Food & Agricultural Policy Research Institute
University of Missouri

Agricultural Markets & Policy
University of Missouri

U.S. Agricultural Market Outlook

March 2022

FAPRI-MU Report #02-22

Division of Applied Social Sciences

fapri.missouri.edu — amap.missouri.edu

Published by the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri (MU), 200 Mumford Hall; Columbia, MO 65211. FAPRI-MU is part of the Division of Applied Social Sciences (DASS) in the College of Agriculture, Food and Natural Resources (CAFNR).

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This material is based upon work supported by the U.S. Department of Agriculture, under Agreement No. 58-0111-21-012, and the USDA National Institute of Food and Agriculture, Hatch project number MO-HASS0024.

Any opinion, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the U.S. Department of Agriculture nor the University of Missouri.

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The Agricultural and Food Policy Center at Texas A&M University will prepare a companion set of estimates of the farm-level impacts of these projections (www.afpc.tamu.edu).

The authors would like to thank participants in a workshop reviewing a preliminary version of these estimates via virtual review in December 2021. Any remaining errors are those of the authors.

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Summary

Unexpected events have caused great uncertainty and volatility in agricultural markets in recent years. Trade disputes, the COVID-19 pandemic and now the war in Ukraine have added to the natural uncertainty caused by weather and other factors. Farm commodity prices and consumer food prices are far higher than would have been expected a few months ago, but so are production expenses.

This report summarizes baseline projections for agricultural and biofuel markets prepared using market information available in January 2022. We recognize that much has happened since then, and some of the possible implications are discussed throughout the report and especially in the information on page 4. Macroeconomic assumptions are based on January forecasts by IHS Markit (S&P Global), many of which would be affected by recent events. The baseline reflects current policies, meaning it incorporates programs that had been enacted prior to January 2022, but does not reflect any subsequent policy changes.

We use our models to develop a range of projected market outcomes that takes into account some major sources of uncertainty about future supply and demand conditions. In some of the resulting 500 outcomes, prices, quantities and values are much higher or much lower than the averages reported here.

Key results:

- Major crop prices have been pushed higher by the global economic recovery, increased demand from China, some weather-induced reductions in crop supplies and now the war in Ukraine.

- Based on information available in January 2022, we were projecting lower prices for most crops in the 2022/23 marketing year. A weather-reduced soybean crop in South America and the war in Ukraine have both pushed oilseed and grain prices higher, at least in the near term.

- Farm production expenses increased sharply in 2021 and another large increase is expected in 2022. Higher prices for fertilizer and feed raise costs for crop and livestock producers. The Ukraine war has resulted in large increases in prices for crude oil and is likely to result in even higher farm production expenses in 2022 than indicated by the projections reported here.

- Livestock sector prices have been supported by strong consumer and export demand. High production costs and other factors have limited growth in supplies of meat and milk. Projected cattle and milk prices increase sharply in 2022, and prices for hogs and poultry remain well above the 2020 pandemic levels.

- Ad hoc programs to respond to trade disputes and the pandemic pushed government payments to farmers to record levels in 2020. In this current-policy baseline, payments drop back to less than $7 billion in 2023. Crop insurance accounts for about half of projected outlays on farm-related programs over the next ten years.

- Net farm income increased in 2021, as sharply higher crop and livestock receipts more than offset reduced government payments and increased production expenses. Projected net income declines in 2022 as the reverse is true. Recent events add uncertainty to the outlook, as both receipts and expenses could exceed projected levels.

- Farm asset values have increased with land prices in recent years, and another increase is projected for 2022. Given assumptions of the outlook, lower farm income and higher interest rates restrain farm real estate values in subsequent years.

- Consumer food price inflation increased to 3.9% in 2021, and the CPI for food exceeded year-ago levels by 7.9% in February 2022. Even if food inflation slows in the months ahead, the annual rate for 2022 is likely to be the highest since 2008. Higher farm commodity and energy prices caused by the Ukraine war could make it more difficult for consumer food price inflation to return to normal levels in the near term.

Although some of the assumptions of this baseline have been overtaken by events, it can be used as a point of reference to evaluate the implications of new market developments or policies. We normally update our projections in August, but in 2020 we prepared an additional update earlier in the year in response to market developments caused by the pandemic. We will continue to monitor developments and will make additional analysis available when appropriate.

Key results

Marketing year	2016/17-2020/21 average	2021/22	2022/23	2023/24-2031/32 average
Crop prices				
Corn farm price, dollars per bushel	3.68	5.44	4.74	4.34
Soybean farm price, dollars per bushel	9.33	12.48	12.72	11.20
Wheat farm price, dollars per bushel	4.68	7.18	6.16	5.72
Upland cotton farm price, cents per pound	66.6	89.3	75.9	73.3
Selected program benefits, billion dollars				
Agriculture risk coverage	1.39	0.06	0.12	1.77
Price loss coverage	2.85	0.37	1.28	2.32
Crop insurance net indemnities	3.52	4.32	7.76	7.41

Calendar year except as noted	2016-2020 average	2021	2022	2023-2031 average
Livestock sector prices				
Fed steers, 5-area direct, dollars per cwt	116.96	122.40	135.54	143.70
Barrows and gilts, 51-52% lean, dollars per cwt	46.74	67.29	62.91	58.21
National wholesale broiler, cents per pound	87.49	101.18	102.98	101.52
All milk, dollars per cwt	17.44	18.66	22.04	19.29
Biofuel production, billion gallons				
Ethanol	15.4	15.0	15.7	16.0
Biomass-based diesel	2.2	2.3	3.1	3.4
Government outlays, billion dollars, fiscal year	27.9	46.4	29.6	21.7
Commodity Credit Corporation (CCC) net outlays	13.9	10.5	5.6	7.2
Major commodity programs	5.7	6.6	2.6	3.9
All other CCC net outlays	8.2	4.0	3.0	3.3
Crop insurance net outlays	7.4	6.7	8.6	10.8
Other non-CCC (ad hoc programs, conservation)	6.6	29.1	15.4	3.6
Net farm income, billion dollars	78.5	119.1	105.2	95.7
Crop and livestock sector cash receipts	366.2	432.6	456.8	458.3
Government payments	21.3	27.1	10.7	9.1
Production expenses	350.1	391.5	420.1	437.5
Nominal net farm income	78.5	119.1	105.2	95.7
Real net farm income in 2022 dollars	87.6	123.7	105.2	85.5
Farm balance sheet, billion dollars				
Farm assets	3,039	3,270	3,400	3,362
Farm debt	406	454	476	512
Debt/asset ratio	13.3%	13.9%	14.0%	15.2%
Annual consumer food price inflation	1.6%	3.9%	4.2%	2.4%

Note: The estimates are based on market information available in January 2022. Projections are averages across 500 outcomes.

Recent developments

The outlook is based on information available in January 2022, but much has happened since then. Two developments are especially worthy of note:

1) Reduced South American soybean production for the crop harvested in early 2022
2) The war in Ukraine

USDA estimates of soybean production in Brazil, Argentina and Paraguay were reduced by 18 million metric tons (669 million bushels) between January and March 2022. This is equivalent to more than 30% of U.S. soybean exports.

The result has been a sharp increase in soybean prices. While USDA estimates only a modest impact on 2021/22 U.S. soybean export quantities, reduced South American supplies will support U.S. exports and prices well into the 2022/23 marketing year.

The short-run impact of the war in Ukraine has been to limit exports of grain, oil and other goods from Ukraine and Russia. This and concern about 2022 production in the region caused a spike in grain prices. Given great uncertainty about the military and geopolitical outlook, there is concern that grain and oilseed market impacts could be larger than the March USDA estimates, and that they could extend well beyond 2021/22.

Some of the likely qualitative impacts of these developments are listed in the table. It is premature to offer precise quantitative estimates of the impacts.

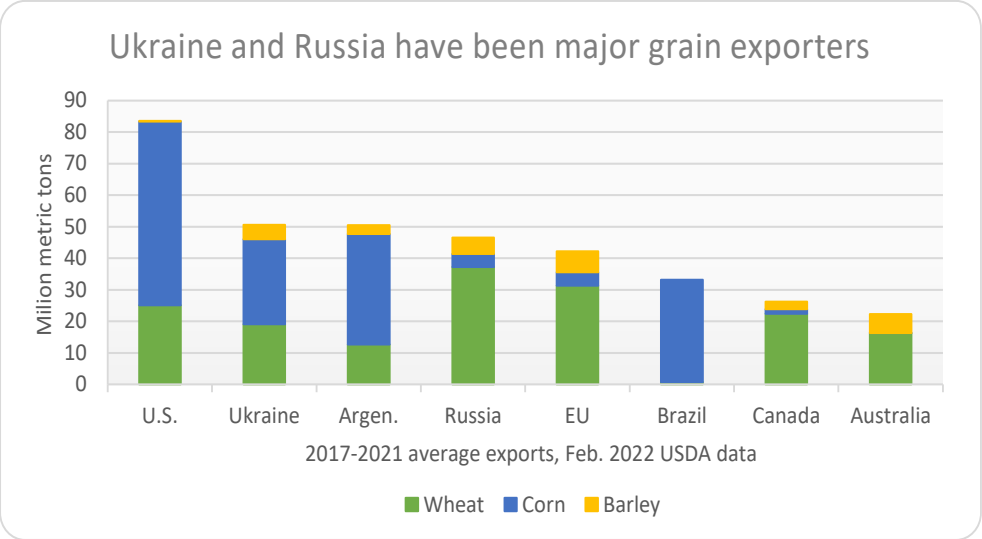
We recognize that many of the near-term projections in this report are unlikely to be realized because of these developments. As more information becomes available, we will examine alternative scenarios and update the outlook.

Recent developments in oilseed and grain markets

2021/22 results	January 2022 USDA estimate	March 2022 USDA estimate	Change
Soybean production		(Million metric tons)	
Brazil	139.0	127.0	-12.0
Argentina	46.5	43.5	-3.0
Paraguay	8.5	5.3	-3.2
Sum	194.0	175.8	-18.2
Wheat exports			
Ukraine	24.2	20.0	-4.2
Russia	35.0	32.0	-3.0
Sum	59.2	52.0	-7.2
Corn exports			
Ukraine	33.5	27.5	-6.0
Russia	4.5	4.5	0.0
Sum	38.0	32.0	-6.0
U.S. exports			
Soybeans	55.8	56.9	1.1
Wheat	22.5	21.8	-0.7
Corn	61.6	63.5	1.9

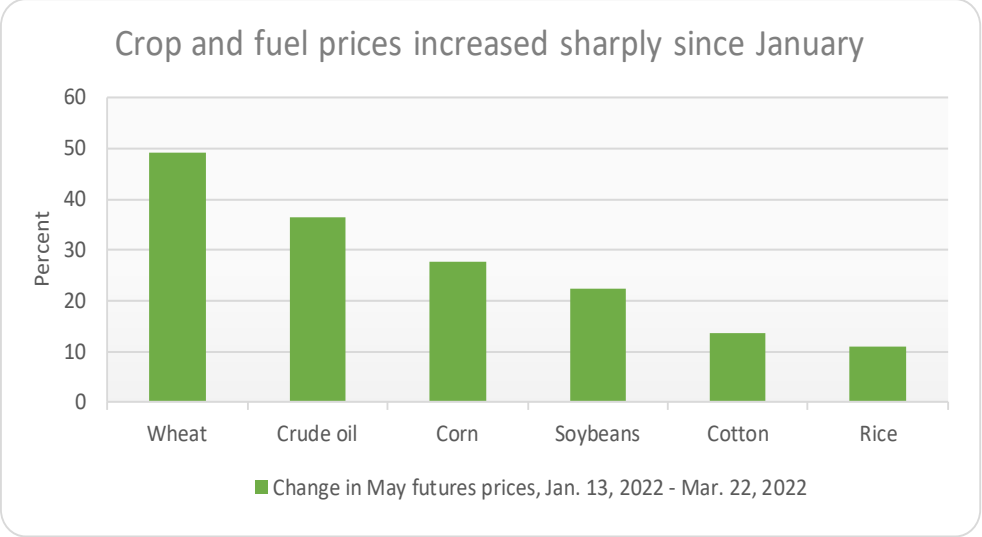
Possible implications of recent developments

Indicator	Possible implications
U.S. grain and oilseed exports	More exports, both in 2021/22 and in 2022/23
U.S. grain and oilseed prices	Higher prices in 2021/22 and 2022/23
Production expenses	Higher feed costs to livestock producers Higher fuel and fertilizer costs, given restrictions on Russian exports
Net farm income	Ambiguous. Depends on magnitudes of increases in receipts and production expenses. Seems likely that the net impact on crop producers will be positive and the net impact on livestock producers negative.
Government farm program outlays	Unlikely to be greatly affected under current legislation
Consumer food prices	Some increase because of higher farm commodity and fuel prices

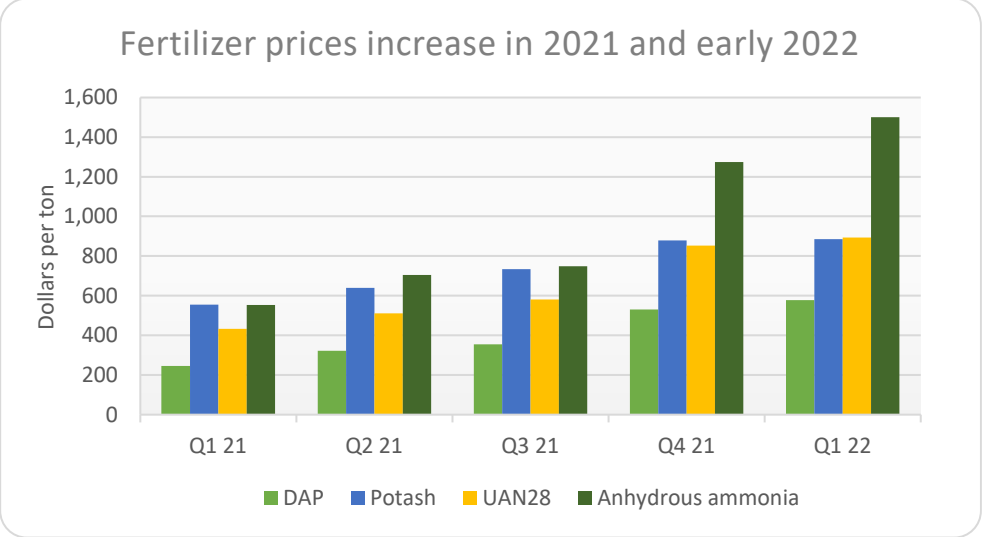


Ukraine and Russia have been major grain exporters in recent years. Ukraine's exports of corn, wheat and barley have averaged about 50 million metric tons per year since 2017, second only to U.S. exports of those three grains. Russia has been the world's top wheat exporter in recent years.

The war in Ukraine has disrupted trade flows and creates the potential for higher prices and uncertainty over the market outlook.



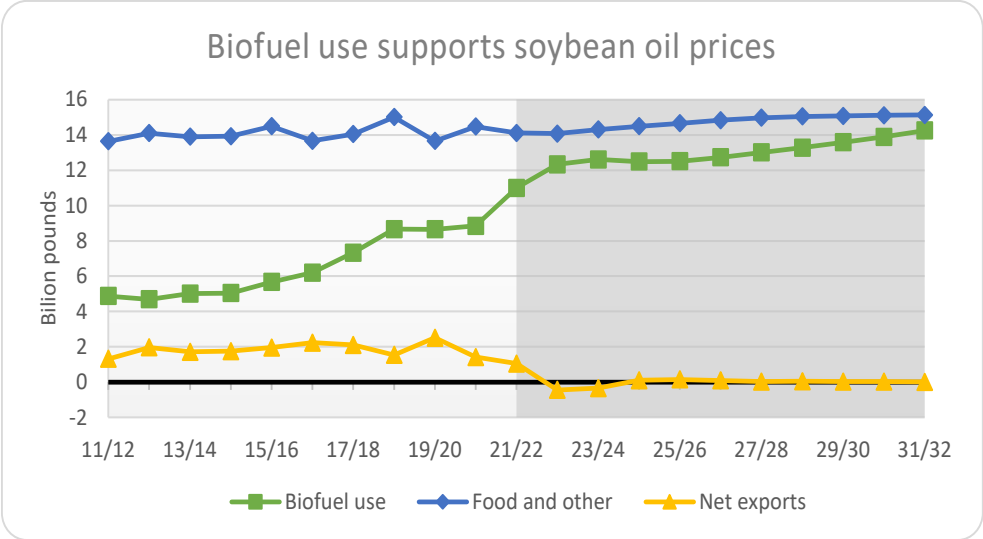
The outlook is based on information available in mid-January. Since then, much has changed. The war in Ukraine has pushed up prices of wheat, other grains, and crude oil. Reduced South American soybean production has contributed to higher soybean prices. May futures contracts for many commodities were far higher in mid-March 2022 than they were two months previously. Some implications of these developments are discussed on page 4.



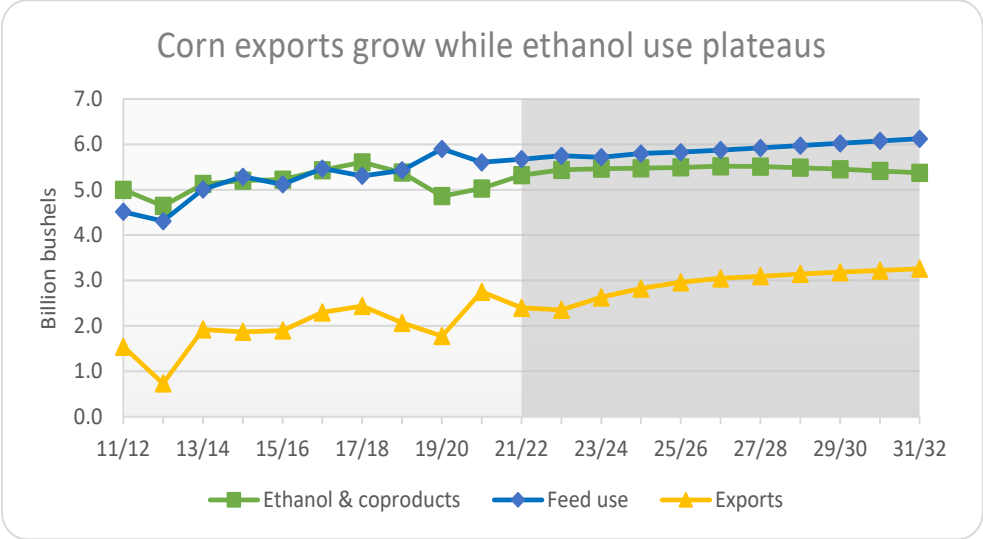
Fertilizer prices increased sharply even before the outbreak of the war in Ukraine, with sharp increases in the fourth quarter of 2021. Production costs will increase more for crops like corn and wheat that use larger amounts of nitrogen fertilizer, than for soybeans, which does not. Fuel and other production expenses have also increased since 2020. The war may limit Russian exports of natural gas, petroleum and fertilizer, raising global prices for those farm inputs.

Crop outlook highlights

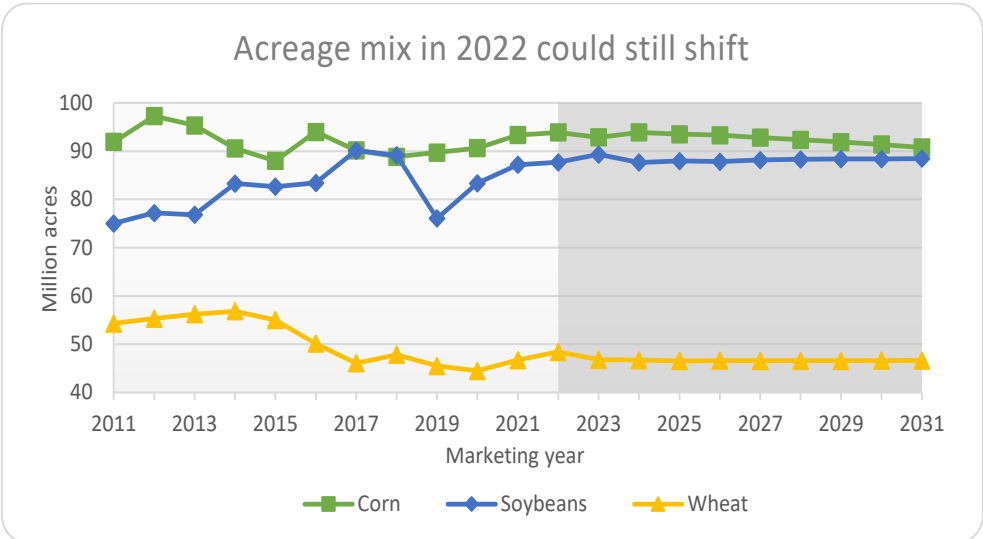
Many firms have announced renewable diesel fuel expansion plans. If even a fraction of the planned capacity is installed and operated, the demand for soybean oil and other fats and oils would surge. This new vegetable oil market force puts upward pressure on prices, reduces U.S. exports and could lead to substantial U.S. imports. At the same time, restricted sunflower oil exports from Ukraine, the world's leading exporter, cause additional disruptions and price strength.

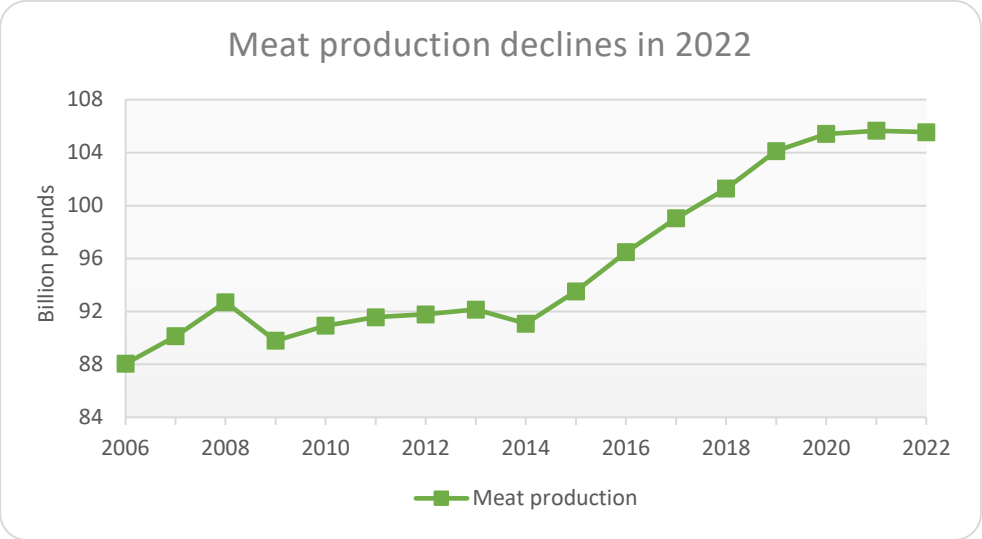


Brazil's weak production and exports and China's strong imports supported U.S. corn exports and prices in 2020/21. Before the Ukraine conflict, U.S corn exports were expected to decline in 2021/22, but then grow steadily over the next decade with rising growth in global corn use. Domestic ethanol production rebounded from a pandemic low and is expected to remain steady with reductions in domestic ethanol use largely offset by increasing U.S. ethanol exports.



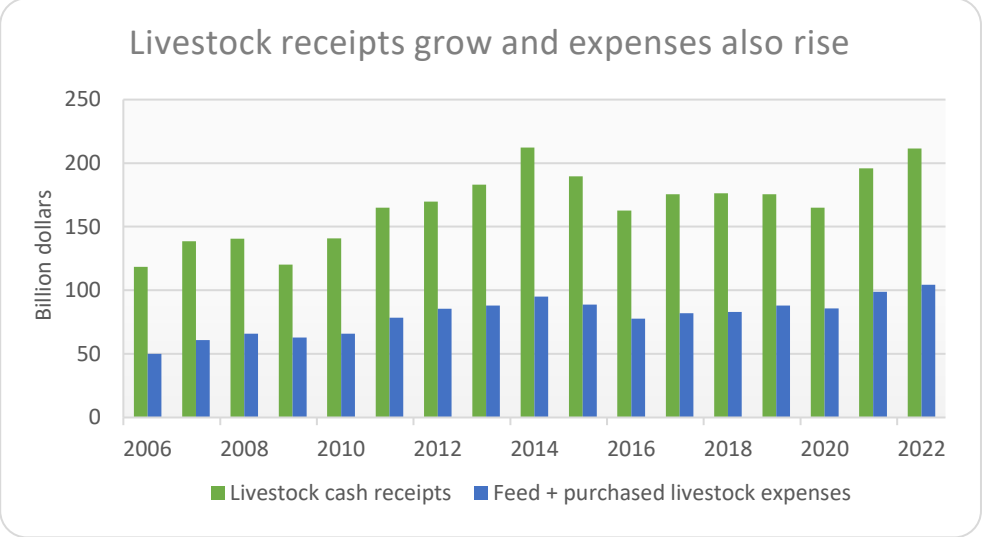
Over the next decade, average projected acreage for major crops remains fairly steady. However, U.S. crop acreage prospects are unusually uncertain in 2022. Higher commodity prices encourage planting, but higher costs and reduced availability of major inputs have the opposite effect. Projections based on January information suggest a slight uptick in acreage for the major field crops, but recent developments, the weather and other factors could still alter the crop mix.



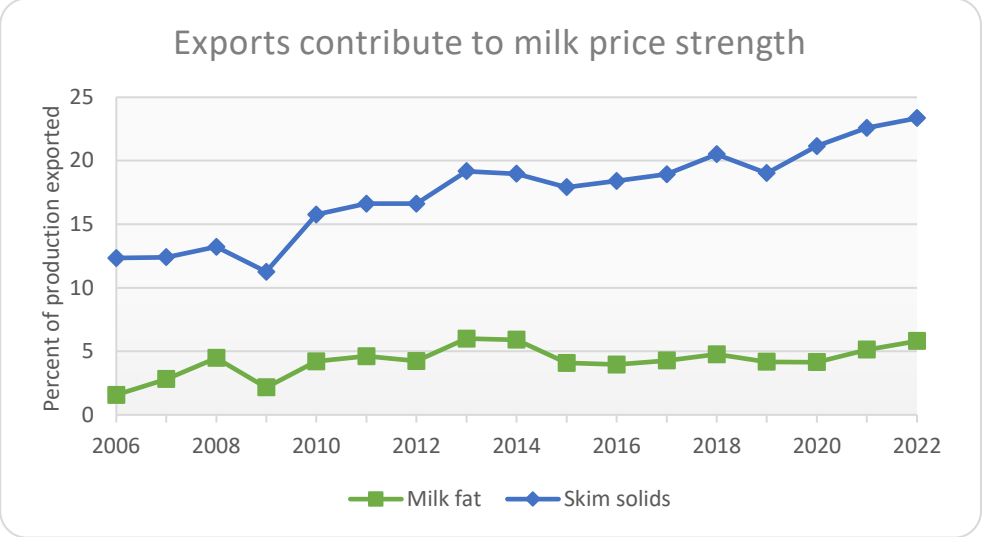


Livestock and dairy outlook highlights

Following seven consecutive years of growth, combined U.S. beef, pork, chicken and turkey production is projected to decline in 2022. Higher feed costs, multiple years of drought in key cow-calf production areas and increased farm-retail margins since the beginning of the pandemic are some of the factors driving the reduction. The smaller meat supply puts upward pressure on prices.



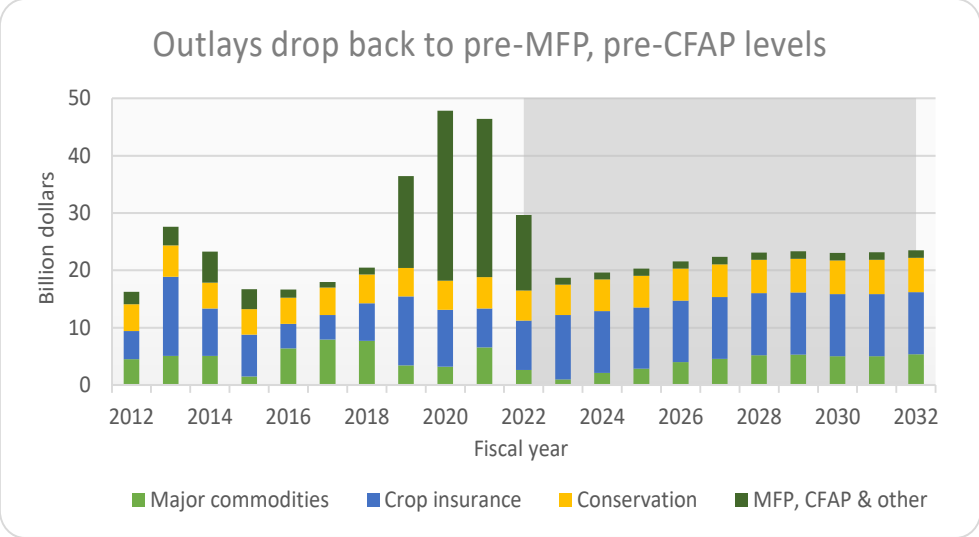
Farm cash receipts for livestock and dairy will rise again in 2022 following a record-large single year increase in 2021. Higher production expenses will once again absorb a large portion of receipt increases, as purchased feed and livestock expenses jump by nearly $6 billion after an increase of almost $13 billion in 2021. Livestock producers will also face input cost increases in other production expense categories.



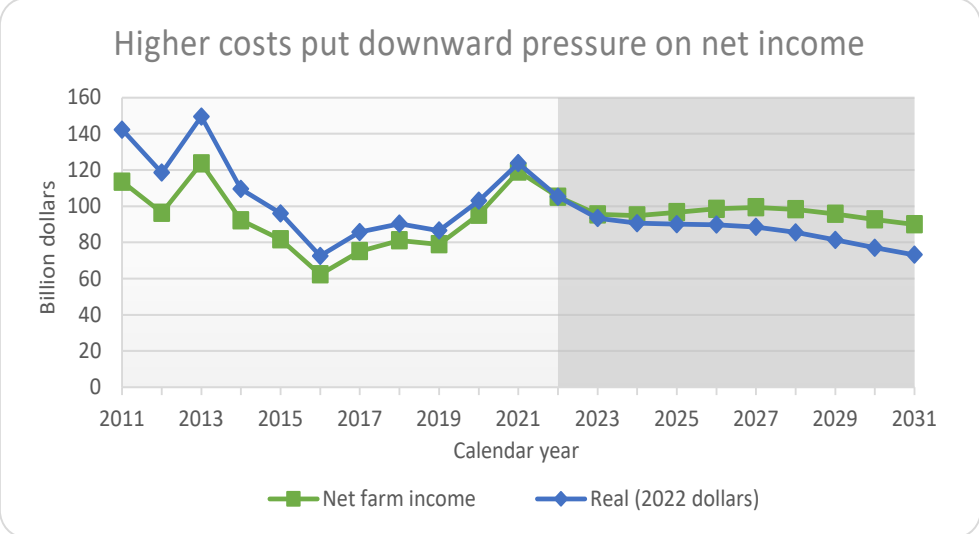
The U.S. all milk price reached $24.20 per cwt in January 2022, the highest level since October 2014. International dairy product prices have been running even higher than those in the U.S., creating ample export opportunities. Even with milk production increasing 1.4% in 2021, exports as a share of production moved higher for both milk fat and skim solids. Continuing to export larger shares of production will be a key factor for the industry to grow at a profitable level.

Government costs, farm income and food prices

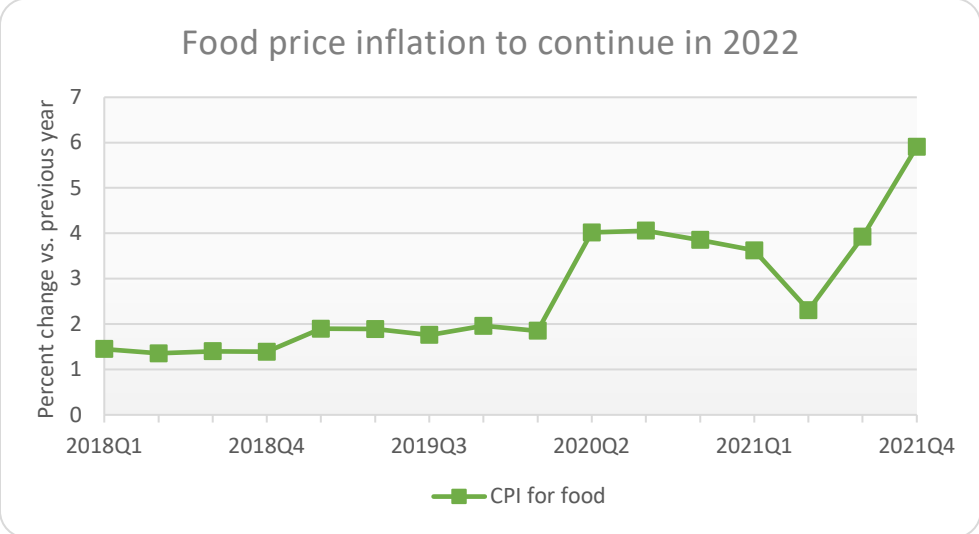
Ad hoc programs such as the Market Facilitation Program (MFP) and the Coronavirus Food Assistance Program (CFAP) resulted in sharply higher spending on farm-related programs in fiscal years (FY) 2019-2021. If no new ad hoc programs are authorized, projected spending falls back to pre-2019 levels in FY 2023. Projected spending averages $21.9 billion per year over the FY 2023-2032 period. Crop insurance accounts for about half of the total.



Sharply higher commodity prices resulted in a large increase in farm cash receipts in 2021. While production expenses rose and government payments declined from the record level of 2020, the result was the highest level of net farm income since 2013. Based on what was known in January 2022, a reduction in net farm income in 2022 was projected because of another large increase in production expenses and drop in government payments. Recent events are likely to push both receipts and expenses above the projected levels in 2022.



The consumer price index (CPI) for food at the beginning of 2022 is more than 10% higher than just two years ago. Though higher commodity prices have contributed to the growth, just over 15% of every dollar spent on food is received by producers at the farm-level. Increased labor, transportation and other marketing costs are the primary drivers for recent food price increases. The CPI for food is projected to grow by 4.2% in 2022.



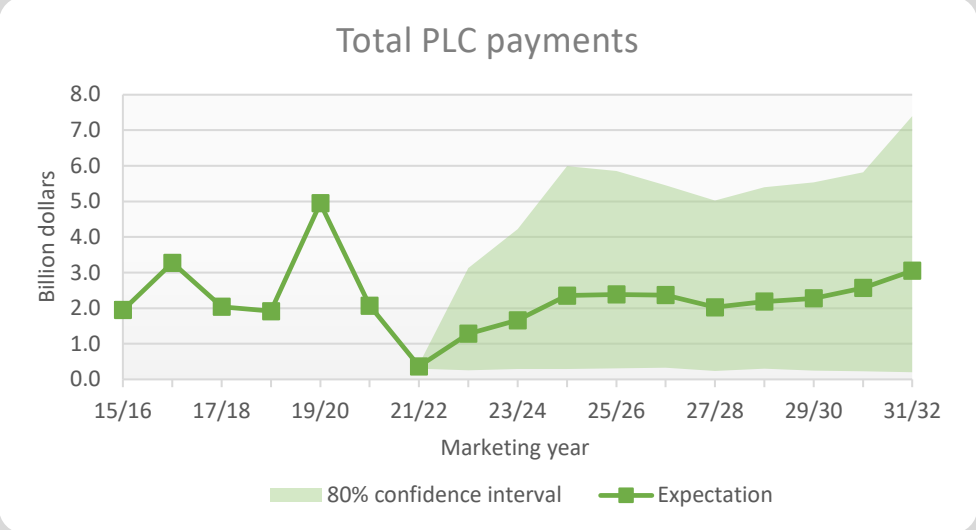
The Stochastic Baseline

This baseline is constructed to incorporate the uncertainty of projections. Any estimate of the future has a random component that cannot be known ahead of time. As a result, a subset of the variables is allowed to be stochastic. This means that they contain a random effect. Since the models are interconnected, this leads to variability throughout the system. It is impossible to capture all uncertainty. Therefore, the stochastic baseline should not be treated as thoroughly incorporating all risk. For example, the 2020 baseline did not incorporate the possibility of a pandemic shock, and this year's baseline did not anticipate the possibility of war in Ukraine.

While the tables present one number for each variable, there is actually a distribution behind each. Many of the paths for the variables appear flat as if there is little year over year change. The charts and tables generally present the expectation for each year, which is the mean of the distribution. In reality, our models approximate an infinite number of outcomes.

