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Goat 2019

Part II: Reference of Goat Health and Management Practices in the United States, 2019



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USDA-APHIS-VS-CEAH-NAHMS
NRRC Building B, M.S. 2E7
2150 Centre Avenue
Fort Collins, CO 80526-8117
970.494.7000
<http://www.aphis.usda.gov/nahms>

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All participants are to be commended, particularly the operators whose voluntary efforts made the Goat 2019 study possible.

A handwritten signature in black ink, appearing to read 'Amy Delgado', with a stylized, flowing script.

Amy Delgado
Director
Center for Epidemiology and Animal Health

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Contacts for further information:

Questions or comments on data analysis: Dr. Natalie Urie (866) 907–8190

Information on reprints or other reports: Ms. Abby Zehr (866) 907–8190

For questions about this report or additional copies, please contact:

USDA–APHIS–VS–CEAH
NRRC Building B, M.S. 2E7
2150 Centre Avenue
Fort Collins, CO 80526-8117
NAHMS@usda.gov

Items of Note

The NAHMS Goat 2019 study was conducted in 24 of the Nation's major goat-producing States (see map on p 2). At the time of the study, these States represented 75.8 percent of U.S. goat operations with five or more adult goats and 80.4 percent of adult goats in the United States (NASS 2017 Census of Agriculture). Unless otherwise noted, estimates in this report refer to the previous 12 months from when the study questionnaire was administered, which occurred from September 2019 through March 2020.

Operations were placed in one of three size categories based on their July 1, 2019 goat inventory: small (5-19), medium (20-99), and large (100 or more).

A higher percentage of medium and large operations (9.9 and 17.0 percent, respectively) normally required or performed individual animal testing of resident goats for caprine arthritis encephalitis (CAE) than small operations (3.2 percent). A higher percentage of operations in the East region (1.6 percent) tested individual resident goats for scrapie than operations in the West region (0.1 percent).

A higher percentage of all operations normally required or performed individual animal testing on new arrivals for caprine arthritis encephalitis, Johne's, and caseous lymphadenitis (9.5, 9.4, and 6.3 percent, respectively) than brucellosis, Q fever, and tuberculosis (1.2, 0.2, and 0.6 percent, respectively). A higher percentage of large operations (3.3 percent) normally required or performed brucellosis testing on new arrivals than small operations (0.1 percent). Only small operations normally required or performed scrapie testing (5.1 percent). A higher percentage of operations in the West region (15.0 percent) normally required or performed testing for caseous lymphadenitis than the East region (3.0 percent).

Slightly less than two-thirds of all operations (60.5 percent) administered any vaccines to any goats in the previous 12 months. There were no differences by herd size or region in the percentage of operations that administered any vaccines to goats in the previous 12 months.

For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months, a higher percentage of all operations administered vaccines to adult does (88.9 percent) than nursing kids, weaned kids, and adult bucks/wethers (74.8, 70.2, 75.3 percent, respectively). There were no differences by herd size or region in the percentage of operations that administered any vaccines to goats in the listed classes in the previous 12 months.

As herd size increased, the percentage of operations that had any kids born on the operation in the previous 12 months increased. There were no differences by region in the percentage of operations that had any kids born on the operation in the previous 12 months.

For operations that had any kids born on the operation during the previous 12 months, operations checked the kidding areas for newborns a median of every 4.0 hours during the most recently completed kidding period. The majority of operations (85.2 percent) checked the kidding areas for newborns twice a day or more during the most recently completed kidding period. There were no differences by herd size or region in the percentage of operations by frequency that kidding areas were checked for newborns during the most recently completed kidding period.

For operations that had any kids born on the operation during the previous 12 months, a higher percentage of dairy operations (34.2 percent) physically separated kids from their dams prior to weaning off milk during the most recently completed kidding period than meat and other operations (3.5 and 10.1 percent, respectively).

Overall, 21.6 percent of operations tested any goats for internal parasites by any fecal test method during the previous 12 months. There were no differences by herd size or region in the percentage of operations that tested any goats for internal parasites by any fecal test method during the previous 12 months.

Most operations had dewormed goats or kids with medication or natural/alternative dewormers during the previous 3 years (96.6 percent) and previous 12 months (91.5 percent). A higher percentage of medium operations dewormed any goats or kids with medications or natural/alternative dewormers during the previous 3 years and the previous 12 months (98.5 and 95.3 percent, respectively) than large operations (85.7 and 73.1 percent, respectively). A higher percentage of operations in the East region (99.1 percent) dewormed any goats or kids with medications or natural/alternative dewormers during the previous three years than the West region (90.8 percent).

For operations that dewormed any goats in the previous 12 months, the highest percentage of all operations dewormed goats with Avermectins (73.6 percent) and Benzimidazoles (61.0 percent). A higher percentage of large operations dewormed any goats with Avermectins and Imidazothiazoles (88.4 and 37.3 percent, respectively) in the previous 12 months than small operations (66.8 and 12.5 percent, respectively). A higher percentage of operations in the East region (7.5 percent) dewormed any goats with Benzenesulphonamides in the previous 12 months than in the West region (1.5 percent).

For operations that had any bred does during the previous 12 months, a higher percentage of medium and large operations (26.3 and 48.9 percent, respectively) had any bred does abort than small operations (8.0 percent). There were no regional differences in the percentage of operations that had any does abort.

For operations that had any does abort in the previous 12 months, 52.8 percent of operations reported an unknown cause of abortion and 25.8 percent of operations reported an “other – non-disease-related” cause of abortion. Overall, 11.6 percent of operations that suspected a disease-related cause had the cause of abortion diagnosed by a veterinarian or laboratory.

Less than 10 percent of all operations had any goats or kids with sore mouth in the previous 12 months. There were no differences by herd size or region in the percentage of operations that had any goats or kids with sore mouth during the previous 12 months. Overall, 1.0 percent of all operations gave kids or adult goats any antibiotics in drinking water to prevent, control, or treat a disease or disorder.

