Characteristics of beef cattle operations in the West

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In 2011, the Beef Checkoff's U.S. Beef Industry Sustainability Assessment was launched to benchmark environmental, social and economic aspects of beef industry sustainability. The first phase of the Assessment was completed using data from the Meat Animal Research Center (MARC) in Clay Center, Nebraska. Phase two of the assessment is underway to include data from seven individual cattle-producing regions across the country.

Incorporating region-specific information into the study ensures that opportunities unique to each region are identified. This factsheet reports production information obtained via online surveys and on-site visits to ranches and feedlots in two of the seven cattle producing regions: the Northwest (Idaho, Montana, Oregon, Washington, and Wyoming) and the Southwest (Arizona, California, Colorado, Nevada, New Mexico and Utah; **Figure 1**).

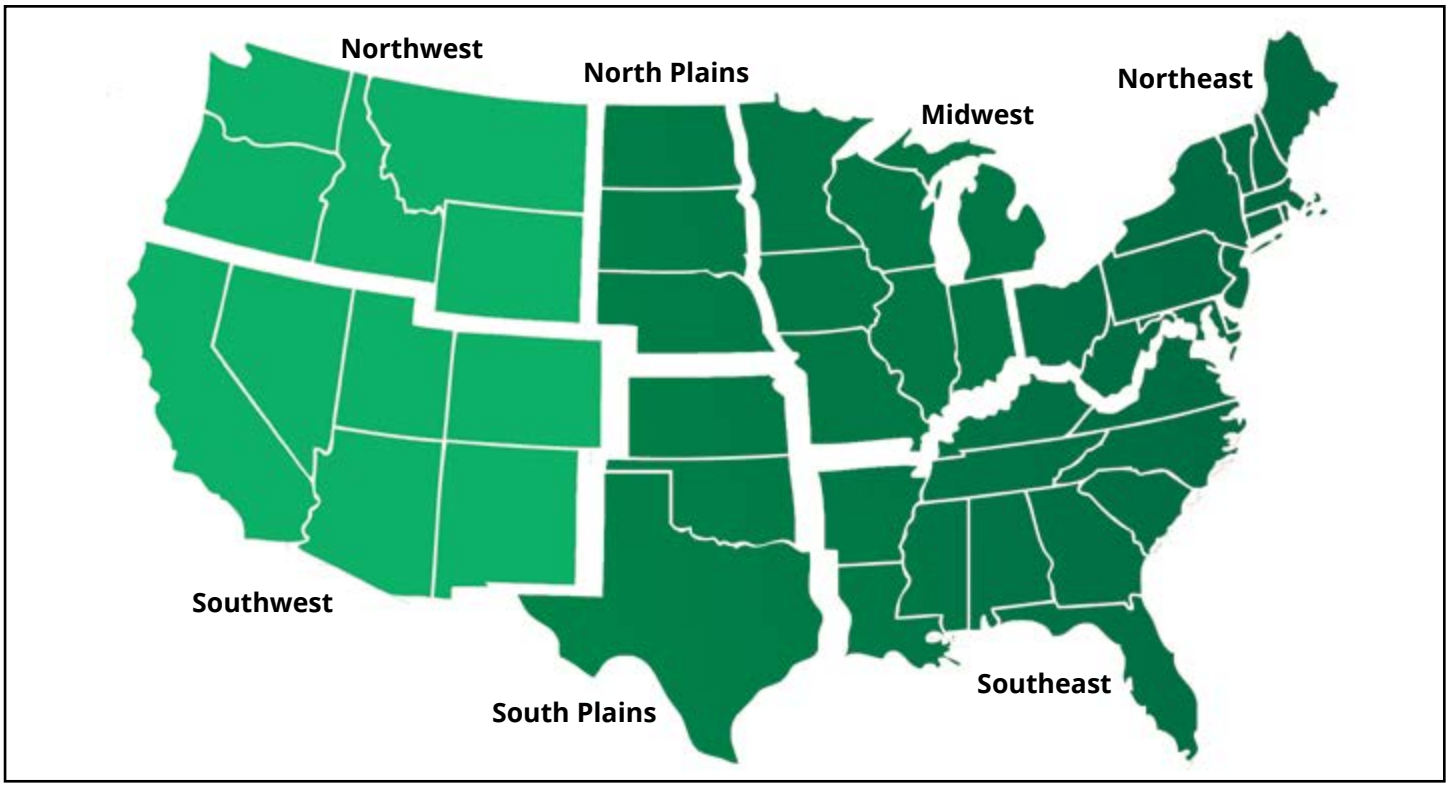

Figure 1. Cattle-producing Regions for Sustainability Data Collection.