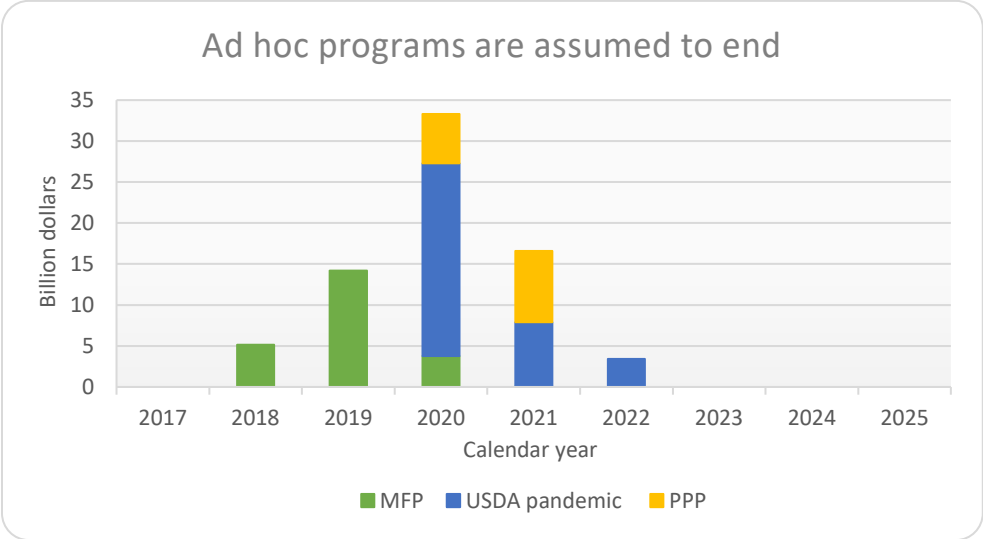
The stochastic nature of the baseline can lead to interesting results. Consider the Price Loss Coverage (PLC) program that makes payments when the farm price falls below a reference price. Our expected farm price may be above the reference price. However, there is some probability that the price may fall below the reference price in the future. All of these outcomes determine the expected PLC payments. As a result, our tables may show an expected PLC payment even when the expected farm price is above the reference price, such as occurs in the case of corn for every year of the projection period.

Whenever the farm price is above the reference price, the PLC payment is zero. However, if the reverse is true then the payment rate has a one-to-one relationship with the farm price. This creates an asymmetry in the distribution of PLC payments as the lower tail is limited at zero while the upper tail can be quite high. The Aggregate Indicators section includes a table with confidence interval information for several variables.

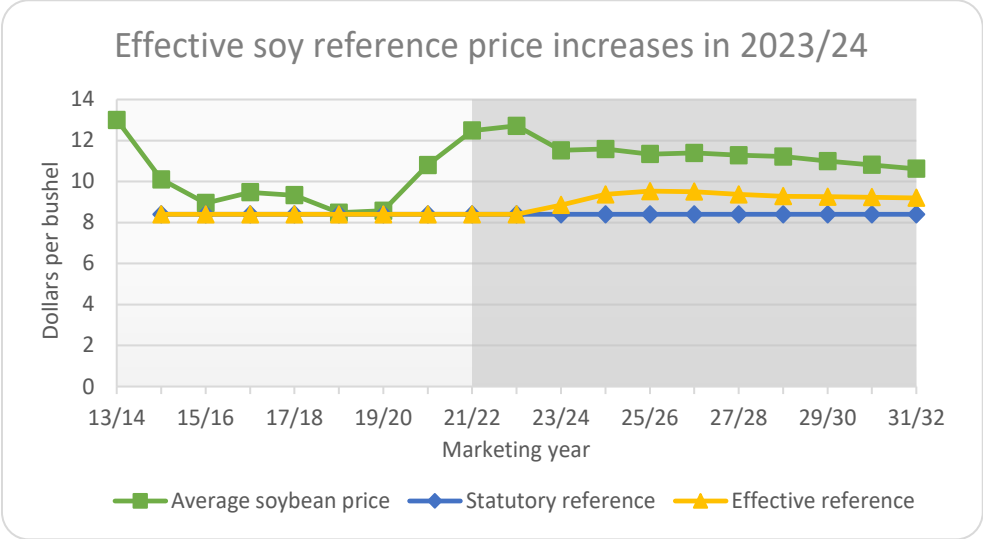


Policy assumptions

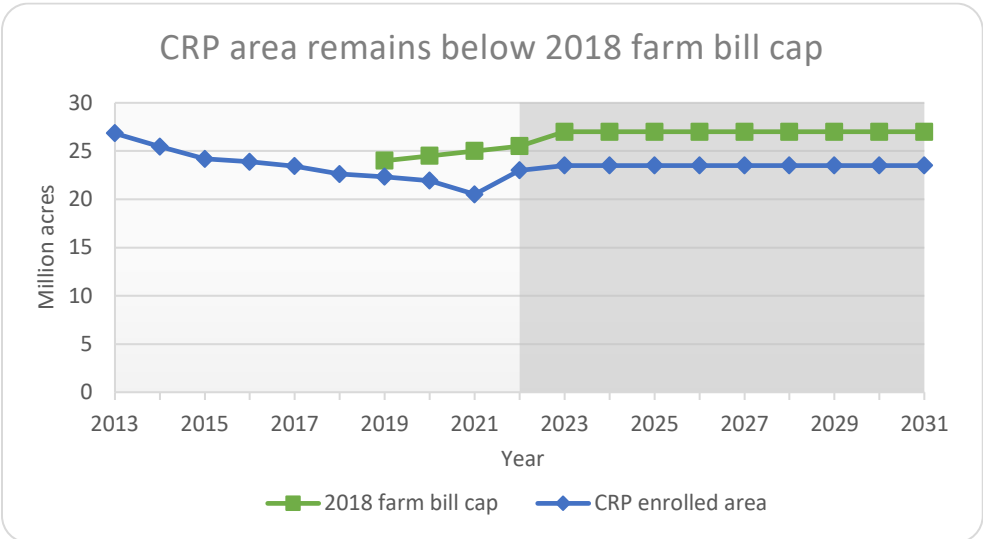
MFP compensated farmers for the impacts of retaliatory trade measures. USDA has provided pandemic assistance through CFAP and the pandemic assistance program (PAP). The paycheck protection program (PPP) offered forgivable loans that also provided substantial support. Benefits under these ad hoc programs totaled $33 billion in 2020, declining by half in 2021. This current-policy outlook assumes no new ad hoc programs to replace expiring ones.



The outlook assumes provisions of the 2018 farm bill, extended through 2031/32. Producers now face annual decisions about whether to elect price loss coverage (PLC) or agriculture risk coverage (ARC) for the eligible base acreage on their farms. The 2018 farm bill introduced an escalator clause that allows effective reference prices to exceed the statutory level when an Olympic average of past market prices exceeds the reference price by a sufficient amount. This provision results in an increase in effective reference prices for soybeans beginning in 2023/24.



The 2018 farm bill increased caps on enrollment in the conservation reserve program (CRP) from 24 million acres in FY 2019 to 27 million acres in FY 2023. The farm bill also reduced caps on per-acre rental payments, which now cannot exceed 85% of county rental rates for general signups and 90% for continuous signups. In spite of increases in county rental rates and other efforts to encourage enrollment, the area in the program has remained below the acreage cap. The grassland reserve accounts for most of the increase in CRP enrollment in 2022.



Selected U.S. crop commodity program provisions

Policy	Crop/provision	2021/22-2023/24 average	2024/25-2031/32 average
Price loss coverage (PLC)		Effective reference price	Effective reference price
Makes payments when marketing year average (MYA) price falls below the effective reference price. Paid on 85% of base acres and program yields. Effective reference price can exceed minimum if the moving average of MYA prices exceeds the minimum by at least 17.6%.	Corn	$3.72 per bu.	$3.90 per bu.
	Soybeans	$8.55 per bu.	$9.34 per bu.
	Wheat	$5.50 per bu.	$5.56 per bu.
	Long grain rice	$14.00 per cwt	$14.00 per cwt
	Japonica rice	$17.30 per cwt	$17.30 per cwt
	Sorghum	$3.95 per bu.	$4.13 per bu.
	Barley	$4.95 per bu.	$4.95 per bu.
	Oats	$2.45 per bu.	$2.68 per bu.
	Peanuts	$535.00 per ton	$535.00 per ton
	Sunflowers	$0.202 per lb	$0.214 per lb
	Seed cotton	$0.367 per lb	$0.367 per lb
Marketing loan program		Loan rate	Loan rate
Producers can borrow at the loan rate and receive benefits if a market price indicator falls below the loan rate.	Corn	$2.20 per bu.	$2.20 per bu.
	Soybeans	$6.20 per bu.	$6.20 per bu.
	Wheat	$3.38 per bu.	$3.38 per bu.
	Rice	$7.00 per cwt	$7.00 per cwt
	Upland cotton	$0.52 per lb	$0.52 per lb

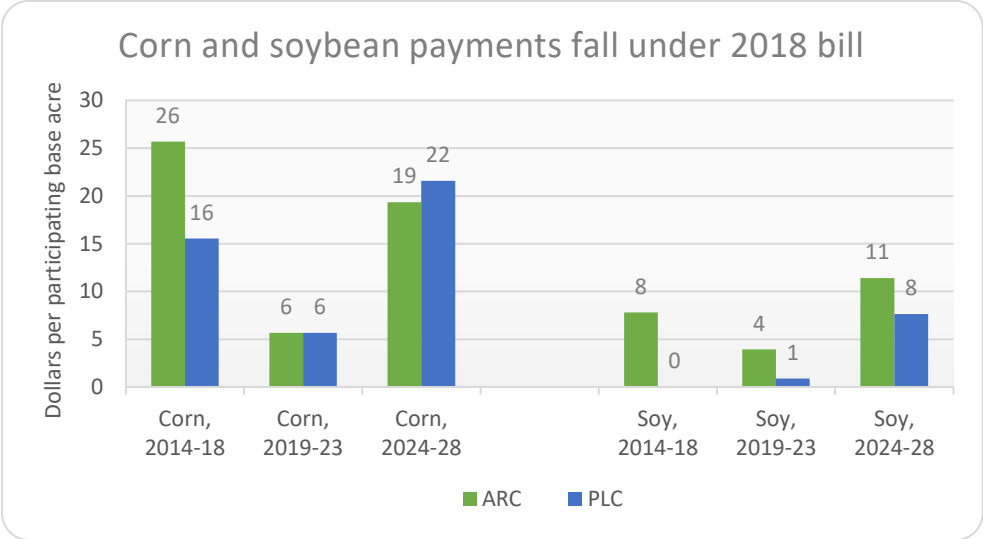
Other policy assumptions

Policy	Description
Agriculture risk coverage (ARC)	County version (ARC-CO) makes payments when county revenues per acre fall below 86% of benchmark county revenue tied to moving averages of MYA prices and trend-adjusted county yields. Payment are made on 85% of base acreage.
Dairy margin coverage (DMC)	Participating milk producers receive payments when the margin between milk prices and an indicator of feed prices falls below coverage levels chosen by the producer. Producers pay premiums, with much lower premiums on the first 5 million pounds of milk than on additional quantities.
Conservation reserve	Maximum allowed enrollment increases to 27 million acres by 2023. Maximum rental rate is 85% of county average rental rate for general signups and 90% of county average rental rate for continuous signups.
Trade policies	Trade policies in place in January 2022 continue. No follow-on to the Phase 1 agreement with China is assumed.
Coronavirus and other ad hoc programs	Pandemic assistance programs announced prior to mid-January 2022 are implemented, but no new programs are assumed.

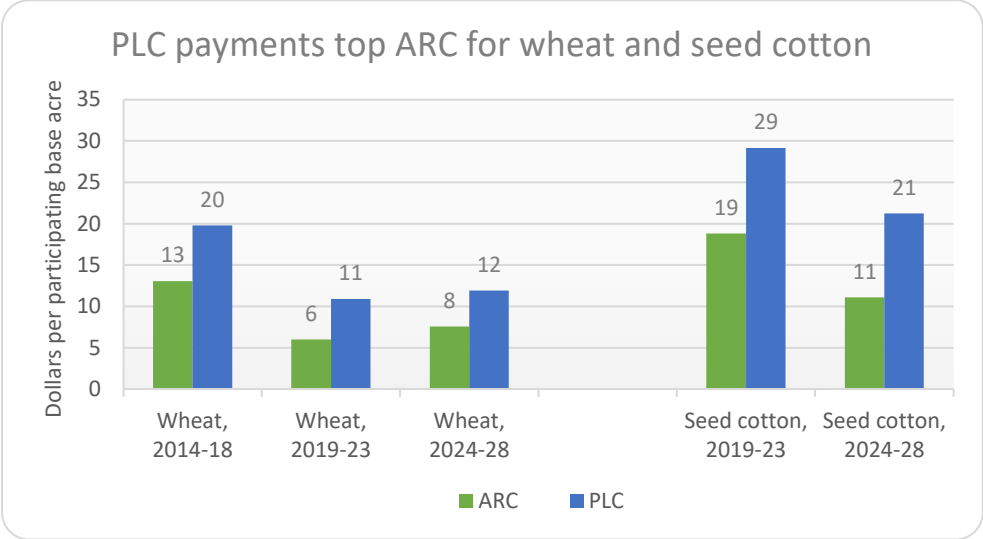
Note: These policy assumptions are not a prediction of future policy outcomes. Alternative policy scenarios can be evaluated against this current policy baseline.

Crop program participation

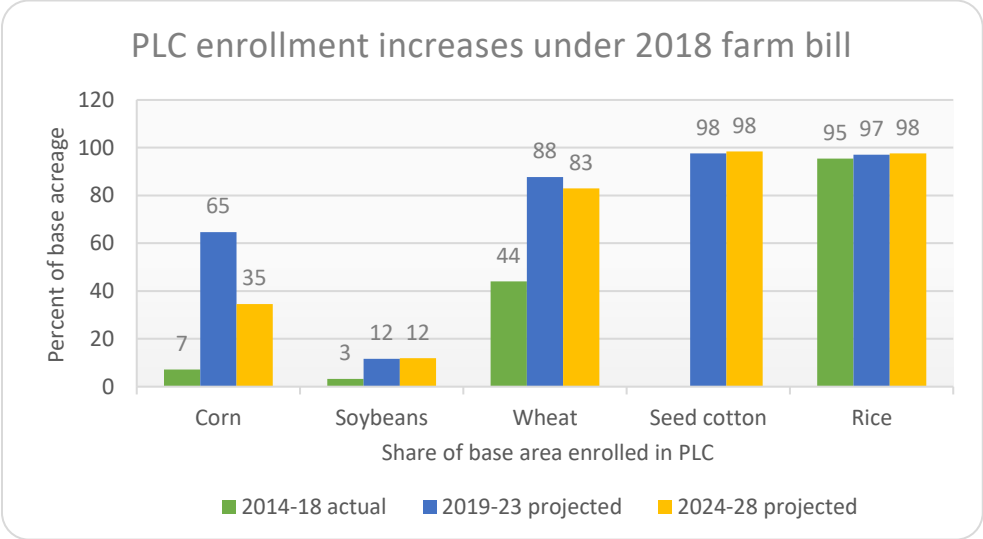
Under the 2014 farm bill, national average ARC payments per participating corn base acre exceeded PLC payments. Under the 2018 farm bill, changing market conditions reduce corn payments under both programs. To date, no PLC payments have been made on soybean base area. Projected average payments are greater in the 2024-28 period for both crops and both programs.



For wheat, seed cotton and many other crops, historical and projected average PLC payments exceed ARC payments per participating base acre. Seed cotton only became eligible for ARC and PLC payments in 2018. Note that payments can vary greatly from one year to the next because of changing market conditions, and for many commodities, the most likely payment rate in any given year is zero. In addition ARC payments vary geographically, as they depend in part on county-level yields.



The 2018 farm bill gave producers the opportunity to make new ARC-PLC elections in 2019, 2021, 2022 and 2023. Given expected payment rates, much corn and wheat base acreage shifted from ARC to PLC in 2019, while most soybean base remains enrolled in ARC. Looking ahead, projected average ARC and PLC payments are similar for corn, so producers may change their program elections from year to year depending on market conditions. Most seed cotton and rice base acreage has been enrolled in PLC, and this is expected to continue.

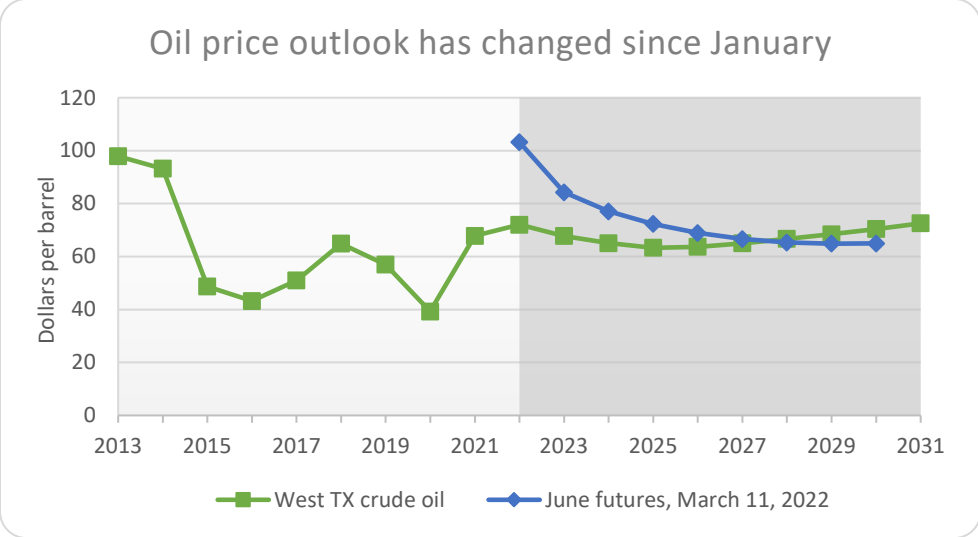


ARC and PLC payments and participation rates

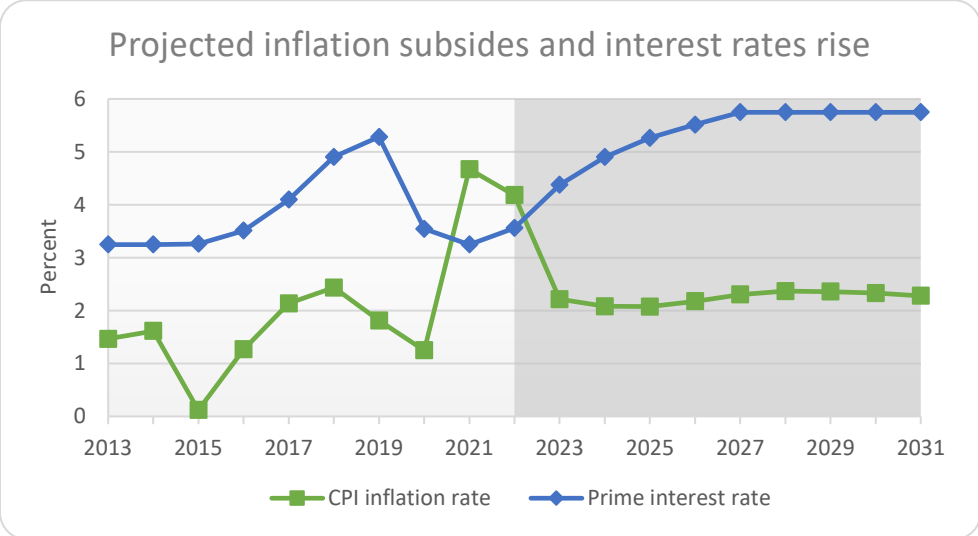
	Average ARC payment	Average PLC payment	Share of base acres in ARC	Share of base acres in PLC
Average for 2014-2018 crop years	(Dollars per base acre)		(Percent)	
Corn	25.67	15.59	92.8	7.2
Soybeans	7.80	0.00	96.7	3.3
Wheat	13.04	19.77	55.9	44.1
Sorghum	14.88	29.73	31.0	69.0
Barley	7.50	7.17	25.2	74.8
Oats	8.62	4.55	65.9	34.1
Rice	18.86	125.07	4.6	95.4
Peanuts	45.40	201.51	0.3	99.7
Sunflower seed	8.17	17.90	43.5	56.5
Average for 2019-2023 crop years				
Corn	5.66	5.66	35.3	64.7
Soybeans	3.92	0.88	88.3	11.7
Wheat	6.01	10.88	12.3	87.7
Sorghum	3.50	7.22	12.9	87.1
Barley	8.19	9.69	6.5	93.5
Oats	1.83	0.31	36.8	63.2
Rice	2.83	96.88	2.9	97.1
Peanuts	31.58	127.42	0.3	99.7
Sunflower seed	3.89	2.00	12.3	87.7
Seed cotton	18.79	29.14	2.4	97.6
Average for 2024-2028 crop years				
Corn	19.35	21.60	65.4	34.6
Soybeans	11.40	7.64	88.1	11.9
Wheat	7.56	11.92	17.0	83.0
Sorghum	7.00	10.42	24.5	75.5
Barley	6.95	22.87	5.3	94.7
Oats	1.57	2.45	35.4	64.6
Rice	15.04	70.99	2.4	97.6
Peanuts	44.47	141.51	1.6	98.4
Sunflower seed	6.54	5.55	26.5	73.5
Seed cotton	11.11	21.24	1.6	98.4

Macroeconomic assumptions and farm prices paid

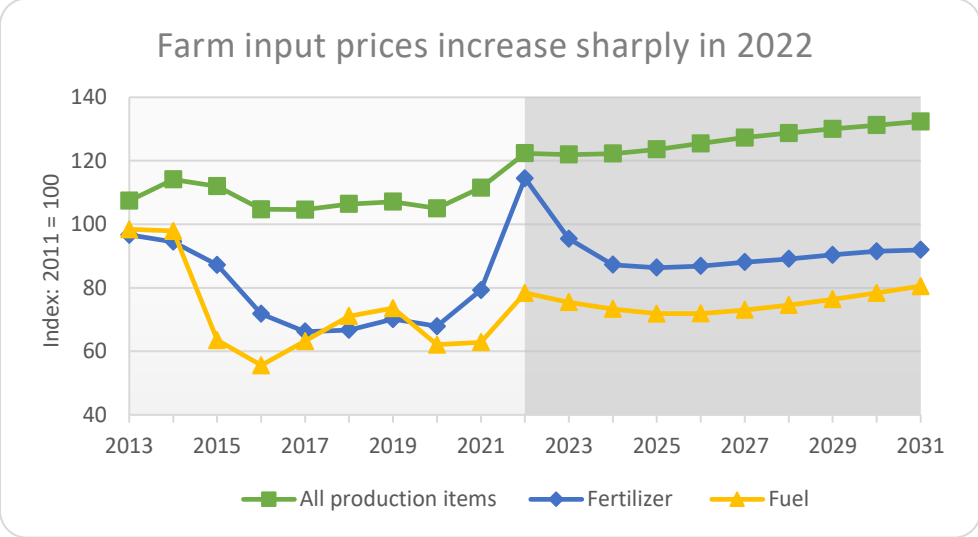
In January 2022, IHS Markit (S&P Global) forecast solid economic growth in the U.S. and global economies again in 2022. West Texas intermediate oil prices were forecast to average $72 per barrel in 2022. The war in Ukraine has upended markets, with June 2022 crude oil futures contracts over $100 per barrel in early March. The level of uncertainty in energy and other markets is likely to have spillover effects on the broader economy.



Inflation jumped in 2021, while the Federal Reserve kept interest rates low. Year-over-year inflation remains high in early 2022, and higher energy prices caused by the war in Ukraine may delay the return of lower inflation rates. In January, IHS Markit (S&P Global) forecast inflation would fall to 2% per year beginning in 2023. The prime interest rate is forecast to rise each year from 2022 to 2027. Higher interest rates would increase farm borrowing costs and could put downward pressure on land values.



Fertilizer prices have increased dramatically since the beginning of 2021, and could be pushed even higher if the war in Ukraine further restricts Russian exports of fertilizer and natural gas. Based on information available in January 2022, the projected increase in prices for all farm production items was about 10% in 2022, coming in the wake of a 6% increase in 2021. Recent developments could result in even higher prices for fertilizer, fuel and feed. Without new shocks, farm cost inflation could moderate in 2023.



Macroeconomic assumptions

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Real GDP growth					(Percent change from previous year)						
United States	5.7	4.1	2.5	2.5	2.4	2.4	2.3	2.2	2.2	2.2	2.1
China	8.1	5.4	5.3	5.2	5.2	5.0	4.7	4.6	4.5	4.4	4.1
World	5.6	4.2	3.4	3.1	3.1	3.0	2.9	2.9	2.8	2.8	2.7
Population growth											
United States	0.1	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
World	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8
U.S. CPI, all urban consumers	4.7	4.2	2.2	2.1	2.1	2.2	2.3	2.4	2.4	2.3	2.3
U.S. real disposable income	2.1	-3.5	2.8	3.1	3.1	3.0	2.7	2.6	2.6	2.6	2.4
					(Percent)						
U.S. unemployment rate	5.4	3.7	3.6	3.8	4.0	4.0	4.1	4.2	4.2	4.2	4.3
3-month Treasury bill rate	0.0	0.4	1.1	1.6	1.9	2.2	2.4	2.4	2.4	2.4	2.4
Prime interest rate	3.3	3.6	4.4	4.9	5.3	5.5	5.8	5.8	5.8	5.8	5.8
Petroleum prices					(Dollars per barrel)						
West Texas Intermediate	67.86	72.04	67.80	65.07	63.34	63.69	65.02	66.68	68.41	70.43	72.55
Refiners' acquisition cost	67.27	71.25	67.05	64.36	62.36	62.66	63.87	65.37	67.06	69.06	71.16
Natural gas price					(Dollars per million BTU)						
Henry Hub	3.92	3.16	3.00	2.63	2.70	2.78	2.83	2.95	3.09	3.23	3.31
Exchange rates					(Currency per dollar)						
Euro	0.85	0.89	0.88	0.84	0.81	0.80	0.80	0.80	0.79	0.79	0.78
Chinese yuan	6.45	6.37	6.34	6.28	6.25	6.23	6.24	6.27	6.36	6.47	6.59

Source: IHS Markit (S&P Global), January 2022

Indices of prices paid by farmers

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Production items, interest,					(2011 = 100)						
taxes and wages	114.2	124.5	125.4	126.8	128.7	131.1	133.5	135.5	137.4	139.3	141.3
Production items	111.5	122.4	122.0	122.3	123.6	125.5	127.3	128.7	130.0	131.2	132.4
Feed	113.7	116.9	109.8	107.1	106.0	105.6	105.3	104.6	103.5	102.1	100.6
Livestock & poultry	108.5	120.8	128.7	131.4	133.5	136.6	137.6	135.3	132.8	130.5	128.6
Seeds	113.1	118.7	124.2	127.5	129.8	131.5	133.2	134.7	136.0	137.1	137.8
Fertilizer	79.3	114.5	95.5	87.3	86.4	86.8	88.1	89.1	90.4	91.5	92.0
Mixed fertilizer	74.2	107.8	92.2	85.0	85.0	85.4	86.4	87.3	88.5	89.4	89.7
Nitrogen fertilizer	83.4	121.7	98.6	89.0	87.4	88.1	89.8	91.0	92.6	94.1	94.9
Potash and phosph.	82.8	113.9	96.5	89.1	87.5	87.6	88.2	89.0	89.8	90.3	90.4
Agricultural chemicals	98.5	108.6	107.5	108.6	110.5	112.5	114.7	116.8	119.0	120.9	122.9
Fuels	62.9	78.4	75.5	73.3	71.9	71.9	73.0	74.6	76.4	78.4	80.5
Supplies & repairs	124.4	134.5	139.0	142.7	146.7	150.8	154.8	159.0	163.4	168.0	172.7
Autos & trucks	112.8	119.2	123.5	127.2	130.5	133.5	136.5	139.4	142.0	144.4	147.1
Farm machinery	131.5	151.3	149.9	149.7	151.6	154.1	156.7	159.1	161.5	163.8	166.2
Building material	140.2	151.7	157.9	162.8	167.1	171.0	174.7	178.3	181.9	185.5	189.2
Farm services	119.8	129.1	131.4	134.1	137.5	141.1	144.8	148.6	152.4	156.1	159.9
Interest*	101.4	106.4	116.5	125.1	131.4	136.2	140.7	142.9	144.6	146.3	148.0
Taxes**	120.4	125.1	134.5	142.8	146.0	147.0	150.2	154.2	158.7	164.0	169.9
Wage rates	142.1	150.6	157.8	164.3	170.8	177.3	184.0	190.9	198.1	205.5	213.2

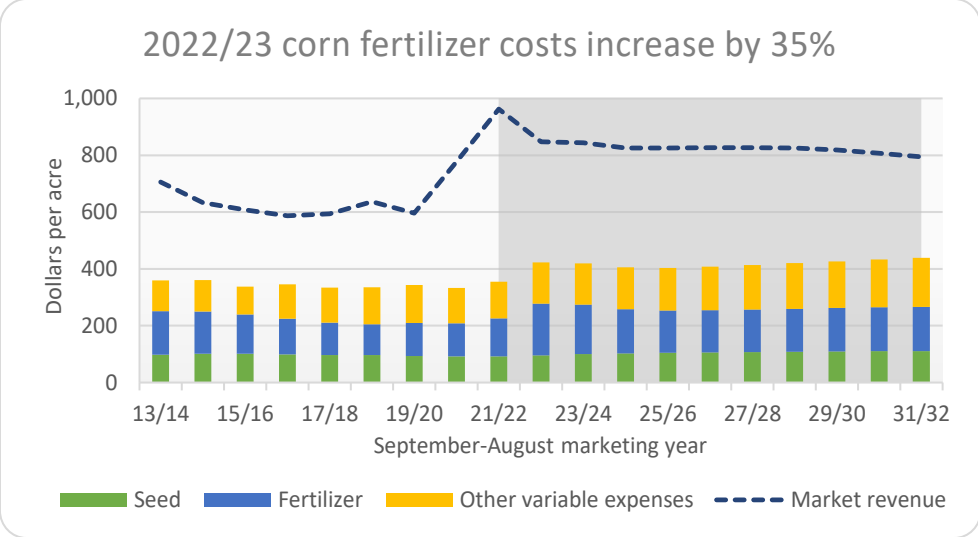
* Interest per acre on farm real estate debt and interest rate on farm non-real estate debt.

** Farm real estate taxes payable per acre.

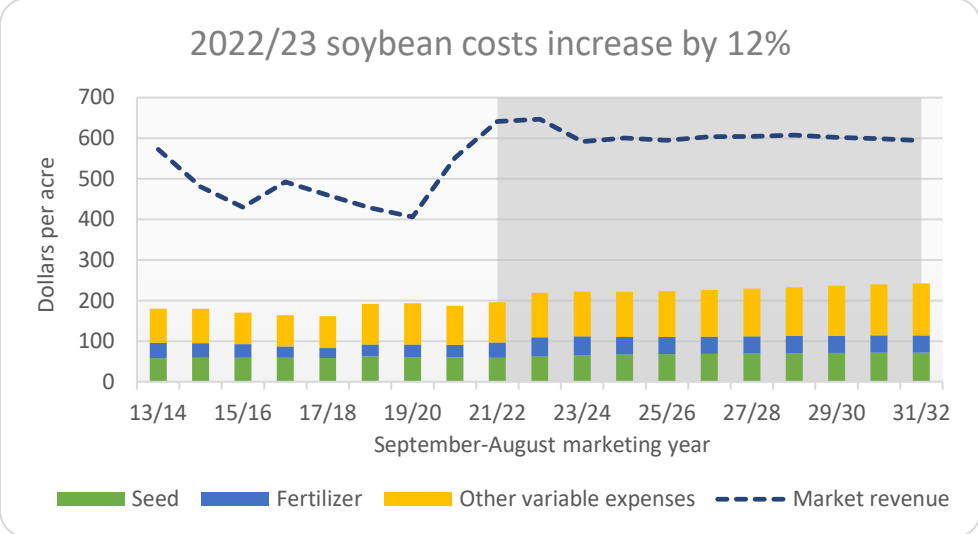
Crop variable expenses

We define variable production expenses to be USDA's operating expenses plus hired labor. This includes seed, fertilizer, fuel, chemicals and other variable inputs, but does not include the cost of land or machinery replacement.

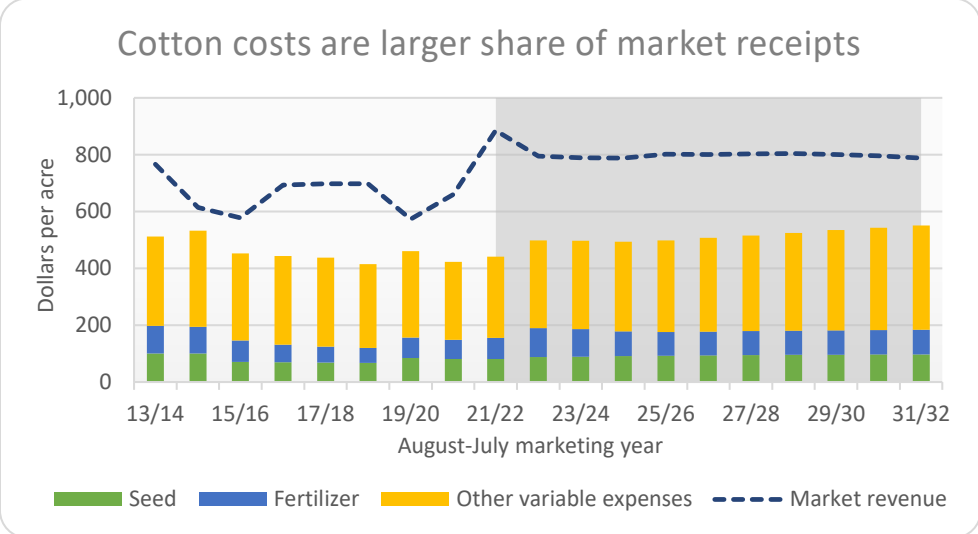
For corn, higher fertilizer costs contribute to a combined 19% increase in variable expenses in 2022/23. Over the 2022-31 period, corn variable expenses increase by an average of 2.2% per year.



Relative to corn, soybeans utilize less fertilizer, and per-acre variable production expenses are lower. Soybean market revenues per acre are also lower than for corn, but net returns (market revenue minus variable production costs) are similar, as the crops compete for acres. Projected soybean production expenses also increase by 2.2% per year between 2022 and 2031.



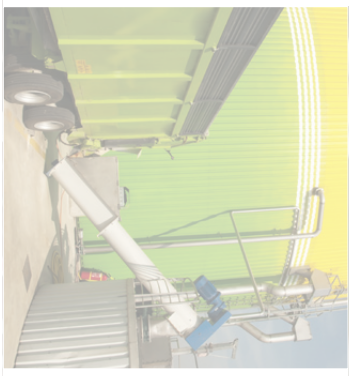
In contrast, national average cotton variable expenses per acre are greater relative to market receipts than in the cases of soybeans and corn. Similar to the case of corn, cotton fertilizer expenses jump in 2022/23 by 27%. Projected cotton variable expenses grow by about 2.3% per year between 2022-2031. Agricultural chemicals, fuel, repairs and ginning costs account for most of the other variable expenses in the chart.



