



Characteristics of beef cattle operations in the Northern Plains

Under the U.S. Beef Industry Sustainability Assessment launched by the Beef Checkoff Program in 2010, region-specific collection of beef cattle, feed (pasture and crop), and manure management information is on-going to inform a benchmark national life cycle assessment. Basing the national assessment on regional practices ensures that opportunities in each of the seven cattle-producing regions are identified

(Figure 1). This factsheet summarizes management information obtained through beef producer online surveys and on-site visits in the Northern Plains (Nebraska, South Dakota, and North Dakota).

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

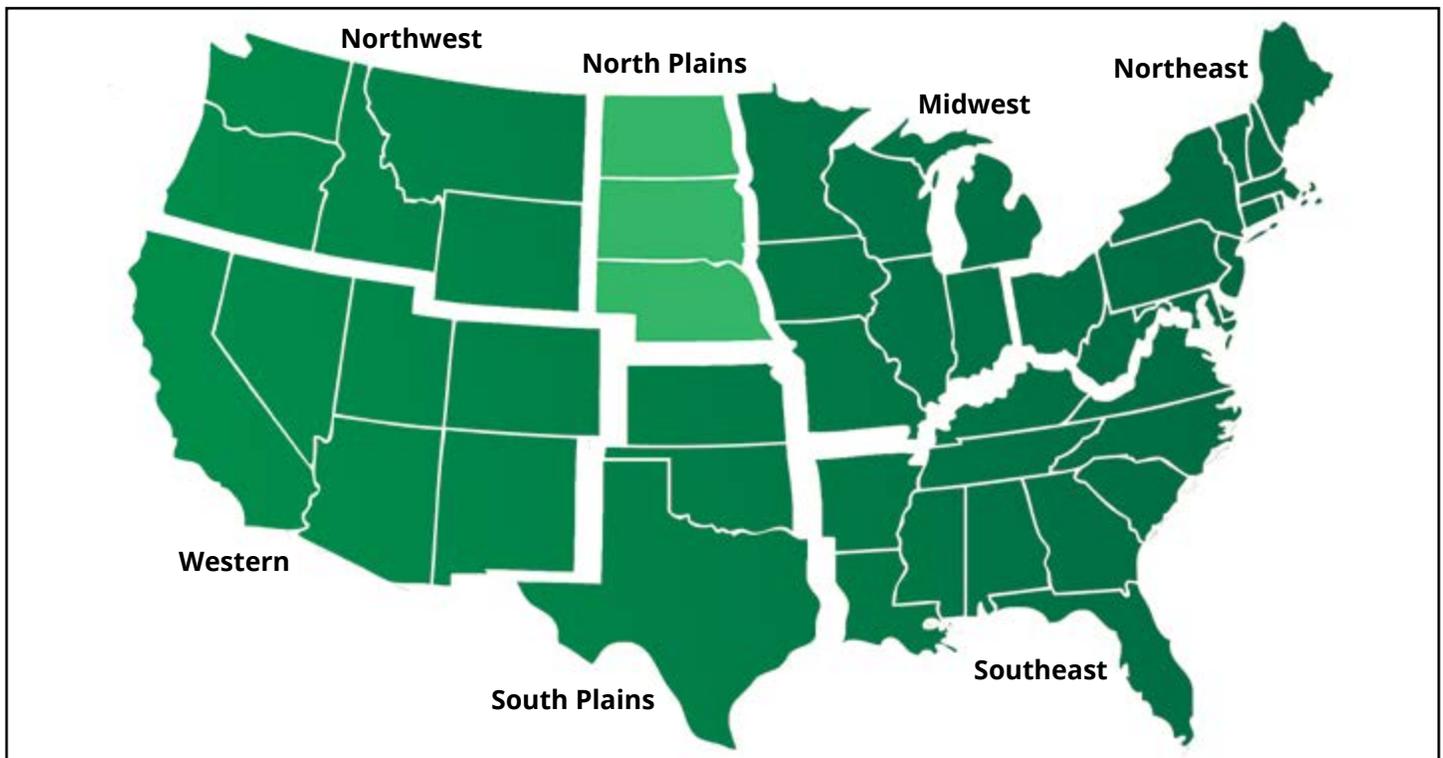


Figure 1. Cattle-producing Regions for Sustainability Data Collection.

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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. A total of 275 ranch responses (Nebraska = 133, South Dakota = 72 and North Dakota = 70) represented 2.4% of the 4.2 million beef cows maintained in the three states (NASS, 2015). Forty-six feedlot responses (Nebraska = 26, South Dakota = 12, and North Dakota = 8) represented 9.6% of cattle finished.