Overall, 0.9 percent of operations gave kids or adults any antibiotics in feed to prevent, control or treat a disease or disorder. A higher percentage of large operations (4.5 percent) gave any goats antibiotics in feed to prevent, control, or treat a disease or disorder than small operations (0.4 percent). A higher percentage of large operations (2.5 percent) gave preweaned kids any antibiotics in the feed to prevent, control, or treat a disease or disorder than small and medium operations (0.1 and 0.2 percent, respectively).

For the 82.5 percent of operations that had any preweaned kids, 67.1 percent of all operations had preweaned kids affected with any of the listed conditions. Digestive problems affected preweaned kids on 29.0 percent of operations and kidding problems or other perinatal conditions affected preweaned kids on 18.6 percent of operations. For the 83.9 percent of operations that had any weaned kids, 38.4 percent of operations had weaned kids affected with any of the listed conditions. The most common conditions were intestinal worms, other digestive problems, such as scours and overeating, and unknown conditions reported on 14.9, 8.9 and 12.9 percent of all operations, respectively.

For the 99.3 percent of operations that had any adult does, 72.0 percent of all operations had any adult does affected with the listed conditions. The highest percentage of all operations (33.3 percent) had does with intestinal worms.

For the 93.2 percent of operations that had any adult bucks/wethers, 43.0 percent of all operations had bucks or wethers with any of the listed conditions. The highest percentage of all operations (16.9 percent) had bucks or wethers with intestinal worms.

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Introduction

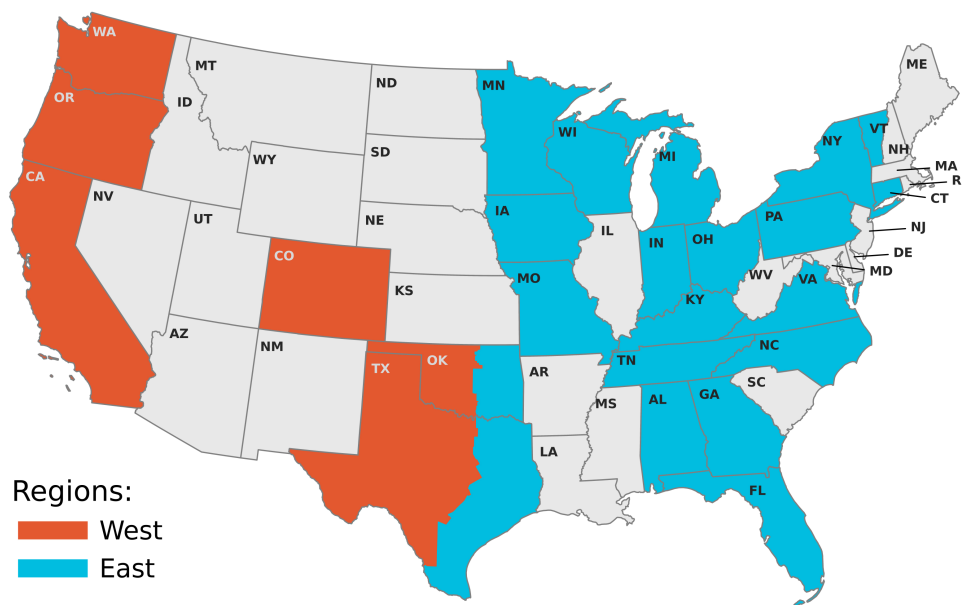
The National Animal Health Monitoring System (NAHMS) is a nonregulatory program of the United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS). NAHMS is designed to help meet the Nation's animal health information needs and has collected data on the health and management practices of the U.S. goat industry in one previous study, Goat 2009.

NAHMS Goat 2009 was the first national study of the U.S. goat industry and was conducted in 21 of the Nation's major goat-producing States. At the time of the study, these States represented 75.5 percent of U.S. goat operations and 82.2 percent of U.S. goats (NASS 2007 Census of Agriculture). Goat 2009 provided participants, industry, and animal health officials with baseline information on the Nation's goat operations and their health and management practices. Operations with one or more goats were selected using a stratified random sample from a NASS list frame for participation in the study. Selected operations with one to nine goats provided information via a mail-in questionnaire or by a follow-up telephone interview. Operations with 10 or more goats participated in an in-person interview conducted by a NASS enumerator. Operations that completed the in-person interview and were interested in participating in the study's second phase were left with a mail-in questionnaire that focused on biosecurity and disease-prevention practices in the U.S. goat industry. More information is provided in the Goat 2009 study descriptive reports available on the NAHMS website.

NAHMS Goat 2019 was conducted in 24 of the Nation's major goat-producing States (see map on p 2). At the time of the study, these States represented 75.8 percent of U.S. goat operations with five or more adult goats and 80.4 percent of adult goats in the United States (NASS 2017 Census of Agriculture). Unlike the Goat 2009 study, in which operations with one or more goats were selected for participation, the Goat 2019 study selected only operations with five or more adult goats, thereby reducing the number of noncommercial operations (i.e., operations that kept goats as pets) participating in the study. In addition, Goat 2019 takes a closer look at the dairy and agritourism segments of the U.S. goat industry.

This report, "Part II: Reference of Goat Health and Management Practices in the United States, 2019," is the second in a series of reports containing national information from the NAHMS Goat 2019 study.

States/regions participating in the NAHMS Goat 2019 study



Note: Texas and Oklahoma were divided on county lines corresponding with either side of the north-south Interstate 35. The western halves of the States were included in the West region, and the eastern halves in the East region. For more detailed information regarding the counties involved, see Appendix II on p. 231.

Detailed information on study methods and number of respondents can be found in the Methodology section on p. 231.

Terms Used in This Report

Animal average—The average value for all animals; the single reported value for each operation multiplied by the number of animals on that operation is summed over all operations and divided by the number of animals on all operations. The result is adjusted for the number of animals on each operation.

Abortion—Expulsion of a dead or nonviable fetus prior to the time of normal kidding.

Antibiotic—A chemical compound generally produced by molds that inhibits and/or kills certain bacteria.

Antimicrobial—Any substance of natural, semisynthetic, or synthetic origin that kills or inhibits the growth of microorganisms. All antibiotics are antimicrobials, but not all antimicrobials are antibiotics. For the purposes of this report, the terms “antimicrobial” and “antibiotic” are considered synonymous.

