus Food Assistance Program and other USDA pandemic assistance paid directly to farm operations that were adversely affected by COVID-19. USDA pandemic assistance received in calendar year 2020 was 23.5 billion. And this forecast significantly lower in 2021 at 7.8 billion and at 3.4 billion for 2022. Additionally, we're including as non-USDA pandemic assistance loans from the Paycheck Protection Program, or the PPP program, administered by the Small Business Administration. Although these are alone, we're anticipating that they will be forgiven large part if their programs requirements are met, so we're treating them as direct payments. And we forecast that farmers received about 8.7 billion in loans in 2021 based on data from the Small Business Administration. We assumed no new loans in 2022. Also, expected to trend downward in 2021 and 2022 are payments that are a function of commodity prices, and this is represented by the orange bar segment here. These are forecast to have decreased about three billion dollars in 2021 and are forecast to decrease another two billion dollars in 2022. Mostly because of lower payments under the Agricultural Risk Coverage and Price Loss Coverage programs, that's ARC and PLC. The gray line on this chart shows inflation-adjusted total direct government payments. Payments across 2001 through 2020, averaged 19.8 billion in

inflation-adjusted dollars. In 2022 government payments would be below that average at 11.7 billion dollars.

This chart looks at government payments relative to the rest of net farm income. It also includes another source of income to farmers, commodity insurance indemnities, which are payments to farmers for losses covered by insurance. On this chart we are looking at inflation-adjusted dollars. The top peach bar shows indemnity payments paid to farmers less premiums paid by farmers for federal commodity insurance, or I'm going to refer to them as net insurance payments. Net insurance payments are forecast to decrease in 2021 and then increase in 2022. The darker orange bar segment shows direct government payments, which is what I talked about in the previous slide. The gray bar represents net farm income excluding net insurance and direct government payments. So, I think it's interesting to compare what has happened in the last three years on this chart. So, in 2020 government payments boosted net farm income. In 2021 net farm income is forecast to rise despite lower net insurance and government payments. In 2022, net farm income less net insurance and government payments, the gray bar, is forecast to rise almost three percent and lower government payments in 2022 are contributing to the forecast decline in net farm income.

Next, let's look at production expenses which are the costs incurred by farmers to produce their agricultural output. These include items such as feed, fertilizer, and labor. This chart shows total expenditures in both nominal and inflation-adjusted dollars. In the inflation-adjusted series, production expenses fell each year after 2014 but then rose in 2020. And we're expecting expenses to continue to increase in 2021 and 2022. For 2021, we're forecasting that expenses increased five percent to their highest level since 2016, in the inflation adjusted series. And for 2022, we're forecasting expenses to increase 1.5 percent in the inflation adjusted series. So, at 412 billion dollars in 2022 that would be the highest level of expenditures since 2015, inflation adjusted.

We can dive into this a little deeper looking at expenses by category. And we're forecasting spending for nearly all categories to increase in both 2021 and 2022. Now this chart is in nominal dollars and we're comparing spending levels across the last three years 2020 through 2022. Everything above the dotted line are items that are expected to see spending increase in 2022. Overall, prices paid for many production inputs have been trending upward in 2022. Based on monthly indexes of prices paid from the National Agricultural Statistics Service, NASS, our sister agency in USDA. And we're forecasting that trend of higher prices paid for farm inputs to continue into 2022, for the most part. The largest dollar increase in 2022 are expected for feed and fertilizer. You know, feed is the single largest category of spending for farm sector as a whole. And we saw feed prices increase 13 percent in 2021. And for fertilizer we're expecting expenses as shown on this table to increase about 12 percent, reflecting the upward trend in fertilizer prices but as well as a slight increase in the forecast for planted acres in 2022. Spending on seed is forecast to remain relatively unchanged in 2022. So, net rent is really the only

category where we're expected to see spending fall, yeah, it'll fall about seven percent. And that follows expectations that both cash, rent, and share, went would fall in 2022.

