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Animal and Plant Health Inspection Service

Veterinary Services

National Animal Health Monitoring System

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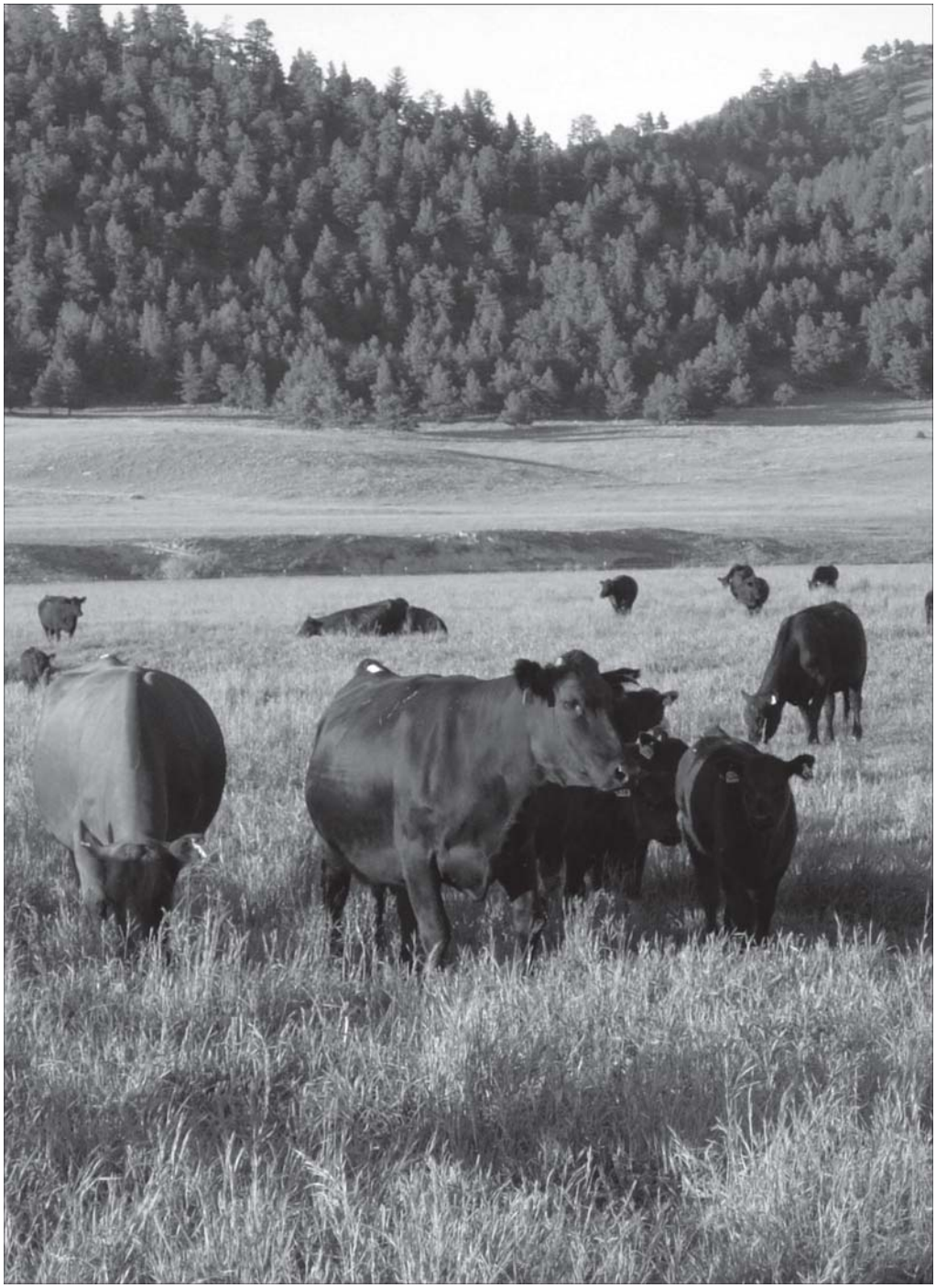
Beef 2007-08

Part II: Reference of Beef Cow-calf Management Practices in the United States, 2007–08



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Cover photo courtesy of Dr. Dave Dargatz

Selected Animal Health and Biosecurity Highlights

The Beef 2007–08 study marks the first time in 10 years that the National Animal Health Monitoring System has taken an in-depth look at the U.S. beef cow-calf industry. In the following pages, you'll find the latest information on the animal health and management practices of one of the Nation's most important livestock industries.

Here are just a few highlights from the second report of the Beef 2007-08 study:

About one-half of all operations (50.8 percent) consulted a veterinarian for some reason during the previous 12 months. Interaction with a veterinarian was more common among herds with 200 or more cows (82.2 percent) compared with operations with fewer than 50 cows (43.2 percent).

In general, producers were familiar with specific diseases such as foot and mouth, brucellosis, bovine spongiform encephalopathy, anthrax, and bovine viral diarrhea. In fact, less than 15 percent of producers had never heard of these diseases. Other diseases—such as rinderpest, vesicular stomatitis, anaplasmosis, Johne's disease, and bluetongue—were not as familiar to producers, with more than 35 percent reporting that they had not heard of these diseases.

During the study, producers were asked about what type of animals had contact with their beef cattle. Contact with wild cervids, horses, and domestic pets was especially prevalent, with more than 40 percent of operations reporting that beef cattle had contact with each of these species during the previous 12 months. Also, in many cases, wild or domestic animals had access to stored grain and protein supplements intended for beef cattle.

Of operations that sent cattle to an off-site event for a period of time, 53.6 percent routinely isolated any animals after their return. However, 33.1 percent of operations that sent animals to an off-site event never isolated any returning animals.

One of three operations (34.5 percent) brought new cattle onto the operation during the previous 12 months. Weaned beef bulls were added on the highest percentage of operations. However, weaned steers accounted for the highest percentage of animals brought onto the operations. Two of five animals (41.7 percent) brought onto operations came from a sale barn/auction.

For operations that brought on any new cattle or calves, only 33.7 percent quarantined all or some of the new animals before introduction to the herd.

The majority of operations (76.3 percent) had commercial cattle (not considered seedstock). On most operations (65.2 percent) at least one-half of the commercial cattle were crossbreds.

About one-half of operations (54.5 percent) had no set breeding season. However, only 34.1 percent of the cows were on operations with no set breeding season, indicating that this practice is more common on smaller operations.

Most operations observed heifers and cows regularly during calving (92.7 and 89.0 percent, respectively). The majority of cows and heifers (95.0 percent) required no assistance at calving. Two-thirds of calves (65.8 percent) born in 2007 were born in the first 4 months of the year.

More than 7 of 10 operations (71.3 percent) never used the calving area to hold sick cows.

Most producers (85.1 percent) were very likely to get information from a private veterinarian in the event of a foot-and-mouth disease outbreak in the United States. By far, the highest percentage of producers would seek information from a veterinarian during a foreign animal disease outbreak compared with all other potential sources. By knowing who producers will turn to for information during an emergency, responders are able to target the dissemination routes of information critical to the emergency response effort.

Acknowledgments

This report was a cooperative effort between two U.S. Department of Agriculture (USDA) Agencies: the National Agricultural Statistics Service (NASS) and the Animal and Plant Health Inspection Service (APHIS).

We would like to thank the NASS enumerators who contacted beef producers and collected the data. Their hard work and dedication were invaluable. Thanks also to the personnel at the USDA–APHIS–Veterinary Services' Centers for Epidemiology and Animal Health for their efforts in generating and distributing this report.

All participants are to be commended, particularly the producers whose voluntary efforts made the Beef 2007-08 study possible.

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Feedback
Feedback, comments, and suggestions regarding Beef 2007–08 study reports are welcomed. Please forward correspondence via e-mail at: NAHMS@aphis.usda.gov.

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Introduction

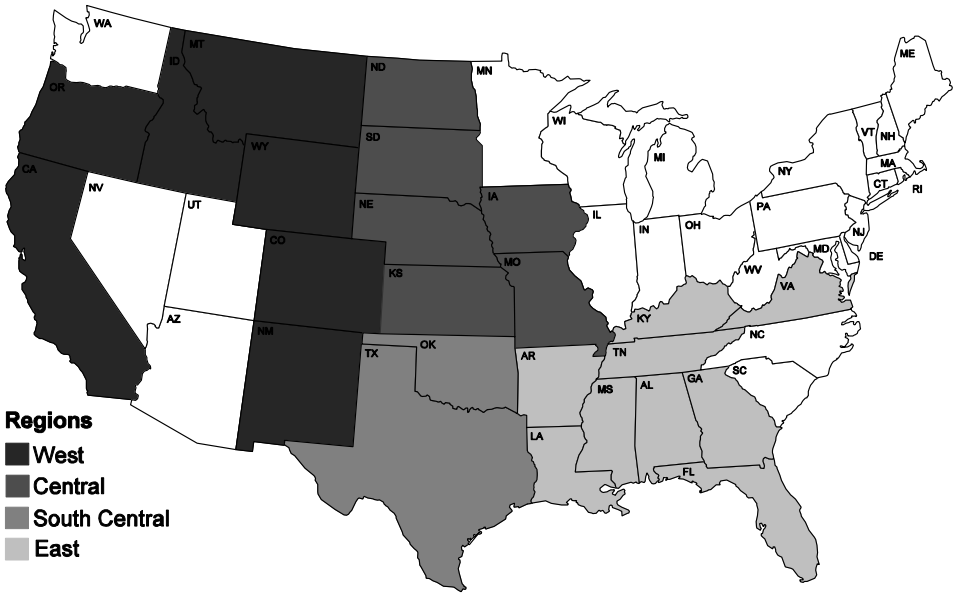
The National Animal Health Monitoring System (NAHMS) is a nonregulatory program of the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service. NAHMS is designed to help meet the Nation's animal health information needs and has collected data on cattle health and management practices on cow-calf operations through two previous studies.

The NAHMS 1992-93 Cow-calf Health and Productivity Audit (CHAPA) provided the first national information on the health and management of cattle on cow-calf operations in the United States. While the study was in progress, the media began to report on the incidence of "mystery calf disease" throughout the United States. Such reports stimulated requests from stakeholders for information on the occurrence of this "new" disease. The CHAPA study became one vehicle that provided estimates of the frequency of occurrence and geographic distribution of the disease.

Information from the NAHMS Beef '97 study helped the U.S. beef industry identify educational needs and prioritize research efforts on such timely topics as antibiotic usage and Johne's disease, as well as potential foodborne pathogens, including *Salmonella.* Data from the Beef '97 study were also critical in designing the enhanced surveillance plan for bovine spongiform encephalopathy (BSE).

The Beef 2007-08 study was conducted in 24 States (see map on next page) with the largest beef cow populations and provides participants, stakeholders, and the industry as a whole with valuable information representing 79.6 percent of U.S. beef cow operations and 87.8 percent of U.S. beef cows. Part II: Reference of Beef Cow-calf Management Practices in the United States, 2007–08 is the second in a series of reports containing national information from the NAHMS Beef 2007-08 study. This report contains information collected from 2,872 cow-calf operations.

NAHMS Beef 2007-08 Participating States by Region



Terms Used in This Report

Animal average: The average value for all animals. The single reported value for each operation multiplied by the number of animals on that operation is summed over all operations and divided by the number of animals on all operations. This way, the result is adjusted for the number of animals on each operation. For an example, see animal average days quarantined or separated on p 101.

Beef cow: Female bovine that has calved at least once.

Beef heifer: Female bovine that has not yet calved.

Born alive: Calves surviving at least 2 hours after birth.

Calf crop percentage: Number of cows and heifers calving divided by number of cows and heifers exposed. The number exposed was adjusted by subtracting the number of cows or heifers exposed or artificially inseminated and that died, were sold, or moved off the operation before calving, and adding the number of cows or heifers exposed or artificially inseminated that were brought onto the operation for calving in 2007.

Composite breed: A cattle breed comprised of at least two component breeds designed to retain characteristics of both breeds in future generations without crossbreeding and maintained as a purebred. Examples of composite breed include Beefmaster and Brangus.

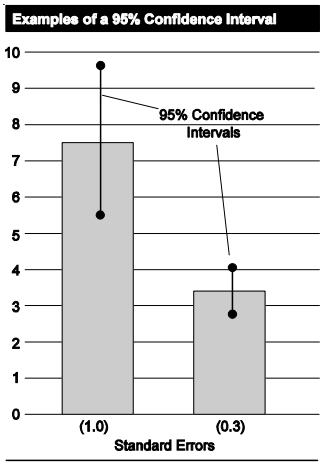
Forward pricing: A way for cattle sellers and buyers to contract for a price on their livestock ahead of an expected sale date. A forward pricing contract is a legal, binding commitment between a buyer and a seller. The contract guarantees a price for a specified amount and quality of product to be delivered at a certain time to a place specified in the contract.

Herd size: Herd size is based on October 1, 2007, cow inventory. If there were no cows on October 1, 2007, then July 1, 2007 cow inventory was used.

Operation: Premises with at least one beef cow on October 1, 2007, or July 1, 2007.

Operation average: The average value for all operations. A single value for each operation is summed over all operations reporting divided by the number of operations reporting. For example, operation average days in the breeding season (p 17) is calculated by summing reported days in the last breeding season over all operations divided by the number of operations.

Population estimates: The estimates in this report make inference to all of the operations in the target population (see Methodology section, p 117). Data from the operations responding to the survey are weighted to reflect their probability of selection during sampling and to account for any survey nonresponse.



Precision of population estimates: Estimates in this report are provided with a measure of precision called the standard error. A 95-percent confidence interval can be created with bounds equal to the estimate plus or minus two standard errors. If the only error is sampling error, the confidence intervals created in this manner will contain the true population mean 95 out of 100 times. In the example to the left, an estimate of 7.5 with a standard error of 1.0 results in limits of 5.5 to 9.5 (two times the standard error above and below the estimate). The second estimate of 3.4 shows a standard error of 0.3 and results in limits of 2.8 and 4.0. Alternatively, the 90-percent confidence interval would be created by multiplying the standard error by 1.65 instead of 2. Most estimates in this report are rounded to the nearest tenth. If rounded to 0, the standard error was reported (0.0). If there were no reports of the event, no standard error was reported (—).

Regions:
West: California, Colorado, Idaho, Montana, New Mexico, Oregon, Wyoming
Central: Iowa, Kansas, Missouri, Nebraska, North Dakota, South Dakota
South Central: Oklahoma, Texas
East: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Tennessee, Virginia

Sample profile: Information that describes characteristics of the operations from which Beef 2007-08 data were collected.

Section I: Population Estimates

A. Breeding Management

1. Description of breeding herd

Approximately three-fourths of operations across all herd sizes described themselves as commercial-cattle–only herds. A higher percentage of operations with 1 to 49 cows than operations with 100 or more cows described themselves as seedstock-only herds .

a. Percentage of operations by best description of the operations' beef breeding herd and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Description	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Seedstock cattle (primarily market cattle for breeding purposes)	11.1	(1.2)	6.0	(1.3)	4.9	(1.3)	4.8	(1.2)	9.5	(0.9)
Commercial cattle (primarily market cattle for eventual consumption)	76.3	(1.6)	74.2	(2.6)	79.8	(2.3)	77.7	(2.4)	76.3	(1.2)
Both seedstock and commercial cattle	12.6	(1.2)	19.8	(2.4)	15.3	(2.1)	17.5	(2.2)	14.2	(1.0)
Total	100.0		100.0		100.0		100.0		100.0	

The percentages of operations by type of breeding herd were similar across all regions.

b. Percentage of operations by best description of the operations' beef breeding herd and by region:

	Percent Operations							
	Region							
	West		Central		South Central		East	
Description	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Seedstock cattle (primarily market cattle for breeding purposes)	5.4	(2.0)	6.6	(1.3)	8.8	(1.7)	13.3	(1.7)
Commercial cattle (primarily market cattle for eventual consumption)	74.9	(3.6)	80.1	(2.1)	76.7	(2.5)	73.7	(2.1)
Both seedstock and commercial cattle	19.7	(3.2)	13.3	(1.7)	14.5	(2.0)	13.0	(1.6)
Total	100.0		100.0		100.0		100.0	

2. Seedstock cattle by breed type

Seedstock cattle were defined as those "primarily marketed for breeding purposes." At least some operations that market seedstock cattle for breeding purposes are likely marketing crossbred or composite bulls or heifers for replacements. Of operations with any seedstock cattle (23.7 percent of all operations), about one-fourth (26.0 percent) had all purebred cattle; about one-tenth (10.2 percent) had all composite cattle; and about one-third (36.0 percent) had all crossbred (hybrid) cattle. The remaining herds (27.8 percent) had a mixture of purebred, composite, and/or crossbred (hybrid) cattle.

For operations with any seedstock cattle, percentage of operations by proportion of cattle on the operation that were purebred, composite, or crossbred:

Percent Operations

Proportion of Seedstock Cattle

	All		Most (More than Half)		Half		Some (Less than Half)		None		
Breed	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Total**
Purebred	26.0	(2.5)	7.2	(1.3)	3.6	(1.0)	10.7	(1.8)	52.5	(3.0)	100.0
Composite	10.2	(1.9)	4.0	(1.1)	2.4	(1.0)	6.0	(1.3)	77.4	(2.5)	100.0
Crossbred (hybrid)	36.0	(2.9)	8.4	(1.6)	3.9	(1.0)	8.7	(1.6)	43.0	(2.9)	100.0

3. Commercial cattle by breed type

Of operations with any commercial cattle (90.5 percent of all operations), approximately one-half (48.7 percent) had all crossbred cattle. Approximately one-fourth of operations (25.4 percent) had at least some composite cattle, and one-fifth (20.0 percent) had at least one-half their herd comprised of composite cattle. Almost one-third of operations (29.9 percent) had at least some purebred cattle.

For operations with any commercial cattle, percentage of operations by proportion of cattle on the operation that were purebred, composite, or crossbred:

Percent Operations

Proportion of Commercial Cattle

	All		Most (More than Half)		Half		Some (Less than Half)		None		
Breed	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Total**
Purebred	9.3	(0.9)	5.6	(0.6)	3.3	(0.5)	11.7	(0.9)	70.1	(1.3)	100.0
Composite	13.7	(1.1)	4.0	(0.6)	2.3	(0.4)	5.4	(0.6)	74.6	(1.3)	100.0
Crossbred (hybrid)	48.7	(1.5)	10.7	(0.8)	5.8	(0.7)	7.5	(0.7)	27.3	(1.3)	100.0

4. Breed makeup of the majority of beef cows

Crossbreeding can result in offspring with hybrid vigor. Producers were asked to provide the best description of the breed makeup of the majority of their beef cows. Two-breed crosses accounted for the majority of beef cows on about one-half of operations (44.9 percent). Three-breed crosses accounted for the majority of beef cows on about one-fourth of operations (24.3 percent). The percentage of operations in which purebreds or straightbreds made up the majority of beef cows ranged from 16.1 percent of operations with 1 to 49 cows to 23.9 percent of operations with 200 or more. A higher percentage of operations with 1 to 49 cows than operations with 200 or more cows reported that composite breeds made up the majority of beef cows on the operation.

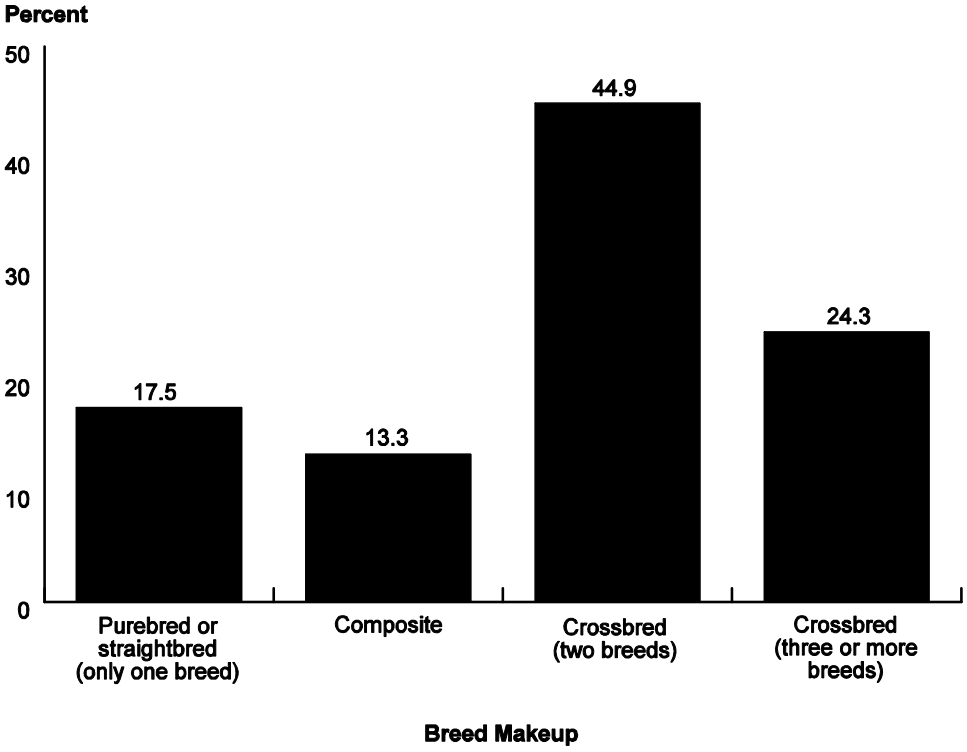
a. Percentage of operations by best description of the breed makeup of the majority of ***beef cows*** on the operation, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Breed Makeup	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Purebred or straightbred (only one breed)	16.1	(1.4)	20.9	(2.2)	18.3	(2.2)	23.9	(2.1)	17.5	(1.0)
Composite	14.3	(1.3)	13.3	(2.2)	7.2	(1.5)	8.5	(1.4)	13.3	(1.0)
Crossbred (two breeds)	42.9	(1.9)	47.4	(2.9)	54.5	(2.9)	51.3	(2.6)	44.9	(1.4)
Crossbred (three or more breeds)	26.7	(1.6)	18.4	(2.3)	20.0	(2.5)	16.3	(1.9)	24.3	(1.2)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Operations by Best Description of the Breed Makeup of the Majority of Beef Cows on the Operation



Across all regions, two-breed crosses accounted for the majority of beef cows on the highest percentage of operations. The West region had a higher percentage of operations in which purebred or straightbred beef cows made up the majority of beef cows, compared with operations in the other three regions.

b. Percentage of operations by best description of the breed makeup of the majority of ***beef cows*** on the operation, and by region:

	Percent Operations							
	Region							
	West		Central		South Central		East	
Breed Makeup	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Purebred or straightbred (only one breed)	27.9	(3.5)	18.5	(2.0)	15.5	(2.1)	15.7	(1.7)
Composite	9.2	(2.2)	9.2	(1.5)	15.0	(2.2)	15.8	(1.7)
Crossbred (two breeds)	43.7	(4.0)	53.3	(2.6)	42.9	(2.9)	40.9	(2.3)
Crossbred (three or more breeds)	19.2	(3.5)	19.0	(2.1)	26.6	(2.6)	27.6	(2.1)
Total	100.0		100.0		100.0		100.0	

5. Breed makeup of the majority of 2007 calf crop

In addition to providing the breed makeup of their cows, producers were asked to give the best description of the breed makeup of the majority of their 2007 calf crop. In general, the breed makeup of the 2007 calf crop was similar to the breed makeup of the breeding cow herd. Two- or three-breed crosses accounted for the majority of the 2007 calf crop on nearly three of four operations (72.7 percent). Across all herd sizes, two-breed crosses accounted for the majority of the calf crop in the highest percentage of operations. These results may indicate that producers are taking advantage of the hybrid vigor associated with crossbreeding.

a. Percentage of operations by best description of the breed makeup of the majority of the 2007 ***calf crop***, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Breed Makeup	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Purebred or straightbred (only one breed)	13.7	(1.3)	20.3	(2.2)	16.0	(2.0)	20.8	(2.0)	15.3	(1.0)
Composite	12.9	(1.2)	12.0	(2.1)	7.4	(1.5)	7.7	(1.3)	12.0	(0.9)
Crossbred (two breeds)	42.2	(1.9)	42.9	(2.9)	49.7	(2.9)	50.8	(2.6)	43.4	(1.4)
Crossbred (three or more breeds)	31.2	(1.7)	24.8	(2.5)	26.9	(2.6)	20.7	(2.0)	29.3	(1.3)
Total	100.0		100.0		100.0		100.0		100.0	

Across all regions, the majority of the 2007 calf crop consisted of two-breed crosses for the highest percentage of operations.

b. Percentage of operations by best description of the breed makeup of the majority of the 2007 ***calf crop***, and by region:

Percent Operations

Region

	West		Central		South Central		East	
Breed Makeup	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Purebred or straightbred (only one breed)	23.1	(3.2)	17.6	(1.9)	12.8	(1.9)	13.8	(1.6)
Composite	8.4	(2.0)	7.7	(1.4)	12.7	(2.0)	15.5	(1.7)
Crossbred (two breeds)	47.7	(4.1)	46.1	(2.6)	42.1	(2.9)	41.4	(2.3)
Crossbred (three or more breeds)	20.8	(3.6)	28.6	(2.4)	32.4	(2.8)	29.3	(2.1)
Total	100.0		100.0		100.0		100.0	

6. Genetic makeup of calf crop

Over one-half of operations (54.9 percent) reported that British breeds accounted for the genetic makeup of all or most of their 2007 calf crop. Fewer than one of five operations (17.9 percent) reported that all or most of their calves were Continental breeds. Nearly four of five operations (79.8 percent) reported that no animals in their 2007 calf crop had Brahman-influenced genetics.

