



Characteristics of beef cattle operations in the Midwest

Following the launch of the Beef Checkoff's U.S. Beef Industry Sustainability Assessment in 2010, region-specific collection of beef cattle, feed (pasture and crop), and manure management information is underway to provide data for a benchmark national life cycle assessment. Collecting region-specific data ensures that opportunities unique to each region are identified. This publication provides a snapshot

of data gathered from online surveys and visits to ranches and feedlots in one of seven cattle-producing regions: the Midwest (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, and Wisconsin), **Figure 1**.

Although terminology varies among cattle operations, we are defining ranches as any operation that predominately includes cattle on pasture or rangeland.

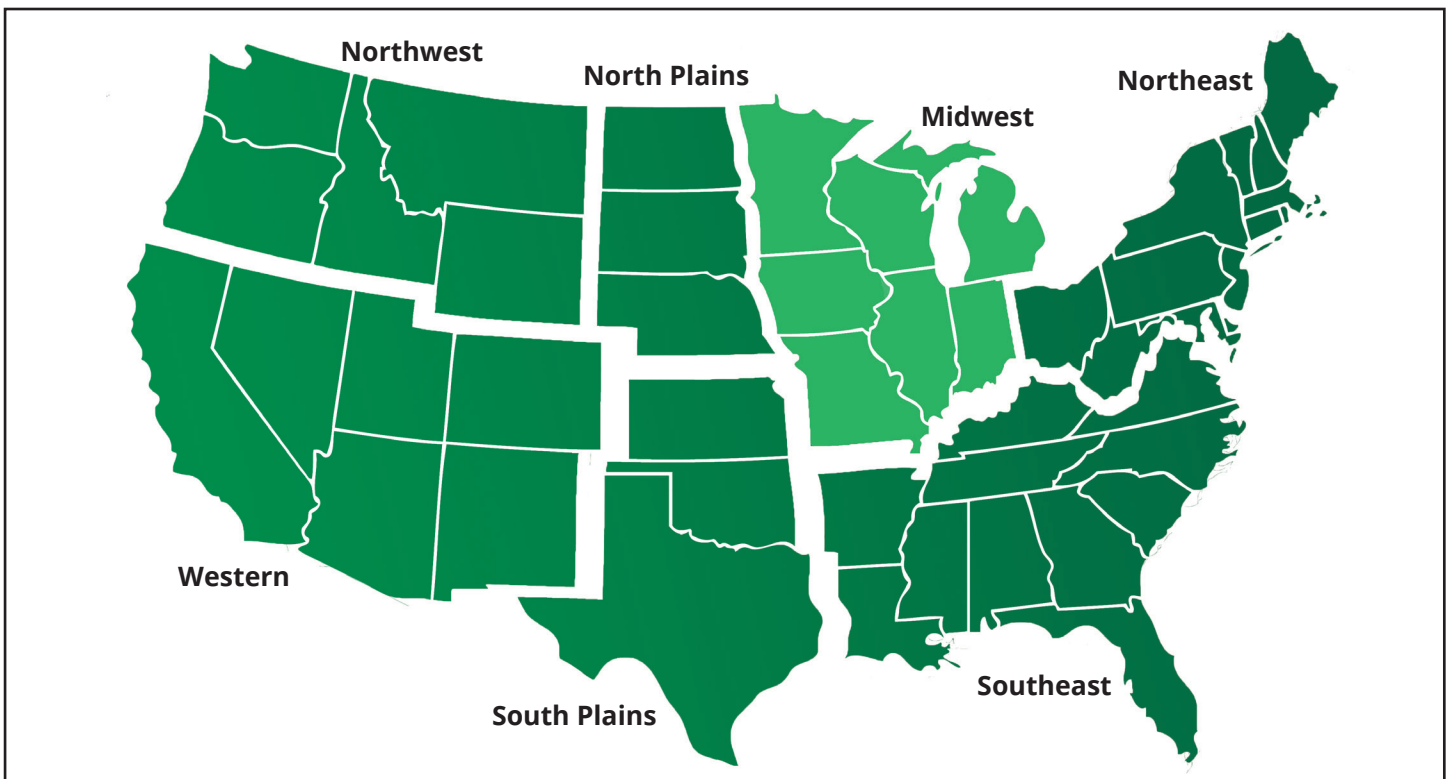


Figure 1. Cattle-producing Regions for Sustainability Data Collection.

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This includes cow-calf to finish operations where calves are weaned, raised and finished on the same operation. Feedlots are defined as operations where cattle are predominantly fed in confinement. Ranch responses represented 0.6% of the 3.80 million beef cows maintained in the Midwest (NASS, 2015), and feedlot responses represented 3.7% of cattle finished in the region.

Ranch Survey Results

Production data from 219 survey responses and 18 ranch visits are summarized in **Table 1**.

Ranch Types and Sizes

- Ranches reported a range of 2 – 900 cows and 2 - 6,000 stockers per ranch.
- The region’s mean brood-cow to bull ratio for cow-calf operations was 18:1.
- The average replacement heifers per cow was 23%. A few ranches retained no replacement heifers while some may have sold extra heifers.