Another tool we can use to measure the health of the finance of the farm sector is the balance sheet which provides information on the value of assets, both physical and financial, and the level of debt in the U.S. agricultural sector. Historically, the balance sheet is strong. Let's first look at the amount of debt held by the farm sector which is shown by the blue area at the bottom of this chart. Since around the mid-1990s, debt has generally been growing and it grew in every year from 2013 to 2020. But, in 2021 and 2022 debt is forecast to fall slightly in inflation-adjusted dollars, about one percent in each year. Only non-real estate debt is forecast to have declined in 2021, but in 2022 real estate debt is also forecast to decline when you adjust it for inflation. The value of farm assets and farm sector equity have remained relatively stable since about 2014. And that's represented by the top line of this chart, that would be your assets, and the green area for equity. Both assets and equity are forecast to decline one percent in 2021 and then decrease the more, about 2 percent, in 2022. About 80 percent of farm sector assets are real estate assets. So, that's the value of land and buildings. Which are expected to decrease about 2 percent in 2021. And then about two and a half percent in 2022 once inflation adjusted. In nominal dollars the value of farm sector real estate assets are forecast to increase slightly, but not enough to keep up with inflation.

Changes in the balance sheet have implications for farm sector solvency and other measures of financial performance and stress. This chart looks at the amount of debt relative to assets and relative to equity, and it's shown as a percentage. These are solvency ratios, which provide a measure of the sector's ability to repay financial liabilities, that's debt or loans, through the sale of assets. Both ratios have increased every year since 2013 and are forecast to remain relatively stable in 2021. But, in 2022 the ratios are forecast to increase some as the value of assets is expected to decline at a slightly faster rate than that of debt. So, that would put the ratios at their highest level since 2002. Now it's important to note that these are solvency ratios that are for the farm sector as a whole and there is a lot of variation in the amount of debt held by individual farms. We have additional indicators of financial stress, including liquidity and profitability, and other solvency measure- measures that are available on our website.

Let me get you just two more here and look at the bankruptcy rates and the debt to service ratio, or the debt service ratio. So, let's start with bankruptcies. From 2015 to 2019, the farm bankruptcy rate trended upward. In 2020, chapter 12 bankruptcies fell four percent according to data from the U.S. Courts. In 2021, we're projecting bankruptcies to fall further based on the filings through September of 2021. The debt service ratio, which is shown by the line on this chart, describes the share of production income, or gross income, that is needed to make debt payments, and this is a measure of liquidity or measure of the amount of capital that could be readily available as cash. In 2021, this ratio is forecast to have decreased as production income increased, largely due to the higher cash receipts in 2021. And then in 2022, the ratio is forecast to increase slightly as interest expenses are forecast to rise and production income growth slows.

Up to this point I've been discussing forecasts for the farm sector as a whole. Now let's take a look at farm businesses, which I said before is an important subset of all farms. Again, just to define farm businesses, those are farms where the primary occupation of the operators farming, plus those farms that had 350,000 dollars or more in gross cash farm income, so that's income before expenses. There are roughly a million farms that meet this definition and they're represented by the blue and orange line segments here for commercial and intermediate farms.

According to the 2020 ARMS, residence farms, that's the gray bar, and are those farms where the operator is retired, or whose primary occupation is not farming, account for about half of all farms. But commercial and intermediate farms account for 90 percent of all agricultural production and they hold most of the sector's assets and debt. So, using data from the 2020 ARMS we are able to project how far businesses may fare in 2021 and 2022, based on the sector level forecast. And we can break down these projections for farm business income by commodity specialization and geographic region.

So, let's start by looking at farm businesses that specialize in crops, so these are just farm businesses, not all farms. And these are in inflation-adjusted dollars. So, in ARMS we are able to categorize farms by their commodity specialization. Meaning that at least 50 percent of the value of production comes from a particular commodity. All farm businesses, regardless of their specialization or geographic region, are expected to see government payments decline and production expenses rise in both 2021 and 2022 - 2021 and 2022, sorry. And this is expected to result in lower net cash farm income for nearly all types of farm businesses specializing in crops, in inflation-adjusted dollars. The largest drop is forecast for farm businesses specializing in specialty crops. You know, those are crops like fruits, nuts, vegetables, greenhouse nursery. For those farm businesses average net cash farm income is forecast to fall nearly 24 percent. Only crop farm businesses specializing in cotton are forecast to see average net cash farm income increase in 2022. After decreasing 13 percent in 2021, average net cash farm income is forecast to increase 15 percent in 2022 for these farm businesses specializing in cotton. You know, as I discussed earlier, for the sector we're forecasting cotton receipts to increase 29 percent in 2022. And this increase is expected to be more than enough to offset lower government payments and higher expenses on average, in 2022.