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Although terminology varies among cattle operations, we are defining ranches as any operation that predominately includes cattle on pasture or rangeland. 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 about 3% of the beef cows maintained in both regions with operation sizes varying from 3 to 28,500 cows. Feedlot responses represented 33 and 19% of cattle finished in the Northwest and Southwest, respectively, with feedlot sizes ranging from 30 to 150,000 cattle.

Ranch Results

Ranches consisted of cow-calf only, cow-calf and stocker or backgrounding, cow-calf – to – finish, and stocker – to – finish operations. All responses from ranches gathered or collected through surveys and visits totaled 371: Northwest (144) and Southwest (227). Alaska was included in the Northwest survey, but no responses were received. Due to the very low number of cattle in this state, (about 0.1% of those in the Northwest region, NASS, 2015), Alaska was not included in our analysis.

Ranch visits numbered 16 in the Northwest and 19 in the Southwest. One to five operations were visited per state depending upon the size and diversity of the industry in the state. According to the 2012 survey of the National Agricultural Statistics Service (NASS, 2015), the total number of beef cows in these regions was 3.37 million in the Northwest and 2.47 million in the Southwest. Based upon these populations, the number of cows represented in our surveys and visits was approximately 3.2% of the beef cow inventory in the Northwest and 2.7% for the Southwest.

Ranch Types and Sizes

- Herd size in these regions ranged from 3 to 28,500 cows with larger ranches in the Northwest.
- Of the cow-calf and stocker operations in the Northwest, there was a range of 85-28,500 brood cows and 20-4,500 stockers. In the Southwest, there was a range of 53-6,000 brood cows and 550-1,565 stocker cattle.
- The mean brood-cow to bull ratio for cow-calf operations was about 20:1 in both regions.
- The average replacement heifers per cow was 23% with similar numbers for both regions.

Table 1. Beef cattle ranch survey results for the Northwest and Southwest regions.[1]

Ranch characteristic	Units	Northwest	Southwest	Combined regions[2]
Ranches with cows	% of ranches	95.8	95.6	95.7
Ranches with stockers	% of ranches	42.4	36.1	39.7
Grass-finished cattle	% of ranches	5.6	6.6	6.0
Growth implants used	% of ranches	35.8	22.9	30.3
Portion of stockers	% of stockers	57.6	68.7	62.3
Harvested pasture land	% of ranches	59.8	47.1	54.5
Portion harvested each year	% of land	3.6	4.1	3.8
Clipped but not harvested	% of land	1.2	2.3	1.7
Pasture reestablishment	% of ranches	19.2	19.3	19.3
Little or no reestablishment	% of land	98.6	97.1	97.9
Reestablishment period	Years	10.0	11.0	10.4
Nitrogen fertilizer use	% of ranches	14.2	14.8	14.4
Fertilizer used	% of land	0.3	0.4	0.3
Amount used by those who fertilize	lb. N/ha	191.8	275.5	227.1
Phosphate fertilizer	% of ranches	4.9	7.7	6.1
Fertilizer used	% of land	0.1	0.2	0.1
Amount used by those who fertilize	lb. P_2O_5/ha	53.6	229.3	127.4
Potash fertilizer	% of ranches	1.8	2.8	2.2
Fertilizer used	% of land	0.1	0.1	0.1
Amount used by those who fertilize	lb. K_2O/ha	24.7	255.7	122.4
Other feed crops grown	% of ranches	57.3	33.2	47.1
	ha/animal	0.48	0.42	0.46

- [1]Northwest responses include: Idaho (n=17), Montana (n = 55), Oregon (n = 11), Washington (n = 19), and Wyoming (n = 42). Southwest responses include: Arizona (n = 5), California (n = 65), Colorado (n = 84), Nevada (n = 14), New Mexico (n = 2) and Utah (n = 56).
- [2]Average of the two regions weighted by the portion of cows maintained in each. Cow numbers for the regions were from the 2012 survey of the National Agricultural Statistics Service (NASS, 2015).

