



# Ag Decision Maker

## A Business Newsletter for Agriculture

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### Custom rates lower in 2020

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Performing custom work can be an additional source of income for farm operators around the state. For others, custom work is a full-time career. When labor is available, and another party has equipment, renting equipment for a short-term is also a common practice. While only a small portion of Iowa farmland is completely custom farmed, many farm operations rent equipment or hire out one or two operations on their farm each year.

The [2020 Iowa Farm Custom Rate Survey](http://www.extension.iastate.edu/agdm/crops/html/a3-10.html), [www.extension.iastate.edu/agdm/crops/html/a3-10.html](http://www.extension.iastate.edu/agdm/crops/html/a3-10.html) canvassed 490 farmers, custom operators, and farm managers from the state, putting together a guide for pricing custom machine work. The survey questionnaire was mailed to 298 people by the US Postal Service and 192 people via email in February 2020.

A total of 106 usable responses, giving 3,022 custom rates were

received from Iowa farmers, custom operators, and farm managers. Fourteen percent of the respondents performed custom work, 15% hired work done, 53% indicated doing both, and 18% did not indicate whether they perform or hire custom work.

The publication, which can be found online at the ISU Extension and Outreach Store ([FM 1698](http://www.store.extension.iastate.edu/Product/1792), [www.store.extension.iastate.edu/Product/1792](http://www.store.extension.iastate.edu/Product/1792)) or on the Ag Decision Maker website ([File A3-10](http://www.extension.iastate.edu/agdm/crops/html/a3-10.html), [www.extension.iastate.edu/agdm/crops/html/a3-10.html](http://www.extension.iastate.edu/agdm/crops/html/a3-10.html)), provides rates for custom work in the following categories: tillage, planting, drilling, seeding, fertilizer application, harvesting, drying and hauling grain, harvesting forages, complete custom farming, labor, and both bin and machine rental. All rates include fuel, repairs, depreciation, interest, labor, and all other machinery costs for the tractor and implement unless otherwise noted.

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### Handbook updates

For those subscribing to the handbook, the following updates are included.

**Historical Corn Yields by County** – A1-12 (10 pages)

**Historical Soybean Yields by County** – A1-13 (10 pages)

**Corn and Soybean County Yields** – A1-14 (4 pages)

**2020 Iowa Farm Custom Rate Survey** – A3-10 (5 pages)

**Monthly Swine Feeding Returns** – B1-31 (5 pages)

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The average rate and range for each machine work function were compiled into the survey as usual, as well as the median charge and number of responses for each category. The average rate for a work function is calculated as the simple average of all responses for that work function. The median rate is the response that splits all the ordered responses within a work function (from smallest to largest) in half. A newly listed item in 2020 is the extra charge to strip-tillage for simultaneous anhydrous application.

The survey found there was a 3% price decline across all surveyed categories. The change from 2019 to 2020 varied across categories, with complete harvesting and hauling declining by 4%, and bin, machinery rental increasing by 2.3%. Table 1 shows historic rates for a sample of operations from the survey.

Subdued commodity prices, lower fuel prices, and another year of thin profit margins in crop production in the horizon are setting the tone for overall lower expected custom rates in 2020. However, some tasks related to manure management might see some price increases, according to the survey respondents.

The reported rates are expected to be charged or paid in 2020, including fuel and labor. The average price for diesel fuel was assumed to be \$2.63 per gallon. The values presented in the survey are intended only as a guide and should not be used as recommended prices by Iowa State University. There are many reasons why the rate charged in

a particular situation should be above or below the average. These include the timeliness with which operations are performed, quality and special features of the machine, operator skill, size and shape of fields, number of acres contracted, and the condition of the crop for harvesting. The availability of custom operators in a given area will also affect rates. Any custom rate should cover the cost of operating the farm machinery as well as the operator's labor.



Photo courtesy of Lisa Scarbrough, ISU Extension and Outreach Women in Ag

Any custom rate should cover the cost of operating the farm machinery as well as the operator's labor.