Cattle Management

- Mean brood-cow body weight was 1,336 (+/- 161) lbs. across the region.
- Cow stocking rates (including associated bulls and replacements) on grazed forage ranged from 0.25 - 40 ac/cow-calf pair. Region-wide, average stocking rate was 2.8 ac/cow-calf pair. Illinois, Indiana, Michigan and Wisconsin were higher than average reporting individual means of 1.9 - 2.3 ac/cow-calf pair, while Iowa, Minnesota, and Missouri reported 2.9 – 4.2 ac/cow-calf pair.
- Concentrate supplemental feeds were fed an average of 3.1 lb. DM/animal/day and included by-products such as distiller’s grain, corn gluten, soy hulls, and beet pulp depending on local availability.
- About 40% of ranches indicated that growth promotants were used (**Table 1**).

Table 1. Beef cattle ranch survey results for the Midwest: Iowa (n = 117), Illinois (n = 33), Indiana (n = 4), Michigan (n = 13), Minnesota (n = 26), Missouri (n = 17), and Wisconsin (n = 27).

Ranch characteristic	Units	IL & IN	IA	MI	MN	MO	WI	Full Region*
Ranches with cows	% of ranches	100.0	97.4	100.0	96.2	100.0	96.3	98.8
Ranches with stockers	% of ranches	24.3	38.5	46.2	53.8	29.4	51.9	34.8
Grass-finished cattle	% of finished cattle	0	1.2	3.1	0.7	0.2	13.2	1.4
Growth implants used	% of ranches	33.3	52.7	0	37.5	37.5	11.5	37.8
Portion of stockers	% of stockers	95.8	89.6	0	64.8	71.0	0.9	71.9
Harvested pasture land	% of ranches	57.1	58.3	75.0	66.7	82.4	76.9	71.4
Portion harvested each year	% of land	3.6	19.4	26.9	17.7	16.6	20.4	14.0
Clipped but not harvested	% of land	98.2	48.5	17.5	8.1	70.9	43.0	52.6
Pasture reestablishment	% of ranches	62.5	70.3	63.6	64.7	58.3	70.0	62.7
Little or no reestablishment	% of land	76.7	13.8	37.1	7.9	17.6	7.6	23.7
Reestablishment period	Years	6.6	10.9	8.9	8.5	7.9	10.0	8.6
Nitrogen fertilizer use	% of ranches	57.7	66.3	50.0	30.0	86.7	54.2	70.9
Fertilizer used	% of land	9.1	58.9	37.4	29.0	70.7	40.6	53.1
Amount used	lb. N/ac	61.5	45.6	48.3	83.3	45.4	60.5	52.2
Phosphate fertilizer	% of ranches	48.0	31.6	27.3	15.8	77.8	34.8	53.3
Fertilizer used	% of land	7.8	23.5	19.2	7.1	50.5	24.7	32.0
Amount used	lb. P ₂ O ₅ /ac/year	62.5	28.4	11.7	18.7	25.0	24.8	26.8
Potash fertilizer	% of ranches	50.0	30.2	36.4	21.1	77.8	45.0	54.6
Fertilizer used	% of land	81.0	12.4	5.6	26.0	22.0	58.9	36.0
Amount used	lb. K ₂ O/ac/year	67.5	37.5	67.5	29.0	27.1	57.3	35.3
Lime use	% of land	10.6	40.5	38.0	6.4	98.2	38.8	59.1
Other feed crops grown	% of ranches	67.7	75.0	50.0	79.2	47.1	74.1	61.1
	ac/animal	0.7	1.0	1.6	1.1	0.5	2.3	0.8

*Values for the full region are weighted by the portion of cows maintained in each state based on the 2012 survey of the National Agricultural Statistics Service (NASS, 2015).

Crop Management

- The vast majority (98%) of grazed pasture consisted of cool-season grasses and annual forage crops and was on average, 390 acres per ranch. Small grains and corn stalks were also grazed.
- Lime and/or fertilizers were applied to a portion of pastures, and urea was the most common source of nitrogen (70% of producers applying N) applied (**Table 1**).

Labor

- Average labor requirement was 23 person-hrs/animal/year, with reported values ranging from 0.04 to 208 hours. Seed stock operations had considerably higher than average labor requirements.

Equipment

- On average, there were two ATVs, two or three trucks, and three to four tractors per ranch.
- For ranches utilizing horses as service animals, 87-700 cows or 1,000 stockers were managed per horse.

Energy Use

- Annual fuel use (in diesel equivalents) on cow-calf operations ranged from 11 to 21 gallons/cow. On combined cow-calf – to – finish operations, fuel use was 7 gallons/animal. A stocker-only ranch used 2 gallons/stocker.

- Reported annual electricity use was 17 – 218 kWh/cow. Combined cow-calf and stocker and cow-calf – to – finish ranches reported 31 and 91 kWh/animal respectively, and a stocker-ranch used 5 kWh/stocker.

Feedlot Results

Feedlot management practices from 61 survey responses and 13 site visits are summarized in **Table 2**.