Percentage of operations by proportion of the 2007 calf crop that consisted of calves with British, Continental, or Brahman-influenced genetics:

Percent Operations

Proportion of Calf Crop

	All		**Most** (More than Half)		**Half**		**Some** (Less than Half)		**None**		
Breed Group	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Total**
British (e.g., Angus, Hereford, Red Angus)	39.8	(1.4)	15.1	(1.0)	13.6	(1.0)	8.5	(0.8)	23.0	(1.2)	100.0
Continental (e.g., Charolais, Limousin, Simmental)	11.6	(1.0)	6.3	(0.7)	11.0	(0.9)	15.1	(1.0)	56.0	(1.4)	100.0
Brahman-influenced	7.0	(0.8)	3.1	(0.5)	3.0	(0.5)	7.1	(0.8)	79.8	(1.2)	100.0

7. Number of breeding seasons

Having a defined breeding season, and thereby a defined calving season, allows producers to devote more attention to animals during calving, a critical time in the production process when adverse events can dramatically affect production. Over one-half of operations (54.5 percent)—accounting for about one-third of beef cows (34.1 percent)—had no defined breeding season. About one-third of operations (34.0 percent) had only one breeding season, and these operations accounted for nearly one-half of beef cows (48.4 percent).

a. Percentage of operations (and percentage of beef cows on these operations on October 1, 2007), by number of defined breeding seasons:

Number of Defined Breeding Seasons*	Percent Operations	Standard Error	Percent Cows	Standard Error
One	34.0	(1.2)	48.4	(1.2)
Two or more	11.5	(0.8)	17.5	(1.0)
No set season	54.5	(1.3)	34.1	(1.1)
Total	100.0		100.0	

*Defined breeding season was determined by removal of the bull from cows and/or heifers for at least 30 days.

Photo courtesy of Dr. Dave Dargatz

For operations with only one breeding season, 49.0 percent of operations—accounting for 55.2 percent of beef cows—reported that the breeding season began in May or June. Given an approximate gestation period of 280 days, this would imply that cows on most operations began calving in February or March.

b. For operations with one breeding season, percentage of operations (and percentage of beef cows on these operations on October 1, 2007), by month the last breeding season began:

Month	Percent Operations	Standard Error	Percent Cows	Standard Error
January	8.5	(1.4)	7.2	(1.0)
February	5.2	(1.0)	5.2	(0.9)
March	6.4	(1.1)	5.9	(1.1)
April	10.3	(1.4)	10.4	(1.2)
May	23.8	(1.9)	24.0	(1.6)
June	25.2	(1.8)	31.2	(1.8)
July	8.6	(1.3)	6.7	(1.0)
August	2.6	(0.8)	1.2	(0.4)
September	1.1	(0.5)	0.7	(0.3)
October	0.9	(0.4)	0.9	(0.3)
November	3.6	(1.0)	2.8	(0.6)
December	3.8	(0.9)	3.8	(0.8)
Total	100.0		100.0	

A short calving season allows for more intense monitoring of animals during calving and the initial growth process and can result in a more uniform calf crop, which facilitates the administration of health programs and marketing. Of operations with 1 breeding season, almost 7 of 10 (69.7 percent) completed calving within 3 months. Operations with 1 to 49 cows were more likely to complete calving in 1 or 2 months than were operations with 50 or more cows.

c. For operations with one breeding season, percentage of operations by number of months that calves were born alive on the operations, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

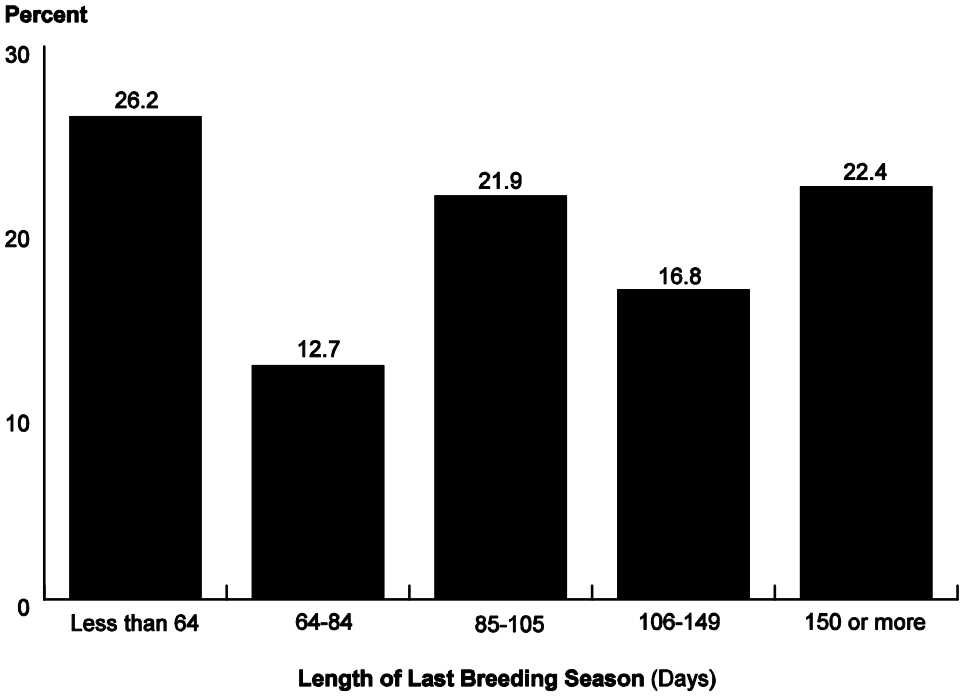
	1-49		50-99		100-199		200 or More		All Operations	
Number of Months	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1	12.4	(2.3)	2.7	(1.6)	1.4	(1.0)	1.0	(0.8)	8.3	(1.4)
2	39.4	(3.3)	17.2	(3.4)	22.6	(3.4)	19.2	(2.6)	31.5	(2.2)
3	25.6	(2.9)	35.6	(4.4)	33.7	(3.7)	41.7	(3.4)	29.9	(2.0)
4	11.2	(2.0)	23.2	(3.7)	24.9	(3.3)	19.4	(2.4)	15.7	(1.5)
5	7.3	(1.8)	13.1	(3.3)	7.7	(1.8)	7.9	(1.7)	8.4	(1.3)
6	1.8	(0.9)	4.1	(1.8)	3.3	(1.3)	3.0	(0.9)	2.5	(0.6)
7	0.4	(0.4)	2.3	(1.0)	3.9	(1.5)	3.5	(1.2)	1.4	(0.4)
8	1.9	(1.0)	1.3	(0.8)	0.7	(0.5)	3.1	(1.7)	1.8	(0.6)
9	0.0	(--)	0.0	(--)	0.0	(--)	1.0	(0.6)	0.1	(0.1)
10	0.0	(--)	0.5	(0.5)	0.7	(0.7)	0.0	(--)	0.2	(0.1)
11	0.0	(--)	0.0	(--)	0.8	(0.8)	0.1	(0.1)	0.1	(0.1)
12	0.0	(--)	0.0	(--)	0.3	(0.3)	0.1	(0.1)	0.1	(0.0)
Total	100.0		100.0		100.0		100.0		100.0	

Of operations with one breeding season, approximately 6 of 10 (60.8 percent)—accounting for 6 of 10 beef cows (61.8 percent)—completed the previous breeding season in 105 days or less.

d. For operations with one breeding season, percentage of operations (and percentage of beef cows on these operations October 1, 2007) by length of the last breeding season:

Length of Last Breeding Season (Days)	**Percent Operations**	**Standard Error**	**Percent Cows**	**Standard Error**
Less than 64	26.2	(2.1)	22.8	(1.6)
64 to 84	12.7	(1.4)	15.5	(1.4)
85 to 105	21.9	(1.9)	23.5	(1.8)
106 to 149	16.8	(1.7)	18.2	(1.6)
150 or more	22.4	(2.0)	20.0	(1.7)
Total	100.0		100.0	

For Operations with One Breeding Season, Percentage of Operations by Length of the Last Breeding Season



For operations with one breeding season, the operation average duration of the breeding season was about 110 days. The operation average duration of the breeding season was similar across herd sizes.

e. For operations with one breeding season, operation average number of days in the breeding season, by herd size:

Operation Average (Days)

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
108.0	(4.5)	119.4	(5.2)	109.7	(4.3)	106.5	(4.4)	110.1	(3.0)

Tradition was the most common factor for determining the timing of the last calving season (43.4 percent of operations). Weather was the next most common factor reported (27.9 percent of operations).

f. For operations with one breeding season, percentage of operations (and percentage of beef cows on these operations on October 1, 2007), by factor most used to determine timing of the last calving season:

Factor	Percent Operations	Standard Error	Percent Cows	Standard Error
Tradition	43.4	(2.2)	41.8	(2.0)
Weather	27.9	(2.0)	26.8	(1.8)
Forage availability	8.6	(1.3)	10.2	(1.3)
Increasing weaning weights	4.5	(0.9)	4.6	(0.7)
Market cycle	5.9	(1.1)	6.8	(1.2)
Labor availability	4.3	(0.9)	4.0	(0.7)
Timing of herd movement	2.1	(0.6)	2.8	(0.7)
Other	3.3	(0.8)	3.0	(0.7)
Total	100.0		100.0	

8. Reproduction technologies

Many reproductive technologies are available to beef producers. Some of these technologies can help improve reproductive efficiency. Utilization of reproductive technologies generally increased as herd size increased. Almost 8 of 10 operations with 200 or more cows (78.5 percent) used at least 1 of the reproductive technologies listed, compared with 1 of 4 operations with 1 to 49 cows (25.3 percent).

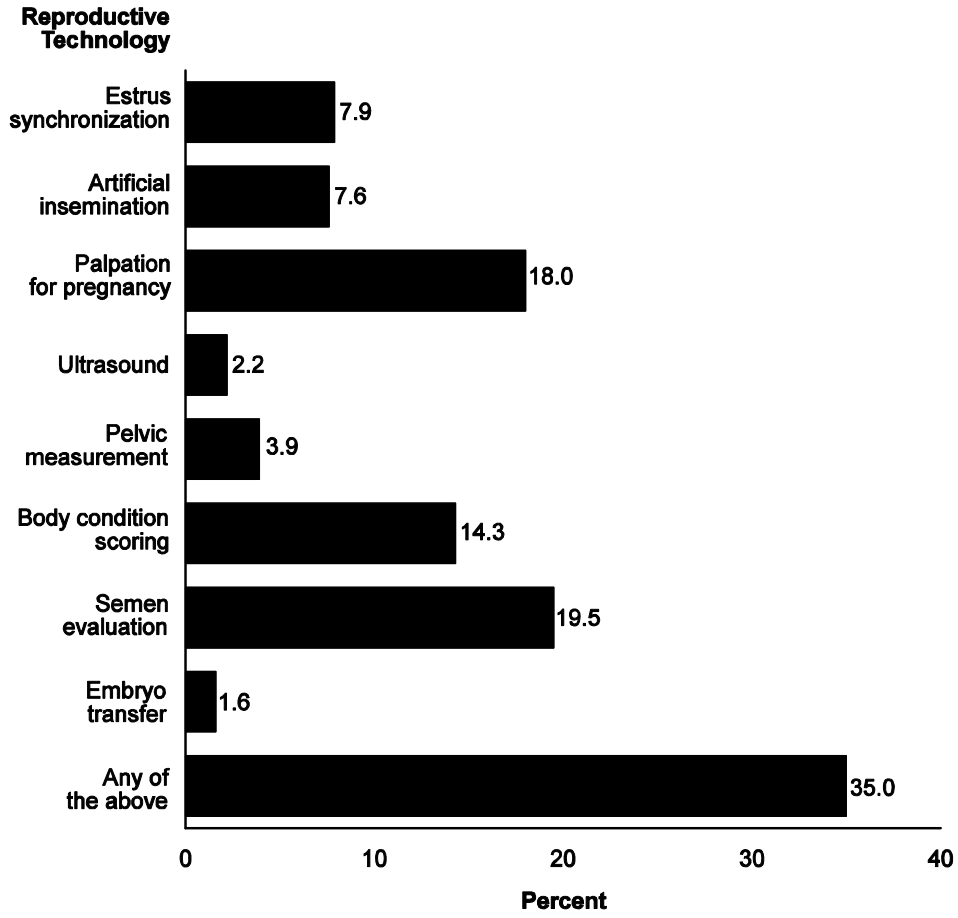
a. Percentage of operations by reproduction technologies used and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Reproduction Technology	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Estrus synchronization	5.7	(0.9)	10.5	(1.8)	14.9	(2.1)	19.3	(1.9)	7.9	(0.7)
Artificial insemination	5.6	(0.8)	8.4	(1.6)	16.3	(2.1)	19.8	(2.0)	7.6	(0.7)
Palpation for pregnancy	10.8	(1.2)	25.8	(2.6)	41.2	(2.8)	58.3	(2.6)	18.0	(1.0)
Ultrasound	0.5	(0.2)	4.4	(1.1)	6.5	(1.3)	13.4	(1.6)	2.2	(0.3)
Pelvic measurement	1.5	(0.4)	4.8	(1.2)	15.4	(2.0)	15.9	(2.0)	3.9	(0.4)
Body condition scoring	10.5	(1.1)	19.1	(2.3)	26.8	(2.5)	34.4	(2.5)	14.3	(0.9)
Semen evaluation	10.9	(1.1)	33.2	(2.7)	45.9	(2.8)	56.8	(2.5)	19.5	(1.0)
Embryo transfer	0.7	(0.3)	4.3	(1.2)	2.6	(1.0)	5.0	(1.0)	1.6	(0.3)
Any of the above	25.3	(1.6)	49.7	(2.9)	65.8	(2.8)	78.5	(2.0)	35.0	(1.3)

Percentage of Operations by Reproduction Technologies Used



Utilization of reproductive technologies was generally higher in the West and Central regions than in the South Central and East regions. The West and Central regions had the highest percentage of operations (54.8 and 48.8 percent, respectively) that used at least one of the listed reproductive technologies, followed by the Central, South Central, and East regions.

b. Percentage of operations by reproduction technologies used and by region:

	Percent Operations							
	Region							
	West		Central		South Central		East	
Reproduction Technology	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Estrus synchronization	10.6	(1.9)	11.4	(1.5)	6.7	(1.4)	5.6	(1.0)
Artificial insemination	13.6	(2.5)	11.5	(1.5)	4.9	(1.2)	5.5	(1.0)
Palpation for pregnancy	36.6	(3.4)	23.7	(1.9)	17.1	(2.1)	9.6	(1.2)
Ultrasound	5.5	(1.2)	4.6	(0.8)	0.9	(0.4)	0.8	(0.3)
Pelvic measurement	7.1	(1.6)	7.9	(1.2)	1.5	(0.5)	2.2	(0.5)
Body condition scoring	19.7	(2.7)	21.0	(2.0)	12.6	(1.9)	9.6	(1.3)
Semen evaluation	31.3	(3.2)	34.4	(2.3)	15.0	(1.9)	9.5	(1.2)
Embryo transfer	0.9	(0.3)	2.7	(0.8)	1.3	(0.5)	1.2	(0.5)
Any of the above	54.8	(4.0)	48.8	(2.5)	32.0	(2.6)	22.3	(1.8)

There are many reasons producers may decide not to use available reproductive technologies, including lack of facilities or labor constraints. In other cases, producer opinions about a technology (does not work or cost is excessive) affect their decision. Labor/time was the most common reason for not using a specific reproductive technology, followed by cost of the technology and difficulty in implementation.

c. For operations that did not use a specific reproductive technology, percentage of operations by technology and by reason for not using the technology:

	Percent Operations												
	Reason Not Used												
	Does Not Work		Labor/ Time		Cost		Lack of Facilities		Too Difficult/ Compli-cated		Other		
Reproduction Technology	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Estrus synchronization	2.3	(0.4)	39.1	(1.4)	16.8	(1.1)	10.5	(1.0)	17.2	(1.2)	14.1	(1.0)	100.0
Artificial insemination	1.6	(0.3)	37.7	(1.4)	21.1	(1.2)	10.6	(1.0)	16.0	(1.1)	13.0	(1.0)	100.0
Palpation for pregnancy	1.3	(0.3)	38.4	(1.6)	19.6	(1.3)	10.6	(1.0)	16.4	(1.2)	13.7	(1.1)	100.0
Ultrasound	1.0	(0.3)	31.8	(1.3)	29.1	(1.3)	10.3	(0.9)	14.7	(1.1)	13.1	(1.0)	100.0
Pelvic measurement	1.9	(0.3)	38.2	(1.4)	18.1	(1.2)	10.1	(0.9)	17.7	(1.2)	14.0	(1.0)	100.0
Body condition scoring	1.7	(0.4)	40.1	(1.5)	17.0	(1.2)	8.3	(0.9)	18.5	(1.2)	14.4	(1.1)	100.0
Semen evaluation	1.3	(0.3)	34.4	(1.5)	25.2	(1.4)	9.4	(1.0)	16.1	(1.2)	13.6	(1.1)	100.0

9. Breeding methods

More than 9 of 10 operations (95.7 percent) used bulls only to breed at least some replacement heifers and cows.

a. Percentage of operations in which ***any*** replacement heifers or cows were bred or were intended to be bred for calving in 2007, by breeding method:

Breeding Method	Percent Operations	Standard Error
Only exposed to bulls	95.7	(0.6)
Only artificially inseminated	2.9	(0.4)
Both artificially inseminated and exposed to bulls	4.3	(0.5)
Brought on bred females	3.1	(0.5)

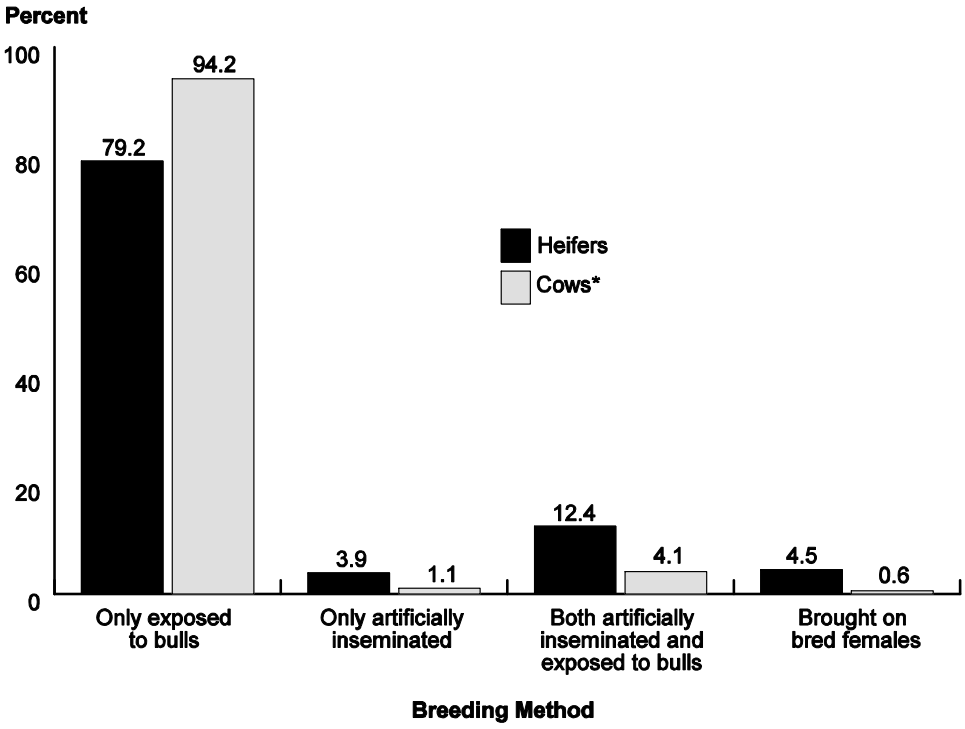
Most heifers and nearly all cows were only exposed to a bull (79.2 and 94.2 percent, respectively). A higher percentage of heifers than cows were only artificially inseminated (3.9 and 1.1 percent, respectively), and a higher percentage of heifers than cows were brought onto the operation already pregnant (4.5 and 0.6 percent, respectively).

b. Percentage of heifers, cows, and all females bred or intended to be bred for calving in 2007, by breeding method:

Breeding Method	Percent Heifers	Std. Error	Percent Cows*	Std. Error	Percent Females	Std. Error
Only exposed to bulls	79.2	(2.6)	94.2	(0.6)	92.6	(0.7)
Only artificially inseminated	3.9	(1.1)	1.1	(0.2)	1.4	(0.3)
Both artificially inseminated and exposed to bulls	12.4	(1.6)	4.1	(0.5)	5.0	(0.5)
Brought on bred females	4.5	(1.1)	0.6	(0.1)	1.0	(0.2)
Total	100.0		100.0		100.0	

*Some producers may have inadvertently included some heifers in this category.

Percentage of Heifers and Cows Bred or Intended to be Bred for Calving in 2007, by Breeding Method



*Some producers may have inadvertently included some heifers in this category.

10. Bull management

As expected, the average number of yearling and mature bulls per operation increased as operation size increased.

a. Average number of bulls used during the last breeding season, by bull type and by herd size:

	Average Number of Bulls **Herd Size** (Number of Beef Cows)									
	1-49		50-99		100-199		200 or More		All Operations	
Bull Type	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
Yearling (less than 2 years of age)	0.1	(0.0)	0.5	(0.1)	1.1	(0.1)	3.6	(0.2)	0.5	(0.0)
Mature (2 years of age or older)	1.3	(0.0)	2.6	(0.1)	4.9	(0.1)	15.6	(0.6)	2.5	(0.0)

b. Average number of yearling bulls per mature bull during the last breeding season, by herd size:

Average Number of Yearling Bulls Per Mature Bull

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
0.12	(0.01)	0.21	(0.02)	0.21	(0.02)	0.23	(0.01)	0.18	(0.01)

c. Average number of yearling bulls per mature bull during the last breeding season, by region:

Average Number of Yearling Bulls Per Mature Bull

Region

West		Central		South Central		East	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
0.32	(0.02)	0.28	(0.02)	0.09	(0.01)	0.11	(0.01)

Despite research suggesting that bulls can breed and impregnate a substantial number of females over a short breeding season, producers continue to use traditional cow-to-bull ratios in breeding pastures. On average, yearling bulls (bulls less than 2 years of age) were expected to breed fewer females than mature bulls (16.3 and 23.7, respectively). On operations with 200 or more beef cows, yearling bulls were expected to breed more females than yearling bulls on operations with fewer than 100 cows. On operations with 50 or more cows, mature bulls were expected to breed more females than mature bulls on operations with fewer than 50 cows.

d. Operation average number of females expected to be mated or serviced per bull, by bull type and by herd size:

Operation Average Number of Females per Bull

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Bull Type	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
Yearling (less than 2 years of age)	15.3	(0.4)	16.9	(0.5)	18.0	(0.4)	19.2	(0.4)	16.3	(0.3)
Mature (2 years or older)	22.0	(0.4)	27.7	(0.4)	28.3	(0.4)	27.8	(0.4)	23.7	(0.3)

e. Average number of females expected to be mated or serviced per bull, by bull type and by herd size:

Average Number of Females per Bull

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Bull Type	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
Yearling (less than 2 years of age)	14.8	(0.4)	16.5	(0.4)	17.8	(0.4)	19.1	(0.3)	17.4	(0.2)
Mature (2 years or older)	22.0	(0.4)	26.9	(0.4)	27.4	(0.4)	26.4	(0.4)	25.1	(0.2)

Examining bulls for reproductive soundness has been associated with increased conception rates in females serviced by those bulls. The percentage of operations that performed reproductive examination procedures on bulls that had been on the operation for two or more breeding seasons varied with herd size. In general, a higher percentage of operations with 200 or more cows performed semen tests, scrotal measurements, and *Tritrichomonas* cultures on at least some bulls compared with operations with fewer than 100 cows. A lower percentage of operations with 1 to 49 cows performed semen tests and scrotal measurements compared with larger operations.

f. Percentage of operations that performed the following reproductive examination procedures on bulls* in preparation for the last breeding season, by herd size:

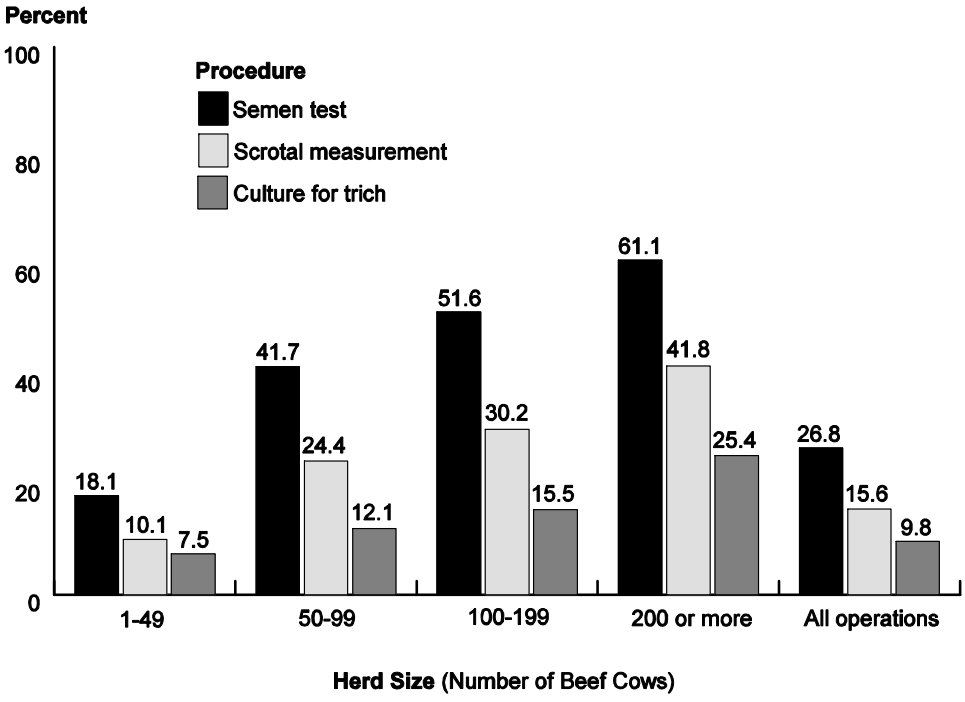
Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Procedure	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Semen test	18.1	(1.4)	41.7	(2.9)	51.6	(2.9)	61.1	(2.7)	26.8	(1.2)
Scrotal measurement	10.1	(1.1)	24.4	(2.5)	30.2	(2.6)	41.8	(2.5)	15.6	(0.9)
Culture for trich (*Tritrichomonas fetus*)	7.5	(1.0)	12.1	(2.0)	15.5	(2.2)	25.4	(2.1)	9.8	(0.8)

*Bulls that had been on operation for at least the last two breeding seasons and excluding bulls purchased, leased, or borrowed.