The Ag Decision Maker website offers [Decision Tools](http://www.extension.iastate.edu/agdm/crops/html/a3-29.html), [www.extension.iastate.edu/agdm/crops/html/a3-29.html](http://www.extension.iastate.edu/agdm/crops/html/a3-29.html), to help custom operators and other farmers estimate their own costs for specific machinery operations. If you are interested in joining the 2021 Custom Rate Survey mailing list, send mail or email address to: Alejandro Plastina, Iowa State University, Department of Economics, 478E Heady Hall, 518 Farm House Lane, Ames, IA 50011-1054, 515-294-6160, [plastina@iastate.edu](mailto:plastina@iastate.edu).

**Table 1. Average farm custom rates reported for Iowa**

Operation	1978	1988	1998	2008	2016	2018	2019	2020
Chisel plowing, per acre	\$6.00	\$8.40	\$9.65	\$13.70	\$16.45	\$17.60	\$18.35	\$17.95
Planting, no attachments, per acre	\$4.40	\$6.80	\$8.85	\$13.20	\$18.55	\$19.15	\$20.40	\$20.70
Spraying, per acre	\$2.40	\$3.50	\$4.00	\$5.60	\$6.80	\$6.60	\$7.25	\$6.70
Combining corn, per acre	\$16.20	\$22.00	\$23.40	\$28.10	\$34.75	\$34.80	\$35.95	\$36.70
Combining soybean, per acre	\$14.00	\$20.60	\$22.55	\$27.10	\$34.05	\$34.00	\$35.10	\$35.60
Baling square bales, per bale	\$0.21	\$0.29	\$0.36	\$0.48	\$0.66	\$0.67	\$0.68	\$0.64
Custom farming, corn, per acre	\$58.00	\$71.00	\$75.80	\$94.10	\$129.95	\$128.80	\$132.25	\$132.70
Custom farming, soybean, per acre	\$50.00	\$65.00	\$70.65	\$83.00	\$116.15	\$117.10	\$121.20	\$119.55
Machinery operating wage, per hour	\$3.50	\$5.10	\$7.20	\$11.70	\$15.05	\$16.30	\$17.20	\$17.25

Source: Iowa State University Extension and Outreach, Iowa Farm Custom Rate Surveys, FM 1698.



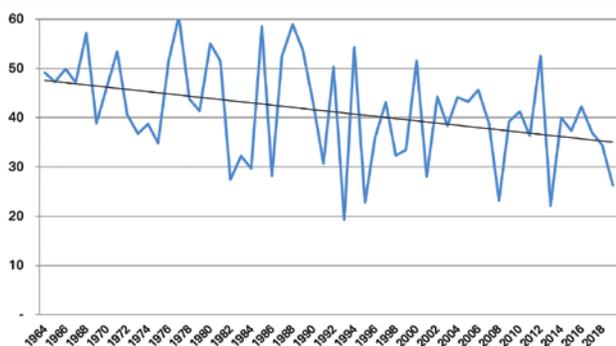
## The number of days suitable for fieldwork in Iowa is shrinking

By William Edwards, retired extension economist, [wedwards@iastate.edu](mailto:wedwards@iastate.edu)

The number of days available to complete tillage, planting, crop protection and harvesting is critical to maximizing corn and soybean yields in Iowa. Each year the Iowa Field Office of the National Agricultural Statistics Service (NASS) collects data on the number of suitable field days from local observers in each crop reporting district. The actual number of days available varies considerably from year-to-year, but the trend has been for a shrinking window of opportunity.

Figure 1 shows the statewide average number of field days recorded each year from 1964 through 2019 for the period April 2 through June 17, when most tillage and planting operations are done. The number of days available varied from less than 20 in 1993 to 60 in 1977. In 2019, only 26 suitable field days were recorded, the fifth lowest number since 1964. Not surprisingly, the number of suitable field days is highly correlated (inversely) with the amount of rainfall received each year.