Artificial insemination (AI)—Mechanical placement of semen into a female.

Bovine respiratory syncytial virus (BRSV)—A virus that mainly infects cattle but can also infect sheep and goats. The virus infects the mucosal cells lining the lower respiratory tract where it can cause pneumonia.

Browsing—The act of feeding on high-growing vegetation, such as leaves, twigs, or bushes. Goats generally browse for food, but if necessary, they will graze and feed on low growing plants on pasture.

Brucellosis—Bacterial disease of mammals that can cause abortions in does and inflamed testicles in bucks. When *Brucella* (the bacteria that causes Brucellosis) first enters a herd, an outbreak of abortions (commonly referred to as abortion storms) usually occurs. Brucellosis in goats is typically caused by *Brucella melitensis*, which is not currently in the United States but is found in Mexico. *Brucella abortus*, a cause of brucellosis in cattle, can also affect goats; however, due to eradication programs in the United States, disease with this bacterium in goats is rare and persists only in the Greater Yellowstone region where bison serve as a reservoir for cattle infections. Brucellosis can affect humans, causing an illness with recurrent flu-like symptoms (undulant fever) or high fever known as “Malta fever.”

Buck—An uncastrated male goat.

Cache Valley virus (CVV)—A mosquito-borne virus that infects lambs and goats in the womb, leading to pregnancy failure, abortions, still birth, and congenital abnormalities.

Caprine arthritis encephalitis (CAE)—The CAE virus causes arthritis in adult goats and encephalitis in kids between two and six months old. Infection can also lead to hard udder or mastitis, reduced milk production, chronic pneumonia, and progressive weight loss. Some goats can be infected without showing any clinical signs, thus serving as a hidden source of infection for other goats in the herd. The virus can be transmitted through the following: ingestion of infected goat milk or colostrum; contact with contaminated blood, saliva, and respiratory or vaginal secretions; contact with contaminated equipment, such as milking equipment, needles, or tattooing equipment; and breeding of noninfected animals with infected animals. Economic losses associated with CAE include loss of milk production (may be up to 30%), early culling, shorter lifespan, and reduced growth of offspring.

Caseous lymphadenitis (CL)—CL is characterized by abscesses in the skin, lymph nodes, and internal organs, and is caused by the *Corynebacterium pseudotuberculosis* bacterium. Abscesses can break open to the skin surface, leading to spread of the bacteria through wounds or abraded skin and via ingestion of contaminated feed or grass. In many animals, the organism disseminates to the lungs and nearby lymph nodes, causing respiratory problems and the spread of the bacteria by the respiratory route. Economic losses related to CL include condemnation and trim of infected carcasses, devaluation of hides, and decreased meat yield and reproductive efficiency.

Central nervous system (CNS)—The brain and spinal cord.

Coccidiostat—Coccidiostats are a group of chemical agents used to control parasitic coccidiosis in animals. Coccidiostats inhibit the growth of but do not kill the coccidia (*Eimeria* spp). Some coccidiostats are ionophores and other coccidiostats are antibiotics.

Colostrum—Colostrum, the first secretion from the mammary gland, provides essential nutrients and passive immunity to kids through immunoglobulins. Colostrum is critical for kids to resist infections in the first few weeks of life. Colostrum also contains important nutrients, such as protein, fat, vitamins, and minerals, and provides warmth when fed at body temperature.

Cull—Adult animals permanently removed from the herd. Operations cull animals for various reasons, such as old age or infertility, disease or injury, and to reduce herd size because of high feed costs or to improve genetics or desirable phenotypic traits.

Dam—A female parent of a goat kid(s).

Disbudding—A procedure performed on young kids to ensure that they do not grow horns. Disbudding is used mostly on dairy operations, but it does occur on meat and fiber operations. Typically, disbudding is performed on kids three weeks of age or younger. After three weeks, the developing horn tissue is attached to the skull and is difficult to remove.

Disinfectant—A chemical product used on surfaces after removal of all organic materials. Disinfectants include 1:10 bleach dilution, phenolic products, or an accelerated hydrogen peroxide product, or lime.

Doe—A female goat.

Drenchrite®—A test performed to detect drug resistance in *Haemonchus contortus* parasites of small ruminants, camelids, and some exotic animals. This specialized test allows determination of the resistance status for the different drug classes commercially available for parasite control.

Drug residues—Any compound present in milk or meat that results from the use of a drug, and includes the drug, its metabolites, and any other substance formed in or on milk or meat because of the drug's use. The U.S. Food and Drug Administration (FDA) defines a violative level as one that is above what is considered safe.

Dry lot—An enclosed pen with dirt, concrete, or any other surface not used for grazing or browsing.

FAMACHA® card—The FAMACHA® card/eye color score is a method for classifying the level of anemia in animals, which is a good indicator of the animals' internal parasite load for one particular worm (*Haemonchus contortus*). By examining the color on the inside of the lower eyelid of a sheep or goat, it is possible to determine if it has become anemic. This test was developed by scientists in South Africa and is being increasingly used as part of integrated parasite control programs.

Goat—Adult goat aged one year or more.

Growth promotant—A product used to help increase the efficiency of animal production by increasing animal weight gain and feed efficiency. Growth promotants can be antibiotics such as ionophores placed in feed.

Herd health management plan—A set of written protocols that directly relate to the management of animal health on the operation, including key factors such as disease control measures (e.g., vaccination and quarantine protocols), disease testing and/or necropsy protocols, feed and water resource management, and structural/enclosure management.

Herd size—Based on an operation's July 1, 2019 inventory of goats and kids. Operations were placed in one of three size categories: small (5 to 19 head), medium (20 to 99 head), and large (100 or more head).

Internal parasites—Internal parasites (usually worms) are the leading cause of disease in goats. A high parasite burden can cause anemia, watery feces, bottle jaw, and death. Worms can become resistant to anthelmintics (dewormers) if deworming agents are used inappropriately, making it harder to control these parasites.