Percentage of Operations that Performed the Following Reproductive Examination Procedures on Bulls* in Preparation for the Last Breeding Season, by Herd Size



*Bulls that had been on the operation for at least the last two breeding seasons and excluding bulls purchased, leased, or borrowed.

Photo courtesy of Anson Eaglin

Of the reproductive examination procedures, semen testing was performed on the highest percentage of bulls (44.1 percent), followed by scrotal measurement (28.6 percent of bulls), and *Tritrichomonas* culture (18.5 percent of bulls).

g. Percentage of bulls* that underwent the following reproductive examination procedures in preparation for the last breeding season, by herd size:

Percent Bulls

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Procedure	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Semen test	21.1	(1.8)	45.1	(3.0)	53.2	(3.0)	62.3	(2.8)	44.1	(1.3)
Scrotal measurement	11.9	(1.4)	28.0	(2.8)	32.1	(2.8)	44.1	(2.8)	28.6	(1.2)
Culture for trich (*Tritrichomonas fetus*)	8.9	(1.4)	12.8	(2.1)	16.9	(2.5)	31.7	(2.6)	18.5	(1.1)

*Bulls that had been on operation for at least the last two breeding seasons and excluding bulls purchased, leased, or borrowed.

As expected, the percentages of operations that purchased, leased, or borrowed bulls for the last breeding season increased as herd size increased, ranging from 25.1 percent of operations with 1 to 49 beef cows to 68.2 percent of operations with 200 or more beef cows.

h. Percentage of operations that purchased, leased, or borrowed bulls in preparation for the last breeding season, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
25.1	(1.6)	34.3	(2.8)	49.1	(2.9)	68.2	(2.4)	30.7	(1.3)

About one of three operations (30.7 percent) purchased, leased, or borrowed a bull (see previous table). The percentage operations that performed reproductive examination procedures on bulls that had been purchased, leased, or borrowed varied by herd size. In general, a higher percentage of operations with 200 or more cows performed semen tests, scrotal measurements, and *Tritrichomonas* cultures on at least some bulls than on operations with fewer than 100 cows. A lower percentage of operations with 1 to 49 cows performed semen tests and scrotal measurements than larger operations.

i. For operations that purchased, leased, or borrowed bulls in preparation for the last breeding season, percentage of operations that performed the following reproductive examination procedures on any of these bulls, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Procedure	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Semen test	58.9	(3.7)	82.8	(4.1)	89.7	(2.5)	95.6	(1.4)	71.3	(2.4)
Scrotal measurement	34.5	(3.4)	65.6	(4.9)	75.8	(3.7)	84.6	(2.2)	51.1	(2.4)
Culture for trich (*Tritrichomonas fetus*)	33.1	(3.5)	31.2	(4.8)	37.3	(4.0)	48.8	(3.3)	35.1	(2.3)

Over one-half of operations (53.3 percent) that purchased, leased, or borrowed bulls for breeding added bulls over 18 months of age or nonvirgin bulls to the herd. A higher percentage of operations with 1 to 49 cows than operations with 200 or more cows added these bulls. Still, two of five large operations (41.2 percent) added bulls older than 18 months or no longer considered virgin, which could risk introducing venereally transmitted diseases such as trichomoniasis.

j. For operations that purchased, leased, or borrowed bulls in preparation for the last breeding season, percentage of operations that added bulls older than 18 months or no longer considered virgin, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
56.5	(3.7)	56.8	(4.9)	45.6	(4.1)	41.2	(3.2)	53.3	(2.4)

Just over one of three operations (34.4 percent) that purchased, leased, or borrowed bulls over 18 months of age or nonvirgin bulls had all the bulls cultured for *Tritrichomonas*. A higher percentage of operations with 200 or more cows tested all these bulls for *Tritrichomonas* than operations with fewer than 200 cows.

k. For operations that introduced bulls older than 18 months or no longer considered virgin, percentage of operations that cultured all these bulls for *Tritrichomonas fetus*, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
34.0	(4.7)	28.6	(6.3)	26.4	(5.1)	58.5	(5.4)	34.4	(3.2)

Overall, nearly 7 of 10 operations purchased a bull from a purebred breeder during the last 10 years. A higher percentage of operations with 50 or more cows tha operations with 1 to 49 cows purchased a bull from a purebred breeder.

l. Percentage of operations that purchased a bull from a purebred breeder during the last 10 years, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
62.1	(1.8)	85.5	(2.1)	87.5	(2.0)	90.6	(1.7)	69.2	(1.4)

DNA analysis of calves can identify the calves' sires when multisire mating groups are used. This relatively new technology allows producers to determine how the offspring of specific bulls are performing. Producers can use this information to make selection or culling decisions. Only 1 of 20 operations used commercially available DNA markers for sire identification. A higher percentage of operations with 200 or more cows used DNA markers for sires compared with operations with 1 to 49 cows.

m. Percentage of operations that used commercially available DNA markers for sire identification in the herd, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
3.8	(0.7)	7.4	(1.5)	7.2	(1.5)	8.4	(1.3)	4.9	(0.6)

B. Calving Management

1. Pregnant cows separated from cow-calf pairs

Separating cow-calf pairs from cows yet to calve may reduce the infectious disease burden for newborn calves. The percentage of operations that separated cow-calf pairs from pregnant cows increased as herd size increased. Fewer than 1 of 10 operations with 1 to 49 cows (9.1 percent) separated pairs from pregnant cows, while nearly 1 of 2 operations with 200 or more cows (45.8 percent) did so.

a. Percentage of operations that separated cow-calf pairs from pregnant cows, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
9.1	(1.0)	17.4	(2.0)	30.9	(2.5)	45.8	(2.4)	14.0	(0.8)

On average, operations that separated cow-calf pairs from pregnant cows waited approximately 6 days after calving before separating them. The average number of days from calving to separation was similar across herd sizes.

b. For operations that separated cow-calf pairs from pregnant cows, operation average number of days after calving that cow-calf pairs were separated, by herd size:

Operation Average (Days)

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
6.0	(1.2)	4.9	(0.9)	6.1	(0.9)	8.1	(1.1)	6.2	(0.6)

2. Calving observation

Almost 9 of 10 operations (89.0 percent) regularly observed cows during calving, and more than 9 of 10 operations (92.7 percent) regularly observed heifers. Ideally, heifers and cows close to calving would be observed at all times in case they needed assistance, but this is not practical or even possible on many operations. The literature suggests, however, that no more than 3 hours should pass between observation periods.

a. Percentage of operations that observed heifers and cows on a regular basis during calving:

Animal Type	Percent Operations	Standard Error
Heifers	92.7	(1.2)
Cows	89.0	(1.0)

Photo courtesy of Anson Eaglin

Of operations that reported they regularly observed heifers during calving, approximately 4 of 10 (39.1 percent) observed heifers 3 or more times in an average 24-hour period. More than 6 of 10 operations with 200 or more cows (64.0 percent) observed heifers 3 or more times per 24-hour period. Only 31.2 percent of operations with 1 to 49 cows observed heifers 3 or more times per 24-hour period.

b. For operations in which ***heifers*** were observed on a regular basis during calving, percentage of operations by number of times heifers were observed during an average 24-hour period, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Number of Times	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1	31.1	(2.5)	25.5	(3.1)	16.9	(2.7)	15.1	(1.9)	27.4	(1.7)
2	37.7	(2.6)	28.9	(3.4)	25.1	(3.0)	20.9	(2.2)	33.5	(1.8)
3 to 4	23.7	(2.2)	27.5	(3.2)	23.7	(2.8)	21.6	(2.5)	24.2	(1.6)
5 or more	7.5	(1.3)	18.1	(2.7)	34.3	(3.0)	42.4	(2.6)	14.9	(1.1)
Total	100.0		100.0		100.0		100.0		100.0	

Of operations that regularly observed cows during calving, approximately 3 of 10 (27.8 percent) observed cows 3 or more times in an average 24-hour period. Approximately 4 of 10 operations with 200 or more cows (40.6 percent) observed cows 3 or more times per 24-hour period. Only 24.3 percent of operations with 1 to 49 cows observed cows 3 or more times in a 24-hour period.

c. For operations in which ***cows*** were observed on a regular basis during calving, percentage of operations by number of times cows were observed during an average 24-hour period, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Number of Times	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1	40.7	(1.9)	39.4	(2.9)	35.1	(2.9)	33.4	(2.5)	39.7	(1.5)
2	35.0	(1.9)	28.2	(2.8)	23.6	(2.4)	26.0	(2.8)	32.5	(1.4)
3 to 4	18.9	(1.5)	19.8	(2.3)	20.1	(2.3)	20.1	(2.2)	19.2	(1.1)
5 or more	5.4	(0.8)	12.6	(2.0)	21.2	(2.2)	20.5	(2.0)	8.6	(0.7)
Total	100.0		100.0		100.0		100.0		100.0	

3. Calving assistance

Overall, almost 4 of 10 operations (38.7 percent) allowed heifers to labor 3 hours or more before assistance was given. Nearly 8 of 10 operations (77.3 percent) with 200 or more cows allowed heifers to labor 2 hours or less before assistance was given, while 6 of 10 operations (58.3 percent) with 1 to 49 cows allowed heifers to labor 2 hours or less before giving assistance.

a. Percentage of operations by average number of hours ***heifers*** were normally allowed to labor before assistance was given, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Average Number Hours	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1	24.5	(2.3)	28.5	(3.2)	32.3	(3.0)	36.4	(2.8)	27.0	(1.6)
2	33.8	(2.6)	33.4	(3.4)	34.2	(3.2)	40.9	(2.8)	34.3	(1.8)
3	13.8	(1.9)	12.9	(2.6)	11.4	(2.3)	10.8	(1.8)	13.1	(1.3)
4	12.6	(1.8)	11.3	(2.4)	10.1	(2.0)	5.9	(1.4)	11.6	(1.2)
5 to 6	8.2	(1.6)	8.9	(1.9)	6.4	(1.6)	3.6	(1.0)	7.8	(1.1)
7 or more	7.1	(1.4)	5.0	(1.6)	5.6	(1.9)	2.4	(0.9)	6.2	(0.9)
Total	100.0		100.0		100.0		100.0		100.0	

Overall, almost one-half of operations (46.8 percent) allowed cows to labor 3 hours or more before assistance was given. The percentages of operations that gave assistance to cows at each time period were similar across herd sizes.

b. Percentage of operations by average number of hours ***cows*** were normally allowed to labor before assistance was given, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

Average Number Hours	1-49		50-99		100-199		200 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
1	20.1	(1.6)	21.7	(2.4)	24.3	(2.4)	28.7	(2.5)	21.2	(1.2)
2	31.3	(1.9)	32.5	(2.8)	36.5	(2.9)	33.9	(2.6)	32.0	(1.4)
3	16.7	(1.5)	14.3	(2.2)	12.1	(1.8)	15.4	(2.2)	15.9	(1.1)
4	13.0	(1.4)	15.4	(2.3)	12.3	(2.1)	9.6	(2.3)	13.1	(1.1)
5 to 6	9.5	(1.2)	9.9	(1.8)	8.3	(1.6)	6.9	(1.5)	9.3	(0.9)
7 or more	9.4	(1.2)	6.2	(1.6)	6.5	(1.5)	5.5	(1.2)	8.5	(0.9)
Total	100.0		100.0		100.0		100.0		100.0	

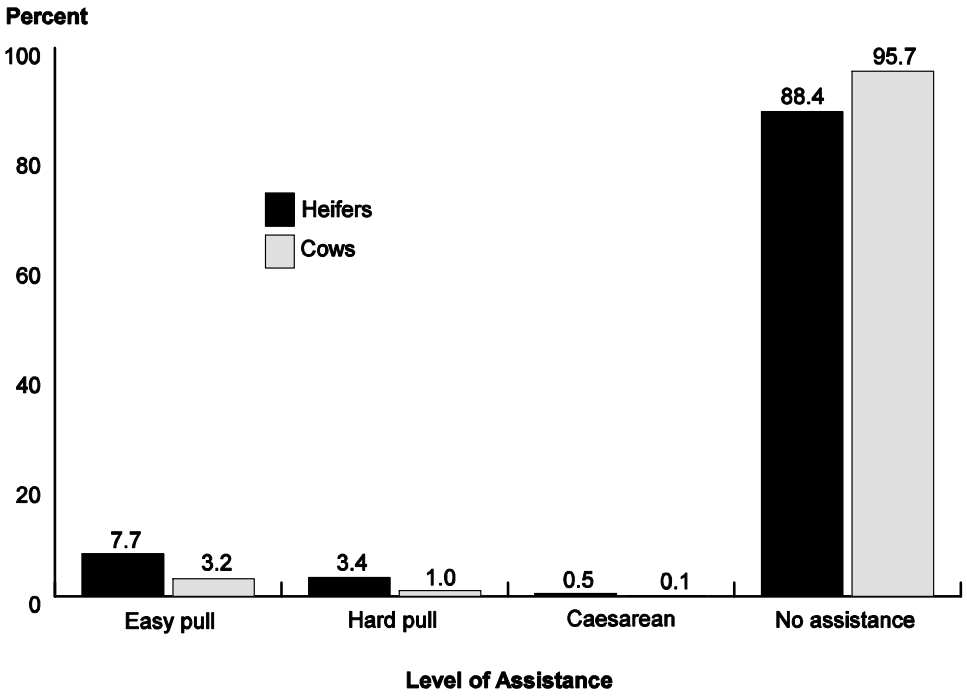
Approximately 1 of 8 heifers (11.6 percent) and 1 of 20 cows (4.3 percent) required some level of assistance during calving. Most heifers and cows required no assistance.

c. Percentage of calves born* to heifers or cows that required the following assistance during calving:

	Percent Calves					
	Heifers		Cows		All Females	
Level of Assistance	Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
Easy pull	7.7	(0.7)	3.2	(0.5)	3.6	(0.4)
Hard pull (mechanical calf puller or abnormal presentation or position)	3.4	(0.3)	1.0	(0.3)	1.2	(0.3)
Caesarean	0.5	(0.2)	0.1	(0.1)	0.2	(0.1)
No assistance	88.4	(0.8)	95.7	(0.1)	95.0	(0.5)
Total	100.0		100.0		100.0	

*Born alive or dead from January to September, 2007.

Percentage of Calves Born* to Heifers or Cows that Required the Following Assistance During Calving



*Born alive or dead from January to September, 2007.

4. Monthly calving distribution

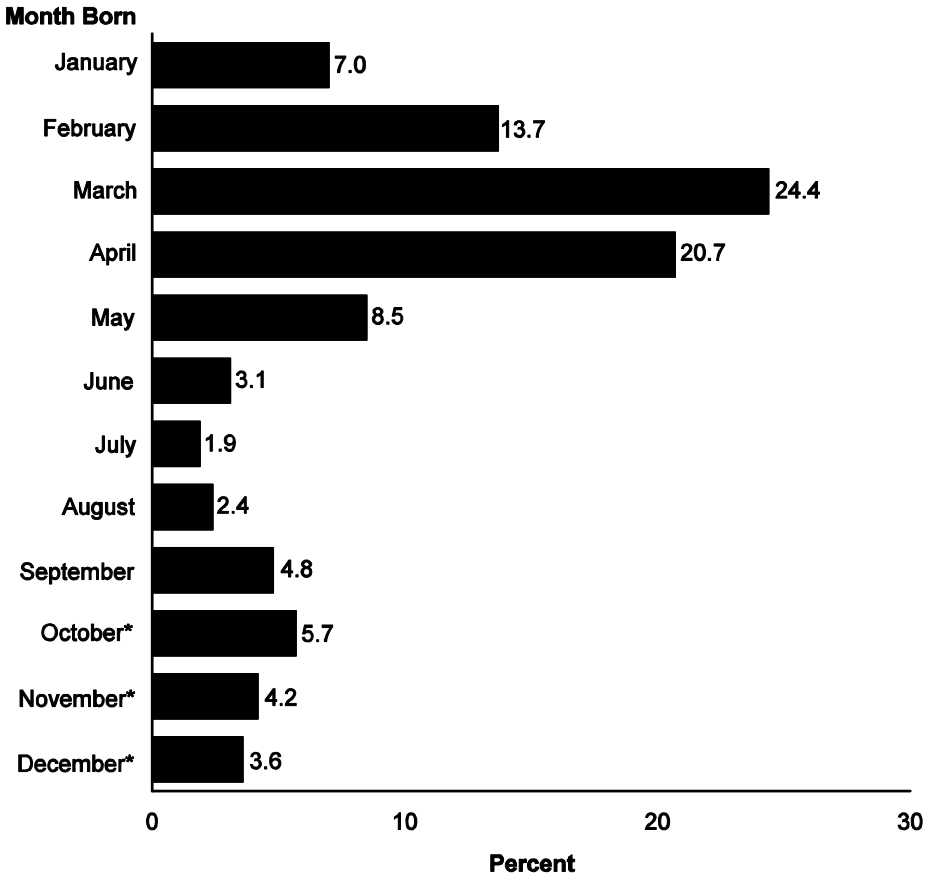
Nearly 6 of 10 calves (58.8 percent) were born from February through April. About 7 of 10 calves in the West and Central regions (74.0 and 69.7 percent, respectively) were born from February through April. In the South Central and East regions fewer than 5 of 10 calves (46.3 and 44.8 percent, respectively) were born from February through April. About one of five calves in the South Central and East regions were born October through December (18.6 and 23.6 percent, respectively), compared with only 7.0 percent in the West region and 6.0 percent in the Central region.

a. Percentage of calves born alive in 2007, by month born and by region:

	Percent Calves									
	Region									
	West		Central		South Central		East		All Operations	
Month Born	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
January	4.1	(0.6)	2.8	(0.4)	11.5	(0.9)	10.4	(0.7)	7.0	(0.3)
February	13.9	(1.5)	11.7	(0.8)	15.0	(0.8)	15.1	(0.8)	13.7	(0.5)
March	31.3	(1.5)	29.3	(1.2)	19.1	(1.0)	17.7	(0.8)	24.4	(0.6)
April	28.8	(1.9)	28.7	(1.0)	12.2	(0.7)	12.0	(0.7)	20.7	(0.6)
May	8.5	(0.8)	10.8	(0.8)	8.2	(0.7)	5.6	(0.4)	8.5	(0.4)
June	1.2	(0.2)	2.7	(0.3)	4.7	(0.6)	3.6	(0.3)	3.1	(0.2)
July	1.1	(0.2)	1.0	(0.2)	3.4	(0.5)	2.2	(0.2)	1.9	(0.1)
August	1.5	(0.3)	2.0	(0.4)	2.6	(0.3)	3.3	(0.4)	2.4	(0.2)
September	2.6	(0.5)	5.0	(0.5)	4.7	(0.6)	6.5	(0.6)	4.8	(0.3)
October*	3.6	(0.6)	3.5	(0.4)	6.7	(0.7)	9.2	(0.7)	5.7	(0.3)
November*	2.1	(0.4)	1.7	(0.3)	5.9	(0.6)	7.7	(0.6)	4.2	(0.2)
December*	1.3	(0.3)	0.8	(0.2)	6.0	(0.6)	6.7	(0.5)	3.6	(0.2)
Total	100.0		100.0		100.0		100.0		100.0	

*Born alive or expected to be born alive.

Percentage of Calves Born Alive in 2007, by Month Born



*Born alive or expected to be born alive.

Across all regions, nearly two of three operations had calves born in March. Nearly one of three operations (34.7 percent) had one or more calves born alive in January. Across all regions, the highest percentage of operations had calves that were born in March and April (66.1 and 59.0 percent, respectively). A higher percentage of operations in the South Central and East regions had some calves born in October, November, and December than operations in the West or Central regions.

b. Percentage of operations that had one or more calves born alive in 2007, by month born and by region:

Percent Operations

	Region									
	West		Central		South Central		East		All Operations	
Month Born	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
January	25.1	(3.7)	21.6	(2.2)	44.6	(2.9)	38.0	(2.2)	34.7	(1.4)
February	47.4	(4.0)	42.2	(2.5)	52.0	(3.0)	53.8	(2.3)	49.7	(1.4)
March	71.7	(3.9)	68.4	(2.5)	64.6	(2.9)	64.4	(2.3)	66.1	(1.4)
April	64.7	(4.0)	70.1	(2.5)	53.5	(3.0)	54.3	(2.4)	59.0	(1.4)
May	39.8	(3.9)	48.1	(2.6)	45.2	(3.0)	35.7	(2.2)	42.1	(1.4)
June	16.0	(2.8)	24.6	(2.3)	35.3	(2.9)	26.8	(2.1)	27.8	(1.3)
July	19.0	(3.5)	14.9	(1.9)	28.0	(2.7)	21.4	(1.9)	21.6	(1.2)
August	12.2	(2.5)	14.6	(1.8)	23.6	(2.5)	25.3	(2.1)	20.8	(1.2)
September	14.3	(2.9)	27.4	(2.3)	28.6	(2.6)	31.5	(2.2)	28.0	(1.3)
October*	16.4	(3.0)	21.7	(2.1)	32.7	(2.7)	32.6	(2.2)	28.4	(1.3)
November*	12.5	(2.7)	15.7	(1.9)	31.5	(2.7)	32.4	(2.1)	26.0	(1.2)
December*	7.7	(2.2)	11.0	(1.7)	30.8	(2.7)	26.0	(2.0)	22.0	(1.2)

*Born alive or expected to be born alive.

