Benchmarking the Performance of Iowa Feedlot Cattle



Introduction

Benchmarking is defined as a standard or point of reference against which things can be compared or assessed. Benchmarking feedlot performance is best done with the objective of monitoring performance and improvement within an operation over time.

Benchmarking can be used to gauge differences across operations at a fixed point of time. Variables where a producer's feedyard is superior to a benchmark average suggests areas of strength; whereas, variables where a producer's operation is inferior to the benchmark average suggests areas where improvement may be warranted.

Benchmarking values should be viewed as averages, rather than "the best achievable," as there are a number of factors influencing differences among operations. These include such things as weather, animal characteristics, facility type, management protocols, and changing market prices.

For example, does the benchmarking data fully capture variability in specific situations and managerial approaches? Firm-specific variation is noteworthy as many operations may not realize the full magnitude of positive returns at times (could have hedged fed cattle sales) or in other cases mitigated losses through implementation of a price risk management strategy (may have hedged fed cattle sales and/or feed inputs).

Iowa feedlot producers are encouraged to use benchmarking as a tool to monitor progress of their own operation over time and to cautiously compare their feedlot performance with other feedlots at a specific point in time. If the latter is undertaken, the task is to determine why the performance of their feedlot varies from other feedlots and to consider possible management changes to improve their operation.

Materials and Methods

Closeout data from 727 pens (131,886 head) of yearling steers and 239 pens (39,699 head) of yearling heifers over the 2017-2020 period were summarized for selected performance and financial characteristics. Closeouts were generated by users of the Iowa State University Feedlot Monitoring Program. The majority of these users were located in the Midwest (Iowa, South Dakota, Nebraska, and Minnesota) with a high concentration throughout Iowa.

Performance and financial data were summarized for 593 pens (98,929 head) of cattle finished in four types of facilities during the same period. Facility types were broadly categorized as windbreak, outdoor lot with shelter, open lot, and confinement. Operations not indicating the type of facility in which cattle were housed were not included in the facility analysis.

All data are reported as averages with standard deviations and were not analyzed for statistical differences. Hence, users should not compare averages for steers versus heifers, year effects, or facility types. The purpose of this data is to provide a point of reference only, and to look at trends.

IOWA STATE UNIVERSITY
Extension and Outreach
Iowa Beef Center

IBC 0144 August 2021

Results and Discussion

Data from the steer pens are reported in Table 1. From 2017-2019, average daily gain trended downward and percent dead increased, probably linked to weather (Sidebar 1). From January 2018 through December 2019 there was increased precipitation, heavier snowfall, and below normal temperatures.[1, 2, 3, 4] Temperatures were below normal for seven months in 2018 and eight months in 2019.

Feed conversions increased during the 2017-2019 period, also impacted by weather and both heavier placement and harvest weights. Feed cost ($/ton feed DM) increased, due primarily to increased corn prices. Average cash corn prices (Sidebar 2) increased from $3.30 in 2017 to $3.71 in 2019.[5] Breakeven prices were highest, on average, in 2018 as higher feeder steer prices peaked.[6] The average price for 700-800 pound steers (Sidebar 3) was $153.61 in 2018.

There were notable differences in 2020 due to COVID-19 related disruptions. Out pay weights and days on feed were substantially higher, driven by a temporary reduction in packing plant capacity and operations. Because of the backlog that developed and the time needed to work through it, fed cattle carried more finish, as reflected in increased dressing percentage. To mitigate excess finish and heavy carcasses, producers reduced the net energy of the diet.

Simultaneously, COVID-19 restricted travel, which in turn reduced the price of both crude oil and subsequently ethanol, forcing ethanol plants to either cut production or close. Hence, the supply of ethanol coproducts or distiller grains dwindled. Producers had to consider other ration ingredients, with most replacing corn coproducts with corn grain and an increased forage level that reduced the net energy of the diet, but increased feed cost per ton. Because of an increase in dry matter intake, average daily gain was similar to previous years.

Heifer data, presented in Table 2, indicates a decline in the number of heifer pens throughout the four-year period. From 2018 through 2020, the feeder steer-heifer spread (Sidebar 4) steadily declined.[7] When the spread narrows, there is less incentive to feed heifers. Generally, heifer gains and feed efficiencies are poorer than steers, and they require increased management to prevent expression of estrus and heat stress.

