

# Ag Decision Maker

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## INSIDE . . .

### PAGE 4

The role of ozone in global warming

### PAGE 5

Iowa's beef cow herd is off and running

### PAGE 8

Farm financial planning program helps producers analyze their numbers

## UPDATES

The following [Information Files](#) have been updated on extension. [iastate.edu/agdm](http://iastate.edu/agdm):

A1-21 Historical Costs of Crop Production

B1-10 Livestock Planning Prices

B2-10 Historical Hog and Lamb Prices

B2-12 Historical Cattle Prices

B2-41 Lean Hog Basis - Iowa/Minnesota

B2-42 Live Cattle Basis - Iowa/Minnesota

B2-43 Feeder Cattle Basis-Iowa

B2-45 Feeder Steer-Heifer Price Spread

C3-60 Building Equity in Your Farm Business

The following [Videos and Decision Tool](#) have been updated on extension. [iastate.edu/agdm](http://iastate.edu/agdm):

A1-10 Chad Hart's Latest Ag Outlook 2022 Farm Bill Decisions (webinar replays)

The following [Profitability Tools](#) have been updated on extension. [iastate.edu/agdm/outlook.html](http://iastate.edu/agdm/outlook.html):

A1-85 Corn Profitability

A1-86 Soybean Profitability

A2-11 Iowa Cash Corn and Soybean Prices

A2-15 Season Average Price Calculator

D1-10 Ethanol Profitability

D1-15 Biodiesel Profitability



## Drought elsewhere helps

By Chad Hart, extension crop market economist  
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The old joke in agricultural marketing is "What is the cure for high prices? High prices." The longer high prices stick around, the more customers look for substitutes or alternative (and cheaper) suppliers. But when those other suppliers are having issues with supplies themselves, those higher prices can stay around for a good time longer. That is the situation seemingly setting up in the crop markets. US crop prices have been high and our international customers have been looking for alternatives, but the search is getting harder as the drought in South America is limiting those alternative supplies coming from there.

Traders have been tracking the USDA projections for South American crops over the past few months. Each month, those projections move a bit lower. The February update provided some additional downward movement on South American production, roughly in line with the private trade expectations. Tables 1 and 2 show the latest global estimates. For corn, the general picture is for increased global production, but the

growth from South America is being reduced by the drought. As the table displays, comparing the year-over-year numbers (the far right column), most places in the world are growing more corn. Only Serbia and India are projected to have less corn production this year. Increased corn plantings, especially in Brazil, had led expectations of sizable leaps in corn production in South America. But the drought conditions have lowered those expectations in both the January and February updates from USDA.

The global soybean situation is different. In prior months, the story was similar to corn. Global production was increasing, as was South American production. But the February update finally revealed the South American drought likely has had a major impact. With the latest cuts to South American crop expectations, Brazil and Argentina are both set to bring in smaller crops than last year and that will bring global production down for the first time in several years. In November, the projections were



for Argentina to have 51 million tons of soybeans and Brazil to have 144 million tons. Over the past few months, those targets have slid to 45 million tons for Argentina and 134 million tons for Brazil. That is an 11.8% decline for Argentina and 7% decline for Brazil.

Those expected tighter global supplies have supported and lifted both crops, with soybeans leading the charge. Smaller crops out of South America should open up additional opportunities for US crop exports, partially offsetting the export losses from the higher prices. So that will be the next part of the story to watch, the export sales movement over the next few months. Figures 1 and 2 show the export sales pace currently and compare it across the past few years. In both graphs, the blue line shows the sales pattern for the 2019 crop, when trade policy and tariffs dominated the export discussion. The green line shows the pattern for the 2020 crop, which bounced higher due to trade deals (USMCA and Phase 1) and buying surges stimulated by viruses (African Swine Fever and COVID). The red line shows the sales for 2021 thus far and the black line displays the five-year average pattern for export sales.

The export sales patterns for both crops were fairly similar in 2019 and 2020. Both crops were hurt by the tariffs and bounced back with the trade agreements.