A short calving season allows for more intense management during this critical phase of production. In addition, calves born over a shorter period of time may be more uniform in size at weaning. Just 7.0 percent of operations had calves born alive in only one month. Approximately two-thirds of operations (66.1 percent) had one or more calves born alive during 4 or fewer months. Additionally, 15.7 percent of operations had calves born in 4 months of the year. Overall, 17.1 percent of operations had calves born in 7 or more months of the year. Only 3.4 percent of operations had calves born in all 12 months of the year.

c. Percentage of operations by number of months in which one or more calves were born alive in 2007, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Number of Months	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1	9.3	(1.1)	1.6	(0.7)	1.6	(0.9)	0.7	(0.5)	7.0	(0.8)
2	23.9	(1.6)	11.1	(1.8)	15.9	(2.2)	15.6	(1.9)	20.9	(1.2)
3	22.1	(1.6)	22.0	(2.4)	21.7	(2.3)	31.1	(2.6)	22.5	(1.2)
4	14.4	(1.3)	17.2	(2.2)	22.8	(2.4)	17.8	(1.9)	15.7	(1.0)
5	9.2	(1.1)	13.2	(2.1)	8.3	(1.4)	9.9	(1.5)	9.8	(0.9)
6	6.0	(0.9)	11.7	(2.0)	7.0	(1.3)	6.2	(1.1)	7.0	(0.7)
7	4.3	(0.8)	6.2	(1.4)	7.2	(1.5)	4.7	(1.0)	4.8	(0.6)
8	3.5	(0.7)	3.0	(1.0)	3.7	(1.2)	4.4	(1.4)	3.5	(0.5)
9	2.0	(0.5)	3.0	(1.0)	1.1	(0.6)	1.8	(0.7)	2.1	(0.4)
10	2.0	(0.5)	1.5	(0.7)	2.5	(0.8)	1.5	(0.6)	1.9	(0.4)
11	1.0	(0.4)	3.8	(1.3)	0.7	(0.5)	0.7	(0.4)	1.4	(0.3)
12	2.3	(0.6)	5.7	(1.3)	7.5	(1.6)	5.6	(1.3)	3.4	(0.5)
Total	100.0		100.0		100.0		100.0		100.0	

In the East and South Central regions, approximately 6 of 10 operations had calves born in 4 or fewer months (64.2 and 59.3 percent, respectively). In the West region, 77.8 percent of operations had calves born in four or fewer months compared with 72.4 percent of operations in the Central region.

d. Percentage of operations by number of months in which one or more calves were born in 2007, and by region:

Percent Operations

Region

	West		Central		South Central		East	
Number of Months	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1	11.5	(3.2)	7.7	(1.6)	5.3	(1.5)	6.9	(1.3)
2	27.3	(3.6)	22.8	(2.3)	18.4	(2.3)	19.8	(2.0)
3	24.4	(3.4)	25.4	(2.2)	22.2	(2.5)	20.1	(2.0)
4	14.6	(2.5)	16.5	(1.8)	13.4	(2.0)	17.4	(1.8)
5	8.8	(2.2)	10.8	(1.6)	11.0	(1.9)	8.3	(1.3)
6	5.8	(2.0)	6.9	(1.3)	6.5	(1.4)	7.9	(1.2)
7	1.4	(0.5)	2.8	(0.8)	6.2	(1.5)	6.0	(1.1)
8	2.0	(1.1)	2.1	(0.7)	5.8	(1.4)	2.9	(0.7)
9	0.1	(0.0)	1.7	(0.8)	2.2	(0.7)	2.8	(0.8)
10	2.7	(1.7)	1.5	(0.7)	0.8	(0.3)	3.0	(0.8)
11	0.4	(0.3)	0.5	(0.4)	2.0	(0.8)	1.7	(0.6)
12	1.0	(0.8)	1.3	(0.6)	6.2	(1.2)	3.2	(0.7)
Total	100.0		100.0		100.0		100.0	

5. Calving percentage

Overall, and considering all females on hand for calving, 92.4 percent of cows and 83.2 percent of heifers calved in 2007. Calving rates were higher for cows than heifers. Calving rates were similar across herd sizes.

a. Of females on hand for calving in 2007,[1] percentage of females that calved[2 3] in 2007, by type of female and by herd size:

Percent Females

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Female Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Heifers	80.1	(3.0)	81.4	(10.0)	82.5	(5.0)	85.5	(4.7)	83.2	(2.9)
Cows	90.5	(0.9)	91.6	(1.3)	92.1	(1.2)	94.2	(0.7)	92.4	(0.5)
All females	89.7	(0.9)	90.7	(1.8)	91.1	(1.3)	93.2	(0.9)	91.5	(0.6)

[1]Exposed to bulls and/or artificially inseminated.
[2]Calved or expected to calve September through December, 2007.
[3]{(Females calved) / [(females exposed to bulls or artificially inseminated [including purchases]) – (those pregnant but died or were sold or moved off the operation before calving)]} x 100.

Calving rates were higher for all females and for cows in the West and Central regions than in the East region. Regional calving rates were similar for heifers.

b. Of females on hand for calving in 2007,[1] percentage of females that calved in 2007,[2 3] by type of female and by region:

Percent Females

Region

	West		Central		South Central		East	
Female Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Heifers	81.8	(6.7)	88.1	(5.7)	77.0	(4.0)	80.8	(2.6)
Cows	95.4	(0.9)	95.2	(0.8)	91.1	(0.9)	88.0	(1.2)
All females	93.5	(1.7)	94.3	(1.0)	90.1	(0.9)	87.4	(1.1)

[1]Exposed to bulls and/or artificially inseminated.
[2]Calved or expected to calve September through December, 2007.
[3]{(Females calved) / (females exposed to bulls or artificially inseminated [including purchases]) – (those pregnant but died or were sold or moved off the operation before calving)]} x 100.

Heifers accounted for 9.3 percent of the females that calved in 2007. Operations with 200 or more cows calved a higher percentage of heifers compared with operations with fewer than 100 cows.

c. Of females that calved in 2007, percentage that were heifers and percentage that were cows, by herd size:

Percent Females

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Female Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Heifers	7.0	(0.6)	8.1	(0.7)	9.5	(0.7)	11.2	(0.6)	9.3	(0.3)
Cows	93.0	(0.6)	91.9	(0.7)	90.5	(0.7)	88.8	(0.6)	90.7	(0.3)
Total	100.0		100.0		100.0		100.0		100.0	

Operations in the West and Central regions calved a higher percentage of heifers in 2007 (12.5 and 11.4 percent, respectively) than operations in the South Central and East regions (5.9 and 7.1 percent, respectively).

d. Of females that calved in 2007, percentage that were heifers and percentage that were cows, by region:

Percent Females

Region

	West		Central		South Central		East	
Female Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Heifers	12.5	(0.6)	11.4	(0.6)	5.9	(0.6)	7.1	(0.5)
Cows	87.5	(0.6)	88.6	(0.6)	94.1	(0.6)	92.9	(0.5)
Total	100.0		100.0		100.0		100.0	

Overall, producers reported a high percentage of calves born alive (96.5 percent). The percentages of calves born alive to heifers, cows, and all females were similar across herd sizes.

e. Percentage of calves born alive* to heifers, cows, and all females in 2007, by herd size:

Percent Calves

Herd Size (Number of Beef Cows)

Calves Born Alive to . . .	1-49		50-99		100-199		200 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Heifers	90.0	(5.6)	96.7	(0.7)	95.6	(0.8)	93.3	(1.4)	93.5	(1.4)
Cows	98.0	(0.2)	94.1	(3.7)	97.5	(0.3)	97.1	(0.3)	96.8	(0.7)
All females	97.3	(0.5)	94.3	(3.4)	97.4	(0.3)	96.7	(0.4)	96.5	(0.7)

*[(Born alive or expected to be born alive) / (born or expected to be born)] x 100

The percentage of calves born alive to cows and to all females was higher in the East region than in the West region.

f. Percentage of calves born alive* to heifers, cows, and all females in 2007, by region:

Percent Calves

Region

Calves Born Alive to . . .	West		Central		South Central		East	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Heifers	91.8	(2.0)	93.2	(3.2)	94.5	(1.9)	95.8	(1.0)
Cows	96.0	(0.5)	95.6	(2.1)	97.7	(0.3)	98.3	(0.2)
All females	95.5	(0.6)	95.3	(2.0)	97.6	(0.3)	98.1	(0.3)

*[(Born alive or expected to be born alive) / (born or expected to be born)] x 100.

6. Sick cows in calving area

Newborn calves can be very susceptible to infectious diseases. Managing the risk of infectious disease among newborn calves should include steps that ensure passive transfer of immunity to calves via colostrum and that minimize calves' exposure to infectious disease agents. More than 7 of 10 operations (71.3 percent) never used the calving area to hold sick cows. Of operations that did use the calving area to hold sick cows, the majority did so only rarely.

a. Percentage of operations by frequency that the calving area was used to hold sick cows, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Frequency	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Frequently (one or more per month)	1.4	(0.4)	1.1	(0.5)	3.3	(1.1)	3.1	(0.9)	1.6	(0.3)
Occasionally (two to five times in 6 months)	4.4	(0.7)	4.5	(1.2)	9.5	(1.8)	4.7	(1.0)	4.8	(0.6)
Rarely (once or less in 6 months)	20.5	(1.5)	27.0	(2.7)	26.8	(2.5)	26.1	(2.5)	22.3	(1.2)
Never	73.7	(1.6)	67.4	(2.8)	60.4	(2.8)	66.1	(2.6)	71.3	(1.3)
Total	100.0		100.0		100.0		100.0		100.0	

The majority of producers in all regions never used the calving area to hold sick cows.

b. Percentage of operations by frequency that the calving area was used to hold sick cows, by region:

	Percent Operations							
	Region							
	West		Central		South Central		East	
Frequency	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Frequently (one or more per month)	1.9	(0.9)	1.0	(0.5)	1.4	(0.6)	2.0	(0.6)
Occasionally (two to five times in 6 months)	6.6	(1.9)	4.3	(0.9)	4.8	(1.2)	4.8	(1.0)
Rarely (once or less in 6 months)	27.9	(3.6)	23.7	(2.2)	19.1	(2.3)	22.6	(2.0)
Never	63.6	(3.8)	71.0	(2.3)	74.7	(2.5)	70.6	(2.1)
Total	100.0		100.0		100.0		100.0	

C. Health and Health Management

1. Veterinarian consultation

About one-half of all operations (50.8 percent) consulted a veterinarian for any reason during the previous 12 months. A higher percentage of operations with 100 or more cows than operations with fewer than 100 cows consulted a veterinarian for any reason. For disease diagnosis or treatment, the percentage of operations that consulted a veterinarian was higher for operations with 100 or more cows than for operations with fewer than 100 cows and was higher for operations with 50 to 99 cows than for operations with 1 to 49 cows. The percentage of operations that consulted a veterinarian for disease prevention increased as herd size increased. The percentage of operations that consulted a veterinarian on production management practices was higher for operations with 100 or more cows than for operations with 1 to 49 cows. Fewer than 1 of 50 operations (1.7 percent) consulted a veterinarian for production or financial analysis.

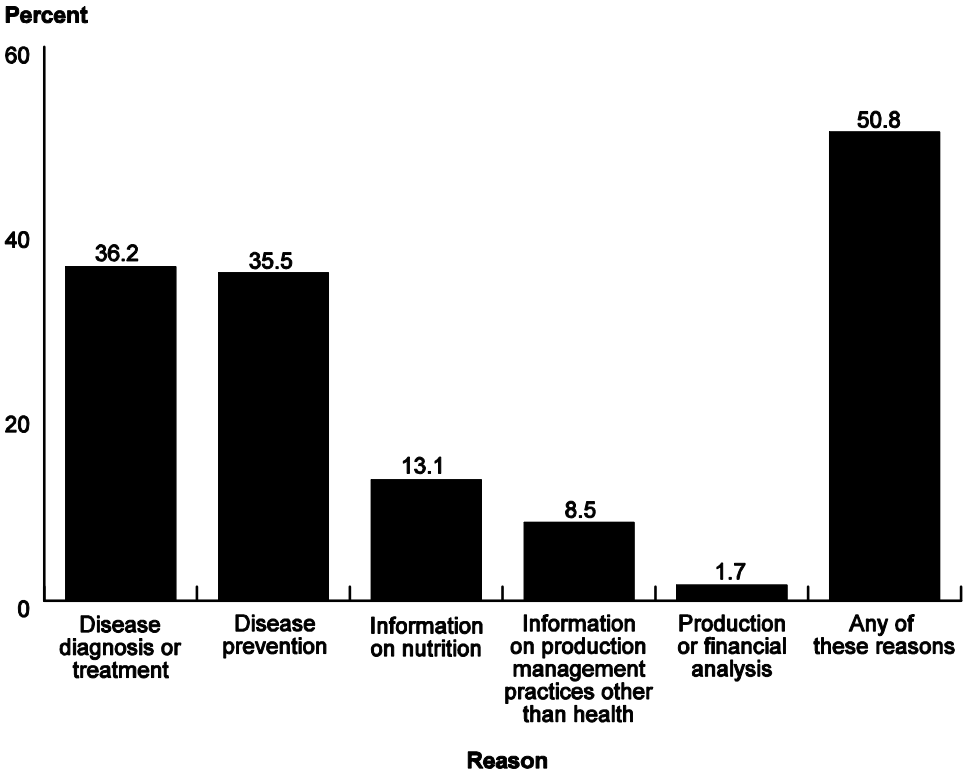
Percentage of operations that consulted a veterinarian during the previous 12 months, by reason for consultation and by herd size:

Percent Operations

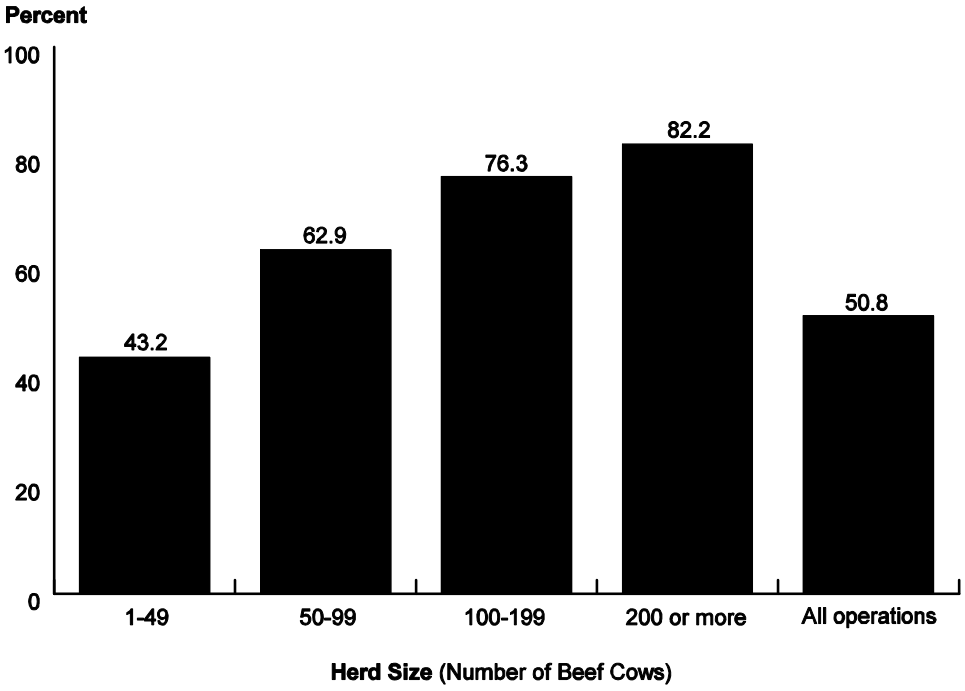
Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Reason	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Disease diagnosis or treatment	28.6	(1.7)	48.7	(2.9)	60.8	(2.8)	66.7	(2.6)	36.2	(1.3)
Disease prevention	28.4	(1.6)	45.6	(2.9)	58.1	(2.8)	68.5	(2.4)	35.5	(1.3)
Information on nutrition	9.8	(1.1)	16.8	(2.2)	24.1	(2.5)	30.7	(2.4)	13.1	(0.9)
Information on production management practices other than health	6.2	(0.9)	11.4	(1.8)	15.8	(2.0)	20.3	(2.1)	8.5	(0.7)
Production or financial analysis	1.5	(0.4)	1.7	(0.7)	2.1	(0.7)	3.9	(0.9)	1.7	(0.3)
Any of the above	43.2	(1.8)	62.9	(2.8)	76.3	(2.3)	82.2	(1.9)	50.8	(1.4)

Percentage of Operations that Consulted a Veterinarian During the Previous 12 Months, by Reason for Consultation



Percentage of Operations that Consulted a Veterinarian for Any Reason During the Previous 12 Months, by Herd Size



2. Number of injections, route, and purpose

Injections are given to animals to deliver vaccines or drugs such as antimicrobials. In the past, injections have caused adverse effects on beef quality at the injection site. Beef quality assurance efforts have resulted in a substantial decline in injection-site blemishes in beef products. The average number of injections given to beef cows and unweaned calves increased as herd size increased.

a. Average number of injections given to beef cows and unweaned calves during the previous 12 months, by herd size:

Average Number of Injections

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Animal Type	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
Cows	1.0	(0.1)	1.3	(0.1)	1.7	(0.1)	2.1	(0.1)	1.6	(0.0)
Unweaned Calves	1.4	(0.1)	2.0	(0.1)	2.8	(0.1)	3.3	(0.1)	2.5	(0.1)

About 7 of 10 operations (70.3 percent) gave injections to beef cows or unweaned calves during the previous 12 months, and a higher percentage of operations gave injections to calves than to cows (65.5 and 53.3 percent, respectively). This relationship was true for all herd sizes. A higher percentage of operations with 100 or more cows gave injections to cows, calves, and either cows or calves compared with operations with 1 to 49 cows.

b. Percentage of operations that gave injections to beef cows, unweaned calves, and either cows or calves during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Animal Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Cows	46.5	(1.8)	65.2	(2.8)	73.4	(2.6)	81.7	(2.0)	53.3	(1.4)
Unweaned Calves	57.1	(1.8)	81.2	(2.3)	92.9	(1.3)	94.4	(1.2)	65.5	(1.4)
Either cows or calves	62.6	(1.8)	85.6	(2.0)	94.5	(1.1)	95.4	(1.1)	70.3	(1.3)

Producers reported that 15.5 percent of injections in beef cows and 18.4 percent of injections in unweaned calves were administered by a veterinarian. Operations with 1 to 49 cows reported that a higher percentage of injections given to calves were administered by a veterinarian compared with operations with 200 or more cows (24.8 and 14.6 percent, respectively). The percentages of injections administered to cows by a veterinarian were similar across herd sizes.

c. Percentage of all injections given to beef cows and unweaned calves that were administered by a veterinarian during the previous 12 months, by herd size:

Percent Injections

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Animal Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Cows	19.9	(2.6)	17.6	(2.7)	18.9	(2.8)	12.2	(1.9)	15.5	(1.2)
Unweaned Calves	24.8	(3.1)	22.3	(2.7)	20.5	(2.5)	14.6	(1.6)	18.4	(1.1)

In order to decrease the likelihood of injection-site blemishes in beef products, beef quality assurance guidelines suggest using the subcutaneous route for injections whenever possible. Almost two of three injections given to beef cows (64.8 percent) were given subcutaneously. Operations with 200 or more cows gave a higher percentage of injections subcutaneously and a lower percentage intramuscularly compared with operations with fewer than 200 cows.

d. Percentage of injections given to beef ***cows*** during the previous 12 months, by route of injection and by herd size:

Percent Injections

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Route	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Intramuscular	43.7	(2.8)	43.2	(3.2)	39.0	(2.9)	27.6	(2.1)	34.7	(1.4)
Subcutaneous	56.0	(2.8)	56.0	(3.2)	60.2	(2.9)	72.1	(2.1)	64.8	(1.4)
Intravenous	0.3	(0.3)	0.8	(0.7)	0.8	(0.5)	0.3	(0.1)	0.5	(0.2)
Total	100.0		100.0		100.0		100.0		100.0	

Almost three of four injections given to unweaned calves (72.8 percent) were given subcutaneously. On operations with 200 or more cows, a higher percentage of injections to calves were given subcutaneously (79.4 percent) and a lower percentage were given intramuscularly (20.2 percent) compared with injections on operations with fewer than 200 cows.

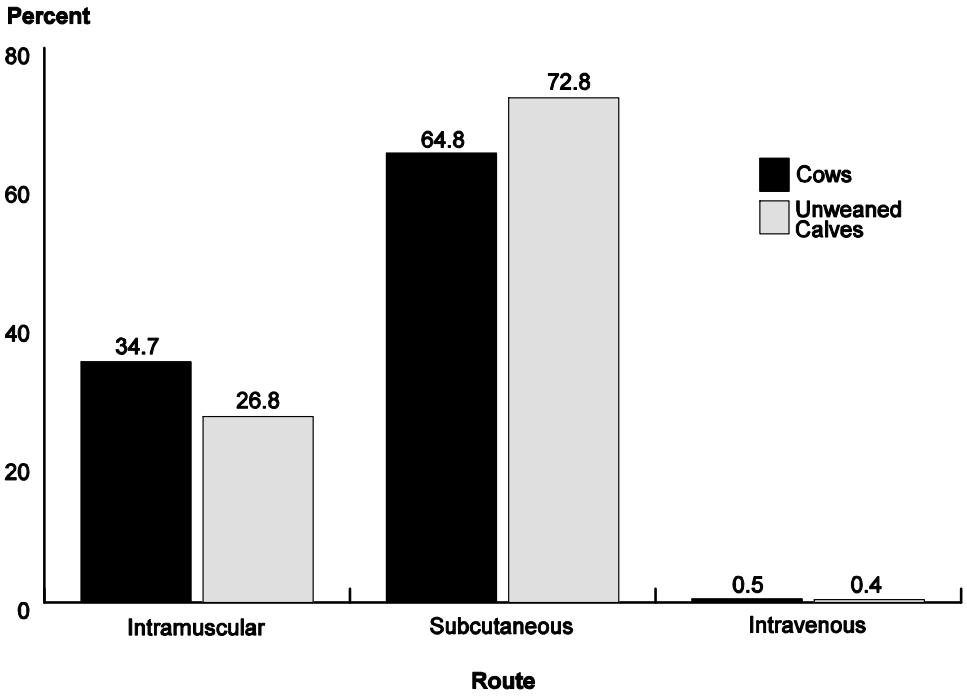
e. Percentage of injections given to unweaned ***calves*** during the previous 12 months, by route of injection and by herd size:

Percent Injections

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Route	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Intramuscular	34.8	(2.5)	37.1	(2.7)	30.1	(2.4)	20.2	(1.6)	26.8	(1.1)
Subcutaneous	65.1	(2.5)	62.1	(2.7)	69.7	(2.4)	79.4	(1.6)	72.8	(1.1)
Intravenous	0.1	(0.1)	0.8	(0.6)	0.2	(0.1)	0.4	(0.2)	0.4	(0.1)
Total	100.0		100.0		100.0		100.0		100.0	

Percentage of Injections Given to Beef Cows and Unweaned Calves During the Previous 12 months, by Route of Injection



Two of three intramuscular injections given to beef cows were vaccines (66.3 percent). The percentages of intramuscular injections given as antibiotics and vaccines were similar across herd sizes. Operations with 100 or more cows gave a higher percentage of intramuscular injections for reproductive purposes compared with operations with 1 to 49 cows.

f. For operations that gave intramuscular injections to beef ***cows*** during the previous 12 months, percentage of injections by purpose of injection and by herd size:

Percent Injections

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Purpose of Injection	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Antibiotic	19.6	(3.6)	20.1	(4.1)	15.4	(3.2)	12.9	(3.4)	16.1	(1.8)
Reproductive	4.2	(1.7)	12.4	(3.4)	20.0	(3.8)	17.3	(3.1)	14.4	(1.6)
Vaccination	70.6	(4.1)	66.1	(4.9)	59.7	(4.4)	67.9	(4.1)	66.3	(2.3)
Other	5.6	(1.7)	1.4	(0.7)	4.9	(2.0)	1.9	(0.9)	3.2	(0.7)
Total	100.0		100.0		100.0		100.0		100.0	

Over 8 of 10 intramuscular injections given to unweaned calves (82.8 percent) were vaccines. Only 14.4 percent of intramuscular injections given were antibiotics. The percentages of intramuscular injections given that were antibiotics, vaccines, and reproductive were similar across herd sizes.

g. For operations that gave intramuscular injections to unweaned ***calves*** during the previous 12 months, percentage of injections by purpose of injection and by herd size:

Percent Injections

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Purpose of Injection	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Antibiotic	15.1	(2.4)	17.4	(4.3)	16.8	(3.8)	11.0	(2.0)	14.4	(1.6)
Reproductive	1.0	(1.0)	0.4	(0.3)	0.9	(0.5)	2.1	(1.0)	1.3	(0.4)
Vaccination	81.3	(2.5)	81.7	(4.3)	80.7	(3.9)	85.3	(2.3)	82.8	(1.6)
Other	2.6	(0.9)	0.5	(0.3)	1.6	(0.9)	1.6	(0.6)	1.5	(0.4)
Total	100.0		100.0		100.0		100.0		100.0	

3. Operator-given injections and route

Over 8 of 10 operations (81.5 percent) reported that the operator or any unpaid or hired worker gave injections to beef cows or unweaned calves during the previous 12 months, and nearly 9 of 10 beef cows (89.3 percent) resided on operations in which operators or any unpaid or hired workers gave injections. A higher percentage of operations with 200 or more cows than operations with fewer than 100 cows reported that the operator or any unpaid or hired worker gave injections.