**Figure 1. Suitable field days in the spring, Iowa average, April 2 to June 17**



The straight line on the graph shows the trend in the number of field days over this period. The line has a downward slope, which means that the number has been decreasing over time. The trend line value has dropped from 48 days to 35 days since 1964, or almost one full day every 4 years. This means that the window for completing spring fieldwork in Iowa is shrinking significantly.

**Table 1. Average annual decrease in the number of spring suitable field days (days per year), 1964-2019, by crop reporting district**

Northwest	.30	North Central	.29	Northeast	.26
West Central	.25	Central	.24	East Central	.20
Southwest	.22	South Central	.20	Southeast	.12

Some areas of the state have seen sharper downward trends than others. Table 1 shows the average annual decrease in the number of suitable field days for each of the nine crop reporting districts in Iowa.

Northwest Iowa has seen the sharpest decline in spring field days, followed closely by the North Central district, losing a full day in just over three years, on average. On the other hand, Southeast Iowa has shown a significantly slower rate of decline than other areas, losing one field day only every eight years.

Figure 2 shows the number of suitable field days since 1964 for the period June 18 through September 9. Summer weather has been less variable than spring weather. One exceptional year was 1993, when only about half the normal number of suitable field days occurred. Many fields were flooded through most of the summer that year.

**Figure 2. Suitable field days in the summer, Iowa average, June 18 to September 9**

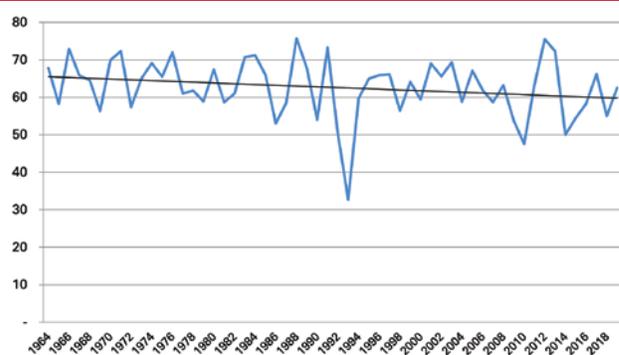
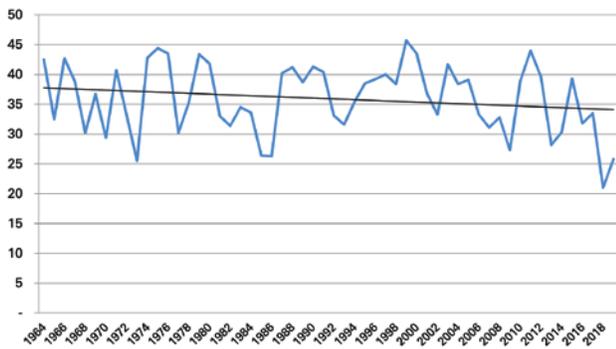


Figure 3 shows the field days each year during the fall harvest season. Note that the two years with the fewest good days were 2018 and 2019. The number of good days has been declining in the summer and

The number of days suitable for fieldwork in Iowa is shrinking, continued from page 3

fall, as well, but at a slower rate than in the spring. Summer field days have been declining one day every 10 years, while fall days have been declining one day every 15 years.

**Figure 3. Suitable field days in the fall, Iowa average, September 10 to October 28**



More details about suitable field days can be found in AgDM File A3-25, [Days Suitable for Fieldwork in Iowa](http://www.extension.iastate.edu/agdm/crops/pdf/a3-25.pdf), [www.extension.iastate.edu/agdm/crops/pdf/a3-25.pdf](http://www.extension.iastate.edu/agdm/crops/pdf/a3-25.pdf).

Crop producers can adjust for fewer expected field days in several ways.

1. Reduce the number of operations performed to cut down on the total hours of field time needed.

2. Invest in larger machinery, which can cover more acres per day.
3. Outsource some operations to a custom operator or input supplier.
4. Improve the efficiency of field operations by using grain carts, seed tenders, auto-steer and other technologies that keep key machines running.
5. Use multiple operators to increase the number of hours per day machinery can be utilized.
6. Install artificial drainage to extend the days for which fieldwork can be completed.
7. Diversify into crops that have different peak periods for field work.