Crop variable costs of production

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Corn					(Dollars per acre)						
Seed	91.47	95.65	100.02	102.67	104.35	105.72	106.96	108.12	109.14	109.94	110.52
Fertilizer	134.25	181.98	173.72	154.64	148.50	148.23	149.72	151.27	152.93	154.49	155.31
Other variable costs	129.26	144.87	145.62	147.67	150.22	153.41	157.04	160.75	164.59	168.55	172.59
Total	354.98	422.50	419.37	404.98	403.07	407.36	413.73	420.14	426.66	432.99	438.42
Wheat											
Seed	14.74	16.60	16.40	16.67	16.67	16.87	16.96	17.10	17.19	17.26	17.28
Fertilizer	45.28	57.73	60.90	55.10	52.96	53.13	53.38	53.89	54.33	54.79	55.00
Other variable costs	73.18	80.84	82.17	83.41	84.93	86.77	88.78	90.87	93.03	95.26	97.55
Total	133.20	155.17	159.48	155.18	154.56	156.78	159.13	161.86	164.55	167.32	169.82
Soybeans											
Seed	59.34	62.29	65.26	66.83	67.96	68.84	69.67	70.43	71.10	71.62	72.00
Fertilizer	36.99	46.98	46.77	43.06	42.16	41.88	42.07	42.27	42.50	42.54	42.46
Other variable costs	99.20	109.50	109.99	111.40	113.29	115.46	117.86	120.27	122.77	125.31	127.92
Total	195.53	218.76	222.02	221.28	223.40	226.17	229.60	232.97	236.37	239.47	242.38
Upland cotton											
Seed	81.01	88.08	89.22	91.33	92.51	93.75	94.55	95.41	96.09	96.59	96.87
Fertilizer	74.21	101.77	96.42	86.90	83.80	83.76	84.30	85.05	85.80	86.44	86.69
Other variable costs	285.73	308.88	311.32	315.96	322.16	329.50	336.85	344.51	352.51	360.30	367.80
Total	440.95	498.73	496.96	494.19	498.47	507.02	515.70	524.96	534.41	543.33	551.37
Rice											
Seed	88.84	92.87	95.93	97.90	99.40	100.59	101.75	102.84	103.85	104.71	105.44
Fertilizer	101.55	128.89	127.81	117.19	114.93	115.33	116.39	117.57	118.86	120.08	120.78
Other variable costs	349.84	391.14	392.72	397.18	403.62	411.88	421.49	431.37	0.00	452.01	462.69
Total	540.24	612.89	616.46	612.26	617.95	627.80	639.62	651.77	664.30	676.80	688.91
Sorghum											
Seed	13.96	14.55	14.78	15.02	15.15	15.29	15.41	15.52	15.61	15.68	15.71
Fertilizer	43.71	58.09	55.76	49.85	47.99	47.92	48.40	48.91	49.46	49.98	50.27
Other variable costs	87.56	96.64	97.22	98.50	100.20	102.21	104.41	106.65	108.95	111.30	113.71
Total	145.23	169.29	167.76	163.37	163.35	165.41	168.22	171.08	174.02	176.96	179.70
Barley											
Seed	21.64	22.65	23.02	23.48	23.40	23.47	23.58	23.69	23.76	23.80	23.79
Fertilizer	44.84	58.09	57.40	52.63	51.26	51.28	51.66	52.10	52.56	52.97	53.13
Other variable costs	111.81	124.58	125.89	127.68	129.89	132.69	135.88	139.21	142.68	146.28	149.99
Total	178.28	205.33	206.31	203.79	204.55	207.45	211.11	214.99	219.00	223.05	226.91
Peanuts											
Seed	115.41	120.97	124.89	126.33	127.67	128.73	129.80	130.85	131.81	132.50	132.97
Fertilizer	78.68	106.85	103.57	92.47	89.06	88.78	89.52	90.41	91.40	92.22	92.64
Other variable costs	322.19	357.05	358.57	363.14	369.23	376.42	384.36	392.41	400.68	409.07	417.60
Total	516.28	584.87	587.04	581.94	585.97	593.94	603.68	613.67	623.89	633.80	643.21

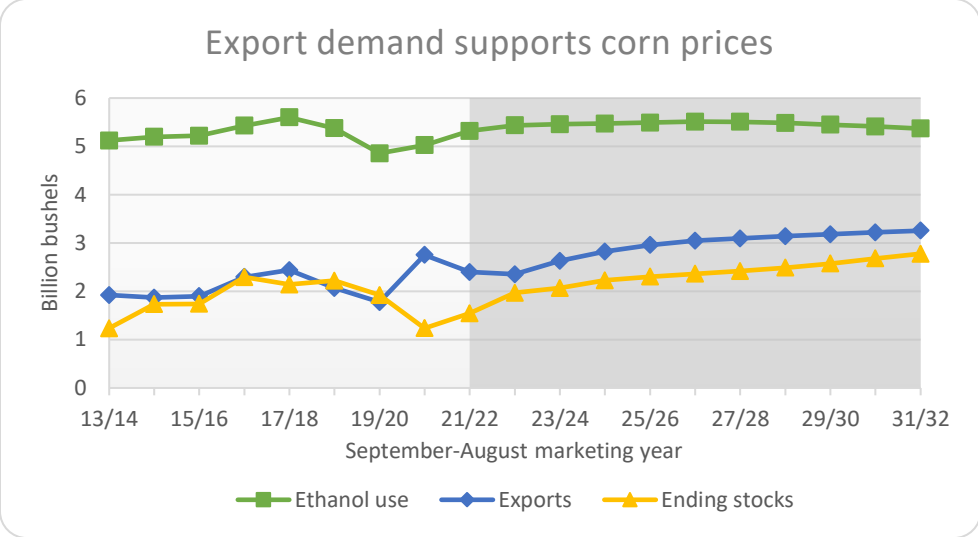




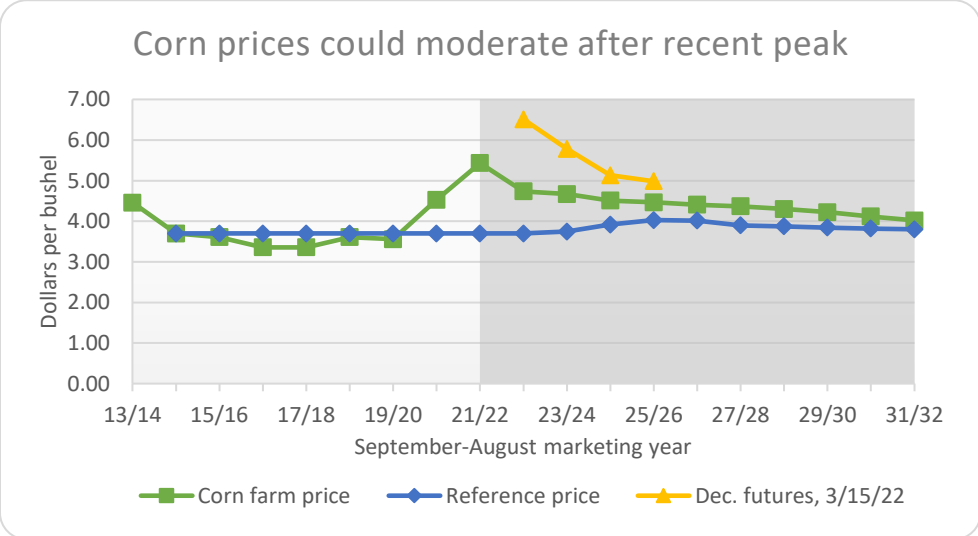

Grains

Corn

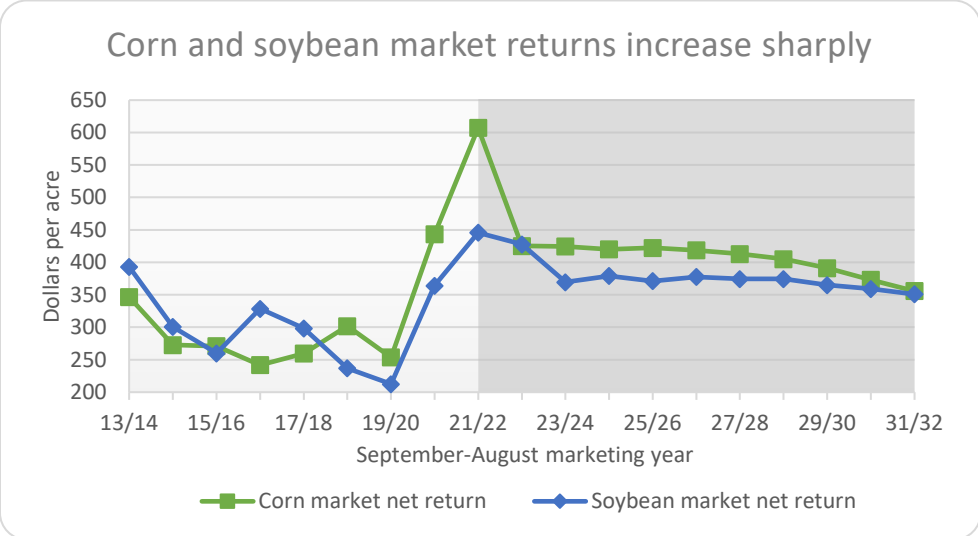
After the low in 2019/20, the continued rebound in ethanol production into 2022/23 coupled with lower-than-historical stock levels, as well as many of the factors mentioned in the summary, have all contributed to the higher 2021/22 prices. Corn ethanol use averages 5.46 billion bushels throughout the baseline. Stocks continue to increase steadily throughout the baseline and prices gradually fall, helping increase exports in 2023/24 and later years.

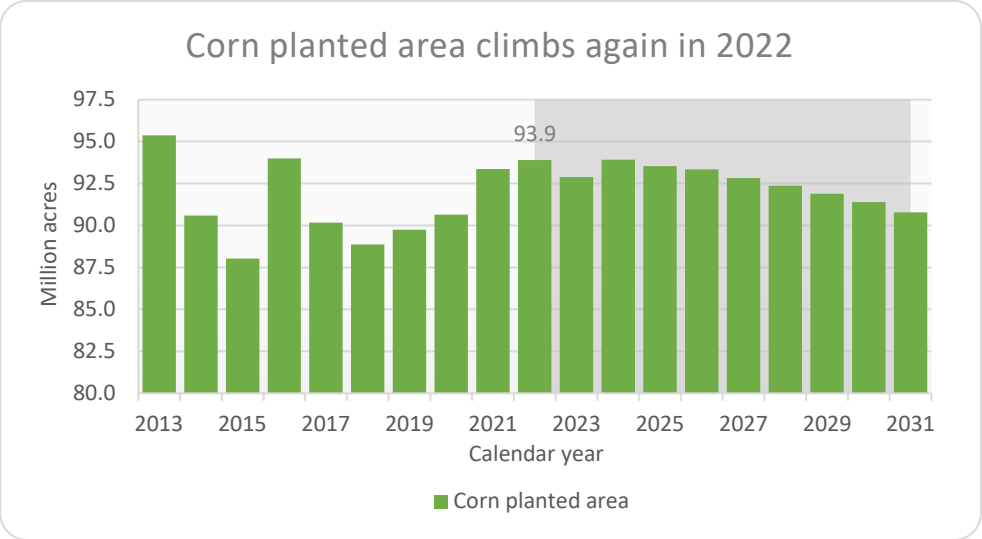


After 6 years of sub-$3.70 per bushel, corn prices rose in 2020/21 to $4.53 per bushel and are projected to rise again in 2021/22 to $5.44. Nearby futures topped $7.80 per bushel in recent weeks and overall futures suggest a higher 2021/22 MYA price. Differences in market information, expectations and assumptions between January and today largely account for price differences in current and later marketing years. Higher MYA prices in 2020/21 through 2023/24 trigger the effective reference price escalator in 2023/24 and are important in later years.

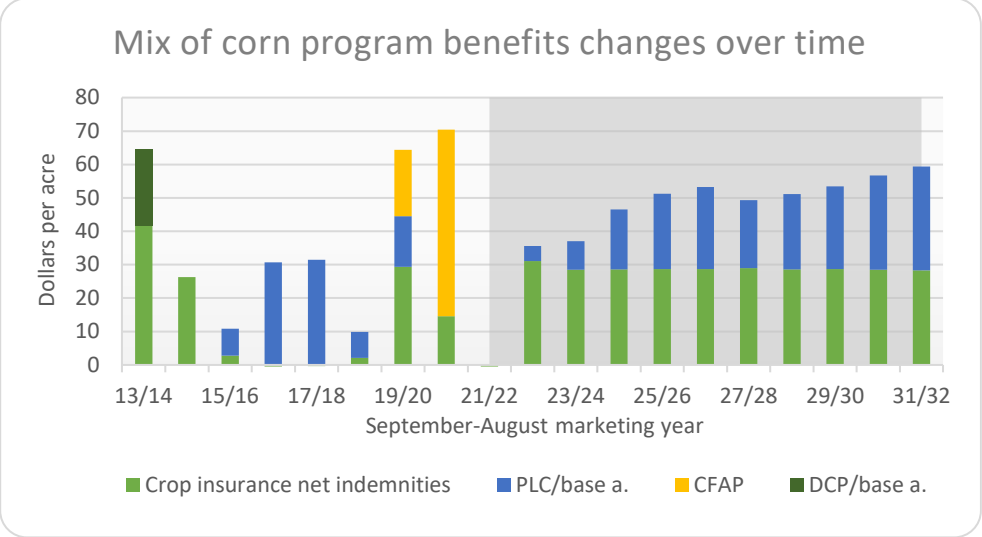


Market returns increased sharply in 2020/21 and are expected to again in 2021/22. Returns remain elevated in 2022/23, helping to incentivize more area for both corn and soybeans. Projected market net returns decline in 2022/23 and later years but remain above the average of the last five years. Market net returns are defined as price times yield less variable costs and exclude government payments and crop insurance net indemnities. Variable costs exclude land and machinery costs.

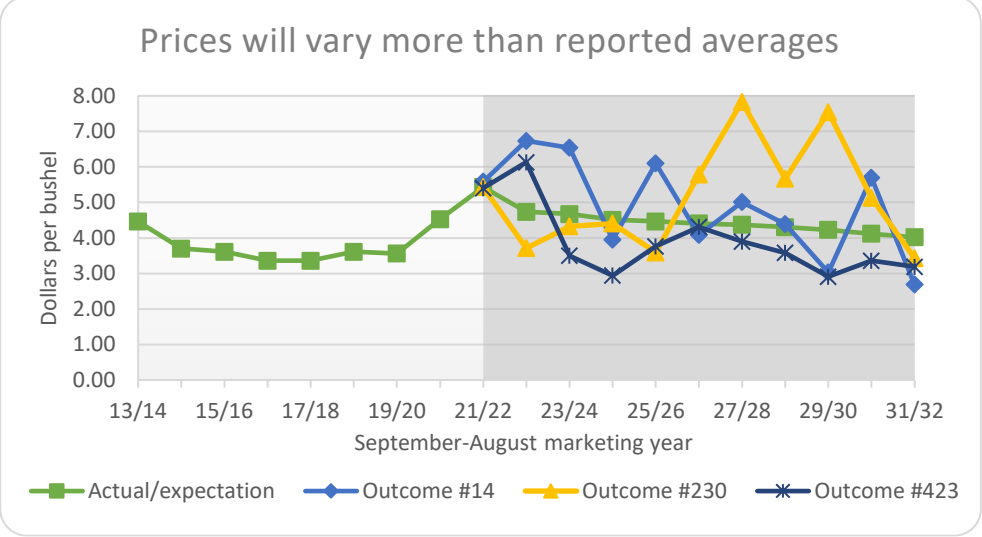




Corn area could see an increase in 2022 over 2021 levels but many uncertainties exist about input prices and availability as well as competing crop prices as noted earlier in the summary section. Current 2022 area is projected at 93.9 million acres using data available in January. In later years, corn area could fall towards 90 million acres as current projected prices fall throughout this baseline.



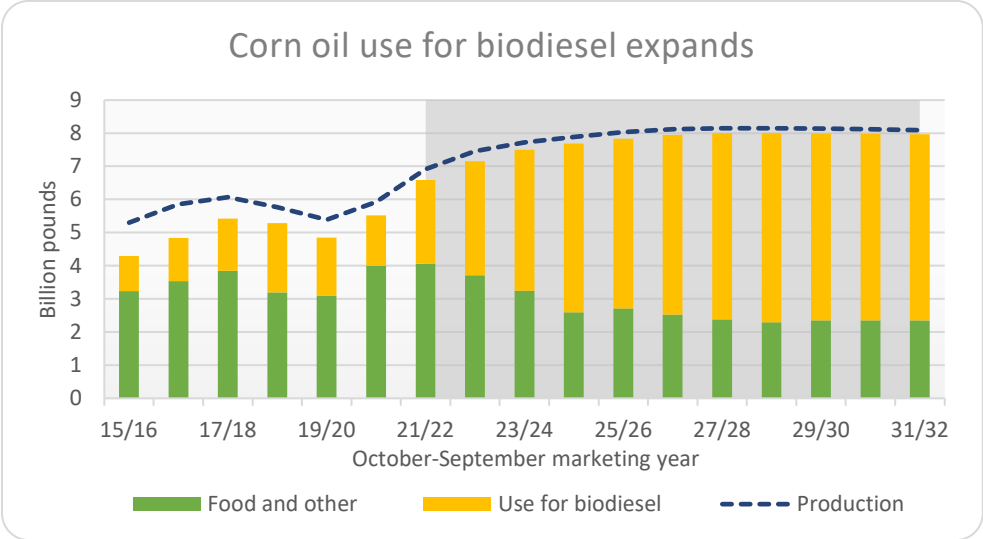
After coming off of two years of higher program benefits, the 2021/22 marketing year is expected to see no program benefits for corn. Higher prices, lower indemnities for crop insurance, and no additional ad-hoc payments all contribute to this decline. Going forward, crop insurance net indemnities are expected to average $29 per acre and PLC payments average $21 per acre throughout the baseline period. Projected average ARC payments (not shown) are similar to PLC payments.



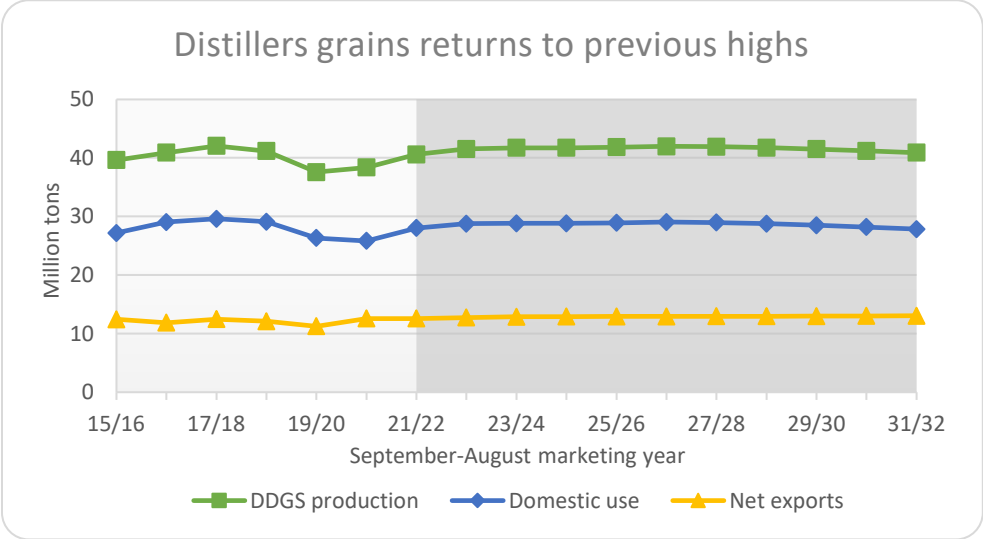
Actual crop production and prices will vary much more than the averages reported in the table. The chart shows three of the 500 stochastic outcomes. They differ because each outcome begins with different plausible sets of assumptions about some of the factors that make agricultural commodity markets inherently uncertain. Because of this uncertainty, the average level of PLC payments as reported in the tables is positive, even though the average projected price is above the effective reference price that triggers PLC payments.

Corn milling products

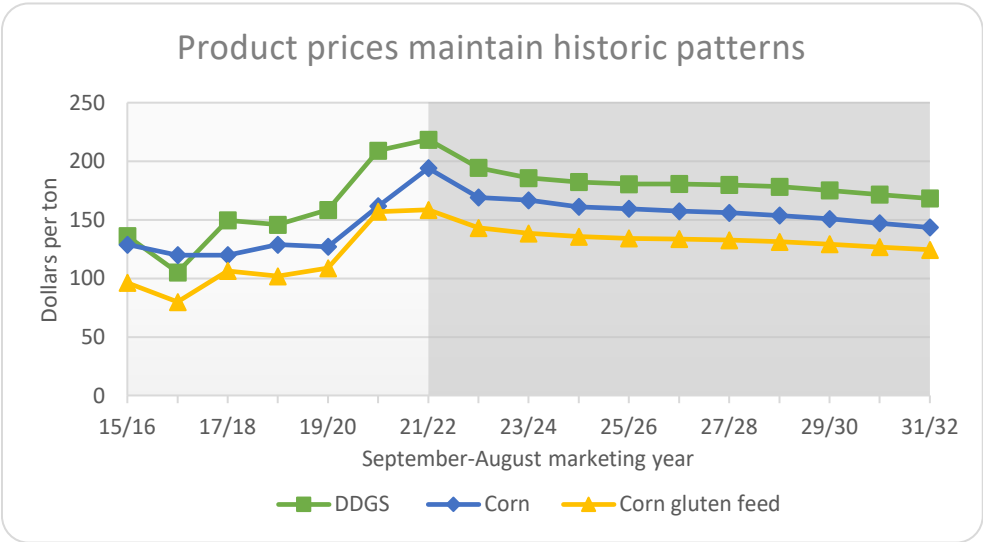
Rising demand for distiller's corn oil as a biomass-based diesel feedstock spurs projected overall corn oil production higher toward 8 billion pounds by MY 2027/28. The expansion in feedstock use also comes at the expense of food and other uses of corn oil.

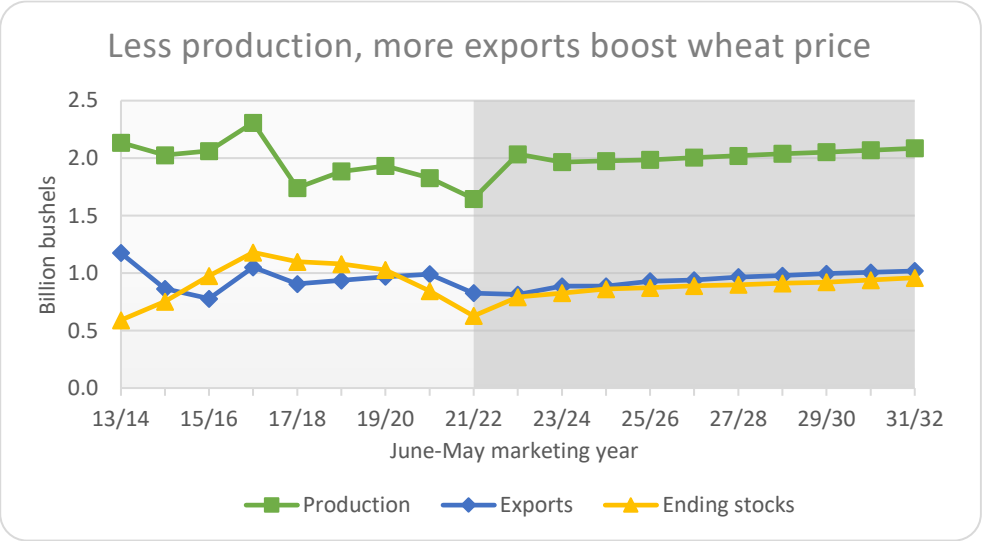


Distillers dried grains with solubles (DDGS) production follows the trajectory of dry mill ethanol production and averages about 41.6 million tons over the projection period. This is slightly below the peak of 2017/18, which came in at 42.1 million tons. Domestic use of DDGS keeps pace with the increases in production as net exports remain roughly constant in the projection period.



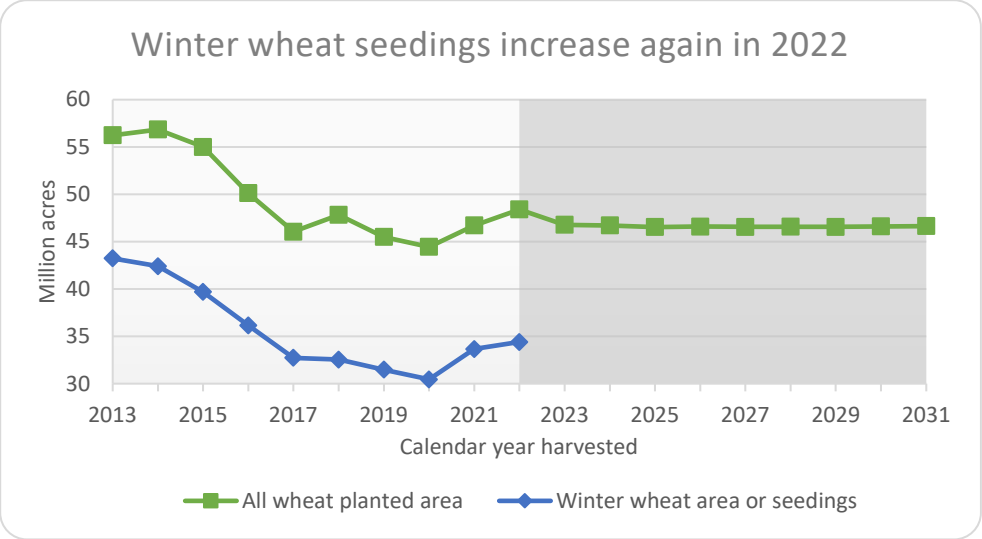
Projected prices for DDGS rise again in 2021/22 to a recent high of $219 per ton before following a lower path alongside corn. Over the rest of the projection period, DDGS prices average $180 per ton on average. The ratios of other corn product prices (e.g., corn gluten feed and corn gluten meal) to the corn price also remain steady.



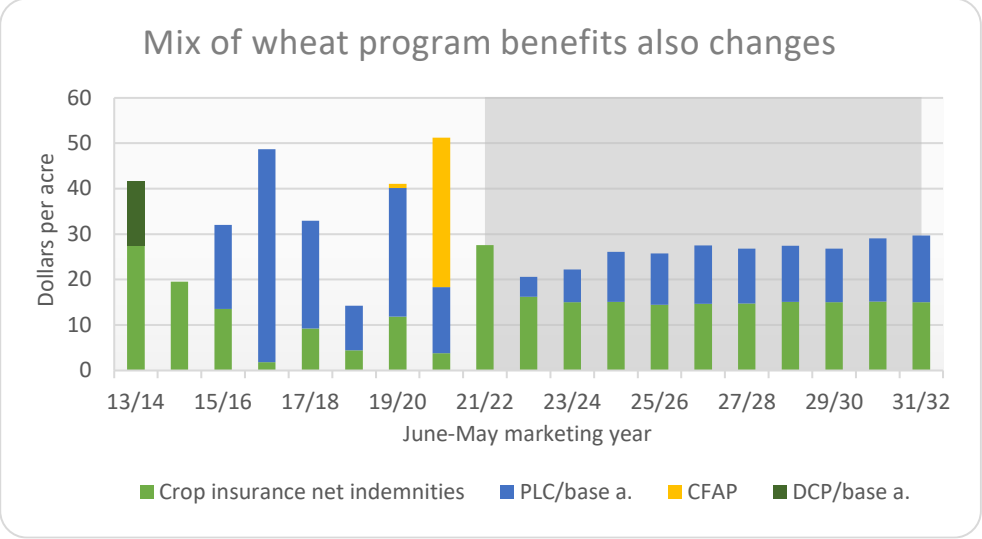


Wheat

Higher wheat area combined with an assumed return to trend yields in 2022/23 leads to a large production increase (+24%) from last year. The lower production in 2021/22 was caused by low yields, which were the lowest since 2015/16. Steady exports and building stocks weigh on prices in the 2022/23 marketing year and later years. Production, exports, and stocks all continue to grow throughout the baseline.



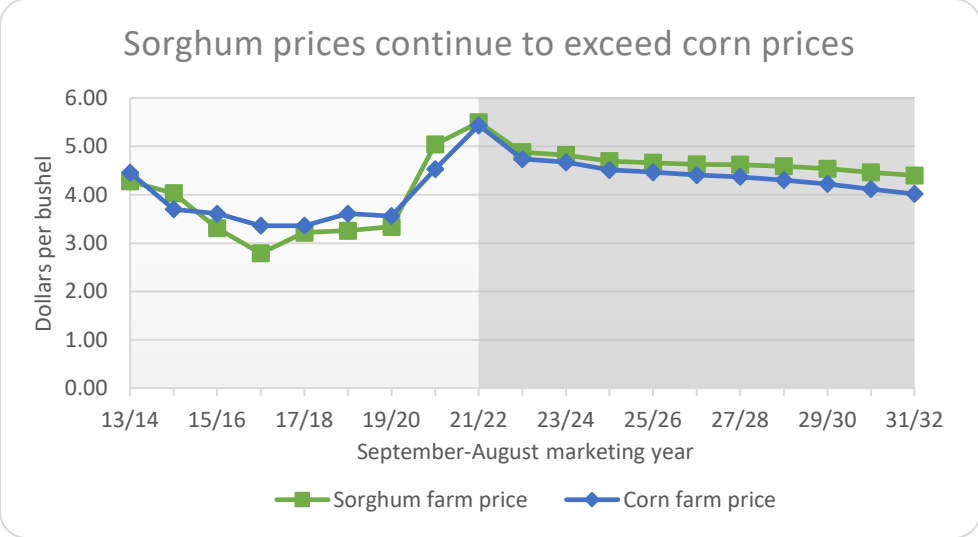
Winter wheat area has increased for the second straight year in 2022, contributing to an increase in total wheat area. Higher wheat prices and lower spring wheat beginning stocks are expected to help drive the higher total wheat area in 2022. For the 2023/24 crop year and later, total wheat area is expected to average 46.6 million acres in this baseline.



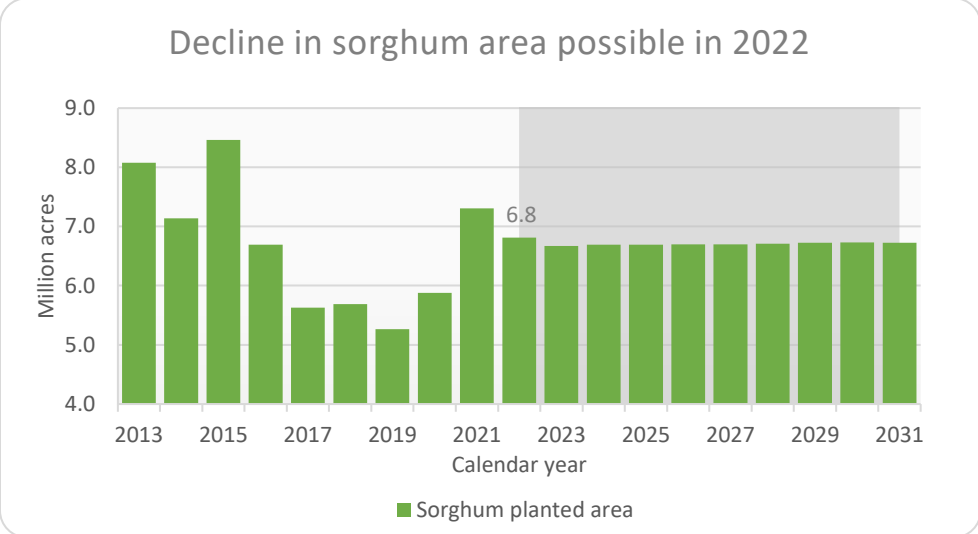
Crop insurance net indemnities have been relatively low over the last 7 years (averaging $7/acre) but increase to about $15/acre throughout the baseline period. With average prices higher than the reference price, PLC payments are expected to be small by historical standards for the next few years. In later years, average PLC payments increase as average market prices fall closer to the reference price.

Sorghum

Sorghum prices largely mirror the corn prices given their competition. The current premium to corn is expected to remain through the baseline period due to the tariff advantage sorghum has in China's market. Their buying habits will largely determine if sorghum prices remain at a premium to corn or if they revert back to a slight discount as has been the case for much of the past.



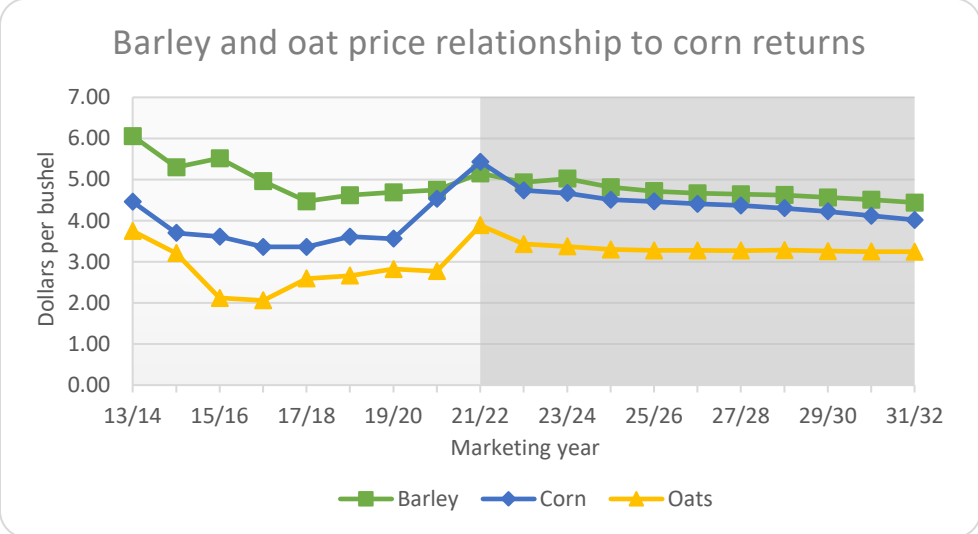
Sorghum area in 2022 is expected to fall slightly to 6.8 million acres. However, better returns were expected for competing crops in January. Much uncertainty remains about 2022 sorghum area due to the factors mentioned in the summary section. Throughout the baseline period, sorghum area is expected to average 6.7 million acres. Note that the sorghum area here does not represent all sorghum area as official statistics no longer track area in some states. In times of strong returns, sorghum area in these states can increase.

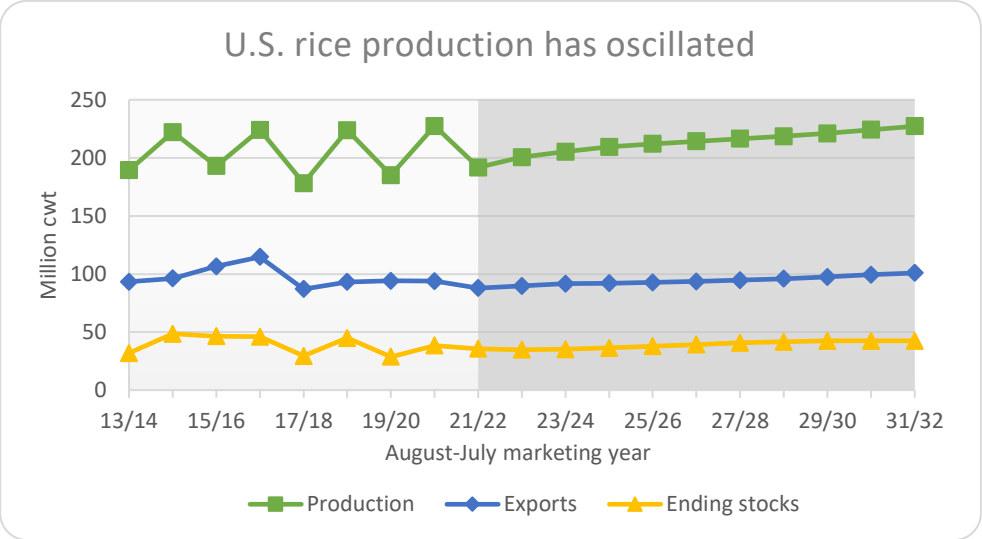


Barley and oats

The corn price is projected to be above the barley price in 2021/22 for only the sixth time in the past 20 years. Barley prices return to a premium to corn in 2022/23. In the U.S., barley is primarily malting barley and prices are set to attract sufficient supply to meet brewing demand.

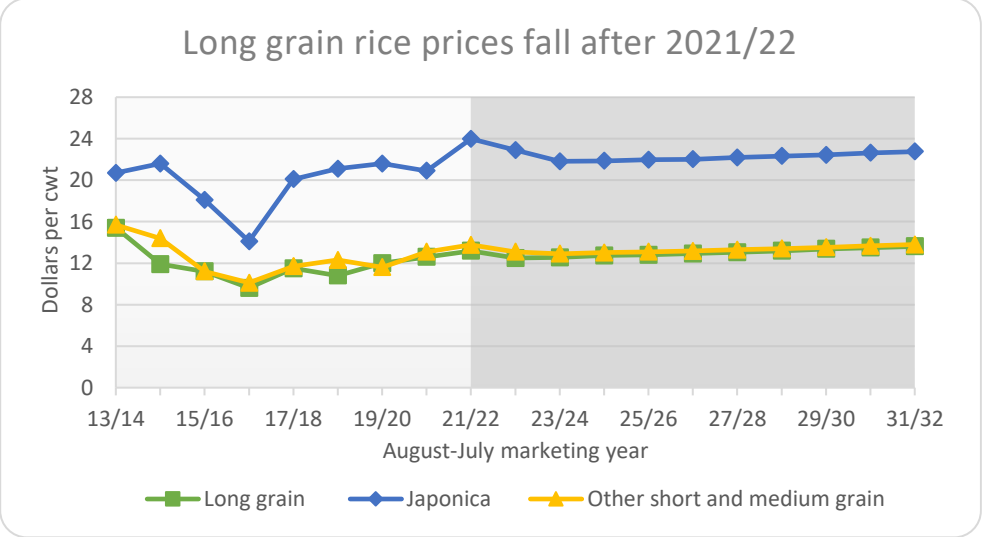
Oat prices have risen in 2021/22 along side other grains amid lower yields and production. Prices remain elevated into 2022/23 as oats compete for area but fall throughout the baseline as production recovers and stocks rebuild.



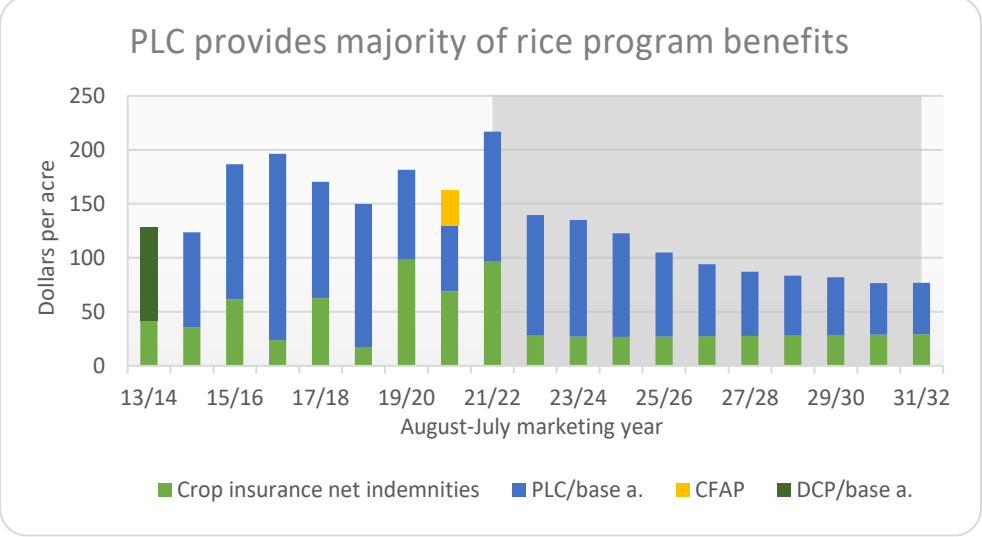


Rice

Rice production for the 2022/23 marketing year is expected to increase but to a smaller magnitude than its historical pattern, mostly due to higher input prices expected to add downward pressure to returns. Production, stocks and exports are all expected to continue increasing throughout the baseline. The actual supply and use in any given future year is almost sure to be more variable than the average shown here.