In 2018, seesawing temperatures, coupled with increased precipitation, may have contributed to a higher death loss, decreased dry matter intake, and poorer gain than in 2017. These trends appear to be more pronounced than in the steer data, possibly due to lighter placement weights. Heifers placed in 2018 were 126 pounds lighter than those placed in 2017, and 163 pounds lighter than the steers placed in 2018.

Sidebar 1: Yearly weather data for Iowa[a]

Year	Avg Temp (degrees F)	Avg Rain (inches)	Avg Snow (inches)
2017	49.9	33.1	18.9
2018	47.5	45.1	38.0
2019	46.8	41.6	48.0
2020	49.2	28.9	31.5

[a]Taken From Iowa Annual Weather Summaries for 2017-2020

Sidebar 2: Avg cash corn price received by Iowa farmers[a]

Year[b]	Price/bu.
2017	$3.30
2018	$3.41
2019	$3.71

[a]USDA NASS

[b]Calendar year (Jan. 1 – Dec. 31)

Sidebar 3: Historic cattle prices - Iowa medium and large frame #1, 700-800 lb steers[a]

Year[b]	Price/CWT
2017	$150.92
2018	$153.61
2019	$146.94
2020	$141.92

[a]USDA-IA Department of Agriculture Market News - NW_LS795, and LSD_MARS_2167

[b]Yearly average

Sidebar 4: Feeder steer-heifer price spread - medium and large frame #1 feeders, 700-800 lb[a]

Year[b]	Price/CWT
2017	$12.51
2018	$15.26
2019	$14.32
2020	$13.14

[a]Combined Iowa auctions

[b]Yearly average

Weather in 2018 was highly variable. April was the coldest on record; whereas, May and June were the third and tenth warmest on record. Fall was generally cooler than average, with November being 6.4°F below average. December was 5.1°F above average. Precipitation for 2018 was 9.81 inches more than normal, ranking the second wettest and 26th snowiest among 131 years of records.

For the period of 2017-2020, there was a consistent increase in the feed cost per pound of gain for the heifers, likely caused by the increase in feed:gain. Feed:gain increased linearly from 7.3 in 2017 to 8.5 in 2020. Weather may have been a contributing factor to poorer conversions. Precipitation for 2018 and 2019 was 9.81 and 6.36 inches more than normal, whereas temperatures for eight months in 2020 were above the 30-year climatological normal.

Interestingly, some of the COVID-19 trends discussed concerning steers were not apparent in the heifer data. Out weights and days fed declined, whereas the net energy of gain in 2020 was similar to diets fed in 2019. However, dressing percent increased even though finished weight declined, suggesting perhaps this year's heifers carried less mud and manure. In 2020, precipitation was below normal for eight of 12 months.

Facility data are presented in Table 3. While there has been an increase in confinement housing, the majority of feedlots in this data are some variation of an outdoor facility.

Feed:gain was lowest for cattle in the windbreak facilities and may be explained by lighter placement and a slightly lower finished weight. In-weight for the windbreak cattle was 777 pounds compared to the 823-pound average for other types of facilities. Out-weights were 1,395 and 1,402 pounds for the windbreak and weighted average of the other facilities, respectively.

Weather varied from year to year as shown in Sidebar 1. Based on Iowa annual weather summaries, the 24-month period from January 2018 through December 2019 was the wettest two-year period on record. During the four-year period of 2017-2020, cattle in open feedyards had the highest feed:gain and dry matter intake. Increased moisture (due to snow and rain) and wind may have contributed to these differences.

Carcass yield was greatest (64.2%) for cattle housed in confinement, but the cause is unknown. It could be related to a heavier out weight (1,470 lb) and/or reduced tag (mud and manure) on the hide which was not measured.

Summary

Benchmarking is best used to track both cattle and financial performance within a feedlot and to monitor trends within the industry. A number of software programs are commercially available, but the Iowa State University Feedlot Monitoring program is designed for upper Midwest feedlots and feedstuffs. For more information, visit the Iowa Beef Center website on feedlot monitoring software for cattle and sheep: https://www.iowabeefcenter.org/feedlotmonitor.html.

This data suggests that cattle characteristics (sex and incoming/harvest weight) and extraneous factors (weather and commodity prices) can greatly affect benchmarking values, and should be kept in mind when monitoring progress within an operation or between operations.