**Table 1. World corn production. Source: USDA-WAQB.**

Country or Region	2020-2021 estimate	2021-2022 forecast	Change from January 12	Change from 2020-2021
<i>Million tons</i>				
World	1,123.1	1,205.3	-1.6	82.3
United States	358.4	383.9	--	25.5
Foreign	764.6	821.4	-1.6	56.8
Argentina	51.5	54.0	--	2.5
Brazil	87.0	114.0	-1.0	27.0
Mexico	27.3	27.6	--	0.3
Canada	13.6	14.0	--	0.4
European Union	67.1	70.0	--	2.9
Serbia	8.1	6.2	--	-1.9
FSU-12	48.9	63.1	-0.1	14.2
Ukraine	30.3	42.0	--	11.7
Russia	13.9	15.0	--	1.1
South Africa	16.9	17.0	--	0.1
China	260.7	272.6	--	11.9
India	31.5	30.0	--	-1.5

**Table 2. World soybean production. Source: USDA-WAQB.**

Country or Region	2020-2021 estimate	2021-2022 forecast	Change from January 12	Change from 2020-2021
<i>Million tons</i>				
World	366.2	363.9	-8.7	-2.4
United States	114.7	120.7	--	6.0
Foreign	251.5	243.2	-8.7	-8.3
Argentina	46.2	45.0	-1.5	-1.2
Brazil	138.0	134.0	-5.0	-4.0
Paraguay	9.9	6.3	-2.2	-3.6
Canada	6.4	6.3	--	-0.1
India	10.5	11.9	--	1.4
China	19.6	16.4	--	-3.2

The 2020 marketing year turned out to be the best export year, in terms of bushels, for both crops.

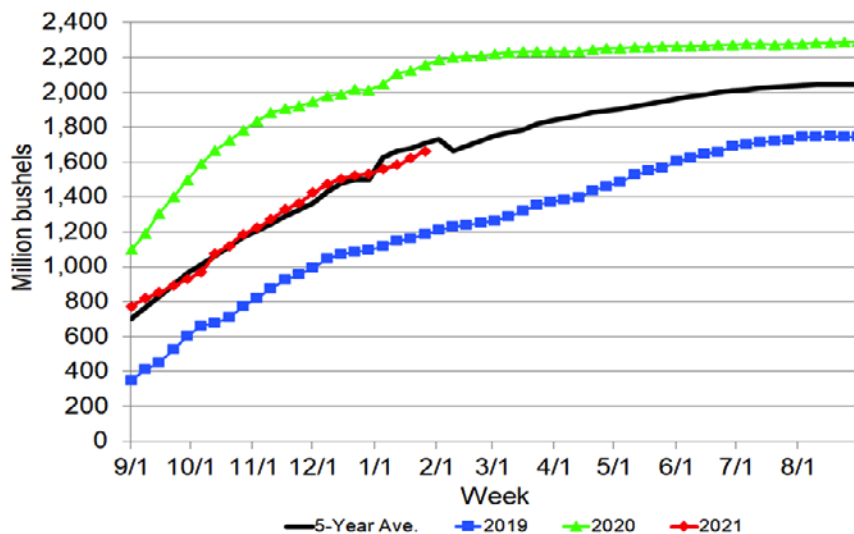
Those trade similarities seem to have faded away for the 2021 marketing year. Soybeans has fallen back to the five-year average pattern, as current sales are roughly 500 million bushels below last year's pace. USDA's current export projection suggests soybeans will continue to track along the five-year average. And the projected shortfall in South American production does open up the possibility of stronger sales in the back half of the marketing year. China will likely

be the linchpin to how exports progress. Current US sales to China are running roughly 350 million bushels below last year.