Lower production and lower stocks drove prices up in 2021/22, especially for Japonica rice, but also for both long grain and other medium and short grain rice as well. Production continues increasing in 2022/23 and beyond, easing prices and increasing stocks. Medium and short grain rice exports rebound as prices continue falling through 2023/24 from their recent highs.



Crop insurance net indemnities have made up a larger share than normal of the support to rice producers from 2019/20 - 2021/22, averaging $88/acre. That is expected to fall back in 2022/23 and later as crop insurance net indemnities returns to a more historical level of $28/acre. PLC payments are expected to make up the remainder of the support to rice producers and decline throughout the baseline as prices rise. Projected PLC payments are at least 3 times larger than ARC payments throughout the baseline period, leading to over 97% participation in PLC.

Corn supply and use

September-August year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	93.4	93.9	92.9	93.9	93.5	93.3	92.8	92.4	91.9	91.4	90.8
Harvested area	85.4	85.7	84.7	85.7	85.3	85.2	84.7	84.3	83.8	83.4	82.8
					(Bushels per harvested acre)						
Yield	177.0	179.8	181.4	183.6	185.8	188.0	190.2	192.3	194.4	196.5	198.3
					(Million bushels)						
Supply	16,375	16,981	17,370	17,829	18,110	18,340	18,497	18,655	18,811	18,984	19,134
Beginning stocks	1,235	1,544	1,968	2,066	2,226	2,301	2,362	2,417	2,488	2,574	2,679
Production	15,115	15,412	15,377	15,739	15,858	16,013	16,110	16,213	16,298	16,384	16,430
Imports	25	25	25	25	25	25	25	25	25	25	25
Domestic use	12,432	12,662	12,675	12,781	12,849	12,930	12,986	13,025	13,054	13,083	13,102
Feed and residual	5,672	5,748	5,717	5,797	5,829	5,874	5,920	5,971	6,020	6,074	6,123
Ethanol and coproducts	5,320	5,438	5,462	5,473	5,493	5,516	5,511	5,487	5,452	5,414	5,372
HFCS	423	430	435	434	435	434	434	433	432	430	427
Seed	31	31	32	32	32	32	32	33	33	33	33
Food and other	985	1,014	1,029	1,045	1,060	1,074	1,088	1,103	1,117	1,132	1,147
Exports	2,398	2,351	2,629	2,822	2,960	3,048	3,094	3,142	3,182	3,221	3,258
Total use	14,830	15,013	15,304	15,603	15,808	15,978	16,080	16,168	16,236	16,304	16,359
Ending stocks	1,544	1,968	2,066	2,226	2,301	2,362	2,417	2,488	2,574	2,679	2,775
CCC inventory	0	0	0	0	0	0	0	0	0	0	0
Under loan	49	78	81	89	92	94	97	100	105	110	114
Other stocks	1,495	1,890	1,984	2,137	2,209	2,268	2,320	2,387	2,469	2,569	2,660
Prices, program provisions					(Dollars per bushel)						
Farm price	5.44	4.74	4.67	4.51	4.47	4.41	4.37	4.30	4.23	4.12	4.02
Loan rate	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20	2.20
Effective reference price	3.70	3.70	3.75	3.92	4.03	4.02	3.90	3.87	3.84	3.82	3.80
					(Million acres)						
Base area	93.6	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3	93.3
					(Bushels per acre)						
PLC program yield	134.1	138.4	135.3	134.1	131.5	130.9	129.1	129.6	130.0	130.0	130.9
					(Percent of base acres)						
PLC participation rate	50.8	72.0	50.0	48.3	38.8	33.3	24.3	28.3	30.5	32.4	36.7
ARC participation rate	49.2	28.0	50.0	51.7	61.2	66.7	75.7	71.7	69.5	67.6	63.3
Returns and payments					(Dollars)						
Gross market revenue/acre	962.10	847.61	843.89	824.91	825.33	825.83	826.72	825.01	817.78	806.10	794.30
Variable expenses/acre	354.98	422.50	419.37	404.98	403.07	407.36	413.73	420.14	426.66	432.99	438.42
Market net return/acre	607.12	425.12	424.52	419.93	422.26	418.46	413.00	404.87	391.12	373.12	355.88
Marketing loan benefits/acre*	0.00	0.01	0.05	0.21	0.13	0.06	0.02	0.17	0.35	0.27	0.25
Payments to participants											
PLC/base acre*	0.00	4.53	8.54	17.95	22.60	24.59	20.29	22.54	24.71	28.20	31.12
ARC/base acre*	0.12	1.61	4.98	11.52	16.74	22.56	25.27	20.67	20.49	21.75	22.24
Insurance net indemnities/acre*	-0.87	31.06	28.46	28.61	28.66	28.64	28.99	28.58	28.72	28.47	28.32

* Marketing loan benefits, CFAP and insurance net indemnities are averaged across all acres. PLC and ARC payments are per participating acre.
All projections are averages across 500 stochastic outcomes.

Corn product supply and use

Marketing year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
High-fructose corn syrup				(Thousand tons, October-September year)							
Production	7,680	7,822	7,925	7,910	7,944	7,950	7,962	7,962	7,960	7,948	7,907
Domestic use	6,413	6,404	6,453	6,344	6,321	6,274	6,211	6,135	6,073	5,990	5,951
Net exports	1,266	1,418	1,472	1,566	1,623	1,676	1,750	1,827	1,887	1,959	1,956
				(Cents per pound, October-September year)							
Price, 42% Midwest	34.77	34.28	34.47	33.73	34.42	34.47	34.83	35.09	35.39	35.51	35.39
HFCS price/ref. sugar price	100%	101%	100%	104%	105%	108%	110%	112%	114%	117%	119%
Distillers, brewers grains				(Thousand tons, September-August year)							
Production (dry equivalent)	40,599	41,521	41,704	41,727	41,830	41,966	41,920	41,732	41,482	41,205	40,898
Domestic use	28,035	28,769	28,831	28,832	28,901	29,035	28,972	28,768	28,485	28,181	27,845
Net exports	12,563	12,752	12,873	12,894	12,929	12,931	12,948	12,965	12,997	13,025	13,052
				(Dollars per ton, September-August year)							
Price, IL points	218.56	194.48	185.80	182.41	180.50	180.66	179.89	178.35	175.14	171.65	168.26
DDGS price/corn price	113%	115%	111%	113%	113%	115%	115%	116%	116%	117%	117%
Corn gluten feed				(Thousand tons, September-August year)							
Production	8,436	8,607	8,719	8,796	8,885	8,962	9,024	9,063	9,089	9,110	9,124
Domestic use	7,546	7,651	7,758	7,835	7,930	8,018	8,090	8,141	8,176	8,207	8,232
Net exports	890	957	961	961	955	945	934	923	913	903	892
				(Dollars per ton, September-August year)							
Price, 21%, IL points	158.51	143.22	138.52	135.72	134.24	133.64	132.74	131.39	129.24	126.81	124.50
CGF price/corn price	82%	85%	83%	84%	84%	85%	85%	85%	86%	86%	87%
Corn gluten meal				(Thousand tons, September-August year)							
Production	2,220	2,265	2,294	2,315	2,338	2,359	2,375	2,385	2,392	2,397	2,401
Domestic use	1,392	1,414	1,421	1,432	1,443	1,456	1,462	1,462	1,457	1,452	1,444
Net exports	828	851	873	883	895	903	913	923	935	946	957
				(Dollars per ton, September-August year)							
Price, 60%, IL points	517.98	487.94	444.46	446.67	440.54	448.25	446.24	442.62	431.33	422.58	413.86
CGM price/soymeal price	139%	140%	143%	142%	143%	142%	142%	142%	143%	144%	144%
Corn oil				(Million pounds, October-September year)							
Production	6,908	7,453	7,715	7,888	8,027	8,116	8,147	8,148	8,135	8,116	8,093
Domestic use	6,584	7,153	7,498	7,688	7,835	7,949	7,996	7,999	7,988	7,976	7,963
Biodiesel	2,527	3,439	4,251	5,095	5,123	5,425	5,619	5,704	5,639	5,624	5,617
Feed	2,952	937	985	1,022	1,053	1,086	1,091	1,087	1,080	1,069	2,506
Food/other	4,057	3,713	3,247	2,593	2,712	2,524	2,377	2,295	2,349	2,352	2,346
Net exports	323	276	215	196	186	167	153	150	148	142	133
Ending stocks	76	101	103	106	113	113	112	111	110	108	105
				(Cents per pound, October-September year)							
Chicago price	61.77	64.45	69.39	72.18	73.24	75.86	78.08	79.37	80.38	81.87	83.76
Corn oil price/soyoil price	96%	109%	125%	130%	134%	140%	144%	144%	145%	147%	149%

All projections are averages across 500 stochastic outcomes.

Wheat supply and use

June-May year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	46.7	48.4	46.8	46.7	46.5	46.6	46.5	46.6	46.6	46.6	46.6
Harvested area	37.2	40.5	39.0	38.9	38.8	38.8	38.8	38.8	38.7	38.7	38.7
					(Bushels per harvested acre)						
Yield	44.3	50.2	50.3	50.7	51.2	51.6	52.0	52.5	52.9	53.4	53.8
					(Million bushels)						
Supply	2,592	2,778	2,872	2,914	2,960	2,990	3,022	3,049	3,076	3,105	3,139
Beginning stocks	845	629	792	827	861	873	890	899	911	922	940
Production	1,646	2,035	1,966	1,976	1,986	2,005	2,020	2,038	2,052	2,070	2,086
Imports	101	114	114	112	112	112	112	112	113	113	113
Domestic use	1,137	1,171	1,158	1,166	1,157	1,160	1,157	1,159	1,158	1,158	1,160
Feed and residual	109	143	128	132	121	121	117	116	113	110	109
Seed	66	64	64	63	63	63	63	63	63	63	63
Food and other	962	965	967	970	972	975	977	979	982	985	988
Exports	826	814	887	887	930	940	966	979	996	1,006	1,020
Total use	1,963	1,986	2,045	2,052	2,087	2,100	2,123	2,138	2,154	2,165	2,180
Ending stocks	629	792	827	861	873	890	899	911	922	940	959
CCC inventory	0	0	0	0	0	0	0	0	0	0	0
Under loan	5	13	14	16	15	16	16	17	17	18	18
Other stocks	624	779	813	846	858	874	883	895	905	922	941
Prices, program provisions					(Dollars per bushel)						
Farm price	7.18	6.16	6.07	5.76	5.82	5.71	5.72	5.67	5.64	5.55	5.48
Loan rate	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38	3.38
Effective reference price	5.50	5.50	5.50	5.51	5.58	5.63	5.57	5.56	5.55	5.55	5.55
					(Million acres)						
Base area	62.3	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7	61.7
					(Bushels per acre)						
PLC program yield	40.7	40.9	40.8	40.8	40.6	40.5	40.4	40.6	40.6	40.7	40.7
					(Percent of base acres)						
PLC participation rate	82.7	82.5	87.6	84.6	82.1	82.9	81.4	84.0	85.7	86.3	86.8
ARC participation rate	17.3	17.5	12.4	15.4	17.9	17.1	18.6	16.0	14.3	13.7	13.2
Returns and payments					(Dollars)						
Gross market revenue/acre	318.00	308.91	305.32	292.00	297.14	294.38	297.43	297.59	298.30	296.13	294.81
Variable expenses/acre	133.20	155.17	159.48	155.18	154.56	156.78	159.13	161.86	164.55	167.32	169.82
Market net return/acre	184.80	153.75	145.84	136.82	142.58	137.60	138.31	135.72	133.75	128.81	124.99
Marketing loan benefits/acre*	0.00	0.05	0.16	0.55	0.61	0.86	0.63	0.47	0.56	0.51	1.17
Payments to participants											
PLC/base acre*	0.00	4.36	7.24	11.02	11.34	12.81	12.04	12.40	11.79	13.90	14.71
ARC/base acre*	2.65	3.68	3.78	5.70	7.24	8.02	8.72	8.13	7.61	8.11	8.30
Insurance net indemnities/acre*	27.59	16.20	15.00	15.07	14.44	14.68	14.75	15.06	15.01	15.19	14.99

* Marketing loan benefits, CFAP and insurance net indemnities are averaged across all acres. PLC and ARC payments are per participating acre.
All projections are averages across 500 stochastic outcomes.

Sorghum supply and use

September-August year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	7.31	6.81	6.67	6.69	6.69	6.69	6.70	6.71	6.72	6.73	6.73
Harvested area	6.49	6.05	5.92	5.94	5.94	5.94	5.94	5.95	5.96	5.97	5.96
					(Bushels per harvested acre)						
Yield	69.0	75.9	75.9	76.4	76.7	77.1	77.4	77.8	78.1	78.4	78.5
Supply and use					(Million bushels)						
Production	448	460	451	455	456	459	461	464	467	469	470
Imports	0	0	0	0	0	0	0	0	0	0	0
Domestic use	127	113	110	108	109	108	107	105	102	100	95
Exports	310	343	340	346	347	350	353	358	363	369	373
Ending stocks	31	36	36	38	39	39	40	41	42	43	45
Prices, returns and payments					(Dollars)						
Farm price/bushel	5.50	4.88	4.82	4.70	4.66	4.63	4.62	4.59	4.54	4.46	4.40
Effective reference price/bushel	3.95	3.95	3.95	4.15	4.27	4.21	4.11	4.10	4.08	4.06	4.05
Market net return/acre	234.21	199.13	195.62	192.89	191.17	189.33	186.74	184.02	177.85	170.61	163.54
Marketing loan benefits/acre*	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.00	3.91
Payments to participants											
PLC/base acre*	0.00	2.78	4.70	9.36	12.30	10.74	9.86	9.84	10.51	10.78	11.36
ARC/base acre*	1.53	0.40	1.71	4.27	6.76	8.13	8.11	7.71	7.36	7.75	7.81
Insurance net indemnities/acre*	5.85	22.50	20.64	20.71	20.26	20.40	20.80	20.39	21.06	21.01	20.45

* Marketing loan benefits, CFAP and insurance net indemnities are averaged across all acres. PLC and ARC payments are per participating acre.
All projections are averages across 500 stochastic outcomes.

Barley supply and use

June-May year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	2.66	2.57	2.60	2.64	2.56	2.50	2.46	2.44	2.41	2.38	2.34
Harvested area	1.95	2.07	2.09	2.12	2.05	2.01	1.98	1.95	1.93	1.91	1.88
					(Bushels per harvested acre)						
Yield	60.4	76.0	77.1	77.7	78.6	79.5	80.3	81.2	82.2	83.0	84.0
Supply and use					(Million bushels)						
Production	118	157	161	165	161	160	159	159	159	158	158
Imports	9	10	13	13	11	12	12	12	12	13	13
Domestic use	130	148	161	164	163	163	162	162	162	162	162
Exports	11	8	7	7	7	7	7	7	7	7	7
Ending stocks	57	68	74	81	83	84	86	87	89	92	94
Prices, returns and payments					(Dollars)						
All barley farm price/bushel	5.15	4.93	5.02	4.81	4.72	4.67	4.64	4.62	4.57	4.51	4.44
Feed barley price/bushel	4.67	3.91	3.92	3.76	3.70	3.65	3.62	3.58	3.52	3.45	3.38
Effective reference price/bushel	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95
Market net return/acre	133.00	169.27	180.33	169.86	165.96	163.05	161.17	160.11	155.91	150.73	145.54
Marketing loan benefits/acre*	0.00	0.28	0.77	1.37	1.26	1.46	1.79	2.49	2.78	3.31	0.74
Payments to participants											
PLC/base acre*	0.00	14.12	15.01	20.41	22.39	23.03	23.44	25.08	25.62	28.20	29.07
ARC/base acre*	15.58	5.79	4.74	5.59	6.18	6.99	7.13	8.83	8.67	9.19	9.08
Insurance net indemnities/acre*	24.86	8.62	8.73	8.87	8.45	8.55	8.73	8.76	8.90	8.78	8.95

* Marketing loan benefits, CFAP and insurance net indemnities are averaged across all acres. PLC and ARC payments are per participating acre.
All projections are averages across 500 stochastic outcomes.

Oats supply and use

June-May year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	2.55	2.44	2.55	2.59	2.62	2.64	2.66	2.68	2.70	2.73	2.77
Harvested area	0.65	0.76	0.80	0.81	0.81	0.82	0.83	0.84	0.85	0.86	0.87
					(Bushels per harvested acre)						
Yield	61.3	66.2	66.5	66.8	67.2	67.7	68.3	68.8	69.3	69.7	70.2
Supply and use					(Million bushels)						
Production	40	51	53	55	55	56	57	58	59	60	61
Imports	79	88	86	84	83	82	81	80	79	78	77
Domestic use	125	134	135	135	135	135	135	135	135	135	135
Exports	2	2	2	2	2	2	2	2	2	2	2
Ending stocks	30	32	34	36	36	37	37	38	39	40	41
Prices, returns and payments					(Dollars)						
Farm price/bushel	3.89	3.43	3.37	3.30	3.28	3.27	3.27	3.28	3.26	3.25	3.24
Effective reference price/bushel	2.40	2.40	2.54	2.65	2.71	2.73	2.68	2.67	2.66	2.66	2.66
Market net return/acre	109.51	72.15	69.66	70.10	69.92	69.61	68.39	67.96	65.50	63.00	61.34
Marketing loan benefits/acre*	0.00	0.07	0.50	0.53	0.52	0.35	0.34	0.54	0.39	0.57	0.00
Payments to participants											
PLC/base acre*	0.00	0.20	1.34	2.46	2.88	2.59	1.95	2.35	2.10	2.40	2.69
ARC/base acre*	1.52	0.59	0.64	1.21	1.38	1.80	1.73	1.72	1.76	1.70	1.74
Insurance net indemnities/acre*	7.27	2.26	2.32	2.32	2.33	2.33	2.28	2.25	2.24	2.30	2.28

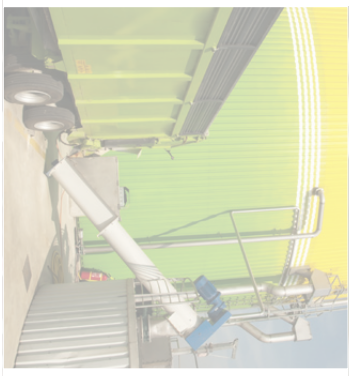
* Marketing loan benefits, CFAP and insurance net indemnities are averaged across all acres. PLC and ARC payments are per participating acre.
All projections are averages across 500 stochastic outcomes.

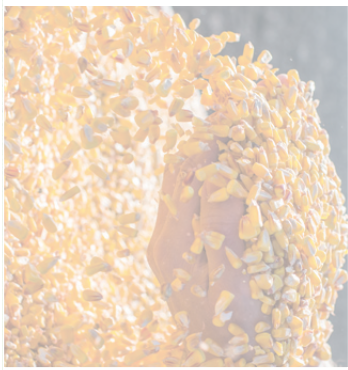
Rice supply and use

August-July year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	2.53	2.66	2.70	2.74	2.75	2.76	2.77	2.78	2.79	2.81	2.83
Harvested area	2.49	2.60	2.65	2.68	2.70	2.71	2.71	2.72	2.73	2.76	2.77
					(Pounds per harvested acre)						
Yield	7,709	7,711	7,761	7,808	7,865	7,922	7,984	8,036	8,088	8,142	8,193
Supply and use					(Million hundredweight)						
Production	191.8	200.7	205.3	209.5	212.2	214.3	216.6	218.7	221.2	224.4	227.3
Imports	31.0	33.0	33.6	34.2	34.8	35.3	35.6	35.9	36.3	36.7	37.1
Domestic use	145.4	146.0	147.4	150.6	153.1	154.9	156.9	158.1	159.2	161.0	162.6
Exports	87.9	89.7	91.6	92.1	92.8	93.6	94.7	95.9	97.4	99.4	101.0
Ending stocks	33.0	31.0	30.8	31.8	32.8	33.9	34.5	35.0	35.8	36.5	37.4
Program provisions					(Dollars per hundredweight)						
Loan rate	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Reference price											
Long grain	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
Japonica	17.30	17.30	17.30	17.30	17.30	17.30	17.30	17.30	17.30	17.30	17.30
Other medium/short	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
Base area					(Million acres)						
Long grain	3.79	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76	3.76
Medium/short	0.52	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Countercyclical/PLC yield					(Pounds per acre)						
Long grain	5,988	5,891	5,893	5,909	5,942	5,975	5,979	5,973	5,966	5,964	5,964
Medium/short	6,920	6,909	6,948	6,954	6,953	6,951	6,941	6,939	6,940	6,939	6,937
PLC participation rate					(Percent of base acres)						
Long grain	99.8	99.9	99.8	99.7	99.8	99.8	99.8	99.8	99.8	99.8	99.8
Medium/short	77.5	76.3	81.6	82.4	82.3	81.9	80.5	80.3	80.3	80.1	79.8
ARC participation rate											
Long grain	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Medium/short	22.5	23.7	18.4	17.6	17.7	18.1	19.5	19.7	19.7	19.9	20.2
Prices, returns and payments					(Dollars)						
Farm price/cwt	15.03	14.45	14.29	14.38	14.44	14.54	14.67	14.78	14.93	15.06	15.19
Long grain	13.19	12.48	12.55	12.73	12.80	12.93	13.05	13.18	13.37	13.49	13.62
Japonica	23.99	22.90	21.82	21.86	21.97	22.02	22.20	22.32	22.44	22.64	22.77
Other medium/short	13.77	13.09	12.91	13.01	13.09	13.17	13.29	13.40	13.53	13.67	13.79
Gross market revenue/acre	1158.90	1113.97	1108.81	1122.91	1135.66	1152.08	1170.93	1187.72	1207.91	1226.56	1244.79
Variable expenses/acre	540.24	612.89	616.46	612.26	617.95	627.80	639.62	651.77	664.30	676.80	688.91
Market net return/acre	618.66	501.08	492.35	510.65	517.71	524.28	531.30	535.94	543.61	549.76	555.88
Marketing loan benefits/acre*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Payments to participants											
PLC/base acre*	120.61	111.57	108.01	95.85	77.76	66.54	59.40	55.38	53.57	47.55	47.56
ARC/base acre*	0.22	2.81	7.97	10.06	11.83	17.28	20.10	15.95	13.64	14.85	13.92
Insurance net indemnities/acre*	96.33	27.96	27.07	26.82	27.15	27.37	27.68	28.05	28.41	28.82	29.22

* Marketing loan benefits, CFAP and insurance net indemnities are averaged across all acres. PLC and ARC payments are per participating acre.
All projections are averages across 500 stochastic outcomes.



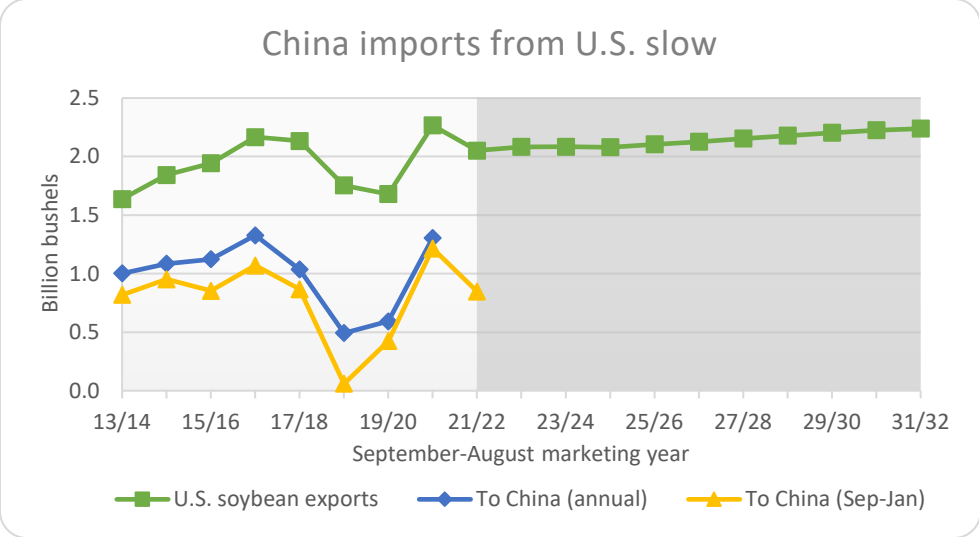


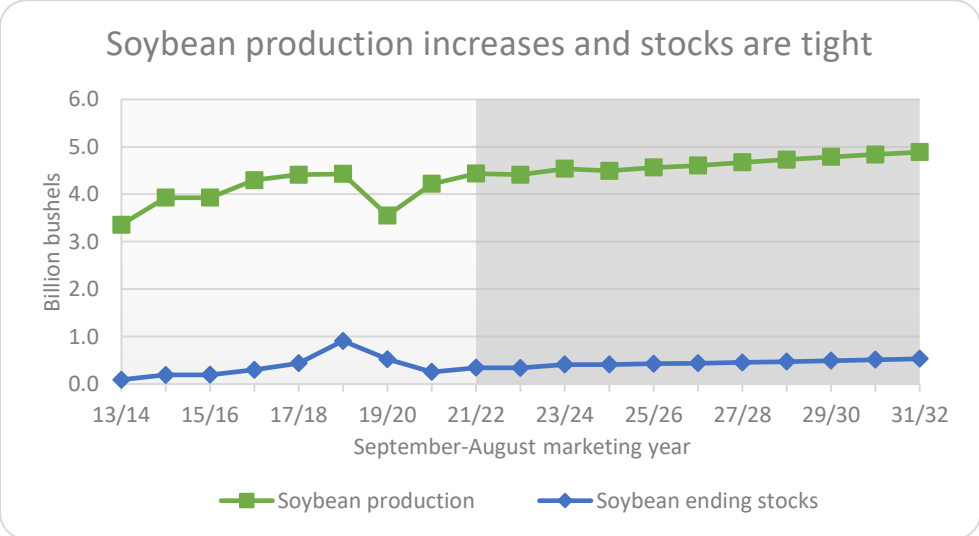
Oilseeds

Soybeans and products

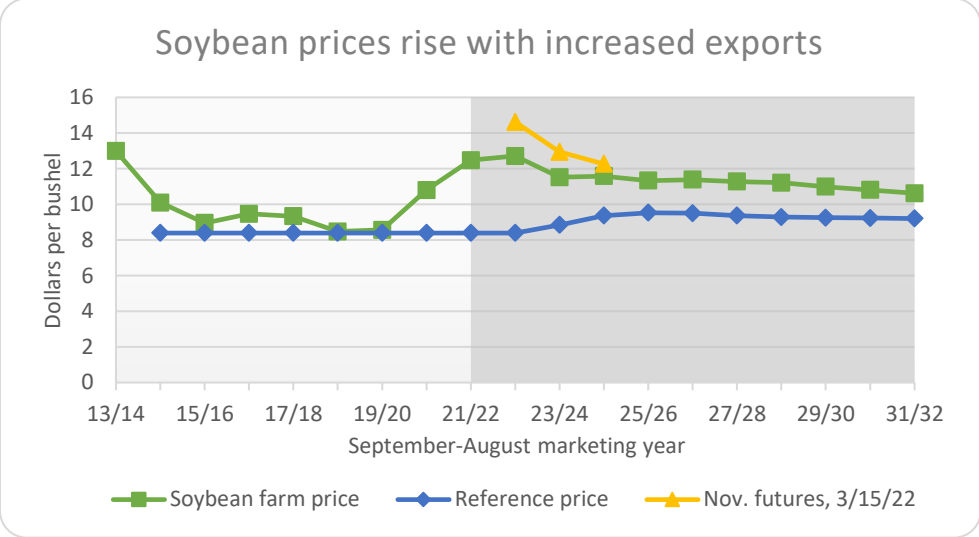
China's imports of U.S. soybeans rebounded to record levels in 2020/21. A recovery to China's pork industry from ASF and the U.S.-China Phase 1 deal both played a role in the increase. The outlook for U.S. soybean exports decline in 2021/22 in part as profitability of China's pork production hit a temporary snag and softened its soybean crush demand for meal and slowed import demand for U.S. soybeans in the first half of the marketing year.

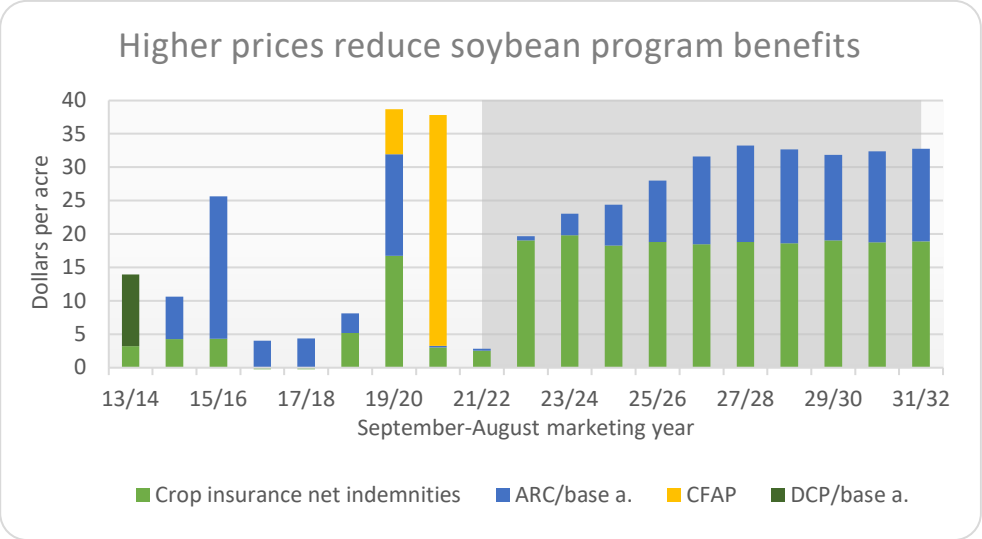


U.S. soybean production increased in 2021 to reach a new record high. Production exceeded the prior record set in 2018/19 by 7 million bushels. At the same time, the large increase in soybean exports in 2020/21 resulted in the second straight year of sharply-reduced ending stocks hitting a 5-year low. Projected ending stocks improve modestly for 2021/22 as exports decline more than the increase in domestic consumption.

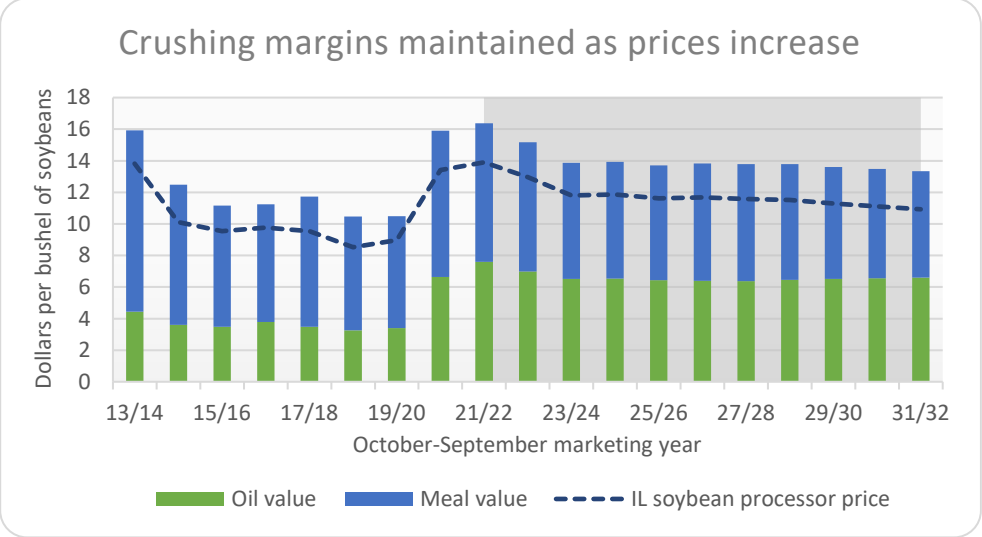


After seven years with soybean farm prices averaging less than $11 per bushel, the 2021/22 price exceeds $12, and the increase in futures prices has been even more dramatic. Nearby futures were more than $16 per bushel in mid-March. Projected price increases in 2022/23 partly can be attributed to increasing domestic demand for soybean oil heading to biofuels. Recent events mentioned in the earlier summary help explain why futures prices are above projected prices. In some stochastic outcomes, higher prices cause increases in soybean reference prices.

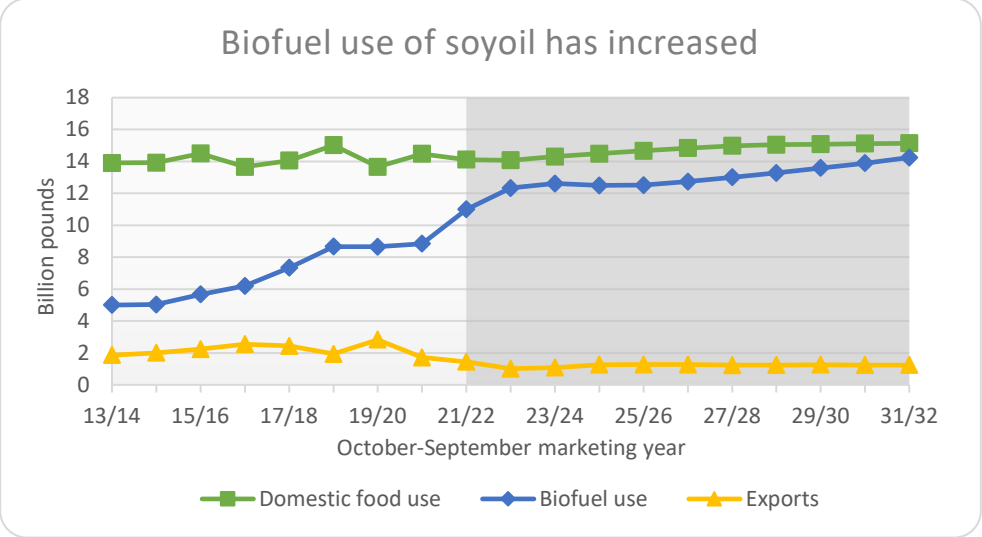




Soybean producers received smaller direct benefits from traditional farm programs in recent years than did producers of many other crops. In 2018/19 and 2019/20, however, they received large MFP payments (not shown in the chart), and CFAP payments exceeded $34 per soybean acre in 2020/21. In the projection period, both ARC and PLC payments are relatively modest. The projected crop insurance net indemnities assume a loss ratio of around 0.9, which is greater than it has been in most years.



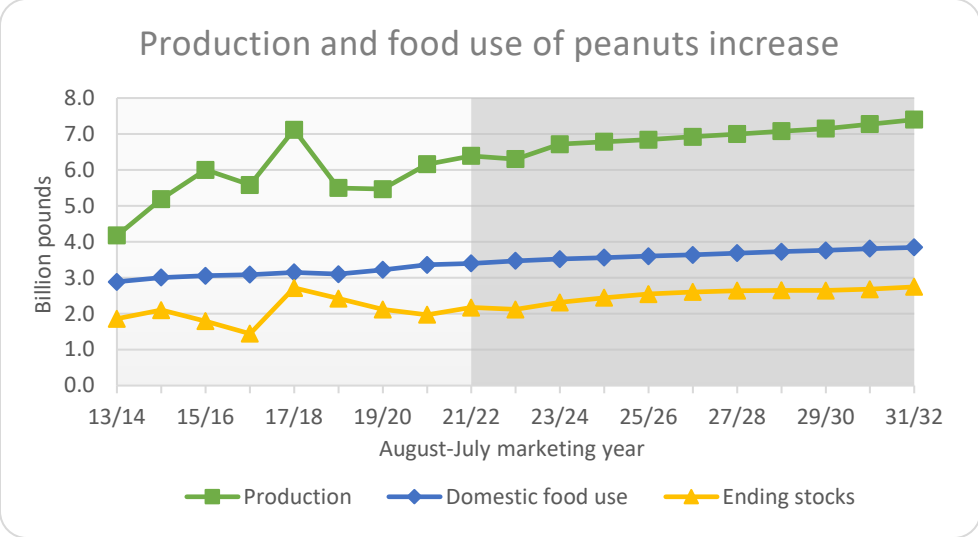
Prices for soybeans and soybean oil increase in 2021/22, with the value of soybean oil increasing 12% above the recent 5-year average and maintaining crushing margins. In this period, soybean meal accounted for approximately two-thirds of the value of crushed soybeans, but this declines to average 52% during the projection period as increasing demand for soybean oil heading to biofuel production increases.