For farm businesses specializing in livestock, or animal products, the outlook is mixed. Average net cash farm income for hog farm businesses is forecast to fall nearly 25 percent in 2022, after a large increase in 2021. This follows the forecast for lower hog cash receipts in 2022. In addition to the expectation of higher expenses and lower government payments. For farm businesses specializing in cattle/calves and poultry, average net cash farm income is forecast to remain relatively stable in 2022. Dairy farm businesses are forecast to see a 52 percent increase in average net cash farm income in 2022, after a forecast decline in 2021 milk receipts are forecast to increase about 18 percent for the sector as a whole. Again, which would be more than enough to offset higher expenses and lower government payments. And this would actually put average net cash farm income for dairy farm businesses at their highest level since 2014.

Next, we can look at how ag production is distributed geographically and can project how average net cash farm income for farm businesses can be expected to change in 2020 by resource region. Across all farm businesses average net cash farm income is forecast to increase two percent, that's down there at the bottom of the chart, or about 1,600, on average from our forecast for 2021. Now this chart, we're back in nominal dollars so we're just looking at a single year change not accounting for inflation. And this increase in average net cash farm income for all farm businesses is consistent with the forecasted increase in net cash farm income for the sector, as a whole, when it's not adjusted for inflation. Five out of the nine resource regions are expected to see higher average net cash farm income in 2021- in 2022, in nominal dollars. But only the growth in the Eastern Uplands and the Northern Crescent is expected to be more than the rate of inflation. So, farm businesses in the Northern Crescent are projected to see the largest increase in average net cash farm income at 16 percent. This is the region with the most milk production and, as I talked about earlier, milk product- milk cash receipts are forecast to increase significantly in 2022. Farm businesses in the Basin and Range are expected to see the largest decrease following forecast decline in government payments and higher expenses, in 2022.

Up to this point, I've been discussing the financial performance of farm operations, but this may not give an accurate or complete picture of the well-being of households that own and operate farms. Farm profits are often shared with other stakeholders, like landlords or contractors. And the well-being of farm operator households is determined by a combination of on-farm and off farm activity with the majority of farm household income coming from off the farm for many farms or farm households. So, now we're just going to look at all family farms, which account for nearly 98 percent of all farms. And we're going to look at the households of the farm operators.

Nearly 5 million people live in households attached to a farm. So, one measure of these farm households' well-being is household income, which in total is forecast to be relatively flat in 2021 and increase in 2020 at the median. Farm households typically receive income from both off-farm and on-farm sources, like I talked about, and this chart looks at the median for that which represents the income level at which half of the households have lower incomes and half of the households have higher incomes. This chart is in inflation-adjusted dollars. So, starting on the left with median farm income earned by farm households, it is forecast to decline in 2021 and then decline further in 2022. As you can see, it's very small and it tends to be negative. But recall that half of all farms are what we call residential farms which are small farms, and the primary occupation of the operator is not farming. So, this results in low and usually negative farm income at the median. Therefore, many farm households rely primarily on off-farm income off-farm income sources include off-farm wage income, off-farm jobs, non-farm business earnings, dividends, and transfers. Median off farm income is forecast to have increased almost one percent in 2021 and is forecast to increase another one percent in 2022 with inflation adjusted. Total farm household income, at the median, is forecast to remain- have remained relatively



unchanged in 2021 from 2020. And this forecast to increase 2.2 percent when inflation adjusted, to just a little over \$88,200 on- at the median in 2022.

This chart looks at farm household income by type of farm, the same definition I were using earlier, for residence, intermediate, and commercial farms. And households attached to commercial farms are forecast to see the largest increase in total household income in 2022. So, if we start by looking at households attached to residential and intermediate farms, median household income, as shown by the blue line, tracks very closely with off farm income, that's the red line, you know, they're right on top of each other. And income from the farm, which is shown by the gray line, is nearly zero for residents and immediate- and intermediate farms. For these residence farms, you know, and for intermediate farms, median household income is expected to increase one percent, that's for the residence farms, and increased just a little under two percent for the intermediate farms. For households attached to a commercial farm, on farm income is more important, and it drives the trends that we see in median total household incomes. On farm income for commercial farms is expected to increase nine percent in 2022 and drive most of the increase in total household income.

The information and data that I presented today is available on our website along with estimates and state level data for prior years. We also have tables, charts, and maps, and a written summary of our findings. Our next release is a little bit away, it's scheduled for September 1st and at that time we're going to update our 2022 forecast and convert our 2021 forecasts into estimates. Which also means that will be when we have our first state level estimates for 2021. So, that's in September- September 1<sup>st</sup>.