Ionophore—A drug administered in feed that promotes the efficient use of feedstuffs by altering the fermentation pattern in the rumen. Ionophores are used for disease prevention and growth promotion. They are particularly successful at targeting protozoan lifecycles by inhibiting growth and can be used to control coccidiosis. Ionophores are not categorized by the FDA as medically important antimicrobials for humans.

Johne's disease—A contagious disease of cattle and other ruminants, including goats, that results in weight loss despite a normal appetite and proper nutrition. Diarrhea can also occur but is less common in goats than in cattle. The disease is caused by the bacterium *Mycobacterium avium* subspecies *paratuberculosis*, which can survive in the environment for up to a year and remain infectious to ruminants. The primary mode of transmission is fecal-oral, including ingestion of contaminated feed, water, or bedding. Kids can be infected by nursing an udder soiled with contaminated fecal material. The bacterium also can be transmitted through milk and colostrum, as well as in utero. Infected animals shed the bacteria for months or years before they develop clinical signs, resulting in heavy contamination of pastures before the disease is detected. Goats sharing pasture with infected cattle are susceptible to infection.

Kid—A young goat, generally less than one year old.

Kid Crop—All kids born during a kidding season. If an operation has no defined breeding season, its kid crop is considered to include all kids born in a 12-month period.

List frame—A list of sampling units (e.g., farms or operations) in a target population that enumerates and identifies the subjects in a population. A list frame includes information that allows contact with sampling units and may contain auxiliary information about sampling units (such as the size of the farm or the types of animals on the farm) that can aid in carrying out complex sampling designs.

Mastitis—Inflammation of the udder, usually caused by bacteria, that reduces milk production and milk quality. Clinical mastitis is detected by visible abnormalities in the milk or udder, such as clots in milk or udder swelling. Subclinical mastitis, which may have few visible abnormalities, is usually detected by increased numbers of somatic cells in milk, referred to as a high somatic cell count (SCC). The primary economic loss caused by mastitis occurs from decreased milk production.

Milk culture—A laboratory-based method used to specifically diagnose the causative bacteria responsible for cases of clinical and sub-clinical mastitis. Laboratories grow the bacteria present in the milk from infected goats and then assess the bacterial colonies that grow to determine the underlying cause of infection.

Neurologic signs—Problems associated with the nervous system. Animals with neurologic problems can exhibit odd behaviors such as circling, tremors, lip smacking, loss of coordination, and rubbing against fences. These animals might be dull, depressed, aggressive, or comatose, and they can appear weak, may stagger when walking, or assume abnormal postures. Neurologic signs are the predominant clinical signs of scrapie.

Nursing kid/unweaned kid—A kid still nursing from a doe or otherwise consuming milk.

Operation—An area of land managed as a unit by an individual, partnership, or hired manager. The term “operation” might be used interchangeably with the term “premises” in this report.

Operation average—The average value for all operations. A single value for each operation is summed over all operations reporting and divided by the number of operations reporting.

Operator—The primary manager of the goat operation. Although operations might have more than one person managing the operation, for this report, the person who was interviewed is considered the operator.

Pasteurization—A process that utilizes heat to destroy pathogens in foods. For the dairy industry, the terms “pasteurization,” “pasteurized,” and similar terms reference the process of heating every milk or milk product particle in properly designed and operated equipment to a specific time and temperature. The most common method of pasteurization in the United States today is High Temperature Short Time (HTST) pasteurization, which uses metal plates and hot water to raise milk temperatures to at least 161° F for at least 15 seconds, followed by rapid cooling.

Population estimates—Estimates in this report are provided with a measure of precision called the standard error. The confidence intervals used to make comparisons in the text of this report were computed using the methods described in Section II.D.2 (p 224). These confidence intervals require more information than is published in the report to compute, but an approximate 95-percent confidence interval can be computed 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 value about 95 out of 100 times. For example, an estimated proportion of 7.5 with a standard error of 1.0 results in limits of 5.5 and 9.5 (two times the standard error above and below the estimate). When estimates are reported as being “higher” or “lower,” a statistical difference is implied by the overlap or absence of overlap between 95-percent confidence intervals for the estimates being compared but was not directly tested. Not all statistically different estimates are mentioned in the text of this report.

Pregnancy toxemia—A metabolic disease that may affect does in late gestation. Pregnancy toxemia is characterized by decreased feed intake, depression, and might include neurologic signs and even death. Pregnancy toxemia is seen most frequently in does carrying multiple fetuses and is often referred to as twin lamb disease or pregnancy ketosis.

Previous 12 months—Refers to the previous 12 months prior to questionnaire administration. Questionnaires were completed between September 2019 and March 2020.

Primary production (of operation)—In this report, these are meat, dairy, and other. While an operation might have goats to produce more than one product, operators were asked to select the primary production focus of the operation if multiple categories applied.

Q fever (coxiellosis)—An infectious disease caused by the bacterium *Coxiella burnetii*. Q fever can infect a variety of animals, including ruminants such as sheep and goats. In ruminants, Q fever may cause very few signs, or it may result in abortion in pregnant animals. Q fever can infect humans, either through contact with infected animals or through contaminated and unpasteurized milk or milk products. Humans that become sick may develop flu-like symptoms, including fever, chills, fatigue, and muscle pain.

Regions*

East—Alabama, Connecticut, Eastern Oklahoma,* Eastern Texas,* Florida, Georgia, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Vermont, Virginia, Wisconsin

West—California, Colorado, Oregon, Washington, Western Oklahoma,* Western Texas*

*Texas and Oklahoma were divided on county lines corresponding with either side of the north-south Interstate 35. The western halves of the States were included in the West region, and the eastern halves were included in the East region. For more detailed information regarding the counties involved, see Appendix II.

Reproductive problems—Difficulty in conceiving (infertility), which might be caused by metritis (uterine inflammation), not showing visible signs of estrus (heat), scarring of the uterus, cystic ovarian disease, abortions, and other causes. Reproductive problems also include difficulty kidding or dystocia.

Sample profile—Information that described characteristics of the operations from which Goat 2019 data were collected.