AgDM File A3-28, [Farm Machinery Selection](http://www.extension.iastate.edu/agdm/crops/pdf/a3-28.pdf), [www.extension.iastate.edu/agdm/crops/pdf/a3-28.pdf](http://www.extension.iastate.edu/agdm/crops/pdf/a3-28.pdf), contains more information about estimating the number of field days needed each year, as well as a hand worksheet and electronic spreadsheet.

A new publication by Iowa State University researchers Gene Takle and William Gutowski provides extensive background information about how Iowa’s agriculture may have to adapt to future climate conditions, [Iowa’s Agriculture Is Losing Its Goldilocks Climate](http://physicstoday.scitation.org/doi/10.1063/PT.3.4407), [physicstoday.scitation.org/doi/10.1063/PT.3.4407](http://physicstoday.scitation.org/doi/10.1063/PT.3.4407).



## Collection of county yield data, how does USDA NASS do it?

By Ann Johanns, extension program specialist, 641-732-5574, [aholste@iastate.edu](mailto:aholste@iastate.edu); Greg Thessen, Director, Upper Midwest Regional Office, National Agricultural Statistics Service, United States Department of Agriculture, [greg.thessen@usda.gov](mailto:greg.thessen@usda.gov)

The 2019 average corn and soybean yields for counties and districts in Iowa were released February 20, 2020 (Figure 1). This information is collected by USDA’s National Agricultural Statistics Service (NASS) each year using the December Agricultural Survey and County Agricultural Production Survey. Through the Ag Decision Maker website, we provide this data in Information Files A1-12 and A1-13, [Historical Yields by County](http://www.extension.iastate.edu/agdm/cdcostsreturns.html#yields), [www.extension.iastate.edu/agdm/cdcostsreturns.html#yields](http://www.extension.iastate.edu/agdm/cdcostsreturns.html#yields), which show county averages from the previous 10 years by

county and crop reporting district. This information is helpful for seeing trends in yields over the past 10 years. Information File A1-14, [Iowa Corn and Soybean Yields](http://www.extension.iastate.edu/agdm/crops/pdf/a1-14.pdf), [www.extension.iastate.edu/agdm/crops/pdf/a1-14.pdf](http://www.extension.iastate.edu/agdm/crops/pdf/a1-14.pdf), also uses this data to show the 10-year average yield, and the year and yield results for the highest and lowest years for each county in the past 10 years. This information is helpful in developing corn and soybean budgets, cash-flow projections or other types of analysis for producers in which the actual production history is not available.

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Collection of county yield data, how does USDA NASS do it?, continued from page 5

reports cannot be derived. If county yield data is used in a farmland lease or other component on a farm operation, it might be necessary to agree upon a secondary source for yield information if the county yield is not released by NASS in a given year.

Participation in agricultural surveys such as the December Agricultural Survey and County Agricultural Production Survey is critical for the results to be published across the state. The February NASS report is the best source of long-term yield history available at the county level. The NASS county data is useful for benchmarking your operation, tracking yield trends, determining flexible farmland lease arrangements, as well as developing crop budgets and cash-flow projections where the actual production history is not available. In addition, the data are used to support RMA crop insurance programs and FSA farm support, conservation, disaster, and loan programs.

Under the 2018 Farm Bill, county data from the RMA crop insurance program, rather than NASS, will be used to make farm program payment calculations. That data is publicly released later in the year (typically available when payment information is released in October). It can be found on the [FSA website](http://www.fsa.usda.gov/), www.fsa.usda.gov/

programs-and-services/arcplc\_program/arcplc-program-data/index.