Also, I'll mention this again, late last year we put out a report on farm income and finances it's the agricultural income and finance situation and outlook report a 2021 edition. And, you know, in these webinars we really focus on the latest forecasts, but this report provides in-depth analysis on historical data. So, if you're interested, I encourage you to check it out. With that, I'm going to go ahead and open it up to questions.

Thanks so much, Carrie. We'll go ahead and open the floor for questions now. As a reminder, you can submit your questions through the chat feature located at the bottom left-hand corner of the screen. Let's see here for our first question: How are you adjusting for inflation or how are you measuring for inflation?

Yeah, that's a good question because, obviously, inflation had an impact on whether you say, for instance net cash farm income is increasing or decreasing. But just simply, the way we do it is- in my charts that were inflation adjusted we are forecasting average inflation for 2021 and 2022 using the- the GDP price index or price deflator and we are rebasing it to 2022. So, we're looking at the average price change across 2021 and 2022 and that gives us our- of our inflation measure, as I said, with that data we see a 4.1 percent inflation rate in 2021 and then 3.6 percent in 2022. Based on the BEA GDP price index.

Okay, next question: Does this forecast include recent price rallies caused by South America crop loss?

I would have to refer you to our source data for that, because you know, I'm not a commodity analyst. So, we get our like our crop and animal production price and quantity forecasts from the WASDE report and from our- our colleagues here at the Economic Research Service, the analysts and so, I'd have to refer you to those sources as to what their forecasts were able to consider. But these were forecasts that were done about mid-January of this year.

Okay, and what deflator do you use to adjust from nominal to real term?

Yeah, that was the same as the previous question but just worded in a different way. We're using the Gross Domestic Product price index, that's what we're using. Of course, BEA does that. They don't do it for 2022 yet, because they don't forecast that deflator so we're using projections of that price index for 2022 from Oxford Economics.

Okay, and for our next question: Can you provide more information behind the large forecast drop in crop inventory values in 2022?

Yeah, large is kind of relative. I think that first chart was about 9 billion dollars. It's a mix of commodities I don't have that list in front of me. I know we don't put it out by commodity but it's kind of an aggregate of all commodities, usually the drivers are corn and soybeans. But, if I recall correctly, what we were looking at was that of the 2021 crop, a lot of the inventory adjustment is that you know what we've what we're showing there with the 9.1 billion is the amount of the '21 crop that was actually sold or is expected to be sold in 2022. So, we think about 9 billion dollars of total cash receipts in 2022 is coming from inventories. Now, the data that we use to do that is as we look at monthly marketing patterns, or monthly marketing percentage, so the amount of a crop that is usually sold in a given month throughout the marketing year, and that data comes from the National Agricultural Statistics Service. So, we use, you know we have that information for a lot of the crops for the prior marketing year and we kind of, those patterns don't often change a whole lot they're usually there's usually a little bit of consistency to them, and so we're kind of using those patterns to help us figure out how much of the 2021 crop is going to be sold in 2022 versus '21. And yeah, it really varies by crop I mean that and by, you know, farmers making decisions as to when is the best time to sell their crops so that, you know, that's kind of what drives the changes in inventories our farmers decisions and also the prices. You know, which that, in turn, influences the farmers decisions again so, I know that's kind of a roundabout way of it um but that's the data we use to forecast that out.

Okay thanks Carrie for our next question: What's behind the forecast for a decline in farm real estate value in the balance sheet?

Yeah, I think that's a good question. I think largely what we're looking at is kind of a slowdown in the rate of growth of real estate assets and then when you inflation- inflate adjust it, you know, it ends up being a decline. You know we don't have- I can't point you to our you know to a

particular indicator for farm real estate values, but just kind of looking at trends and looking at how the rate of growth, I believe, has been slowing down for the real estate assets. And oftentimes also, not always, but real estate values can be linked to the profitability of the land. So, when you see farm income decreasing or expected to decrease in 2022, that can- that can have an impact on real estate values for farmland.

Thanks Carrie let's see here another question: How did debt to equity or, you know, debt to asset ratios relate to the debt service ratio?