Between 2012/13 and 2020/21, biodiesel accounted for about 90% of the increase in U.S. soybean oil consumption. Further growth is projected, in large part due to increased renewable diesel production, whereas only modest expansion from food and other domestic uses contribute to soybean oil consumption growth. U.S. soybean oil exports remain modest, as Argentina exports of soybean oil and Asian palm oil exports continue to dominate global vegetable oil trade.

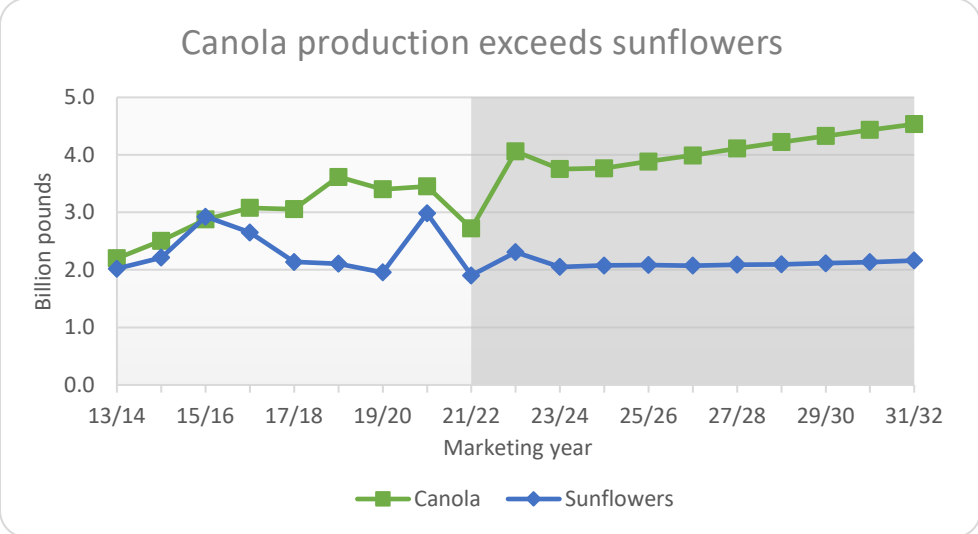
Peanuts

Per-capita food uses of peanuts have increased in recent years and the trend is projected to continue, but at a slower pace. Yield growth accounts for most of the projected increase in production, as area planted is stable near 1.6 million acres. Stocks increase, and prices average about $450 per ton (22 cents per pound).

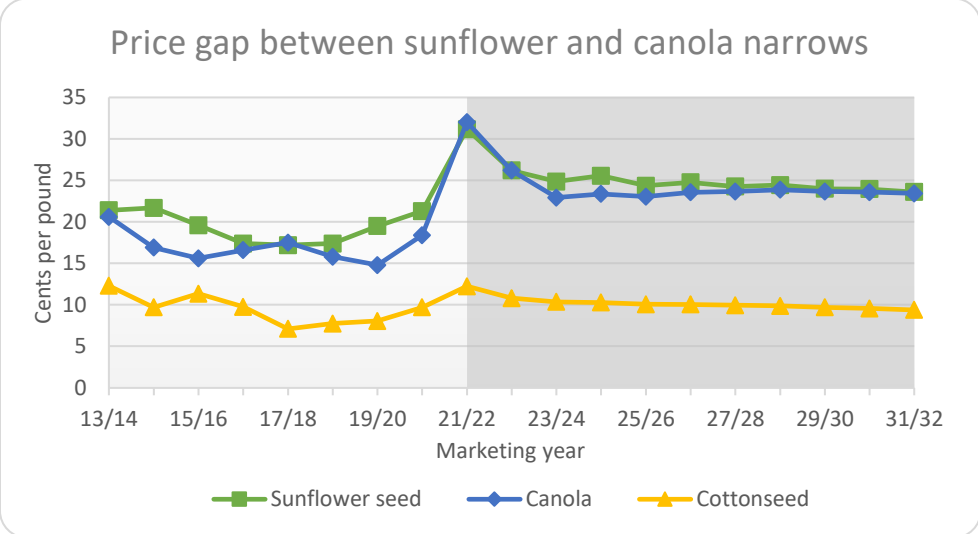


Other oilseeds

U.S. production of canola increased from 2013-18 and now consistently exceeds production of sunflowers. Overly dry-to-drought conditions in the Northern Plains and across the Canada Prairies led to weaker yields despite larger harvested area in both countries reducing production for canola in 2021/22. Strong price appreciation makes canola competitive and brings more area to U.S. canola in 2022. When combined with trend yields, increased area drives a strong year-on-year recovery in production.



Sunflower seed prices were at a strong premium to canola in 2019/20 and the beginning of the 2020/21 marketing year. The gap narrowed, and is projected to stay fairly narrow in the projection period. U.S. prices for both oilseeds are affected by global markets for oilseed and oilseed products. Reduced supplies also supported cottonseed prices in 2020/21, but despite better U.S. and global cottonseed production in 2021/22, cottonseed price rose as tighter global soybean and canola supplies supported the oilseed complex.



Soybean supply and use

September-August year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	87.2	87.7	89.3	87.7	88.0	87.8	88.2	88.3	88.4	88.4	88.5
Harvested area	86.3	86.5	88.1	86.4	86.7	86.6	86.9	87.1	87.2	87.1	87.2
					(Bushels per harvested acre)						
Yield	51.4	51.0	51.5	52.0	52.6	53.2	53.7	54.3	54.9	55.5	56.0
					(Million bushels)						
Supply	4,707	4,773	4,892	4,922	4,992	5,052	5,126	5,200	5,274	5,346	5,417
Beginning stocks	257	346	340	411	413	430	439	455	472	492	512
Production	4,435	4,410	4,534	4,493	4,562	4,605	4,670	4,728	4,785	4,837	4,888
Imports	15	17	17	17	17	17	17	17	17	17	17
Domestic use	2,310	2,350	2,397	2,429	2,458	2,487	2,517	2,549	2,580	2,609	2,644
Crush	2,192	2,230	2,271	2,304	2,329	2,356	2,384	2,414	2,442	2,469	2,501
Seed and residual	118	120	125	126	129	130	133	135	138	140	142
Exports	2,051	2,083	2,084	2,080	2,105	2,127	2,154	2,179	2,203	2,225	2,238
Total use	4,361	4,433	4,480	4,509	4,562	4,613	4,671	4,728	4,783	4,834	4,882
Ending stocks	346	340	411	413	430	439	455	472	492	512	535
CCC inventory	0	0	0	0	0	0	0	0	0	0	0
Under loan	7	9	14	14	16	16	17	18	20	21	23
Other stocks	339	331	397	398	414	423	438	454	472	491	513
Prices, program provisions					(Dollars per bushel)						
Farm price	12.48	12.72	11.52	11.59	11.34	11.39	11.28	11.22	10.99	10.81	10.62
Illinois processor price	13.91	12.97	11.81	11.87	11.63	11.68	11.58	11.51	11.29	11.12	10.93
Loan rate	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20
Effective reference price	8.40	8.40	8.85	9.37	9.53	9.51	9.37	9.28	9.26	9.23	9.20
					(Million acres)						
Base area	52.9	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8	52.8
					(Bushels per acre)						
PLC program yield	39.2	38.6	38.7	38.5	38.3	38.2	38.2	38.4	38.4	38.4	38.4
					(Percent of base acres)						
PLC participation rate	12.7	6.1	11.6	14.4	13.0	10.6	9.8	11.5	12.5	12.8	13.5
ARC participation rate	87.3	93.9	88.4	85.6	87.0	89.4	90.2	88.5	87.5	87.2	86.5
Returns and payments					(Dollars)						
Gross market revenue/acre	641.31	646.52	591.40	600.38	594.43	603.70	603.87	607.39	601.42	598.48	593.33
Variable expenses/acre	195.53	218.76	222.02	221.28	223.40	226.17	229.60	232.97	236.37	239.47	242.38
Market net return/acre	445.78	427.76	369.38	379.10	371.03	377.53	374.27	374.43	365.04	359.01	350.95
Marketing loan benefits/acre*	0.00	0.04	0.42	0.25	0.20	0.30	0.30	0.73	0.30	0.33	0.56
Payments to participants											
PLC/base acre*	0.00	0.36	4.02	6.58	8.60	7.05	8.84	7.11	8.77	10.70	11.47
ARC/base acre*	0.28	0.66	3.23	6.13	9.23	13.14	14.45	14.04	12.79	13.60	13.85
Insurance net indemnities/acre*	2.54	19.02	19.82	18.25	18.78	18.46	18.80	18.63	19.05	18.77	18.91
					(Dollars per bushel)						
Crush margin	2.46	2.21	2.06	2.07	2.08	2.15	2.20	2.28	2.32	2.37	2.41

* Marketing loan benefits, CFAP and insurance net indemnities are averaged across all acres. PLC and ARC payments are per participating acre.
All projections are averages across 500 stochastic outcomes.

Soybean oil supply and use

October-September year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
					(Million pounds)						
Supply	28,473	29,611	30,318	30,577	30,858	31,299	31,714	32,095	32,473	32,797	33,208
Beginning stocks	2,131	1,913	2,178	2,317	2,334	2,406	2,461	2,499	2,519	2,542	2,553
Production	25,936	26,230	26,711	27,090	27,390	27,709	28,041	28,389	28,719	29,036	29,418
Imports	407	1,468	1,428	1,169	1,134	1,184	1,212	1,208	1,236	1,219	1,236
Domestic use	25,106	26,409	26,913	26,973	27,168	27,562	27,970	28,322	28,661	28,996	29,375
Biofuel	10,996	12,335	12,610	12,488	12,509	12,728	13,002	13,279	13,585	13,885	14,243
Food and other	14,110	14,074	14,303	14,484	14,660	14,834	14,968	15,042	15,076	15,110	15,132
Exports	1,454	1,024	1,087	1,270	1,284	1,276	1,245	1,255	1,270	1,248	1,247
Total use	26,561	27,433	28,000	28,243	28,452	28,838	29,215	29,577	29,931	30,244	30,622
Ending stocks	1,913	2,178	2,317	2,334	2,406	2,461	2,499	2,519	2,542	2,553	2,585
Price					(Cents per pound)						
Decatur	64.26	59.33	55.45	55.63	54.68	54.37	54.28	54.94	55.36	55.78	56.04

All projections are averages across 500 stochastic outcomes.

Soybean meal supply and use

October-September year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
					(Thousand tons)						
Supply	52,351	53,415	54,396	55,173	55,773	56,418	57,083	57,782	58,448	59,090	59,860
Beginning stocks	341	392	409	426	427	431	431	434	437	444	449
Production	51,560	52,573	53,537	54,296	54,896	55,537	56,202	56,898	57,561	58,196	58,962
Imports	450	450	450	450	450	450	450	450	450	450	450
Domestic use	37,991	38,082	39,221	39,198	39,541	39,684	40,198	40,771	41,459	42,059	42,638
Exports	13,968	14,923	14,750	15,548	15,801	16,303	16,451	16,573	16,546	16,583	16,769
Total use	51,959	53,005	53,970	54,746	55,342	55,987	56,650	57,345	58,005	58,641	59,407
Ending stocks	392	409	426	427	431	431	434	437	444	449	453
Price					(Dollars per ton)						
Decatur, 48% protein	372.77	348.00	311.85	313.82	308.84	315.41	313.81	310.79	301.32	293.97	286.62

All projections are averages across 500 stochastic outcomes.

Peanut supply and use

August-July year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	1.59	1.54	1.62	1.62	1.61	1.61	1.61	1.60	1.60	1.61	1.62
Harvested area	1.55	1.49	1.57	1.57	1.56	1.56	1.55	1.55	1.55	1.56	1.57
					(Pounds per harvested acre)						
Yield	4,135	4,231	4,281	4,333	4,393	4,447	4,503	4,560	4,613	4,672	4,726
Supply and use					(Million pounds)						
Production	6,389	6,301	6,716	6,781	6,838	6,919	6,997	7,075	7,151	7,276	7,399
Imports	115	115	115	115	115	115	115	115	115	115	115
Domestic use	4,969	5,060	5,169	5,228	5,285	5,340	5,410	5,475	5,530	5,597	5,654
Exports	1,335	1,407	1,465	1,538	1,569	1,634	1,666	1,706	1,740	1,759	1,793
Ending stocks	2,169	2,117	2,314	2,444	2,544	2,604	2,640	2,650	2,645	2,679	2,745
Prices, returns and payments					(Dollars)						
Farm price/ton	467.49	472.65	454.50	447.21	445.63	442.69	441.67	442.10	445.92	446.09	444.64
Reference price/ton	535.00	535.00	535.00	535.00	535.00	535.00	535.00	535.00	535.00	535.00	535.00
Market net return/a.	450.37	412.26	383.29	384.04	390.02	387.04	388.67	391.46	401.59	405.80	404.54
Marketing loan benefits/acre*	0.00	10.03	12.93	15.27	18.52	18.58	18.08	16.68	16.09	17.04	18.43
Payments to participants											
PLC/base acre*	92.25	102.23	126.56	137.30	139.42	142.25	143.60	144.97	139.85	142.66	145.45
ARC/base acre*	20.16	29.14	42.40	41.95	45.79	38.75	46.88	48.98	43.28	53.14	54.26

* Marketing loan benefits, CFAP and insurance net indemnities are averaged across all acres. PLC and ARC payments are per participating acre.
All projections are averages across 500 stochastic outcomes.

Sunflower seed supply and use

September-August year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	1.29	1.45	1.28	1.29	1.29	1.27	1.27	1.26	1.27	1.27	1.28
Harvested area	1.24	1.37	1.21	1.22	1.21	1.20	1.20	1.19	1.20	1.20	1.21
					(Pounds per harvested acre)						
Yield	1,530	1,681	1,688	1,703	1,716	1,730	1,741	1,754	1,769	1,782	1,792
Supply and use					(Million pounds)						
Production	1,903	2,307	2,051	2,075	2,086	2,073	2,089	2,095	2,117	2,136	2,164
Imports	433	451	443	398	397	383	385	378	378	370	366
Domestic use	2,433	2,599	2,421	2,371	2,368	2,348	2,357	2,358	2,373	2,384	2,405
Exports	93	88	90	103	103	109	109	111	112	114	116
Ending stocks	204	276	259	258	270	270	278	282	291	298	308
Prices, returns and payments					(Dollars)						
Farm price/lb	0.312	0.262	0.249	0.256	0.244	0.248	0.243	0.244	0.240	0.240	0.101
Market net return/acre	313.74	256.52	233.46	249.96	231.15	238.86	230.02	233.42	226.24	226.39	219.78
Marketing loan benefits/acre*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00
Payments to participants											
PLC/base acre*	0.00	1.31	2.25	2.46	6.55	7.19	6.22	5.32	5.47	5.71	6.07
ARC/base acre*	0.03	0.69	1.01	2.28	5.15	8.36	9.58	7.35	7.32	7.29	8.00

Cottonseed and canola production and prices

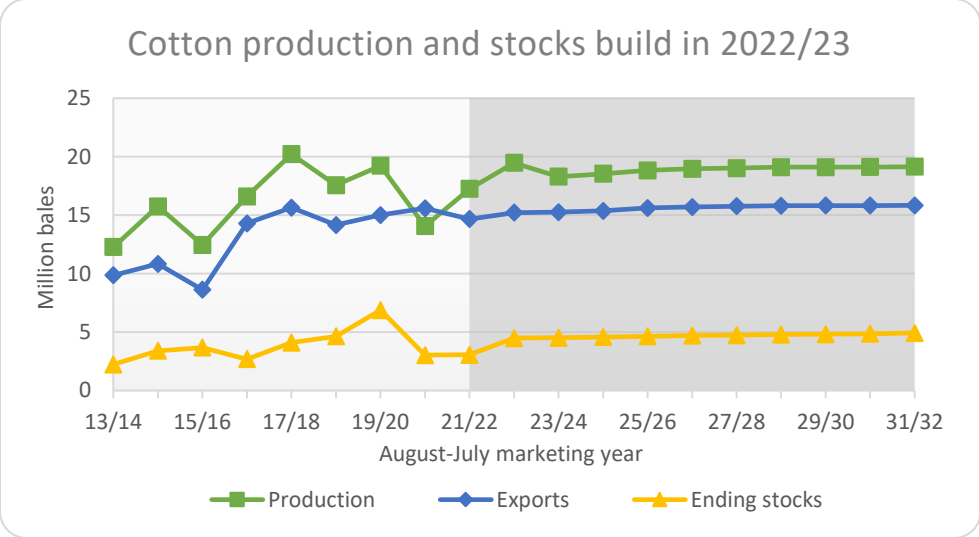
Marketing year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Production					(Thousand tons, August-July year)						
Cottonseed	5,377	6,183	5,795	5,869	5,943	5,979	5,986	6,003	5,993	5,985	5,978
					(Million pounds, July-June year)						
Canola	2,721	4,060	3,753	3,767	3,884	3,992	4,109	4,222	4,329	4,433	4,536
Prices					(Dollars per ton, August-July year)						
Cottonseed	245	216	207	206	201	201	199	197	194	191	188
Canola					(Cents per pound, July-June year)						
Farm price	32.0	26.2	22.9	23.4	23.1	23.6	23.7	23.9	23.7	23.6	23.4
Effective reference price	20.2	20.2	20.2	20.9	21.8	22.2	21.5	21.3	21.2	21.1	21.1

Cottonseed production, cottonseed prices and canola farm price projections are averages across 500 stochastic outcomes.

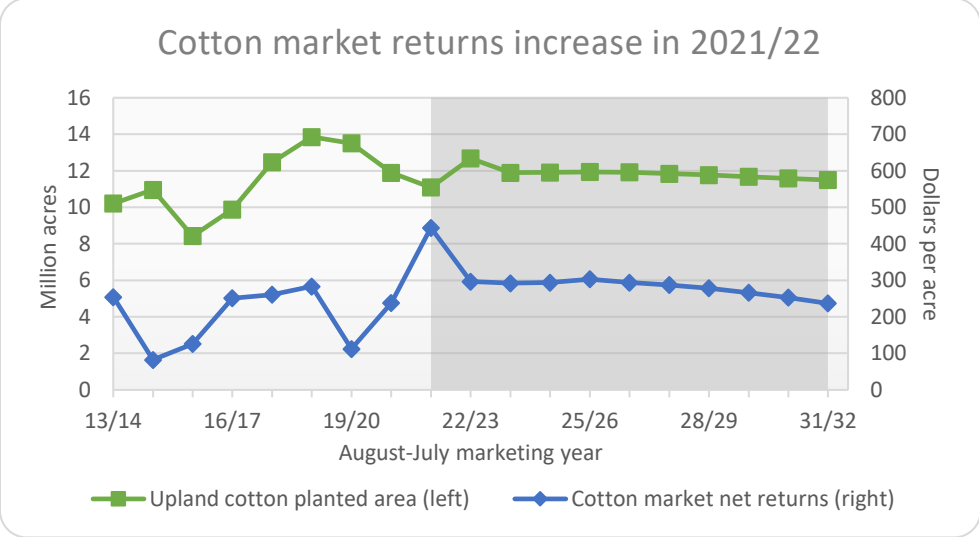
Other crops

Upland cotton and seed cotton

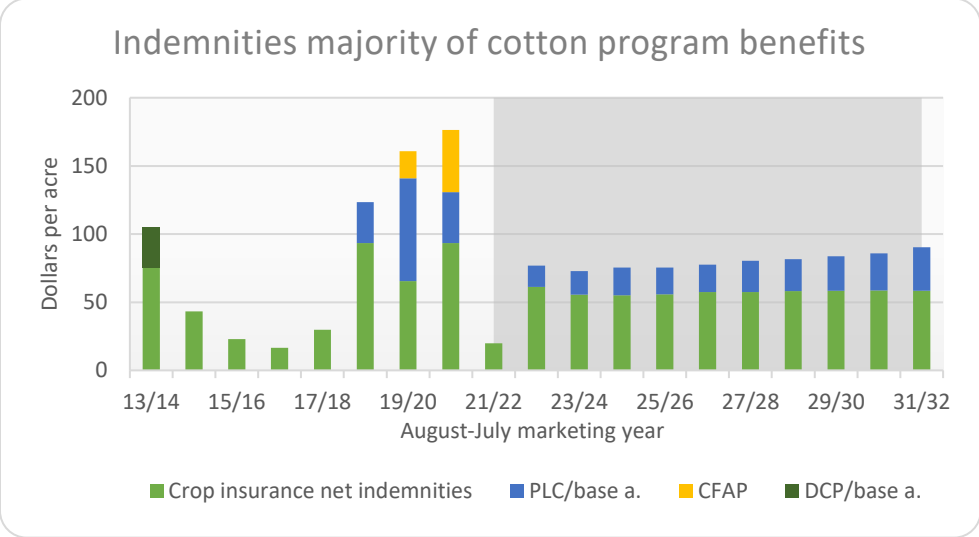
The projected increase in acreage and production in 2022 outpaces use, allowing stocks to increase. Throughout the baseline period, yield increases drive production growth, stocks build, prices decline, and exports continue to increase.

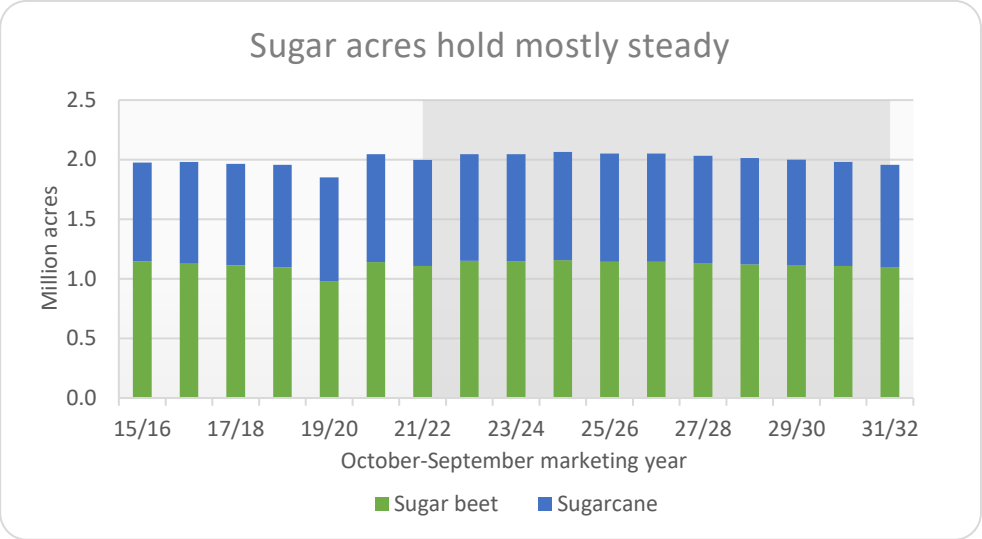


Higher cotton prices combined with average yields have led to higher market net returns for the 2021/22 marketing year which are expected to be higher than even 2011/12. Upland cotton area in 2022 could increase alongside higher expected cotton prices. The higher production could weigh on cotton prices which, combined with higher costs, bring down 2022/23 market net returns. Throughout the rest of the baseline, upland cotton planted area is projected to average 11.8 million acres.



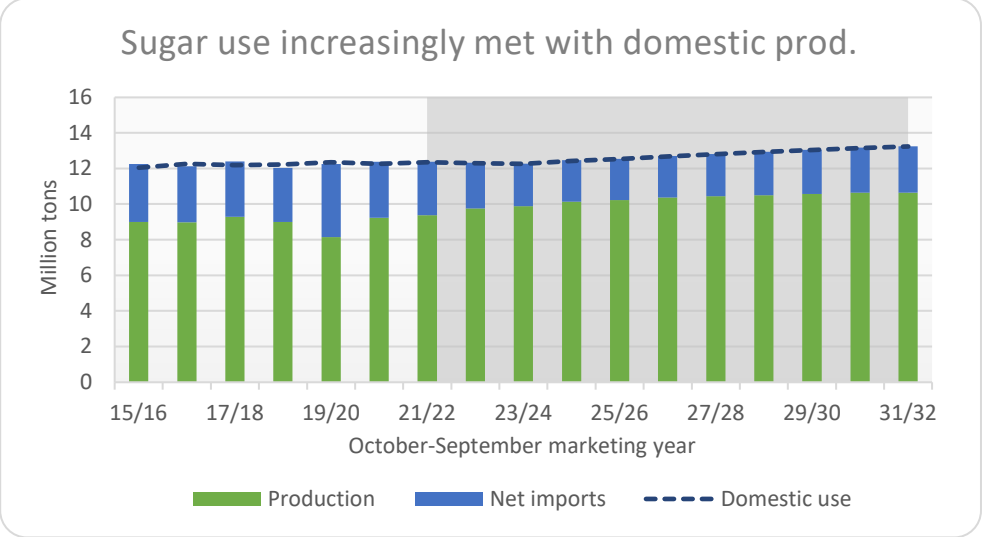
Program benefits to cotton are expected to be low in 2021/22 as ad-hoc assistance disappears and PLC payments go to zero as seed cotton prices rise. This follows three years of large benefits. For 2022/23 and later, crop insurance net indemnities average $58/acre and PLC payments average $22/base acre, growing slightly throughout the baseline period as average seed cotton prices fall back to and eventually below the reference price.



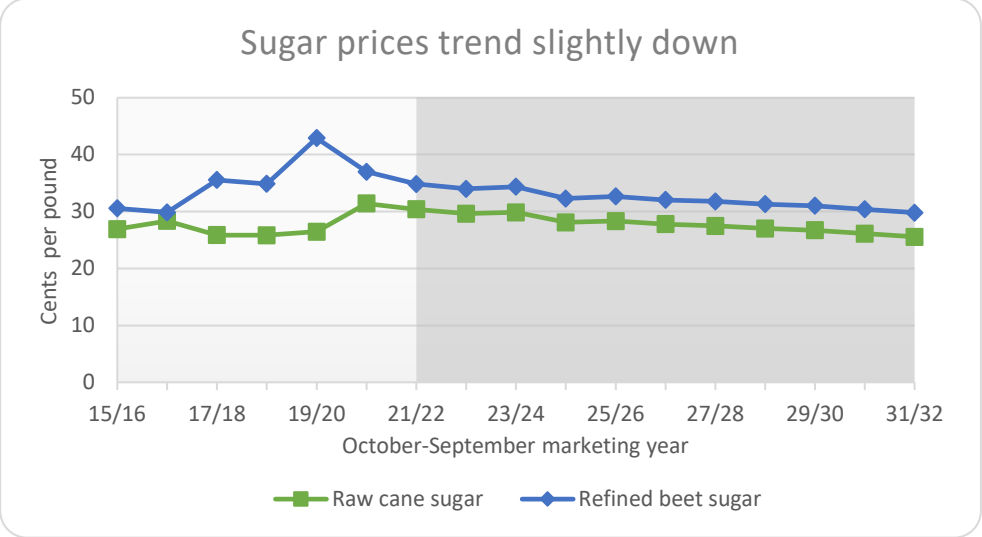


Sugar

Areas harvested for both sugarcane and sugar beets averaged 0.85 and 1.13 million acres, respectively, for the 10-year historical period from MY 2011/12 to MY 2020/21. Price levels remain near that historical average but trend slightly down toward the end of the projection period.



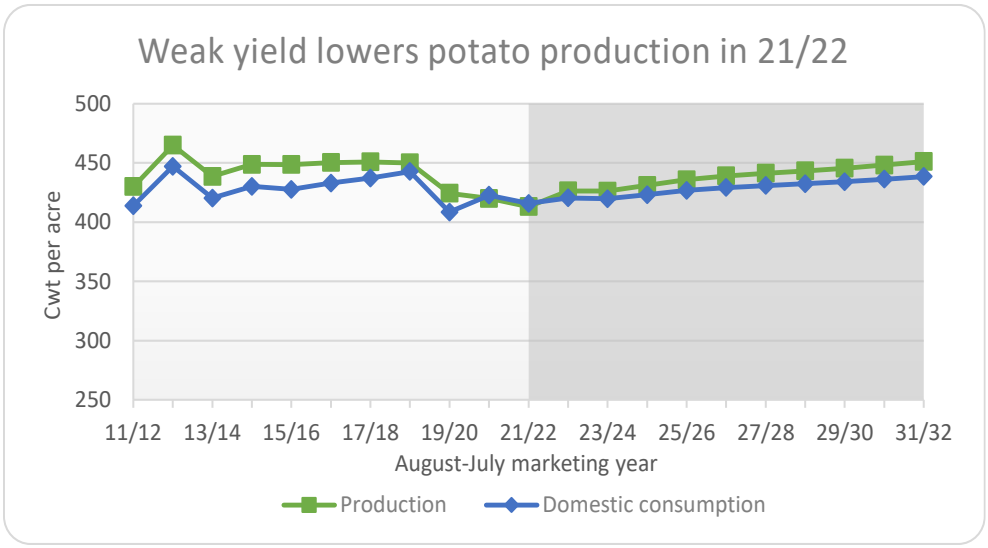
Projected domestic sugar use reaches 13.2 million tons by 2031/32. This growth in demand is met with both additional domestic sugar production and a slight expansion in sugar imports. The share of demand met with domestic supplies rises to just over 80% compared to the 10-year historical average of 73%.



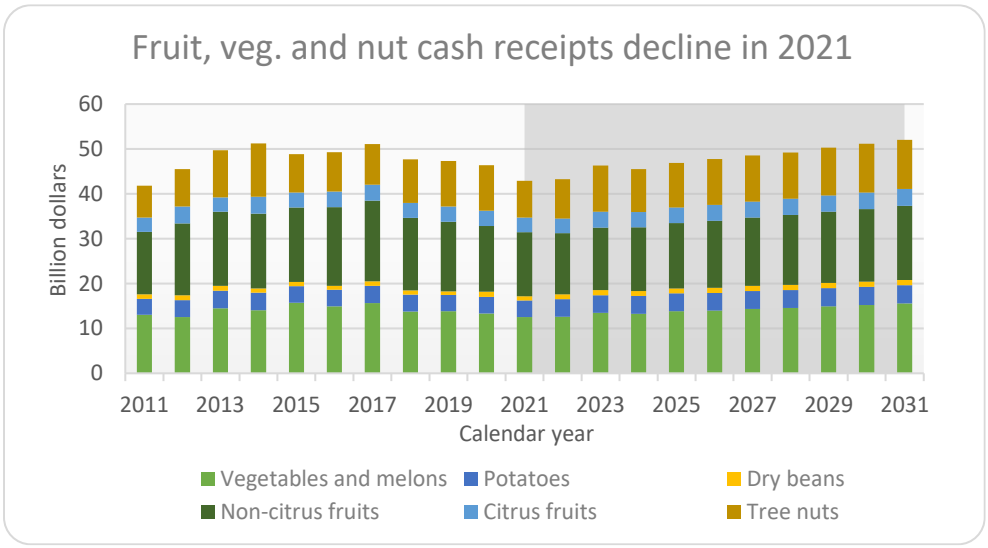
The projected price spread between raw and refined sugar remains narrower than in recent years, though not as narrow as in MY 2015/16 and MY 2016/17. The projected prices also decline slightly over time, ending just below the levels seen in MY 2017/18 and MY 2018/19, suggesting a relatively stronger supply response compared to domestic use.

Potatoes, fresh vegetables, fruits and nuts

Drought in key potato growing states in 2021 limited yield potential and reduced potato production 1.6% for 2021/22 despite a 3% increase in harvested area. Projected receipts in 2022/23 rise as a return to trend yields will more than offset a decline in area to increase production by 3%. This assumes that precipitation will return as the El Nino South Oscillation Index (ENSO) is projected to shift to neutral late spring 2022 by the National Oceanic and Atmospheric Administration (NOAA).

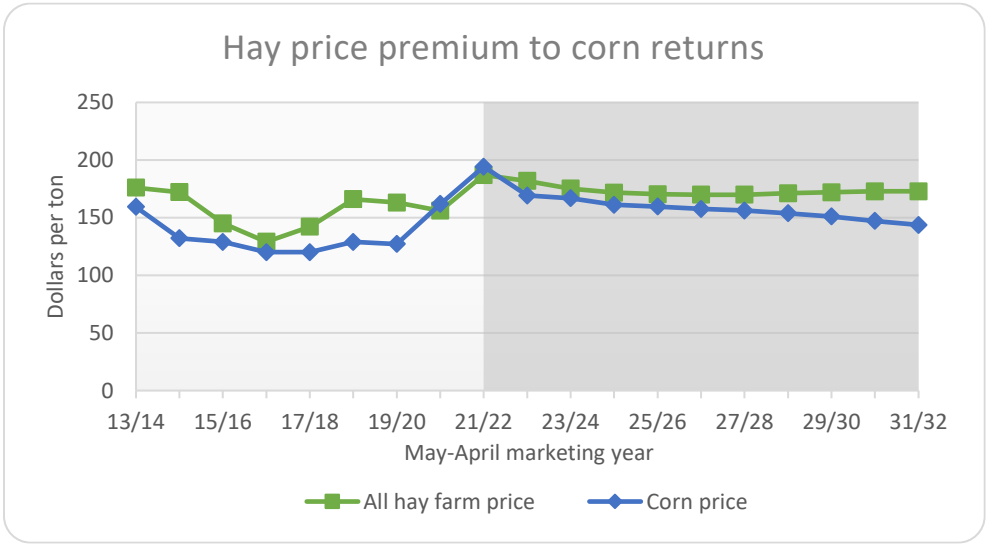


Total cash receipts for fruits, vegetables and tree nuts decreased by 7% in 2021 compared to 2020. The drought across much of the western U.S. limited production for multiple crops. As new COVID variants have drawn out the pandemic recovery there was limited consumption growth. Prices consequently softened in select categories despite weaker domestic production in 2021. Projected receipts increase 1% in 2022 as production improves, although it remains below the 2020 level as consumption growth continues to be muted.



Hay

The all hay price has generally been above the corn price in the past when expressed on a per-ton basis. The rise in corn prices has exceeded the rise in all hay prices recently and will result in an all hay price 4% lower than the corn price in 2021/22, like 2020/21. The historic relationship is expected to return in the remainder of the projection period, with the all hay price averaging an 11% premium to corn. The all hay price is made up of alfalfa prices and other hay prices, which are higher and lower than the all hay price, respectively.



Upland cotton supply and use

August-July year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Planted area	11.09	12.68	11.89	11.91	11.94	11.91	11.84	11.77	11.67	11.58	11.50
Harvested area	9.84	10.57	9.88	9.90	9.93	9.91	9.84	9.79	9.70	9.62	9.55
					(Pounds per harvested acre)						
Yield	841	884	888	899	910	919	927	937	944	953	961
					(Million bales)						
Supply	20.28	22.54	22.77	23.06	23.40	23.60	23.72	23.83	23.89	23.93	24.01
Beginning stocks	3.02	3.05	4.48	4.51	4.58	4.63	4.70	4.73	4.78	4.81	4.86
Production	17.26	19.48	18.29	18.55	18.83	18.97	19.03	19.10	19.10	19.12	19.15
Imports	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Use	17.22	18.06	18.26	18.48	18.78	18.90	18.99	19.05	19.07	19.07	19.08
Domestic mill use	2.55	2.83	3.00	3.11	3.17	3.20	3.23	3.24	3.24	3.24	3.24
Exports	14.67	15.22	15.25	15.37	15.61	15.70	15.76	15.81	15.83	15.83	15.84
Ending stocks	3.05	4.48	4.51	4.58	4.63	4.70	4.73	4.78	4.81	4.86	4.92
Prices, program provisions					(Cents per pound)						
Farm price	89.3	75.9	75.4	74.4	75.1	74.2	73.8	73.1	72.3	71.2	70.0
Adjusted world price	96.3	75.3	73.5	71.7	72.4	71.0	70.6	69.8	69.0	67.8	66.5
Loan rate	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
Returns and payments					(Dollars)						
Gross market revenue/acre	884.66	794.94	789.04	788.14	801.37	800.61	802.64	803.45	800.26	795.84	788.35
Variable expenses/acre	440.95	498.73	496.96	494.19	498.47	507.02	515.70	524.96	534.41	543.33	551.37
Market net return/acre	443.71	296.20	292.07	293.94	302.89	293.59	286.95	278.49	265.86	252.51	236.98
Marketing loan benefits/acre*	0.00	2.23	2.62	3.99	3.44	4.47	4.87	5.83	5.17	7.01	7.83
Insurance net indemnities/acre	20.03	61.40	55.55	55.26	55.92	57.49	57.62	58.29	58.54	58.64	58.42

* Marketing loan benefits, CFAP and insurance net indemnities are averaged across all acres.
All projections are averages across 500 stochastic outcomes.

Seed cotton indicators

August-July year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
					(Cents per pound)						
Marketing year average price	45.75	38.79	38.35	37.89	38.13	37.73	37.54	37.21	36.80	36.30	35.72
Reference price	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70	36.70
					(Million acres)						
Base area	11.55	11.53	11.52	11.52	11.52	11.52	11.52	11.52	11.52	11.52	11.52
					(Pounds per acre)						
PLC program yield	1,492	1,597	1,597	1,593	1,586	1,580	1,576	1,578	1,579	1,579	1,580
					(Percent of base acres)						
PLC participation rate	91.2	99.3	99.4	99.2	98.7	98.3	97.7	98.0	98.1	98.0	98.0
ARC participation rate	8.8	0.7	0.6	0.8	1.3	1.7	2.3	2.0	1.9	2.0	2.0
Payments to participants					(Dollars)						
PLC/base acre*	0.00	15.43	17.45	20.21	19.64	20.22	22.80	23.32	25.21	27.18	31.87
ARC/base acre*	0.08	4.66	3.64	4.89	7.77	11.32	17.38	14.17	14.50	15.81	17.87

All projections are averages across 500 stochastic outcomes.