Summary information is available on the [Ag Decision Maker website](http://www.extension.iastate.edu/agdm/), www.extension.iastate.edu/agdm/. For other state or county estimates, including other crops, livestock and farm numbers, visit the [NASS website for Iowa](http://www.nass.usda.gov/Statistics_by_State/Iowa/), www.nass.usda.gov/Statistics\_by\_State/Iowa/.

**Table 1. Undisclosed USDA NASS county yield data by year for Iowa corn and soybean acres**

	Corn	Soybean
2015	Union, Monroe, Mills, Taylor	Mills, Taylor
2017	Lucas, Clarke, Decatur, Wayne	Clarke, Decatur, Wayne
2018	Appanoose, Lucas, Davis, Wapello, Mills, Pottawattamie	Taylor, Mills, Pottawattamie
2019	Adams, Clarke, Decatur, Emmet, Fremont, Harrison, Ida, Lucas, Pocahontas, Ringgold, Warren	Adams, Allamakee, Appanoose, Cedar, Clarke, Decatur, Delaware, Emmet, Fremont, Harrison, Ida, Jackson, Lucas, Mills, Plymouth, Pocahontas, Ringgold

\*Information provided in this article comes from the USDA NASS website and was reviewed by staff from the USDA's National Agricultural Statistics Service, Iowa Field Office



## Cattle market shaken by COVID-19

By Lee Schulz, extension livestock economist, 515-294-3356, lschulz@iastate.edu

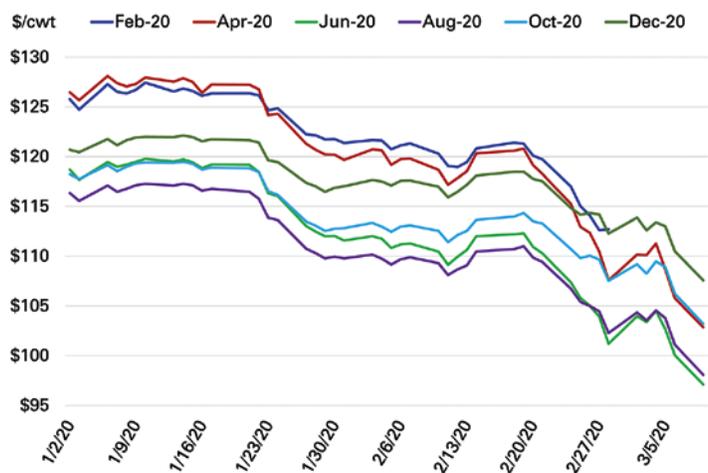
Why did April 2020 live cattle futures lose \$10.675/cwt from Friday, February 21 to Friday, February 28? Why did it recover \$3.70/cwt over the next three trading days? Why did it then skid \$5.525/cwt by week's end (Figure 1)?

Your crystal ball guess may be as good as mine. I may be being a bit facetious here. A market analyst's job is to be able to tally this all up. Right?

However, how COVID-19, formerly known as the 2019 novel coronavirus or 2019-nCoV, will play out and how long it will take to

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**Figure 1. CME live cattle futures, daily**



Data Source: Barchart.com

Cattle market shaken by COVID-19, continued from page 6

come under control are unquantifiable. The cattle market fears the disease will spread and slow the global economy, which will trim beef demand. No one can predict the what/when/where of the next outbreak and its impact on cattle prices. Many wonder if the Monday, March 9 contract low of \$102.850/cwt for April 2020 live cattle futures was a major bottom. We cannot know that because of the unknown future impacts of COVID-19 among all the other factors impacting the market.

### The fed cattle market is not alone

Feeder cattle, lean hogs, corn and soybean are all down, albeit at different levels and across different time frames. All have incredible volatility, too. Our 24/7 news cycle makes sure markets have something to react to. Futures markets anticipate the worst, or best. And in doing so, they sometimes overreact.

Stock market jitters and concern over national and global issues have recently dominated cattle markets. But staying in tune with the fundamentals is equally important. Supply and demand are the cornerstones to evaluate any market. Equilibrium among those two factors will find a price, even when a lot of noise exists around the price, as is currently the case.