Cattle Management

- Mean brood-cow body weight ranged from 1,124–1,398 lbs. for both regions.

- A wide range was reported for cow-calf pairs across the regions with an average stocking rate of 38.5 ac/cow-calf pair. For stockers, the average was 22 ac/cow-calf pair.

- For operations reporting the purchase and use of concentrate feeds, average use per animal was .79 lb. DM/animal/day in the Northwest and 0.97 lb. DM/animal/day in the Southwest.

- About 36% of the ranches in the Northwest and 23% of those in the Southwest reported the use of growth promotants **(Table 1).**

Crop Management

- Estimated area used for grazing was about 21,000 ac/ranch in both regions including the grazing of small grain crops and crop residue. Other feed crops included alfalfa, perennial grass hay and annual forage crops such as small grains.

- Very little inorganic fertilizer was used on grazing land. The form of nitrogen applied was normally ammonium sulfate (37%), urea (25%) or urea ammonium nitrate (18%).

- Phosphate and potash fertilizer use were reported by only 6% and 2% of ranches, respectively, and the portion of land fertilized was approximately 0.1%. Lime application was reported by 3% of the ranches and the estimated amount of land covered was trivial. **(Table 1).**

Labor

- Labor required to feed and maintain animals varied widely among ranches with an average of 16 person-hrs/animal/year. Reported labor use was very similar between the two regions. No relationship was found between herd size and labor requirements, but a slight trend toward less labor per animal was seen in larger herds.

Equipment

- Average number of tractors was one to two per ranch. Nearly all ranches used pickup trucks with 1-40 per operation and the number of trucks was proportional to the number of cattle managed.

- 88% of the ranches in the Northwest and 74% of those in the Southwest utilized horses. The number of horses per ranch ranged from 2-310. Cattle managed per horse varied from 16-700 with an average of 150 in the Northwest and 100 in the Southwest. For ranches utilizing horses as service animals, 87-700 cows and 1,000 stockers were managed per horse.

Energy Use

- Average reported annual fuel use (in diesel equivalents) over the two regions was 10 gallons/animal.

- Reported annual electricity use was similar across the regions with average values of 125 kWh/animal in the Northwest and 123 kWh/animal in the Southwest.

Feedlot Results

Feedlot sizes were similar in the two regions with average capacities around 30,000 cattle and maximum capacities around 150,000 cattle **(Table 2)**. About 20% of the lots only backgrounded cattle, 20% only finished cattle and 60% both backgrounded and finished cattle. Holsteins culled from dairies were finished on 79% of the operations in the Southwest (primarily in California) but only 17% of operations in the Northwest. Holsteins represented about 5% of the cattle finished in the Northwest and 33% of those finished in the Southwest. The number of Holstein cattle fed in the Southwest was very high compared to other regions. (Asem-Hiablie et al., 2015; Asem-Hiablie et al., 2016), due to the large number of cull calves available from the dairy industry in California.

Table 2. Summary of feedlot and feeding practices gathered from survey responses in the Northwest and Southwest region[1].

Management characteristic	Unit	Mean	Range	
			Min.	Max.
Northwest				
Maximum capacity	cattle	29,246	2,700	150,000
Cattle finished/capacity	ratio	1.6	0.11	3.6
Entering weight,	lb.	610.7	449.7	780.4
Entering weight, finish	lb.	864.2	851	899.5
Finished weight	lb.	1,393.3	1,300.7	1,499.1
Portion backgrounded	%	71.1	10.0	100
Backgrounding period	d	98	75	150
Backgrounding feed	lb. DM/d/animal	21.6	18.1	24.9
Finish period	d	161	110	225
Finishing feed intake	lb. DM/d/animal	21.6	15	33.9
Labor use	h/animal/year	1.5	0.1	3.7
Southwest				
Maximum capacity	cattle	31,370	30	120,000
Cattle finished/capacity	ratio	1.3	0.6	3.3
Entering weight,	lb.	657	548.9	862
Entering weight, finish	lb.	29.8	275.5	532
Finished weight	lb.	1,239	851	1,450.6
Portion backgrounded	%	69	15	100
Background period	d	82	35	140
Backgrounding feed	lb. DM/d/animal	21.6	15	33.9
Finish period	d	95	60	130
Finish period, Holstein	d	358	336	385
Finishing feed intake	lb. DM/d/animal	18.5	15	24.9
Labor use	h/animal/year	3.4	0.8	14.9