a. Percentage of operations (and percentage of cows on these operations) in which the operator or any unpaid or hired worker gave injections to any beef cows or unweaned calves during the previous 12 months, by herd size:

Percent

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Operations	77.6	(2.0)	85.1	(2.1)	89.8	(1.8)	94.1	(1.3)	81.5	(1.3)
Cows	79.2	(2.1)	85.6	(2.0)	89.8	(1.8)	95.6	(1.0)	89.3	(0.8)

Of operations in which the operator or any unpaid or hired worker gave injections, 76.3 percent gave at least one injection subcutaneously, and 50.9 percent gave at least one injection intramuscularly. A higher percentage of operations with 200 or more cows than operations with fewer than 100 cows gave at least one injection subcutaneously.

b. For operations in which the operator or any unpaid or hired worker gave injections to any beef cows or unweaned calves during the previous 12 months, percentage of operations that gave one or more injections, by route of injection and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Route	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Intramuscular	49.1	(2.6)	59.3	(3.3)	48.3	(3.2)	47.3	(2.8)	50.9	(1.8)
Subcutaneous	74.5	(2.2)	73.8	(3.1)	82.5	(2.4)	87.4	(1.8)	76.3	(1.5)
Other	0.1	(0.1)	1.1	(0.8)	0.2	(0.2)	0.8	(0.6)	0.4	(0.2)

Of injections given by operators or any unpaid or hired workers, 70.4 percent were given subcutaneously, and 29.5 percent were given intramuscularly. A higher percentage of injections were given by the subcutaneous route (75.6 percent) on operations with 200 or more cows than on operations with fewer than 200 cows.

c. For operations in which an operator or any unpaid or hired worker gave injections to any beef cows or unweaned calves during the previous 12 months, percentage of injections by route of injection and by herd size:

Percent Injections

Herd Size (Number of Beef Cows)

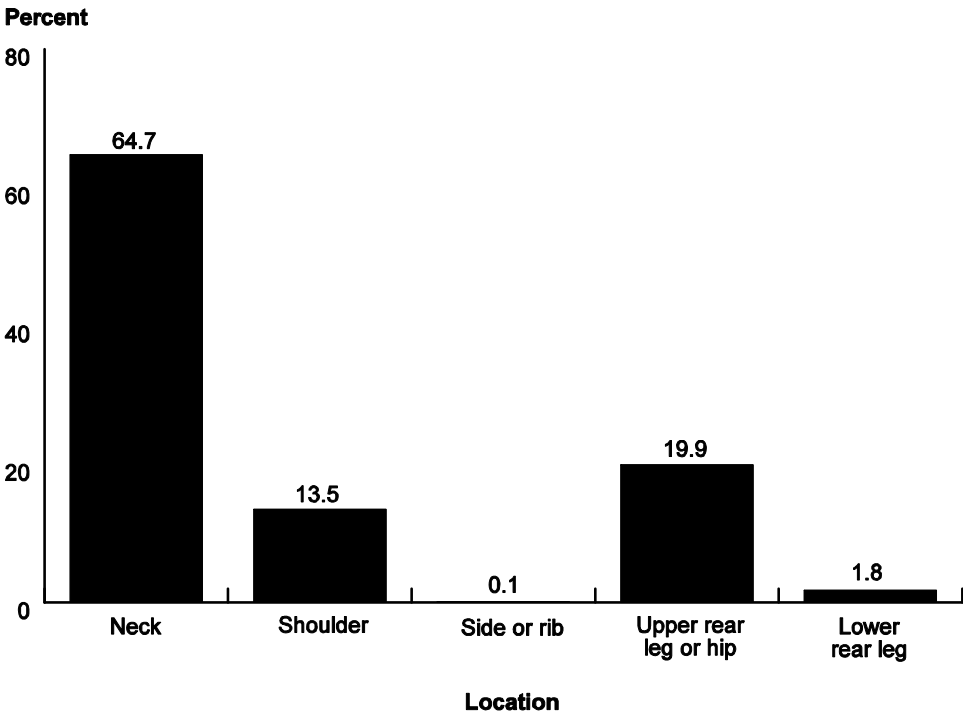
	1-49		50-99		100-199		200 or More		All Operations	
Route	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Intramuscular	36.0	(2.7)	36.2	(2.7)	34.7	(2.8)	24.2	(1.8)	29.5	(1.3)
Subcutaneous	64.0	(2.7)	63.6	(2.7)	65.3	(2.8)	75.6	(1.8)	70.4	(1.3)
Other	0.0	(0.0)	0.2	(0.1)	0.0	(0.0)	0.2	(0.1)	0.1	(0.1)
Total	100.0		100.0		100.0		100.0		100.0	

Beef quality assurance guidelines recommend that intramuscular injections be given in the neck region rather than the upper rear leg or hip. A higher percentage of operations gave subcutaneous injections in the neck than they did intramuscular injections (84.4 and 64.7 percent, respectively). Also, a higher percentage of operations gave intramuscular injections in the upper rear leg or hip than they did subcutaneous injections (19.9 and 3.1 percent, respectively).

d. For operations in which an operator or any unpaid or hired worker gave injections to any beef cows or unweaned calves during the previous 12 months, percentage of operations by usual location of injections and by route:

	Percent Operations					
	Route					
	Intramuscular		Subcutaneous		Other	
Location	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Neck	64.7	(2.4)	84.4	(1.6)	31.9	(18.3)
Shoulder	13.5	(1.8)	11.4	(1.4)	0.0	(--)
Side or rib	0.1	(0.0)	0.9	(0.4)	0.0	(--)
Upper rear leg or hip	19.9	(2.0)	3.1	(0.8)	68.1	(18.3)
Lower rear leg	1.8	(0.6)	0.2	(0.1)	0.0	(--)
Total	100.0		100.0		100.0	

For Operations in Which an Operator or any Unpaid or Hired Worker Gave Intramuscular Injections to any Beef Cows or Unweaned Calves During the Previous 12 Months, Percentage of Operations by Usual Location of Injections



4. Veterinarian-given injections and route

In some cases, the veterinarian can be a role model for implementing beef quality assurance guidelines for injection practices. On one of three operations (35.0 percent), a veterinarian had given one or more injections to beef cows during the previous 12 months. The percentages of operations in which a veterinarian gave one or more injections to beef cows were similar across herd sizes.

a. For operations that gave injections to beef cows or calves, percentage of operations (and percentage of cows on these operations) in which a veterinarian gave injections to any beef cows during the previous 12 months, by herd size:

Percent

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Operations	33.6	(2.2)	36.9	(2.9)	36.7	(2.9)	40.3	(2.6)	35.0	(1.5)
Cows	33.6	(2.4)	36.8	(2.9)	36.6	(2.9)	42.4	(2.6)	38.5	(1.4)

The route by which veterinarians and producers give injections is partly determined by the type of product being injected and the label directions on the product. Therefore, it is important that veterinarians communicate why they use a particular route of injection. Producers reported their perception of the route veterinarians used to give injections. For operations in which a veterinarian gave injections, 66.0 percent reported that veterinarians gave at least one subcutaneous injection and 53.1 percent reported that veterinarians gave at least one intramuscular injection. The percentages of operations in which a veterinarian gave subcutaneous and intramuscular injections were similar across herd sizes.

b. For operations in which a veterinarian gave injections to any beef cows or unweaned calves during the previous 12 months, percentage of operations in which a veterinarian gave one or more injections, by route of administration and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Route	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Intramuscular	55.2	(4.0)	55.3	(4.9)	47.3	(4.9)	39.6	(4.2)	53.1	(2.7)
Subcutaneous	63.7	(3.9)	64.4	(4.8)	72.1	(4.2)	78.5	(3.8)	66.0	(2.6)
Other	0.0	(0.0)	0.8	(0.8)	0.0	(0.0)	2.0	(1.5)	0.3	(0.2)

For operations in which a veterinarian gave injections, veterinarians gave a higher percentage of injections subcutaneously than intramuscularly (62.7 and 37.2 percent, respectively). The percentages of injections given by each route were similar across herd sizes.

c. For operations in which a veterinarian gave injections to any beef cows or unweaned calves during the previous 12 months, percentage of injections given by a veterinarian, by route and by herd size:

Percent Injections

Herd Size (Number of Beef Cows)

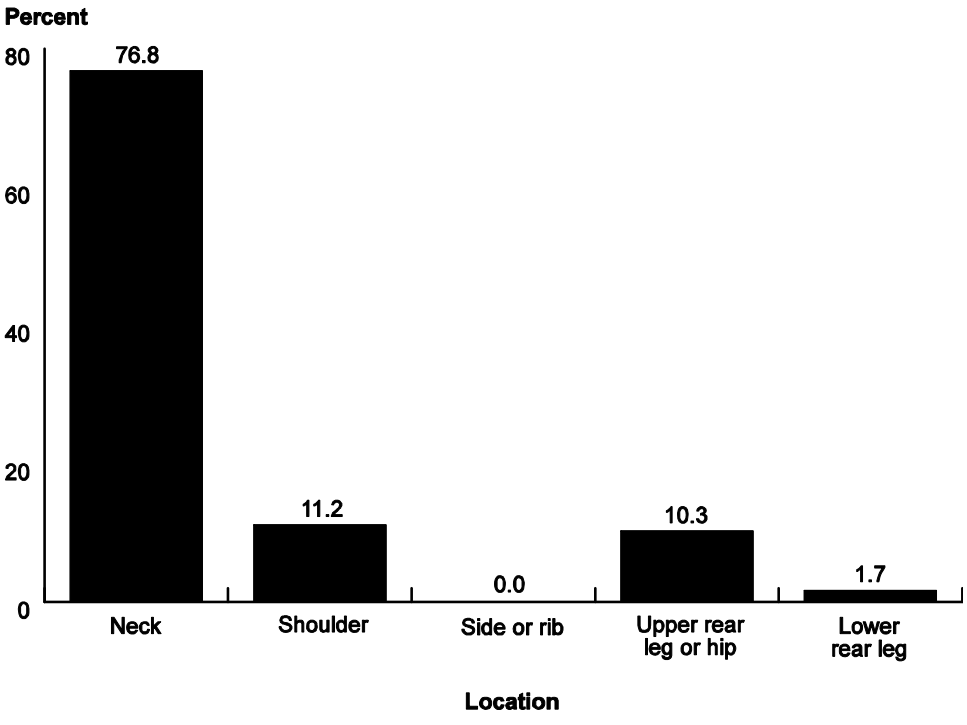
	1-49		50-99		100-199		200 or More		All Operations	
Route	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Intramuscular	42.8	(5.2)	50.3	(6.8)	38.3	(5.7)	28.0	(4.5)	37.2	(2.8)
Subcutaneous	57.2	(5.2)	49.6	(6.8)	61.7	(5.7)	71.9	(4.5)	62.7	(2.8)
Other	0.0	(0.0)	0.1	(0.1)	0.0	(0.0)	0.1	(0.1)	0.1	(0.0)
Total	100.0		100.0		100.0		100.0		100.0	

The neck was the most common location that veterinarians used to administer intramuscular and subcutaneous injections (76.8 and 87.0 percent of operations, respectively). The shoulder was the next most commonly reported region for both intramuscular and subcutaneous injections (11.2 and 10.1 percent of operations, respectively).

d. For operations in which a veterinarian gave injections to any beef cows or unweaned calves during the previous 12 months, percentage of operations by usual location of injections given by a veterinarian and by route of injection:

	Percent Operations					
	Route					
	Intramuscular		Subcutaneous		Other	
Location	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Neck	76.8	(3.3)	87.0	(2.4)	65.9	(28.4)
Shoulder	11.2	(2.4)	10.1	(2.2)	0.0	(--)
Side or rib	0.0	(--)	0.9	(0.5)	34.1	(28.4)
Upper rear leg or hip	10.3	(2.3)	2.0	(1.0)	0.0	(--)
Lower rear leg	1.7	(1.1)	0.0	(--)	0.0	(--)
Total	100.0		100.0		100.0	

For Operations in which a Veterinarian Gave Intramuscular Injections to Any Beef Cows or Unweaned Calves During the Previous 12 Months, Percentage of Operations by Usual Location of Injections Given by a Veterinarian



5. Producer familiarity with disease

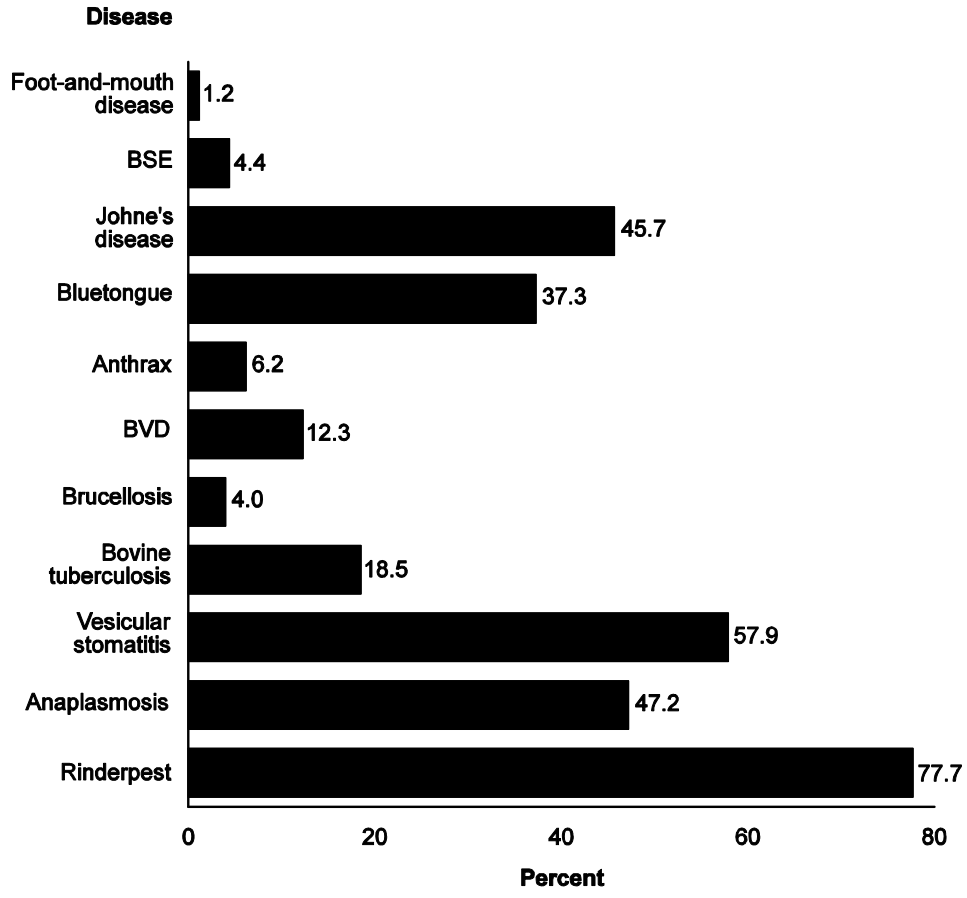
Producers caring for their livestock will likely be the first to witness an animal health emergency. Early detection and response are critical to mitigating the adverse effects of animal disease outbreaks. Producers who are knowledgeable about a variety of diseases and disease agents may help speed the detection and response to unexpected disease occurrences.

Producers were asked about their familiarity with a number of cattle diseases. Producers were most familiar with brucellosis: 44.8 percent said they were fairly knowledgeable about the disease and 33.6 percent knew some basics. Producers on approximately two of three operations knew some basics or were fairly knowledgeable about foot-and-mouth disease, bovine spongiform encephalopathy, and bovine viral diarrhea (65.8, 63.5, and 64.0 percent of operations, respectively). On nearly one-half of operations (49.1 percent), producers either recognized the name anthrax or had not heard of it before. On over two of three operations (68.7 percent), producers knew little or nothing about Johne's disease. Not surprisingly, producers on more than three of four operations (77.7 percent) had not heard of the foreign animal disease rinderpest.

a. Percentage of operations by familiarity with the following diseases:

	Percent Operations								
	Level of Familiarity								
	Fairly Knowledge-able		Know Some Basics		Recognized the Name, Not Much Else		Had Not Heard of Before		
Disease	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Foot-and-mouth disease	32.5	(1.3)	33.3	(1.3)	33.0	(1.4)	1.2	(0.3)	100.0
Bovine spongiform encephalopathy (BSE)	26.0	(1.2)	37.5	(1.4)	32.1	(1.3)	4.4	(0.6)	100.0
Johne's disease (Paratuber-culosis)	14.8	(0.9)	16.5	(1.0)	23.0	(1.2)	45.7	(1.4)	100.0
Bluetongue	13.3	(0.9)	15.4	(1.0)	34.0	(1.3)	37.3	(1.4)	100.0
Anthrax	22.6	(1.2)	28.3	(1.3)	42.9	(1.4)	6.2	(0.7)	100.0
Bovine viral diarrhea (BVD)	31.6	(1.3)	32.4	(1.3)	23.7	(1.3)	12.3	(1.0)	100.0
Brucellosis (Bang's disease)	44.8	(1.4)	33.6	(1.4)	17.6	(1.1)	4.0	(0.6)	100.0
Bovine tuberculosis	22.8	(1.2)	27.3	(1.3)	31.4	(1.3)	18.5	(1.1)	100.0
Vesicular stomatitis	8.7	(0.8)	12.2	(0.9)	21.2	(1.1)	57.9	(1.4)	100.0
Anaplasmosis	16.2	(1.0)	13.7	(1.0)	22.9	(1.2)	47.2	(1.4)	100.0
Rinderpest	3.9	(0.5)	4.8	(0.6)	13.6	(1.0)	77.7	(1.2)	100.0

Percentage of Operations that Had not Heard of the Following Diseases



A higher percentage of producers on operations with 200 or more cows knew some basics or were fairly knowledgeable about most of the listed diseases compared with producers on operations with 1 to 49 head.

b. Percentage of operations that were fairly knowledgeable or knew some basics about the following diseases, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Disease	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Foot-and-mouth disease	64.1	(1.8)	67.1	(2.7)	72.8	(2.6)	74.8	(2.3)	65.8	(1.4)
Bovine spongiform encephalopathy (BSE)	60.5	(1.8)	66.9	(2.7)	74.3	(2.5)	79.2	(2.0)	63.5	(1.4)
Johne's disease (Paratuber-culosis)	27.4	(1.6)	37.4	(2.8)	42.7	(2.9)	50.5	(2.6)	31.3	(1.3)
Bluetongue	25.9	(1.6)	33.4	(2.7)	36.0	(2.8)	43.9	(2.6)	28.8	(1.2)
Anthrax	49.1	(1.9)	52.1	(2.9)	58.5	(2.8)	60.7	(2.6)	50.9	(1.4)
Bovine viral diarrhea (BVD)	57.8	(1.9)	75.8	(2.5)	81.0	(2.4)	89.3	(1.6)	64.1	(1.4)
Brucellosis (Bang's disease)	74.5	(1.6)	84.8	(1.9)	90.3	(1.9)	95.1	(1.1)	78.4	(1.2)
Bovine tuberculosis	46.8	(1.9)	56.0	(2.9)	59.7	(2.9)	63.2	(2.5)	50.1	(1.4)
Vesicular stomatitis	18.8	(1.4)	23.2	(2.4)	29.3	(2.6)	31.1	(2.4)	21.0	(1.1)
Anaplasmosis	26.4	(1.6)	34.0	(2.7)	44.6	(2.8)	45.1	(2.5)	29.9	(1.3)
Rinderpest	7.9	(1.0)	9.2	(1.5)	12.9	(2.0)	10.0	(1.5)	8.6	(0.8)

6. Disease outbreak information source and reporting contact

During an animal health emergency (disease outbreak) it is critical that producers get reliable information. By knowing who producers will turn to for information during an emergency responders are able to target the dissemination routes of information critical to the emergency response effort. In the event of a foot-and-mouth disease outbreak in the United States, most operations (85.1 percent) were very likely to get information from a private veterinarian. The next most likely sources of information were other beef producers and extension agents (46.2 and 40.8 percent of operations, respectively).

a. Percentage of operations by likelihood of using the following sources to obtain information if an outbreak of foot-and-mouth disease (or other foreign animal disease) occurred in the United States:

	Percent Operations						
	Likelihood						
	Very Likely		Somewhat Likely		Not Likely		
Source	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Other beef producers	46.2	(1.4)	30.8	(1.3)	23.0	(1.2)	100.0
Private veterinarian	85.1	(1.0)	10.3	(0.9)	4.6	(0.6)	100.0
Extension agent	40.8	(1.4)	28.3	(1.3)	30.9	(1.3)	100.0
Beef organization or cooperative	20.4	(1.1)	27.2	(1.2)	52.4	(1.4)	100.0
Magazines	18.7	(1.1)	30.0	(1.3)	51.3	(1.4)	100.0
Internet	20.9	(1.2)	17.3	(1.1)	61.8	(1.4)	100.0
State Veterinarian's office	28.0	(1.3)	21.1	(1.1)	50.9	(1.4)	100.0
U.S. Department of Agriculture	26.7	(1.3)	28.3	(1.3)	45.0	(1.4)	100.0
Television/ newspapers	22.2	(1.2)	28.5	(1.3)	49.3	(1.4)	100.0
Other	2.7	(0.4)	3.3	(0.5)	94.0	(0.7)	100.0

If an outbreak of a foreign animal disease such as foot-and-mouth disease were to occur in the United States, early detection would be critical to mitigating the effects of the outbreak. Ensuring that those most likely to be contacted by producers are aware of the appropriate procedures for reporting a suspected outbreak will help to speed diagnosis and response. Almost all operations (95.5 percent) would contact a private veterinarian if they had an animal suspected of having foot-and-mouth disease or another foreign animal disease.

b. Percentage of operations that would contact the following resources if there was an animal on the operation suspected of having foot-and-mouth disease (or other foreign-animal disease):

Resource	Percent Operations	Standard Error
Extension agent/university	35.0	(1.3)
State Veterinarian’s office	35.2	(1.3)
U.S. Department of Agriculture	24.4	(1.2)
Private veterinarian	95.5	(0.6)
Other	4.3	(0.6)
Any	98.8	(0.3)

D. Biosecurity

1. Contact with beef cattle by other animals

Disease agents can be brought onto an operation via animals newly introduced to the herd, through contact with animals that are not part of the operation, or via inanimate objects such as equipment brought onto the operation. Assessing each of these exposure routes is part of developing an effective biosecurity plan. Nearly all operations (96.3 percent) reported that at least some beef cattle on the operation had fence-line contact (nose to nose) or commingled with one or more of the animals listed. Over two-thirds of operations reported beef cattle contact with wild cervids and dogs (72.6 and 69.7 percent, respectively). About one-half of operations' beef cattle had contact with cats and horses (55.4 and 44.5 percent, respectively).

a. Percentage of operations by whether or not any beef cattle on the operation had fence-line contact (nose-to-nose) or commingled with the following animals during the previous 12 months:

	Percent Operations						
	Contact						
	Yes		Don't Know		No		
Animal Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Wild cervids (e.g., elk, deer)	72.6	(1.3)	12.0	(0.9)	15.4	(1.1)	100.0
Captive cervids (e.g., elk, deer)	3.2	(0.5)	2.5	(0.4)	94.3	(0.6)	100.0
Captive bison	0.9	(0.3)	0.9	(0.2)	98.2	(0.3)	100.0
Cattle of Mexican origin	1.0	(0.3)	2.1	(0.4)	96.9	(0.5)	100.0
Dairy cattle	3.1	(0.5)	1.5	(0.3)	95.4	(0.6)	100.0
Pigs	12.1	(0.9)	4.8	(0.6)	83.1	(1.1)	100.0
Sheep	5.2	(0.6)	1.3	(0.3)	93.5	(0.7)	100.0
Goats	9.6	(0.9)	1.6	(0.3)	88.8	(0.9)	100.0
Horses or other equids (e.g., ponies, donkeys, mules, burros, etc.)	44.5	(1.4)	2.8	(0.5)	52.7	(1.4)	100.0
Camelids (e.g., llamas, alpacas, etc.)	2.8	(0.5)	1.4	(0.3)	95.8	(0.6)	100.0
Chickens, other poultry, or their litter	15.3	(1.0)	2.3	(0.4)	82.4	(1.1)	100.0
Dogs	69.7	(1.3)	9.0	(0.8)	21.3	(1.2)	100.0
Cats	55.4	(1.4)	12.3	(0.9)	32.3	(1.3)	100.0
Any of the above	96.3	(0.6)	0.1	(0.1)	3.6	(0.6)	100.0

Nearly all beef cows (97.8 percent) were on operations in which at least some beef cattle had fence-line contact or commingled with 1 or more of the animals listed in the table below, and about 9 of 10 cows (88.0 percent) were on operations in which contact occurred with wild cervids. Dogs were the next most common animal that any beef cattle had exposure to, followed by cats, and horses. Fewer than 1 in 20 cows were on operations in which any beef cattle had exposure to camelids, dairy cattle, cattle of Mexican origin, captive bison, or captive cervids.