### Consider the price curve

The futures price curve provides one “guess” on where future prices may go. It plots the prices of futures contract months on a curve going out in time. Now, technically, this isn’t a bet on where future prices will be, it’s today’s price for a commodity to be delivered in the future and a tool for buyers and sellers to manage (share) price risk.

Intuitively, most people might assume you would pay less today for something that will be delivered many months or a year-plus from now, given the time value of money, that the receiver of the money could earn interest and the whole “bird in the hand” argument where a producer is likely to book guaranteed future revenue for a discount. That sort of a price curve, where the further out futures contracts are priced lower, is called backwardation. The terms “negative carry” and “premium market” are synonymous with backwardation. Many commodities markets are frequently in backwardation, especially when the seasonal aspect is taken into consideration.

But price curves don’t always work that way. Many times, a further out contract is priced higher in a curve structure. That’s referred to as contango. The terms positive carry and normal market are synonymous with contango. Why would traders pay more today, for a commodity they won’t get in months or over a year? Buyers may think supply will be tighter in the future. The opposite would be true for a market in backwardation where supply is expected to be greater in the future.

The same rationale follows for demand. If short-term demand is stronger than is expected in the long-term, with all else equal, chances are the market structure will tend toward backwardation. But if demand is expected to get stronger, the market may be in contango.

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Most simply, contango is when deferred futures prices are anticipated to be higher than the nearby prices. Backwardation is when deferred futures prices are anticipated to be lower than nearby prices.

Understanding contango and backwardation can assist in analyzing the current supply and demand characteristics of any commodity market. Many factors go into the collective market wisdom that sets these curves on a day to day basis, but the key is that they are dynamic, and a key component of futures markets.

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### Where is the market now?

The live cattle futures market recently switched from backwardation to contango. We will attempt to explain some of the fundamentals behind the switch.

Live cattle entered a bear market after it made highs in early January 2020. The bear gained momentum due to large beef supplies compared to a year ago. January 2020 beef production, at 2.39 billion pounds, was 3% above 2019 according to USDA’s Livestock Slaughter report (Figure 2). Cattle slaughter totaled 2.90 million head, up 2%. The average live weight was up 12 pounds from January 2019, at 1,375 pounds. The rise in beef production has come at a time when supplies of other proteins are also quite large. January 2020 pork production was up 8% from January 2019, with broiler production up 6%.

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Cattle market shaken by COVID-19, continued from page 7

The increase in supply has resulted in lower prices although the price decline has seemingly been larger than would be expected, especially since most of this supply increase had already been priced into the market. Based on calculations from the Livestock Marketing Information Center, the retail all fresh beef demand index for 2019 was 109, which is the fourth highest level in the past 20 years and 2% stronger than 2018. Beef demand has been strong.

But futures markets trade expectations of future demand, not necessarily what's happening today. The spread of COVID-19 threatens domestic, and especially export demand. Lock downs, various degrees of restrictions on mobility, closures of food service and markets are all occurring in some capacity worldwide.

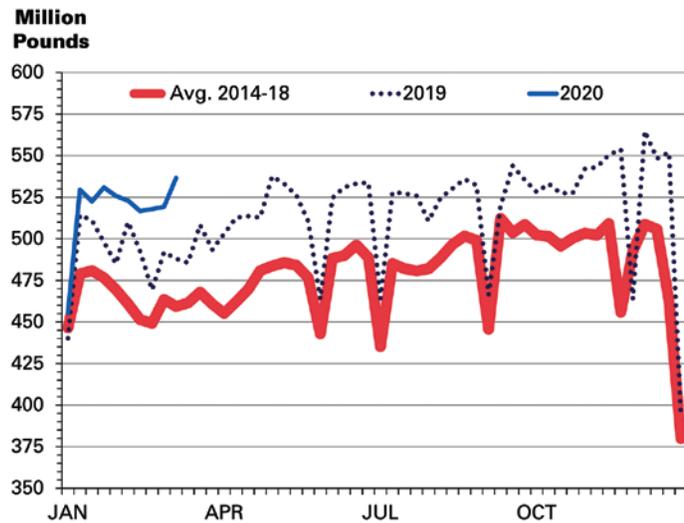
Beef consumption should rebound when the COVID-19 fears ease. However, what are already high prices could temper demand, and consumers may shift to lower-priced proteins in a slowing economy. Again, futures markets are forward looking and they trade daily based on the information available and how it is interpreted.