Scrapie—A degenerative, fatal disease affecting the central nervous system of sheep and goats. Infected flocks that contain a high percentage of susceptible animals can experience significant production losses. In these flocks over a period of several years, the number of infected animals increases and the age at onset of clinical signs decreases, making these flocks economically unviable. Animals sold from infected flocks spread scrapie to other flocks. The presence of scrapie in the U.S. also prevents the export of breeding stock, semen, and embryos to many other countries.

Somatic cell count (SCC)—A measure of the number of white blood cells and secretory cells per milliliter of milk. Each bulk tank of milk is usually tested for SCC as an indication of milk quality. Individual goats can be tested for SCC, usually through routine Dairy Herd Improvement Association (DHIA) monitoring.

Sore mouth (orf, contagious ecthyma)—Sore mouth is caused by a poxvirus and is highly contagious in goats, especially young kids. Sores caused by the virus usually occur around the mouth and teats but can also occur on the legs, vulva, and face. Scabs which have fallen off of infected animals can act as a source of infection for other animals, because the virus remains viable on scabs in the environment. The virus is zoonotic, meaning it can infect people. Infected people can develop sores that may be painful and last for “two” months, but the sores usually heal without scarring. This disease does not transmit from person to person.

Stillborn—For the purposes of this study, a stillborn kid is one that was already dead when it was born or that died within the first two hours following birth. Study respondents might not have known if a kid was born dead or born alive and then died shortly following birth. Likewise, a stillborn kid might never be seen at all if predators remove its carcass.

Tuberculosis (TB)—Bovine tuberculosis is a contagious disease of animals and humans caused by *Mycobacterium bovis*. It is commonly a chronic, debilitating disease, but occasionally it manifests as an acute, rapidly progressive disease. TB is a globally widespread zoonotic disease affecting nearly all species of vertebrates. The disease is spread by direct contact, inhalation of droplets expelled from airways of infected animals, and ingestion of contaminated feed or milk.

Veterinarian-Client-Patient Relationship (VCPR)—The following is the U.S. Food and Drug Administration's definition of a "valid veterinarian-client-patient relationship" (VCPR). States can have their own definition of a VCPR, as well.

1. A veterinarian has assumed the responsibility for making medical judgments regarding the health of (an) animal(s) and the need for medical treatment, and the client (the owner of the animal or animals or other caretaker) has agreed to follow the instructions of the veterinarian;
2. There is sufficient knowledge of the animal(s) by the veterinarian to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s), and;
3. The practicing veterinarian is readily available for follow-up in case of adverse reactions or failure of the regimen of therapy. Such a relationship can exist only when the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of examination of the animal(s), and/or by medically appropriate and timely visits to the premises where the animal(s) are kept.

Veterinary feed directive order—Written authorization allowing the owner or caretaker of animals to obtain and use animal feed containing medically important antibiotics (i.e., medically important to humans, per the U.S. Food and Drug Administration) to treat their animals in accordance with the FDA-approved directions for use.

Weaned kid—A kid no longer nursing a doe or otherwise drinking milk.

Weaning—Removing milk or milk replacer from a kid's diet.

Weaning age—The age of a kid when milk or milk replacer is removed from the diet.

Wether—A castrated male goat.

Withhold or Withdrawal Period—The period following the last treatment with the drug during which the animal may not be offered for slaughter and milk may not be offered for sale. The withdrawal period is determined by residue studies conducted under the labeled conditions of use (type of animal, dosage, route of administration) and is based upon the time necessary for drug residues in the animal to deplete to levels that are shown to be safe. Adhering to these times is important to avoid violative chemical residues from entering the food supply.

Section I: Population Estimates

Where applicable, column or row totals are shown as 100.0 to aid in interpretation; however, estimates may not always sum to 100.0 due to rounding. Most estimates in this report are rounded to the nearest tenth. If rounded to 100.0 or 0.0, or the standard error is rounded to less than 0.1, the standard error was reported as (0.0). If the estimate was exactly 100.0 or 0.0, no standard error was reported (—).

When estimates are reported as being “higher” or “lower,” a statistical difference is implied by the overlap or absence of overlap between 95-percent confidence intervals (see Section II.D.2 p 224). Not all statistically different estimates are mentioned in the text of this report.

Unless otherwise noted, estimates in this report refer to the previous 12 months from when the study questionnaire was administered, which occurred from September 2019 through March 2020.

A. Preventative Practices

Preventive practices, such as a written herd health management plan, disease testing, and vaccination protocols, all help to ensure a healthy goat herd. A healthy goat herd is foundational to a successful goat operation. Therefore, producers should use resources, such as veterinarians, extension and university personnel, and reference materials, to ensure their preventive practices are addressing any health and disease concerns. These concerns may vary based on an operation's location, primary production of the operation, and the overall goals of the producer.

1. Herd health management plan

A herd health management plan is a set of written protocols that directly relate to the management of animal health on the operation, including key factors such as disease control measures (e.g., vaccination and quarantine protocols), disease testing and necropsy protocols, feed and water resource management, and structural and enclosure management on the operation. Overall, 8.8 percent of all operations had a written herd health management plan. There were no differences by herd size or region in the percentage of operations that had a written herd health management plan.

A.1.a. Percentage of operations that had a written herd health management plan, by herd size and region:

Percent Operations									
Herd size (number of goats and kids)						Region			
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East	
All operations									
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
9.1	(2.7)	8.9	(2.8)	6.5	(2.0)	8.0	(2.8)	9.2	(2.3)
8.8	(1.8)								

There were no differences by primary production of the operation in the percentage of operations that had a written herd health management plan.

A.1.b. Percentage of operations that had a written herd health management plan, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
8.1	(2.6)	13.7	(4.6)	6.0	(2.1)

For operations that had a written herd health management plan, 60.9 percent used reference materials and 41.2 percent used a veterinarian as resources to help develop the plan.

A.1.c. For the 8.8 percent of operations that had a written herd health management plan (table A.1.a.), percentage of operations that used the following resources in the development of the plan:

Resource	Percent operations	Standard error
Veterinarian	41.2	(9.2)
Extension (university)	28.3	(8.1)
Other producers	47.0	(10.4)
Reference materials (online or book)	60.9	(11.2)
Other	9.7	(7.4)

2. Disease testing

An operation may consult with a veterinarian or an extension/university specialist to decide which disease testing is appropriate for their goats. The diseases for which an operation may choose to test their resident goats may depend on the size, location, and goals of the operation. For example, goats traveling to shows may require testing before the show. Additionally, goats that show signs of disease may be tested.