b. For operations in which beef cattle had fence-line contact (nose-to-nose) or commingled with the following animals during the previous 12 months, percentage of beef cows on these operations:

Animal Type	Percent Beef Cows	Standard Error
Wild cervids (e.g., elk, deer)	88.0	(0.9)
Captive cervids (e.g., elk, deer)	3.9	(0.6)
Captive bison	2.1	(0.5)
Cattle of Mexican origin	1.8	(0.4)
Dairy cattle	3.8	(0.5)
Pigs	15.4	(1.0)
Sheep	6.9	(0.8)
Goats	7.8	(0.7)
Horses or other equids (e.g., ponies, donkeys, mules, burros, etc.)	58.2	(1.3)
Camelids (e.g., llamas, alpacas, etc.)	2.9	(0.5)
Chickens, other poultry, or their litter	13.5	(0.9)
Dogs	79.9	(1.1)
Cats	63.9	(1.4)
Any of the above	97.8	(0.3)

For operations that knew whether their cattle had fence-line contact with specific animals, the percentage of operations in which beef cattle had fence-line contact or commingled with wild cervids was higher on operations with 200 or more cows than on operations with 1 to 49 cows. A higher percentage of operations with 200 or more cows reported beef cattle had contact with horses than did all other operation sizes.

c. Percentage of operations in which the following animals had fence-line contact (nose-to-nose) or commingled with any beef cattle on the operation during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Animals	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Wild cervids (e.g., elk, deer)	80.3	(1.6)	86.2	(2.2)	89.3	(2.3)	91.3	(1.4)	82.5	(1.2)
Captive cervids (e.g., elk, deer)	3.1	(0.7)	3.3	(1.0)	4.2	(1.0)	4.1	(0.9)	3.2	(0.5)
Captive bison	0.5	(0.3)	1.7	(0.9)	2.1	(0.8)	2.1	(0.6)	0.9	(0.3)
Cattle of Mexican origin	0.8	(0.3)	1.2	(0.6)	1.4	(0.6)	1.9	(0.7)	1.0	(0.3)
Dairy cattle	2.8	(0.6)	4.0	(1.3)	4.8	(1.1)	4.2	(1.0)	3.2	(0.5)
Pigs	11.7	(1.3)	17.2	(2.2)	10.8	(1.8)	15.2	(1.7)	12.7	(1.0)
Sheep	5.3	(0.8)	4.4	(1.3)	4.4	(1.1)	8.5	(1.4)	5.3	(0.6)
Goats	11.0	(1.2)	7.8	(1.7)	4.6	(1.1)	7.8	(1.4)	9.8	(0.9)
Horses or other equids (e.g., ponies, donkeys, mules, burros, etc.)	42.5	(1.9)	49.1	(2.9)	52.2	(2.9)	69.2	(2.4)	45.7	(1.4)
Camelids (e.g., llamas, alpacas, etc.)	2.4	(0.6)	4.9	(1.5)	3.7	(1.0)	2.0	(0.7)	2.9	(0.5)
Chickens, other poultry, or their litter	16.2	(1.4)	14.8	(2.1)	15.6	(2.1)	10.8	(1.5)	15.7	(1.1)
Dogs	75.9	(1.7)	75.9	(2.5)	80.9	(2.3)	82.6	(1.9)	76.6	(1.3)
Cats	63.1	(1.9)	60.8	(3.0)	68.3	(2.8)	64.3	(2.7)	63.2	(1.5)
Any of the above	95.6	(0.8)	97.6	(0.8)	99.8	(0.2)	98.4	(0.6)	96.4	(0.6)

2. Contact with feed or minerals by other animals

Beef cattle can be exposed to disease agents through feedstuffs contaminated by other animals. More than 8 of 10 operations (81.2 percent) knew that 1 or more of the animals listed in the table below had access to cattle feed or minerals. Wild cervids most commonly had access to cattle feed or minerals, followed by dogs, cats, and horses or other equids.

a. Percentage of operations in which the following animals had access to the operations' cattle feed or minerals during the previous 12 months:

	Percent Operations						
	Access						
	Yes		Don't Know		No		
Source	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Wild cervids (e.g., elk, deer)	63.3	(1.4)	6.2	(0.7)	30.5	(1.3)	100.0
Captive cervids (e.g., elk, deer)	2.5	(0.4)	1.2	(0.3)	96.3	(0.5)	100.0
Captive bison	0.3	(0.1)	0.5	(0.2)	99.2	(0.2)	100.0
Cattle of Mexican origin	0.3	(0.1)	0.8	(0.2)	98.9	(0.2)	100.0
Dairy cattle	1.6	(0.4)	0.5	(0.1)	97.9	(0.4)	100.0
Pigs	7.8	(0.8)	2.2	(0.4)	90.0	(0.9)	100.0
Sheep	3.2	(0.5)	0.6	(0.2)	96.2	(0.5)	100.0
Goats	5.4	(0.7)	0.9	(0.3)	93.7	(0.7)	100.0
Horses or other equids (e.g., ponies, donkeys, mules, burros, etc.)	27.5	(1.3)	1.1	(0.3)	71.4	(1.3)	100.0
Camelids (e.g., llamas, alpacas, etc.)	1.9	(0.4)	0.8	(0.2)	97.3	(0.4)	100.0
Chickens, other poultry, or their litter	7.9	(0.8)	1.5	(0.3)	90.6	(0.8)	100.0
Dogs	44.1	(1.4)	8.7	(0.8)	47.2	(1.4)	100.0
Cats	39.0	(1.4)	10.7	(0.9)	50.3	(1.4)	100.0
Any of the above	81.2	(1.2)	0.2	(0.1)	18.6	(1.2)	100.0

About 9 of 10 cows (88.8 percent) were on operations in which 1 or more of the animals listed in the table below had access to cattle feed or minerals. Nearly 8 of 10 cows (79.5 percent) resided on operations on which wild cervids were known to have access to cattle feed or minerals.

b. For operations in which the following animals had access to the operations' cattle feed or minerals during the previous 12 months, percentage of beef cows on these operations:

Animals	Percent Beef Cows	Standard Error
Wild cervids (e.g., elk, deer)	79.5	(1.0)
Captive cervids (e.g., elk, deer)	3.0	(0.5)
Captive bison	1.1	(0.4)
Cattle of Mexican origin	0.8	(0.2)
Dairy cattle	1.7	(0.3)
Pigs	10.4	(1.0)
Sheep	3.8	(0.6)
Goats	4.9	(0.6)
Horses or other equids (e.g., ponies, donkeys, mules, burros, etc.)	36.0	(1.3)
Camelids (e.g., llamas, alpacas, etc.)	1.9	(0.4)
Chickens, other poultry, or their litter	7.4	(0.7)
Dogs	52.2	(1.4)
Cats	45.4	(1.4)
Any of the above	88.8	(0.8)

On operations that knew whether other animals had access to cattle feed or minerals, 67.5 percent reported that wild cervids had access to cattle feed or minerals, followed by dogs (48.3 percent) and cats (43.7 percent). The percentage of operations in which wild cervids, horses, or any animals had access to cattle feed or minerals was higher for operations with 200 or more cows than for operations with fewer than 100 cows.

c. For operations that knew whether other animals had access to cattle feed or minerals during the previous 12 months, percentage of operations by type of animals that access to cattle feed or minerals, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Animal Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Wild cervids (e.g., elk, deer)	62.9	(1.9)	74.3	(2.7)	81.4	(2.5)	87.6	(1.6)	67.5	(1.4)
Captive cervids (e.g., elk, deer)	2.4	(0.6)	3.0	(1.0)	2.3	(0.8)	3.3	(0.8)	2.5	(0.4)
Captive bison	0.1	(0.1)	0.7	(0.5)	1.3	(0.6)	0.7	(0.3)	0.3	(0.1)
Cattle of Mexican origin	0.0	(0.0)	1.0	(0.5)	1.1	(0.6)	0.7	(0.3)	0.3	(0.1)
Dairy cattle	1.5	(0.5)	1.8	(0.8)	1.4	(0.5)	2.4	(0.7)	1.6	(0.4)
Pigs	7.9	(1.1)	8.5	(1.5)	7.2	(1.5)	9.4	(1.3)	8.0	(0.8)
Sheep	3.0	(0.6)	3.5	(1.2)	2.7	(0.9)	5.0	(1.1)	3.2	(0.5)
Goats	5.9	(0.9)	4.2	(1.2)	3.0	(0.9)	5.6	(1.2)	5.4	(0.7)
Horses or other equids (e.g., ponies, donkeys, mules, burros, etc.)	25.6	(1.6)	29.9	(2.6)	33.9	(2.7)	42.5	(2.6)	27.8	(1.3)
Camelids (e.g., llamas, alpacas, etc.)	1.6	(0.5)	3.8	(1.3)	1.3	(0.6)	1.0	(0.4)	1.9	(0.4)
Chickens, other poultry, or their litter	8.2	(1.0)	7.6	(1.6)	8.0	(1.6)	6.4	(1.3)	8.0	(0.8)
Dogs	46.2	(1.9)	51.6	(3.0)	55.7	(3.0)	54.6	(2.7)	48.3	(1.5)
Cats	42.7	(1.9)	44.1	(3.0)	50.3	(3.0)	45.6	(2.7)	43.7	(1.5)
Any of the above	78.3	(1.6)	87.0	(2.2)	89.4	(2.1)	93.0	(1.2)	81.4	(1.2)

3. Access to feed storage units

Approximately one-half of operations stored grain and protein supplements in containers that did not prevent access by dogs, cats, birds, rodents, and other wildlife.

Percentage of operations in which storage units used for cattle grain and protein supplements prevent access by the following animals:

Animal	Percent Operations	Standard Error
Dogs	51.0	(1.4)
Cats	51.8	(1.4)
Birds	49.1	(1.4)
Rodents	51.0	(1.4)
Other wildlife (e.g., skunks, opossums, raccoons, etc.)	50.3	(1.4)
Any of the above	64.2	(1.4)

Photo courtesy of Dr. Dave Dargatz

4. Wildlife sightings

During the previous 3 years, more than 6 of 10 operations (62.5 percent) frequently saw wild deer within 1 mile of cattle on the operation during winter and spring; 20.3 percent of operations saw deer occasionally. More than 9 of 10 operations never saw wild elk or wild bison within 1 mile of cattle during winter and spring. Nearly one-fourth of operations saw wild pigs within 1 mile of their operations at least rarely.

Percentage of operations by frequency in the previous 3 years that the following wildlife species were seen within 1 mile of cattle on the operation during winter and spring:

Percent Operations

Wildlife Species

	Wild Deer		Wild Elk		Wild Bison		Wild Pig	
Frequency	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Frequently (more than four times/month)	62.5	(1.4)	2.3	(0.4)	0.3	(0.2)	8.0	(0.8)
Occasionally (about one to four times/month)	20.3	(1.2)	1.2	(0.2)	0.1	(0.1)	6.4	(0.7)
Rarely (less than one time/month)	11.6	(1.0)	2.8	(0.4)	0.7	(0.2)	8.5	(0.9)
Never	5.6	(0.7)	93.7	(0.6)	98.9	(0.3)	77.1	(1.1)
Total	100.0		100.0		100.0		100.0	

5. Possible contact with other animals at events

Animals that leave the operation and return represent another avenue for introducing disease agents. Overall, 5.4 percent of operations reported that any cattle left the operation to go to a show, fair, rodeo, or other event during the previous 12 months. A higher percentage of operations with more than 200 cows than operations with 1 to 49 cows reported that animals left the operation.

a. Percentage of operations in which any cattle left the operation* to attend a show, fair, rodeo, or other event during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
4.3	(0.7)	6.2	(1.4)	9.5	(1.9)	12.0	(1.8)	5.4	(0.6)

*Excluding cattle that left the operation to graze.

For operations in which any cattle left the operation during the previous 12 months to attend an event and then returned (5.4 percent of operations) the highest percentage of operations took cattle to a fair (57.6 percent) or to a show (50.6 percent).

b. For operations in which any cattle left the operation* during the previous 12 months to attend an event and then returned, percentage of operations by event type and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Event Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Show	52.7	(8.8)	48.7	(12.2)	46.0	(10.9)	48.0	(8.0)	50.6	(5.7)
Fair	53.7	(8.8)	64.6	(11.9)	67.5	(9.7)	54.7	(8.3)	57.6	(5.7)
Rodeo	9.1	(4.8)	5.7	(3.8)	5.1	(3.6)	9.3	(3.9)	8.0	(2.9)
Other	15.2	(6.4)	12.5	(7.6)	18.8	(8.5)	9.1	(5.8)	14.5	(4.1)
Any	90.7	(5.3)	96.8	(3.2)	94.8	(3.6)	83.8	(7.9)	91.5	(3.3)

*Excluding cattle that left the operation to graze.

For operations in which any cattle left the operation and then returned during the previous 12 months, over one-half of operations (54.0 percent) traveled less than 50 miles one way, while 38.4 percent traveled 100 or more miles one way. The percentages of operations by traveling distance were similar across herd sizes.

c. For operations in which any cattle left the operation and then returned during the previous 12 months, percentage of operations by maximum one-way distance traveled and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

Distance Traveled One Way (Miles)	**1-49**		**50-99**		**100-199**		**200 or More**		**All Operations**	
	Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1 to 14	35.2	(8.8)	16.2	(9.6)	8.8	(4.5)	21.0	(6.5)	26.4	(5.5)
15 to 49	23.8	(7.6)	36.4	(11.4)	29.5	(9.1)	30.5	(7.9)	27.6	(5.1)
50 to 99	8.2	(5.5)	4.3	(3.2)	9.2	(5.3)	8.2	(3.9)	7.6	(3.3)
100 to 199	20.3	(7.0)	2.8	(2.8)	22.5	(10.3)	12.4	(4.7)	16.5	(4.3)
200 or more	12.5	(6.2)	40.3	(12.7)	30.0	(10.9)	27.9	(7.0)	21.9	(4.8)
Total	100.0		100.0		100.0		100.0		100.0	

For operations in which any cattle left the operation and then returned during the previous 12 months, a higher percentage of operations in the Central region had cattle that traveled less than 50 miles one way (76.6 percent) compared with operations in the South Central region (16.3 percent). Conversely, a higher percentage of operations in the South Central region had cattle that traveled 100 or more miles one way compared with operations in the Central region (70.9 and 17.3 percent, respectively).

d. For operations in which any cattle left the operation and then returned during the previous 12 months, percentage of operations by maximum one-way distance cattle traveled and by region:

	Percent Operations							
	Region							
	West		Central		South Central		East	
Distance Traveled One Way (Miles)	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1 to 14	22.8	(16.1)	33.5	(8.6)	7.5	(6.4)	31.4	(11.1)
15 to 49	28.9	(15.1)	43.1	(8.3)	8.8	(6.5)	21.6	(9.8)
50 to 99	3.7	(2.4)	6.1	(2.7)	12.8	(11.6)	7.0	(5.8)
100 to 199	11.7	(6.3)	4.6	(3.3)	36.6	(13.8)	18.7	(8.0)
200 or more	32.9	(17.2)	12.7	(4.9)	34.3	(13.7)	21.3	(8.5)
Total	100.0		100.0		100.0		100.0	

6. Destination

For operations on which any cattle left the operation for an event and then returned during the previous 12 months, 79.0 percent of operations made from one to five trips within the State. Most operations did not make any trips to an out-of-State destination.

For operations in which any cattle left the operation and then returned during the previous 12 months, percentage of operations by destination and by number of trips taken:

	Percent Operations							
	Destination							
	Within State		Adjacent State		Beyond Adjacent State		Other	
Number Trips	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
0	3.1	(1.5)	89.7	(2.7)	91.3	(2.9)	97.4	(2.3)
1 to 5	79.0	(4.8)	8.9	(2.6)	8.0	(2.9)	2.4	(2.3)
6 to 9	12.3	(4.0)	1.2	(0.8)	0.5	(0.5)	0.0	(--)
10 or more	5.6	(2.8)	0.2	(0.2)	0.2	(0.2)	0.2	(0.2)
Total	100.0		100.0		100.0		100.0	

7. Isolation upon return

Isolating animals when they return from events is one method of mitigating some of the risk of introducing disease agents to the operation. For operations in which any cattle left the operation and then returned during the previous 12 months, over one-half (53.6 percent) routinely isolated cattle upon their return. One-third (33.1 percent) never isolated returning cattle.

a. For operations in which any cattle left the operation, had contact with other cattle, and then returned during the previous 12 months, percentage of operations by general practice for returning cattle, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Isolation Practice	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Routinely isolate after return to the operation	55.5	(9.0)	49.8	(12.1)	48.7	(11.1)	57.7	(7.8)	53.6	(5.8)
Routinely isolate before return to the operation	3.6	(3.6)	0.0	(--)	2.5	(2.5)	1.6	(1.1)	2.6	(2.0)
Only isolate for a specific reason (e.g., disease, known exposure to disease)	10.4	(5.8)	8.4	(6.8)	8.7	(5.1)	18.8	(6.6)	10.7	(3.6)
Never isolate returning cattle	30.5	(8.6)	41.8	(12.3)	40.1	(10.9)	21.9	(5.8)	33.1	(5.7)
Total	100.0		100.0		100.0		100.0		100.0	

For Operations in which Any Cattle Left the Operation, Had Contact with Outside Cattle, and then Returned During the Previous 12 Months, Percentage of Operations by General Practice for Returning Cattle

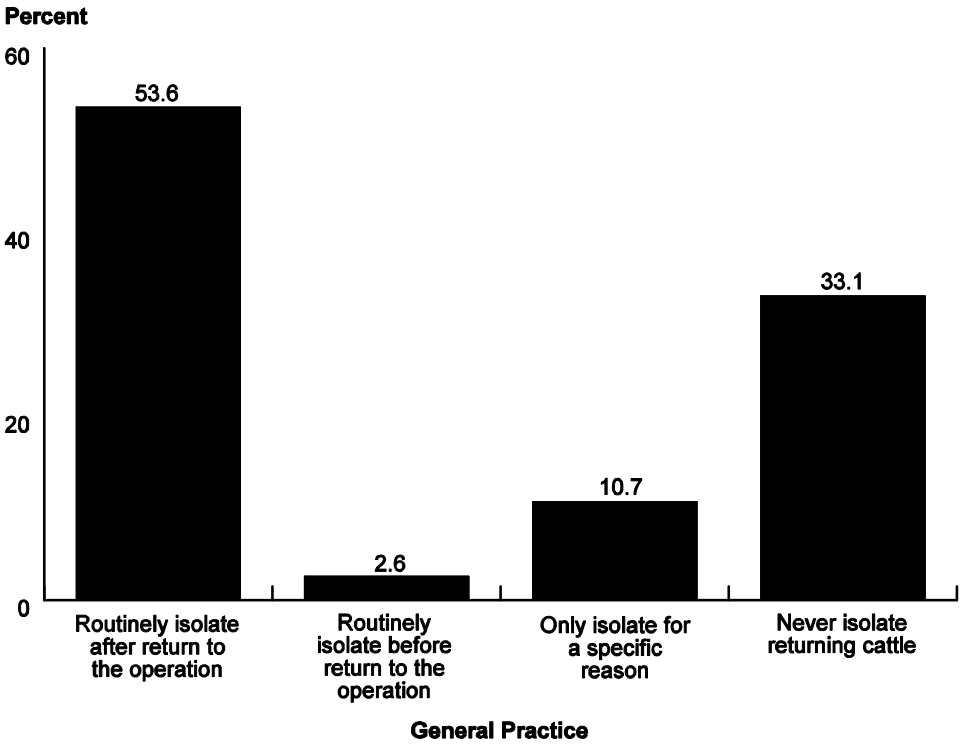


Photo courtesy of Dr. Dave Dargatz

8. Visits to the operation

The number of visits to an operation in an average month varied by herd size. A higher percentage of operations with 1 to 49 cows had no visits in an average month compared with operations with 100 or more cows. Over one-half of operations with 200 or more cows (51.4 percent) had 10 or more visits in a month, higher than all other operation sizes.

a. Percentage of operations by number of visits to the operation during an average month, including visits by employees, veterinarians, neighbors, nutritionists, commercial haulers, etc., and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Number of Visits/Month	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
0	20.5	(1.6)	13.2	(2.0)	10.0	(1.6)	8.8	(2.1)	17.9	(1.2)
1 to 2	24.8	(1.6)	26.5	(2.6)	25.9	(2.7)	15.1	(2.0)	24.7	(1.2)
3 to 5	21.5	(1.5)	20.7	(2.3)	20.5	(2.4)	18.1	(2.0)	21.1	(1.2)
6 to 9	7.1	(1.0)	6.8	(1.4)	5.0	(1.1)	6.6	(1.3)	6.9	(0.7)
10 or more	26.1	(1.6)	32.8	(2.8)	38.6	(2.8)	51.4	(2.7)	29.4	(1.3)
Total	100.0		100.0		100.0		100.0		100.0	

The number of visits to an operation in an average month varied by region. A higher percentage of operations in the South Central and East regions (24.9 and 18.8 percent, respectively) had no visits in an average month compared with operations in the West and Central regions (10.2 and 10.4 percent, respectively). A higher percentage of operations in the West region had 10 or more visits in a month (44.6 percent) compared with operations in the South Central and East regions (27.2 and 23.4 percent, respectively).

b. Percentage of operations by number of visits to the operation during an average month, including visits by employees, veterinarians, neighbors, nutritionists, commercial haulers, etc., by region:

Percent Operations

Region

	West		Central		South Central		East	
Number of Visits/Month	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
0	10.2	(2.7)	10.4	(1.7)	24.9	(2.6)	18.8	(1.9)
1 to 2	18.5	(3.0)	28.6	(2.4)	21.3	(2.4)	26.6	(2.1)
3 to 5	21.0	(3.5)	18.6	(2.1)	19.2	(2.3)	24.7	(2.0)
6 to 9	5.7	(1.6)	7.3	(1.4)	7.4	(1.5)	6.5	(1.2)
10 or more	44.6	(4.1)	35.1	(2.4)	27.2	(2.6)	23.4	(1.9)
Total	100.0		100.0		100.0		100.0	

Prohibiting visitors from having contact with animals on the operation is one method of decreasing the risk of introducing disease. Approximately one-third of visits in an average month (33.2 percent) involved contact with animals on the operation. Percentages were similar across herd sizes.

c. Of visits made to operations during an average month, percentage of visits that involved contact with animals on the operation, by herd size:

Percent Visits

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
31.8	(2.4)	39.4	(4.0)	34.7	(3.1)	31.8	(3.0)	33.2	(1.7)

The percentages of visits to an operation in an average month that involved contact with animals were similar across regions.

d. Of visits made to operations during an average month, percentage of visits that involved contact with animals on the operation, by region:

Percent Visits

Region

West		Central		South Central		East	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
32.3	(4.8)	30.9	(2.7)	36.8	(3.6)	32.0	(3.1)

9. Herd additions

The percentage of operations that imported any class of cattle during the previous 12 months increased as herd size increased, with just over 1 of 4 operations with 1 to 49 cows (27.6 percent) bringing cattle onto the operation and nearly 7 of 10 of operations with 200 or more cows (69.9 percent) bringing cattle onto the operation.

