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Veterinary Services

National Animal Health Monitoring System

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VS

Goat 2009

Part II: Reference of Goat Health and Marketing Practices in the United States, 2009

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#574.0411

Items of Note

The Goat 2009 study marks the first time that the USDA's National Animal Health Monitoring System has taken an in-depth look at the U.S. goat industry. In this report, you will find the first nationally representative information on the health and management practices of one of the Nation's fastest growing livestock industries.

Disease management

The occurrence of disease symptoms, in general, increased when comparing very small and small operations with large operations.* This increase might be due to more experienced producers on larger operations who are more adept at identifying possible illness; the fact that larger operations typically add more new additions from outside the herd, which can introduce new pathogens; or that larger operations have more animals in which disease might occur.

About one of two producers was unfamiliar with caseous lymphadenitis. Caseous lymphadenitis is an economically important disease in goats caused by the bacterium *Corynebacterium pseudotuberculosis.* Goats with caseous lymphadenitis often have abscesses along the neck or on the back-side of the rear legs. The disease can also cause internal abscesses, reduce reproductive efficiency, and result in condemnation of an infected carcass at slaughter. Of the 18.7 percent of operations that had goats with abscesses, more than 9 of 10 treated their animals. Caseous lymphadenitis is a zoonotic disease and can cause enlarged lymph nodes in humans. Therefore, gloves should be worn when working with goats with abscesses, especially when abscesses are draining.

More than three of four producers reported that they were unfamiliar with Q fever. Q fever is a zoonotic disease most often associated with infection in sheep, goats, and cattle, but it can also infect other domestic animals and wildlife. In sheep and goats, it often causes abortions and stillbirths.

Goat health management and biosecurity

About one-third of operations had consulted a veterinarian during the previous 12 months. While it is unclear why so few operations used a veterinarian, one reason could be the difficulty in finding a veterinarian experienced in working with goats.

An excellent way to manage disease on goat operations is to improve biosecurity. A biosecurity plan should be developed in concert with a veterinarian experienced in goat production. Good biosecurity reduces the likelihood of introducing disease to a herd and also helps manage disease spread among animals within the herd.

*See "Terms Used in This Report," p 5, for herd-size breakouts.

A higher percentage of dairy goat operations (59.7 percent) than meat goat operations (35.1 percent) always used biosecurity measures to prevent disease introduction by visitors who entered the goat production area. The two most commonly reported biosecurity measures on dairy goat operations were to park away from the goat area (45.7 percent of operations) and to wash hands before handling goats (30.9 percent of operations).

Physical contact with domestic animals of other species can sometimes promote the transmission of diseases common to more than one species. A higher percentage of large operations had domestic sheep and beef or dairy cattle compared with the other-sized operations. Overall, 16.9 percent of goat operations also had domestic sheep on their operation.

Marketing and movement

About one of five operations had added any goats or kids to their herd during the previous 12 months. Most of the operations that added adult goats (72.8 percent) acquired them directly from another goat operation. The second most common source was an auction market (23.5 percent of operations). As was the case with adult goats, most operations that added new kid goats (69.1 percent) acquired them directly from another goat operation, while less than one-fourth (21.2 percent) purchased them from an auction market. Marketing animals at an auction or sale barn requires little effort on the part of the animal owner in finding a buyer. However, direct sales to consumers can be more profitable since there may be no transportation costs and no middlemen or sales commissions. For operations that removed kids during the previous 12 months, the highest percentages of operations permanently removed kids through an auction/sale barn or by direct sales to consumer or ethnic market (52.8 and 31.1 percent, respectively).

Identification

Individual animal identification (ID) helps producers monitor important production parameters. Herd ID helps producers identify their animals, should one herd become commingled with another herd. Herd ID can also aid in finding a particular animal's herd of origin. Certain forms of ID are required by the USDA and/or individual States when animals are moved from their herd of origin or when they are sold. The percentage of operations that used either herd or individual animal ID increased with herd size, ranging from 30.7 percent of very small operations to 74.3 percent of large operations. Overall, 53.2 percent of operations with 10 or more goats used either herd or individual animal ID at the time of the interview. Across herd sizes, a higher percentage of operations used individual animal ID than herd ID.

Selected Highlights for Part II: Reference of Goat Management Practices in the United States, 2009

About one-third of operations had consulted a veterinarian during the previous 12 months.

Use of a veterinarian ranged from 28.7 percent of very small operations to 42.4 percent of large operations. More than one-half of dairy goat operations (55.2 percent) consulted a veterinarian, compared with about one-third (37.1 percent) of meat goat operations.

Two-thirds of goat operations had visitors of some kind during the previous 12 months. The three most common visitor types were: “Other” visitors (other producers, neighbors, friends, etc.), private or company veterinarian, and customer (51.0, 24.5, and 22.2 percent of operations, respectively).

For operations that added new adult goats during the previous 12 months, slightly less than one-half of the adult goats (43.7 percent) were acquired directly from another goat operation, and one-half (49.5 percent) were purchased at an auction market. While a relatively large proportion of adult goats were sourced from auctions, a smaller proportion of operations (23.5 percent) obtained adult goats from auctions, indicating that a higher proportion of larger operations obtained adult goats from auctions.

Of operations that added new goats, 48.6 percent always isolated new arrivals and 11.9 percent sometimes isolated new arrivals.

The percentage of operations that used either herd or individual animal ID increased with herd size, ranging from 30.7 percent of very small operations to 74.3 percent of large operations.

Overall, 53.2 percent of operations with 10 or more goats used either herd or individual animal identification at the time of the interview. Across herd sizes, a higher percentage of operations used individual animal ID than herd ID.

Almost one-fourth of all operations (26.8 percent) used some type of herd ID. The methods used for herd ID by the highest percentage of all operations were scrapie ear tag (15.6 percent), tattoo (9.6 percent), or other ear tag (6.7 percent).

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).

Thanks to the NASS enumerators who contacted goat 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. Additional biological sampling and testing for the Goat 2009 study were afforded by the generous contributions of collaborators, including:

- University of Georgia College of Veterinary Medicine, Department of Infectious Diseases
- Centers for Disease Control and Prevention, National Center for Zoonotic and Vector-borne Enteric Diseases (NCZVED), Division of Viral and Rickettsial Diseases (DVRD)
- Veterinary Services, National Animal Health Program Johne's staff

All participants are to be commended, particularly the producers whose voluntary efforts made the Goat 2009 study possible.

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Feedback

Feedback, comments, and suggestions regarding Goat 2009 study reports are welcomed. Please forward correspondence via email to: NAHMS@usda.gov

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Introduction

The National Animal Health Monitoring System (NAHMS) is an information gathering and disseminating organization within the Animal and Plant Health Inspection Service (APHIS), an agency of the U.S. Department of Agriculture (USDA). The purpose of the NAHMS program is to collect and analyze animal health data to provide scientifically sound and current information on the health status of U.S. livestock and poultry. The information is intended to benefit both livestock producers (by facilitating efficient production and animal welfare) and the general public (by facilitating a safer and higher quality food supply). Special emphasis is placed on obtaining valid estimates of management practices, production levels, and disease status of the national herds.

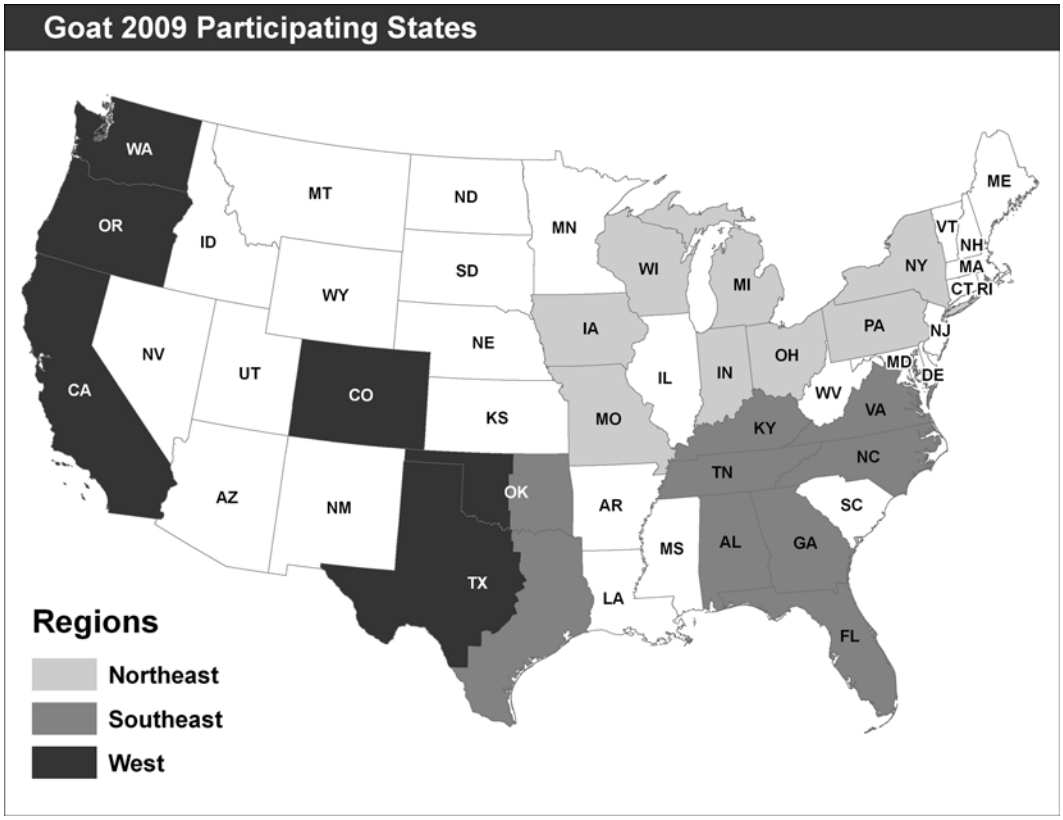
NAHMS studies animal health problems as well as food-safety and food-quality issues. As the food- and fiber-animal industry grows more sophisticated and production becomes more concentrated in large, confined facilities, demand increases for information on the impact of animal health problems. These problems are often related to animal genetics, herd management practices, the environment in which the herd is located, and exposure to infectious agents. The NAHMS program attempts to measure the occurrence of these conditions and reports the findings to the livestock industry and the general public. Additionally, as the livestock industry addresses concerns with food quality and food safety, it needs valid information on which to base decisions.

The NAHMS program compiles some of its information from sources other than surveys of producers. These sources include other government agencies, livestock industry organizations, and universities. Surveys of livestock producers are conducted to assemble data not available elsewhere.

NAHMS was started in 1983. At first, animal health and economic data were collected for various types of livestock through several State programs. Since 1989, surveys have been national in scope and have focused on hogs from farrowing to market, dairy cattle, cow-calf operations, cattle-on-feed operations, equids, catfish, poultry, and sheep. National Agricultural Statistics Service (NASS) State offices and National Association of State Departments of Agriculture field enumerators were involved in most of these projects.

Goat 2009 is NAHMS first-ever study of the U.S. goat industry and was conducted in 21 of the Nation’s major goat-producing States (see map). The study provides participants, stakeholders, and the industry as a whole with valuable information representing 75.5 percent of U.S. goat operations and 82.2 percent of U.S. goats (NASS 2007 Census of Agriculture). Part II: Reference of Goat Health and Marketing Practices in the United States, 2009 is the second report containing national information from the NAHMS Goat 2009 study. This report contains information collected from 2,484 goat operations. Operations with fewer than 10 goats (649 operations) answered, by phone, a smaller

version of the questionnaire. Those with 10 or more goats (1,835 operations) were interviewed by NASS enumerators to complete the full version of the questionnaire. Some tables in this report reflect only the responses of larger operations. These tables will be demarcated by a footnote.



Texas and Oklahoma were divided on a line corresponding to north-south Interstate 35. The western halves of the States were included in the West region, and the eastern halves were included in the Southeast region. For more detailed information regarding the counties involved, see Appendix II.

The methods used and number of respondents in the study can be found in Section II and Appendix I of this report, respectively.

Study Objectives and Related Outputs

1. Provide a baseline description of animal health, nutrition, and management practices in the U.S. goat industry.

- Part I: Reference of Goat Management Practices in the United States, 2009, December 2010
- **Part II: Reference of Goat Health and Marketing Practices in the United States, 2009, April 2011**
- Part III: Reference of Goat Biosecurity and Disease Practices in the United States, 2009, expected spring 2011
- Small-scale U.S. Goat Operations, expected spring 2011
- Biosecurity on U.S. Goat Operations, information sheet, expected summer 2011
- Goat Disease and Death, information sheet, expected summer 2011

2. Determine producer awareness of VS program diseases

- **Part II: Reference of Goat Health and Marketing Practices in the United States, 2009, April 2011**
- Producer Knowledge of Production Limiting Diseases on Goat Operations, information sheet, expected spring 2011
- Part III: Reference of Goat Biosecurity and Disease Practices in the United States, expected spring 2011
- Identification Practices on U.S. Goat Operations, information sheet, expected spring 2011

3. Describe producer-reported occurrence of infectious diseases (including brucellosis, scrapie, caprine arthritis encephalitis, Johne's disease, and caseous lymphadenitis) and the management and biosecurity practices important for controlling them.

- **Part II: Reference of Goat Health and Marketing Practices in the United States, 2009, April 2011**
- Part III: Reference of Goat Biosecurity and Disease Practices in the United States, expected spring 2011
- Biosecurity on Goat Operations, information sheet, expected summer 2011

4. Describe practices important for controlling internal parasites and reducing anthelmintic resistance.

- **Part II: Reference of Goat Health and Marketing Practices in the United States, 2009, April 2011**
- Part III: Reference of Goat Biosecurity and Disease Practices in the United States, expected spring 2011
- Parasites and Anthelminthic Resistance on U.S. Goat Operations, information sheet, expected spring 2011

5. Determine producer awareness of sore mouth (contagious ecthyma) and practices to prevent its transmission.

- Part I: Reference of Goat Management Practices in the United States, 2009, expected December 2010
- **Part II: Reference of Goat Health and Marketing Practices in the United States, 2009, April 2011**
- Part III: Reference of Goat Biosecurity and Disease Practices in the United States, expected spring 2011
- Sore Mouth (Contagious Ecthyma, Orf) and its Impact on U.S. Goat Operations, information sheet, expected spring 2011

Terms Used in This Report

Backgrounder: Most often used for cattle operations and refers to the transitional phase between weaning and finishing.

Cabrito:Term used for the meat from young goat kids.

Goat: Animal 1 year old and older.

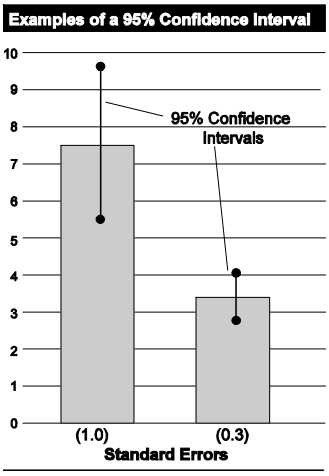
Herd size: Herd sizes are based on all goats or kids on the operation. Very small (fewer than 10); small (10–19); medium (20–99); large (100 or more).

Herd type:

Open range (unfenced acreage)
Fenced range (uncultivated fenced acreage)
Fenced farm (cultivated pasture or browse)
Dry lot (pen which does not allow grazing and is not meant for finishing goats on a high energy diet for slaughter).

Kid: Goat less than 1 year old.

Operation average: A single value for each operation is summed over all operations reporting divided by number of operations reporting.



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 (—).

Primary production focus (of operation): Meat, dairy, fiber, other. An operation may have goats to produce both meat and fiber. If multiple categories applied, producers were asked to select the primary production focus of the operation.

Primary use (of goat): Angora/fiber, milk, meat, other (including brush control/forage management, showing, competition, 4-H or club, pet/companion goats, pack goats, other). Based on primary use of individual goats regardless of breed.

Regions*:
West: California, Colorado, Oklahoma, Oregon, Texas, Washington
Southeast: Alabama, Florida, Georgia, Kentucky, North Carolina, Tennessee, Virginia
Northeast: Indiana, Iowa, Michigan, Missouri, New York, Ohio, Pennsylvania, Wisconsin

Scrapie PIN: Often referred to by producers as the scrapie flock ID. This ID is printed on all scrapie program ear tags. It does not necessarily tie to a single location, but rather to a group of sheep or goats managed as a distinct unit with respect to scrapie risk.

*Texas and Oklahoma were divided north to south: operations in counties west of I-35 were included in the West region and counties east of I-35 were included in the Southeast region.

Section I: Population Estimates

A. Goat Diseases

1. Disease management

Producers were asked to report the occurrence of symptoms commonly caused by some of the most economically important diseases affecting U.S. goats. The symptoms in the following two tables (a. and b.) are only suggestive of caprine arthritis encephalitis, Johne's disease, scrapie, footrot, bacterial mastitis, caseous lymphadenitis, or sore mouth. However, the producers' responses provide an idea of the level of disease present in the U.S. goat herd.

Except for weight loss despite a good appetite, as herd size increased so did the occurrence of reported symptoms. More than one-third of large operations reported the occurrence of mastitis (35.8 percent) or abscesses (34.9 percent).

a. Percentage of operations on which the following symptoms were observed in any goats or kids during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**		**Only Operations with 10 or More**	
Symptom	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Joint swelling (knobby knees) or crippled goats	4.0	(0.9)	5.2	(1.0)	10.1	(1.1)	19.4	(1.7)	6.7	(0.6)	9.0	(0.7)
Weight loss despite good appetite	8.1	(1.2)	16.5	(1.7)	19.7	(1.5)	18.6	(1.8)	13.6	(0.8)	18.3	(1.0)
CNS signs[1]	2.2	(0.6)	5.9	(1.1)	8.8	(1.1)	13.1	(1.5)	5.3	(0.5)	8.1	(0.7)
Sores on hoof area with foul odor	2.1	(0.6)	7.6	(1.1)	12.0	(1.2)	15.3	(1.4)	6.6	(0.5)	10.5	(0.8)
Udder inflammation/ mastitis	4.4	(0.9)	12.3	(1.5)	19.4	(1.5)	35.8	(2.3)	11.7	(0.7)	18.1	(1.0)
Abscesses/ boils/lumps on the head, shoulder, or upper rear legs	4.7	(1.0)	9.8	(1.3)	22.7	(1.6)	34.9	(2.1)	12.2	(0.7)	18.7	(1.0)
Scabs around the mouth, udder, or feet[2]	0.6	(0.3)	4.2	(0.9)	7.5	(1.0)	23.0	(2.2)	4.4	(0.4)	7.6	(0.7)

[1]Loss of coordination, staggering, swaying, falling down, high stepping of forelegs or stiff rear legs, lip smacking, etc.
[2]Not known to be caused by trauma.