A higher percentage of medium and large operations (9.9 and 17.0 percent, respectively) normally required or performed individual animal testing of resident goats for caprine arthritis encephalitis (CAE) than small operations (3.2 percent). A higher percentage of operations in the East region (1.6 percent) tested individual resident goats for scrapie than operations in the West region (0.1 percent).

A.2.a. Percentage of operations that normally required or performed individual animal testing of **resident goats** in the herd in the previous 12 months for the following diseases, by herd size and region:

Percent Operations												
Disease	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Caprine arthritis encephalitis (CAE)	3.2	(0.7)	9.9	(2.1)	17.0	(9.3)	5.9	(2.0)	6.8	(1.4)	6.5	(1.1)
Johne's (paratuberculosis)	5.8	(1.9)	11.0	(2.8)	3.1	(0.9)	6.1	(2.0)	8.1	(2.0)	7.5	(1.5)
Brucellosis	0.2	(0.2)	1.7	(0.6)	6.2	(3.7)	1.6	(0.5)	1.0	(0.4)	1.2	(0.3)
Q fever (coxiellosis)	0.0	(0.0)	0.2	(0.1)	1.0	(0.5)	0.4	(0.1)	0.1	(0.0)	0.2	(0.0)
Caseous lymphadenitis (boils, CL, abscesses)	3.3	(1.4)	6.1	(1.9)	3.4	(1.2)	4.4	(1.8)	4.4	(1.3)	4.4	(1.1)
Scrapie	1.3	(1.2)	0.9	(0.7)	0.4	(0.3)	0.1	(0.0)	1.6	(1.0)	1.1	(0.7)
Tuberculosis	0.1	(0.1)	1.3	(0.4)	3.4	(1.0)	1.3	(0.4)	0.5	(0.1)	0.8	(0.1)
Other	0.1	(0.1)	3.2	(1.3)	2.7	(1.1)	0.3	(0.1)	1.9	(0.7)	1.4	(0.5)
Any individual animal testing	9.6	(2.6)	19.5	(3.2)	26.1	(9.1)	8.7	(2.0)	16.8	(2.4)	14.3	(1.8)

A higher percentage of dairy operations (28.7 percent) normally required or performed any individual animal testing than meat operations (7.8 percent). A higher percentage of dairy operations (18.0 percent) normally required or performed individual animal testing for caprine arthritis encephalitis than meat operations (1.7 percent).

A.2.b. Percentage of operations that normally required or performed individual animal testing of **resident goats** in the herd in the previous 12 months for the following diseases, by primary production of the operation:

Disease	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Caprine arthritis encephalitis (CAE)	1.7	(0.7)	18.0	(4.2)	7.3	(2.7)
Johne's (paratuberculosis)	3.4	(1.5)	12.0	(3.9)	13.4	(4.2)
Brucellosis	0.7	(0.5)	2.8	(1.0)	0.8	(0.5)
Q fever (coxiellosis)	0.1	(0.0)	0.5	(0.2)	0.1	(0.0)
Caseous lymphadenitis (boils, CL, abscesses)	2.8	(1.4)	6.2	(1.5)	6.4	(2.7)
Scrapie	0.5	(0.4)	3.5	(3.1)	0.5	(0.3)
Tuberculosis	0.1	(0.1)	2.4	(0.5)	0.9	(0.5)
Other	1.9	(0.9)	1.4	(0.6)	0.4	(0.3)
Any individual animal testing	7.8	(2.2)	28.7	(4.4)	16.6	(4.4)

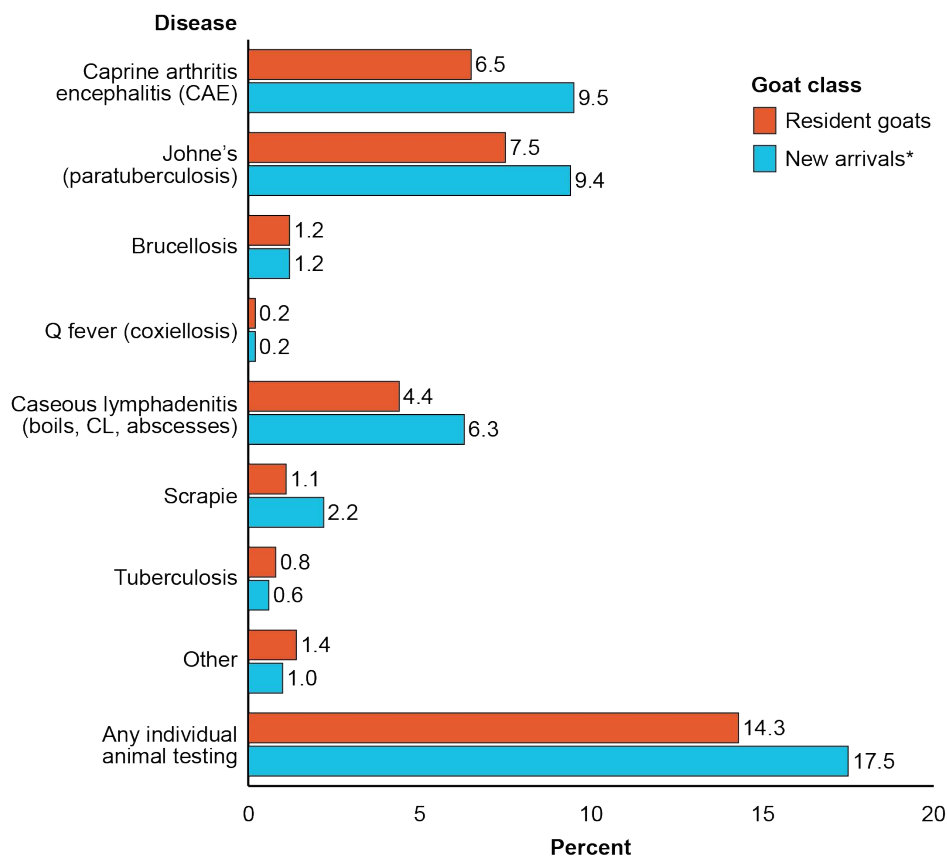
A higher percentage of all operations normally required or performed individual animal testing on new arrivals for caprine arthritis encephalitis, Johne's, and caseous lymphadenitis (9.5, 9.4, and 6.3 percent, respectively) than brucellosis, Q fever, and tuberculosis (1.2, 0.2, and 0.6 percent, respectively). A higher percentage of large operations (3.3 percent) normally required or performed brucellosis testing on new arrivals than small operations (0.1 percent). Only small operations normally required or performed scrapie testing (5.1 percent). A higher percentage of operations in the West region (15.0 percent) normally required or performed testing for caseous lymphadenitis than the East region (3.0 percent).