The percentage of operations that brought specific classes of cattle onto the operation during the previous 12 months varied with herd size for some classes of cattle. A higher percentage of operations with 100 or more cows brought bred beef heifers onto the operation than did operations with 1 to 49 cows. A higher percentage of operations with 200 or more cows brought pregnant beef cows onto the operation compared with operations with 1 to 49 cows (17.5 and 7.4 percent, respectively). A higher percentage of operations with 200 or more cows than operations with fewer than 100 cows brought weaned beef bulls onto the operation.

a. Percentage of operations that brought any cattle or calves onto the operation during the previous 12 months, by cattle class and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Cattle Class	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Unweaned beef calves with dam	2.9	(0.6)	3.2	(1.0)	7.7	(1.7)	4.2	(1.0)	3.4	(0.5)
Beef heifers weaned, but not bred	5.6	(0.9)	6.8	(1.4)	8.3	(1.6)	10.9	(1.5)	6.2	(0.7)
Bred beef heifers	2.4	(0.6)	4.8	(1.3)	8.1	(1.5)	7.9	(1.5)	3.5	(0.5)
Beef cows (pregnant)	7.4	(1.0)	12.6	(2.0)	13.9	(2.1)	17.5	(2.4)	9.2	(0.8)
Beef cows (not pregnant)	2.0	(0.5)	2.7	(1.0)	5.5	(1.5)	6.0	(1.3)	2.6	(0.4)
Weaned beef bulls	14.9	(1.3)	25.7	(2.5)	33.6	(2.7)	43.1	(2.6)	19.5	(1.0)
Weaned steers (all types)	2.9	(0.6)	2.8	(1.0)	4.3	(1.1)	4.9	(1.0)	3.1	(0.5)
Unweaned dairy calves	0.2	(0.1)	2.2	(1.2)	0.0	(--)	0.2	(0.2)	0.5	(0.2)
Weaned dairy heifers and cows	0.2	(0.1)	1.6	(0.9)	0.4	(0.3)	0.3	(0.2)	0.4	(0.2)
Weaned dairy bulls	0.6	(0.3)	0.0	(--)	0.0	(--)	0.5	(0.2)	0.4	(0.2)
Any	27.6	(1.6)	43.0	(2.8)	58.0	(2.9)	69.9	(2.3)	34.5	(1.3)

About one-half of operations in the West and Central regions (53.1 and 48.5 percent, respectively) brought any class of cattle onto the operation compared with about one-fourth of operations in the South Central or East regions (29.4 and 24.1 percent, respectively). The percentage of operations that brought specific classes of cattle onto the operation during the previous 12 months varied by region for some classes of cattle. In the Central region, a higher percentage of operations (7.4 percent) brought bred beef heifers onto the operation compared with other regions. A higher percentage of operations in the West and Central regions (32.8 and 29.8 percent, respectively) brought weaned beef bulls onto the operation compared with operations in the South Central or East regions (15.1 and 12.3 percent, respectively). In the West region, 7.6 percent of operations brought on weaned steers compared with only 1.3 percent of operations in the East region.

b. Percentage of operations that brought any cattle or calves onto the operation during the previous 12 months, by cattle class and by region:

	Percent Operations							
	Region							
	West		Central		South Central		East	
Cattle Class	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Unweaned beef calves with dam	5.1	(1.7)	5.2	(1.1)	3.4	(0.9)	1.6	(0.6)
Beef heifers weaned, but not bred	8.5	(2.4)	7.6	(1.2)	6.6	(1.4)	4.4	(1.0)
Bred beef heifers	2.4	(0.9)	7.4	(1.3)	1.6	(0.6)	2.8	(0.8)
Beef cows (pregnant)	11.6	(2.4)	11.6	(1.6)	8.9	(1.6)	7.2	(1.2)
Beef cows (not pregnant)	2.3	(1.1)	2.5	(0.8)	2.1	(0.6)	3.2	(0.8)
Weaned beef bulls	32.8	(3.7)	29.8	(2.1)	15.1	(2.0)	12.3	(1.4)
Weaned steers (all types)	7.6	(2.4)	3.4	(0.8)	3.6	(1.1)	1.3	(0.6)
Unweaned dairy calves	2.4	(1.7)	0.4	(0.3)	0.0	(0.0)	0.4	(0.3)
Weaned dairy heifers and cows	1.2	(1.0)	0.7	(0.4)	0.0	(0.0)	0.4	(0.3)
Weaned dairy bulls	0.9	(0.7)	1.0	(0.6)	0.0	(0.0)	0.2	(0.2)
Any	53.1	(3.9)	48.5	(2.5)	29.4	(2.6)	24.1	(1.9)

The number of new cattle brought onto an operation as a ratio to existing inventory is a measure of turnover or expansion of the herd. About 1 of 10 operations brought on fewer than 2 animals per 100 beef cows (fall inventory). This low rate of new additions to the herd was most common on operations with 200 or more cows, probably suggestive of internal replacement of culled animals instead of purchased replacements.

c. For operations that brought any cattle or calves onto the operation during the previous 12 months, percentage of operations by number of new cattle and calves relative to October 1, 2007, total beef cow inventory, and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Number of Cattle and Calves Brought On*	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Less than 0.02	0.0	(0.0)	17.5	(3.0)	28.7	(3.3)	40.3	(3.1)	11.4	(0.9)
0.02 to less than 0.05	13.7	(2.3)	20.6	(3.4)	17.4	(2.6)	8.9	(1.8)	15.0	(1.5)
0.05 to less than 0.25	43.6	(3.5)	34.7	(4.5)	29.7	(3.5)	27.0	(2.9)	38.3	(2.2)
0.25 to less than 1.0	28.5	(3.2)	20.1	(3.3)	14.9	(2.8)	17.4	(3.0)	24.0	(2.0)
1.0 or more	14.2	(2.5)	7.1	(2.5)	9.3	(2.0)	6.4	(1.5)	11.3	(1.5)
Total	100.0		100.0		100.0		100.0		100.0	

*Number of cattle and calves brought on divided by beef cow inventory.

Overall, operations brought on cattle and calves at approximately one-half (47.8 percent) of the beef cows in inventory.

d. Number of cattle and calves brought onto the operation during the previous 12 months as a percentage of October 1, 2007, total beef cow inventory, by herd size:

Percent Cattle and Calves

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
119.9	(82.0)	49.0	(13.3)	49.6	(13.6)	26.5	(3.5)	47.8	(12.2)

Nearly one-half of cattle brought on (49.9 percent) were weaned steers, followed by weaned but not bred beef heifers (15.5 percent) and pregnant beef cows (14.4 percent). Weaned steers accounted for a higher percentage of cattle and calves brought on operations with 1 to 49 cows (75.4 percent) compared with operations with 200 or more cows (28.7 percent).

e. For operations that brought any cattle or calves onto the operation during the previous 12 months, percentage of cattle and calves brought on, by cattle class and by herd size:

Percent Cattle and Calves

Herd Size (Number of Beef Cows)

Cattle Class	1-49		50-99		100-199		200 or More		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Unweaned beef calves with dam	3.8	(2.8)	14.8	(8.2)	8.7	(3.3)	8.8	(3.4)	8.0	(2.7)
Beef heifers weaned, but not bred	5.0	(3.7)	17.4	(7.3)	21.6	(8.5)	23.6	(4.2)	15.5	(4.6)
Bred beef heifers	1.7	(1.3)	4.9	(1.9)	3.9	(1.5)	6.7	(1.7)	4.0	(1.2)
Beef cows (pregnant)	8.3	(6.0)	18.2	(5.9)	10.8	(3.6)	23.3	(4.8)	14.4	(4.0)
Beef cows (not pregnant)	1.9	(1.4)	2.0	(1.0)	5.1	(2.2)	4.1	(1.1)	3.2	(1.0)
Weaned beef bulls	2.7	(1.9)	3.4	(1.0)	2.6	(0.8)	4.3	(1.1)	3.2	(0.9)
Weaned steers (all types)	75.4	(17.1)	32.7	(13.0)	46.8	(13.5)	28.7	(5.3)	49.9	(12.9)
Unweaned dairy calves	0.4	(0.4)	0.8	(0.6)	0.0	(0.0)	0.1	(0.1)	0.3	(0.2)
Weaned dairy heifers and cows	0.2	(0.2)	5.8	(5.1)	0.5	(0.5)	0.3	(0.3)	1.2	(0.9)
Weaned dairy bulls	0.6	(0.7)	0.0	(--)	0.0	(0.0)	0.1	(0.1)	0.3	(0.2)
Total	100.0		100.0		100.0		100.0		100.0	

For operations that brought any cattle or calves onto the operation during the previous 12 months, about one of three (34.8 percent) brought cattle or calves onto the operation from a sale barn or auction. Most operations (70.3 percent) brought cattle or calves directly from another beef operation.

f. For operations that brought any cattle or calves onto the operation during the previous 12 months, percentage of operations by source of cattle calves and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Source	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Sale barn/auction	30.2	(3.2)	39.8	(4.4)	43.0	(3.7)	40.7	(3.4)	34.8	(2.1)
Directly from another beef operation	75.0	(3.0)	62.5	(4.3)	62.4	(3.6)	68.7	(3.1)	70.3	(2.0)
Directly from a dairy operation	3.7	(1.3)	8.4	(3.2)	0.6	(0.4)	0.4	(0.3)	3.8	(1.0)
Other	3.8	(1.4)	5.8	(2.2)	2.2	(1.0)	1.2	(0.8)	3.7	(0.9)

For operations that brought any cattle or calves onto the operation during the previous 12 months, a higher percentage of operations in the Central region brought cattle or calves onto the operation from a sale barn or auction market compared with operations in the West region (39.8 and 23.2 percent, respectively).

g. For operations that brought any cattle or calves onto the operation during the previous 12 months, percentage of operations by source of cattle and calves and by region:

Percent Operations

Region

Source	West Pct.	West Std. Error	Central Pct.	Central Std. Error	South Central Pct.	South Central Std. Error	East Pct.	East Std. Error
Sale barn/auction	23.2	(4.3)	39.8	(3.3)	35.6	(4.9)	33.5	(4.2)
Directly from another beef operation	76.6	(4.4)	69.3	(3.0)	68.5	(4.8)	70.1	(4.0)
Directly from a dairy operation	6.4	(3.4)	3.6	(1.5)	3.2	(1.9)	3.4	(1.9)
Other	4.9	(2.6)	2.6	(1.2)	4.2	(2.0)	4.1	(2.0)

There were no consistent patterns noted in the percentage of cattle and calves brought onto the operation by source or by herd size.

h. For operations that brought any cattle or calves onto the operation during the previous 12 months, percentage of cattle and calves by source and by herd size:

Percent Cattle and Calves

Herd Size (Number of Beef Cows)

Source	1-49 Pct.	1-49 Std. Error	50-99 Pct.	50-99 Std. Error	100-199 Pct.	100-199 Std. Error	200 or More Pct.	200 or More Std. Error	All Operations Pct.	All Operations Std. Error
Sale barn/auction	14.5	(10.3)	57.0	(13.0)	69.6	(10.0)	46.4	(7.4)	41.7	(11.3)
Directly from another beef operation	13.9	(9.8)	33.5	(12.0)	24.2	(8.1)	52.8	(7.4)	29.6	(8.1)
Directly from a dairy operation	2.1	(1.8)	6.6	(5.1)	0.5	(0.5)	0.5	(0.4)	2.1	(1.1)
Other	69.5	(21.3)	2.9	(2.4)	5.7	(5.0)	0.3	(0.2)	26.6	(18.3)
Total	100.0		100.0		100.0		100.0		100.0	

There were no consistent patterns noted in the percentage of animals brought onto the operation by source or by region.

i. For operations that brought any cattle or calves onto the operation during the previous 12 months, percentage of cattle and calves by source and by region:

	Percent Cattle and Calves							
	Region							
	West		Central		South Central		East	
Source	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Sale barn/auction	27.6	(8.6)	67.4	(7.8)	24.3	(16.3)	45.7	(7.1)
Directly from another beef operation	69.9	(8.7)	28.3	(7.2)	11.9	(7.7)	40.3	(6.4)
Directly from a dairy operation	0.9	(0.5)	1.0	(0.6)	0.5	(0.5)	13.7	(8.0)
Other	1.6	(1.0)	3.3	(3.1)	63.3	(23.4)	0.3	(0.2)
Total	100.0		100.0		100.0		100.0	

For operations that brought any cattle or calves onto the operation during the previous 12 months, more than 8 of 10 operations (80.8 percent) reported that arriving shipments traveled less than 100 miles to the operation.

j. For operations that brought any cattle or calves onto the operation during the previous 12 months, percentage of shipments by average distance traveled* from the source to the operation, and by herd size:

Percent Shipments

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Distance	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1 to 9	16.1	(3.6)	12.6	(4.0)	6.5	(1.5)	3.2	(1.0)	11.8	(1.8)
10 to 49	44.2	(7.8)	33.0	(8.7)	48.4	(5.6)	44.3	(8.5)	42.4	(4.5)
50 to 99	29.4	(11.3)	24.9	(11.0)	14.7	(3.2)	30.5	(8.8)	26.6	(6.2)
100 or more	10.3	(2.7)	29.5	(9.7)	30.4	(5.9)	22.0	(4.2)	19.2	(3.1)
Total	100.0		100.0		100.0		100.0		100.0	

*Average distance traveled per shipment from source.

For operations that brought any cattle or calves onto the operation during the previous 12 months, a lower percentage of operations in the East region (9.7 percent) reported that arriving shipments traveled 100 miles or more compared with the West region (26.4 percent).

k. For operations that brought any cattle or calves onto the operation during the previous 12 months, percentage of shipments by average distance traveled* from the source to the operation, by region:

Percent Shipments

Region

	West		Central		South Central		East	
Distance	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1 to 9	16.1	(5.6)	10.1	(1.8)	7.5	(2.9)	17.2	(4.4)
10 to 49	44.7	(6.8)	51.5	(5.0)	32.6	(9.4)	40.5	(8.5)
50 to 99	12.8	(3.2)	19.0	(4.2)	36.2	(16.5)	32.6	(9.4)
100 or more	26.4	(5.1)	19.4	(3.6)	23.7	(9.5)	9.7	(2.8)
Total	100.0		100.0		100.0		100.0	

*Average distance traveled per shipment from source.

For operations that brought any cattle or calves onto the operation during the previous 12 months, operations with 100 or more cows on average received more shipments of cattle and calves from a sale barn or auction market than operations with 1 to 49 cows.

l. For operations that brought any cattle or calves onto the operation during the previous 12 months, average number of shipments per operation, by source and by herd size:

Average Number of Shipments

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Source	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
Sale barn/auction	0.6	(0.1)	1.3	(0.4)	1.5	(0.3)	2.9	(0.7)	1.1	(0.1)
Directly from another beef operation	1.4	(0.3)	1.1	(0.1)	1.2	(0.2)	1.5	(0.1)	1.3	(0.2)
Directly from a dairy operation	0.1	(0.1)	0.5	(0.4)	0.0	(0.0)	0.0	(0.0)	0.2	(0.1)
Other	0.1	(0.0)	0.1	(0.0)	0.1	(0.0)	0.0	(0.0)	0.1	(0.0)
All sources	2.2	(0.3)	3.0	(0.6)	2.8	(0.3)	4.4	(0.7)	2.7	(0.2)

The number of shipments received was similar across regions. Overall, operations received a low number of shipments, with most shipments coming either directly from another beef operation or from a sale barn or auction market.

m. For operations that brought any cattle or calves onto the operation during the previous 12 months, average number of shipments per operation, by source and by region:

	Average Number							
	Region							
	West		Central		South Central		East	
Source	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
Sale barn/auction	0.7	(0.2)	1.2	(0.2)	1.1	(0.3)	1.1	(0.2)
Directly from another beef operation	1.3	(0.1)	1.1	(0.1)	1.8	(0.7)	1.1	(0.1)
Directly from a dairy operation	0.2	(0.1)	0.2	(0.1)	0.0	(0.0)	0.4	(0.4)
Other	0.1	(0.1)	0.0	(0.0)	0.1	(0.1)	0.0	(0.0)
All sources	2.3	(0.3)	2.5	(0.2)	3.0	(0.8)	2.6	(0.5)

Photo courtesy of Judy Rodriguez

Isolating new additions is one way to decrease the risk of introducing new disease agents to the herd. Ideally, new additions are monitored for signs of disease while in isolation. Should disease occur in isolated new additions, the nature of the disease and its potential threat to the existing herd should be determined. For operations that brought cattle onto the operation during the previous 12 months, most quarantined either all or none of the incoming cattle. In each cattle class, the majority of operations did not quarantine any of the cattle. Almost one-half of operations (46.5 percent) quarantined all bred beef heifers brought onto the operation.

n. For operations that brought any of the following classes of cattle or calves onto the operation during the previous 12 months, percentage of operations that quarantined or separated all, some, or none of the new cattle or calves:

	Percent Operations						
	Level of Quarantine						
	All		Some		None		
Cattle Class	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Unweaned beef calves with dam	33.6	(6.8)	6.3	(3.8)	60.1	(7.1)	100.0
Beef heifers weaned, but not bred	35.0	(5.1)	2.5	(1.6)	62.5	(5.2)	100.0
Bred beef heifers	46.5	(6.7)	2.7	(2.0)	50.8	(6.7)	100.0
Beef cows (pregnant)	30.0	(3.9)	2.0	(1.1)	68.0	(4.0)	100.0
Beef cows (not pregnant)	23.4	(6.3)	1.6	(1.0)	75.0	(6.4)	100.0
Weaned beef bulls	30.0	(2.6)	0.8	(0.4)	69.2	(2.6)	100.0
Weaned steers (all types)	33.5	(7.6)	0.0	(--)	66.5	(7.6)	100.0
Unweaned dairy calves	25.9	(18.0)	0.0	(--)	74.1	(18.0)	100.0
Weaned dairy heifers and cows	2.6	(2.4)	0.0	(--)	97.4	(2.4)	100.0
Weaned dairy bulls	2.3	(1.9)	0.0	(--)	97.7	(1.9)	100.0
All cattle and calves	28.0	(1.9)	5.7	(1.0)	66.3	(2.0)	100.0

Of the cattle and calves brought onto the operation, more than one-half (56.7 percent) were quarantined or separated. Over one-half of bred beef heifers (53.2 percent) were quarantined or kept separate. Only 3 of 10 bred cows (31.3 percent) were kept separate or quarantined.

o. Percentage of cattle or calves brought on to the operation that were quarantined or separated upon arrival, by cattle class:

Cattle Class	Percent Cattle and Calves	Standard Error
Unweaned beef calves with dam	33.4	(10.4)
Beef heifers weaned, but not bred	38.3	(9.0)
Bred beef heifers	53.2	(7.1)
Beef cows (pregnant)	30.9	(5.4)
Beef cows (not pregnant)	31.3	(9.2)
Weaned beef bulls	40.8	(5.5)
Weaned steers (all types)	78.0	(11.9)
Unweaned dairy calves	66.5	(19.5)
Weaned dairy heifers and cows	0.9	(0.9)
Weaned dairy bulls	10.1	(11.2)
All cattle and calves	56.7	(11.5)

Ideally, quarantine periods should be long enough to allow recently infected animals to begin to show signs of disease and be detected as infected before introducing them to the herd. For operations that quarantined cattle, more than two of three operations quarantined newly arriving beef animals for 40 or fewer days.

p. For operations that brought any of the following classes of cattle onto the operation during the previous 12 months, percentage of operations by days cattle and calves were quarantined or separated:

	Percent Operations								
	Days Quarantined								
	1-20		21-40		41-149		150 or More		
Cattle Class	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Unweaned beef calves with dam	73.3	(9.4)	13.7	(6.8)	10.5	(6.8)	2.5	(2.2)	100.0
Beef heifers weaned, but not bred	38.6	(8.3)	36.9	(8.1)	18.7	(6.3)	5.8	(4.7)	100.0
Bred beef heifers	36.6	(9.8)	30.7	(8.4)	29.0	(8.7)	3.7	(1.8)	100.0
Beef cows (pregnant)	51.4	(7.4)	27.9	(6.7)	18.3	(5.7)	2.4	(1.4)	100.0
Beef cows (not pregnant)	73.5	(11.3)	20.6	(10.9)	5.9	(3.5)	0.0	(--)	100.0
Weaned beef bulls	44.2	(5.0)	37.0	(4.6)	18.0	(3.6)	0.8	(0.4)	100.0
Weaned steers (all types)	58.2	(13.2)	17.0	(9.6)	13.6	(6.4)	11.2	(10.0)	100.0
Unweaned dairy calves	*		*		*		*		
Weaned dairy heifers and cows	*		*		*		*		
Weaned dairy bulls	*		*		*		*		
All classes	47.4	(3.6)	28.9	(3.1)	21.0	(2.8)	2.7	(1.1)	100.0

*Too few to report.

For operations that quarantined or separated cattle, beef heifers (weaned and bred) were quarantined for almost 50 days on average.

q. For operations that quarantined or separated any of the following classes of cattle, operation average and animal average days that cattle and calves were quarantined or separated:

Cattle Class	Operation Average Days	Standard Error
Unweaned beef calves with dam	22.1	(5.2)
Beef heifers weaned, but not bred	47.9	(16.3)
Bred beef heifers	49.3	(9.4)
Beef cows (pregnant)	32.9	(7.3)
Beef cows (not pregnant)	16.2	(3.2)
Weaned beef bulls	28.0	(2.3)
Weaned steers (all types)	61.4	(34.7)
Unweaned dairy calves	*	
Weaned dairy heifers and cows	*	
Weaned dairy bulls	*	
All cattle and calves	35.6	(4.2)

*Too few to report.

For most classes of cattle, shipments were not commonly received across State lines.

r. For operations that received shipments of cattle or calves during the previous 12 months, percentage of operations that received cattle or calves from across State lines, by cattle class:

Cattle Class	Percent Operations	Standard Error
Unweaned beef calves with dam	9.3	(4.0)
Beef heifers weaned, but not bred	15.0	(3.3)
Bred beef heifers	13.4	(4.0)
Beef cows (pregnant)	10.3	(2.0)
Beef cows (not pregnant)	9.0	(3.9)
Weaned beef bulls	12.8	(1.8)
Weaned steers (all types)	18.1	(5.8)
Weaned dairy calves	*	
Weaned dairy heifers and cows	*	
Weaned dairy bulls	*	
All cattle and calves	14.0	(1.4)

*Too few to report.

E. Cattle Movement

1. Cattle permanently leaving the operation

Most operations (87.6 percent) had cattle and calves that permanently left the operation. Nearly 6 of 10 operations (59.1 percent) had weaned but not yet bred beef heifers that left the operation permanently. Weaned steers left the operation permanently on more than 4 of 10 operations (45.2 percent). Nearly 3 of 10 operations had beef cows (not pregnant) and beef bulls permanently leave (31.9 and 34.5 percent, respectively). The percentage of operations in which any cattle permanently left the operation varied by herd size for some classes of cattle. Operations with 1 to 49 cows had the lowest percentages of operations in which any weaned but not yet bred beef heifers, beef cows (not pregnant), weaned steers, and all classes of cattle permanently left the operation. A higher percentage of operations with 100 or more cows had beef cows (not pregnant) permanently leave the operation compared with operations with fewer than 100 cows, and a higher percentage of operations with 200 or more cows (77.7 percent) had weaned steers permanently leavethe operation compared with all other herd sizes.

a. Percentage of operations in which any cattle or calves permanently left the operation during the previous 12 months, by cattle class and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Cattle Class	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Unweaned beef calves with dam	13.1	(1.3)	10.6	(1.7)	13.2	(2.1)	11.4	(1.6)	12.6	(1.0)
Beef heifers weaned but not bred	53.9	(1.9)	69.6	(2.7)	75.0	(2.7)	76.3	(2.4)	59.1	(1.4)
Bred beef heifers	3.6	(0.7)	3.2	(0.9)	4.6	(1.1)	9.1	(2.0)	3.9	(0.6)
Beef cows (pregnant)	9.5	(1.1)	10.0	(1.5)	11.9	(1.8)	18.9	(2.1)	10.2	(0.8)
Beef cows (not pregnant)	25.7	(1.6)	41.1	(2.8)	52.8	(2.9)	57.9	(2.6)	31.9	(1.3)
Weaned beef bulls	35.4	(1.8)	34.4	(2.7)	29.3	(2.6)	30.3	(2.3)	34.5	(1.4)
Weaned steers (all types)	37.2	(1.7)	59.7	(2.8)	67.9	(2.8)	77.7	(2.1)	45.2	(1.3)
Unweaned dairy calves	0.6	(0.3)	0.3	(0.3)	0.0	(--)	0.6	(0.4)	0.5	(0.2)
Weaned dairy heifers and cows	1.1	(0.4)	1.6	(0.9)	0.9	(0.7)	0.7	(0.4)	1.2	(0.3)
Weaned dairy bulls	0.2	(0.1)	1.1	(0.9)	1.2	(0.7)	0.1	(0.1)	0.4	(0.2)
All cattle and calves	84.9	(1.4)	94.1	(1.3)	94.0	(1.8)	95.4	(1.2)	87.6	(1.0)

The percentage of operations in which any cattle or calves permanently left the operation varied by region for some classes of cattle. Operations in the South Central and East regions reported a lower percentage of beef cows (not pregnant) and weaned steers that permanently left the operation compared with operations in the West and Central regions.

b. Percentage of operations in which any cattle or calves permanently left the operation during the previous 12 months, by cattle class and by region:

Percent Operations

	Region							
	West		Central		South Central		East	
Cattle Class	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Unweaned beef calves with dam	10.2	(2.2)	6.6	(1.3)	16.5	(2.2)	14.2	(1.6)
Beef heifers weaned, but not bred	62.2	(4.0)	67.9	(2.5)	51.7	(2.9)	58.6	(2.3)
Bred beef heifers	4.1	(1.5)	4.0	(1.0)	3.7	(1.2)	4.0	(0.9)
Beef cows (pregnant)	11.0	(2.2)	9.9	(1.4)	9.5	(1.7)	10.9	(1.4)
Beef cows (not pregnant)	43.2	(3.7)	43.1	(2.5)	23.9	(2.4)	27.8	(2.1)
Weaned beef bulls	29.7	(3.6)	26.1	(2.2)	37.5	(2.9)	39.2	(2.3)
Weaned steers (all types)	69.3	(3.9)	67.6	(2.5)	33.5	(2.6)	33.0	(2.1)
Unweaned dairy calves	1.4	(1.4)	0.4	(0.3)	0.5	(0.4)	0.4	(0.3)
Weaned dairy heifers and cows	1.4	(1.4)	1.8	(0.8)	0.6	(0.4)	1.2	(0.5)
Weaned dairy bulls	1.7	(1.5)	0.0	(0.0)	0.2	(0.1)	0.5	(0.3)
All cattle and calves	84.8	(3.3)	92.2	(1.5)	83.4	(2.3)	88.7	(1.5)

The ratio of the number of animals permanently leaving the operation to the number of beef cows in inventory gives some indication of animal population turnover. The highest percentage of operations (43.4 percent) had between 0.5 and 1.0 animals leave the operation per beef cow in inventory. One in four operations had at least as many animals leave the operation as there were beef cows in inventory on October 1, 2007. There were few differences in the turnover ratio across operations of different sizes.

c. For operations in which any cattle or calves permanently left the operation during the previous 12 months, percentage of operations by number of new cattle or calves relative to October 1, 2007, beef cow inventory and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Number Cattle and Calves Removed*	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Less than 0.05	15.8	(1.4)	7.4	(1.5)	6.5	(1.8)	5.9	(1.3)	13.2	(1.0)
0.05 to less than 0.5	18.9	(1.5)	20.7	(2.5)	14.9	(2.1)	9.3	(1.4)	18.4	(1.1)
0.5 to to less than 1.0	39.8	(1.8)	52.4	(2.9)	49.9	(2.9)	56.3	(2.7)	43.4	(1.4)
1.0 or more	25.5	(1.6)	19.5	(2.1)	28.7	(2.5)	28.5	(2.5)	25.0	(1.2)
Total	100.0		100.0		100.0		100.0		100.0	

*Number of cattle and calves removed divided by beef cow inventory.