Caseous lymphadenititis is an economically important disease in goats caused by the bacterium *Corynebacterium pseudotuberculosis.* Goats with caseous lymphadenititis often have abscesses along the neck or on the back-side of the rear legs. The disease can also cause internal abscesses and may reduce reproductive efficiency and result in condemnation of an infected carcass at slaughter.

A relatively high percentage of meat goat operations reported abscesses and sores on the hoof areas of their goats (19.8 and 11.4 percent, respectively).

b. Percentage of operations on which the following symptoms were observed in any goats or kids during the previous 12 months, by primary production:

	Percent Operations							
	Primary Production							
	Meat		Dairy		Fiber		Other	
Symptom	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Joint swelling (knobby knees) or crippled goats	7.1	(0.8)	10.7	(1.8)	5.9	(2.3)	5.4	(0.9)
Weight loss in spite of good appetite	19.0	(1.3)	13.3	(2.1)	10.8	(3.0)	8.6	(1.1)
CNS signs[1]	7.7	(0.9)	5.0	(1.2)	5.3	(2.0)	3.2	(0.7)
Sores on hoof area with foul odor	11.4	(1.0)	5.1	(1.1)	4.4	(1.7)	2.5	(0.5)
Udder inflammation/ mastitis	17.0	(1.2)	20.2	(2.5)	15.3	(5.0)	4.8	(0.8)
Abscesses/ boils/lumps on head, shoulder, or upper rear legs	19.8	(1.3)	13.3	(1.9)	5.3	(1.8)	5.0	(0.8)
Scabs around the mouth, udder, or feet[2]	7.5	(0.8)	6.0	(1.1)	6.5	(4.2)	1.0	(0.3)

[1]Loss of coordination, staggering, swaying, falling down, high stepping of forelegs or stiff rear legs, lip smacking, etc.
[2]Not known to be caused by trauma.

Of the 18.7 percent of operations with 10 or more goats that had goats with abscesses (see table a., p 7), more than 9 of 10 (91.0 percent) treated their animals for abscesses. The two most common treatments were to drain or lance the abscess and to treat with antibiotics (65.2 and 59.2 percent of operations, respectively). Since drainage from abscesses can contaminate the environment and cause disease spread within a herd, it is important to avoid allowing pus or other material to contact areas frequented by other goats. Isolating affected animals until a lesion heals is also recommended. Caseous lymphadenitis is a zoonotic disease and can cause enlarged lymph nodes in humans. Therefore, gloves should be worn when working with goats with abscesses, especially when abscesses are draining.

c. For operations on which any goats or kids had abscesses on the head, shoulder, or upper rear legs during the previous 12 months, percentage of operations by action taken and by herd size:

Percent Operations

	Herd Size (Number of Goats and Kids)							
	Small (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Action Taken	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Cull the animal to market or slaughter	10.5	(4.4)	15.8	(3.1)	24.9	(3.0)	16.3	(2.2)
Isolate animal	36.1	(6.9)	38.9	(3.9)	33.3	(3.3)	37.3	(2.9)
Drain or lance abscess/boil/lump	66.4	(6.7)	64.6	(3.9)	66.0	(3.4)	65.2	(2.8)
Drain or lance abscess/boil/lump and collect drainage in container	15.6	(4.8)	22.8	(3.4)	29.3	(3.3)	22.4	(2.4)
Treat with antibiotics	62.9	(6.6)	60.0	(3.9)	51.8	(3.6)	59.2	(2.9)
Inject a substance into abscess/ boil/lump	23.2	(5.9)	28.8	(3.7)	27.6	(3.1)	27.4	(2.6)
Call veterinarian	31.8	(6.4)	19.3	(3.0)	13.9	(2.6)	21.0	(2.4)
Lab test (culture) for caseous lymphadenitis	10.4	(4.1)	6.1	(1.6)	8.1	(2.2)	7.3	(1.4)
Other	2.9	(2.0)	3.7	(1.3)	3.5	(1.4)	3.5	(0.9)
Any action	95.5	(2.6)	89.8	(2.5)	89.7	(1.9)	91.0	(1.7)

Scabs around the mouth, feet, or udder may be a sign of pox-virus infection, a cause of contagious ecthyma, also known as sore mouth. Since the virus is capable of infecting people, precautions should be taken when handling goats with scabs to prevent transmission of the virus to people. The most common precaution taken by the 4.4 percent of operations that reported goats with scabs (table a., p 7) was to wash hands with soap and water after handling the goats (88.7 percent of operations). A little more than one-half of producers (54.4 percent) wore gloves when handling goats with scabs. More information on sore mouth in humans is available at: www.cdc.gov/az/s.html

d. For operations on which any goats had scabs around the mouth, feet, or udder during the previous 12 months, percentage of operations that used the following practices when handling goats with scabs:

Practice	Percent Operations*	Std. Error
Wear gloves when handling goats with scabs	54.4	(4.5)
Wash hands with soap and water after touching goats with scabs	88.7	(2.5)
Cover your cuts and scrapes when handling goats with scabs	58.7	(4.5)
Obtain veterinary consultation when goats have scabs	28.6	(4.5)
Vaccinate for sore mouth	21.8	(3.5)

*Operations with one or more goats.

Photo courtesy of Anson Eaglin.

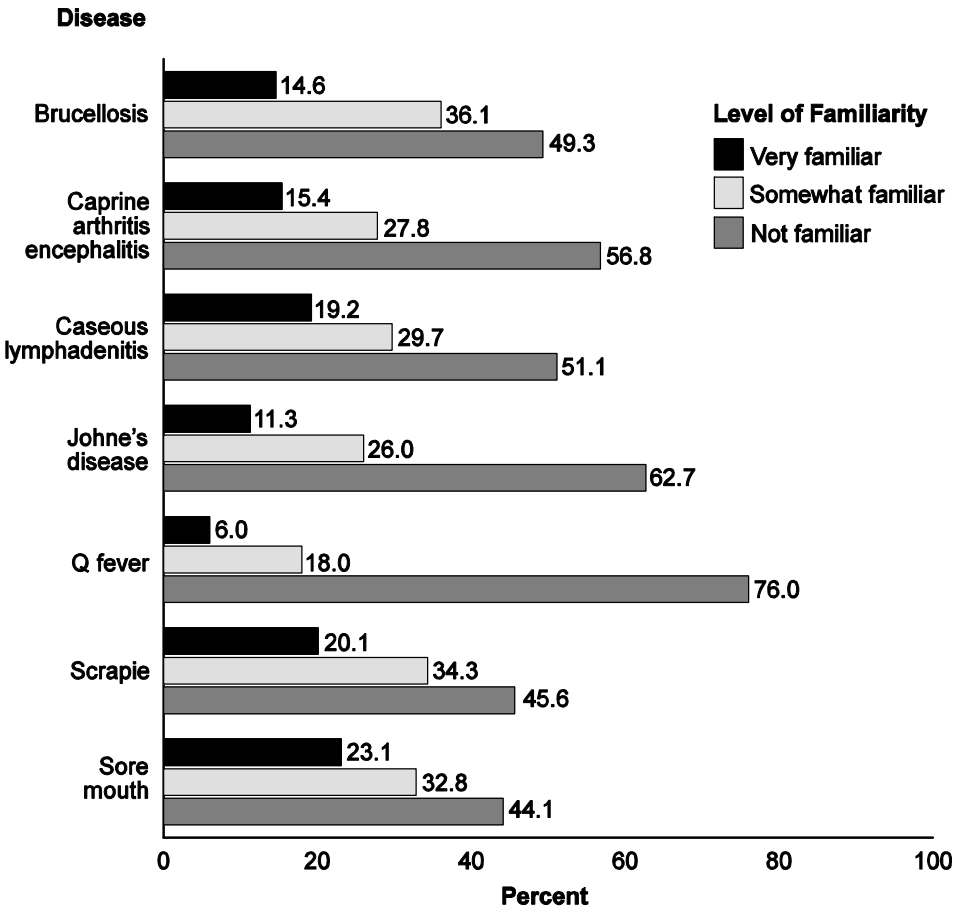
Goat producers were asked whether they were very familiar, somewhat familiar, or not familiar with several economically important diseases, including Johne's disease. Johne's disease in goats is under diagnosed and can cause weight loss despite a good appetite. Clinical signs common in cattle with Johne's disease are often not present in goats, and laboratory tests for Johne's disease are not as sensitive in goats as they are for cattle. About two-thirds of producers (62.7 percent) were not familiar with Johne's disease.

Q fever was the least known of the listed diseases, with more than three of four producers reporting that they were unfamiliar with the disease. Q fever is most often associated with infection in sheep, goats, and cattle, but it can also infect other domestic animals and wildlife. In sheep and goats it often causes abortions and stillbirths. Humans often become infected through inhalation of contaminated dust or by consumption of unpasteurized dairy products. In humans, symptoms of Q fever are often mild and go undiagnosed. However, acute infection may cause flulike illness and pneumonia. More information on Q fever and other zoonotic diseases is available at www.cdc.gov.

e. Percentage of operations by level of familiarity with the following diseases in goats:

	Percent Operations						
	Level of Familiarity						
	Very Familiar		Somewhat Familiar		Not Familiar		
Disease	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Brucellosis	14.6	(0.8)	36.1	(1.2)	49.3	(1.2)	100.0
Caprine arthritis encephalitis (CAE, big knee)	15.4	(0.8)	27.8	(1.1)	56.8	(1.2)	100.0
Caseous lymphadenitis (boils, CL, abscesses)	19.2	(0.9)	29.7	(1.1)	51.1	(1.2)	100.0
Johne's disease (paratuberculosis)	11.3	(0.7)	26.0	(1.1)	62.7	(1.2)	100.0
Q fever	6.0	(0.5)	18.0	(0.9)	76.0	(1.0)	100.0
Scrapie	20.1	(0.9)	34.3	(1.2)	45.6	(1.2)	100.0
Sore mouth (orf virus/contagious ecthyma)	23.1	(0.9)	32.8	(1.2)	44.1	(1.2)	100.0

Percentage of Operations by Level of Familiarity with the Following Diseases in Goats



More than one-half of operations were very familiar or somewhat familiar with brucellosis, scrapie, and sore mouth. A higher percentage of large operations were more familiar with all these diseases compared with very small and small operations.

f. Percentage of operations that were **somewhat familiar** or **very familiar** with the following diseases in goats, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Disease	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Brucellosis	43.9	(2.2)	55.4	(2.3)	55.8	(1.9)	66.8	(2.3)	50.7	(1.2)
Caprine arthritis encephalitis (CAE, big knee)	34.6	(2.1)	48.2	(2.2)	51.1	(1.9)	58.1	(2.5)	43.2	(1.2)
Caseous lymphadenitis (boils, CL, abscesses)	36.4	(2.1)	55.4	(2.3)	60.6	(1.9)	72.4	(2.3)	48.9	(1.2)
Johne’s disease (paratubercu-losis)	28.1	(2.0)	44.1	(2.2)	44.2	(1.9)	56.1	(2.5)	37.3	(1.2)
Q fever	17.3	(1.7)	28.8	(2.1)	28.9	(1.8)	38.8	(2.5)	24.0	(1.0)
Scrapie	43.6	(2.2)	61.4	(2.2)	63.7	(1.9)	75.2	(2.1)	54.4	(1.2)
Sore mouth (orf virus/contagious ecthyma)	39.4	(2.1)	64.8	(2.2)	70.9	(1.8)	88.0	(1.4)	55.9	(1.2)

A higher percentage of dairy goat operations than meat goat operations were somewhat familiar or very familiar with brucellosis, CAE, caseous lymphadenitis, and Johne's disease.

g. Percentage of operations **somewhat familiar** or **very familiar** with the following diseases in goats, by primary production:

	Percent Operations							
	Primary Production							
	Meat		Dairy		Fiber		Other	
Disease	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Brucellosis	54.8	(1.7)	68.9	(3.0)	70.8	(6.0)	42.2	(2.1)
Caprine arthritis encephalitis (CAE, big knee)	45.9	(1.7)	76.1	(3.0)	57.2	(6.4)	33.0	(1.9)
Caseous lymphadenitis (abscesses/boils/ lumps)	56.1	(1.7)	73.9	(3.0)	64.3	(6.3)	36.0	(2.0)
Johne's disease (paratuberculosis)	41.5	(1.7)	61.5	(3.2)	53.2	(6.6)	27.5	(1.8)
Q fever	28.2	(1.5)	29.9	(2.9)	28.3	(6.3)	18.6	(1.6)
Scrapie	64.1	(1.7)	70.0	(3.2)	77.7	(5.8)	41.1	(2.1)
Sore mouth (orf virus/contagious ecthyma)	69.2	(1.6)	72.8	(3.1)	69.8	(5.9)	39.1	(2.0)

2. Awareness of zoonotic disease

All the diseases listed in the following table are infectious to humans. Q fever was the least recognized as a zoonotic agent. Q fever is caused by the bacterium *Coxiella burnettii* and has been linked to abortion storms in sheep and goats, although many infected animals never show symptoms of disease. *C. burnettii* is excreted in feces, milk, placenta, amniotic fluid, and other body fluids of its primary reservoirs—cattle, sheep, and goats. The bacteria are hardy organisms which can survive in the environment for long periods. Humans are usually infected by inhaling barnyard dust contaminated by an infected herd or flock of animals.

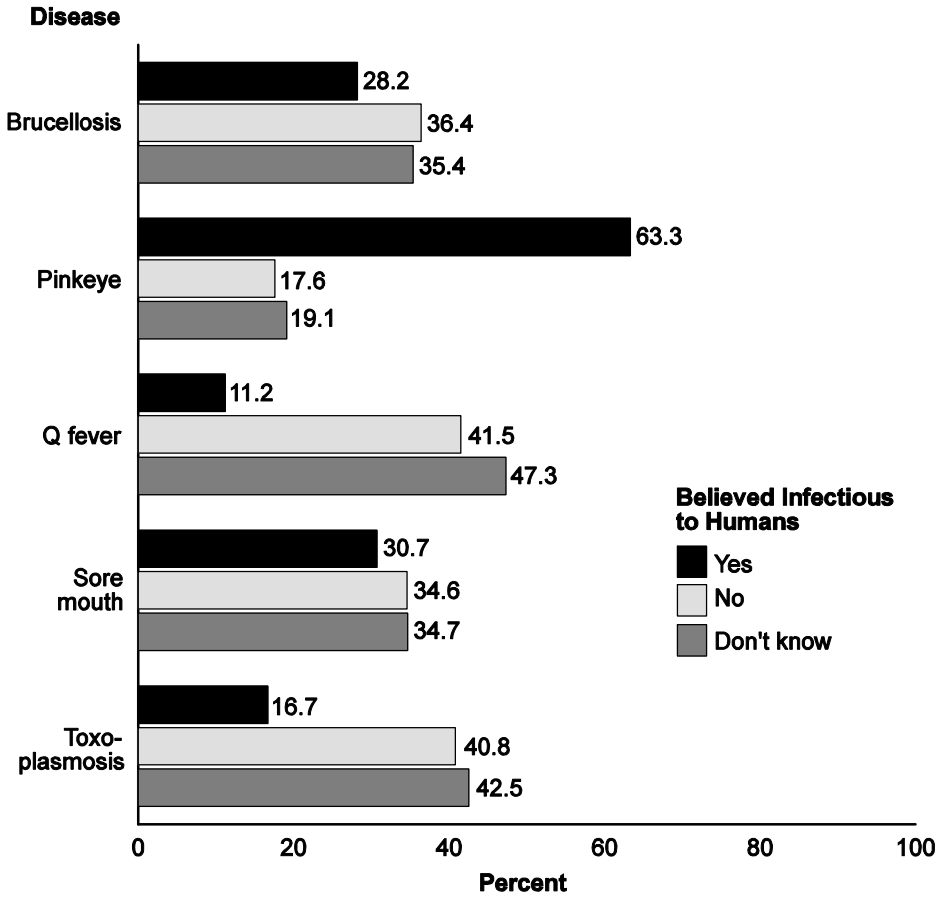
Although producers on more than one-half of operations were somewhat familiar with brucellosis and sore mouth, producers on less than one-third of operations knew that these diseases were infectious to humans. Producers on more than one-third of operations were unaware that brucellosis, Q fever, sore mouth, and toxoplasmosis are infectious to humans. On about two-thirds of operations, producers knew that pinkeye was infectious to humans, possibly because pinkeye is the common name used for many forms of human conjunctivitis, although the majority of human pinkeye cases are not caused by *Chlamydia*.

a. Percentage of operations by whether or not producers believed that the following diseases in goats are infectious to humans:

	Percent Operations* Believed Infectious to Humans						
	Yes		No		Don't Know		
Disease	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Brucellosis	28.2	(1.1)	36.4	(1.2)	35.4	(1.2)	100.0
Pinkeye (*Chlamydia*)	63.3	(1.2)	17.6	(0.9)	19.1	(1.0)	100.0
Q fever	11.2	(0.8)	41.5	(1.2)	47.3	(1.3)	100.0
Sore mouth	30.7	(1.1)	34.6	(1.2)	34.7	(1.2)	100.0
Toxoplasmosis	16.7	(0.9)	40.8	(1.2)	42.5	(1.3)	100.0

*Operations with one or more goats.

Percentage of Operations* by Whether or Not Producers Believed that the Following Diseases in Goats are Infectious to Humans



*Operations with one or more goats.