Ranch Survey Results

Beef cattle production data from ranch survey responses and visits are summarized in **Table 1**.

Ranch Types and Sizes

- Brood cows numbered 1 - 12,500 and stockers, 1 - 9,500 per ranch.
- Average herd sizes increased moving westward; 144 (east), 303 (central) and 565 cows per ranch (west).

- Mean brood-cow to bull ratio was 18.3:1 (east); 21.7:1 (central); and 22.9:1 (west).
- Average replacement heifers per cow within the region was 24 - 34%. Areas with high replacement rates were likely rebuilding herds reduced by recent droughts and winter storms.

Cattle Management

- Mean brood cow body weights increased moving northward; Nebraska (1,292 lb.), South Dakota (1,310 lb.) and North Dakota (1,347 lb.).
- Cow stocking rates (including associated bulls and replacements) decreased from east (7.1 ac/cow-calf pair) to the drier west (16.9 ac/cow-calf pair).
- Concentrates were fed at 2.0 lb. DM/animal/day and included feed by-products with types depending on local availability.

Table 1. Beef cattle ranch management characteristics gathered from survey and site visits of the eastern (n = 75), central (n = 76) and western (n = 124) Northern Plains.

Ranch characteristic	Units	East	Central	West	Full Region*
Ranches with cows	% of ranches	98.7	97.4	98.4	98.0
Ranches with stockers	% of ranches	60.0	53.9	56.5	56.3
Grass-finished cattle	% of finished cattle	0	0.4	1.8	0.74
Growth implants used	% of ranches	35.0	47.7	38.3	41.6
Portion of stockers	% of stockers	43.9	68.7	53.4	57.7
Harvested pasture land	% of ranches	42.6	44.6	50.0	46.9
Portion harvested each year	% of land	10.1	10.4	14.2	11.5
Clipped but not harvested	% of land	13.1	10.5	18.4	13.7
Pasture reestablishment	% of ranches	11.8	2.9	10.4	7.5
Little or no reestablishment	% of land	69.3	97.3	85.5	86.6
Reestablishment period	Years	12.3	11.3	12.0	11.7
Nitrogen fertilizer use	% of ranches	46.7	6.6	2.9	15.5
Fertilizer used	% of land	36.1	1.5	1.5	10.2
Amount used	lb. N/ac	59.5	35.0	38.7	42.3
Phosphate fertilizer	% of ranches	25.5	0	1.0	6.7
Fertilizer used	% of land	31.3	0	0.2	7.9
Amount used	lb. P ₂ O ₅ /ac	21.9	—	60.0	43.0
Potash fertilizer	% of ranches	16.0	0	1.1	4.4
Fertilizer used	% of land	2.8	0	0.2	0.8
Amount used	lb. K ₂ O/ac	20.6	—	40.0	31.4
Other feed crops grown	% of ranches	62.9	75.4	42.6	62.0
	ac/animal	1.15	0.82	0.86	0.91

*Values for the full region are weighted by the portion of cows maintained in each state based on the 2007 survey of the National Agricultural Statistics Service (NASS, 2015).

- Growth implant use was reported by 42% of ranches raising 44 - 69% of the stocker cattle.

Crop Management

- Grazed acreage consisted of native warm-season grasses, "tame" cool-season grasses, and annual forage crops. The average grazing land was 6,550 acres per ranch.
- Fertilizer was most used in the eastern part of the region (**Table 1**). Urea was the most common nitrogen fertilizer. No lime application was reported in the region.

Labor

- Mean annual labor requirement for east, central, and west areas were 16.3, 12.8, and 11.1 person hours per animal, respectively. Expectedly, seed stock operations had relatively higher labor needs.

Equipment

- On average, there were three ATVs and three to four trucks and tractors per ranch.
- When horses were used, between 33 and 378 cattle were managed per horse.

Energy Use

- Annual fuel use (diesel equivalents) reported on cow-calf ranches was 2 – 13 gallons/cow-calf pair. Combined cow-calf and stocker operations used 5.5 – 20.0 gallons/animal and a cow-calf – to – finish operation reported 10 gallons/animal.
- On cow-calf operations, electricity use varied from 11 – 555 kWh/cow. Combined cow-calf and stocker ranches consumed 17 – 279 kWh/animal.

Feedlot Survey Results

Table 2 summarizes feedlot practices from 46 survey responses including 13 site visits.

Feedlot Sizes and Types

- The largest feedlots surveyed were in Nebraska where 73% of finished cattle reported in the region were located. These large feedlots were concentrated in the east and center of the state.

- Some feedlots grazed stockers and 11% of respondents were backgrounding-only operations.
- Holstein cattle, making up 5% of feeder cattle surveyed, were finished on 14% of feedlots.