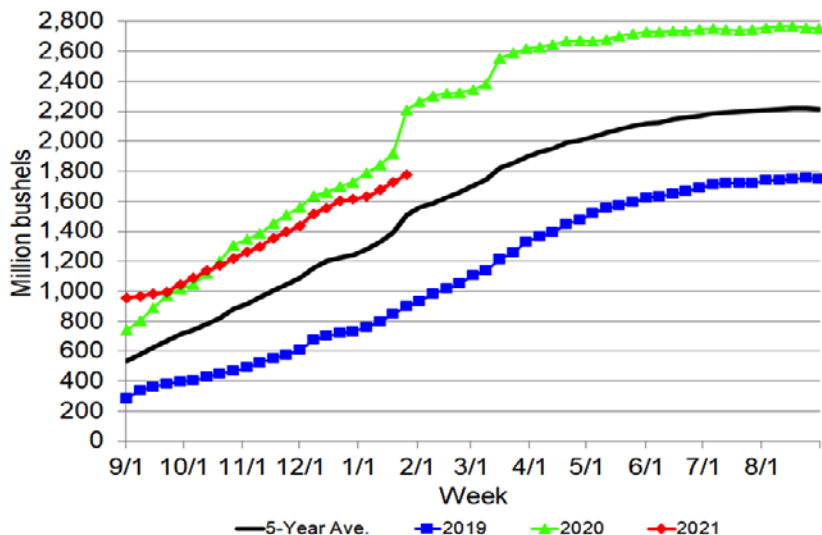
For corn, export sales for 2021 have been able to maintain a better pace, but have still slipped behind last year. It was around this time last year that China made several large purchases of corn, leading to the record export year. With the weaker South American crops, we'll be looking for some additional Chinese purchases again. Based on the five-year average pattern, we tend to have an additional 600 million bushels in export sales during the remainder of the marketing year. That pace would be in line with USDA's projection of 2.425 billion bushels. It would be approximately 325 million bushels below last year's export level, but the higher prices offset the bushel reduction. Compared to last year, the largest sales declines have been in China and Japan. The drought losses in South America will likely push those countries to take another look at US corn.

For 2021-22 season-average prices, USDA held firm with corn at \$5.45 per bushel, but raised soybeans to \$13 per bushel, a 40-cent increase. The futures markets have been more optimistic over the past few weeks and the February update did nothing to dampen that enthusiasm. As the markets closed on February 9, corn futures pointed to a 2021-22 season-average price in the \$5.80 range, with soybean

**Figure 1. Soybean export sales. Source: USDA-FAS.**



**Figure 2. Corn export sales. Source: USDA-FAS.**



futures indicating \$13.50. The futures price strength extends to the 2022 and 2023 marketing years as well, with corn futures north of \$5 and soybean futures above \$12.50 well into 2024. So, while input costs have soared over the past several months, crop prices have remained strong enough to cover those costs and provide profit opportunities. The situation reminds me a lot of the 2013 marketing year, when we began the year with strong prices and

profit windows, but we ended the year with lower prices and challenging returns. While I hope we do not repeat that, it is a good reminder that now is a great time to put a marketing plan in place to capture and protect the healthy returns the markets are offering. As 2013 showed, those returns can disappear as quickly as they appeared.

For more ag market outlook, see this [month's video](https://youtu.be/GBrnzKoqCkE), <https://youtu.be/GBrnzKoqCkE>.



## The role of ozone in global warming

By Don Hofstrand, retired extension value-added agriculture specialist

Reviewed by Eugene Takle, retired professor emeritus, Iowa State University

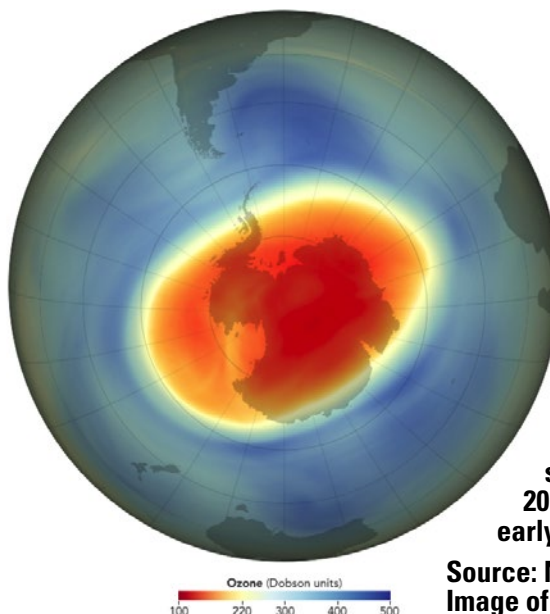
**This article is the twelfth in a series focused on the causes and consequences of a warming planet.**

Ozone is a modest greenhouse gas. It accumulated in significant concentrations in two regions of the atmosphere: at ground level (bad ozone) and stratospheric (good ozone). Ground level ozone comes from motor vehicle exhaust, gasoline vapors, industrial facility emissions, and other sources. Breathing ozone can also cause a variety of health problems.