In general, the percentage of producers that were aware that the listed diseases were infectious to humans increased with herd size.

b. Percentage of operations on which the producer believed that the following diseases in goats are infectious to humans, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)	
Disease	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Brucellosis	24.4	(1.9)	26.5	(2.0)	33.2	(1.8)	42.4	(2.5)
Pinkeye (*Chlamydia*)	64.3	(2.1)	56.6	(2.3)	64.4	(1.9)	76.0	(2.0)
Q fever	7.8	(1.2)	11.2	(1.5)	15.4	(1.4)	18.9	(2.1)
Sore mouth	20.5	(1.7)	31.5	(2.1)	41.4	(1.9)	62.6	(2.3)
Toxoplasmosis	13.6	(1.4)	17.6	(1.7)	20.2	(1.5)	22.1	(2.4)

Almost 1 of 10 producers on large operations thought they had been infected with sore mouth virus at some time in the past.

c. Percentage of operations on which the respondent thought he/she had ever been infected with sore mouth virus, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
3.0	(0.8)	1.0	(0.4)	4.7	(0.8)	9.3	(1.4)	3.3	(0.4)

About 6 percent of operations had tested any of their goats for brucellosis at least once during the previous 3 years.

d. Percentage of operations that had tested any goats for brucellosis during the previous 3 years, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**		**Only Operations with 10 or More**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
5.9	(1.1)	3.8	(0.8)	9.1	(1.1)	7.1	(1.2)	6.4	(0.6)	6.8	(0.6)

e. Percentage of operations that had tested any goats for brucellosis during the previous 3 years, by primary production:

Percent Operations*

Primary Production

Meat		**Dairy**		**Fiber**		**Other**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
4.8	(0.7)	18.5	(2.5)	10.1	(3.7)	5.0	(1.0)

*Operations with one or more goats.

The percentages of operations by purpose of testing goats for brucellosis were similar. Many producers that listed “other” as a reason for testing goats for brucellosis tested their goats because they drank the goats’ milk themselves.

f. For operations that tested goats for brucellosis during the previous 3 years, percentage of operations by purpose of most recent testing:

Purpose of Testing	Percent Operations*	Std. Error
Movement requirement	34.0	(4.4)
Show or exhibition requirement	33.5	(4.3)
Veterinarian (nonregulatory, private practitioner) recommendation	31.2	(4.8)
State requirement	27.7	(4.0)
Other	21.1	(4.2)

*Operations with one or more goats.

Brucellosis can be diagnosed by blood or tissue testing. Blood tests identify antibodies in animals that have been exposed to brucellosis, while testing tissue from a fetus, placenta, or vaginal discharge isolates the organism, if present. For producers who knew what test had been used most recently, 83.0 percent had used a blood test and 1.6 percent had used another test.

g. For operations that tested any goats for brucellosis during the previous 3 years, percentage of operations by whether blood or other types of tests were used during the most recent testing:

	Percent Operations*						
	Yes		No		Don’t Know		
Test	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Blood	83.0	(3.6)	1.9	(1.4)	15.1	(3.4)	100.0
Other	1.6	(0.9)	83.5	(3.6)	14.9	(3.6)	100.0

*Operations with 10 or more goats.

FAMACHA© provides a tool to identify anemic animals and was originally developed in South Africa to reduce the burden of deworming goats infected with *Haemonchus contortus* (the bloodsucking Barber's pole worm). The FAMACHA system requires training to use. It is based on a card that provides pictures of a spectrum of color viewed inside the eyelids of sheep and goats. The paler the color, the greater the chance a goat is infected with *H. contortus,* which causes anemia and weakness. The use of FAMACHA to determine which goats need to be treated with a dewormer should reduce dewormer resistance on the farm. Only goats most affected by the worm are treated, which reduces the risk of all *H. contortus* worms on the farm developing resistance to dewormers and also decreases the cost and time required for treatment. Over time, producers can select goats least affected by *H. contortus* worms by culling goats that consistently require treatment for the worms.

For information on FAMACHA training and parasite control, visit the Southern Consortium for Small Ruminant Parasite Control Web site at: www.scsrpc.org.

Three-fourths of goat producers had not heard of FAMACHA. Though the percentage of operations that regularly used FAMACHA increased with herd size, it was used regularly as a management tool by only 10.6 percent of large operations.

h. Percentage of operations by level of use of the FAMACHA card, and by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Level of Use	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Regularly used FAMACHA card as a management tool	1.1	(0.5)	3.4	(0.7)	7.3	(0.9)	10.6	(1.5)	3.8	(0.4)
Had used the FAMACHA card some	2.8	(0.8)	4.5	(1.0)	5.2	(0.8)	8.6	(1.2)	4.1	(0.5)
Had seen or heard about the FAMACHA card, but do not use it	9.2	(1.2)	19.6	(1.8)	26.0	(1.7)	30.6	(2.5)	17.2	(0.8)
Had not heard of FAMACHA	86.9	(1.5)	72.5	(2.0)	61.5	(1.8)	50.2	(2.5)	74.9	(1.0)
Total	100.0		100.0		100.0		100.0		100.0	

i. Percentage of operations by use of the FAMACHA card and by region:

	Percent Operations*					
	Region					
	West		Southeast		Northeast	
Level of Use	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Regularly used FAMACHA card as a management tool	1.8	(0.5)	5.3	(0.7)	3.5	(0.7)
Had used the FAMACHA card some	2.8	(0.6)	5.1	(0.9)	4.0	(0.8)
Had seen or heard about the FAMACHA card, but do not use it	17.0	(1.5)	15.9	(1.2)	19.3	(1.7)
Had not heard of FAMACHA	78.4	(1.7)	73.7	(1.5)	73.2	(1.9)
Total	100.0		100.0		100.0	

*Operations with one or more goats.

j. Percentage of operations by use of the FAMACHA card and by primary production:

	Percent Operations*							
	Primary Production							
	Meat		Dairy		Fiber		Other	
Level of Use	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Regularly used FAMACHA card as a management tool	6.1	(0.7)	4.2	(1.1)	11.0	(3.4)	1.3	(0.4)
Had used the FAMACHA card some	6.2	(0.9)	6.5	(1.4)	1.5	(0.7)	1.7	(0.5)
Had seen or heard about the FAMACHA card, but do not use it	22.6	(1.4)	20.1	(2.6)	33.8	(6.9)	10.7	(1.2)
Had not heard of FAMACHA	65.1	(1.6)	69.2	(2.9)	53.7	(6.7)	86.3	(1.3)
Total	100.0		100.0		100.0		100.0	

*Operations with one or more goats.

B. Goat Health Management and Biosecurity

An excellent way to manage disease on goat operations is to improve biosecurity, which should be developed in concert with a veterinarian experienced in goat production. Good biosecurity reduces the likelihood of introducing disease to a herd and also manages disease spread among animals within a herd.

1. Use of veterinarian

About one-third of operations had consulted a veterinarian during the previous 12 months. It is unclear why so few operations used a veterinarian during the previous 12 months. One reason could be the difficulty in finding a veterinarian experienced in working with goats. Use of a veterinarian ranged from 28.7 percent of very small operations to 42.4 percent of large operations.

a. Percentage of operations that consulted a veterinarian for any reason related to goat health, productivity, or management during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
28.7	(2.0)	36.8	(2.2)	42.2	(1.9)	42.4	(2.4)	34.8	(1.2)

A higher percentage of operations in the Northeast region (41.6 percent) consulted a veterinarian compared with operations in the Southeast region (30.8 percent).

b. Percentage of operations that consulted a veterinarian for any reason related to goat health, productivity, or management during the previous 12 months, by region:

Percent Operations*

Region

West		**Southeast**		**Northeast**	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
34.1	(2.2)	30.8	(1.7)	41.6	(2.2)

*Operations with one or more goats.

More than one-half of dairy goat operations (55.2 percent) consulted a veterinarian, compared with about one-third of meat goat operations (37.1 percent).

c. Percentage of operations that consulted a veterinarian for any reason related to goat health, productivity, or management during the previous 12 months, by primary production:

Percent Operations*

Primary Production

Meat		Dairy		Fiber		Other	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
37.1	(1.6)	55.2	(3.3)	44.9	(6.5)	27.8	(1.9)

*Operations with one or more goats.

2. Visitors

Two-thirds of goat operations had visitors of some kind during the previous 12 months. Almost 4 of 10 medium and large operations had customers visit to purchase products. A lower percentage of very small operations had visitors compared with other operation sizes. Regardless of herd size, about one of four operations were visited by a private or company veterinarian.

a. Percentage of operations by type of visitors on the operation during the previous 12 months, and by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Visitor	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Federal/State veterinarian or animal health worker	5.0	(0.9)	2.1	(0.6)	4.3	(0.7)	3.6	(0.9)	4.1	(0.5)
Extension agent or university veterinarian	3.3	(0.8)	3.4	(0.8)	4.2	(0.8)	9.9	(1.3)	3.9	(0.5)
Private or company veterinarian	26.5	(2.0)	21.0	(1.8)	23.7	(1.6)	24.9	(2.0)	24.5	(1.1)
Nutritionist or feed company consultant	2.5	(0.7)	2.4	(0.6)	4.7	(0.7)	12.8	(1.3)	3.6	(0.4)
Customer (private individual) purchasing milk, fiber, goats, meat, cheese, or other goat product	7.8	(1.1)	28.7	(2.1)	38.9	(1.9)	39.2	(2.4)	22.2	(0.9)
Goat wholesaler, buyer, or dealer	2.3	(0.6)	6.7	(1.1)	9.8	(1.1)	15.9	(1.5)	5.9	(0.5)
Renderer	0.3	(0.3)	0.3	(0.2)	0.8	(0.4)	1.3	(0.7)	0.5	(0.2)
Other visitors (including other producers, neighbors, friends, school field trips, hunters, etc.)	45.5	(2.2)	55.6	(2.3)	55.7	(1.9)	56.9	(2.5)	51.0	(1.3)
Any visitors	58.7	(2.2)	71.9	(2.1)	75.0	(1.7)	74.0	(2.4)	66.7	(1.2)

A private or company veterinarian had visited 41.7 percent of dairy goat operations and 20.2 percent of meat goat operations during the previous 12 months.

b. Percentage of operations by type of visitors on the operation during the previous 12 months, by primary production:

	Percent Operations*							
	Primary Production							
	Meat		Dairy		Fiber		Other	
Visitor	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Federal/State veterinarian or animal health worker	2.9	(0.6)	8.3	(1.7)	5.7	(2.7)	4.2	(0.9)
Extension agent or university veterinarian	4.9	(0.7)	2.4	(0.8)	5.4	(2.2)	3.2	(0.8)
Private or company veterinarian	20.2	(1.3)	41.7	(3.3)	32.9	(6.2)	24.5	(1.8)
Nutritionist or feed company consultant	3.9	(0.5)	5.3	(0.9)	4.5	(2.6)	2.9	(0.7)
Customer (private individual) purchasing milk, fiber, goats, meat, cheese, or other goat product	33.8	(1.6)	34.9	(3.0)	25.8	(5.0)	8.5	(1.0)
Goat wholesaler, buyer, or dealer	8.9	(0.9)	13.4	(2.2)	0.8	(0.7)	1.7	(0.4)
Renderer	0.5	(0.2)	0.3	(0.3)	0.0	(--)	0.5	(0.3)
Other visitors (including other producers, neighbors, friends, school field trips, hunters, etc.)	50.5	(1.7)	67.1	(3.1)	67.4	(6.3)	47.4	(2.1)
Any visitors	69.5	(1.6)	85.8	(2.4)	78.0	(5.7)	59.5	(2.1)

*Operations with one or more goats.

On average, operations visited by a private veterinarian had the veterinarian visit quarterly (an average of 4.6 times per year). Customers visited operations an average of 15.2 times during the previous 12 months. The most frequent visitors to goat operations were “other,” which included other producers, neighbors, friends, school field trips, hunters, etc.

c. For operations that had the following types of visitors during the previous 12 months, average number of visits per year:

Visitor*	Average Number	Std. Error
Federal/State veterinarian or animal health worker	6.4	(2.2)
Extension agent or university veterinarian	3.5	(0.5)
Private or company veterinarian	4.6	(0.5)
Nutritionist or feed company consultant	5.4	(0.7)
Customer (private individual) purchasing milk, fiber, goats, meat, cheese, or other goat product	15.2	(1.3)
Goat wholesaler, buyer, or dealer	7.7	(1.7)
Renderer	6.6	(2.9)
Other visitors (including other producers, neighbors, friends, school field trips, hunters, etc.)	40.2	(2.5)

*On operations with one or more goats.

For the 66.7 percent of operations that had any visitors (see table a., p 24), just over one-half (59.5 percent) had visitors that entered the goat production area, which, by extrapolation, indicates that 39.7 percent[1] of all operations had visitors that entered the goat area.

d. For operations that had any visitors during the previous 12 months, percentage of operations on which any visitors entered the goat production area (barns, sheds, pasture, etc.), by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
53.4	(2.9)	61.3	(2.6)	65.6	(2.1)	64.7	(2.8)	59.5	(1.5)

[1] 39.7 percent = 66.7 percent of operations that had visitors x 59.5 percent of operations on which visitors entered the goat production area.

For the 39.7 percent[1] of all operations on which any visitor entered the goat production area, different biosecurity measures were taken to prevent introduction of disease. The biosecurity measures always used by the highest percentages of operations was to have visitors park away from the goat area (35.0 percent) or to have visitors wash their hands before handling goats (14.4 percent).

e. For operations on which any visitors entered the goat production area during the previous 12 months, percentage of operations by frequency of requiring the following biosecurity measures:

	Percent Operations*						
	Frequency						
	Always		Sometimes		Never		
Biosecurity Measure	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Change into clean clothes or coveralls	1.9	(0.5)	2.8	(0.6)	95.3	(0.8)	100.0
Use a footbath before entry	1.9	(0.4)	2.4	(0.6)	95.7	(0.7)	100.0
Change into clean boots or use shoe covers	5.5	(0.8)	4.7	(0.7)	89.8	(1.1)	100.0
Scrub shoes before or immediately after entry	3.0	(0.5)	3.8	(0.7)	93.2	(0.9)	100.0
Wash hands before handling goats	14.4	(1.3)	7.0	(1.0)	78.6	(1.5)	100.0
No contact with other livestock for at least 24 hr before visiting your goats	2.6	(0.6)	5.6	(0.9)	91.8	(1.0)	100.0
Park away from goat area	35.0	(1.8)	6.2	(0.9)	58.8	(1.9)	100.0

*Operations with one or more goats.

A higher percentage of very small operations (45.3 percent) required any of the listed biosecurity measures compared with large operations (29.7 percent), which is due to the fact that the biosecurity measure “park away from goat area” was the most frequently used biosecurity measure for all size groups and the use of this measure was higher for very small operations than for large operations.

[1] 39.7 percent = 66.7 percent of operations that had visitors x 59.5 percent of operations on which visitors entered the goat production area.

Less than one-third of large operations on which visitors entered the goat production area used any of the listed biosecurity measures. This finding is especially concerning because a higher percentage of large operations (74.0 percent) than very small operations (58.7 percent) had visitors (see table a., p 24) and a higher percentage of large operations with visitors (64.7 percent) than very small operations (53.4 percent) allowed visitors to enter the goat production area (see table d., p 27).