A.2.c. Percentage of operations that normally required or performed individual animal testing of **new arrivals*** in the previous 12 months for the following diseases, by herd size and region:

Percent Operations*												
Disease	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Caprine arthritis encephalitis (CAE)	6.9	(2.2)	12.3	(3.9)	8.1	(2.3)	16.5	(6.2)	6.9	(1.6)	9.5	(2.1)
Johne's (paratuberculosis)	6.7	(2.3)	12.9	(4.1)	4.9	(1.7)	15.3	(6.2)	7.2	(1.9)	9.4	(2.2)
Brucellosis	0.1	(0.1)	1.7	(1.2)	3.3	(1.3)	1.0	(0.5)	1.2	(0.8)	1.2	(0.6)
Q fever (coxiellosis)	0.0	(—)	0.2	(0.1)	1.1	(0.6)	0.7	(0.3)	0.0	(—)	0.2	(0.1)
Caseous lymphadenitis (boils, CL, abscesses)	4.6	(1.7)	8.4	(3.7)	3.6	(1.4)	15.0	(6.2)	3.0	(1.0)	6.3	(1.9)
Scrapie	5.1	(4.5)	0.0	(—)	0.0	(—)	0.8	(0.8)	2.8	(2.7)	2.2	(2.0)
Tuberculosis	0.0	(—)	0.4	(0.2)	4.3	(1.6)	0.9	(0.4)	0.5	(0.2)	0.6	(0.2)
Other	0.0	(—)	2.1	(2.0)	0.0	(—)	0.0	(—)	1.3	(1.3)	1.0	(1.0)
Any individual animal testing	15.5	(5.4)	20.8	(4.7)	10.3	(2.7)	20.9	(6.4)	16.2	(3.8)	17.5	(3.3)

*For those operations that had new arrivals.

Percentage of operations that normally required or performed individual animal testing of resident goats and new arrivals* in the herd in the previous 12 months for the following diseases



*For those operations that had new arrivals.

Overall, 32.2 percent of dairy operations normally required or performed individual animal testing of new arrivals in the previous 12 months compared to 6.3 percent of meat operations. A higher percentage of dairy and other operations tested new arrivals for caprine arthritis encephalitis (18.7 and 16.6 percent, respectively), Johne's disease (14.4 and 20.1 percent, respectively), and caseous lymphadenitis (10.2 and 14.4 percent, respectively) than meat operations (1.6, 1.9, and 0.4 percent, respectively).

A.2.d. Percentage of operations that normally required or performed individual animal testing of **new arrivals*** in the previous 12 months for the following diseases, by primary production of the operation:

Disease	Percent Operations*					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Caprine arthritis encephalitis (CAE)	1.6	(0.9)	18.7	(4.8)	16.6	(6.8)
Johne's (paratuberculosis)	1.9	(1.1)	14.4	(4.4)	20.1	(7.4)
Brucellosis	1.4	(1.1)	1.9	(0.7)	0.0	(—)
Q fever (coxiellosis)	0.2	(0.1)	0.4	(0.2)	0.0	(—)
Caseous lymphadenitis (boils, CL, abscesses)	0.4	(0.2)	10.2	(3.5)	14.4	(6.7)
Scrapie	0.0	(—)	7.8	(7.2)	0.9	(0.9)
Tuberculosis	0.2	(0.1)	1.5	(0.6)	0.5	(0.4)
Other	1.9	(1.9)	0.0	(—)	0.0	(—)
Any individual animal testing	6.3	(2.6)	32.2	(8.2)	25.4	(7.7)

*For those operations that had new arrivals.

3. Caseous lymphadenitis

Caseous lymphadenitis (CL) causes abscesses in the skin, lymph nodes, and internal organs and is caused by the *Corynebacterium pseudotuberculosis* bacterium. Abscesses are typically seen on the head, neck, shoulders, or upper rear legs, and can break open to the skin surface, spreading bacteria into the environment. In many animals, including goats, the bacteria may spread to the lungs and nearby lymph nodes, causing respiratory problems. Economic losses related to CL include condemnation and trim of infected carcasses, devaluation of hides, decreased meat yield, and reduced reproductive efficiency. Abscesses in goats should be considered CL until proven otherwise. Although CL is relatively widespread, operations may choose to implement specific management practices to limit the spread of CL within their herd. There is no current effective treatment for CL and although a vaccine is available in sheep, it should not be used in goats.

A higher percentage of large operations (68.0 percent) had any goats with abscesses, boils, or lumps in the previous 12 months than small and medium operations (21.4 and 33.9 percent, respectively). There were no differences by region in the percentage of operations that had any goats with abscesses, boils, or lumps in the previous 12 months.

A.3.a. Percentage of operations that had any goats with abscesses, boils, or lumps (typically on the head, neck, shoulder, or upper rear legs) in the previous 12 months, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
21.4	(4.1)	33.9	(4.4)	68.0	(9.8)	30.8	(4.8)	28.3	(3.6)	29.0 (2.9)

There were no differences by primary production of the operation in the percentage of operations that had any goats with abscesses, boils, or lumps in the previous 12 months.

A.3.b. Percentage of operations that had any goats with abscesses, boils, or lumps (typically on the head, neck, shoulder, or upper rear legs) in the previous 12 months, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
30.3	(4.0)	29.1	(6.1)	26.1	(5.7)

There were no differences by herd size or region in the percentage of goats that had abscesses, boils, or lumps in the previous 12 months.