Stratospheric ozone, the good ozone, occurs naturally and forms a protective layer that shields us from the sun's harmful ultraviolet rays. You can think of stratospheric ozone as Earth's "sunscreen."

Remember the hole in the ozone layer over Antarctica? It caused great concern that stratospheric ozone depletion would allow more ultraviolet rays from the sun to reach the Earth, leading to greatly increased incidences of human skin cancer and damage to many sensitive micro-organisms.

Researchers found that certain substances such as chlorofluorocarbons, when emitted into the atmosphere, were destroying stratospheric ozone. Chlorofluorocarbons are man-made substances developed for a variety of uses including refrigerants in air conditioning (Freon).



**Large, deep Antarctic ozone hole in 2020. Ozone depletion was significantly worse than in 2019, but better than in the early 2000s.**

**Source: NASA Earth Observatory, Image of the Day, November 2, 2020**

In 1987, an international treaty called the [Montreal Protocol](http://www.unep.org/ozonaction/who-we-are/about-montreal-protocol), [www.unep.org/ozonaction/who-we-are/about-montreal-protocol](http://www.unep.org/ozonaction/who-we-are/about-montreal-protocol), was created to protect the ozone layer by phasing out ozone depleting substances like chlorofluorocarbons. Signed by 197 countries, it is the first treaty in the history of the United Nations to achieve universal ratification.

Hydrofluorocarbons, substances that don't destroy ozone, have been replacing ozone depleting substances. However, hydrofluorocarbons are powerful and long-lasting greenhouse gases. They are over 3,000 times more potent than carbon dioxide. Although the concentration of hydrofluorocarbons in the atmosphere is very small, it does have a global warming impact.

To meet this new challenge, the parties to the Montreal

Protocol adopted an amendment that is paving the way for the phasedown of hydrofluorocarbons by using other substances. The phasedown of hydrofluorocarbons is expected to avoid almost 1°F of global temperature rise by 2100.

With the elimination of ozone depleting substances, atmospheric ozone will gradually increase and the hole in the ozone will eventually disappear. Although ozone is a mild greenhouse gas, the ultraviolet shielding value of good ozone will more than offsets its negative impact on global warming.

See the [Ag Decision Maker website](http://www.extension.iastate.edu/agdm/energy.html#climate), [www.extension.iastate.edu/agdm/energy.html#climate](http://www.extension.iastate.edu/agdm/energy.html#climate), for more from this series.





## Iowa's beef cow herd is off and running

By Lee Schulz, extension livestock economist  
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Antithesis literally means opposite. People use it in everyday speech when describing two ideas or terms that are placed in strong contrast to each other. Some common ones are: go big or go home. Get busy living or get busy dying. No pain, no gain, No guts, no glory. One even helps explain academics: those who can, do and those who can't do, teach.

Can producers use knowledge of the cattle cycle to make more profitable investment decisions? Yes, if they apply two basic principles. First, buy low and sell high. Second, find out what everyone else is doing and do the opposite. While easier said than done, these principles can provide some guidance when making long range plans.

### Iowa climbs in beef cow rankings

A year ago, Iowa was the thirteenth largest beef cow state with 2.8% of the national beef cow herd. Today, Iowa ranks tenth with 3.1% of the US inventory. Thirteenth is the lowest Iowa has sat in the rankings, also being there on January 1, 2011. In the last 30 years, Iowa has made it as high as the ninth largest beef cow state three times: at the beginning of 1993, 2016, and 2017. The beef cow herd is the foundation of the total cattle inventory and Iowa appears to be leading the national herd by about two years in the current

Figure 1. Beef cows, January 1. Source: USDA-NASS.