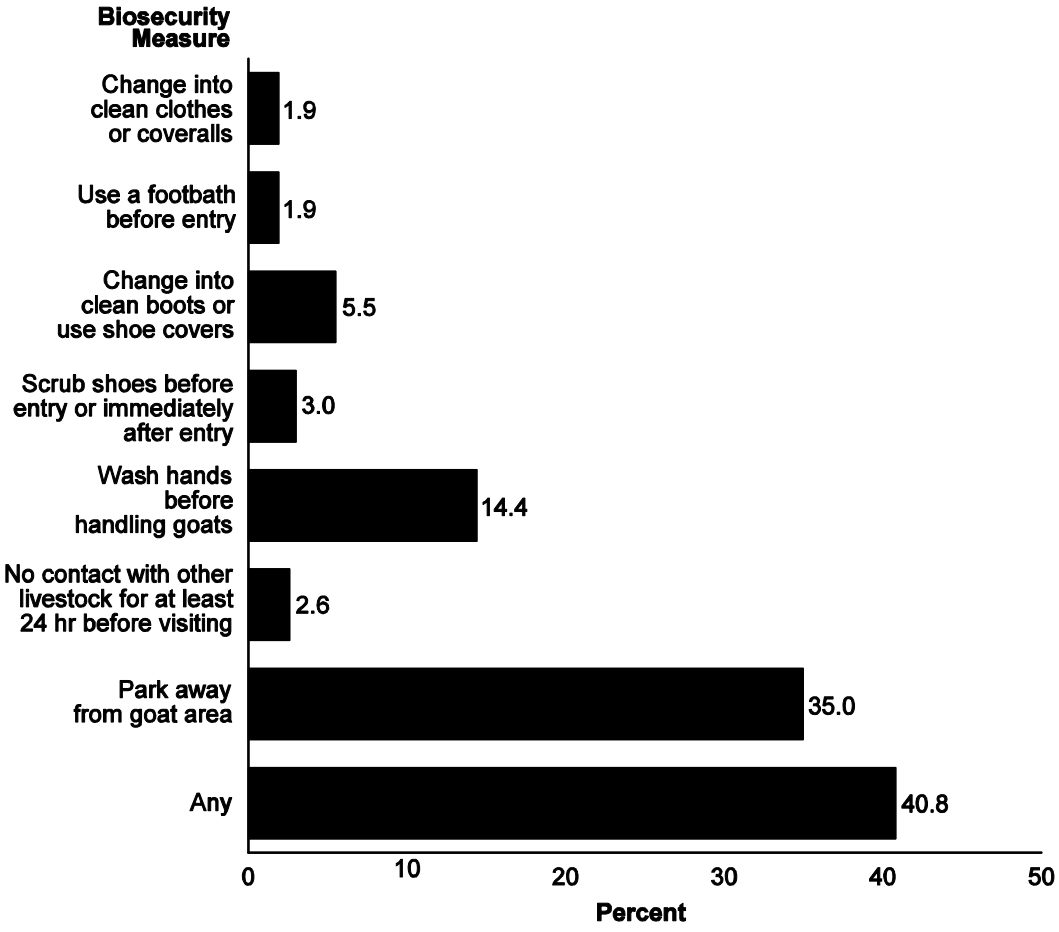
f. For operations on which any visitors entered the goat production area during the previous 12 months, percentage of operations that **always** required the following biosecurity measures, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Biosecurity Measure	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Change into clean clothes or coveralls	2.1	(1.0)	1.5	(0.7)	1.9	(0.6)	1.6	(0.9)	1.9	(0.5)
Use a footbath before entry	1.7	(0.9)	1.1	(0.6)	2.5	(0.7)	1.8	(0.6)	1.9	(0.4)
Change into clean boots or use shoe covers	4.8	(1.7)	5.4	(1.5)	6.0	(1.2)	8.4	(1.8)	5.5	(0.8)
Scrub shoes before or immediately after entry	1.1	(0.6)	3.0	(1.2)	5.0	(1.1)	3.8	(1.1)	3.0	(0.5)
Wash hands before handling goats	13.6	(2.5)	15.8	(2.4)	15.5	(1.9)	8.5	(1.5)	14.4	(1.3)
No contact with other livestock for at least 24 hr before visiting your goats	3.2	(1.5)	2.3	(1.0)	1.9	(0.6)	3.6	(1.0)	2.6	(0.6)
Park away from goat area	40.7	(3.8)	33.5	(3.1)	32.1	(2.5)	22.9	(2.7)	35.0	(1.8)
Any	45.3	(3.9)	39.8	(3.3)	38.4	(2.6)	29.7	(2.9)	40.8	(1.8)

For Operations on which Any Visitors Entered the Goat Production Area During the Previous 12 Months, Percentage of Operations that Always Required the Following Biosecurity Measures



A higher percentage of dairy goat operations (59.7 percent) than meat goat operations (35.1 percent) always used at least one biosecurity measure to prevent disease introduction by visitors who entered the goat production area. The two most commonly reported biosecurity measures on dairy goat operations were park away from the goat area (45.7 percent of operations) and washing hands before handling goats (30.9 percent).

g. For operations on which any visitors entered the goat production area during the previous 12 months, percentage of operations that **always** required the following biosecurity measures, by primary production:

	Percent Operations*							
	Primary Production							
	Meat		Dairy		Fiber		Other	
Biosecurity Measure	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Change into clean clothes or coveralls	1.6	(0.5)	3.7	(2.1)	7.2	(3.1)	1.2	(0.6)
Use a footbath before entry	2.3	(0.8)	3.5	(1.6)	5.3	(2.8)	0.5	(0.3)
Change into clean boots or use shoe covers	6.4	(1.3)	5.2	(1.6)	9.8	(4.3)	4.3	(1.4)
Scrub shoes before or immediately after entry	2.7	(0.7)	5.4	(1.6)	6.0	(2.9)	2.3	(0.8)
Wash hands before handling goats	10.4	(1.5)	30.9	(3.8)	14.8	(7.6)	13.0	(2.3)
No contact with other livestock for at least 24 hr before visiting your goats	1.6	(0.7)	4.6	(1.5)	14.4	(7.6)	2.5	(1.3)
Park away from goat area	30.6	(2.4)	45.7	(4.0)	53.3	(9.8)	35.5	(3.5)
Any	35.1	(2.5)	59.7	(3.9)	60.4	(10.1)	39.6	(3.5)

*Operations with one or more goats.

A higher percentage of large operations (15.6 percent) than medium or small operations (9.0 and 7.8 percent, respectively) had workers who lived off the operation and also owned livestock.

h. Percentage of operations that had any paid or unpaid workers, including family members, who lived off the operation and had goats or other livestock at their homes during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Small (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
7.8	(1.2)	9.0	(1.1)	15.6	(1.9)	9.1	(0.8)

Almost 9 of 10 operations (87.4 percent) had a worker or family member who had visited a feed store or mill during the previous 12 months. The majority of operations (51.8 percent) had a worker or family member that had visited another goat operation, a facility that sells goats (56.1 percent), or went to a sale, show, or fair (50.6 percent).

i. Percentage of operations that had any paid or unpaid workers, including the producer and family members, who had visited the following places during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Small (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Place	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Milk, fiber, or other processing plant	5.2	(0.9)	4.8	(0.7)	10.8	(1.4)	5.5	(0.5)
Goat slaughter facility	4.4	(0.9)	6.8	(0.9)	10.8	(1.4)	6.2	(0.6)
Other farms where goats are raised (separate from this operation)	46.4	(2.3)	53.5	(1.9)	65.9	(2.4)	51.8	(1.4)
Facility that sells goats (e.g., auction, flea market, swap meet, bird market)	49.8	(2.3)	57.8	(1.9)	74.2	(2.2)	56.1	(1.3)
Feed store or feed mill	85.4	(1.6)	88.3	(1.3)	91.0	(2.0)	87.4	(0.9)
Rendering facility	1.9	(0.6)	1.2	(0.4)	3.3	(0.7)	1.7	(0.3)
Goat sale, show, or fair	44.9	(2.2)	53.1	(1.9)	61.9	(2.5)	50.6	(1.3)

3. Physical contact with other animals

Almost 9 of 10 goat operations (88.8 percent) had dogs or cats on the operation, and more than one-half (52.9 percent) had horses or donkeys. A higher percentage of large operations had domestic sheep and beef or dairy cattle compared with the other-sized operations. Conversely, a lower percentage of large operations kept poultry compared with the other-sized operations.

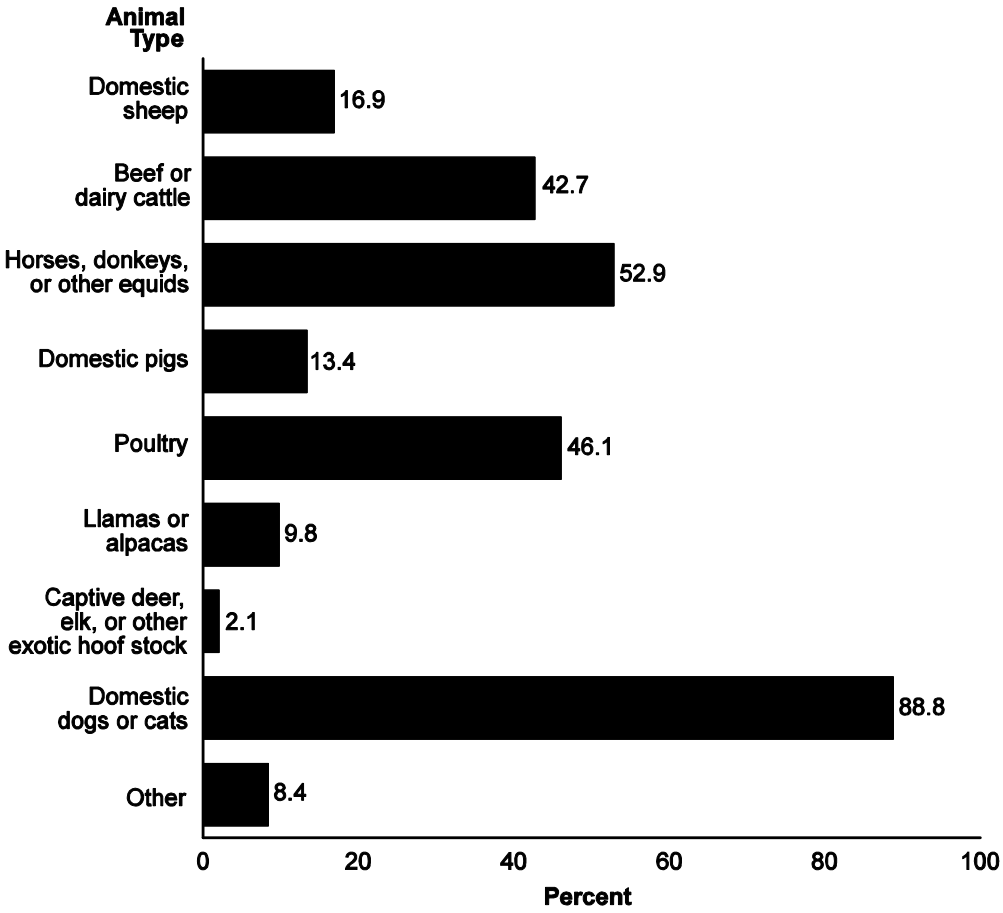
a. Percentage of operations that had any of the following types of animals on the operation during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Animal Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Domestic sheep	16.8	(1.6)	14.6	(1.5)	17.2	(1.4)	25.5	(2.1)	16.9	(0.9)
Beef or dairy cattle	42.1	(2.2)	37.8	(2.2)	44.4	(2.0)	59.9	(2.5)	42.7	(1.2)
Horses, donkeys, or other equids	59.0	(2.2)	45.5	(2.3)	47.7	(2.0)	56.5	(2.5)	52.9	(1.3)
Domestic pigs	14.5	(1.6)	13.8	(1.5)	11.9	(1.2)	10.3	(1.2)	13.4	(0.9)
Poultry (domestic chickens, turkeys, ducks, geese, etc.)	48.8	(2.2)	45.1	(2.2)	45.1	(1.9)	31.2	(2.1)	46.1	(1.2)
Llamas or alpacas	9.5	(1.3)	8.4	(1.2)	10.9	(1.2)	11.4	(1.4)	9.8	(0.7)
Captive deer, elk, or other exotic hoof stock	2.2	(0.7)	2.3	(0.7)	1.6	(0.5)	3.5	(0.9)	2.1	(0.4)
Domestic dogs or cats	90.6	(1.3)	88.5	(1.5)	86.1	(1.4)	88.0	(1.8)	88.8	(0.8)
Other domestic/ captive animals	11.0	(1.4)	6.7	(1.0)	6.1	(0.9)	3.1	(0.7)	8.4	(0.7)

Percentage of Operations that had Any of the Following Types of Animals on the Operation During the Previous 12 Months



A lower percentage of operations in the Southeast region (8.9 percent) had sheep than operations in the West region (22.2 percent) or Northeast region (23.6 percent). More than 1 of 5 operations in the Northeast region had pigs compared with approximately 1 of 10 operations in the West and Southeast regions.

b. Percentage of operations that had any the following types of animals on the operation during the previous 12 months, by region:

	Percent Operations*					
	Region					
	West		Southeast		Northeast	
Animal Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Domestic sheep	22.2	(1.9)	8.9	(1.0)	23.6	(2.0)
Beef or dairy cattle	40.4	(2.2)	41.3	(1.9)	47.2	(2.4)
Horses, donkeys, or other equids	52.9	(2.4)	52.8	(1.9)	53.0	(2.3)
Domestic pigs	9.6	(1.4)	10.5	(1.2)	21.8	(1.9)
Poultry (domestic chickens, turkeys, ducks, geese, etc.)	36.1	(2.3)	48.3	(1.9)	53.2	(2.4)
Llamas or alpacas	13.6	(1.6)	5.9	(0.9)	11.7	(1.5)
Captive deer, elk, or other exotic hoof stock	2.7	(0.8)	2.1	(0.6)	1.6	(0.6)
Domestic dogs or cats	87.4	(1.6)	86.4	(1.3)	93.9	(1.3)
Other domestic/ captive animals	8.5	(1.3)	6.2	(1.0)	11.7	(1.6)

*Operations with one or more goats.

In the West region, goats on more than one-fifth of operations had commingled or had fence-line contact with goats and sheep from another operation, and goats on more than one-third of operations (37.2 percent) commingled or had fence-line contact with cattle from another operation. The majority of operations in the West region (53.6 percent) reported that their goats had contact with predators (e.g., coyotes, bears, wolves, mountain lions). Goats on almost one-third of all operations had commingled or had fence-line contact with deer, elk, antelope, or other exotic hoofstock.

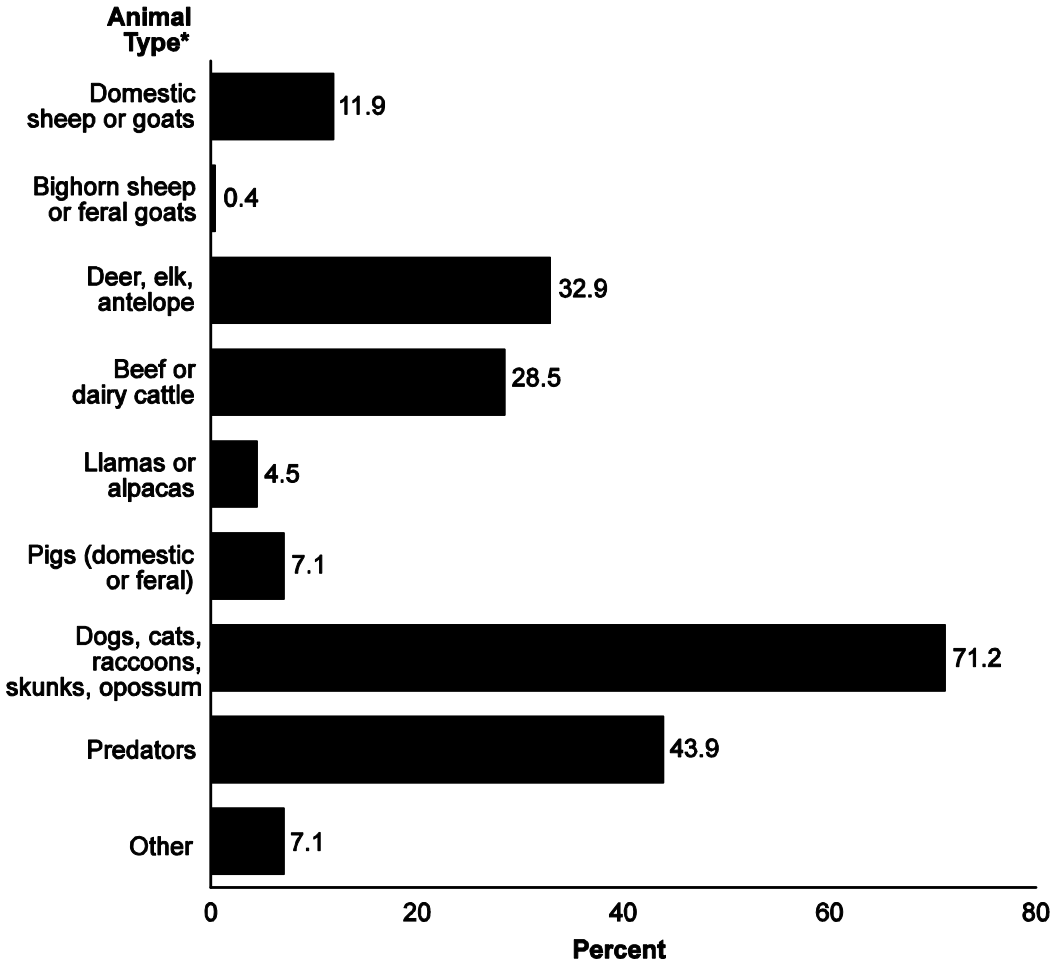
c. Percentage of operations on which goats had commingled or had fence-line contact with the following types of animals (not part of the operation) during the previous 12 months, by region:

Percent Operations

	Region							
	West		Southeast		Northeast		All Operations	
Animal Type*	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Domestic sheep or goats	21.2	(1.8)	6.3	(0.9)	11.0	(1.4)	11.9	(0.8)
Bighorn sheep or feral goats	1.0	(0.5)	0.2	(0.2)	0.2	(0.2)	0.4	(0.2)
Deer, elk, antelope, or other exotic hoof stock	35.1	(2.2)	32.2	(1.7)	31.8	(2.2)	32.9	(1.2)
Beef or dairy cattle	37.2	(2.2)	27.2	(1.7)	21.7	(1.8)	28.5	(1.1)
Llamas or alpacas	8.2	(1.2)	2.8	(0.7)	3.3	(0.8)	4.5	(0.5)
Pigs (domestic or feral)	9.8	(1.4)	7.7	(1.1)	3.4	(0.7)	7.1	(0.6)
Dogs, cats, raccoons, skunks, opossum	75.8	(2.1)	69.8	(1.8)	68.5	(2.3)	71.2	(1.2)
Predators (e.g., coyotes, bears, wolves, mountain lions)	53.6	(2.4)	43.4	(1.9)	34.9	(2.2)	43.9	(1.2)
Other	7.6	(1.4)	6.3	(0.9)	8.0	(1.3)	7.1	(0.7)

*Includes neighbors' animals, visiting domestic animals, and wild or feral animals.

Percentage of Operations on which Goats had Commingled or had Fence-line Contact with the Following Types of Animals (Not Part of the Operations) During the Previous 12 Months



*Includes neighbors' animals, visiting domestic animals, and wild or feral animals.

C. Marketing and Movement

1. Herd additions

About one-fifth of operations (21.5 percent) added any goats or kids to the operation during the previous 12 months. A higher percentage of operations added new goats (15.2 percent) than kids (12.0 percent).

a. Percentage of operations that added any goats or kids during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
	Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Goats	8.1	(1.2)	16.3	(1.7)	25.4	(1.7)	21.9	(1.8)	15.2	(0.8)
Kids	8.0	(1.1)	13.3	(1.5)	17.0	(1.5)	17.9	(1.6)	12.0	(0.7)
Goats or kids	13.3	(1.5)	23.7	(1.9)	32.4	(1.8)	31.0	(2.1)	21.5	(1.0)

Overall, for operations that added goats or kids during the previous 12 months, additions accounted for nearly 20 percent of the July 1 inventory.

b. For operations that added goats or kids during the previous 12 months, percentage of goats or kids added to total inventory on July 1, 2009, by primary production:

Percent Goats or Kids[1,2]

Primary Production

Meat		**Dairy**		**Fiber**		**Other**		**All Operations**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
20.9	(3.0)	11.3	(1.6)	22.0	(8.5)	25.1	(3.1)	19.6	(2.2)

[1]Number of goats or kids added during the previous 12 months / total goat and kid inventory on July 1, 2009 x 100.
[2]Operations with one or more goats.

