



## BEEF FACTS: SUSTAINABILITY

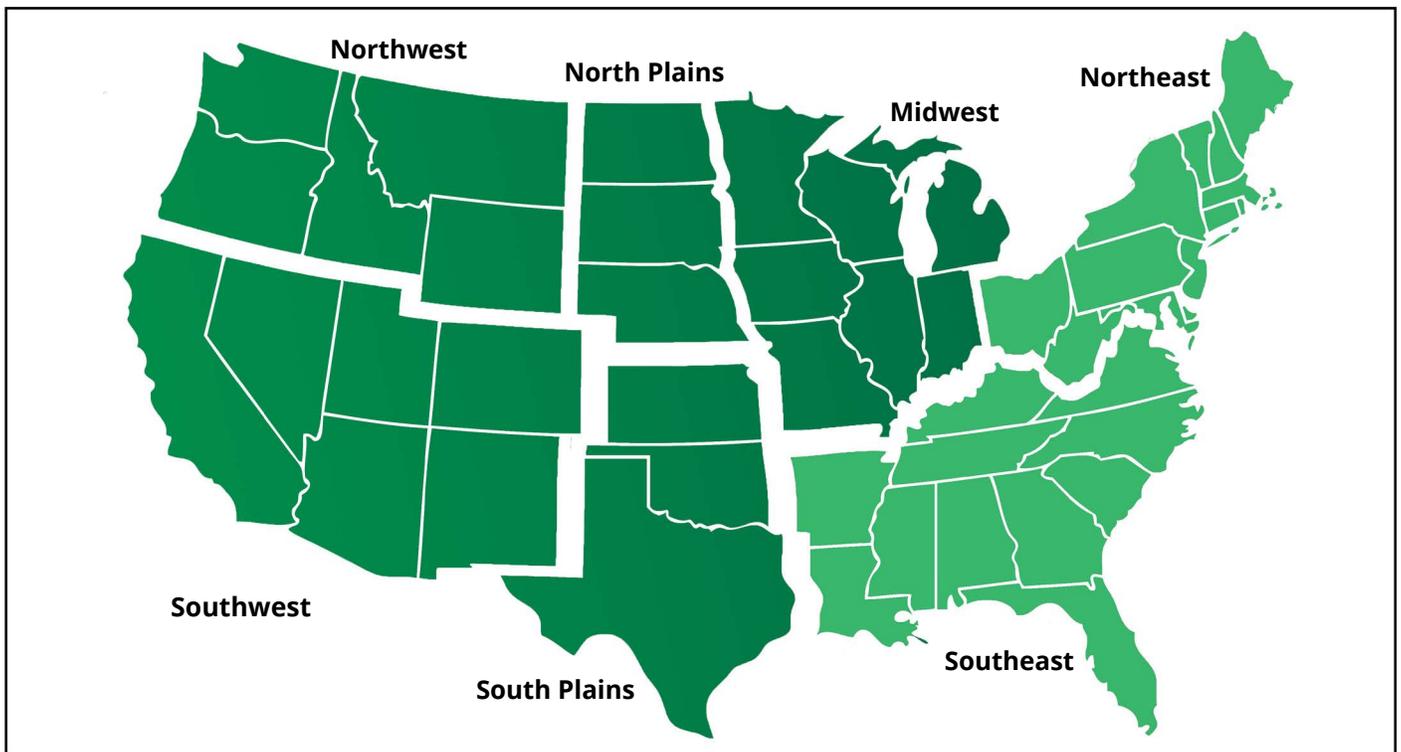
## BEEF RESEARCH

### Characteristics of beef cattle operations in the East

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Region-specific collection of beef production practices has been on-going as part of the Beef Checkoff's U.S. Beef Industry Sustainability Assessment launched in 2011 to inform and benchmark environmental, social and economic aspects of beef industry sustainability. Characterizing regional beef production practices provides the basis for a comprehensive national life cycle assessment (LCA) quantifying the sustainability of U.S. beef. This fact sheet provides an overview of beef

cattle production obtained from online surveys and on-site visits to ranches and feedlots in the final two of the seven cattle-producing regions: The Southeast (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North and South Carolina, Tennessee and Virginia) and the Northeast (Connecticut, Delaware, New Hampshire, Maine, Maryland, Massachusetts, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and West Virginia; **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. A total of 817 ranch responses represented 1.2% of the 0.80 million beef cows in the Northeast and 1.0% of the 6.87 million beef cows in the Southeast (NASS, 2017). Fifty-five feedlot responses represented 4.4% and 34.5% of cattle fed in the Northeast and Southeast, respectively.