Cattle Management

- Entering and finishing weights were highest in South Dakota.
- Average crude protein in finishing diets was 14.1%. **Figure 2** shows the typical composition of rations.

Crop Management

- The majority of feedlots (90%) produced most of their feed. Cultivated areas averaged 0.74 ac/animal. The main crops reported were corn grain (71% of operations), corn silage (42%), and alfalfa (52%).
- Nitrogen fertilizer was applied by 74% of corn grain and 80% of corn silage growers. Anhydrous ammonia and/or urea were most often used.
- Most operations applied manure on cropland. A few large operations composted and sold 49% of the manure produced in the region.
- Irrigation was more often used on corn (50% of growers) than on alfalfa (20% of growers).

Labor

- Generally, operations that backgrounded cattle required more labor per animal fed.

Table 2. Summary of feedlot and feeding characteristics gathered from the Northern Plains; Nebraska (n = 26), South Dakota (n = 12), and North Dakota, (n = 8).

Management characteristic	Unit	Mean	Range	
			Min.	Max.
Maximum capacity	cattle	4,956	10	45,000
Cattle finished/capacity	ratio	1.2	0.3	2.4
Stocker cattle grazed	cattle	693	10	2,600
Entering weight	lb.	668	516	851
Finished weight	lb.	1,349	1,108	1,499
Portion backgrounded	%	50.2	0	100
Backgrounding period	d	98	30	225
Backgrounding feed consumption	lb. DM/d/animal	20	13	26
Finish period	d	137	84	280
Finishing feed consumption	lb. DM/d/animal	24	20	26
Crop area/finished animal	ac/animal	0.74	0.01	2.8
Labor use	h/animal/year	4.6	0.5	26.2

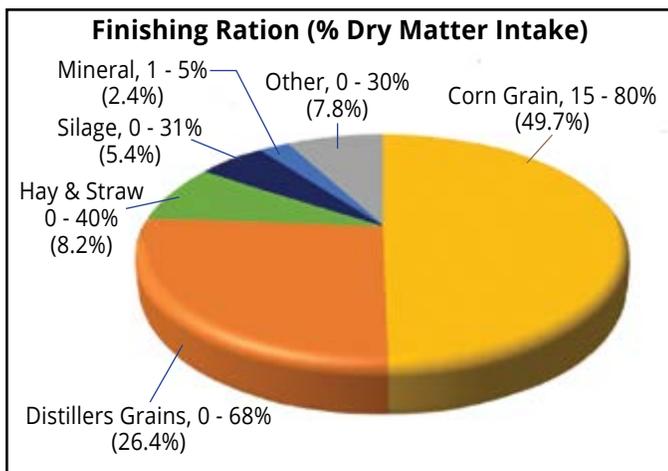
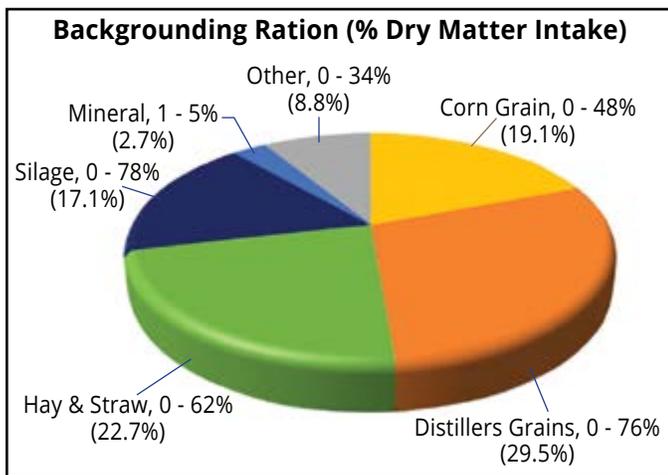


Figure 2. Range (mean) of the constituents making up rations averaged over all participating feedlots in the Northern Plains.

Equipment

- On average, each feedlot used one or two payloaders, three tractors, two or three ATVs, four pick-up trucks, up to three feed trucks, and three trailers.
- Machinery use reported was up to 8,900 animals fed/tractor and up to 2.5 tractor hours/animal/year. Skid steer loaders served a maximum of 12,600 animals and payloaders served 17,800 animals. There were up to 8,100 cattle served per pick-up truck and 8,900 cattle per ATV.

Energy Use

- Reported annual fuel use was 1.3 - 4.2 gallons diesel equivalent/animal fed. The amount of fuel consumed depended on the amount of feed produced on a feedlot and the custom operations used.
- Electricity consumption was 14 - 114 kWh/animal and was affected by irrigation use.

Literature Cited

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