Operations with fewer than 20 goats added goats about 1 time during the previous 12 months compared with two times for medium operations and three times for large operations.

c. For operations that added goats or kids during the previous 12 months, average number of times goats or kids were added, by herd size:

Average Number of Times*

Herd Size (Number of Goats and Kids)

Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Avg.	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
1.3	(0.1)	1.4	(0.1)	2.1	(0.4)	3.1	(0.5)	1.8	(0.2)

*E.g., if five goats were added all at once, it would count as one time.

Most operations that added goats (72.8 percent) acquired them directly from another goat operation. The second most common source was an auction market (23.5 percent).

d. For operations that added **goats** during the previous 12 months, percentage of operations by source of goats and by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Source	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Goat wholesaler or dealer	2.9	(2.0)	4.7	(2.3)	6.6	(1.9)	5.6	(1.8)	5.2	(1.1)
Directly from another premises with goats	81.6	(6.2)	76.0	(4.8)	67.1	(3.6)	67.7	(3.9)	72.8	(2.5)
Auction market	15.9	(6.0)	16.3	(4.1)	30.8	(3.6)	27.2	(3.7)	23.5	(2.5)
Farm store or feed store	0.0	(--)	3.9	(2.4)	0.9	(0.9)	0.9	(0.5)	1.4	(0.7)
Flea market, farmer's market, or swap meet	0.0	(--)	0.0	(--)	1.4	(1.0)	0.6	(0.5)	0.7	(0.5)
Fair or show	1.1	(1.1)	0.0	(--)	2.6	(1.2)	2.2	(1.4)	1.6	(0.6)
Other	0.0	(--)	0.9	(0.8)	0.5	(0.5)	1.4	(1.3)	0.5	(0.3)

As was the case with adult goats, most operations that added new kids (69.1 percent) acquired them directly from another goat operation. About one-fifth of operations that added new kids (21.2 percent) purchased them from an auction market.

e. For operations that added **kids** during the previous 12 months, percentage of operations by source of kids and by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Source	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Goat wholesaler or dealer	11.1	(4.4)	3.1	(1.8)	7.6	(2.6)	7.2	(2.2)	7.6	(1.7)
Directly from another premises with goats	71.2	(6.8)	71.8	(5.9)	65.1	(4.5)	72.4	(4.0)	69.1	(3.1)
Auction market	12.0	(4.5)	21.7	(5.5)	28.0	(4.3)	21.9	(3.7)	21.2	(2.6)
Farm store or feed store	0.0	(--)	1.9	(1.9)	0.0	(--)	0.4	(0.3)	0.5	(0.4)
Flea market, farmer's market, or swap meet	0.0	(--)	2.7	(1.9)	0.0	(--)	0.7	(0.6)	0.7	(0.5)
Fair or show	6.8	(4.5)	0.0	(--)	2.8	(1.4)	2.9	(1.1)	3.4	(1.5)
Other	6.2	(3.2)	0.0	(--)	2.2	(1.6)	0.0	(--)	2.7	(1.2)

For all new goats and kids added, about one-half (43.7 and 44.3 percent, respectively) were acquired directly from another goat operation. While a relatively large proportion of goats were sourced from auctions, a small proportion of operations obtained goats from auctions (see table d. p 41), indicating that a large number of goats were obtained from auctions by a few operations.

f. For operations* that added **goats** or **kids** during the previous 12 months, percentage of goats and kids by source :

Source	Percent Goats	Std. Error	Percent Kids	Std. Error
Goat wholesaler or dealer	4.9	(1.5)	17.7	(6.4)
Directly from another premises with goats	43.7	(7.1)	44.3	(5.9)
Auction market	49.5	(8.1)	36.1	(5.8)
Farm store or feed store	0.8	(0.4)	0.2	(0.1)
Flea market, farmer's market, or swap meet	0.5	(0.3)	0.1	(0.1)
Fair or show	0.5	(0.2)	1.1	(0.5)
Other	0.1	(0.0)	0.5	(0.3)
Total	100.0		100.0	

*Operations with one or more goats.

Photograph courtesy of Anson Eaglin

Very small operations purchased a higher percentage of kids (71.3 percent) from another goat operation compared with medium operations (36.2 percent). Very small operations purchased a lower percentage of kids from the auction market compared with small, medium, and large operations.

g. For operations that added **kids** during the previous 12 months, percentage of kids by source of kids and by herd size:

Percent Kids

Herd Size (Number of Goats and Kids)

Source	**Very Small** (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)	
	Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Goat wholesaler or dealer	9.7	(4.1)	2.0	(1.5)	14.4	(9.7)	27.3	(10.4)
Directly from another premises with goats	71.3	(6.7)	61.8	(11.3)	36.2	(10.2)	39.5	(8.0)
Auction market	11.3	(4.9)	33.9	(11.8)	48.2	(11.0)	32.3	(7.0)
Farm store or feed store	0.0	(--)	1.2	(1.2)	0.0	(--)	0.1	(0.1)
Flea market, farmer’s market, or swap meet	0.0	(--)	1.1	(0.8)	0.0	(--)	0.0	(0.0)
Fair or show	4.2	(3.0)	0.0	(--)	0.9	(0.6)	0.8	(0.5)
Other	3.5	(2.0)	0.0	(--)	0.3	(0.3)	0.0	(--)
Total	100.0		100.0		100.0		100.0	

2. Isolation[1] of new additions

A total of 48.6 percent of operations that added new goats or kids always isolated new arrivals, while 39.5 percent never isolated new arrivals.

a. For operations that added goats or kids during the previous 12 months, percentage of operations that isolated new additions from the primary herd, by frequency new additions were isolated and by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		Small (10–19)		Medium (20–99)		Large (100 or More)		All Operations	
Frequency	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Always	42.7	(5.8)	51.7	(4.5)	50.6	(3.4)	51.3	(3.7)	48.6	(2.4)
Sometimes	14.1	(4.1)	11.3	(2.9)	11.0	(2.1)	10.2	(2.2)	11.9	(1.6)
Never	43.2	(5.9)	37.0	(4.3)	38.4	(3.3)	38.5	(3.7)	39.5	(2.4)
Total	100.0		100.0		100.0		100.0		100.0	

b. For operations that added goats or kids during the previous 12 months, percentage of operations that isolated new additions from the primary herd, by frequency new additions were isolated and by region:

Percent Operations*

Region

	West		Southeast		Northeast	
Frequency	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Always	39.0	(4.4)	52.9	(4.2)	52.8	(4.0)
Sometimes	10.6	(2.9)	12.0	(2.8)	12.9	(2.7)
Never	50.4	(4.6)	35.1	(4.1)	34.3	(3.8)
Total	100.0		100.0		100.0	

*Operations with one or more goats.

[1]Prevent nose-to-nose contact with other goats on the operation and prevent sharing of feed, drinking water, and equipment.

On average, new arrivals were isolated for about 21 days before introduction into the herd. New goats or kids brought onto operation should be quarantined to reduce the risk of any infection being transmitted from the new arrivals to others in the herd. While 3-week quarantines are typical, a minimum of 30-days is recommended (Olcott, B. 2007). The ideal quarantine period is 60 days (Olcott, B. 2007). A longer quarantine is more likely to reduce any transmission of previously unrecognized infection.

c. For operations that added goats or kids during the previous 12 months and always isolated new arrivals from the primary herd prior to introduction, operation average **minimum** number of days new animals were isolated, by region:

Operation Average Minimum Number of Days*

Region

West		Southeast		Northeast		All Operations	
Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
23.8	(4.0)	18.2	(2.1)	22.9	(1.8)	21.2	(1.5)

*Operations with one or more goats.

3. Movement

One-fifth of medium and large operations had goats or kids leave and then return to the operation.

a. Percentage of operations on which any goats or kids left the operation during the previous 12 months to attend an event (e.g., fair, show, sale, rodeo, or visit to another operation) and then returned, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Very Small (Fewer than 10)		Small (10–19)		Medium (20–99)		Large (100 or More)		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
12.2	(1.4)	17.6	(1.7)	20.5	(1.5)	20.6	(1.9)	16.1	(0.8)

A higher percentage of operations in the Northeast region (23.5 percent) than operations in the West and Southeast regions (16.1 and 11.2 percent, respectively) had goats or kids leave to attend an event and then return to the operation.

b. Percentage of operations on which any goats or kids left the operation during the previous 12 months to attend an event (e.g., fair, show, sale, rodeo, or visit to another operation) and then returned, by region:

Percent Operations*					
Region					
West		Southeast		Northeast	
Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
16.1	(1.6)	11.2	(1.1)	23.5	(1.8)

*Operations with one or more goats.

A higher percentage of dairy goat operations (33.9 percent) than meat goat operations (18.0 percent) had goats or kids leave to attend an event and then return to the operation.

c. Percentage of operations on which any goats or kids left the operation during the previous 12 months to attend an event (e.g., fair, show, sale, rodeo, or visit to another operation) and then returned, by primary production:

Percent Operations*							
Primary Production							
Meat		Dairy		Fiber		Other	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
18.0	(1.3)	33.9	(3.1)	20.4	(4.9)	10.3	(1.2)

*Operations with one or more goats.

Most goat operations (61.8 percent) never isolated goats or kids returning to the operation after attending an event. About one-fourth of the operations always isolated returning goats or kids.

d. For operations on which any goats or kids left the operation to attend an event (e.g., fair, show, sale, rodeo, or visit to another operation) and then returned, percentage of operations that isolated returning goats or kids before reintroduction to the herd, by frequency of isolation and by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Frequency	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Always	25.8	(5.4)	23.0	(4.3)	32.4	(3.8)	28.5	(4.3)	27.6	(2.5)
Sometimes	3.7	(2.1)	17.3	(4.1)	12.0	(2.5)	15.0	(3.5)	10.6	(1.6)
Never	70.5	(5.6)	59.7	(5.1)	55.6	(4.0)	56.5	(4.8)	61.8	(2.7)
Total	100.0		100.0		100.0		100.0		100.0	

For operations that always isolated goats or kids returning from an event, more than 6 of 10 operations (62.7 percent) isolated the goats or kids for a minimum of 7 to 21 days.

e. For operations that **always** isolated goats or kids returning from an event (e.g., fair, show, sale, rodeo, or visit to another operation), percentage of operations by **minimum** length of isolation:

Minimum Length of Isolation (Days)	**Percent Operations**	**Std. Error**
Less than 7	11.2	(3.5)
7 to 21	62.7	(5.6)
22 or more	26.1	(5.3)
Total	100.0	

Goats or kids returning from an event were isolated for an average of about 19 days on operations that always isolated returning goats or kids.

f. For operations that **always** isolated goats or kids returning from an event (e.g., fair, show, sale, rodeo, or visit to another operation), operation average minimum number of days returning animals were isolated, by herd size:

Operation Average Minimum Number of Days

Herd Size (Number of Goats and Kids)

Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Avg.	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
20.3	(5.0)	14.2	(2.5)	19.6	(3.3)	22.5	(4.1)	18.9	(2.1)

4. Operations that sold weaned kids

About two-thirds of operations (66.1 percent) sold at least one weaned kid during the previous 12 months. Because certain markets, such as Easter kids or cabrito, require very young animals that may not have been weaned prior to sale, it is possible this underestimates the number of operations that sold kids.

a. For operations with kids born from July 1, 2008, through June 30, 2009, percentage of operations that sold any weaned kids during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Small (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
58.4	(2.5)	70.3	(1.9)	74.1	(2.5)	66.1	(1.4)

A higher percentage of meat goat operations (71.4 percent) sold weaned kids than operations in the “other” category (48.4 percent).

b. For operations with kids born from July 1, 2008, through June 30, 2009, percentage of operations that sold any weaned kids during the previous 12 months, by primary production:

Percent Operations*

Primary Production

Meat		Dairy		Fiber		Other	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
71.4	(1.7)	65.1	(3.5)	50.6	(9.0)	48.4	(3.4)

*Operations with 10 or more goats.

While the average age of doe kids at weaning was 14.4 weeks, weaned doe kids averaged 19.8 weeks of age at the time of sale. Large operations reported the highest average weight for weaned doe kids sold (53.7 pounds), which reflects the kids’ older age at the time of sale. Weaned buck kids averaged 19.5 weeks of age at the time of sale.

c. Operation average age and weight of weaned doe kids and weaned buck kids sold during the previous 12 months, by herd size:

Operation Average

Herd Size (Number of Goats and Kids)

	Small (10–19)		Medium (20–99)		Large (100 or More)		All Operations	
	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
Does								
Age (wk)	18.8	(0.7)	20.0	(0.5)	21.4	(0.5)	19.8	(0.4)
Weight (lb)	45.4	(1.4)	47.5	(0.8)	53.7	(1.0)	47.6	(0.7)
Bucks								
Age (wk)	18.8	(0.7)	19.6	(0.5)	20.8	(0.4)	19.5	(0.3)
Weight (lb)	49.0	(1.6)	49.2	(0.8)	54.8	(0.9)	49.8	(0.7)

Weaned doe kids sold from operations in the Northeast region were sold at a younger average age (16.5 weeks) than doe kids sold from the West and Southeast regions (21.3 and 19.9 weeks, respectively), which might be due to the different primary production focuses in the regions. Weaned buck kids sold in the Northeast region were sold at a younger average age (16.1 weeks) than weaned buck kids sold in West and Southeast regions (21.0 and 19.7 weeks, respectively).

d. Operation average age and weight of weaned doe kids and weaned buck kids sold during the previous 12 months, by region:

	Operation* Average					
	Region					
	West		Southeast		Northeast	
Does	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
Does						
Age (wk)	21.3	(0.6)	19.9	(0.6)	16.5	(0.6)
Weight (lb)	50.9	(1.0)	45.4	(1.1)	46.1	(1.4)
Bucks						
Age (wk)	21.0	(0.6)	19.7	(0.5)	16.1	(0.6)
Weight (lb)	53.1	(1.0)	48.9	(1.3)	45.6	(1.3)

*Operations with 10 or more goats.

Weaned doe kids on dairy goat operations averaged 14.9 weeks of age at the time of sale, which was younger than the average 21.0 weeks of age for weaned doe kids sold on meat goat operations. On dairy goat operations, weaned buck kids averaged 13.7 weeks of age at the time of sale, which was much younger than the average 20.7 weeks of age for weaned buck kids sold on meat goat operations.

e. Operation average age and weight of weaned doe kids and weaned buck kids sold during the previous 12 months, by primary production:

	Operation* Average Primary Production							
	Meat		Dairy		Fiber		Other	
Number of Weeks	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error	Avg.	Std. Error
Does								
Age (wk)	21.0	(0.4)	14.9	(1.0)	18.2	(2.0)	16.5	(0.8)
Weight (lb)	50.0	(0.7)	46.4	(2.5)	39.6	(3.5)	34.2	(2.0)
Bucks								
Age (wk)	20.7	(0.4)	13.7	(0.8)	16.8	(1.6)	16.8	(0.9)
Weight (lb)	52.8	(0.8)	43.5	(2.1)	39.4	(3.8)	36.4	(2.0)

*Operations with 10 or more goats.

5. Marketing

This section refers to animals that were removed from the operation alive and marketed through various channels. This section does not include animals that were slaughtered for home consumption or were otherwise dead when removed, nor does it capture animals that were sold and slaughtered on the operation by the buyer or the producer.

Marketing animals at an auction or sale barn requires little effort in finding a buyer. However, direct sales to consumers can be more profitable since there may be no transportation costs and no middleman or sales commission.

The percentage of operations that permanently removed goats 1 year old or older increased with herd size, ranging from 13.9 percent of very small operations to 60.6 percent of large operations. The same trend was true for operations that permanently removed kids, with 17.9 percent of very small operations removing kids from the operation compared with 80.8 percent of large operations.

a. Percentage of operations that permanently removed goats or kids during the previous 12 months, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
	Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Goats	13.9	(1.5)	39.2	(2.2)	48.1	(1.9)	60.6	(2.6)	31.0	(1.0)
Kids	17.9	(1.7)	53.8	(2.3)	66.0	(1.9)	80.8	(2.3)	41.9	(1.1)
Either goats or kids	24.2	(1.9)	65.4	(2.1)	73.6	(1.7)	86.4	(2.1)	49.7	(1.2)

A higher percentage of operations in the West region (49.4 percent) permanently removed kids compared with operations in the Southeast and Northeast regions (39.5 and 37.8 percent, respectively).

b. Percentage of operations that permanently removed goats or kids during the previous 12 months, by region:

	Percent Operations*					
	Region					
	West		Southeast		Northeast	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Goats	34.1	(2.0)	30.9	(1.7)	27.9	(1.8)
Kids	49.4	(2.2)	39.5	(1.8)	37.8	(2.0)
Either goats or kids	55.1	(2.2)	49.4	(1.8)	44.6	(2.1)

*Operations with one or more goats.

A higher percentage of meat and dairy goat operations (63.1 and 61.1 percent, respectively) permanently removed kids compared with fiber or “other” operations (32.8 and 17.9 percent, respectively).

c. Percentage of operations that permanently removed goats or kids during the previous 12 months, by primary production:

	Percent Operations*							
	Primary Production							
	Meat		Dairy		Fiber		Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Goats	46.3	(1.7)	42.4	(3.2)	31.4	(6.1)	14.1	(1.3)
Kids	63.1	(1.7)	61.1	(3.3)	32.8	(6.2)	17.9	(1.4)
Either goats or kids	72.3	(1.6)	72.2	(3.0)	40.3	(6.4)	23.6	(1.6)

*Operations with one or more goats.

Goats or kids removed during the previous 12 months represented 61.4 percent of the July 1, 2009, inventory.

d. For operations that permanently removed goats or kids during the previous 12 months, percentage of goats or kids removed relative to total inventory on July 1, 2009, by primary production:

Percent Operations*

Primary Production

Meat		Dairy		Fiber		Other		All Operations	
Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
62.6	(2.4)	50.2	(2.7)	60.6	(16.0)	68.6	(5.8)	61.4	(2.0)

*Operations with one or more goats.