## Ranch Results

Beef cattle production results obtained from 817 survey responses and 55 ranch visits are summarized in **Table 1**.

### Ranch Types and Sizes

- Brood cows ranged from 2 to 12,223, while stockers were between 3,000 and 8,000 per ranch.
- Ranch herd sizes were larger in the Southeast than the Northeast; however, stocking rates were similar.

- Mean brood-cow to bull ratio was 18:1 (Northeast); and 21:1 (Southeast).
- Average replacement heifers per cow was 25% for both regions.

### Cattle Management

- Mean brood-cow body weights increased moving northward; Southeast (1,219 lb.) and Northeast (1,312 lb.).
- Cow stocking rates (including associated bulls and replacements) were similar across both regions with an average stocking rate of 2.5 ac/cow-calf pair. For stockers, the average rate decreased from Northeast (2 ac/stocker) to the drier Southeast (1.5 ac/stocker).
- Concentrates were fed at 1.3 lb. DM/animal/day in both regions and included feed by-products with types depending on local availability.
- Growth implant use was reported by 11% (Northeast) and 31% (Southeast) of ranches, representing 75% of the stocker cattle produced in the East (**Table 1**).

**Table 1.** Beef cattle ranch survey results for the Southeast (n = 659) and Northeast (n = 158) regions.

Ranch characteristic	Units	Northeast <sup>1</sup>	Southeast <sup>2</sup>	Combined regions <sup>3</sup>
Ranches with cows	% of ranches	98.1	96.7	96.9
Ranches with stockers	% of ranches	72.4	47.2	49.9
Grass-finished cattle	% of finished cattle	41.5	36.8	37.3
Growth implants used	% of ranches	10.5	31.4	29.1
Portion of stockers	% of stockers	61.2	77.2	75.5
Harvested pasture land	% of ranches	57.6	62.8	62.2
Portion harvested each year	% of land	16.5	7.7	8.7
Clipped but not harvested	% of land	43.9	6.6	10.7
Pasture reestablishment	% of ranches	44.3	52.8	51.9
Little or no reestablishment	% of land	67.1	76.2	75.2
Reestablishment period	Years	9.6	8.9	9.0
Nitrogen fertilizer use	% of ranches	43.1	64.9	62.5
Fertilizer used	% of land	29.4	25.7	26.1
Amount used by those who fertilize	lb. N/ha	174.8	231.0	224.9
Phosphate fertilizer	% of ranches	17.5	45.8	42.7
Fertilizer used	% of land	11.5	13.7	13.5
Amount used by those who fertilize	lb. P <sub>2</sub> O <sub>5</sub> /ha	107.6	149.2	144.6
Potash fertilizer	% of ranches	24.6	50.0	47.2
Fertilizer used	% of land	12.3	19.3	18.5
Amount used by those who fertilize	lb. K <sub>2</sub> O/ha	127.2	154.5	151.5
Other feed crops grown	% of ranches	60.7	28.9	32.4
	acre/animal	1.56	0.86	0.99

<sup>1</sup>Northeast region includes: Connecticut, Massachusetts and Rhode Island (n = 2), Maine (n = 8), Maryland (n = 5), New Jersey and Delaware (n = 5), New York (n = 23), Ohio (n = 19), Pennsylvania (n = 68), Vermont and New Hampshire (n = 18) and West Virginia (n = 10).

<sup>2</sup>Southeast region includes: Alabama (n = 29), Arkansas (n = 26), Florida (n = 23), Georgia (n = 96), Kentucky (n = 208), Louisiana (n = 23), Mississippi (n = 31), North Carolina (n = 21), South Carolina (n = 5), Tennessee (n = 155), and Virginia (n = 42).

<sup>3</sup>Weighted average with 10.9% of beef cows in the Northeast (NASS, 2017).

## **Crop Management**

- Grazed acreage in the Northeast was dominated by cool-season grasses and legumes while the Southeast consisted of warm season grasses, as well as legumes. The average grazing land was 210 acres (Northeast) and 583 acres (Southeast) per ranch.
- Nitrogen fertilizer use on pasture was prominent among ranches in the Southeast (65%) compared to the Northeast (43%); however, nearly equal portions of pastureland in both regions received nitrogen with a combined total of 26% (**Table 1**).
- Lime was used on about 6% (Northeast) and 18% (Southeast) of pastureland.