### Market fears current fundamentals

On January 2, 2020, the one-year backwardation — nearby month futures contract (Feb 2020) versus the one-year deferred contract (Feb 2021) — was \$3.575/cwt or 3% (Figure 3). On February 28, 2020, the one year contango was \$2.925/cwt or 3%. The same pattern holds true for the April 2020 to April 2021 price curve. The current contango in live cattle points to a combination of ample supplies and lower demand. Be it feared, perceived, or actual lower demand. Contango and backwardation is a real-time indicator of supply and demand fundamentals.

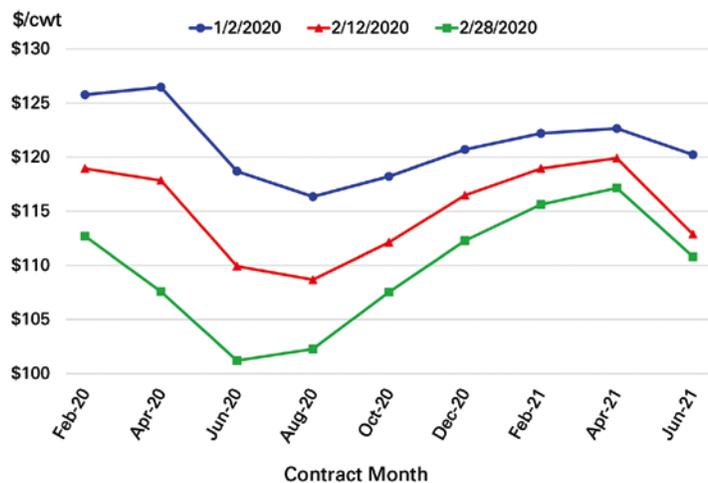
If you were bullish live cattle when February and April 2020 futures contracts were trading over \$125/cwt in late-December and January, some critics would have said you cannot be bullish live cattle

**Figure 2. Beef production federally inspected, weekly**



Data Source: USDA-AMS & USDA-NASS, Livestock Marketing Information Center

**Figure 3. Live cattle futures price curve**



Data Source: Barchart.com

because we were in backwardation and the far out futures were signaling lower prices. If you believed the backwardation, you would have been bearish when you should have been bullish. The same is true for recent times. So maybe the change to contango is a significant sign that perhaps little downside is left, at least in the front end of the market. It also could be signaling that current demand for live cattle is much weaker than expected.

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Updates, continued from page 1

Monthly Cattle Feeding Returns – B1-36 (2 pages)

Historic Hog and Lamb Prices – B2-10 (5 pages)

Lean Hog Basis – B2-41 (1 page)

Live Cattle Basis – B2-42 (1 page)

Feeder Cattle Basis – B2-43 (1 page)

Please add these files to your handbook and remove the out-of-date material.

**Internet Updates**

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

Organic Crop Budgets - Corn, Soybeans, Oats, and Alfalfa – A1-18 (4 Decision Tools)

2018 Farm Bill Payment Estimator by County for ARC-CO and PLC – A1-33 (Decision Tool)

Feeder Steer-Heifer Price Spread – B2-45 (1 page)

**Current Profitability**

The following tools have been updated on [www.extension.iastate.edu/agdm/info/outlook.html](http://www.extension.iastate.edu/agdm/info/outlook.html).

Corn Profitability – A1-85

Soybean Profitability – A1-86

Iowa Cash Corn and Soybean Prices – A2-11

Season Average Price Calculator – A2-15

Ethanol Profitability – D1-10

Biodiesel Profitability – D1-15

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