For operations that permanently removed **kids** during the previous 12 months, the highest percentages of operations permanently removed kids through an auction/sale barn or by direct sales to consumer or ethnic market (52.8 percent and 31.1 percent, respectively). A higher percentage of meat goat operations (61.7 percent) permanently removed kids by auction/sale barn compared with dairy goat operations (34.5 percent). Conversely, a higher percentage of dairy goat operations than meat goat operations permanently removed kids through direct sales to consumer or ethnic market (41.8 and 25.5 percent, respectively).

e. For operations that permanently removed **kids** during the previous 12 months, percentage of operations by method of removal and by primary production:

Percent Operations*

Primary Production

	Meat		Dairy		Fiber		Other		All Operations	
Method	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Direct sales to consumer or ethnic market	25.5	(1.8)	41.8	(4.3)	15.0	(7.2)	42.7	(4.3)	31.1	(1.6)
Direct sales to slaughter plant/ packer	4.9	(0.8)	2.1	(1.3)	0.0	(--)	4.9	(2.2)	4.4	(0.7)
Taken to slaughter plant with retained ownership	0.8	(0.3)	2.1	(1.0)	0.0	(--)	0.0	(--)	0.8	(0.2)
Direct sales to another goat producer or goat backgrounder	16.8	(1.5)	27.5	(3.4)	28.6	(9.4)	9.9	(2.3)	17.1	(1.2)
Auction/sale barn	61.7	(2.0)	34.5	(3.8)	50.1	(11.5)	36.8	(4.1)	52.8	(1.7)
Buyer/dealer	9.6	(1.2)	8.4	(2.2)	10.6	(9.5)	5.6	(2.3)	8.6	(1.0)
Other	4.1	(0.8)	8.2	(2.4)	5.5	(3.6)	14.8	(3.4)	6.8	(0.9)

*Operations with one or more goats.

For operations that permanently removed goats during the previous 12 months, a higher percentage of dairy goat operations (34.6 percent) than meat goat operations (17.5 percent) permanently removed goats via direct sales to another goat producer or backgrounder. A lower percentage of dairy goat operations permanently removed goats via auction (45.3 percent) compared with meat goat operations (64.7 percent). More than one-fifth of operations that permanently removed goats sold them directly to the consumer or an ethnic market.

f. For operations that permanently removed **goats** during the previous 12 months, percentage of operations by method of removal and by primary production:

Percent Operations*

Primary Production

	Meat		Dairy		Fiber		Other		All Operations	
Method	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Direct sales to consumer or ethnic market	19.5	(1.9)	17.6	(3.5)	10.0	(4.1)	33.2	(5.0)	21.9	(1.7)
Direct sales to slaughter plant/ packer	3.3	(0.8)	4.2	(1.6)	0.0	(--)	1.6	(0.8)	3.0	(0.6)
Taken to slaughter plant with retained ownership	0.7	(0.3)	3.3	(1.5)	0.0	(--)	0.7	(0.7)	1.0	(0.3)
Direct sales to another goat producer or goat backgrounder	17.5	(1.9)	34.6	(4.2)	35.3	(10.2)	21.8	(4.1)	21.0	(1.6)
Auction/sale barn	64.7	(2.3)	45.3	(4.5)	55.7	(11.5)	41.9	(5.0)	57.3	(2.0)
Buyer/dealer	6.7	(1.1)	8.7	(2.2)	19.1	(10.6)	5.4	(3.0)	6.9	(1.0)
Other	1.1	(0.5)	4.0	(1.6)	0.0	(--)	1.7	(1.3)	1.6	(0.5)

*Operations with one or more goats.

Across herd sizes, the highest percentage of kids permanently removed were removed via an auction or sale barn.

g. For operations that permanently removed **kids** during the previous 12 months, percentage of kids removed, by method of removal and by herd size:

Percent Kids Removed

Herd Size (Number of Goats and Kids)

Method	Very Small (Fewer than 10)		Small (10–19)		Medium (20–99)		Large (100 or More)		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Direct sales to consumer or ethnic market	25.4	(4.6)	23.0	(3.2)	17.1	(1.9)	9.8	(1.9)	14.6	(1.3)
Direct sales to slaughter plant/ packer	2.3	(1.3)	2.6	(1.3)	6.9	(2.9)	3.4	(0.8)	4.5	(1.2)
Taken to slaughter plant with retained ownership	0.0	(--)	0.4	(0.2)	0.8	(0.6)	1.1	(0.5)	0.9	(0.3)
Direct sales to another goat producer or goat backgrounder	7.8	(2.4)	10.1	(2.0)	12.9	(2.5)	9.5	(1.7)	10.8	(1.3)
Auction/sale barn	45.9	(5.0)	53.5	(4.4)	52.6	(3.4)	61.1	(3.8)	56.5	(2.3)
Buyer/dealer	11.4	(4.2)	7.1	(1.9)	6.4	(1.5)	14.3	(3.3)	10.5	(1.7)
Other	7.2	(3.5)	3.3	(1.0)	3.3	(1.0)	0.8	(0.3)	2.2	(0.4)
Total	100.0		100.0		100.0		100.0		100.0	

On meat and fiber operations, the highest percentage of kids permanently removed were removed through an auction or sale barn. A higher percentage of dairy kids were sold via buyer/dealer compared with kids on fiber and “other” operations.

h. For operations that permanently removed **kids** during the previous 12 months, percentage of kids removed, by method of removal and by primary production:

	Percent Kids Removed*							
	Primary Production							
	Meat		Dairy		Fiber		Other	
Method	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Direct sales to consumer or ethnic market	11.6	(1.4)	21.2	(3.5)	5.2	(3.0)	36.0	(5.3)
Direct sales to slaughter plant/ packer	5.4	(1.5)	0.5	(0.2)	0.0	(--)	2.8	(1.3)
Taken to slaughter plant with retained ownership	1.0	(0.4)	0.4	(0.2)	0.0	(--)	0.0	(--)
Direct sales to another goat producer or goat backgrounder	8.2	(1.1)	23.6	(4.1)	16.0	(7.4)	17.7	(8.7)
Auction/sale barn	62.6	(2.6)	27.5	(4.2)	76.4	(9.3)	33.9	(5.3)
Buyer/dealer	9.6	(1.8)	23.5	(7.0)	2.1	(2.2)	2.4	(1.0)
Other	1.6	(0.5)	3.3	(1.2)	0.3	(0.3)	7.2	(2.3)
Total	100.0		100.0		100.0		100.0	

*Operations with one or more goats.

Across herd sizes, most goats (58.6 percent) were permanently removed via an auction or sale barn.

i. For operations that permanently removed **goats** during the previous 12 months, percentage of goats removed, by method of removal and by herd size:

Percent Goats Removed

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Method	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Direct sales to consumer or ethnic market	16.6	(5.3)	22.4	(5.0)	13.0	(2.4)	9.6	(3.7)	13.1	(1.9)
Direct sales to slaughter plant/ packer	0.0	(--)	1.6	(0.8)	10.1	(5.5)	2.9	(1.1)	5.6	(2.6)
Taken to slaughter plant with retained ownership	0.7	(0.6)	0.2	(0.2)	0.2	(0.1)	1.2	(0.6)	0.6	(0.2)
Direct sales to another goat producer or goat backgrounder	20.8	(6.6)	17.6	(4.1)	15.8	(3.0)	10.0	(2.0)	14.2	(1.7)
Auction/sale barn	56.3	(9.3)	52.2	(5.7)	56.4	(5.3)	63.5	(5.0)	58.6	(3.1)
Buyer/dealer	4.9	(2.7)	5.7	(1.8)	3.8	(1.4)	12.3	(3.3)	7.3	(1.4)
Other	0.7	(0.5)	0.3	(0.2)	0.7	(0.5)	0.5	(0.2)	0.6	(0.2)
Total	100.0		100.0		100.0		100.0		100.0	

A higher percentage of goats sold from dairy goat operations (29.4 percent) were sold directly to other operations than goats sold from meat goat operations (11.4 percent).

j. For operations that permanently removed **goats** during the previous 12 months, percentage of goats removed, by method of removal and by primary production:

	Percent Goats Removed							
	Primary Production							
	Meat		Dairy		Fiber		Other	
Method	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Direct sales to consumer or ethnic market	11.8	(2.3)	8.1	(2.0)	1.8	(1.1)	32.8	(6.1)
Direct sales to slaughter plant/ packer	6.5	(3.3)	4.0	(1.4)	0.0	(--)	2.1	(1.4)
Taken to slaughter plant with retained ownership	0.6	(0.3)	1.0	(0.5)	0.0	(--)	0.4	(0.4)
Direct sales to another goat producer or goat backgrounder	11.4	(1.9)	29.4	(4.8)	18.7	(10.2)	18.6	(4.5)
Auction/sale barn	62.3	(3.9)	43.9	(5.7)	64.0	(14.4)	42.9	(6.2)
Buyer/dealer	6.9	(1.7)	12.1	(4.0)	15.5	(7.7)	2.7	(1.9)
Other	0.5	(0.3)	1.5	(0.7)	0.0	(--)	0.5	(0.4)
Total	100.0		100.0		100.0		100.0	

6. Culling

Operations cull animals because of disease, to reduce herd size, to improve genetics or desirable phenotypic traits, or to economize during episodes of high feed costs. Operations attempting to enlarge their herds are less likely to cull animals for most of these reasons.

The percentage of operations that culled either breeding bucks or does increased with herd size, ranging from 8.1 percent of very small operations to 52.6 percent of large operations. About twice the percentage of operations culled breeding does (29.9 percent) as culled breeding bucks (14.5 percent), which might be because most operations have more breeding does than bucks.

a. Percentage of operations that culled at least one breeding buck or doe during the previous 12 months, by goat type and by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**		**Only Operations with 10 or More**	
Goat Type	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Bucks	4.0	(0.9)	12.1	(1.6)	15.1	(1.4)	21.4	(2.1)	9.6	(0.7)	14.5	(1.0)
Does	6.3	(1.0)	20.8	(1.9)	33.3	(1.9)	50.1	(2.6)	18.7	(0.8)	29.9	(1.2)
Either	8.1	(1.2)	25.8	(2.1)	36.6	(1.9)	52.6	(2.6)	21.7	(0.9)	33.8	(1.3)

Breeding bucks and does culled as a percentage of the July 1, 2009, breeding goat inventory was 20.6 and 15.3 percent, respectively.

b. Percentage of breeding goats culled during the previous 12 months, by goat type and by herd size:

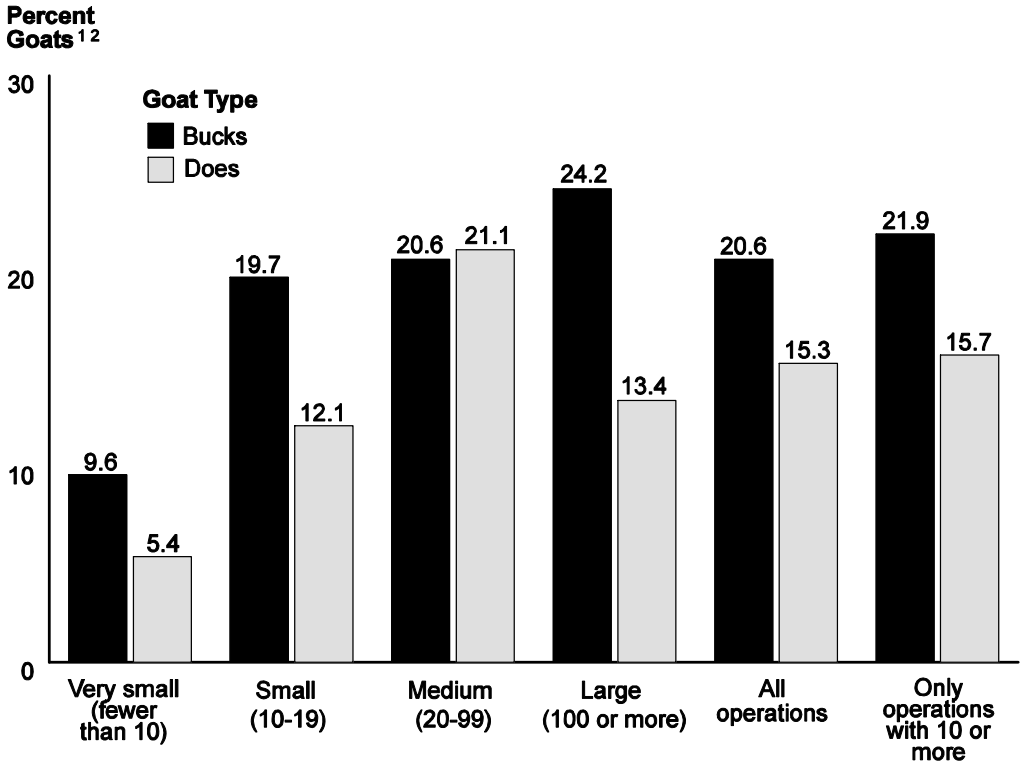
Percent Goats[1,2]

Herd Size (Number of Goats and Kids)

Goat Type	Very Small (Fewer than 10)		Small (10–19)		Medium (20–99)		Large (100 or More)		All Operations		Only Operations with 10 or More	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Bucks	9.6	(3.2)	19.7	(4.2)	20.6	(4.2)	24.2	(8.8)	20.6	(3.6)	21.9	(4.0)
Does	5.4	(1.7)	12.1	(1.9)	21.1	(3.1)	13.4	(1.8)	15.3	(1.4)	15.7	(1.5)

[1]The number of breeding bucks or does culled during the previous 12 months, as a percentage of the July 1, 2009, breeding goat inventory.
[2]This table excludes operations that had any goats with the primary use of “other.” See Terms Used in This Report, p 6.

Percentage of Breeding Goats Culled During the Previous 12 Months, by Goat Type and by Herd Size



[1] The number of breeding bucks or does culled during the previous 12 months, as a percentage of the July 1, 2009, breeding inventory.
[2] This graph excludes operations that had any goats with the primary use of "other." See Terms Used in This Report.

The top three reasons operations culled does were old age (31.9 percent of operations), low productivity (23.8 percent), and economic issues (17.8 percent). About one of four operations (25.7 percent) culled bucks due to other reasons. The “other” reasons often included buck temperament or odor and that the operation had too many bucks.

c. For operations that culled breeding bucks and does during the previous 12 months, percentage of operations by reason for culling:

	Percent Operations[1]			
	Bucks		Does	
Reason	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Mastitis (including hard bag syndrome)			11.6	(1.5)
Thin or unthrifty	2.2	(0.9)	5.1	(0.9)
CNS signs[2]	0.0	(0.0)	0.6	(0.2)
Internal parasites, low blood count, or based on FAMACHA© score	0.7	(0.7)	1.9	(0.7)
Other illness	0.9	(0.6)	2.2	(0.7)
Low productivity	3.6	(1.1)	23.8	(2.0)
Poor genetics (conformational faults, small young, etc.)	14.5	(2.4)	13.4	(1.7)
Old age/teeth problems	12.9	(2.1)	31.9	(2.2)
Poor mothering			12.6	(1.6)
Failure to kid (open or aborted) or other reproductive problems			11.9	(1.5)
High somatic cell count			1.0	(0.4)
Buck breeding performance	20.1	(3.0)		
Economic issues (e.g., drought, herd reduction, market conditions)	23.5	(3.1)	17.8	(1.9)
Other	25.7	(3.2)	13.1	(1.8)

[1]Operations with 10 or more goats.
[2]Loss of coordination, staggering, swaying, falling down, high stepping of forelegs or stiff rear legs, lip smacking, etc.

Economic issues was the primary reason for culling breeding bucks and does (38.3 and 27.3 percent of animals culled, respectively). The percentage of bucks culled for breeding performance and for other issues was 16.6 and 19.3 percent, respectively. A large percentage of bucks were culled for "other" reasons, which included too many bucks, behavioral problems, and changing bloodlines. The most commonly reported reasons for culling does were: economic issues (27.3 percent of does culled), old age (24.4 percent) and low productivity (14.3 percent).

d. For breeding bucks and does culled during the previous 12 months, percentage of culled bucks and does by reason for culling:

	Percent Culled[1]			
	Bucks		Does	
Reason	**Percent**	**Std. Error**	**Percent**	**Std. Error**
Mastitis (including hard bag syndrome)			2.8	(0.4)
Thin or unthrifty	1.3	(0.5)	4.7	(2.3)
CNS signs[2]	0.0	(0.0)	0.4	(0.2)
Internal parasites, low blood count, or based on FAMACHA© score	0.2	(0.2)	0.6	(0.2)
Other illness	0.7	(0.5)	0.4	(0.1)
Low productivity	1.8	(0.6)	14.3	(2.2)
Poor genetics (conformational faults, small young, etc.)	11.1	(3.7)	8.7	(2.2)
Old age/teeth problems	10.7	(2.8)	24.4	(2.9)
Poor mothering			4.9	(1.2)
Failure to kid (open or aborted) or other reproductive problems			3.3	(0.6)
High somatic cell count			0.2	(0.1)
Buck breeding performance	16.6	(4.7)		
Economic issues (e.g., drought, herd reduction, market conditions)	38.3	(9.0)	27.3	(4.8)
Other	19.3	(4.0)	8.0	(1.9)
Total	100.0		100.0	

[1]On operations with 10 or more goats.
[2]Loss of coordination, staggering, swaying, falling down, high stepping of forelegs or stiff rear legs, lip smacking, etc.