Sugar supply and use

October-September year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Million acres)						
Sugar cane harvested	0.890	0.895	0.899	0.907	0.906	0.906	0.900	0.892	0.884	0.875	0.863
Sugar beet planted	1.160	1.172	1.170	1.180	1.166	1.166	1.154	1.143	1.136	1.128	1.114
Sugar beet harvested	1.108	1.150	1.148	1.158	1.144	1.144	1.132	1.121	1.115	1.107	1.093
Yield					(Tons per harvested acre)						
Cane sugar	4.25	4.55	4.60	4.66	4.72	4.78	4.84	4.90	4.95	5.00	5.05
Beet sugar	5.05	4.94	5.01	5.11	5.20	5.28	5.38	5.46	5.56	5.65	5.74
Supply and use					(Thousand tons)						
Production	9,373	9,750	9,890	10,140	10,222	10,374	10,440	10,497	10,575	10,636	10,636
Cane sugar	3,779	4,066	4,132	4,228	4,277	4,329	4,354	4,369	4,377	4,377	4,360
Beet sugar	5,594	5,684	5,757	5,911	5,945	6,045	6,086	6,129	6,198	6,259	6,276
Imports	3,033	2,620	2,428	2,363	2,366	2,363	2,410	2,488	2,520	2,578	2,664
Domestic use	12,349	12,291	12,262	12,422	12,533	12,670	12,797	12,928	13,037	13,156	13,245
Exports	33	39	41	44	44	43	44	46	46	47	48
Ending stocks	1,729	1,768	1,783	1,819	1,831	1,854	1,862	1,874	1,885	1,896	1,903
Prices					(Cents per pound)						
N.Y. spot raw sugar	30.39	29.63	29.85	28.10	28.33	27.78	27.47	27.01	26.70	26.11	25.56
Refined beet sugar	34.82	33.97	34.34	32.28	32.64	32.04	31.77	31.30	31.01	30.38	29.80

All projections are averages across 500 stochastic outcomes.

Potato supply and use

August-July year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Area					(Thousand acres)						
Planted area	951	940	931	933	935	933	930	925	922	919	917
Harvested area	942	931	922	924	925	924	920	917	913	911	909
					(Hundredweight per harvested acre)						
Yield	438	458	462	467	471	475	479	484	488	492	496
Supply and use					(Million hundredweight)						
Production	413	426	426	431	436	439	441	443	446	448	451
Imports	71	68	69	69	70	71	71	72	73	73	74
Domestic disappearance	416	420	420	423	427	429	431	432	434	436	438
Exports	68	74	75	77	79	80	82	83	84	85	87
Prices					(Dollars per hundredweight)						
Farm price	10.59	10.27	10.40	10.27	10.13	10.06	10.05	10.06	10.08	10.09	10.08
					(Percent of acres)						
Crop insurance participation	80	80	80	80	80	80	80	80	80	80	80
					(Million dollars)						
Cash receipts	3700	3911	3944	3956	3948	3947	3958	3979	4004	4032	4057
Returns and payments					(Dollars)						
Gross market revenue/acre	4,645	4,707	4,809	4,791	4,772	4,782	4,820	4,868	4,917	4,966	5,003
Variable expenses/acre	2,348	2,920	2,719	2,626	2,613	2,629	2,656	2,686	2,717	2,739	2,756
Market net return/acre	2,297	1,788	2,090	2,165	2,160	2,153	2,163	2,182	2,201	2,226	2,247
Premium subsidy/acre	57	67	65	66	67	66	67	67	68	69	70

All projections are averages across 500 stochastic outcomes.

Vegetable and melon supply and use

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Harvested area					(Million acres)						
Vegetable area	4.21	4.21	4.18	4.19	4.18	4.18	4.17	4.17	4.17	4.17	4.17
Melon area	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.13	0.13
Yield					(Tons per harvested acre)						
Vegetable yield	8.4	8.5	8.5	8.4	8.4	8.4	8.4	8.4	8.4	8.3	8.3
Melon yield	16.1	16.6	16.8	17.0	17.2	17.4	17.6	17.8	17.9	18.1	18.3
Vegetable supply and use					(Million tons)						
Production	35.6	35.7	35.4	35.4	35.2	35.2	35.0	35.0	34.9	34.8	34.7
Imports	10.9	11.2	11.5	11.7	12.0	12.3	12.6	12.8	13.1	13.4	13.6
Domestic use	43.5	43.7	43.7	43.9	44.0	44.2	44.4	44.6	44.7	44.9	45.1
Exports	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
Melon supply and use					(Million tons)						
Production	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Imports	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6
Domestic use	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.7
Exports	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Prices					(Cents per pound)						
Vegetable price	16.8	16.4	17.8	17.6	18.5	18.6	19.2	19.6	20.1	20.6	21.1
Dry bean price	29.9	37.3	37.1	33.4	33.3	33.4	33.4	33.3	33.2	33.0	32.7
Melon price	18.0	18.4	17.4	18.4	18.2	18.8	18.8	19.3	19.5	19.8	20.1
Cash receipts					(Million dollars)						
Vegetable	11,720	11,742	12,635	12,426	12,995	13,081	13,481	13,693	14,042	14,322	14,662
Dry bean	928	1,106	1,133	1,097	1,112	1,126	1,137	1,149	1,158	1,164	1,168
Melon	844	883	843	886	878	902	905	922	930	944	955
Total receipts	13,493	13,731	14,611	14,409	14,984	15,109	15,524	15,765	16,131	16,430	16,785

Note: Vegetable category excludes dry beans, melons and potatoes.

Fruit and tree nut supply and use

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Bearing area					(Million acres)						
Non-citrus fruit	1.86	1.87	1.85	1.86	1.85	1.84	1.85	1.85	1.85	1.86	1.86
Citrus fruit	0.67	0.68	0.64	0.65	0.65	0.64	0.65	0.64	0.64	0.64	0.63
Tree nut	2.45	2.47	2.47	2.51	2.55	2.55	2.59	2.64	2.66	2.69	2.73
Yield					(Tons per bearing acre)						
Non-citrus fruit	8.55	8.86	8.90	8.94	8.98	9.02	9.06	9.10	9.14	9.18	9.22
Citrus fruit	10.33	11.42	11.12	11.38	11.35	11.44	11.47	11.53	11.58	11.63	11.68
Tree nut	0.80	0.85	0.82	0.84	0.83	0.84	0.84	0.84	0.84	0.85	0.85
Non-citrus fruit supply and use					(Million tons)						
Production	15.9	16.5	16.5	16.6	16.6	16.6	16.7	16.8	16.9	17.0	17.1
Imports	11.1	11.2	11.4	11.5	11.6	11.8	12.0	12.1	12.2	12.4	12.5
Domestic use	25.2	25.9	26.0	26.2	26.4	26.5	26.8	27.0	27.3	27.5	27.7
Exports	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Citrus fruit supply and use					(Million tons)						
Production	6.9	7.7	7.1	7.4	7.4	7.3	7.5	7.3	7.4	7.4	7.4
Imports	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9
Domestic use	8.2	8.8	8.2	8.5	8.5	8.5	8.6	8.6	8.6	8.7	8.7
Exports	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Tree nut supply and use					(Million tons)						
Production	3944	4184	4049	4197	4232	4276	4338	4446	4493	4560	4637
Imports	741	738	766	772	784	797	809	817	830	843	854
Domestic use	1905	1917	1860	1940	1959	1985	2017	2062	2083	2114	2148
Exports	2945	3000	2939	2996	3035	3073	3116	3182	3228	3276	3329
Prices					(Cents per pound)						
Non-citrus fruit	44.8	41.4	42.5	42.7	44.0	45.2	45.6	46.4	46.9	47.5	48.2
Citrus fruit	24.0	21.0	24.6	23.0	23.5	24.4	23.6	24.6	24.6	24.7	25.2
Tree nut	202	204	249	222	229	233	234	227	233	234	233
Cash receipts					(Million dollars)						
Non-citrus fruit	14,234	13,615	13,949	14,169	14,585	14,955	15,221	15,547	15,848	16,161	16,491
Citrus fruit	3,310	3,247	3,503	3,414	3,473	3,560	3,526	3,621	3,636	3,663	3,719
Tree nut	8,157	8,756	10,293	9,532	9,908	10,179	10,350	10,277	10,696	10,876	10,989
Total receipts	25,701	25,618	27,745	27,115	27,966	28,694	29,098	29,445	30,180	30,700	31,199

Hay supply and use

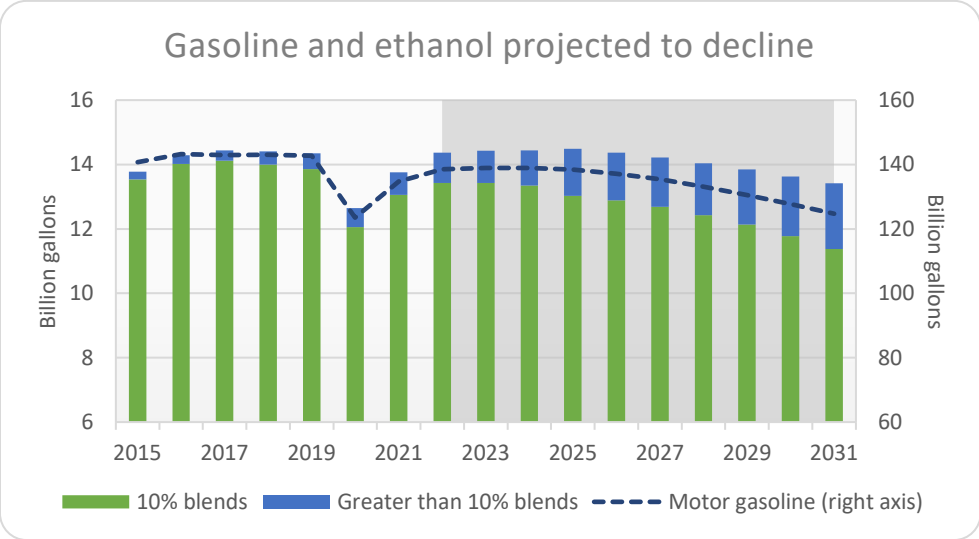
May-April year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
					(Million acres)						
Harvested area	50.7	51.1	51.3	51.3	51.2	51.2	51.2	51.2	51.4	51.5	51.7
					(Tons per acre)						
Yield	2.37	2.45	2.46	2.46	2.47	2.48	2.48	2.49	2.49	2.50	2.50
Supply and use					(Million tons)						
Production	120.2	125.3	126.1	126.4	126.6	126.7	127.0	127.5	128.1	128.7	129.4
Domestic disappearance	118.4	119.1	119.6	120.1	120.5	120.6	120.9	121.4	122.0	122.5	123.1
Net exports	5.2	5.2	5.4	5.4	5.5	5.6	5.6	5.7	5.8	5.8	5.9
Ending stocks	14.6	15.5	16.7	17.5	18.1	18.5	18.9	19.3	19.7	20.1	20.5
					(Dollars per ton)						
All hay farm price	186.92	181.80	175.16	171.70	170.32	169.82	169.82	171.08	171.92	172.71	172.80

All projections are averages across 500 stochastic outcomes.

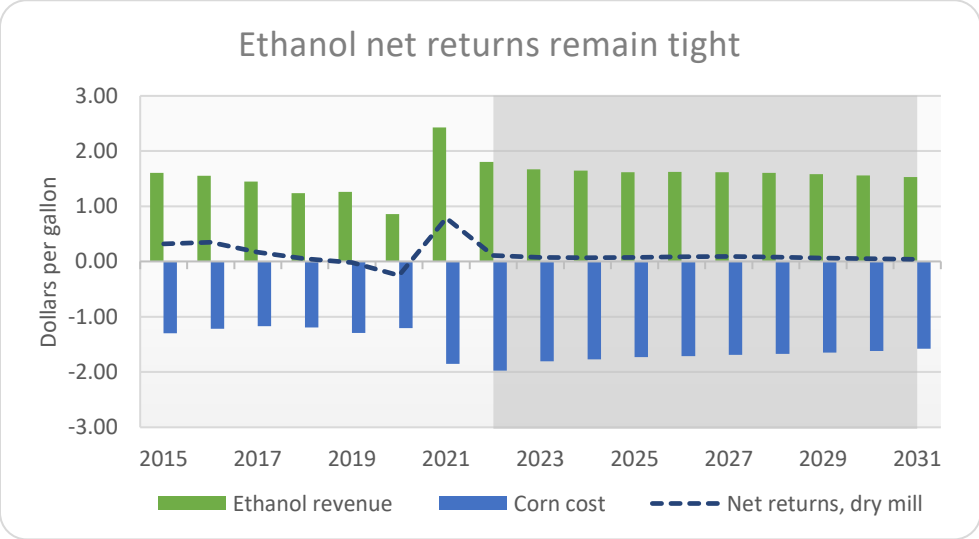
Biofuels

Ethanol

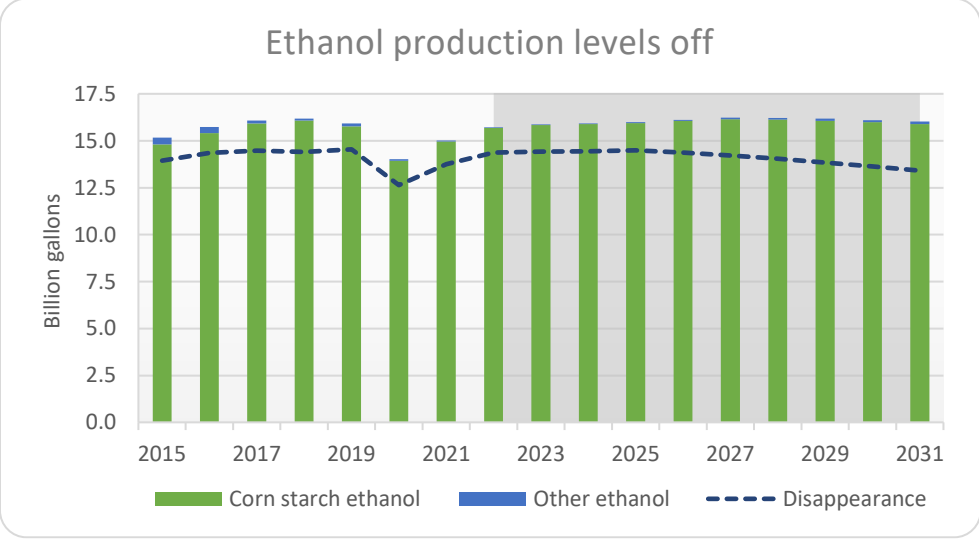
Motor gasoline use averages 134.5 billion gallons per year throughout the projection period and declines after 2025 as drivers adopt more fuel-efficient vehicles. Projected ethanol use recovers fully to pre-pandemic levels of 14.4 billion gallons before falling toward the end of the period. Ethanol use declines by 6.5% during this period, which is less than the 10% reduction in overall gasoline use as the use of higher blend fuels expands.

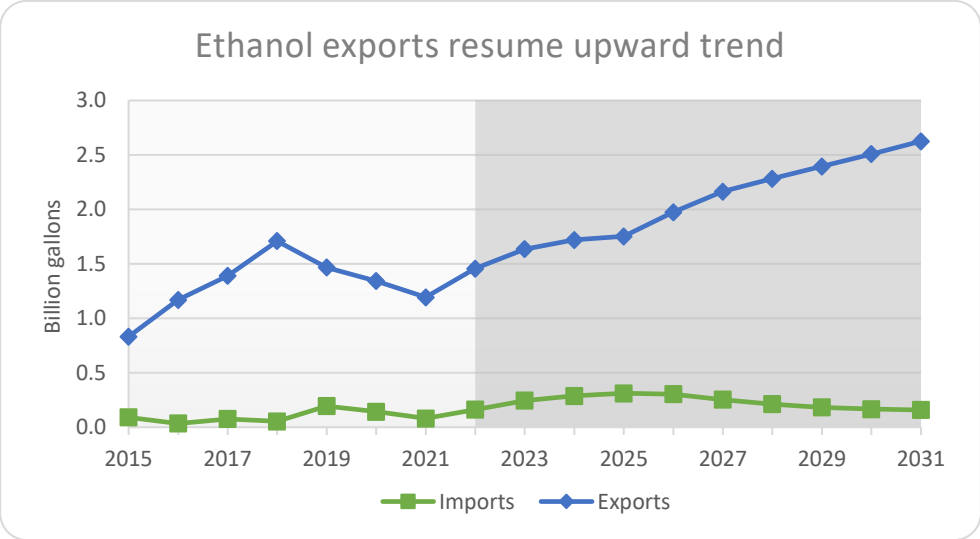


Increased demand for ethanol in 2021 along with somewhat tighter supplies led to a strong rebound in ethanol net returns. Going forward, projected net returns fall to a lower but still sustainable level.

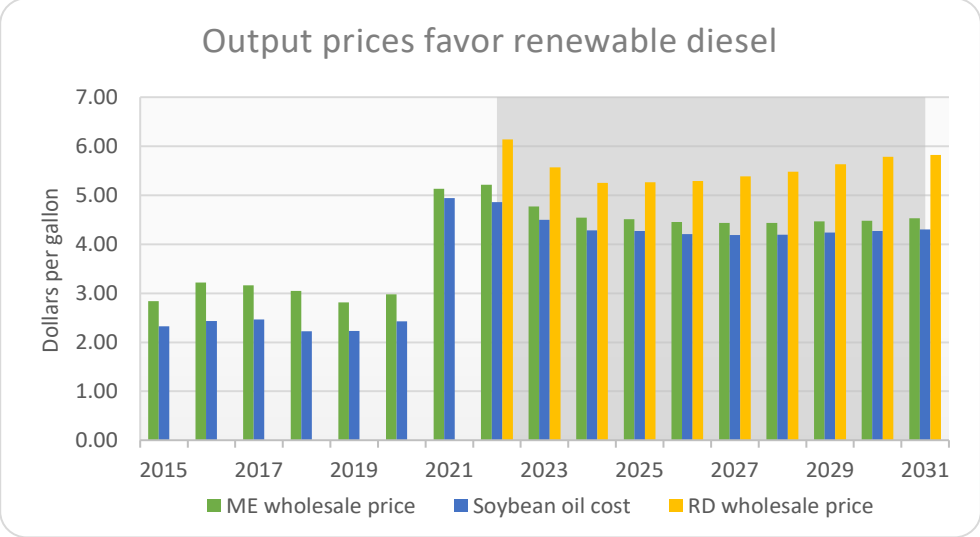


Ethanol production recovers to pre-pandemic levels near 16 billion gallons. Nearly all domestic production comes from corn starch, with only minor quantities from other feedstocks. Production levels remain mostly flat through the projection period even as domestic demand falls off.



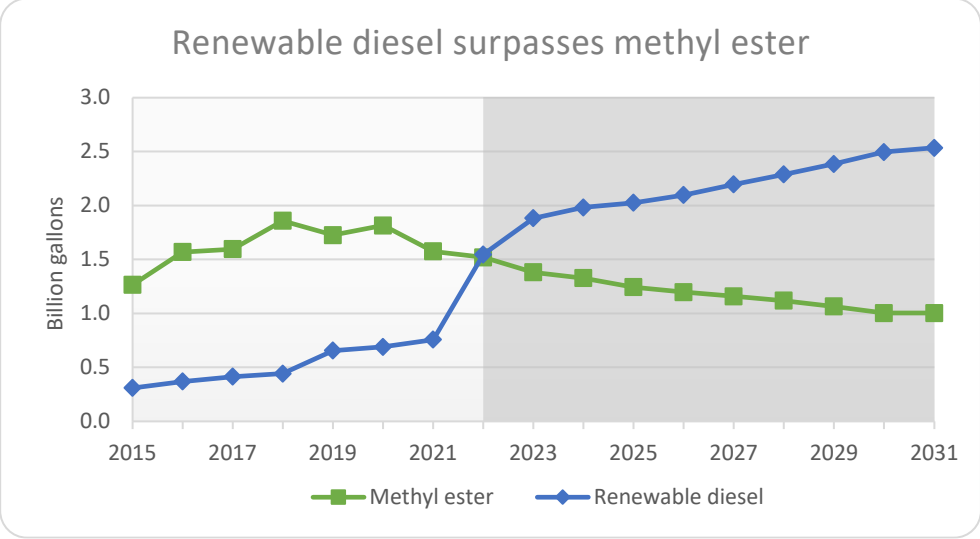


As petroleum prices and global incomes rise, projected international ethanol demand picks up and pushes U.S. ethanol exports to near 2.75 billion gallons by 2031. U.S. imports of ethanol remain limited to small quantities brought in to help meet state-level Low Carbon Fuel Standard (LCFS) requirements.



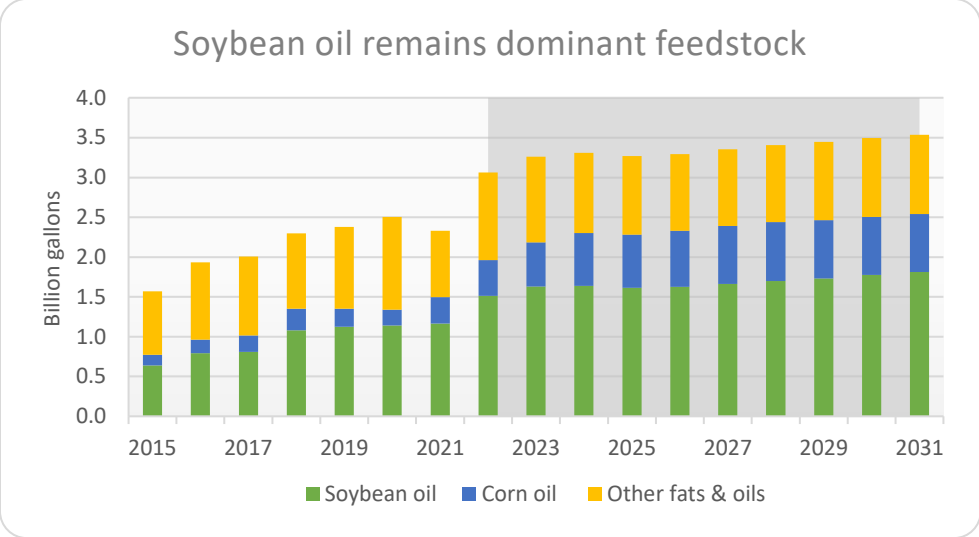
Biomass-based diesel

The combination of high Renewable Identification Number (RIN) prices as well as LCFS credits gives renewable diesel an advantage over methyl ester biodiesel in the projection period despite the higher projected feedstock costs. The projected margins of methyl ester and renewable diesel prices over input soybean oil cost per gallon average $0.25 and $1.23 per gallon, respectively.



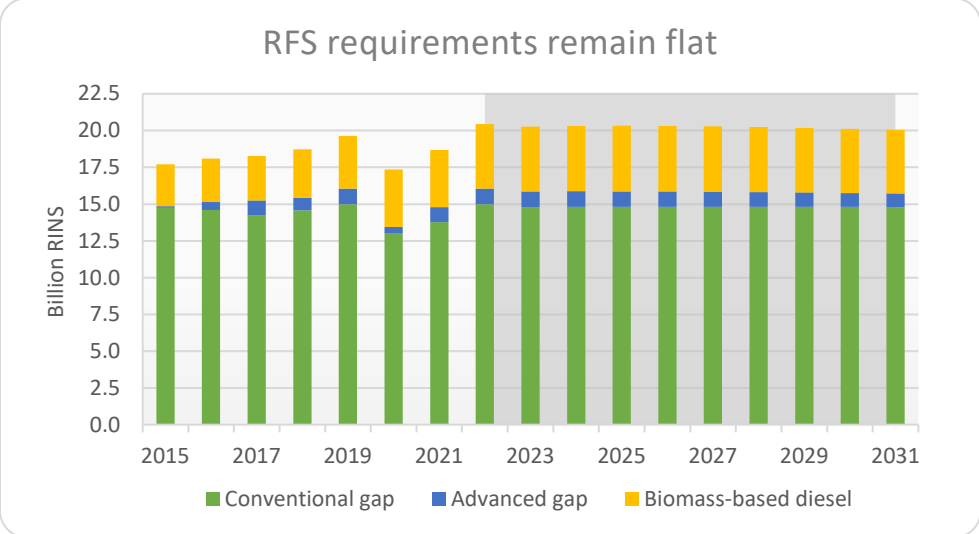
While the production capacity of renewable diesel in these results does not fully match the capacity expansions that have been announced in the press, projected domestic renewable diesel production increases rapidly in the near term and maintains steady growth thereafter. The growth in renewable diesel is partly offset by a downward trend in methyl ester biodiesel production as net returns for methyl ester biodiesel struggle to compete with the net returns for renewable diesel.

Projected use of soybean oil as a renewable fuel feedstock rises from 11 billion pounds in the 2021/22 marketing year to just over 14 billion pounds by the end of the period. This equates to 1.8 billion gallons of biomass based diesel. Distiller's corn oil makes up an increasing share of feedstock use, reaching 21%, while the share of other fats and oils falls from 36% in 2022 down to 28% by 2031.

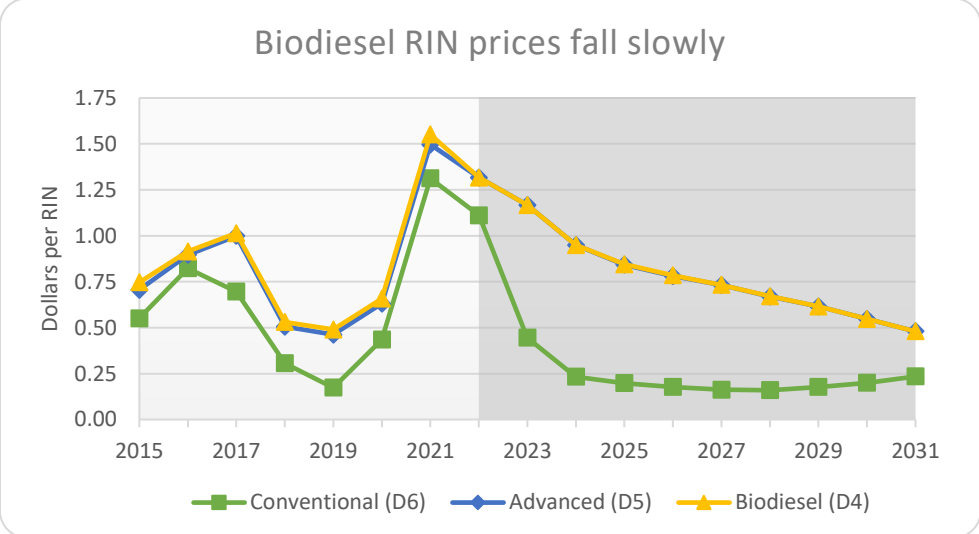


Renewable Fuel Standard

EPA's proposed RFS requirements for 2022 suggest a return to the 15 billion gallon conventional gap. There is considerable uncertainty in what RFS requirements will look like beyond 2022, so in this baseline the requirements are assumed to hold relatively flat at the 2022 levels. Additional guidance from EPA, when announced, could lead to different market outcomes.



The prices for all RIN categories jumped sharply to record highs in 2021 as a result of motor fuel demand recovery and policy uncertainty. These prices have ebbed compared to last year, but the projected level remains elevated in 2022 at more than $1.00 per RIN for all types. Going forward, projected D6 (ethanol) RIN prices decline rapidly to near $0.25 per RIN. D4 and D5 (biodiesel and advanced biofuel) RINs decline more slowly as their respective RFS requirements remain comparatively more stringent.



Ethanol supply and use

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Petroleum fuel prices					(Dollars per barrel)						
Petroleum, W. Texas Intermediate	67.86	72.04	67.80	65.07	63.34	63.69	65.02	66.68	68.41	70.43	72.55
Petroleum, refiners' acquisition	67.27	71.25	67.05	64.36	62.36	62.66	63.87	65.37	67.06	69.06	71.16
					(Dollars per gallon)						
Unleaded gasoline, FOB Omaha	2.24	2.19	2.11	2.05	2.01	2.03	2.07	2.11	2.16	2.22	2.28
Unleaded gasoline, retail	3.05	2.99	2.84	2.77	2.73	2.75	2.79	2.84	2.90	2.96	3.03
					(Million gallons)						
Motor gasoline use*	134,754	138,506	138,935	138,979	138,404	137,183	135,412	133,172	130,584	127,731	124,692
Ethanol supply and use											
Production	14,966	15,692	15,847	15,899	15,953	16,059	16,151	16,131	16,073	15,988	15,898
From corn	14,915	15,662	15,822	15,867	15,910	15,998	16,071	16,036	15,965	15,869	15,769
Other conventional	50	29	25	31	42	60	78	93	106	117	127
Cellulosic	0	0	1	1	1	1	1	2	2	2	2
Imports	82	163	246	288	312	305	255	214	183	167	160
Domestic disappearance	13,763	14,368	14,429	14,441	14,489	14,367	14,221	14,044	13,845	13,633	13,421
Exports	1,194	1,456	1,635	1,720	1,752	1,975	2,163	2,282	2,394	2,507	2,624
Ending stocks	1,128	1,158	1,187	1,213	1,238	1,261	1,282	1,302	1,319	1,335	1,348
Ethanol prices					(Dollars per gallon)						
Conventional rack, Omaha	2.43	1.80	1.67	1.64	1.61	1.62	1.62	1.60	1.58	1.56	1.53
Other advanced rack	2.61	2.01	2.39	2.36	2.26	2.23	2.19	2.11	2.02	1.91	1.77
Effective retail	1.93	1.49	1.96	2.13	2.13	2.17	2.18	2.17	2.14	2.10	2.05
Ethanol/gasoline retail	63%	50%	69%	77%	78%	79%	78%	76%	74%	71%	67%
RIN values											
Conventional ethanol	1.31	1.11	0.45	0.23	0.20	0.18	0.16	0.16	0.18	0.20	0.23
Advanced ethanol	1.50	1.32	1.17	0.95	0.84	0.78	0.73	0.67	0.62	0.55	0.48

* Includes fuel ethanol

All projections are averages across 500 stochastic outcomes.

Renewable Fuel Standard

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Applicable standard											
Overall	10.97%	12.09%	12.34%	12.59%	12.84%	13.09%	13.34%	13.59%	13.84%	14.09%	14.34%
Advanced biofuels	3.08%	3.32%	3.34%	3.36%	3.38%	3.40%	3.42%	3.44%	3.46%	3.48%	3.50%
Cellulosic biofuel	0.37%	0.44%	0.46%	0.47%	0.48%	0.49%	0.51%	0.52%	0.53%	0.54%	0.56%
Biomass-based diesel	2.23%	2.46%	2.48%	2.50%	2.52%	2.54%	2.56%	2.58%	2.60%	2.62%	2.64%
Required volume					(Million gallons)						
Overall	19,148	20,895	20,736	20,784	20,793	20,785	20,758	20,715	20,660	20,596	20,524
Advanced biofuels	5,376	5,895	5,941	5,967	5,974	5,965	5,938	5,897	5,845	5,786	5,721
Cellulosic biofuel	459	461	464	466	469	471	474	476	479	482	484
Biomass-based diesel	3,894	4,371	4,414	4,443	4,457	4,459	4,447	4,425	4,395	4,359	4,318
Gaps: Conventional	13,771	15,000	14,795	14,816	14,819	14,820	14,820	14,819	14,815	14,810	14,803
Advanced	1,023	1,063	1,063	1,058	1,049	1,035	1,017	995	971	946	919

All projections are averages across 500 stochastic outcomes.

Biomass-based diesel sector

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Biomass-based diesel supply					(Million gallons)						
Production	2,331	3,064	3,263	3,308	3,267	3,294	3,353	3,405	3,449	3,497	3,536
From soybean oil	1,167	1,515	1,631	1,640	1,616	1,627	1,662	1,698	1,734	1,774	1,813
From corn oil	328	447	552	662	665	705	730	741	732	730	729
From other fats and oils	836	1,102	1,080	1,007	986	962	962	967	983	992	993
Net imports	411	596	568	536	497	448	403	366	338	311	286
Biomass-based diesel use											
Domestic disappearance	2,784	3,676	3,837	3,847	3,766	3,743	3,756	3,771	3,786	3,808	3,821
Ending stocks	121	106	99	97	95	95	95	95	95	95	95
Fuel prices and tax credit					(Dollars per gallon)						
Biodiesel, rack	5.13	5.21	4.77	4.55	4.51	4.45	4.43	4.44	4.47	4.48	4.53
#2 Diesel, refiner sales	2.13	2.23	2.15	2.09	2.05	2.07	2.10	2.15	2.20	2.26	2.32
#2 Diesel, retail	3.28	3.40	3.32	3.25	3.21	3.22	3.26	3.30	3.35	3.41	3.47
Biodiesel tax credit	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIN values											
Per RIN gallon	1.55	1.32	1.17	0.95	0.84	0.79	0.73	0.67	0.62	0.55	0.48
Per physical gallon	2.33	1.97	1.75	1.42	1.27	1.18	1.10	1.01	0.92	0.82	0.72

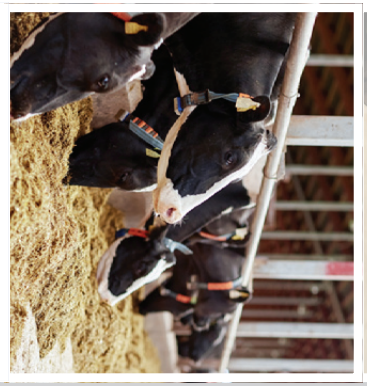
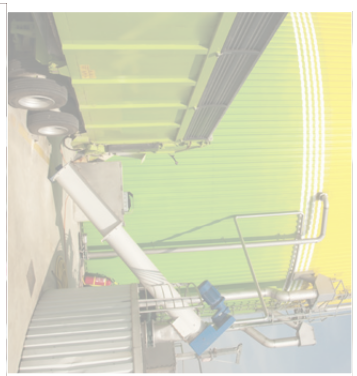
All projections are averages across 500 stochastic outcomes.

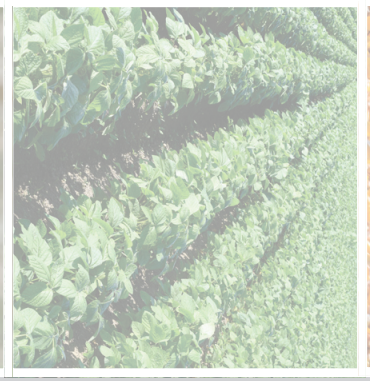
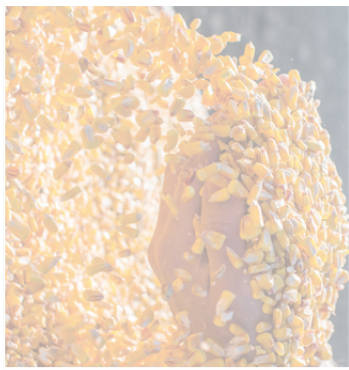
Biofuel plant returns

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Biodiesel costs and returns					(Dollars per gallon)						
Biodiesel value	5.13	5.21	4.77	4.55	4.51	4.45	4.43	4.44	4.47	4.48	4.53
Glycerin value	0.17	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Soyoil cost	-4.95	-4.86	-4.50	-4.28	-4.27	-4.21	-4.19	-4.20	-4.24	-4.27	-4.30
Other operating costs	-0.61	-0.62	-0.63	-0.64	-0.65	-0.65	-0.66	-0.67	-0.68	-0.69	-0.69
Net operating return	-0.25	-0.16	-0.24	-0.26	-0.29	-0.29	-0.30	-0.31	-0.33	-0.36	-0.35
Corn milling for ethanol					(Million gallons)						
Corn wet milled for ethanol	440	449	455	460	466	472	479	483	483	482	481
Corn dry milled for ethanol	4,701	4,944	4,989	4,995	4,999	5,019	5,032	5,012	4,983	4,947	4,909
(Share de-oiling DDGS)	89%	91%	93%	95%	96%	98%	98%	98%	98%	98%	98%
Dry mill ethanol costs, returns					(Dollars per gallon)						
Ethanol value	2.43	1.80	1.67	1.64	1.61	1.62	1.62	1.60	1.58	1.56	1.53
Distillers grains value	0.59	0.60	0.54	0.52	0.51	0.51	0.50	0.50	0.50	0.49	0.48
Corn oil value*	0.18	0.21	0.20	0.20	0.20	0.20	0.20	0.19	0.19	0.19	0.19
Corn cost	-1.85	-1.98	-1.81	-1.77	-1.73	-1.71	-1.69	-1.67	-1.65	-1.62	-1.58
Fuel and electricity cost	-0.16	-0.12	-0.12	-0.10	-0.10	-0.10	-0.11	-0.11	-0.12	-0.12	-0.12
Other operating costs	-0.40	-0.41	-0.41	-0.42	-0.42	-0.43	-0.43	-0.44	-0.44	-0.45	-0.45
Net operating return	0.79	0.11	0.07	0.07	0.07	0.09	0.09	0.08	0.06	0.05	0.04

* Weighted by share of dry mills de-oiling DDGS

All projections are averages across 500 stochastic outcomes.