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References

[1]Hillaker, Harry. 2017. Iowa Annual Weather Summary – 2017. Iowa Department of Agriculture and Land Stewardship. https://iowaagriculture.gov/sites/default/files/climatology/Historic/2017/fas2017.pdf

[2]Glisan, Justin. 2018. Iowa Annual Weather Summary – 2018. Iowa Department of Agriculture and Land Stewardship. https://iowaagriculture.gov/sites/default/files/climatology/Historic/2018%20Annual%20Weather%20Summary.pdf

[3]Glisan, Justin. 2019. Iowa Annual Weather Summary – 2019. Iowa Department of Agriculture and Land Stewardship. https://iowaagriculture.gov/sites/default/files/climatology/2019/updated%202019/2019%20Iowa%20Annual%20Summary.pdf

[4]Glisan, Justin. 2020. Iowa Annual Weather Summary – 2020. Iowa Department of Agriculture and Land Stewardship. https://iowaagriculture.gov/sites/default/files/climatology/2020/2020%20Iowa%20Preliminary%20Annual%20Summary_1.pdf

[5]Johanns, Ann. Revised April 2021. Iowa Cash Corn and Soybean Prices. Ag Decision Maker. Iowa State University Extension and Outreach. https://www.extension.iastate.edu/agdm/crops/pdf/a2-11.pdf

[6]Schulz, Lee. Revised February 2021. Historical Cattle Prices. Ag Decision Maker. Iowa State University Extension and Outreach. https://www.extension.iastate.edu/agdm/livestock/pdf/b2-12.pdf

[7]Schulz, Lee. Revised February 2021. Feeder Steer-Heifer Price Spread. Ag Decision Maker. Iowa State University Extension and Outreach. https://www.extension.iastate.edu/agdm/livestock/pdf/b2-45.pdf

Funding for this publication was provided by a mini-grant from the Iowa Beef Center at Iowa State University.

Table 1: Feedlot Monitor Benchmark Report Steers Finished 2017-2020

	2017		2018		2019		2020		Overall	
	Average	Std Err	Average	Std Err	Average	Std Err	Average	Std Err	Average	Std Err
Pens	256		127		198		146		727 total	
Pen Size	194.9	113.2	168.3	80.0	164.8	77.0	178.0	85.6	178.6	92.0
In Pay Wt (lb)	792.4	119.8	831.2	135.9	846.8	124.5	847.0	131.3	829.3	126.2
Out Pay Wt (lb)	1426.7	81.6	1429.9	88.6	1479.4	94.3	1561.0	102.3	1468.6	90.4
% Dead	1.1	1.1	1.2	2.0	1.4	1.6	1.0	1.1	1.2	1.4
Carcass Yield %	63.1	3.5	62.1	5.4	63.0	3.5	64.6	3.5	63.2	3.8
Days Fed	183.7	38.9	184.9	42.0	200.0	44.5	219.9	49.0	195.6	43.0
ADG (lb)	3.5	0.4	3.2	0.5	3.1	0.5	3.2	0.4	3.3	0.5
F:G	7.1	0.9	7.8	2.5	8.2	1.1	8.0	0.9	7.7	1.2
DMI (lb)	24.4	3.4	23.8	2.5	25.0	2.4	25.7	6.1	24.7	3.5
AFI (lb)	39.3	5.9	36.9	4.6	38.0	4.6	39.4	4.4	38.5	5.0
NEg(avg Mcal/CWT)	59.7	12.4	60.5	2.5	60.0	2.6	58.8	7.5	59.7	7.0
$/lb gain Feed	$0.50	$0.06	$0.58	$0.19	$0.63	$0.10	$0.64	$0.07	$0.58	$0.09
$/lb gain Total	$0.67	$0.08	$0.79	$0.28	$0.81	$0.15	$0.84	$0.11	$0.76	$0.14
$/Ton Feed DM	$121.66	$11.63	$124.13	$14.60	$131.73	$11.50	$136.64	$12.01	$127.84	$12.19
Breakeven-Live	$108.70	$9.55	$116.70	$12.98	$115.52	$11.43	$116.02	$6.29	$113.43	$10.01