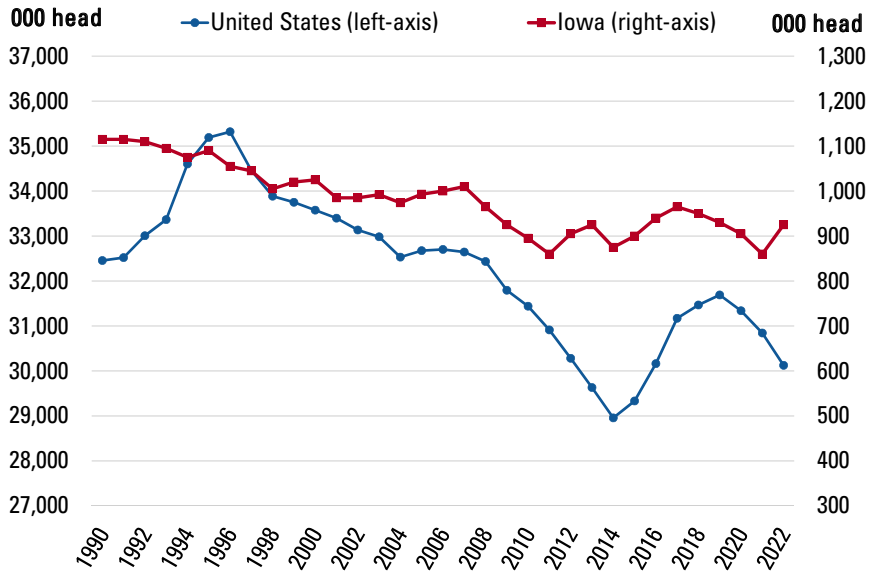
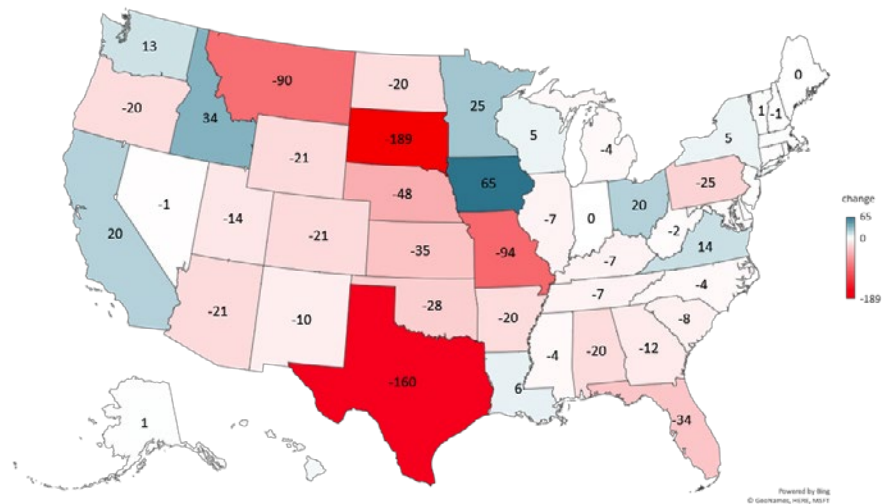


Figure 2. Change in beef cows 2021 to 2022 (1,000 head)  
Notes: US total -719, VT 1, NH -0.5, MA 1, RI 0.1, CT -0.5, NJ -0.8, DE -0.1, MD -3. Source: USDA-NASS. Compiled by LMIC.



cattle cycle. Iowa's beef cow herd last peaked on January 1, 2017 at 965,000 beef cows and fell to 860,000 beef cows on January 1, 2021 (Figure 1). The US beef cow inventory peaked on January 1, 2019 at 31.691 million head and has not yet hit its cyclical bottom.

The 30.125 million beef cows in the United States as of January 1, 2022 were down 2.3% from January 1, 2021 according to the USDA National Agricultural Statistics Service, Cattle inventory report. Two-thirds of the states reported fewer beef cows than a year ago.

This was headlined by 189,000 fewer beef cows in South Dakota and 160,000 fewer beef cows in Texas (Figure 2). Missouri and Montana were each down 94,000 and 90,000 head, respectively, while Nebraska had 48,000 fewer beef cows.

Iowa's 925,000 beef cows were up 7.6% from a year ago. The 65,000 head gain was the largest of any state. Idaho rose 34,000 head. Minnesota grew by 25,000 head. Ohio was up 20,000 beef cows, a notable 6.8% year-over-year rise.