## **Labor**

- Average annual labor requirements for the Northeast and Southeast were 47 and 33 person-hrs/animal, respectively. No correlation was found between herd size and labor needs in either region.

## **Equipment**

- On average, there were two or three trucks, one to three trailers, a maximum of six tractors, and up to four utility vehicles (UTVs) and/or all-terrain vehicles (ATVs) listed per ranch, with the number of tractors and UTV/ATVs used being proportional to the herd size managed.
- 42% of ranches in the Southeast utilized horses, managing 256 cows per horse with the number of horses used being proportional to herd size. Only two operations in the Northeast utilized horses, managing 45-120 cows per horse.

## **Energy Use**

- Average annual fuel use estimates for the Northeast (in diesel equivalents) was 21 gallons/brood cow on cow-calf ranches while on cow-calf – to – finish operations, the average was 9 gallons/animal. In the Southeast, annual fuel use estimates for cow-calf and cow-calf and stocker operations were given as 19 gallons/cow and 18 gallons/animal, respectively. Meanwhile, stocker-backgrounder operators in the Southeast reported an average of 2 gallons/animal.
- Reported annual electricity use was similar for cow-calf and cow-calf – to – finish operations at

30 kWh/cow and 26 kWh/animal, respectively in the Northeast, and cow-calf stocker at 12 kWh/head. In the Southeast, reported annual electricity use varied between 20 to 181 kWh/cow with a reported average of 64 kWh/cow, and cow-calf stocker operations reported a mean electricity use of 81 kWh/animal and a range of 4 to 254 kWh/animal.

## **Feedlot Results**

Results obtained from 55 survey responses and 13 feedyard visits are summarized in **Table 2**.

### **Feedlot Sizes and Types**

- Fewer feedlots were recorded in the Southeast with the majority of these being backgrounding facilities. In the Northeast, 58% finished cattle only while fewer (35%) backgrounded and finished cattle.
- Holstein cattle made up an average of 34% of cattle reported on Northeastern feedlots and 2.5% of cattle finished in the region.

### **Cattle Management**

- The mean finished body weight (BW) in the Northeast was 1,340 lb., similar to the values reported for the Midwest, Northern Plains and Southwest regions (Asem-Hiablie et al., 2016, 2017). The mean finished BW in the Southeast was 1,107 lb.
- The portion of cattle backgrounded on operations that reported backgrounding of cattle averaged 67% and 76% in the Northeast and Southeast, respectively.
- The daily dry matter intake (DMI) during the backgrounding period was 19 lb. DM/animal for the Northeast and 18 lb. DM/animal for the Southeast. Typical backgrounding diets varied between the regions. **Figure 2** shows the typical composition of rations.
- About 51% of cattle in the Northeast and 35% of cattle in the Southeast are finished “natural” (i.e. without growth-enhancing technologies).

### **Crop Management**

- Most feedlots (more than 69%) produced their own feed crops. Cultivated areas averaged

**Table 2.** Summary of survey results for feedlot and feeding characteristics in the Northeast (n = 37) and Southeast regions (n = 20).

Management characteristic	Unit	Mean	Range	
			Min.	Max.
<b>Northeast<sup>1</sup></b>				
Maximum capacity	cattle	347	20	2,200
Finished/capacity	ratio	1.0	0.35	2.2
Stocker cattle grazed	cattle	30	0	300
Enter weight, finish	lb.	670	399	875
Finished weight	lb.	1,340	1,124	1,499
Portion backgrounded	%	67	0	100
Backgrounding period	d	151	28	364
Backgrounding feed intake	lb. DM/animal/d	18.9	12.3	27.1
CP of background diet	%	13.8	12.0	16.0
Finish period	d	164	56	364
Finishing feed intake	lb. DM/animal/d	24	15.4	32
CP of finish diet	%	12.8	11.3	15.0
Labor use	person-h/animal	12.9	0.9	53.0
<b>Southeast<sup>2</sup></b>				
Maximum capacity	cattle	807	16	8,000
Finished/capacity	ratio	1.4	0.10	4.0
Stocker cattle grazed	cattle	709	12	3,000
Enter weight, background	lb.	491.6	299.8	725.3
Enter weight, finish	lb.	740.8	599.7	1,000.9
Finished weight	lb.	1,106.7	950.2	1,402.1
Portion backgrounded	%	75.5	30	100
Backgrounding period	d	108	28	280
Backgrounding feed intake	lb. DM/animal/d	17.6	6	50
CP of background diet	%	12.2	10.0	14.0
Finish period	d	154	28	260
Finishing feed intake	lb. DM/animal/d	22.3	20.1	26
CP of finish diet	%	14.3	13.0	15.5
Labor use	person-h/animal	57.4	1.3	138.7