Data from Iowa, South Dakota, Nebraska, and Minnesota

Table 2: Feedlot Monitor Benchmark Report Heifers Finished 2017-2020

	2017		2018		2019		2020		Overall	
	Average	Std Err	Average	Std Err	Average	Std Err	Average	Std Err	Average	Std Err
Pens	114		54		46		25		239 total	
Pen Size	184.5	127.9	137.9	61.8	168.5	94.5	138.7	18.2	166.1	95.0
In Pay Wt (lb)	794.1	178.4	668.1	127.6	744.2	130.1	772.4	131.6	753.8	152.7
Out Pay Wt (lb)	1306.2	104.0	1254.7	73.7	1341.4	140.0	1308.3	71.6	1301.6	100.7
% Dead	0.8	1.1	2.6	1.9	1.5	1.8	2.1	2.0	1.5	1.5
Carcass Yield %	63.2	1.0	63.3	1.5	61.7	.08	63.9	0.6	63.0	1.0
Days Fed	165.7	45.2	209.9	41.6	198.5	45.8	187.8	39.1	184.3	43.9
ADG (lb)	3.1	0.5	2.7	0.5	2.9	0.5	2.8	0.4	3.0	0.5
F:G	7.3	1.6	7.9	2.4	8.1	1.3	8.5	1.2	7..7	1.7
DMI (lb)	22.7	2.9	20.5	2.2	22.9	2.4	23.9	1.3	22.4	2.5
AFI (lb)	35.3	4.5	34.4	4.6	35.7	3.6	36.0	2.3	35.2	4.1
NEg(avg Mcal/CWT)	60.0	1.9	60.0	2.6	59.4	2.0	59.5	0.9	59.8	2.0
$/lb gain Feed	$0.54	$0.09	$0.55	$0.10	$0.66	$0.12	$0.69	$0.05	$0.58	$0.09
$/lb gain Total	$0.74	$0.15	$0.78	$0.11	$0.86	$0.16	$0.91	$0.13	$0.79	$0.14
$/Ton Feed DM	$119.37	$11.58	$128.53	$13.76	$140.35	$17.75	$136.39	$12.67	$127.26	$13.37
Breakeven-Live	$104.03	$14.41	$114.25	$6.33	$116.78	$12.56	$114.67	$6.01	$109.91	$11.35

Data from Iowa, South Dakota, Nebraska, and Minnesota

Table 3: Feedlot Monitor Benchmark Report Based on Facility Type Finished 2017-2020

	Windbreak		Shelter+Outdoor Lot		Open Yards		Confinement	
	Average	Std Dev	Average	Std Dev	Average	Std Dev	Average	Std Dev
Pens	111		212		197		73	
Pen Size	206.8	142.3	165.5	78.6	154.6	81.4	142.9	58.3
In Pay Wt (lb)	777.4	182.1	820.2	170.7	811.7	165.6	860.8	124.7
Out Pay Wt (lb)	1395.3	224.8	1422.5	127.0	1352.5	291.1	1469.7	133.6
% Dead	1.2	1.7	1.4	2.1	1.5	2.3	1.4	1.4
Carcass Yield %	62.8	1.9	62.1	8.5	62.8	1.8	64.2	1.1
Days Fed	195.9	58.4	194.3	62.9	174.0	60.1	191.9	38.3
ADG (lb)	3.1	0.8	3.0	0.5	3.3	2.1	3.1	0.5
F:G	7.7	3.7	8.2	3.0	10.2	13.5	8.4	1.8
DMI (lb)	24.6	5.0	23.9	3.9	27.3	10.0	25.3	3.2
AFI (lb)	39.2	8.2	37.3	5.5	38.3	8.6	37.7	4.5
NEg(avg Mcal/ CWT)	60.9	10.5	60.2	2.2	59.2	6.5	59.9	14.1
$/lb gain Feed	$0.57	$0.23	$0.64	$0.23	$0.68	$0.43	$0.67	$0.14
$/lb gain Total	$0.78	$0.29	$0.88	$0.29	$0.85	$0.58	$0.89	$0.16
$/Ton Feed DM	$128.10	$19.75	$132.68	$24.08	$129.43	$25.83	$135.78	$9.64
Breakeven-Live	$113.78	$32.03	$124.20	$16.28	$119.39	$20.38	$116.72	$10.87

Data from Iowa, South Dakota, Nebraska, and Minnesota