The average age of bucks culled on large operations was 4.3 years, while the average age of bucks culled on medium and small operations was 3.2 and 3.4 years, respectively. The average age of breeding does culled increased with herd size.

e. For operations that culled at least one breeding buck or doe during the previous 12 months, operation average age of bucks and does at culling, by herd size:

	Operation Average Age (Years)							
	Herd Size (Number of Goats and Kids)							
	Small (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
	Avg.	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
Bucks	3.4	(0.4)	3.2	(0.2)	4.3	(0.2)	3.4	(0.2)
Does	3.6	(0.2)	4.4	(0.1)	5.1	(0.1)	4.3	(0.1)

The average age of breeding does culled on dairy goat operations was 3.6 years compared with an average age of 4.5 years for culled does on meat goat operations.

f. For operations that culled at least one breeding buck or doe during the previous 12 months, operation average age of bucks and does at culling, by primary production:

	Operation* Average Age (Years)							
	Primary Production							
	Meat		**Dairy**		**Fiber**		**Other**	
	Avg.	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**	**Avg.**	**Std. Error**
Bucks	3.6	(0.2)	3.2	(0.3)	3.5	(0.8)	2.6	(0.2)
Does	4.5	(0.1)	3.6	(0.2)	4.3	(0.6)	3.4	(0.3)

*Operations with 10 or more goats.

About 6 of 10 operations with 10 or more goats that culled at least one breeding buck or doe (64.7 percent) had goats with either individual or herd identification (ID). A higher percentage of large operations (83.7 percent) used either individual or herd ID than very small, small, or medium operations (51.0, 50.5, and 67.5 percent, respectively).

g. For operations that culled at least one breeding buck or doe during the previous 12 months, percentage of operations that had goats with individual ID[1] or herd ID[2] at the time of the interview, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**		**Only Operations with 10 or More**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
51.0	(7.5)	50.5	(4.6)	67.5	(3.2)	83.7	(2.4)	62.3	(2.3)	64.7	(2.3)

[1]E.g., a unique number assigned to each goat.
[2]E.g., farm name, farm logo, or a number unique to this farm.

A higher percentage of dairy goat operations with 10 or more goats that had culled at least one breeding buck or doe (81.8 percent) had goats with individual or herd ID at the time of the interview compared with of meat goat operations with 10 or more goats (64.8 percent).

h. For operations that culled at least one breeding buck or doe during the previous 12 months, percentage of operations that had goats with individual ID[1] or herd ID[2] at the time of the interview, by primary production:

Percent Operations

Primary Production

	Meat		**Dairy**		**Fiber**		**Other**	
	Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Operations with 1 or more goats	64.6	(2.8)	72.2	(5.5)	77.8	(14.3)	46.1	(6.3)
Only operations with 10 or more goats	64.8	(2.8)	81.8	(4.6)	77.8	(14.3)	43.3	(2.3)

[1]E.g., a unique number assigned to each goat.
[2]E.g., farm name, farm logo, or a number unique to this farm.

About 4 of 10 cull goats had a herd ID when they left the operation. Small operations had the lowest percentage of cull goats with a herd ID.

i. Percentage of goats culled during the previous 12 months that had herd ID[1] when culled, by herd size:

Percent Culls[2]

Herd Size (Number of Goats and Kids)

Small (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
22.9	(4.9)	44.3	(5.3)	42.5	(6.3)	40.5	(3.7)

[1]E.g., farm name, farm logo, or a number unique to this farm.
[2]On operations with 10 or more goats.

D. Identification

Note: the tables in this section represent operations with one or more goats.

1. Identification types

Individual animal indentification (ID) helps producers monitor important production parameters. Herd ID helps producers identify animals should one herd become commingled with another herd. Herd ID can also aid in finding a particular animal's herd of origin. Certain forms of ID are required by the USDA and/or individual States when animals are moved from their herd of origin or when they are sold.

The percentage of operations that used **either** herd or individual animal ID increased with herd size, ranging from 30.7 percent of very small operations to 74.3 percent of large operations. Overall, 53.2 percent of operations with 10 or more goats used either herd or individual animal ID at the time of the interview. Across herd sizes, a higher percentage of operations used individual animal ID than herd ID.

a. Percentage of operations on which any goats had an individual ID[1] or herd ID[2] at the time of the interview, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

	Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**		**Only Operations with 10 or More**	
ID Type	**Pct.**	**Std. Err.**	**Pct.**	**Std. Err.**	**Pct.**	**Std. Err.**	**Pct.**	**Std. Err.**	**Pct.**	**Std. Err.**	**Pct.**	**Std. Err.**
Herd	15.8	(1.5)	28.6	(1.9)	39.8	(1.8)	52.9	(2.5)	26.8	(1.0)	36.6	(1.2)
Individual	27.9	(1.9)	42.1	(2.2)	53.5	(1.9)	67.4	(2.5)	39.8	(1.1)	50.3	(1.3)
Either	30.7	(2.0)	44.4	(2.2)	56.1	(1.9)	74.3	(2.3)	42.6	(1.2)	53.2	(1.3)

[1] E.g., a unique number assigned to each goat.
[2] E.g., farm name, farm logo, or a number unique to this farm.

The percentage of operations that used either herd or animal ID differed by region: 52.2 percent of operations in the Northeast region compared with 43.8 percent in the West region and 35.6 percent in the Southeast region.

b. Percentage of all operations on which any goats had an individual ID[1] or herd ID[2] at the time of the interview, by region:

	Percent Operations					
	Region					
	West		Southeast		Northeast	
ID Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Herd	27.7	(1.6)	20.7	(1.4)	35.2	(2.0)
Individual	40.6	(2.1)	33.0	(1.7)	49.4	(2.2)
Either	43.8	(2.2)	35.6	(1.7)	52.2	(2.3)

[1]E.g., a unique number assigned to each goat.
[2]E.g., farm name, farm logo, or a number unique to this farm.

A higher percentage of dairy goat operations (66.7 percent) than meat goat operations (54.2 percent) used either herd or animal ID.

c. Percentage of all operations on which any goats had an individual ID[1] or herd ID[2] at the time of the interview, by primary production:

	Percent Operations							
	Primary Production							
	Meat		Dairy		Fiber		Other	
ID Type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Herd	36.2	(1.6)	47.9	(3.3)	47.0	(6.5)	12.9	(1.3)
Individual	51.2	(1.7)	62.8	(3.3)	69.6	(6.0)	23.2	(1.7)
Either	54.2	(1.7)	66.7	(3.2)	73.9	(5.3)	25.7	(1.7)

[1]E.g., a unique number assigned to each goat.
[2]E.g., farm name, farm logo, or a number unique to this farm.

2. Herd ID

Almost one-fourth of operations (26.8 percent) used some type of herd ID. The methods used for herd ID by the highest percentage of operations were scrapie ear tag (15.6 percent), tattoo (9.6 percent), or other ear tag (6.7 percent). While only 1.8 percent of operations used ear notches as a form of herd ID, 12.7 percent of goats and kids had their ears notched. The highest percentage of goats/kids with herd ID had a scrapie ear tag (25.7 percent). Scrapie ear tags were the method of herd ID on about one-half of goats/kids with ID.

a. Percentage of all operations and percentage of goats and kids on those operations by type of herd ID used on at least one goat on the operation at the time of the interview:

Herd ID* Method	Percent Operations	Std. Error	Percent Goats/Kids	Std. Error
Tattoo	9.6	(0.6)	15.1	(1.3)
Collar or leg band	0.9	(0.2)	1.5	(0.4)
Ear notch	1.8	(0.3)	12.7	(2.2)
Hot iron/freeze brand	0.1	(0.1)	0.1	(0.1)
Paint brand	0.0	(0.0)	0.0	(0.0)
Microchip	0.6	(0.2)	0.5	(0.3)
Scrapie ear tag	15.6	(0.8)	25.7	(1.7)
Ear tag other than scrapie ear tag	6.7	(0.5)	18.8	(1.9)
Other	0.5	(0.1)	1.4	(0.5)
Any	26.8	(1.0)	50.6	(2.1)

*E.g., farm name, farm logo, or a number unique to this farm.

Photograph courtesy of Anson Eaglin

For operations that had goats with herd ID, a higher percentage of very small operations than large operations used a scrapie ear tag as a form of herd ID (68.3 and 50.5 percent, respectively). Conversely, a higher percentage of large operations than very small operations used ear tags other than scrapie tags (42.3 and 17.1 percent, respectively). However, overall scrapie ear tags were used by a higher percentage of operations than any other form of herd ID.

b. For operations that had goats with herd ID at the time of the interview, percentage of operations by herd ID used during the previous 12 months, and by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Herd ID* Method	Very Small (Fewer than 10)		Small (10–19)		Medium (20–99)		Large (100 or More)		All Operations		Only Operations with 10 or More	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Tattoo	27.6	(4.6)	41.6	(3.9)	38.0	(2.8)	35.6	(3.4)	35.7	(1.9)	38.8	(2.0)
Collar or leg band	4.8	(2.0)	1.2	(1.2)	4.3	(1.2)	2.4	(0.7)	3.5	(0.8)	3.0	(0.8)
Ear notch	4.7	(2.2)	0.2	(0.2)	7.8	(1.9)	22.9	(3.3)	6.7	(1.0)	7.5	(1.2)
Hot iron/freeze brand	0.0	(--)	0.0	(--)	0.6	(0.6)	0.0	(--)	0.2	(0.2)	0.3	(0.3)
Paint brand	0.0	(--)	0.0	(--)	0.0	(--)	0.2	(0.1)	0.0	(0.0)	0.0	(0.0)
Microchip	5.0	(2.9)	0.7	(0.7)	1.3	(0.8)	0.5	(0.3)	2.1	(0.9)	1.0	(0.5)
Scrapie ear tag	68.3	(4.9)	55.4	(4.0)	54.5	(2.9)	50.5	(3.2)	58.1	(2.0)	54.2	(2.1)
Ear tag other than scrapie ear tag	17.1	(4.0)	19.8	(3.4)	29.2	(2.7)	42.3	(3.4)	25.0	(1.8)	28.0	(1.9)
Other	0.0	(--)	1.9	(1.1)	2.7	(1.1)	3.4	(1.5)	1.9	(0.5)	2.6	(0.7)

*E.g., farm name, farm logo, or a number unique to this farm.

For operations that had goats with herd ID, a higher percentage of dairy goat operations (72.5 percent) used tattoos for herd ID than meat or fiber goat operations (30.0 and 32.4 percent, respectively). A lower percentage of dairy goat operations (8.0 percent) used ear tags—other than scrapie ear tags—for herd ID than meat goat operations (31.5 percent).

c. For operations that had goats with herd ID at the time of interview, percentage of operations by herd ID used during the previous 12 months and by primary production:

Percent Operations

Primary Production

	Meat		Dairy		Fiber		Other	
Herd ID* Method	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Tattoo	30.0	(2.4)	72.5	(4.0)	32.4	(8.9)	21.5	(3.6)
Collar or leg band	1.8	(0.8)	9.6	(2.8)	0.8	(0.7)	3.3	(1.7)
Ear notch	9.9	(1.6)	1.7	(1.2)	17.0	(8.5)	1.3	(0.8)
Hot iron/ freeze brand	0.4	(0.4)	0.0	(--)	0.0	(--)	0.0	(--)
Paint brand	0.0	(0.0)	0.0	(--)	0.0	(--)	0.0	(--)
Microchip	0.8	(0.7)	2.5	(1.8)	1.1	(1.0)	5.3	(3.2)
Scrapie ear tag	61.1	(2.6)	45.7	(4.7)	63.9	(9.1)	59.6	(5.1)
Ear tag other than scrapie ear tag	31.5	(2.4)	8.0	(2.4)	23.5	(8.6)	22.0	(4.3)
Other	2.3	(0.8)	0.7	(0.6)	0.0	(--)	1.9	(1.1)

*E.g., farm name, farm logo, or a number unique to this farm.

3. Individual ID

Producers, markets, slaughter plants, and dealers are required to ensure that certain sheep and goats have an official ID. Free scrapie ear tags and applicators are provided by the USDA. These tags have a flock and individual animal ID.

Almost 4 of 10 operations (39.8 percent) used some type of individual animal ID, regardless of herd size, and these operations accounted for nearly two-thirds of the goat/kids (62.6 percent) on these operations. The methods used by the highest percentage of operations to identify individual animals were: scrapie ear tag (15.6 percent), tattoo (15.8 percent), or other ear tag (17.8 percent).

a. Percentage of all operations and percentage of goats and kids on those operations that used individual ID, by individual ID method:

Individual ID* Method	Percent Operations	Std. Error	Percent Goats/Kids*	Std. Error
Tattoo	15.8	(0.8)	21.6	(1.6)
Collar or leg band	4.1	(0.5)	6.4	(0.7)
Ear notch	3.2	(0.4)	14.8	(2.1)
Hot iron/freeze brand	0.1	(0.1)	0.2	(0.1)
Paint brand	0.3	(0.1)	0.9	(0.4)
Microchip	1.3	(0.3)	1.5	(0.5)
Scrapie ear tag	15.6	(0.8)	25.7	(1.7)
Ear tag other than scrapie ear tag	17.8	(0.8)	32.5	(2.0)
Other	0.8	(0.2)	1.4	(0.5)
Any	39.8	(1.1)	62.6	(2.1)

*E.g., a unique number assigned to each goat.

b. For operations that had any goats with individual ID at the time of the interview, percentage of operations by individual ID method used during the previous 12 months, and by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Individual ID Method*	Very Small (Fewer than 10)		Small (10–19)		Medium (20–99)		Large (100 or More)		All Operations		Only Operations with 10 or More	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Tattoo	39.3	(3.8)	40.9	(3.2)	40.2	(2.4)	35.0	(2.7)	39.6	(1.7)	39.8	(1.7)
Collar or leg band	13.0	(2.7)	7.5	(1.7)	9.7	(1.4)	9.8	(1.1)	10.3	(1.1)	9.0	(0.9)
Ear notch	7.0	(2.1)	0.8	(0.5)	10.1	(1.7)	21.8	(2.7)	8.0	(1.0)	8.5	(1.0)
Hot iron/freeze brand	0.0	(--)	0.6	(0.6)	0.0	(--)	0.5	(0.4)	0.2	(0.1)	0.3	(0.2)
Paint brand	0.2	(0.2)	1.0	(0.7)	1.3	(0.6)	0.8	(0.4)	0.8	(0.3)	1.1	(0.4)
Microchip	5.6	(2.2)	2.2	(1.0)	2.5	(0.8)	0.6	(0.3)	3.3	(0.8)	2.1	(0.6)
Scrapie ear tag	38.6	(4.0)	37.7	(3.2)	40.5	(2.4)	39.6	(2.6)	39.1	(1.7)	39.4	(1.7)
Ear tag other than scrapie ear tag	34.1	(3.8)	46.7	(3.3)	49.9	(2.5)	58.6	(2.9)	44.7	(1.8)	49.9	(1.8)
Other	1.0	(0.7)	2.7	(1.0)	1.8	(0.8)	3.6	(1.1)	1.9	(0.4)	2.3	(0.6)

*E.g., a unique number assigned to each goat.

A higher percentage of dairy goat operations used tattoo or collar/leg bands for individual animal ID (73.4 and 27.7 percent, respectively) than meat goat operations (31.2 and 4.5 percent, respectively). A lower percentage of dairy goat operations (14.8 percent) used ear tags—other than scrapie ear tags—for individual animal ID than meat goat operations (57.5 percent).

c. For operations that had any goats with individual ID at the time of the interview, percentage of operations by individual ID method used during the previous 12 months, and by primary production:

Percent Operations

Primary Production

	Meat		Dairy		Fiber		Other	
Individual ID Method*	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
Tattoo	31.2	(2.1)	73.4	(3.6)	32.8	(7.7)	37.7	(3.8)
Collar or leg band	4.5	(0.9)	27.7	(3.6)	8.2	(5.1)	12.2	(2.8)
Ear notch	10.2	(1.4)	4.0	(1.7)	15.9	(6.3)	5.2	(2.0)
Hot iron/ freeze brand	0.3	(0.3)	0.0	(--)	0.0	(--)	0.0	(--)
Paint brand	1.3	(0.5)	0.6	(0.4)	0.0	(--)	0.0	(--)
Microchip	1.2	(0.6)	4.2	(2.0)	3.8	(3.0)	6.9	(2.4)
Scrapie ear tag	43.1	(2.2)	34.8	(4.0)	43.1	(7.5)	33.1	(3.8)
Ear tag other than scrapie ear tag	57.5	(2.3)	14.8	(2.7)	32.9	(6.5)	37.2	(3.9)
Other	2.3	(0.7)	2.8	(1.1)	3.2	(3.0)	0.3	(0.2)

*E.g., a unique number assigned to each goat.

4. Scrapie ID

Of operations that had any goats with individual or herd ID at the time of the interview, less than one-fifth were assigned a unique scrapie ID (scrapie pin).

a. For operations that had any goats with individual or herd ID at the time of the interview, percentage of operations that were assigned a unique herd ID (scrapie PIN) as part of the National Scrapie Eradication Program, by herd size:

Percent Operations

Herd Size (Number of Goats and Kids)

Very Small (Fewer than 10)		**Small** (10–19)		**Medium** (20–99)		**Large** (100 or More)		**All Operations**	
Pct.	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**	**Pct.**	**Std. Error**
0.0	(--)	21.0	(1.6)	28.3	(1.6)	38.8	(2.3)	16.4	(0.7)

Of operations that had any goats with individual or herd ID at the time of the interview, a higher percentage in the Northeast region than in the West and Southeast regions had a unique scrapie PIN.

b. For operations that had any goats with individual or herd ID at the time of the interview, percentage of all operations that were assigned a unique herd ID (scrapie PIN) as part of the National Scrapie Eradication Program, by region:

Percent Operations*

Region

West		**Southeast**		**Northeast**	
Percent	**Std. Error**	**Percent**	**Std. Error**	**Percent**	**Std. Error**
15.8	(1.2)	11.4	(1.0)	25.9	(1.6)

*Operations with 10 or more goats.

Section II: Methodology

A. Needs Assessment

NAHMS develops study objectives by exploring existing literature and contacting industry members about their informational needs and priorities during a needs assessment phase. The needs assessment for the NAHMS Goat 2009 study collected information from U.S. goat producers and other goat specialists about what they perceived to be the most important goat health and productivity issues. A driving force of the needs assessment was the desire of NAHMS to receive as much input as possible from a variety of producers, industry experts and representatives, veterinarians, extension specialists, universities, and industry organizations. Information was collected through a Needs Assessment Survey, and top issues were prioritized by teleconferences with representatives of the dairy, fiber, and meat segments of the goat industry, along with extension agents and other university affiliates.