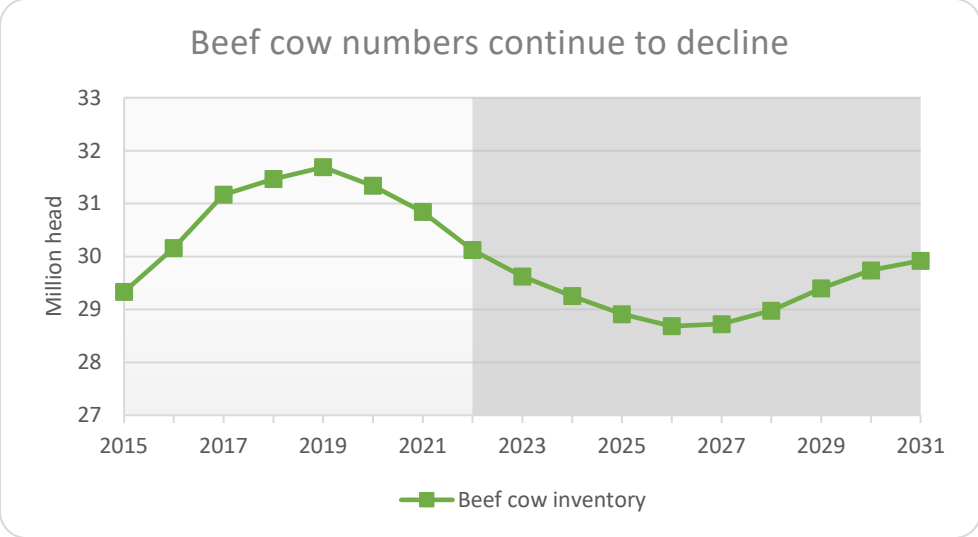




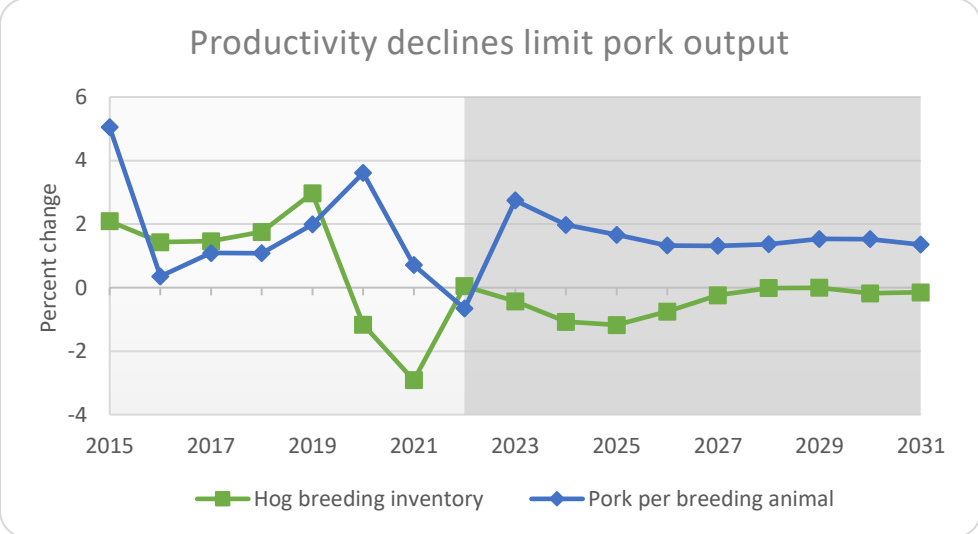
Livestock & dairy

Cattle and hogs

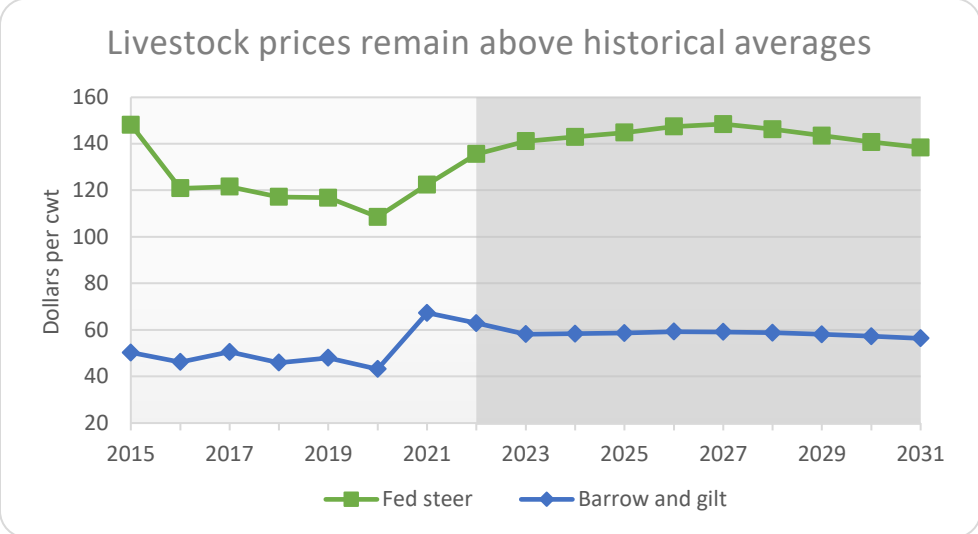
The U.S. beef cow herd declined for the third consecutive year in 2021 and more liquidation is expected this year. Seven out of the top ten beef cow inventory states have begun 2022 with nearly half or more land area classified in moderate drought or worse. Above average feedlot placements of cattle relative to available supply and heavy slaughter weights have kept recent beef production levels up, but there is a limit to how long that can continue with a shrinking cow herd.

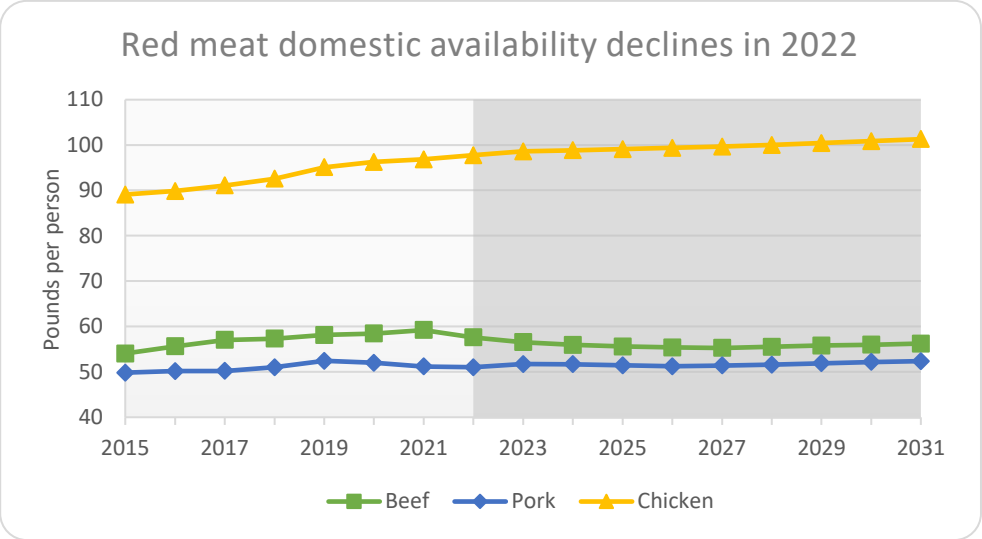


The hog industry has also experienced declining numbers as the breeding inventory to begin 2022 was down nearly 6% relative to two years ago. Gains in productivity typically offset modest declines in sow numbers, but disease challenges and other issues have limited growth in pork production per sow. With feed costs projected to remain elevated and construction costs well above recent history, expansion will be slow to develop even after 2021 proved to be a profitable year for most producers.



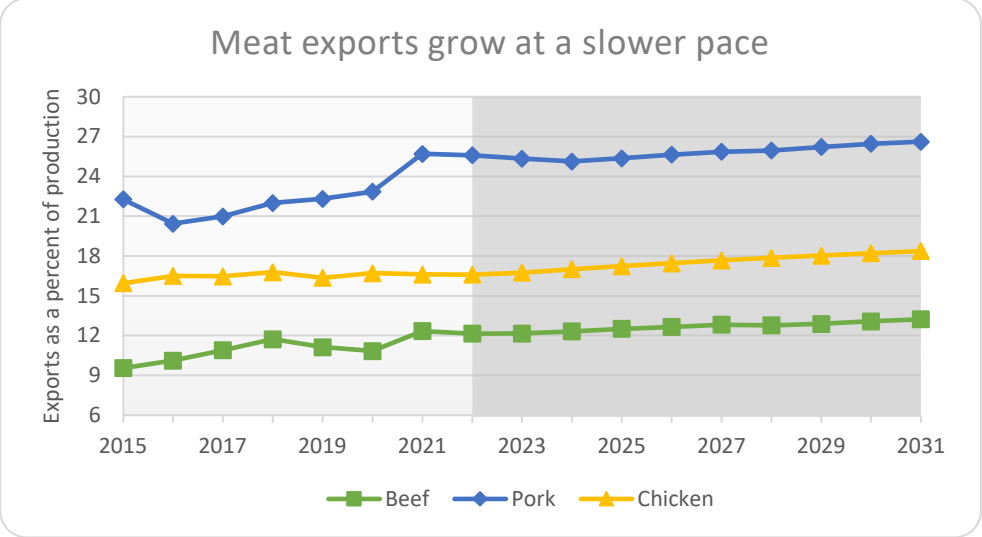
Tighter supplies of beef and pork will keep cattle and hog prices above historical average levels. With fewer animals being sent to slaughter relative to recent years, the packing industry is expected to see tighter margins. Though output prices remain relatively high, profitability will be challenged by input costs.



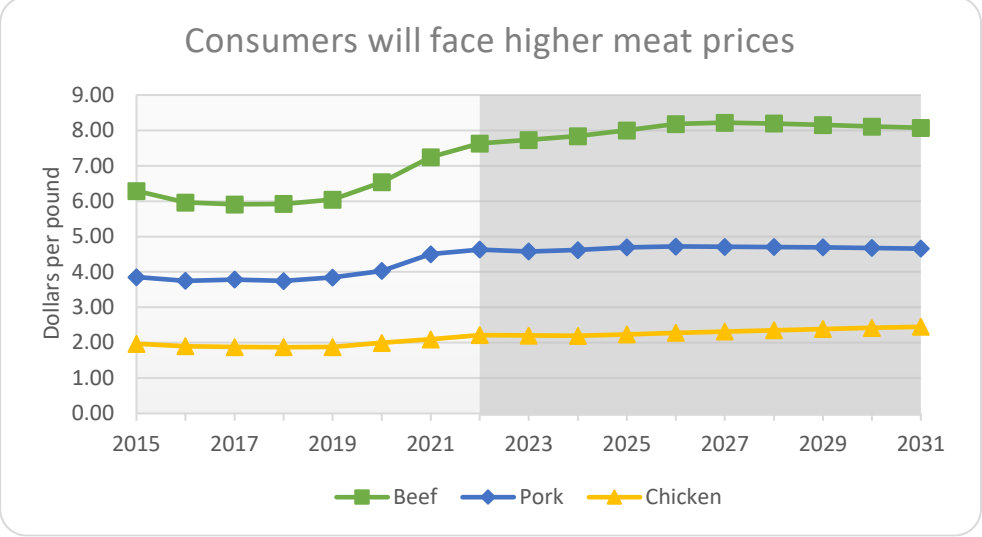


Meat

Per capita domestic availability of both beef and pork is projected to decline this year, the first time this has occurred since 2014. Meat demand growth in recent years has allowed for industry expansion along with generally increasing wholesale prices, and tighter supplies into the medium term will keep prices relatively high. Consumers are projected to continue the long-term shift to more chicken consumption relative to beef and pork.



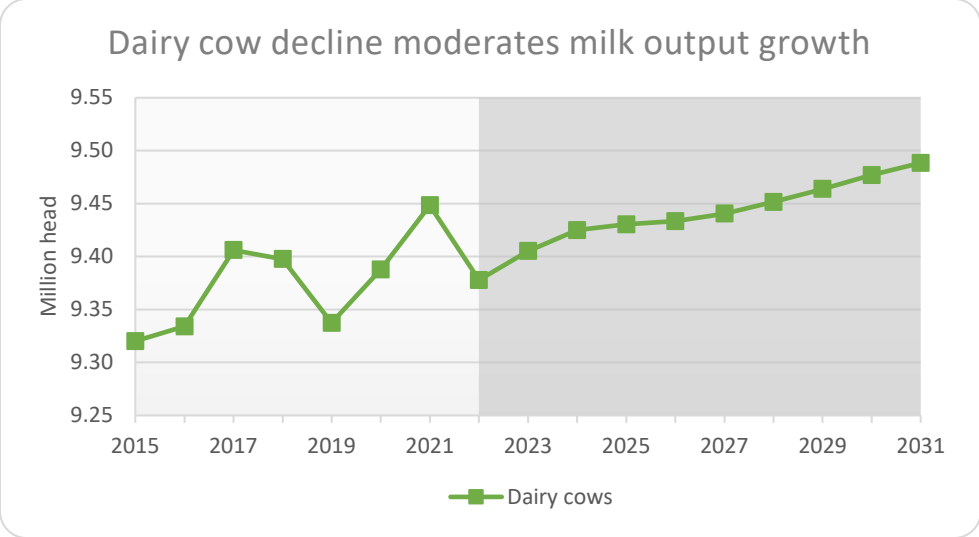
Strong international demand for U.S. meat products has contributed to recent high wholesale meat prices. With China continuing to rebuild its hog herd, pork exports will struggle to match the shipment levels of 2020 for the next couple of years. Maintaining the beef export pace of 2021 will also be difficult, as high prices weigh on consumers and Australia increases beef exports.



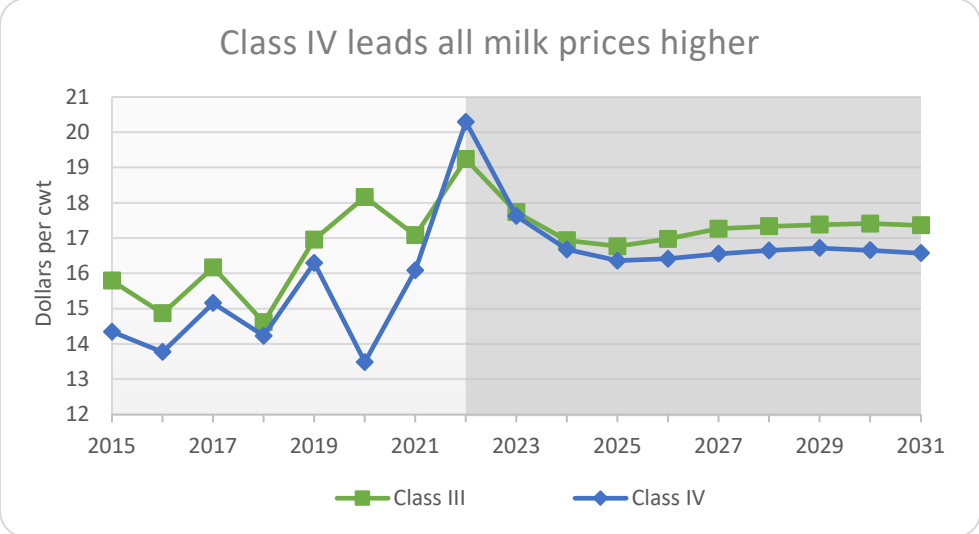
Consumers will continue to face sharp increases in retail meat prices. Relative to 2019, beef retail prices are projected to be 26% higher this year, with pork up 21% and chicken 18% more expensive. To this point consumers have continued to spend their dollars on meat, particularly higher-value products, but the risk of some consumers being priced out of the market is increasing. With energy and other goods taking a larger share of consumer finances, recent meat demand strength could be tested given projected price levels.

Dairy

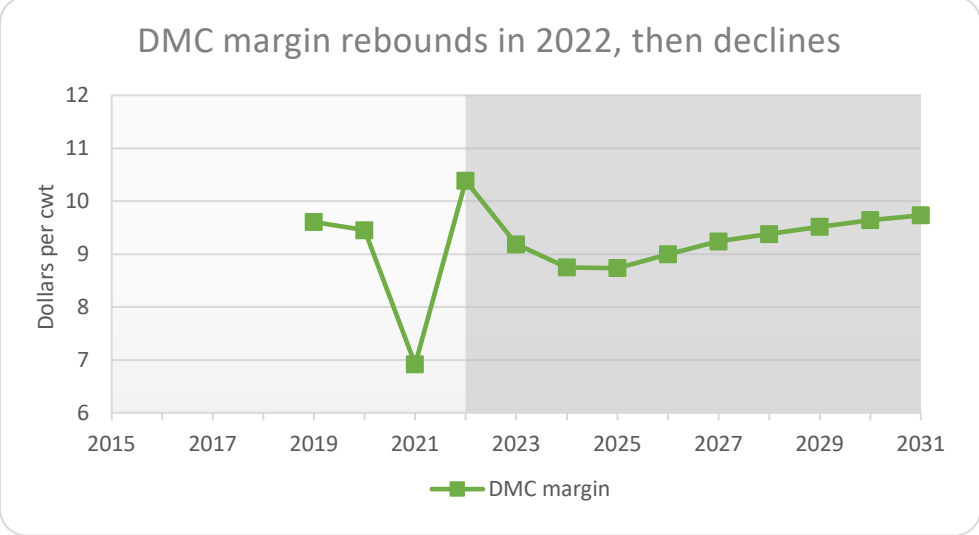
The U.S. dairy cow inventory has declined by more than 130 thousand head from its recent peak in May 2021, as rising feed costs depressed profitability for much of last year. Milk prices have rebounded significantly since last summer, and producers are projected to begin to increase cow numbers again later this year. Milk production is projected to grow by only 0.6% in 2022, the second-smallest output growth since 2013.



Current Class IV milk prices have advanced about $10 per cwt relative to the beginning of 2021. Exports of nonfat dry milk increased by more than 10% for the second consecutive year in 2021, and international demand for U.S. dairy products is projected to remain strong. Butter and cheese exports are projected higher as well, though prices for these products depend more heavily upon the domestic market.



The Dairy Margin Coverage (DMC) program margin is projected to be well above the payment trigger level in 2022, though the risks of higher than expected feed costs or a setback in demand that could cause weaker milk prices still make this an important risk management tool. As producers rebuild the milk cow herd by next year, milk prices fall and the margin declines.



Cattle and hogs

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
CATTLE					(Million head)						
Beef cows (Jan. 1)	30.8	30.1	29.6	29.3	28.9	28.7	28.7	29.0	29.4	29.7	29.9
Dairy cows (Jan. 1)	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.5	9.5	9.5
Cattle and calves (Jan. 1)	93.8	91.9	90.9	90.5	90.3	90.1	90.0	90.2	90.5	90.9	91.4
Cattle on feed (Jan. 1)	14.7	14.7	14.3	14.2	14.1	14.0	14.0	14.1	14.3	14.4	14.5
Calf crop	35.1	34.5	34.2	33.9	33.7	33.6	33.8	34.1	34.5	34.8	34.9
Cattle slaughter	34.3	33.3	32.5	32.2	32.0	31.8	31.7	31.9	32.2	32.4	32.6
Cattle imports	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.1
Cattle exports	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Prices											
Total all grades,					(Dollars per hundredweight)						
5-Area direct steers	122.40	135.54	141.05	142.90	144.81	147.40	148.39	146.19	143.46	140.71	138.39
600-650#, Oklahoma City feeder steers	157.65	176.87	190.60	194.31	197.40	202.43	204.14	200.58	196.45	192.21	189.11
Utility cows, Sioux Falls	63.56	71.57	75.81	76.57	78.16	80.15	80.77	78.85	76.41	73.99	72.04
Cow-calf returns					(Dollars per cow)						
Receipts	786.68	859.76	911.87	926.55	943.81	963.55	965.84	947.76	927.36	907.06	894.43
Feed expenses	428.46	444.80	441.56	439.56	442.08	445.60	447.78	449.00	451.37	453.58	455.49
Non-feed expenses	245.45	271.58	288.56	300.29	310.67	321.53	330.84	334.94	338.44	341.90	346.18
Net returns	112.77	143.38	181.75	186.71	191.06	196.43	187.22	163.81	137.56	111.59	92.76
HOGS					(Million head)						
Hogs for breeding (Dec. 1*)	6.18	6.18	6.18	6.13	6.05	5.98	5.96	5.95	5.96	5.95	5.94
Market hogs (Dec. 1*)	71.1	68.0	69.3	69.9	69.9	69.7	69.9	70.2	70.7	71.3	71.8
Sows farrowed	12.02	12.15	12.19	12.10	11.99	11.92	11.92	11.95	11.98	12.00	11.98
Pig crop	132.9	135.9	137.8	138.1	138.1	138.5	139.8	141.3	143.0	144.4	145.5
Barrow and gilt slaughter	125.6	124.2	126.5	127.3	127.4	127.6	128.5	129.8	131.3	132.6	133.7
Hog imports	6.6	5.9	5.8	5.8	5.8	5.9	5.9	5.9	5.9	5.9	5.9
Hog exports	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Prices											
National base 51-52% lean equiv.					(Dollars per hundredweight)						
barrows & gilts	67.29	62.91	58.16	58.34	58.60	59.25	59.09	58.76	58.08	57.25	56.36
Farrow-finish returns											
Receipts	70.69	66.59	61.52	61.71	61.98	62.63	62.47	62.14	61.45	60.61	59.70
Feed expenses	38.71	39.89	36.41	35.19	34.59	34.28	34.16	33.89	33.43	32.74	32.03
Non-feed expenses	21.78	23.42	23.64	23.79	23.93	24.14	24.40	24.62	24.85	25.10	25.35
Net returns	10.21	3.28	1.47	2.74	3.45	4.22	3.92	3.62	3.16	2.77	2.32

* Preceding year

All projections are averages across 500 stochastic outcomes.

Meat sector

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Beef					(Million pounds)						
Production	28,008	27,320	26,855	26,715	26,720	26,703	26,825	27,130	27,513	27,892	28,250
Imports	3,355	3,285	3,316	3,335	3,366	3,449	3,492	3,490	3,465	3,428	3,412
Domestic use	27,963	27,296	26,908	26,760	26,740	26,769	26,868	27,140	27,417	27,657	27,909
Exports	3,455	3,319	3,265	3,288	3,342	3,377	3,439	3,464	3,544	3,647	3,737
Ending stocks	660	649	647	648	652	658	668	682	699	715	731
Pork											
Production	27,688	27,520	28,155	28,403	28,536	28,698	29,006	29,400	29,850	30,252	30,616
Imports	1,190	1,264	1,181	1,123	1,091	1,073	1,066	1,062	1,059	1,059	1,059
Domestic use	21,798	21,805	22,211	22,303	22,305	22,341	22,528	22,736	22,991	23,241	23,445
Exports	7,088	6,975	7,076	7,205	7,317	7,424	7,532	7,710	7,901	8,054	8,216
Ending stocks	460	464	512	530	535	540	552	567	585	601	616
Broiler											
Production	44,405	45,108	45,783	46,275	46,758	47,259	47,776	48,322	48,892	49,478	50,062
Domestic use	37,264	37,739	38,248	38,541	38,839	39,151	39,475	39,830	40,213	40,603	40,997
Exports	7,376	7,486	7,663	7,872	8,060	8,248	8,441	8,631	8,816	9,011	9,202
Ending stocks	750	777	793	797	798	799	801	804	809	814	820
Turkey											
Production	5,558	5,600	5,661	5,705	5,732	5,763	5,791	5,821	5,855	5,890	5,924
Domestic use	5,063	5,054	5,095	5,135	5,158	5,181	5,203	5,226	5,252	5,279	5,306
Exports	550	565	574	582	590	598	605	612	619	626	633
Ending stocks	190	193	206	215	219	223	227	232	237	242	248
Wholesale prices				(Dollars per hundredweight or cents per pound)							
Boxed beef cutout	280.21	288.00	286.26	290.00	296.07	302.19	304.50	302.50	299.56	296.47	294.01
Pork cutout	104.10	99.02	94.21	94.81	95.73	97.09	96.89	96.68	95.87	94.71	93.52
National wholesale broiler	101.18	102.98	97.87	97.15	98.53	100.35	101.96	103.35	104.35	104.82	105.32
National wholesale turkey hens	122.75	125.81	119.36	116.17	116.93	118.41	119.85	121.19	122.08	122.10	122.17
Retail prices					(Dollars per pound)						
Beef	7.25	7.64	7.73	7.84	8.01	8.18	8.22	8.20	8.16	8.11	8.07
Pork	4.50	4.63	4.58	4.62	4.70	4.72	4.71	4.71	4.69	4.68	4.66
Broiler	2.09	2.21	2.20	2.19	2.23	2.28	2.31	2.35	2.38	2.42	2.45
Turkey	1.83	1.92	1.90	1.87	1.89	1.92	1.95	1.99	2.02	2.04	2.07
Per capita consumption					(Pounds, retail)						
Beef	59.2	57.6	56.5	55.9	55.6	55.4	55.3	55.5	55.8	56.0	56.2
Pork	51.2	51.0	51.7	51.7	51.4	51.2	51.4	51.6	51.9	52.1	52.3
Broiler	96.8	97.7	98.6	98.8	99.1	99.3	99.6	100.0	100.4	100.9	101.3
Turkey	15.3	15.2	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3
Total	222.5	221.5	222.1	221.8	221.4	221.2	221.5	222.3	223.3	224.2	225.1

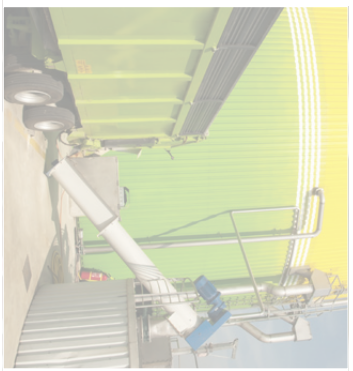
All projections are averages across 500 stochastic outcomes.

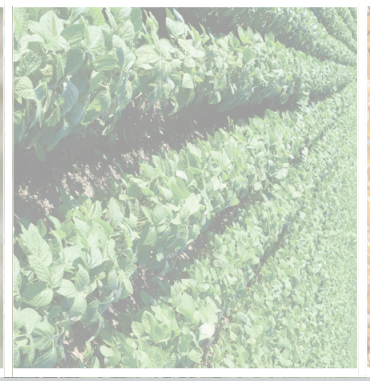
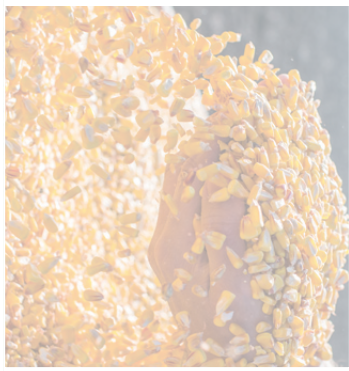
Dairy sector

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Milk supply											
Dairy cows (thousand head)	9,448	9,378	9,405	9,425	9,430	9,433	9,440	9,451	9,464	9,477	9,488
California	1,720	1,700	1,701	1,700	1,697	1,694	1,692	1,692	1,692	1,693	1,693
Wisconsin	1,273	1,267	1,268	1,268	1,268	1,267	1,267	1,266	1,266	1,265	1,264
New York	627	621	620	621	621	620	619	618	618	617	617
Idaho	652	648	653	659	662	665	668	672	676	679	682
Pennsylvania	474	463	459	455	452	449	446	444	442	440	438
Minnesota	461	463	466	469	470	471	473	474	475	475	476
Texas	622	635	653	669	683	696	707	717	727	735	742
Michigan	441	444	445	447	449	452	455	458	462	466	470
New Mexico	318	308	308	307	307	306	304	304	303	303	303
Ohio	257	255	256	256	256	256	255	255	255	254	254
Rest of U.S.	2,604	2,576	2,577	2,572	2,565	2,558	2,554	2,551	2,549	2,549	2,548
Milk yield (lbs per cow)	23,949	24,282	24,566	24,880	25,072	25,352	25,630	25,977	26,173	26,447	26,720
Milk production (billion lbs)	226.3	227.7	231.0	234.5	236.4	239.2	242.0	245.5	247.7	250.6	253.5
Minimum FMMO class prices					(Dollars per hundredweight)						
Class I mover	16.83	20.51	18.42	17.55	17.30	17.44	17.65	17.73	17.79	17.77	17.70
Class II	16.44	20.99	18.32	17.38	17.06	17.11	17.26	17.35	17.42	17.35	17.27
Class III	17.08	19.24	17.73	16.93	16.77	16.98	17.26	17.34	17.38	17.41	17.36
Class IV	16.09	20.29	17.62	16.68	16.36	16.41	16.56	16.65	16.72	16.65	16.57
All milk price	18.66	22.04	20.00	19.13	18.89	19.03	19.24	19.32	19.38	19.36	19.30
Actual dairy prod. margin	6.92	10.39	9.19	8.75	8.74	9.00	9.24	9.38	9.52	9.64	9.73
Wholesale prices					(Dollars per pound)						
Butter, CME	1.74	2.11	1.85	1.78	1.79	1.81	1.82	1.84	1.86	1.87	1.87
Cheese, Amer., 40#, CME	1.71	1.86	1.80	1.75	1.75	1.77	1.80	1.80	1.80	1.81	1.81
Nonfat dry milk, AA	1.31	1.60	1.41	1.34	1.30	1.29	1.30	1.30	1.30	1.29	1.28
Dairy product production					(Million pounds)						
American cheese	5,511	5,576	5,687	5,792	5,862	5,939	6,018	6,113	6,182	6,268	6,357
Other cheese	8,112	8,253	8,433	8,601	8,713	8,845	8,981	9,141	9,261	9,397	9,534
Butter	2,070	2,172	2,225	2,283	2,305	2,341	2,378	2,434	2,444	2,481	2,513
Nonfat dry milk	2,569	2,675	2,756	2,820	2,887	2,959	3,037	3,128	3,206	3,304	3,400
Dairy product exports											
American cheese	193	215	219	223	225	226	229	234	238	243	247
Other cheese	706	731	744	757	769	781	794	807	821	835	848
Butter	99	112	121	123	123	124	127	130	133	136	139
Nonfat dry milk	2,000	2,040	2,090	2,137	2,195	2,251	2,313	2,385	2,456	2,534	2,610
Per-capita consumption					(Pounds)						
Butter	6.5	6.5	6.6	6.7	6.8	6.8	6.9	7.0	7.0	7.1	7.1
Nonfat dry milk	2.0	1.9	2.0	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.2
Total cheese	39.3	39.8	40.4	40.9	41.3	41.6	42.0	42.5	42.8	43.1	43.5
American	16.0	16.2	16.4	16.7	16.8	16.9	17.1	17.2	17.3	17.5	17.6
Other	23.3	23.6	23.9	24.3	24.5	24.7	25.0	25.3	25.4	25.7	25.9
Total fluid milk	154.2	150.1	148.3	146.4	144.4	142.5	140.4	138.5	136.5	134.5	132.5

All projections are averages across 500 stochastic outcomes.



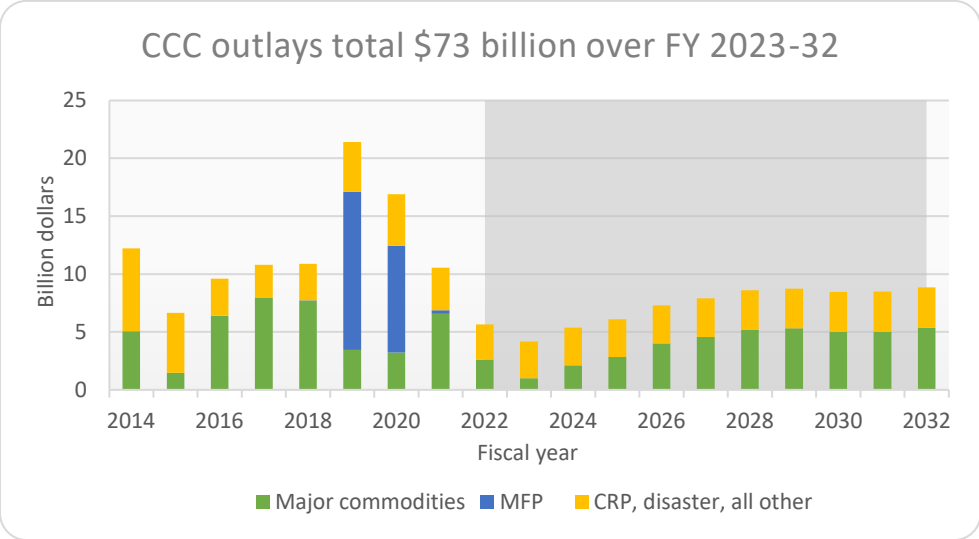


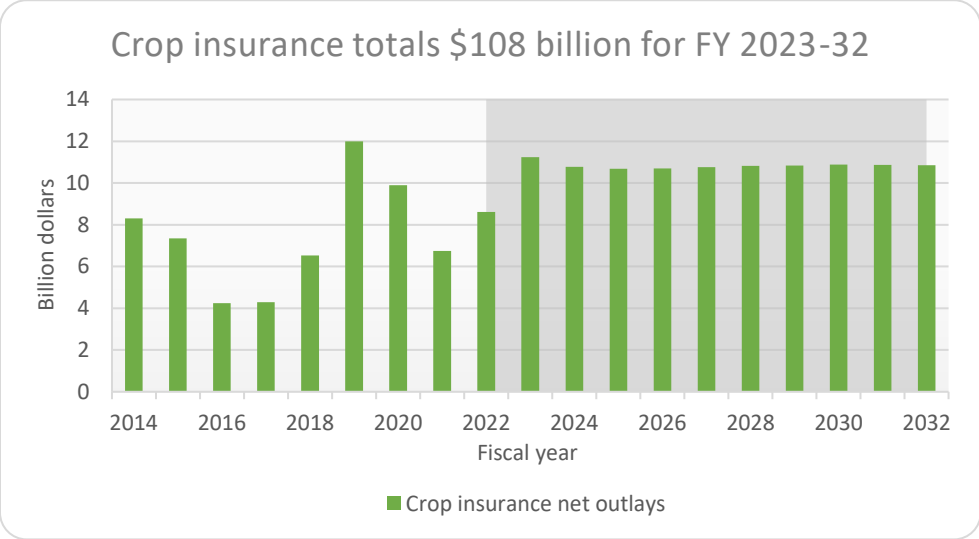
Aggregate indicators

Government costs

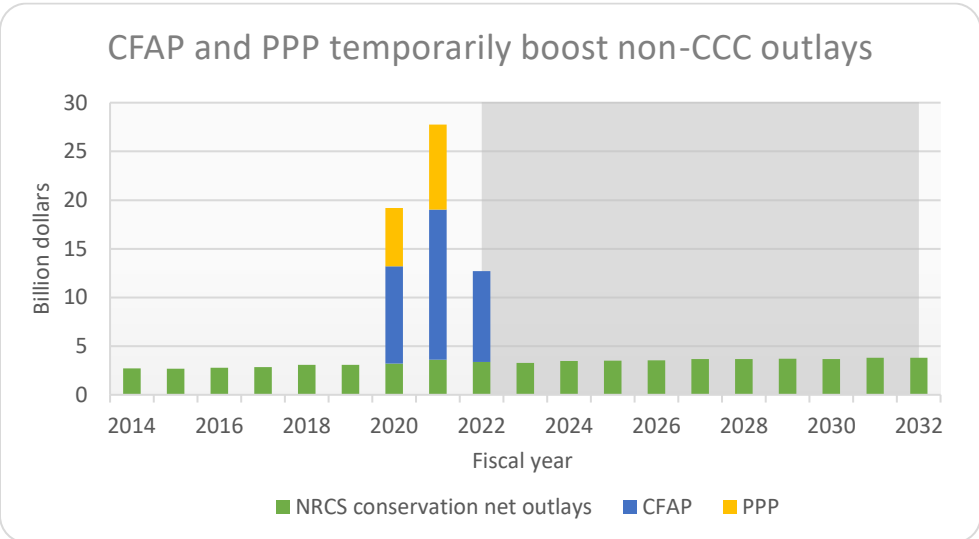
Net Commodity Credit Corporation (CCC) outlays peaked in FY 2019 because of $13.7 billion in MFP payments, and a second round of MFP payments kept outlays elevated in FY 2020. Net CCC outlays drop to $5.6 billion in FY 2022, given modest ARC and PLC payments for crops harvested in 2020. Between FY 2023 and FY 2032, net CCC outlays total $73.9 billion, with major commodity programs accounting for $40 billion.