Beef replacement heifers nationally as of January 1, 2022 totaled 5.612 million head, 3.3% below the 5.803 million head on January 1, 2021 (Table 1). Beef replacement heifers in Iowa, at 160,000 head, were up 3.2% which is on top of the previous year's 6.9% rise.

### Investment timing matters

The market value of cows is one factor influencing herd investment strategies, and results. As calf prices rise, the value of bred cows, replacement heifers, and cull animals all rise. Breeding stock will sell at higher prices over the next couple of years.

Beef cow herds are capital-intensive enterprises and should be viewed as other capital investments. The initial investment in cows, purchased heifers or farm-raised replacement heifers generates a future earnings stream from calf sales that provides a return on the original investment. The cull income at the end of the cow's productive life provides a salvage value. The timing of when you invest impacts the return because the cattle cycle impacts the investment cost and future earnings.

**Table 1. Cattle Inventory by Class and Calf Crop**

January 1 inventory *	United States			Iowa		
	2021	2022	2022 as % of 2021	2021	2022	2022 as % of 2021
Cattle and calves	93,789.5	91,901.6	98.0	3,700	3,850	104.1
Cows and heifers that calved	40,286.0	39,500.1	98.0	1,080	1,150	106.5
Beef cows	30,843.6	30,125.1	97.7	860	925	107.6
Milk cows	9,442.4	9,375.0	99.3	220	225	102.3
Heifers 500 pounds and over	20,200.1	19,776.0	97.9	830	850	102.4
For beef cow replacement	5,803.1	5,611.5	96.7	155	160	103.2
For milk cow replacement	4,608.5	4,450.6	96.6	125	120	96.0
Other heifers	9,788.5	9,713.9	99.2	550	570	103.6
Steers 500 pounds and over	16,787.8	16,579.7	98.8	1,250	1,280	102.4
Bulls 500 pounds and over	2,210.5	2,109.6	95.4	60	60	100.0
Calves under 500 pounds	14,305.1	14,692.6	102.7	480	510	106.3
Feeder cattle outside feedlots	26,214.0	26,293.6	100.3	1,110.0	1,190.0	107.2
Cattle on feed	14,667.4	14,692.6	100.2	1,170	1,170	100.0
Calf crop **	35,495.5	35,085.4	98.8	1,030	1,120	108.7

\* 1,000 head, \*\* 2020 and 2021. Source: USDA-NASS.

[Full report:](https://release.nass.usda.gov/reports/cat10122.pdf) <https://release.nass.usda.gov/reports/cat10122.pdf>

Many producers who are trimming herds now likely bought them at very high prices, by buying or retaining exceptionally more heifers back in 2014 and 2015. The replacement females may not have paid for themselves yet. But, the situation has been complicated by widespread drought in 2021 which impacted what many producers had to do as opposed to what they would have liked to do. The same may be true in 2022.

The cost of producing or purchasing feed accounts for about three-quarters of the total operating cost in cow-calf production. Types and costs of feed used are quite variable. Producers not only graze cows on pasture and range, but also on land used primarily for other purposes. For example, crop residues are frequently grazed following harvest. Weather conditions in Iowa were mild, including a lack of snow cover, until the middle of January this year and cattle continued to graze on corn stalks, minimizing the need for supplemental hay. In other regions, drought and poor grazing conditions were limiting factors and may have neutralized any cost advantages.

### **Cost structure also matters**

The portion of production costs that are fixed and the portion that are variable can significantly impact the benefits or costs producers experience by trimming or growing their herds. When times are tough, farms with relatively high variable costs and low fixed costs benefit most from herd reductions. If these

farms sell their least-productive cows, then average production per cow should rise. This will lower the average variable cost for each calf produced. Fixed costs per unit produced will also change. These farms now have fewer cows producing fewer calves to spread their costs around, so average fixed cost per cow rises. But because fixed costs were relatively low to begin with, the net effect on total cost of the herd reduction may well be positive. On the other hand, herd expansions or holding inventories best suit farms with a lower variable cost and higher fixed cost structure. Therefore, reducing the cow herd during low price periods does not benefit every farm.