Feedlot Sizes and Types

- The largest feedlots were found in Iowa, which produced 70% of finished cattle reported in the region. Minnesota and Illinois each produced 14 and 8%, respectively.
- In addition to beef-breed animals, 32% of feedlots surveyed also fed Holstein cattle.

Cattle Management

- Average crude protein contents of backgrounding and finishing rations were 14.1 and 13.6%, respectively. Average compositions are shown in **Figure 2** for both rations.
- Growth promoter and antibiotic treatments were used on more than 90% of cattle finished in the region. Growth-enhancing technologies included implants, ionophores, β -agonists, tylosin and estrus synchronizing hormones.

Table 2. Summary of feedlot and feeding practices gathered from survey responses in the Midwest: Iowa (n = 43), Michigan (n = 11), Minnesota (n = 8), Illinois (n = 6), Wisconsin (n = 5), and Indiana (n = 1).

Management characteristic	Unit	Mean	Range	
			Min.	Max.
Maximum capacity	cattle	1,412	5	10,000
Cattle finished/capacity	ratio	1.3	0.2	3.0
Stocker cattle grazed	cattle	316	10	2,300
Stocker cattle/finished cattle*	%	36.0	—	—
Entering weight	lb.	639	201	851
Finished weight	lb.	1,360	950	1,526
Portion backgrounded	%	19.9	0	100
Backgrounding period	d	88	28	140
Backgrounding feed consumption	lb. DM/d/animal	17	7	23
Finish period	d	175	70	420
Finishing feed consumption	lb. DM/d/animal	23	18	30
Crop area/finished animal	ac/animal	0.94	0.07	3.73
Labor use	h/animal/year	5.0	0.7	29.3

* The percentage of total cattle finished that are grazed on operations that included grazing.

Crop Management

- More than 90% of feedlots grew crops to feed cattle. Cultivated areas averaged 0.94 ac/animal. Most frequent crops grown were: corn grain (97% of those producing feed), corn silage (60%), and alfalfa (35%).
- Irrigation use in the Midwest was low, reported by only 10% of responding feedlots.

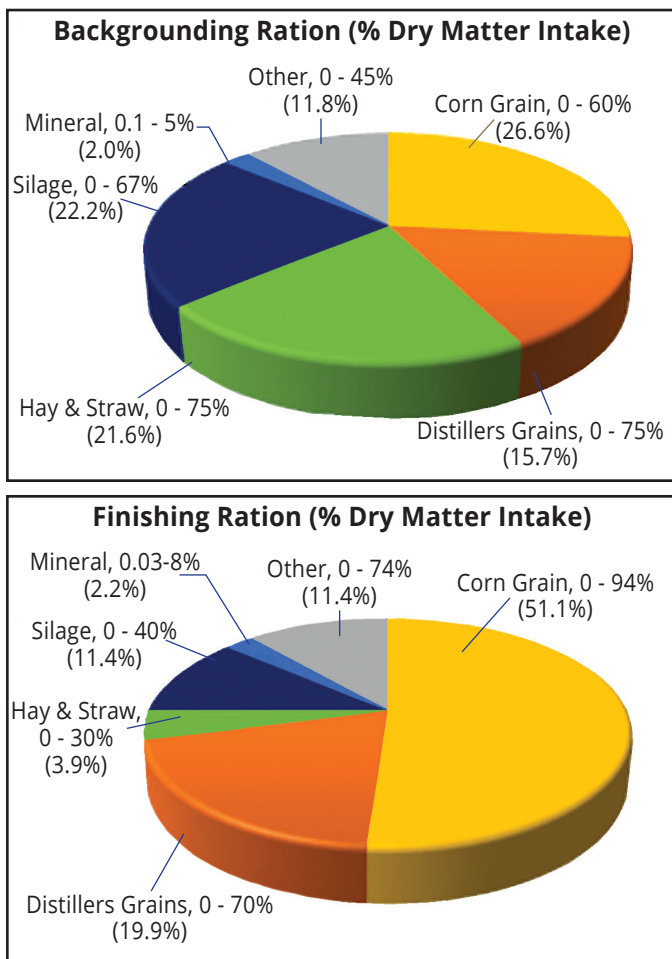


Figure 2. Range (mean) of the constituents making up rations averaged over all participating feedlots in the Midwest.

Labor

- Higher than average values were reported by operations with low levels of mechanization, and by those that included administrative hours in their response.

Equipment

- Common equipment were tractors, ATVs, semi-trucks and trailers, and light trucks (pick-up and tri-axle), skid-steer loaders and payloaders. On the average, three tractors, one feed truck, two semi-trucks/trailers, and one ATV per feedlot were observed.
- A tractor served up to 3,250 animals on a feedlot with up to 20 tractor hours/animal fed/year. Skid steer loaders served up to 2,300 animals and payloaders, 3,250 animals.

Energy Use

- Annual fuel use given by three feedlots visited were 2.6 - 30 gallons diesel equivalent/animal fed. The wide variation in fuel consumption was related to the amount of feed produced by the feedlots and the custom operations used.
- Reported electricity used ranged between 4 and 49 kWh/animal and was influenced by irrigation use.

Literature Cited

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