Yeah, I showed those two charts kind of back to back. So, we saw the debt asset ratio pretty much increasing pretty steadily for 2013, because, you know, because of the rate of growth in debt and assets. The debt service ratio is a little bit different. What is different in that it also considers income. So, it's not just looking at the balance sheet it's actually looking largely at the income statement. So, it's looking at how much income, gross income and that would include government payments, is the farmer earning and then looking at how much they have to spend to make their debt payments. So, looking at their interest expenses, as shown on the value-added table or the income statement, and then looking, you know, at forecast- looking at their principal payments. So, we can have this fluctuation in the debt service ratio when we have fluctuations in income, and I think that's largely what you see on that chart. It's usually it fluctuates with income, but it can also fluctuate with interest rates.

All right, thanks Carrie. Let's see here another question: Do you have forecasts by state, or will you have 2021 data available by state?

We do not have state level data for 2021 at this time. That's going to be released in September 1<sup>st</sup>, so in our next release. Because we're, you know, we have to wait until we get more complete information on what happened in 2021 and that's when state-level data starts becoming available from NASS is, well some of it starts coming in now, but we don't have the complete data yet. So, we don't have that yet, but we will have it September 1<sup>st</sup>, and we don't forecast the state. The closest we come is that map that I showed you where we can forecast out average net cash income by region.

Thanks, for our next question: Any specific crops driving the decline in tree fruit and nut cash receipts?

I don't know the answer to that off the top of my head. For forecasting, we're kind of looking at aggregates for, you know, aggregate price index is received and aggregate quantities. So, I can't tell you off the top of my head what fruits and nuts that might have been. But we do, ERS does put out an outlook report on fruits and nuts so, I would encourage you to find that on our website and that will give you a lot more information than I could about this outlook for fruits and nuts.

Okay, and can you provide more intuition behind the large forecast drop in crop inventory values in 2022?

That was the first question, wasn't it?

I think I repeated that.

Maybe. So yeah, the first question I think it was. So, we were talking about how we're expecting the inventory adjustment to be a negative nine billion dollars stop and yeah.

Okay, let's see here. All right, here's another one. This next question is about the surge and fertilizer prices: Is there a study that has looked at prior surges and fertilizer prices and how much on average crop plantings decline as a result?

Well, I am not aware of one. That doesn't mean there isn't one, and that actually would be very interesting. I know we have, you know, ERS puts out cost of production data by the major crops and that that could kind of that might provide a foundation for such type of research, but I can't point to a specific research publication from ERS on that topic, but I wouldn't be surprised if there is one.

Thanks. Okay, and for our next question: When you look at cash receipts, cotton seems pretty small compared to the other commodities, but when you look at per farm business average net cash farm income for those farms seems really high. Why is that?

Yeah, cotton cash receipts, you know, aren't a huge share of total cash receipts in the U.S. farm sector, as a whole. So, the first chart I showed on cash receipts just had the dollar value of their receipts. They definitely are dwarfed by the level of corn and soybean receipts in the U.S. So, that gives you the idea of the relative size to the sector as a whole. The other chart looked at average net cash farm income for these farm business types, and there are very- cotton farms are a very small percentage of all farms in the U.S. About, I think I looked it up yesterday, and it was under one percent of all farms specialize in cotton. So, what you have is a small number of farms with a higher average net cash farm income. It's kind of the reverse of what you see with cattle. Cattle is a huge cash receipt commodity, but when you look at average net cash farm income for cattle it's really small. That's because you have a lot of cattle-calf operations and they tend to be small, on average. So, just kind of opposing pictures for cotton versus cattle.

Got it, okay. Looks like we have time for one more question: Do you have information on how government payments are distributed to farms by size or commodity?

Yes, not directly. Like the table I presented you on government payments, the one that had all the program payments by type, that we don't have by farm type or farm size. We just have it in aggregate- in aggregate for the entire sector. But we do collect information on government payments from the Agricultural Resource Management Survey, the ARMS. So, we have an ARMS web tool on our website where you can kind of drill down to some degree onto the government payments data to see which farms are receiving it, what kinds, and how much. Also, I would refer you to that report that I talked about in this slide. And yeah, that that did look at how the distribution of government payments had changed across different types of farms, and I

think it also had it by region. So, I would highly encourage, if that's an interest to you, of checking out this publication to kind of see how the distribution has changed.

Great, thanks Carrie. That's all the time we have for today Carrie again thanks for sharing your report with us today. And thank you to our listeners for taking time out of your day to join us. As a reminder, a recording and transcript of today's webinar will be available on the ERS webpage next week. Again, thanks everyone this concludes our webinar.