USDA's Economic Research Service defines farm resource regions based on geography and a host of other factors. North and South Dakota are in the Northern Great Plains region. Parts of Montana, Wyoming, Nebraska and Colorado are also in this region. According to the Commodity Costs and Returns estimates, this region traditionally has the highest proportion of variable cost as a percentage of total cost, that is, a 50/50 percentage split on fixed and variable costs. In 2021, variable costs certainly skyrocketed in the region due to weather and feed prices. Not coincidentally, these states notably trimmed beef cow herds.

The Heartland region, which includes Iowa, is estimated to have a 60/40 split on fixed and variable costs. Increasing the

beef cow herd, even during a relatively tight margin period, can be beneficial with such a cost structure. If these farms are losing money on every calf, they would lose more money after reducing their herd, because total unit production cost would increase dramatically driven by a much higher fixed cost. Adding cows may allow them to lose less or make more.

### **Price impact in Iowa**

I received an insightful question in response to the recent dynamics in cattle inventories. The question, "Will having more cattle in Iowa impact local cash prices?"

Remember, when supplies rise, all else equal, prices tend to decline.

The change in Iowa inventories does little to affect the downturn in the total US cattle inventory. Prices tend to vary inversely (though not perfectly) with cattle numbers, meaning that as inventories decline nationally, all prices should increase. Also, cash price differences reflect quality differences. Iowa has a reputation for producing high quality cattle.

Iowa is in the top ten nationally for cow-calf production and top four for cattle on feed, meaning Iowa is a net importer of cattle for finishing. If anything, recent dynamics may move Iowa to being more self-sustainable, helping to insulate from outside shocks, and becoming even more competitive on the national landscape.



## Farm Financial Planning Program helps producers analyze their numbers

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### Associates are available to help farmers study their numbers and plan ahead

As farmers make financial projections for the new year, there are resources available from Iowa State University Extension and Outreach that can help.

A popular choice is the [Farm Financial Planning Program](http://www.extension.iastate.edu/farmanalysis), [www.extension.iastate.edu/farmanalysis](http://www.extension.iastate.edu/farmanalysis), which includes access to seven farm financial associates, in addition to software and helpful publications and guides.

The program allows producers and the associate to take a broad look at what's going on within an operation, where the operator would like to be in the future and what must be done for success.

We use budgeting software that allows us to analyze a farm's current situation, beginning balance sheet and income statement, costs of production and family living expense. With all of this information, we can look not only at profitability but also debt repayment capacity and

alternative business options, based on cash flow from farm and non-farm income.

All of the financial associates, have a background in risk management and finance. For example, Nancy Brannaman is the farm manager for her family farm, in Illinois, and worked for nearly seven years as a farm management specialist with ISU Extension and Outreach.

### Honest answers

The associates give an honest assessment about the path forward.

The associate offers a big picture look at the farm, and it's up to the farmer to make specific changes and to contact the specialists who can help. While working with financial associates is important, it's equally important to follow up with the specialists the associate recommends.

The associates are one piece of looking at the overall picture.

### Making decisions

Clients are often looking to enter farming or expand in a way that allows more family members to work for the farm.

The financial program also helps families who just need to get everyone on the same page, especially when multiple generations are involved.

We value family farming and fully employing family members on farms and supporting small towns and rural schools. Associates get to accomplish this by helping farm families and new farmers figure out how to bring in new family members, and use their talents and interests in the family operation.

Farmers can locate a Farm Financial Planning Program associate in their area by contacting their [ISU Extension and Outreach county office](http://www.extension.iastate.edu/countyservices/), [www.extension.iastate.edu/countyservices/](http://www.extension.iastate.edu/countyservices/), or by visiting the [Farm Financial Planning Program website](http://www.extension.iastate.edu/farmanalysis), [www.extension.iastate.edu/farmanalysis](http://www.extension.iastate.edu/farmanalysis). For questions on whether meeting with an associate is the right step, contact the [farm management field specialist in your area](http://www.extension.iastate.edu/ag/farm-management), [www.extension.iastate.edu/ag/farm-management](http://www.extension.iastate.edu/ag/farm-management).

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