The Needs Assessment Survey was designed to ascertain the top three management issues, diseases/disorders, and producer incentives from producers, veterinarians, extension personnel, university researchers, and allied industry groups. The survey, created in SurveyMonkey, was available online from October 2007 to February 2008 and was promoted via electronic newsletters, magazines, and Web sites. Organizations promoting the study included the American Dairy Goat Association, American Meat Goat Association, individual State goat associations, and the newly formed National Goat Federation. Email messages were also sent to State and Federal personnel asking for input and identifying the online site. A total of 1,253 people responded to the survey questionnaire and, of those, 1,022 completed the entire survey. Meat goat producers accounted for 32.7 percent of the respondents, while dairy goat producers accounted for 32.0 percent. Another 9.9 percent were both meat and dairy producers, and 2.1 percent were fiber producers. Thus, producers accounted for 76.7 percent of survey respondents. The remaining survey participants were university researchers or extension agents, veterinarians, State or Federal personnel, associates of an allied industry such as pharmaceutical or nutrition companies, or otherwise identified as none of the above.

Once the most important issues were identified, the study objectives were created by prioritizing the needs during discussions with producers, veterinarians, university extension agents, and government personnel. These discussions culminated in the study objectives:

- Determine producer awareness of Veterinary Services program diseases and describe management and biosecurity practices important for the control of infectious diseases (including brucellosis, scrapie, caprine arthritis encephalitis (CAE), Johne's disease, and caseous lymphadenitis). Provide a baseline description of animal health, nutrition, and management practices in the U.S. goat industry.

- Estimate the prevalence of
  - *Mycobacterium paratuberculosis* (Johne's) infection;
  - Internal parasitism.

- Characterize contagious ecthyma (sore mouth) in U.S. goats. Determine producer awareness of zoonotic potential and practices to prevent sore mouth transmission, and assess producer interest in an improved vaccine for sore mouth.

B. Sampling and Estimation

1. State selection

The preliminary selection of States to be included in the study was done March through May 2008 using the National Agricultural Statistics Service (NASS) 2002 Census of Agriculture and the February 1, 2008, "Sheep and Goat Report." A goal for NAHMS national studies is to include States that account for at least 70 percent of animals and producer populations in the United States. The initial review of States identified 21 major States representing 82.2 percent of the U.S. January 1 goat inventory and 75.5 percent of U.S. goat operations. The States were Alabama, California, Colorado, Florida, Georgia, Indiana, Iowa, Kentucky, Michigan, Missouri, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Virginia, Washington, and Wisconsin.

A memo identifying these 21 States was provided in June 2008 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. In December 2008, another memo showing predicted workload was sent to the VS Regional Directors. The 21 States were included in the study. In April 2009, a memo was sent to the field sharing the decision that no VS field force would be available for the study.

2. Operation selection

The list sampling frame was provided by NASS. Within each State a stratified random sample was selected. The size stratum was the number of goats and kids for each operation on the list sampling frame at the time of sample selection. NASS selected a sample of goat producers in each State. Among producers on the list frame with fewer than 10 goats, 2,000 operations were selected for Phase Ia. For operations on the list frame with 10 or more goats, a total of 3,501 operations were selected for contact during Phase Ib.

Operations in the sample selected for Phase Ia (those with fewer than 10 goats) were contacted by mail and telephone follow-up. Operations with 10 or more goats that participated in the Phase Ib personal interview were conducted by the NASS enumerator.

3. Population inferences

a. Phases Ia and Ib: General Goat Management Reports

Inferences cover the population of goat producers with at least 1 goat or kid in the 21 participating States. As of December 31, 2007 (2007 Census of Agriculture), these States accounted for 82.2 percent of all goats (2,580,616 head) and 75.5 percent of operations (109,116) with goats 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 Goat Management Report

From July 1 to 30, 2009, NASS enumerators administered the General Goat Management Report questionnaire. For producers with fewer than 10 goats, the telephone interview took approximately 10 minutes. For producers with 10 or more goats the in-person interview took approximately 1 hour.

D. Data Analysis

1. Phase I: Validation—General Goat Management Report

Telephone interviews were conducted via computer-assisted telephone interview software at a NASS office. For the in-person administered questionnaire, initial data entry and validation for the General Goat Management Report were performed in the 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 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 following table presents an evaluation based upon a number of response measurement parameters, which are defined with an *x* in categories that contribute to the measurement.

1. Phase Ia: General Goat Management Report—fewer than 10 goats

A total of 2,000 operations were selected for the survey. Of these operations, 1,591 (79.5 percent) were contacted. There were 1,429 operations that provided usable inventory information (71.5 percent of the total selected and 89.8 percent of those contacted). Of these, 649 operations (32.5 percent of the total sample) provided “complete” information for the questionnaire. None of these operations, regardless of reported number of head, was eligible to participate in Phase II of the study.

			Measurement Parameter		
Response Category	Number Operations	Percent Operations	Contacts	Usable[1]	Complete[2]
Survey complete	649	32.5	x	x	x
No goats on July 1, 2009	780	39.0	x	x	
Out of business	0	0.0	x	x	
Out of scope	0	0.0			
Refusal of GGMR	162	8.1	x		
Office hold (NASS elected not to contact)	1	0.0			
Inaccessible	408	20.4			
Total	2,000	100.0	1,591	1,429	649
Percent of total operations			79.5	71.5	32.5
Percent of total operations weighted[3]			78.9	70.6	30.9

[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.
[3]Weighted response—the rate was calculated using the initial selection weights.

2. Phase Ib: General Goat Management Report—10 or more goats

A total of 3,501 operations were selected for the survey. Of these operations, 3,189 (91.1 percent) were contacted. There were 2,873 operations that provided usable inventory information (82.1 percent of the total selected and 90.1 percent of those contacted). In addition, there were 1,835 operations (52.4 percent) that provided "complete" information for the questionnaire. Of 1,835 operations that provided complete information, 1,438 (78.4 percent) planned to complete the mail-in questionnaire.

			Measurement Parameter		
Response Category	**Number Operations**	**Percent Operations**	**Contacts**	**Usable[1]**	**Complete[2]**
Survey complete and plan 2nd questionnaire	1,438	41.1	x	x	x
Survey complete, do not plan 2nd questionnaire	397	11.3	x	x	x
No goats on July 1, 2007	797	22.8	x	x	
Out of business	241	6.9	x	x	
Out of scope	9	0.3			
Refusal of GGMR	316	9.0	x		
Office hold (NASS elected not to contact)	19	0.5			
Inaccessible	284	8.1			
Total	3,501	100.0	3,189	2,873	1,835
Percent of total operations			91.1	82.1	52.4
Percent of total operations weighted[4]			91.7	84.1	50.8

[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.
[3]Weighted response—the rate was calculated using the initial selection weights.

Appendix I: Sample Profile

A. Responding Operations

1. Number of responding operations, by herd size

	Phase Ia: General Goat Management Report—fewer than 10 goats	Phase Ib: General Goat Management Report—10 or more goats
Herd Size (Number of Goats and Kids)	**Number of Responding Operations**	
Fewer than 10	649	
10 to 19		532
20 to 99		739
100 or more		564
Total	649	1,835

2. Number of responding operations, by region

	Phase Ia: General Goat Management Report—fewer than 10 goats	Phase Ib: General Goat Management Report—10 or more goats
Region	**Number of Responding Operations**	
West	169	594
Southeast	238	728
Northeast	242	513
Total	649	1,835

3. Number of responding operations, by primary production

	Phase Ia: General Goat Management Report—fewer than 10 goats	Phase Ib: General Goat Management Report—10 or more goats
Primary Production	**Number of Responding Operations**	
Meat	103	1,149
Dairy	91	267
Fiber	21	70
Other	434	349
Total	649	1,835

Appendix II: U.S. Goat Population and Farms

Note: The eastern halves of Oklahoma and Texas included the following counties:

Oklahoma: Adair, Bryan, Cherokee, Choctaw, Coal, Craig, Creek, Delaware, Haskell, Hughes, Johnston, Latimer, Le Flore, Lincoln, Marshall, Mayes, McCurtain, McIntosh, Muskogee, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Pittsburg, Pontotoc, Pottawatomie, Pushmataha, Rogers, Sequoyah, Tulsa, Wagoner, Washington

Texas: Anderson, Angelina, Atascosa, Austin, Bastrop, Bee, Bowie, Brazoria, Brazos, Brooks, Burleson, Cameron, Cass, Cherokee, Collin, Colorado, Dallas, De Witt, Duval, Ellis, Fannin, Franklin, Galveston, Gonzales, Grayson, Gregg, Grimes, Hall, Hardin, Harris, Henderson, Hidalgo, Hopkins, Houston, Hunt, Jackson, Jasper, Jefferson, Jim Wells, Karnes, Kaufman, Kennedy, Kleberg, Lamar, Lavaca, Lee, Leon, Liberty, Limestone, Live Oak, Madison, Matagorda, Milam, Montgomery, Morris, Nacogdoches, Navarro, Nueces, Orange, Panola, Rains, Red River, Refugio, Robertson, Rusk, San Jacinto, Shelby, Smith, Starr, Titus, Tyler, Upshur, Van Zandt, Victoria, Walker, Waller, Washington, Wilson, Wood

A. All Goats

Region	State	Number of Goats*		Number of Farms	
		Goats on farms with 1 or more head	Goats on farms with 1–9 head	Farms with 1 or more head	Farms with 1–9 head
West	CA	130,823	10,272	4,985	2,894
	CO	48,978	5,732	2,720	1,746
	OK (west)	51,410	3,545	2,165	968
	OR	38,111	6,981	3,127	2,067
	TX (west)	998,833	21,758	17,369	5,200
	WA	32,840	7,269	3,143	2,131
	Total	1,300,995	55,557	33,509	15,006
Southeast	AL	80,436	7,017	4,120	1,528
	FL	57,696	8,304	4,040	2,124
	GA	83,976	7,973	4,283	1,880
	KY	98,166	10,003	5,298	2,497
	NC	98,356	10,279	5,589	2,411
	OK (east)	73,893	6,316	3,551	1,601
	TN	130,968	13,953	6,828	3,295
	TX (east)	141,129	17,476	8,997	4,487
	VA	63,091	8,042	3,934	2,113
	Total	827,711	89,363	46,640	21,936
Northeast	IN	47,090	7,543	3,385	1,971
	IA	55,950	4,412	2,257	1,166
	MI	27,841	7,962	3,186	2,398
	MO	96,449	8,421	4,476	2,188
	NY	39,920	5,831	2,707	1,748
	OH	69,505	10,935	4,910	3,166
	PA	59,214	10,722	4,844	3,237
	WI	55,941	7,428	3,202	2,378
	Total	451,910	63,254	28,967	18,252
Total (21 States)		2,580,616	208,174	109,116	55,194
Percent of U.S.		82.2	73.2	75.5	72.9
Total U.S. (50 States)		3,140,529	284,477	144,466	75,695

*Source: NASS 2007 Census of Agriculture.

B. Milk Goats

Region	State	Number of Milk Goats*		Number of Farms	
		Goats on farms with 1 or more head	Goats on farms with 1–9 head	Farms with 1 or more head	Farms with 1–9 head
West	CA	39,198	3,333	1,402	914
	CO	7,713	1,815	783	571
	OK (west)	2,735	777	323	241
	OR	8,300	2,259	901	637
	TX (west)	12,002	2,750	1,155	795
	WA	8,168	2,579	1,076	843
	Total	78,116	13,513	5,640	4,001
Southeast	AL	4,032	1,185	444	320
	FL	6,632	1,912	778	571
	GA	4,513	1,107	453	302
	KY	6,129	1,824	747	560
	NC	9,379	1,799	786	505
	OK (east)	4,500	1,219	525	390
	TN	5,751	1,189	587	382
	TX (east)	8,090	2,296	969	707
	VA	5,344	1,401	617	452
	Total	54,370	13,932	5,906	4,189
Northeast	IN	10,301	2,667	1,070	782
	IA	22,269	1,409	652	397
	MI	9,883	2,903	1,144	863
	MO	8,866	2,444	951	733
	NY	11,968	2,321	1,030	713
	OH	10,072	2,896	1,258	956
	PA	14,297	3,136	1,342	990
	WI	36,367	2,420	1,088	745
	Total	124,023	20,196	8,535	6,179
Total (21 States)		256,509	47,641	20,081	14,369
Percent of U.S.		76.6	72.5	73.1	72.9
Total U.S. (50 States)		334,754	65,742	27,481	19,722

*Source: NASS 2007 Census of Agriculture.

C. Angora Goats

Region	State	Number of Angora Goats*		Number of Farms	
		Goats on farms with 1 or more head	Goats on farms with 1–9 head	Farms with 1 or more head	Farms with 1–9 head
West	CA	3,400	560	262	202
	CO	1,007	391	182	148
	OK (west)	232	69	27	23
	OR	1,750	577	245	203
	TX (west)	131,178	608	600	215
	WA	1,197	389	200	159
	Total	138,764	2,594	1,516	950
Southeast	AL	262	210	57	53
	FL	236	90	54	45
	GA	814	240	106	80
	KY	810	324	129	108
	NC	1,418	391	174	130
	OK (east)	512	154	66	53
	TN	250	121	49	42
	TX (east)	1,519	461	183	146
	VA	1,533	300	158	107
	Total	7,354	2,291	976	764
Northeast	IN	367	232	66	59
	IA	780	220	78	61
	MI	1,058	373	164	140
	MO	1,334	186	102	73
	NY	886	321	152	126
	OH	1,361	382	160	129
	PA	1,298	555	227	192
	WI	790	390	179	158
	Total	7,874	2,659	1,128	938
Total (21 States)		153,992	7,544	3,620	2,652
Percent of U.S.		75.4	56.5	50.2	61.1
Total U.S. (50 States)		204,106	13,361	7,215	4,339

*Source: NASS 2007 Census of Agriculture.

D. Other (Meat) Goats

Region	State	Number of Other (Meat) Goats*		Number of Farms	
		Goats on farms with 1 or more head	Goats on farms with 1–9 head	Farms with 1 or more head	Farms with 1–9 head
West	CA	88,225	8,210	4,016	2,434
	CO	40,258	4,555	2,183	1,438
	OK (west)	48,443	3,077	1,962	843
	OR	28,061	5,539	2,453	1,709
	TX (west)	855,653	20,004	16,413	4,818
	WA	23,475	6,110	2,478	1,795
	Total	1,084,115	47,495	29,505	13,037
Southeast	AL	76,142	6,151	3,810	1,347
	FL	50,828	7,106	3,588	1,877
	GA	78,649	7,268	3,959	1,741
	KY	91,227	8,797	4,808	2,211
	NC	87,559	9,167	5,037	2,164
	OK (east)	68,881	5,588	3,243	1,438
	TN	124,967	13,586	6,549	3,238
	TX (east)	131,520	16,057	8,338	4,135
	VA	56,214	7,089	3,452	1,856
	Total	765,987	80,809	42,784	20,007
Northeast	IN	36,422	6,096	2,711	1,617
	IA	32,901	3,443	1,793	955
	MI	16,900	6,128	2,449	1,988
	MO	86,249	7,050	3,859	1,829
	NY	27,066	4,228	1,993	1,356
	OH	58,072	9,168	4,094	2,703
	PA	43,619	8,694	3,864	2,674
	WI	18,784	5,615	2,354	1,891
	Total	320,013	50,422	23,117	15,013
Total (21 States)		2,170,115	178,726	95,406	48,057
Percent of U.S.		83.4	74.3	77.4	73.9
Total U.S. (50 States)		2,601,669	240,498	123,278	65,063

*Source: NASS 2007 Census of Agriculture.

E. U.S. Goat Population, January 1, 2010, Inventory

Region	State	All Goats	Milk Goats	Meat and Other Goats	Angora Goats
West	CA	NA	38,000	93,000	3,500
	CO	NA	8,400	38,000	NA
	OK (west)*	NA			NA
	OR	NA	9,100	30,000	1,900
	TX (west)*	NA			95,000
	WA	NA	7,300	22,000	1,000
	Total	NA	NA	NA	NA
Southeast	AL	NA	4,200	60,000	NA
	FL	NA	5,000	60,000	NA
	GA	NA	3,000	79,000	NA
	KY	NA	6,500	79,000	NA
	NC	NA	8,000	95,000	NA
	OK (east)*				
	TN	NA	6,400	125,000	NA
	TX (east)*				
	VA	NA	5,800	52,000	1,400
	Total	NA	NA	NA	NA
Northeast	IN	NA	11,800	33,500	NA
	IA	NA	29,500	25,000	NA
	MI	NA	10,900	16,000	NA
	MO	NA	9,000	84,600	1,400
	NY	NA	13,000	35,000	NA
	OH	NA	8,000	50,000	1,300
	PA	NA	17,000	42,000	NA
	WI	NA	46,000	21,000	1,000
	Total	NA	145,200	307,100	NA
Total (21 States)		NA	275,200	2,120,100	NA
Percent of U.S.		NA	77.5	83.5	NA
Total U.S. (50 States)		3,043,000	355,000	2,538,000	150,000

Source: NASS Sheep and Goats report, January 28, 2010.

*Inventory split between eastern half and western half of State is not available for January 1, 2010, inventory. State-level published inventories for Oklahoma and Texas are shown below.

	All Goats	Milk Goats	Meat and Other Goats	Angora Goats
Oklahoma	NA	8,300	90,000	NA
Texas	NA	20,000	990,000	95,000

Appendix III: References

Olcott B. 2007. Biosecurity for Meat Goat Producers. Proceedings 22nd Annual Goat Field Day, Langston University, Langston, OK, p 1–117.

Appendix IV: Related Web Sites

Centers for Disease Control
www.cdc.gov/az/s.html

Scrapie disease information
http://www.aphis.usda.gov

Southern Consortium for Small Ruminant Parasite Control
www.scsrpc.org