[1]Northwest responses include: Idaho (N = 3), Montana (n = 4), Oregon (n = 2), Washington (n = 3), and Wyoming (n = 0). Southwest responses include: Arizona (n = 0), California (n = 10), Colorado (n = 3), Nevada (n = 1), New Mexico (n = 0) and Utah (n = 1).

Feedlot Sizes and Types

- Of the 6 feedlot facilities visited, 300 to 187,000 cattle were finished per year.
- The largest feedlots were found in Washington, Colorado and California.

Cattle Management

- Crude protein content of backgrounding rations was 12.9-15.9% in the Northwest and 11.4-18.6% in the Southwest. Average crude protein content of finishing diets was 11.5-17.1% in the Northwest and 12.4-13.6 % in the Southwest. Typical feed compositions are shown in **Figures 2a and 2b** for both rations.
- Over both regions, 88% of the operations used growth promoting technologies on at least a portion of their cattle. Of these, essentially all used growth implants and rumensin, 57% used beta-agonist, and 43% used tylosin.

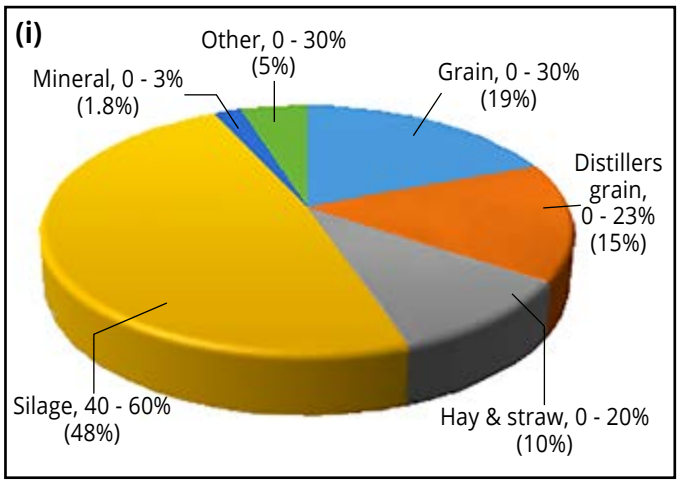
Crop Management

- About 50% of feedlots in each region grew a portion of their crops to feed cattle. The most frequent crops grown were: small grain (75% of those producing feed), corn (58%), grass hay or silage (25%), and alfalfa (17%).
- Around 83% of all operations producing corn applied nitrogen fertilizer. Among operations producing small grains, 55% applied nitrogen

fertilizer with little application of phosphorus and potassium. For grass and alfalfa crops, no nitrogen fertilizer use was reported, but a few operations in the Southwest applied phosphate and potash fertilizers. Lime application was rare.

- Essentially all cropland was irrigated in both regions with greater amounts used in the Southwest.

- In the Northwest, more than 80% of the crops were established using a no-till system with the remainder established using a minimum tillage system. The use of no-till systems was not reported in the Southwest. In this region, 70% of the crops were established using a minimum tillage system and 30% used conventional tillage.