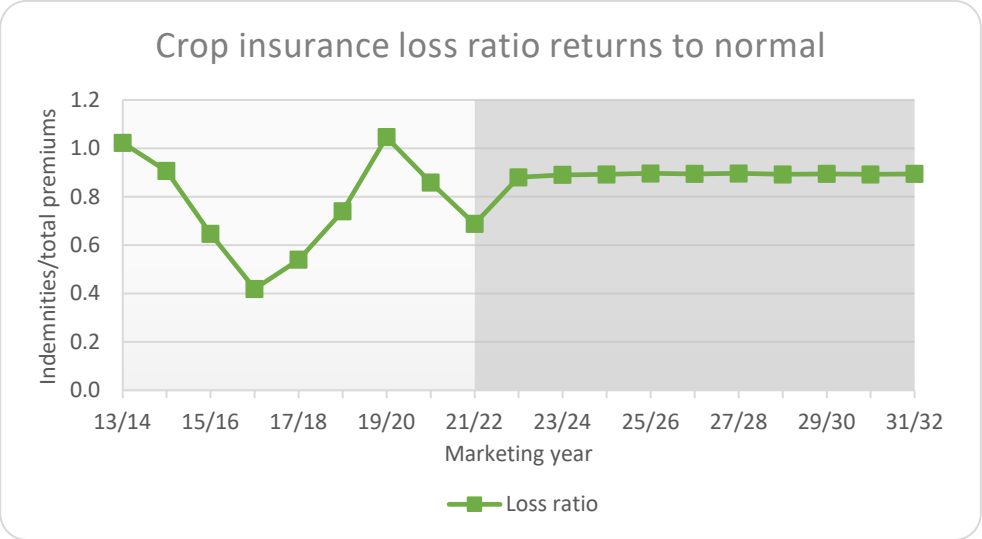


Spring flooding and other natural disasters increased federal spending on the crop insurance program in FY 2019 and FY 2020. Higher market prices increase the value of crops insured and thus the value of premium subsidies and other program costs in FY 2022. Normal variability, particularly in yields, results in a projected average loss ratio of about 0.9 in the projection period, subject to large swings due to weather and other factors. Program fiscal costs total $108 billion between FY 2023 and FY 2032.



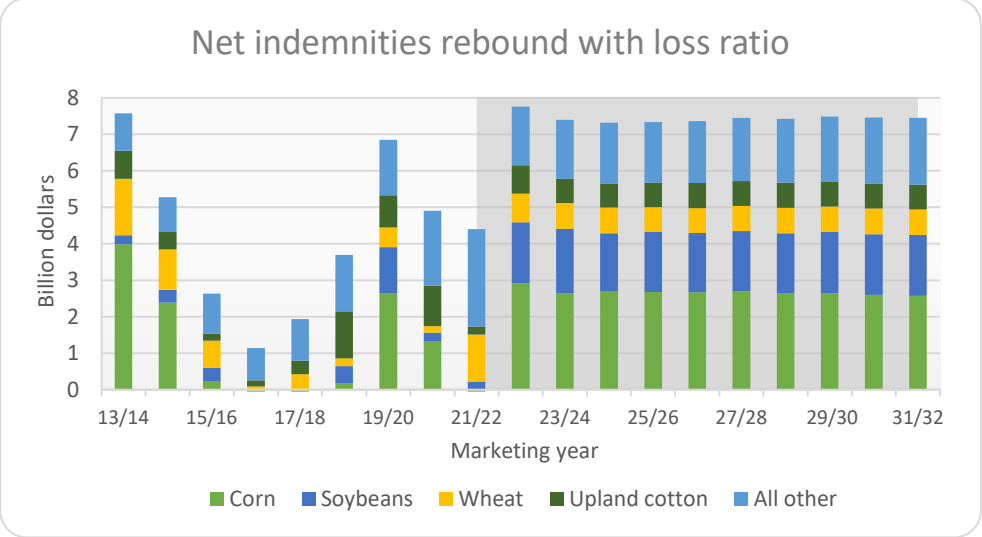
CFAP is not treated as part of CCC outlays, and PPP was not operated by USDA, but both provided substantial benefits to farmers in FY 2020, 2021 with CFAP continuing in FY 2022. The Natural Resources Conservation Service (NRCS) operates several mandatory conservation programs. Spending on those programs total $36 billion over FY 2023 to FY 2032. The conservation reserve is managed by the Farm Service Agency, and its outlays are included in the CCC accounts.



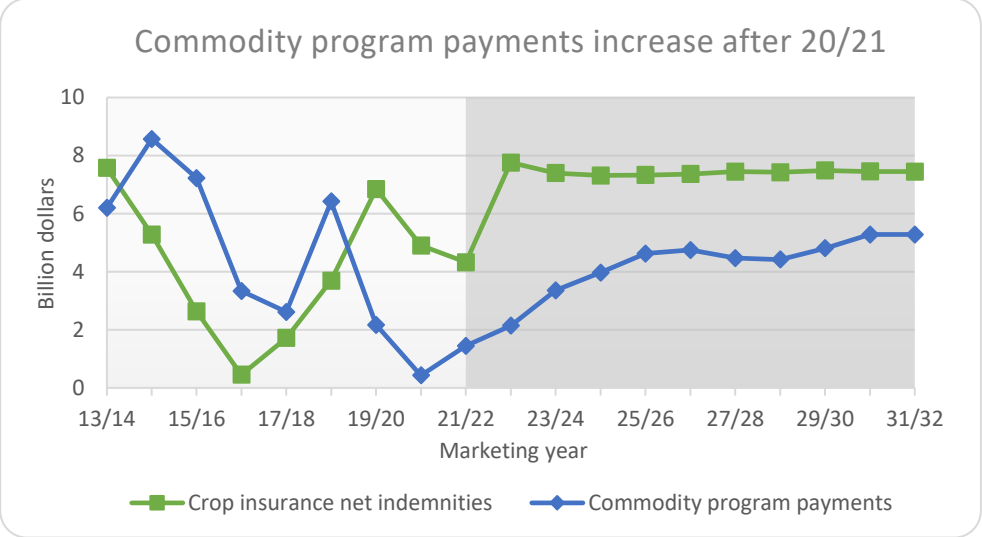


Crop insurance

Crop insurance indemnity payments for losses were unusually low from 2015-2018, but increased because of widespread flooding in 2019. The loss ratio (indemnity payments divided by total premiums, including both producer-paid and government subsidized premiums) was just over 1.0 in 2019, and then fell for the next two years as weather impacts were less influential. In the projection period, the distribution of yields, indemnities and premiums results in an average loss ratio of near 0.9.



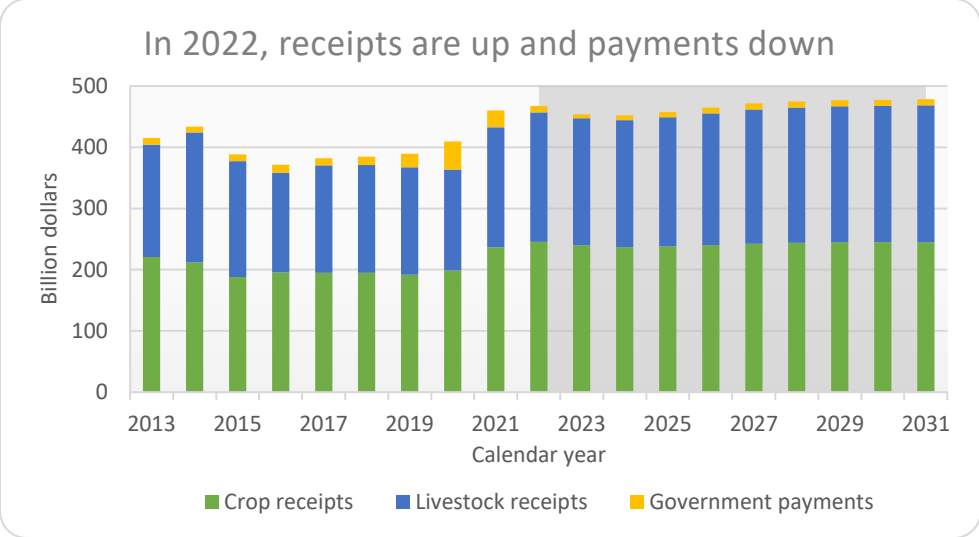
Net indemnities are the difference between indemnity payments for losses and producer-paid premiums. Like the loss ratio, net indemnities can vary dramatically from one year to the next. After a smaller loss ratio in 2021/22, net indemnities increase in 2022/23 because higher prices increase crop insurance liabilities. In the projection period, net indemnities average about $7.4 billion per year.



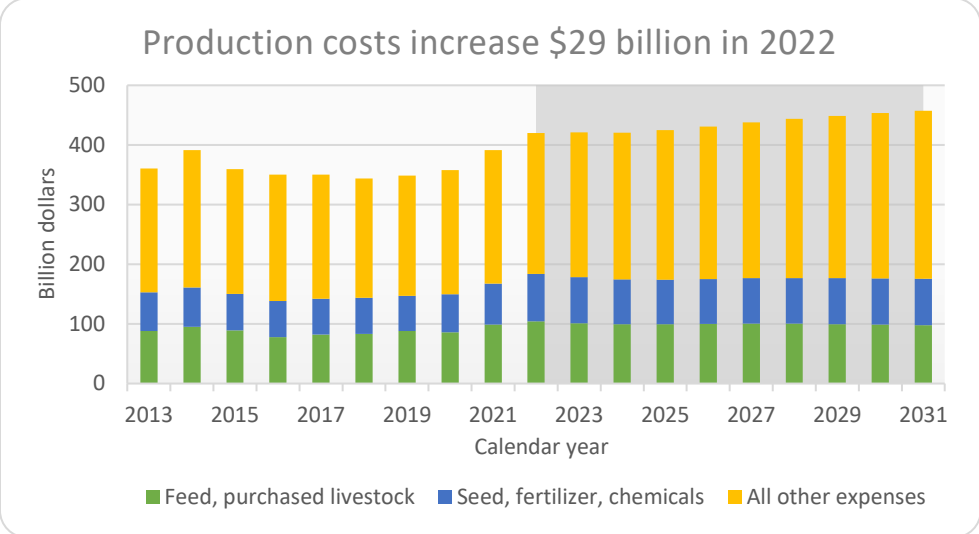
Crop insurance net indemnities can be much greater or smaller than payments under farm bill crop commodity programs (currently ARC, PLC, and marketing loans; the chart excludes ad hoc programs like MFP and CFAP). Over the next ten years, projected average commodity program payments are lower but draw closer to crop insurance net indemnities toward the end of the projection period. In any given year, results can differ greatly. For example, years with high yields and low prices generally result in high PLC payments but low crop insurance net indemnities.

Farm income, expenses

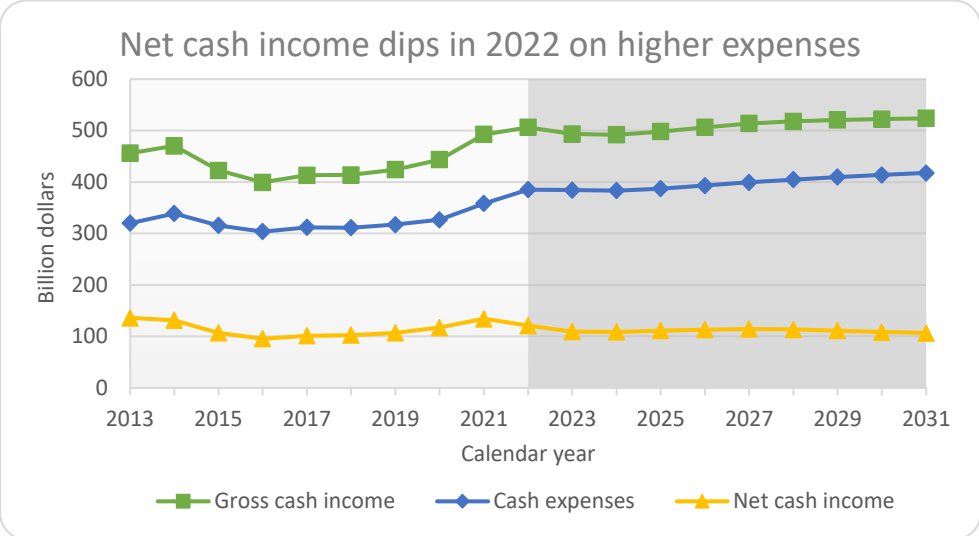
In 2021, farm cash receipts from both livestock sales and crop receipts increased, more than compensating for lower government payments thereby increasing combined revenue. Crop and livestock receipts increase by a total of $24 billion in 2022, but projected government payments decline by $16 billion in the assumed absence of new programs. In later years, receipts increase at a modest pace, while payments are relatively stable.

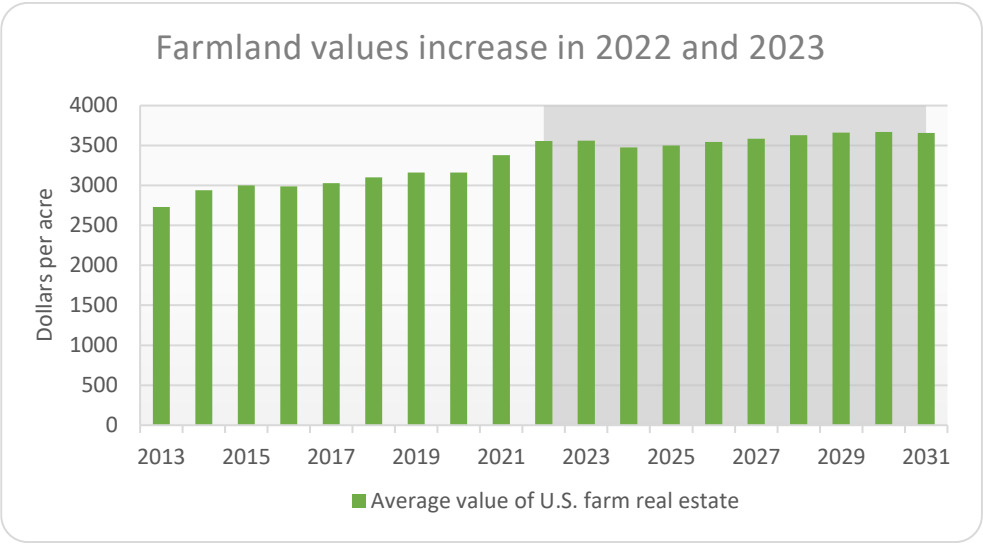


Farm production expenses rose in in 2021, largely because of higher feed and fertilizer prices. In 2022 total expenses rise by $29 billion (7%) with higher costs for feed and fertilizer again accounting for most of the increase. Projected production expenses increase by an average of 1.5% per year from 2022 to 2031, reflecting greater production and slight upticks in most input prices.



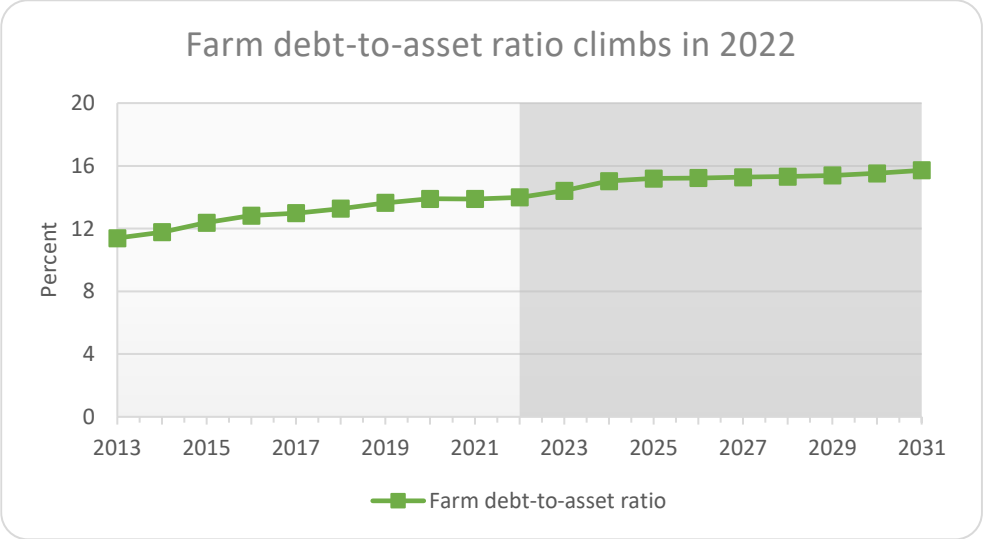
Net cash income for the farm sector increased in 2021 despite a decline in government payments as both crop receipts and livestock receipts increased. Net cash income declines in 2022 as the reduction in government payments and the increase in production expenses outweigh the increase in cash receipts. Net cash income drops again in 2023, in part because of a further decline in payments and a continued rise in expenses.



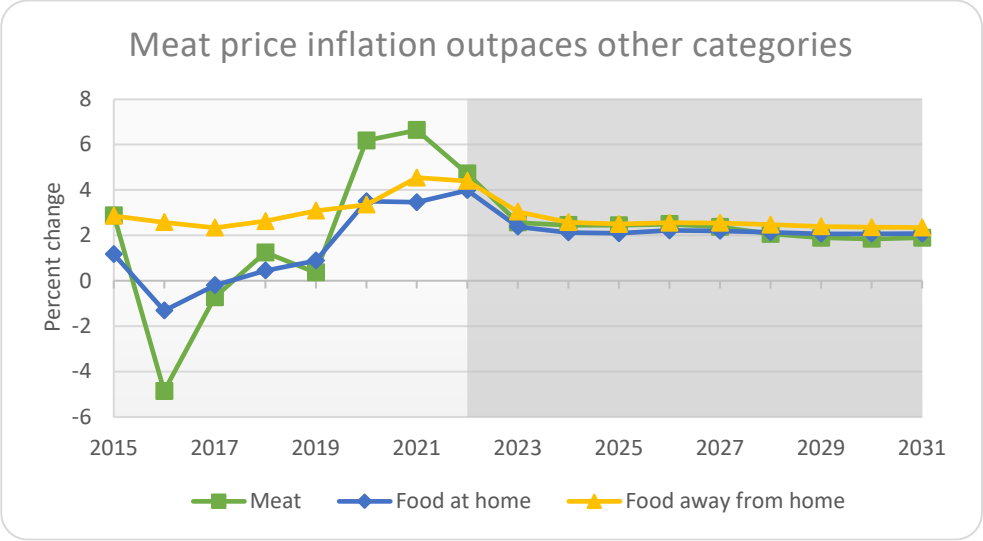


Farm assets and debt

Reports suggest farmland values in many parts of the country are increasing. Higher farm income and delayed interest rate hikes support a 5% projected increase in farm real estate value in 2022. After 2022, climbing interest rates reduce real net farm income and limit upward support for farmland value.



The national average farm debt-to-asset ratio dropped to its lowest level in decades in 2012, but then increased in every year through 2020. The projected increase in farm asset values in 2021 allowed the debt-to-asset ratio to stabilize, and actually dip very slightly. Beginning again in 2022, increases in farm debt causes the ratio to resume its increase, suggesting that long-term concerns about the status of farm finances remain.



Consumer food prices

Meat prices have led the trend toward higher food inflation in recent years, but the cost of other food products has moved higher as well in recent months. Food at home inflation is projected to increase by 4.0% in 2022, following back to back 3.5% increases in 2020 and 2021. This follows a period from 2009 to 2019 when food at home inflation topped 2.5% only once (2011). U.S. consumers have resumed spending more of their dollars on food away from home as pandemic restrictions subside.

Net government outlays

Fiscal year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Feed grains					(Million dollars)						
Corn	19	35	351	644	1,366	1,773	2,167	2,253	1,988	2,043	2,235
Sorghum	0	4	21	35	69	92	83	77	76	79	82
Barley	47	10	72	77	103	112	117	120	129	132	146
Oats	3	2	1	3	5	5	5	4	5	4	5
Food grains											
Wheat	903	46	284	434	648	667	745	711	732	717	856
Rice	225	147	253	244	217	203	179	160	136	107	78
Oilseeds											
Soybeans	-9	19	52	179	333	487	666	748	712	658	710
Peanuts	417	254	279	336	369	373	378	378	381	372	381
Other oilseeds	35	1	2	10	9	18	21	19	16	15	16
Other selected commodities											
Upland cotton	533	85	256	295	320	326	338	376	375	415	446
Dairy	441	390	552	585	570	508	482	466	446	464	404
Subtotal, selected commodities	2,613	991	2,123	2,842	4,010	4,565	5,181	5,314	4,994	5,007	5,360
Conservation reserve	1,828	1,994	2,035	2,021	2,030	2,068	2,116	2,145	2,172	2,168	2,168
Other CCC											
Disaster payments, NAP	691	684	682	677	677	682	682	682	682	693	693
All other net CCC outlays	503	494	521	554	583	598	604	607	610	616	616
Net CCC outlays	5,635	4,164	5,362	6,094	7,300	7,913	8,584	8,748	8,458	8,484	8,837
NRCS conservation	3,396	3,280	3,469	3,503	3,563	3,671	3,690	3,712	3,696	3,820	3,820
Crop insurance	8,615	11,232	10,782	10,689	10,695	10,753	10,828	10,841	10,886	10,865	10,859
Selected other non-CCC											
Coronavirus food assist. (CFAP)	9,326	0	0	0	0	0	0	0	0	0	0
Paycheck protection (PPP)	0	0	0	0	0	0	0	0	0	0	0
Other non-CCC emergency	2,655	0	0	0	0	0	0	0	0	0	0
Total mandatory outlays	29,627	18,675	19,613	20,286	21,558	22,337	23,101	23,302	23,041	23,169	23,517

Note: "NRCS Conservation" denotes mandatory spending on conservation programs authorized by the 2002, 2008, 2014 and 2018 farm bills that is not included in reported CCC outlays. "NAP" is the Noninsured Crop Disaster Assistance Program. CFAP is the Coronavirus Food Assistance Program.
Fiscal years begin on October 1 of the previous calendar year (FY 2021: Oct. 1, 2020-Sep. 30, 2021).
All projections are averages across 500 stochastic outcomes.

Selected direct government payments

Marketing year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
					(Million dollars)						
ARC payments	61	118	418	900	1,483	2,142	2,614	2,156	2,021	2,103	2,051
PLC payments	366	1,282	1,661	2,356	2,388	2,370	2,026	2,186	2,278	2,569	3,054
Marketing loans	0	43	62	102	97	114	109	126	119	136	176
Total	9,752	1,444	2,141	3,358	3,968	4,626	4,749	4,469	4,419	4,808	5,282

Note: Includes selected payments for feed grains, food grains, oilseeds and cotton.
All projections are averages across 500 stochastic outcomes.

Crop insurance

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
					(Million dollars)						
Total premiums	13,715	15,242	14,278	14,073	13,995	14,108	14,217	14,303	14,356	14,357	14,302
Producer-paid premiums	5,112	5,660	5,321	5,249	5,220	5,262	5,304	5,338	5,360	5,362	5,345
Premium subsidies	8,603	9,582	8,957	8,824	8,775	8,846	8,913	8,965	8,997	8,994	8,958
Total indemnities	9,434	13,421	12,718	12,562	12,553	12,625	12,750	12,764	12,844	12,818	12,795
					(Ratio of indemnities to total premiums)						
Loss ratio	0.69	0.88	0.89	0.89	0.90	0.89	0.90	0.89	0.89	0.89	0.89
					(Million dollars)						
Net indemnities	4,322	7,761	7,397	7,313	7,333	7,363	7,446	7,426	7,484	7,455	7,450
Corn	-81	2,916	2,643	2,687	2,680	2,673	2,692	2,640	2,639	2,602	2,571
Soybeans	222	1,669	1,770	1,600	1,652	1,621	1,658	1,645	1,684	1,658	1,674
Wheat	1,288	784	702	704	672	684	687	701	699	708	699
Upland cotton	222	778	660	658	668	685	682	686	683	679	672
All other	2,670	1,613	1,622	1,664	1,661	1,699	1,728	1,753	1,779	1,809	1,834
Net outlays	6,742	8,615	11,232	10,782	10,689	10,695	10,753	10,828	10,841	10,886	10,865

All projections are averages across 500 stochastic outcomes.

Farm cash receipts

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
					(Billion dollars)						
Feed grains	83.56	86.15	79.92	79.66	79.26	79.50	79.60	79.56	79.14	78.27	77.13
Food grains	14.59	14.51	14.48	14.03	14.15	14.16	14.29	14.37	14.46	14.45	14.44
Oilseeds	54.78	58.56	56.40	54.37	54.36	54.61	55.11	55.40	55.34	55.01	54.69
Cotton	7.35	8.76	8.06	8.06	8.12	8.19	8.15	8.11	8.03	7.92	7.78
Sugar	3.09	3.03	3.09	3.06	3.05	3.06	3.05	3.04	3.02	3.00	2.95
Other crops	73.27	74.30	77.73	77.39	79.36	80.83	82.27	83.46	85.16	86.57	88.01
Cattle	72.26	78.24	81.80	82.84	84.09	85.81	86.90	86.36	85.58	84.79	84.34
Hogs	26.80	25.47	23.96	24.25	24.49	24.94	25.15	25.36	25.45	25.43	25.33
Dairy products	41.97	49.89	45.87	44.49	44.27	45.09	46.17	47.04	47.58	48.12	48.51
Poultry, eggs	48.04	50.60	48.69	48.84	49.97	51.32	52.66	53.90	54.96	55.75	56.57
Other livestock	6.86	7.26	7.30	7.40	7.56	7.75	7.94	8.10	8.25	8.39	8.54
Total cash receipts	432.59	456.77	447.30	444.38	448.67	455.25	461.29	464.70	466.98	467.70	468.28

All projections are averages across 500 stochastic outcomes.

Farm production expenses

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
					(Billion dollars)						
Feed	64.92	68.54	63.31	61.51	60.99	60.92	61.24	61.36	61.20	60.66	60.05
Purchased livestock	33.76	35.83	37.68	38.00	38.33	38.92	39.26	38.85	38.37	37.90	37.59
Seed	23.41	23.99	24.81	25.44	25.82	26.11	26.35	26.56	26.74	26.86	26.92
Fertilizer	28.49	37.22	34.88	31.79	30.85	30.80	31.00	31.20	31.44	31.61	31.64
Chemicals	16.91	18.07	17.78	17.89	18.11	18.36	18.61	18.85	19.07	19.26	19.45
Fuels and electricity	22.02	23.75	23.35	23.15	23.08	23.32	23.75	24.31	24.95	25.59	26.30
Interest	20.79	22.68	24.68	26.33	27.69	28.81	29.77	30.43	30.94	31.36	31.69
Contract and hired labor	37.69	39.42	41.60	42.71	44.33	45.83	47.38	48.95	50.65	52.37	54.13
Capital consumption	30.93	32.61	33.57	33.94	34.28	34.66	35.05	35.44	35.81	36.12	36.33
Rent to landlords	18.87	18.05	18.34	18.27	18.39	18.63	18.87	19.09	19.21	19.20	19.06
All other	93.69	99.97	100.80	101.49	102.81	104.63	106.54	108.48	110.41	112.29	114.12
Total production expenses	391.48	420.14	420.80	420.52	424.68	430.98	437.82	443.51	448.79	453.21	457.27

All projections are averages across 500 stochastic outcomes.

Farm income indicators

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
					(Billion dollars)						
1. Farm receipts	465.31	495.58	487.07	484.46	489.42	496.82	503.74	507.95	511.04	512.51	513.83
Crops	236.65	245.31	239.68	236.56	238.30	240.34	242.48	243.95	245.16	245.21	245.00
Livestock	195.94	211.47	207.62	207.82	210.37	214.91	218.81	220.75	221.82	222.49	223.28
Farm-related	32.72	38.81	39.77	40.07	40.76	41.57	42.45	43.25	44.06	44.81	45.55
2. Government payments	27.14	10.72	6.47	7.51	8.76	9.37	10.02	10.15	9.82	9.72	10.16
3. Gross cash income (1 + 2)	492.45	506.29	493.54	491.97	498.18	506.19	513.76	518.10	520.86	522.23	523.98
4. Non-money income	21.55	22.87	23.09	22.97	22.91	22.92	22.94	22.95	22.89	22.77	22.61
5. Value of inventory Change	-3.41	-3.83	-0.34	0.40	0.20	0.42	0.46	0.72	0.73	0.84	0.60
6. Gross farm income (3 + 4 + 5)	510.59	525.34	516.29	515.34	521.29	529.53	537.17	541.77	544.49	545.84	547.20
7. Cash expenses	358.26	385.22	384.24	383.28	387.05	393.00	399.46	404.76	409.66	413.78	417.63
8. Total expenses	391.48	420.14	420.80	420.52	424.68	430.98	437.82	443.51	448.79	453.21	457.27
9. Net cash income (3 - 7)	134.19	121.08	109.30	108.69	111.13	113.19	114.30	113.33	111.20	108.45	106.35
10. Realized net farm income (3 + 4 - 8)	122.51	109.03	95.83	94.42	96.41	98.12	98.89	97.53	94.97	91.79	89.33
11. Net farm income (6 - 8)	119.11	105.20	95.49	94.82	96.61	98.55	99.35	98.25	95.70	92.63	89.93
Deflated (2020 $)	123.73	105.20	93.39	90.54	90.08	89.80	88.46	85.50	81.39	77.03	73.14

All projections are averages across 500 stochastic outcomes.

Land rental rates and real estate values

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Rental rates					(Dollars per acre)						
Cropland	141.00	146.11	148.62	147.98	148.98	150.96	152.97	154.75	155.75	155.68	154.57
Pasture	13.00	13.22	13.38	13.35	13.42	13.59	13.80	13.99	14.08	14.07	13.95
Value of farm real estate	3,380	3,558	3,562	3,476	3,500	3,544	3,586	3,628	3,662	3,671	3,656

All projections are averages across 500 stochastic outcomes.

Land use for major crops and the conservation reserve

Marketing year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Planted area					(Million acres)						
Corn	93.36	93.91	92.88	93.92	93.54	93.34	92.84	92.37	91.90	91.39	90.78
Soybeans	87.20	87.72	89.33	87.67	87.97	87.85	88.18	88.32	88.39	88.37	88.50
Wheat	46.70	48.39	46.78	46.70	46.54	46.60	46.55	46.57	46.56	46.60	46.64
Upland cotton	11.09	12.68	11.89	11.91	11.94	11.91	11.84	11.77	11.67	11.58	11.50
Sorghum	7.31	6.81	6.67	6.69	6.69	6.69	6.70	6.71	6.72	6.73	6.73
Barley	2.66	2.57	2.60	2.64	2.56	2.50	2.46	2.44	2.41	2.38	2.34
Oats	2.55	2.44	2.55	2.59	2.62	2.64	2.66	2.68	2.70	2.73	2.77
Rice	2.53	2.66	2.70	2.74	2.75	2.76	2.77	2.78	2.79	2.81	2.83
Sunflowers	1.29	1.45	1.28	1.29	1.29	1.27	1.27	1.26	1.27	1.27	1.28
Peanuts	1.59	1.54	1.62	1.62	1.61	1.61	1.61	1.60	1.60	1.61	1.62
Sugar beets	1.16	1.17	1.17	1.18	1.17	1.17	1.15	1.14	1.14	1.13	1.11
Sugar cane (harvested)	0.94	0.95	0.95	0.96	0.96	0.96	0.95	0.95	0.94	0.93	0.91
12 crop planted area	258.37	262.29	260.43	259.91	259.62	259.29	258.98	258.58	258.09	257.53	257.01
Hay (harvested)	50.74	51.11	51.28	51.28	51.24	51.16	51.16	51.23	51.37	51.53	51.70
12 crops + hay	309.11	313.40	311.71	311.19	310.87	310.46	310.14	309.82	309.46	309.06	308.71
Conservation reserve (CRP)	20.51	23.00	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50
12 crops + hay + CRP	329.62	336.40	335.21	334.69	334.37	333.96	333.64	333.32	332.96	332.56	332.21
Double-crop soybeans	3.99	4.76	4.36	4.19	4.18	4.16	4.16	4.15	4.13	4.11	4.08
12 crops + hay + CRP - double-crop soybeans	325.64	331.64	330.85	330.50	330.19	329.79	329.48	329.17	328.83	328.46	328.13

All projections are averages across 500 stochastic outcomes.

Balance sheet of the farm sector

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
					(Billion dollars)						
Assets	3,270	3,400	3,375	3,284	3,293	3,330	3,364	3,394	3,413	3,411	3,390
Real estate	2,693	2,801	2,804	2,740	2,758	2,791	2,822	2,853	2,879	2,885	2,874
Other assets	577	598	571	544	535	539	542	540	535	526	516
Debts	454	476	487	494	500	507	514	520	525	530	533
Real estate	302	313	322	328	331	335	338	342	345	348	349
Other debts	153	163	164	166	169	173	176	178	180	182	184
Debt/asset ratio	13.9%	14.0%	14.4%	15.0%	15.2%	15.2%	15.3%	15.3%	15.4%	15.5%	15.7%

All projections are averages across 500 stochastic outcomes.

Consumer price indices for food

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
						(1982-84 = 100)					
Total food	277.8	289.5	297.4	304.5	311.5	319.0	326.7	334.2	341.8	349.4	357.2
(Inflation rate)	3.9%	4.2%	2.7%	2.4%	2.3%	2.4%	2.4%	2.3%	2.3%	2.2%	2.2%
Food at home	258.9	269.2	275.6	281.5	287.4	293.7	300.2	306.6	312.9	319.4	326.0
Cereal and bakery	289.1	302.2	310.4	317.8	324.6	332.1	339.6	347.6	355.7	364.0	372.6
Meat	282.8	296.2	303.8	311.2	318.8	326.8	334.5	341.4	347.9	354.3	361.0
Dairy	231.4	241.0	248.1	252.6	258.1	264.5	271.4	278.4	285.3	292.4	299.6
Fruit and vegetables	314.8	324.4	330.2	335.2	340.6	346.4	352.5	358.6	364.9	371.3	377.8
Other food at home	222.9	229.9	234.5	239.3	243.7	248.5	253.3	258.4	263.6	268.9	274.4
Sugar and sweets	234.4	242.0	248.6	255.6	260.9	266.9	273.1	279.5	286.0	292.9	299.8
Fats and oils	240.1	249.1	256.9	263.5	270.9	278.2	285.8	293.9	302.5	311.3	320.5
Other prepared items	237.4	245.7	251.0	256.1	261.0	266.3	271.5	277.2	282.8	288.7	294.6
Non-alc. Beverages	181.8	185.9	188.2	191.5	194.1	197.2	200.3	203.5	206.7	210.1	213.5
Food away from home	307.3	320.8	330.6	339.1	347.6	356.4	365.5	374.6	383.5	392.6	401.8

All projections are averages across 500 stochastic outcomes.

Consumer expenditures for food

Calendar year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
						(Dollars per person)					
Total food per capita	6,018	6,385	6,578	6,775	6,968	7,168	7,372	7,575	7,777	7,981	8,188
Food at home	2,845	2,931	2,980	3,045	3,115	3,190	3,268	3,345	3,422	3,499	3,577
Food away from home	3,173	3,454	3,598	3,729	3,853	3,978	4,104	4,230	4,355	4,482	4,611
Multiply by population for:						(Billion dollars)					
Total U.S. food expenditures	1,990	2,118	2,192	2,269	2,346	2,427	2,509	2,592	2,675	2,760	2,846

All projections are averages across 500 stochastic outcomes.

Stochastic results

Marketing year	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32
Corn price					(Dollars per bu.)						
90th percentile	5.53	6.14	6.09	5.93	5.95	5.76	5.69	5.62	5.45	5.49	5.17
Expectation	5.44	4.74	4.67	4.51	4.47	4.41	4.37	4.30	4.23	4.12	4.02
10th percentile	5.34	3.58	3.41	3.27	3.31	3.27	3.15	3.18	3.04	3.00	2.90
Soybean price					(Dollars per bu.)						
90th percentile	12.88	15.62	14.66	14.72	14.35	14.42	14.28	14.58	13.91	13.63	13.58
Expectation	12.48	12.72	11.52	11.59	11.34	11.39	11.28	11.22	10.99	10.81	10.62
10th percentile	12.12	9.88	8.47	8.38	8.50	8.51	8.36	8.36	8.17	7.95	7.75
Wheat price					(Dollars per bu.)						
90th percentile	7.24	7.43	7.53	7.20	7.22	7.18	7.22	7.15	7.00	7.01	6.89
Expectation	7.18	6.16	6.07	5.76	5.82	5.71	5.72	5.67	5.64	5.55	5.48
10th percentile	7.12	4.98	4.63	4.29	4.37	4.31	4.25	4.31	4.33	4.21	4.16
PLC payments					(Million dollars)						
90th percentile	419	3,129	4,221	5,987	5,852	5,451	5,027	5,399	5,534	5,818	7,398
Expectation	366	1,282	1,661	2,356	2,388	2,370	2,026	2,186	2,278	2,569	3,054
10th percentile	305	254	290	296	313	328	237	303	251	225	200
ARC payments					(Million dollars)						
90th percentile	67	277	1,375	2,563	3,988	5,330	6,974	5,839	5,984	5,613	5,249
Expectation	61	118	418	900	1,483	2,142	2,614	2,156	2,021	2,103	2,051
10th percentile	54	11	12	15	36	54	89	38	50	56	73
Crop ins. net indemnities					(Million dollars)						
90th percentile	4,439	11,419	11,282	10,940	11,641	11,216	11,734	11,575	11,723	11,346	11,576
Expectation	4,322	7,761	7,397	7,313	7,333	7,363	7,446	7,426	7,484	7,455	7,450
10th percentile	4,198	4,873	4,203	4,242	3,976	4,023	4,012	4,088	4,116	4,155	4,078