Overall, nearly as many cattle and calves left beef cattle operations as there were cows in inventory. This was true regardless of herd size.

d. Number of cattle and calves that left the operation during the previous 12 months as a percentage of October 1, 2007, beef cow inventory, by herd size:

Percent Cattle/Calves

Herd Size (Number of Beef Cows)

1-49		50-99		100-199		200 or More		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
100.0	(15.1)	87.2	(6.6)	95.8	(8.1)	89.6	(2.7)	92.9	(4.4)

For operations in which any cattle or calves permanently left the operation, weaned steers accounted for 40.0 percent of all cattle and calves that permanently left the operation, followed by weaned but not bred heifers (30.9 percent). Operations with 200 or more cows reported a lower percentage of weaned beef bulls that permanently left the operation compared with operations with fewer than 100 cows.

e. For operations in which any cattle and calves permanently left the operation during the previous 12 months, percentage of cattle and calves that left, by cattle class and by herd size:

Percent Cattle/Calves

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Cattle Class	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Unweaned beef calves with dam	11.6	(2.9)	8.1	(1.6)	7.9	(1.6)	6.5	(1.3)	8.4	(1.1)
Beef heifers weaned, but not bred	25.2	(4.0)	33.6	(2.2)	32.6	(3.4)	33.1	(1.3)	30.9	(1.6)
Bred beef heifers	1.1	(0.3)	1.2	(0.4)	1.5	(0.5)	2.2	(0.6)	1.6	(0.3)
Beef cows (pregnant)	3.5	(0.8)	3.2	(1.1)	2.0	(0.4)	3.3	(0.6)	3.1	(0.4)
Beef cows (not pregnant)	7.5	(1.4)	6.1	(0.8)	6.2	(0.8)	7.7	(0.6)	7.1	(0.5)
Weaned beef bulls	10.5	(1.7)	8.1	(1.1)	4.7	(0.8)	3.0	(0.5)	6.3	(0.5)
Weaned steers (all types)	34.0	(5.5)	37.5	(3.2)	44.5	(4.7)	43.6	(1.3)	40.0	(1.8)
Unweaned dairy calves	*		*		*		*		*	
Weaned dairy heifers and cows	*		*		*		*		*	
Weaned dairy bulls	*		*		*		*		*	
Total	100.0		100.0		100.0		100.0		100.0	

*Too few to report.

For operations in which any cattle or calves permanently left the operation, about 9 of 10 operations (90.0 percent) sent cattle to a sale barn or auction market. The percentage of operations that reported specific destinations for cows that permanently left the operation varied across herd size for some destinations. A lower percentage of operations with 200 or more cows than operations with fewer than 100 cows sent cattle to a sale barn or auction market. A higher percentage of operations with 200 or more cows sent cattle directly to slaughter compared with operations with fewer than 100 cows, and a higher percentage of operations with 200 or more cows sent cattle directly to another beef operation compared with operations for all other herd sizes. The percentage of operations that sent cattle directly to a feedlot increased as herd size increased.

f. For operations in which any cattle and calves permanently left the operation during the previous 12 months, percentage of operations by destination and by herd size:

Percent Operations

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Destination	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Directly to slaughter	5.6	(0.9)	5.6	(1.4)	9.8	(1.7)	13.1	(1.9)	6.4	(0.7)
Sales/auction	90.3	(1.2)	93.2	(1.5)	88.7	(1.8)	79.0	(2.0)	90.0	(0.9)
Feedlot	2.0	(0.5)	5.8	(1.3)	12.5	(1.9)	30.1	(2.5)	5.1	(0.5)
Directly to another beef operation	10.7	(1.2)	8.8	(1.7)	13.4	(2.2)	22.5	(2.1)	11.2	(0.9)
Directly to a dairy operation	0.1	(0.1)	1.7	(1.2)	0.0	(--)	0.0	(--)	0.3	(0.2)
Other	2.6	(0.7)	1.6	(0.7)	0.8	(0.4)	2.7	(0.7)	2.3	(0.5)

The percentage of operations that reported specific destinations for cattle and calves that permanently left the operation varied regionally for some destinations. A higher percentage of operations in the West and Central regions sent cattle and calves directly to slaughter (11.4 and 11.1 percent, respectively) compared with operations in the South Central and East regions (2.9 and 4.4 percent, respectively). A higher percentage of operations in the West region sent cattle and calves directly to a feedlot or another beef operation compared with operations in all other regions.

g. For operations in which any cattle and calves permanently left the operation during the previous 12 months, percentage of operations by destination and by region:

	Percent Operations							
	Region							
	West		Central		South Central		East	
Destination	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Directly to slaughter	11.4	(2.9)	11.1	(1.6)	2.9	(0.9)	4.4	(1.0)
Sales/auction	84.2	(2.9)	89.9	(1.7)	92.8	(1.5)	89.3	(1.5)
Feedlot	21.4	(2.9)	5.2	(0.9)	2.9	(0.8)	2.8	(0.6)
Directly to another beef operation	20.4	(3.1)	10.7	(1.6)	10.2	(1.9)	10.2	(1.5)
Directly to a dairy operation	1.7	(1.7)	0.0	(--)	0.0	(--)	0.5	(0.4)
Other	4.0	(1.8)	1.8	(0.8)	2.0	(0.9)	2.4	(0.8)

The percentage of cattle and calves sent to specific destinations varied by herd size for some destinations. Overall, nearly two-thirds (62.5 percent) of all cattle and calves that left over the year's time went to a sales or auction market. A higher percentage of cattle and calves on operations with 1 to 49 cows (73.5 percent) were sent to sales or auction markets, compared with cattle and calves on operations with 200 or more cows (45.3 percent). A higher percentage of cattle and calves from operations with 200 or more cows were sent directly to a feedlot than were cattle and calves from operations of all other herd sizes. A higher percentage of cattle and calves from operations with 100 to 199 cows (15.1 percent) were sent directly to a feedlot than were cattle and calves from operations with 1 to 49 cows (3.3 percent). A higher percentage of cattle and calves from operations with 200 or more cows (15.8 percent) were sent directly to another beef operation than were cattle and calves from operations with 50 to 99 and 100 to 199 cows (6.3 and 6.6 percent, respectively).

h. For operations in which any cattle or calves permanently left the operation during the previous 12 months, percentage of cattle and calves by destination and by herd size:

Percent Cattle/Calves

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Destination	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Directly to slaughter	3.5	(1.5)	2.9	(1.6)	11.7	(6.7)	6.5	(2.1)	6.0	(1.6)
Sales/auction	73.5	(7.0)	76.2	(4.8)	66.3	(5.8)	45.3	(2.6)	62.5	(2.2)
Feedlot	3.3	(1.5)	10.8	(4.5)	15.1	(3.5)	30.8	(2.6)	16.8	(1.6)
Directly to another beef operation	14.5	(7.8)	6.3	(2.3)	6.6	(1.5)	15.8	(1.9)	12.0	(2.4)
Directly to a dairy operation	0.1	(0.1)	1.6	(1.5)	0.0	(0.0)	0.0	(0.0)	0.3	(0.3)
Other	5.1	(4.4)	2.2	(2.0)	0.3	(0.2)	1.6	(0.5)	2.4	(1.3)
Total	100.0		100.0		100.0		100.0		100.0	

The percentage of cattle and calves sent to specific destinations varied by region for some destinations. A higher percentage of cattle and calves from the Central region were sent directly to slaughter than from other regions. Compared with the other regions, the West region had a lower percentage of cattle and calves sent to a sales or auction market and a higher percentage of cattle and calves sent directly to a feedlot. The West region also had a higher percentage of cattle and calves sent directly to another beef operation (18.9 percent) compared with operations in the Central and East regions (7.2 and 7.2 percent, respectively).

i. For operations in which any cattle or calves permanently left the operation during the previous 12 months, percentage of cattle and calves by destination and by region:

Percent Cattle/Calves

Region

	West		Central		South Central		East	
Destination	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Directly to slaughter	2.1	(0.6)	12.8	(4.2)	2.0	(0.6)	3.0	(0.7)
Sales/auction	36.0	(3.2)	67.7	(3.8)	64.5	(6.4)	76.8	(2.3)
Feedlot	33.1	(4.2)	12.2	(2.2)	14.9	(4.5)	10.9	(1.8)
Directly to another beef operation	18.9	(3.4)	7.2	(1.3)	17.6	(8.5)	7.2	(1.0)
Directly to a dairy operation	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	1.4	(1.3)
Other	9.9	(5.9)	0.1	(0.0)	1.0	(0.4)	0.7	(0.3)
Total	100.0		100.0		100.0		100.0	

Over one-half of shipments (56.7 percent) were for distances of 10 to 49 miles. More than one of three shipments (34.7 percent) were for 50 miles or more.

j. For operations on which any cattle or calves permanently left the operation during the previous 12 months, percentage of shipments by average distance traveled from the operation to the destination, and by herd size:

Percent Shipments

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Distance (Miles)	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1 to 9	9.6	(1.9)	10.5	(2.3)	5.9	(1.8)	2.5	(0.6)	8.6	(1.1)
10 to 49	56.0	(8.4)	64.3	(3.5)	56.4	(4.5)	46.6	(3.4)	56.7	(5.0)
50 to 99	16.4	(3.1)	17.0	(2.7)	18.0	(3.7)	19.6	(2.4)	17.0	(2.0)
100 or more	18.0	(11.9)	8.2	(1.8)	19.7	(4.1)	31.3	(3.2)	17.7	(7.0)
Total	100.0		100.0		100.0		100.0		100.0	

Shipments from the West region were for longer distances than shipments from the other regions, with nearly two-thirds of the shipments (65.3 percent) being for 100 or more miles.

k. For operations in which any cattle or calves permanently left the operation during the previous 12 months, percentage of shipments by average distance traveled from the operation to the destination, and by region:

Percent Shipments

Region

	West		Central		South Central		East	
Distance (Miles)	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
1 to 9	2.6	(1.5)	8.5	(1.7)	10.1	(2.0)	10.7	(1.7)
10 to 49	20.2	(10.4)	59.2	(2.8)	66.5	(3.2)	65.9	(3.2)
50 to 99	11.9	(6.3)	20.0	(2.5)	16.1	(2.5)	17.9	(2.9)
100 or more	65.3	(17.7)	12.3	(2.0)	7.3	(1.5)	5.5	(1.6)
Total	100.0		100.0		100.0		100.0	

On average, 3.4 shipments were made to sales or auction markets and 4.5 shipments were made to all destinations.

l. For operations in which any cattle or calves permanently left the operation during the previous 12 months, average number of shipments per operation, by destination and by herd size:

Average Number of Shipments

Herd Size (Number of Beef Cows)

	1-49		50-99		100-199		200 or More		All Operations	
Destination	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
Directly to slaughter	0.1	(0.0)	0.1	(0.0)	0.5	(0.3)	0.7	(0.2)	0.2	(0.0)
Sales/auction	2.8	(0.1)	4.4	(0.2)	5.1	(0.3)	4.6	(0.3)	3.4	(0.1)
Feedlot	0.1	(0.0)	0.2	(0.0)	0.6	(0.3)	1.2	(0.2)	0.2	(0.0)
Directly to another beef operation	0.2	(0.0)	0.4	(0.1)	0.8	(0.3)	1.2	(0.2)	0.3	(0.0)
Directly to a dairy operation	0.0	(0.0)	0.0	(0.0)	0.0	(--)	0.0	(--)	0.0	(0.0)
Other	0.6	(0.5)	0.1	(0.1)	0.0	(0.0)	0.2	(0.2)	0.4	(0.4)
All shipments	3.8	(0.5)	5.2	(0.3)	7.0	(0.5)	7.9	(0.4)	4.5	(0.4)

The number of shipments of cattle and calves sent to specific destinations varied by region for some destinations. Operations in the Central region reported a higher number of shipments directly to slaughter (0.4 shipments) compared with operations in the South Central and East regions (0.1 shipments for both regions). Operations in the West region reported a higher number of shipments to feedlots compared with operations in the South Central region. Operations in the West region reported a higher number of shipments directly to another beef operation (0.7 shipments) compared with operations in the South Central or East regions (0.2 shipments for both regions). Operations that reported “other” for the destination most commonly did not specify an alternate destination.

m. For operations in which any cattle or calves permanently left the operation during the previous 12 months, average number of shipments per operation, by destination and by region:

Average Number of Shipments

Region

	West		Central		South Central		East	
Destination	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
Directly to slaughter	0.2	(0.0)	0.4	(0.1)	0.1	(0.0)	0.1	(0.0)
Sales/auction	2.8	(0.2)	3.4	(0.1)	3.3	(0.2)	3.5	(0.2)
Feedlot	0.5	(0.1)	0.2	(0.0)	0.1	(0.0)	0.2	(0.1)
Directly to another beef operation	0.7	(0.1)	0.5	(0.1)	0.2	(0.0)	0.2	(0.1)
Directly to a dairy operation	0.0	(0.0)	0.0	(--)	0.0	(--)	0.0	(0.0)
Other	4.2	(4.0)	0.0	(0.0)	0.1	(0.0)	0.1	(0.0)
All shipments	8.4	(4.1)	4.5	(0.2)	3.8	(0.2)	4.1	(0.2)

Only 1 of 10 operations (10.4 percent) sent any class of cattle or calves that permanently left the operation across State lines.

n. For operations in which any cattle or calves permanently left the operation during the previous 12 months, percentage of operations that sent cattle or calves across State lines, by cattle class:

Cattle Class	Percent Operations	Standard Error
Unweaned beef calves with dam	6.3	(1.8)
Beef heifers weaned, but not bred	9.3	(0.9)
Bred beef heifers	8.2	(2.4)
Beef cows (pregnant)	10.6	(2.6)
Beef cows (not pregnant)	6.8	(1.1)
Weaned beef bulls	7.3	(1.2)
Weaned steers (all types)	11.4	(1.1)
Unweaned dairy calves	1.3	(1.4)
Weaned dairy heifers and cows	11.8	(9.5)
Weaned dairy bulls	0.0	(--)
Any class	10.4	(0.8)

Section II: Methodology

A. Needs Assessment

The National Animal Health Monitoring System (NAHMS) develops study objectives by exploring existing literature and contacting stakeholders about their informational needs and priorities during a needs assessment phase. Stakeholders for NAHMS studies include industry members, allied industry representatives, other government agencies, animal health officials, and many others. The objective of the needs assessment for the NAHMS Beef 2007-08 study was to collect information about the most important health and productivity issues of cow-calf production. A driving force for the needs assessment was the desire of NAHMS to receive as much input as possible from a variety of producers, as well as from industry experts and representatives, veterinarians, extension specialists, universities, and beef organizations. Information was collected via interviews with key industry figures and through a Needs Assessment Survey.

The needs assessment survey was designed to ascertain the most critical information gaps regarding animal health, and health and production management from producers, veterinarians, extension personnel, university researchers, and allied industry groups. The survey, created in SurveyMonkey, was available online from September 9, 2006, through February 15, 2007. The survey was promoted via electronic newsletters, magazines, and Web sites. Organizations/magazines promoting the study included “Beef Magazine”, “Drovers”, “Feedstuffs,” “Bovine Veterinarian”, and “The National Cattleman”. E-mail messages identifying the online site and asking for inputwere also sent to State extension personnel as well as State and Federal animal health officials. A total of 94 people completed the questionnaire. Universities/extensions accounted for 41.5 percent of respondents, and veterinarians/consultants accounted for 31.9 percent.

Objectives for the Beef 2007-08 study, using input from interviews, literature searches, and the online survey, were drafted and circulated to stakeholder groups. Following this review, six final study objectives were identified:

- Describe trends in beef cow-calf health and management practices,
- Evaluate management factors related to beef quality assurance,
- Describe record-keeping practices on cow-calf operations,
- Determine producer awareness of bovine viral diarrhea (BVD) and management practices used for BVD control,
- Describe current biosecurity practices, and
- Determine the prevalence and antimicrobial resistance patterns of potential food safety pathogens.

B. Sampling and Estimation

1. State selection

The preliminary selection of States to be included in the study was done in October 2006 using the National Agricultural Statistics Service (NASS) “Cattle Report”. A goal for NAHMS national studies is to include States that account for at least 70 percent of the animals and producer population in the United States. The initial review identified 24 States representing 87.8 percent of the Nation’s beef cow inventory and 79.6 percent of operations with beef cows (cow-calf herds). The States were: Alabama, Arkansas, California, Colorado, Florida, Georgia, Idaho, Iowa, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Tennessee, Texas, Virginia, and Wyoming.

A memo identifying the States was provided in November 2006 to the USDA-APHIS-VS CEAH Director and, in turn, the VS Regional Directors. Each Regional Director sought input from the respective States about being included or excluded from the study.

2. Operation selection

The list sampling frame was provided by NASS. Within each State a stratified random sample was selected. The size indicator was the number of beef cows for each operation. NASS selected a sample of beef producers in each State for making the January 1 cattle estimates. The list sample from the January 2007 survey was used as the screening sample. Those producers in the 24 States reporting one or more beef cows on January 1, 2007, were included in the sample for contact in October 2007.

3. Population inferences

a. Phase I: General Beef Management Report

Inferences cover the population of beef producers with at least 1 beef cow in the 24 participating States. As of January 1, 2008, these States accounted for 87.8 percent (28.6 million) of beef cows and 79.6 percent (603,000) of operations with beef cows in the United States. (See Appendix II for respective data on individual States.) All respondent data were statistically weighted to reflect the population from which they were selected. The inverse of the probability of selection for each operation was the initial selection weight. This selection weight was adjusted for nonresponse within each State and size group to allow for inferences back to the original population from which the sample was selected.

C. Data Collection

1. Data collectors and data collection period

a. Phase I: General Beef Management Report
From October 22 through November 30, 2007, NASS enumerators administered the General Beef Management Report. The interview took slightly over 1 hour.

D. Data Analysis

1. Phase I: Validation—General Beef Management Report

Initial data entry and validation for the General Beef Management Report were performed in individual NASS State offices. Data were entered into a SAS data set. NAHMS national staff performed additional data validation on the entire data set after data from all States were combined.

E. Sample Evaluation

The purpose of this section is to provide various response performance measurement parameters. Historically, the term “response rate” was used as a catchall parameter, but there are many ways to define and calculate response rates. Therefore, the table on the next page presents an evaluation based upon a number of measurement parameters, which are defined with an “x” in categories that contribute to the measurement.

A total of 4,001 operations were selected for the survey. Of these operations, 3,648 (91.2 percent) were contacted. There were 2,872 operations that provided usable inventory information (71.8 percent of the total selected and 78.7 percent of those contacted). In addition, there were 2,159 operations (54.0 percent) that provided “complete” information for the questionnaire. Of operations that provided complete information and were eligible to participate in the veterinary medical officer (VMO) phase of the study (2,159 operations), 1,033 (47.8 percent) consented to be contacted for consideration/discussion about further participation.

			Measurement Parameter		
Response Category	**Number Operations**	**Percent Operations**	**Contacts**	**Usable[1]**	**Complete[2]**
Survey complete and VMO consent	1,033	25.8	x	x	x
Survey complete, refused VMO consent	1,126	28.1	x	x	x
No beef cows on October 1 and July 1, 2007	469	11.7	x	x	
Out of business	244	6.1	x	x	
Out of scope	7	0.2			
Refusal of GBMR	776	19.4	x		
Office hold (NASS elected not to contact)	46	1.2			
Inaccessible	300	7.5			
Total	4,001	100.0	3,648	2,872	2,159
Percent of total operations			91.2	71.8	54.0
Percent of total operations weighted[3]			92.9	77.8	52.1

[1]Useable operation—respondent provided answers to inventory questions for the operation (either zero or positive number on hand).
[2]Survey complete operation—respondent provided answers to all or nearly all questions for at least one site.
[3] Weighted response—the rate was calculated using the initial selection weights.

Appendix I: Sample Profile

A. Responding Operations

1. Total beef cow inventory, by herd size

Herd Size (Total Beef Cow Inventory)	**Number of Responding Operations**
1 to 49	819
50 to 99	386
100 to 199	381
200 or more	573
Total	2,159

2. Number of responding operations, by region

Region	**Number of Responding Operations**
West	370
Central	612
South Central	483
East	694
Total	2,159

Appendix II: U.S. Beef Cow Population and Operations

Number of cows on January 1, 2008*

Region	State	Beef Cow Inventory Jan. 1, 2008 (Thousand Head)	Beef Cow Operations 2007
West	California	655	11,200
	Colorado	730	9,900
	Idaho	460	7,100
	Montana	1,523	11,000
	New Mexico	460	5,900
	Oregon	605	11,500
	Wyoming	733	4,800
	Total	5,166	61,400
Central	Iowa	1,015	25,000
	Kansas	1,511	26,000
	Missouri	2,080	54,000
	Nebraska	1,883	20,000
	North Dakota	922	10,500
	South Dakota	1,644	14,500
	Total	9,055	150,000
South Central	Oklahoma	2,053	48,000
	Texas	5,240	130,000
	Total	7,293	178,000
East	Alabama	677	23,000
	Arkansas	943	26,000
	Florida	936	15,500
	Georgia	553	17,500
	Kentucky	1,159	38,000
	Louisiana	513	12,100
	Mississippi	519	18,500
	Tennessee	1,079	42,000
	Virginia	692	21,000
	Total	7,071	213,600
Total (24 States)		28,585	603,000
Percentage of U.S.		87.8	79.6
Total U.S. (50 States)		32,553	757,900

*Source: NASS Cattle report, February 1, 2008, and NASS Farms, Land in Farms, and Livestock Operations 2007 Summary report, February 2008. An operation is any place having one or more head of beef cows, excluding cows used to nurse calves, on hand at any time during the year.

Appendix III: Study Objectives and Related Outputs

1. Describe trends in beef cow-calf health and management practices
   - Part I: Reference of Beef Cow-calf Management Practices, October 2008
   - **Part II: Reference of Beef Cow-calf Management Practices, January 2009**
   - Part III: Changes in the U.S. Beef Cattle Industry, 1993-2008, expected March 2009
   - Part V: Reference of Beef Cow-calf Management Practices, expected spring 2009
   - Info sheets, expected spring 2009

2. Evaluate management factors related to beef quality assurance
   - Part I: Reference of Beef Cow-calf Management Practices, October 2008
   - Info sheets, expected spring 2009

3. Describe record-keeping practices on cow-calf operations
   - Part I: Reference of Beef Cow-calf Management Practices, October 2008
   - Part III: Changes in the U.S. Beef Cattle Industry, 1993-2008, expected March 2009

4. Determine producer awareness of bovine viral diarrhea (BVD) and management practices used for BVD control
   - Part IV: Reference of Beef Cow-calf Health and Health Management, expected spring 2009
   - BVD Control on U.S. Beef Cow-calf Operations, Interpretive Report, expected spring 2009
   - Info sheets, expected spring 2009

5. Describe current biosecurity practices on cow-calf operations
   - Part IV: Reference of Beef Cow-calf Health and Health Management, expected spring 2009

6. Determine the prevalence and antimicrobial resistance patterns of potential food-safety pathogens
   - Info sheets, expected spring 2009