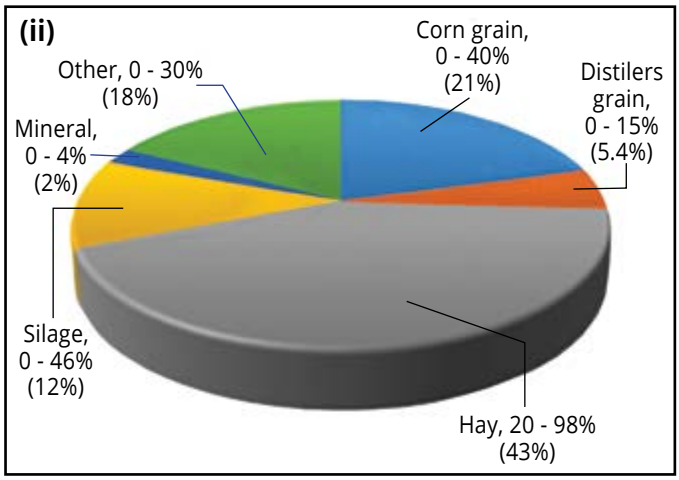
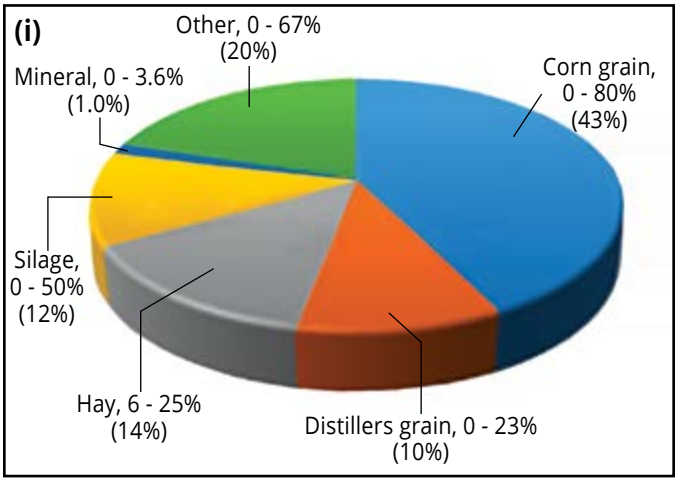


Figure 2a. Range and (mean) of backgroudning diet constituents making up total DMI averaged over all participating feedlots in (i) the Northwest and (ii) in the Southwest.



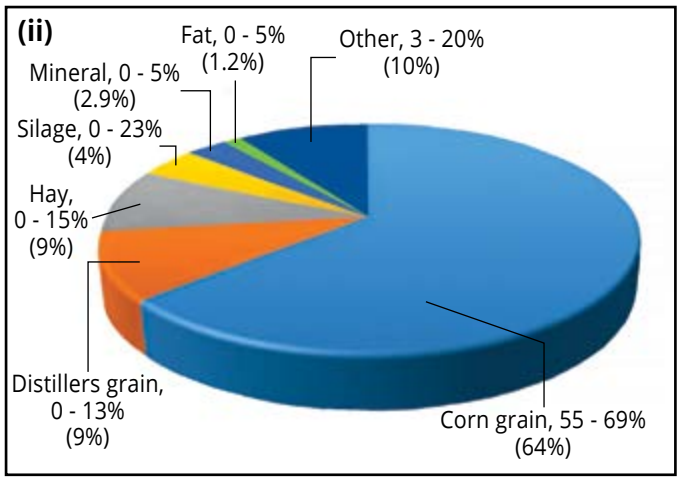


Figure 2a. Range and (mean) of finishing diet constituents making up total DMI averaged over all participating feedlots in (i) the Northwest and (ii) the Southwest.

Labor

- In both regions, the labor requirement was inversely related to operation size (r = 0.5) with less labor per animal on larger operations.

Energy Use

- Reported annual fuel use ranged from 1-4 gallons diesel equivalent/animal fed.

- Reported electricity use ranged from 8-53 kWh/animal finished. A wide variation in electricity use among operations is expected due to differences in water use and pumping requirements, irrigation use, and perhaps lighting requirements.

Equipment

- On average, 4 tractors per feedlot were observed. The number of tractors was related to the number of cattle managed with an average of 20,000 cattle per tractor.

- Payloaders were used for feeding on all larger feedlots with 2-5 on each operation. A smaller skid-steer loader was found on many of the operations and ATVs were found on most operations, with 3-6 per feedlot.

- Pickup trucks were used on most operations with 3-16 on each. Other trucks included feed trucks with 2-5 per feedlot.

References

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