<sup>1</sup>Northeast responses include: Connecticut, Massachusetts and Rhode Island (n = 1), Maine (n = 1), Maryland (n = 1), New Jersey and Delaware (n = 2), New York (n = 6), Ohio (n = 4), Pennsylvania (n = 11), Vermont and New Hampshire (n = 2) and West Virginia (n = 3).

<sup>2</sup>Southeast responses include: Florida (n=3), Kentucky (n = 10), North Carolina (n = 1), Tennessee (n = 4), and Virginia (n = 1).

1.43 acres/animal in the Northeast and 0.49 acres/animal in the Southeast. The main crops reported for both regions were corn grain or silage, alfalfa or other legumes for hay, grass hay or silage, small grain hay or silage.

- Nitrogen fertilizer was applied by 90% of operations cultivating corn in the Northeast and all operations cultivating corn in the Southeast.

### Energy Use

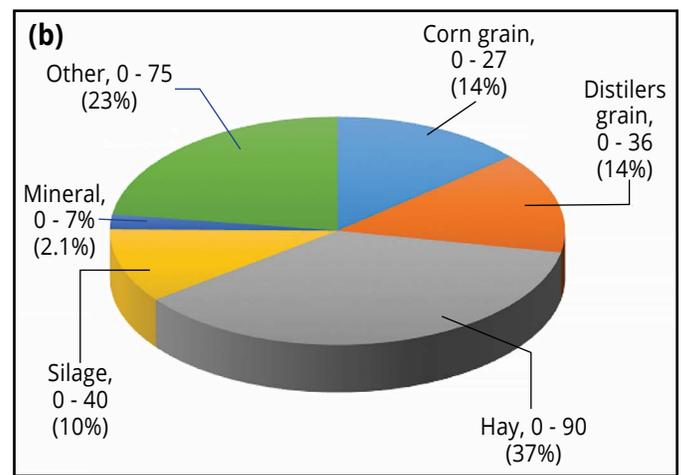
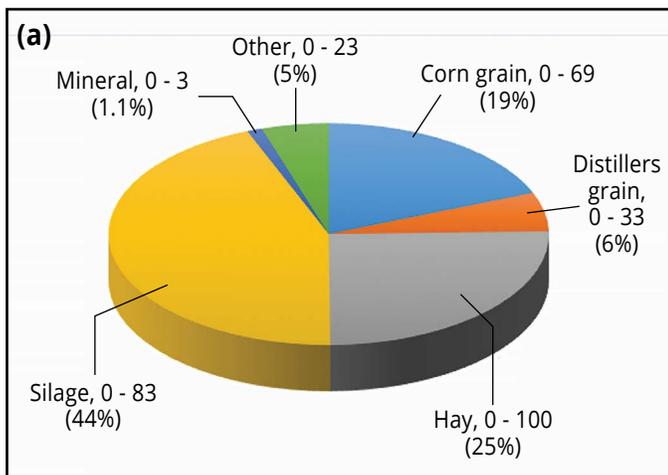
- Reported annual fuel use ranged between 0.79 and 25 gallons/animal of diesel equivalent with an average of 9.7 gallons/animal in the Northeast and 0.79 gallons/animal in the Southeast.
- Electricity consumption was estimated as 41 kWh/animal in the Northeast and 21 kWh/animal in the Southeast.

### Labor

- Generally, operations in the Southeast required more labor per animal fed.

### Equipment

- On average, feedlots used 2 to 4 pickup trucks in the Northeast and Southeast, respectively. Each pickup truck was used for between 53 and 2,289 animals in the Northeast and between 275 and 4,000 animals in the Southeast.
- The number of tractors per operation ranged from 2 to 10 with each serving on the average, 85 fed cattle in the Northeast and 2,140 cattle in the Southeast. The number of tractors was not proportional to the number of cattle managed.



**Figure 2.** Range and (mean) of backgrounding diet constituents of total DMI for all participating feedlots in the Northeast (a) and Southeast (b).

## References

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## Acknowledgement

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