A.3.c. Percentage of goats* that had abscesses, boils, or lumps (typically on the head, neck, shoulder, or upper rear legs) in the previous 12 months, by herd size and region:

Percent Goats*										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
3.0	(0.6)	3.3	(0.7)	5.3	(1.8)	2.9	(0.7)	5.2	(1.5)	4.2 (1.0)

*As a percentage of the goat and kid inventory on the day of the interview.

There were no differences by primary production of the operation in the percentage of goats that had abscesses, boils, or lumps in the previous 12 months.

A.3.d. Percentage of goats* that had abscesses, boils, or lumps (typically on the head, neck, shoulder, or upper rear legs) in the previous 12 months, by primary production of the operation:

Percent Goats*					
Primary Production of the Operation					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
3.0	(0.6)	7.7	(2.8)	2.5	(0.6)

*As a percentage of the goat and kid inventory on the day of the interview.

For operations that had any goats with abscesses, boils, or lumps in the previous 12 months, 50.4 percent of operations drained or lanced the lumps and 30.6 percent isolated the goats. There were no differences by herd size or region in the percentage of operations by actions taken for goats with abscesses, boils, or lumps in the previous 12 months.

A.3.e. For the 29.0 percent of operations that had any goats with abscesses, boils, or lumps in the previous 12 months (table A.3.a.), percentage of operations by actions taken, and by herd size and region:

Percent Operations												
Action	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Call the veterinarian	44.4	(10.0)	20.1	(5.5)	10.3	(5.4)	27.8	(9.7)	29.2	(6.3)	28.7	(5.3)
Cull the animal to market or slaughter	13.0	(7.4)	13.5	(5.3)	15.3	(4.1)	14.9	(5.7)	12.9	(5.1)	13.6	(3.9)
Isolate the goats	33.9	(9.8)	28.1	(7.3)	28.6	(8.5)	23.5	(8.7)	33.9	(6.8)	30.6	(5.4)
Drain or lance the lumps	41.6	(10.6)	51.8	(7.7)	70.8	(6.3)	48.0	(9.4)	51.5	(7.1)	50.4	(5.7)
Lab tests for caseous lymphadenitis (CL)/ abscesses (e.g., culture, SHI test)	19.4	(9.0)	10.8	(3.5)	4.3	(2.0)	15.0	(7.5)	12.7	(5.0)	13.4	(4.1)
Treat with antibiotics	20.1	(8.6)	24.6	(5.9)	51.5	(7.8)	24.0	(6.3)	28.1	(6.2)	26.8	(4.7)
Inject a substance into the abscess/lump	15.8	(7.6)	26.6	(7.5)	34.5	(8.0)	29.2	(9.3)	20.5	(5.4)	23.3	(4.8)
Other*	31.5	(10.9)	26.4	(8.2)	17.0	(5.9)	31.6	(10.0)	25.0	(7.1)	27.1	(5.8)
Any action	70.1	(9.6)	76.4	(6.2)	82.0	(5.4)	76.6	(6.6)	73.7	(6.4)	74.6	(4.8)

*Washing/cleaning, applying topicals, vaccination, and applying iodine were common "other" actions.

For operations that had any goats with abscesses, boils, or lumps in the previous 12 months, a higher percentage of meat operations (17.3 percent) culled the animal to market or slaughter than other operations (2.5 percent). A higher percentage of meat operations (34.4 percent) took “other” actions, which included washing/cleaning the abscess, applying topicals, vaccination, or applying iodine, than dairy operations (6.3 percent).

A.3.f. For the 29.0 percent of operations that had any goats with abscesses, boils, or lumps in the previous 12 months (table A.3.a.), percentage of operations by actions taken, and by primary production of the operation:

Action	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Call the veterinarian	24.9	(6.7)	33.3	(11.8)	34.7	(12.9)
Cull the animal to market or slaughter	17.3	(5.8)	14.0	(9.1)	2.5	(1.5)
Isolate the goats	20.2	(6.0)	52.4	(11.2)	36.7	(13.0)
Drain or lance the lumps	45.1	(7.7)	64.7	(10.5)	50.3	(13.0)
Lab tests for caseous lymphadenitis (CL)/ abscesses (e.g., culture, SHI test)	8.7	(4.6)	8.9	(3.6)	31.1	(13.0)
Treat with antibiotics	25.6	(6.2)	24.1	(9.6)	33.0	(11.7)
Inject a substance into the abscess/lump	17.6	(5.3)	17.9	(5.9)	44.7	(13.4)
Other*	34.4	(8.0)	6.3	(2.7)	28.4	(12.9)
Any action	72.0	(6.7)	75.0	(10.3)	81.6	(7.5)

*Washing/cleaning, applying topicals, vaccination, and applying iodine were common “other” actions.

For operations that isolated goats with abscesses, boils, or lumps in the previous 12 months, there was no predominant number of days these goats were isolated. Goats were isolated a median of 12.2 days.

A.3.g. For operations that isolated goats with abscesses, boils, or lumps in the previous 12 months* (table A.3.e.), percentage of operations by number of days these goats were isolated and median number of days these goats were isolated:

Days	Percent operations	Std. error
Less than 7	21.9	(8.5)
7 to < 14	25.5	(9.7)
14 to < 21	24.4	(9.8)
21 to < 28	2.9	(2.0)
28 or more	25.3	(9.3)
Total	100.0	
Median	12.2	(1.9)

*Refers to the 8.9 percent of operations overall that isolated goats with abscesses, boils, or lumps. This estimate comes from the 29.0 percent of operations that had any goats with abscesses, boils, or lumps (table A.3.a.), of which 30.6 percent of those operations had isolated those goats (table A.3.e.).

For operations that drained or lanced lumps in the previous 12 months, 78.1 percent of operations disposed of the drainage away from the goat raising area.

A.3.h. For operations that drained or lanced lumps in the previous 12 months* (table A.3.e.), percentage of operations that disposed of the drainage away from the goat raising areas:

Percent operations	Standard error
78.1	(7.5)

*Refers to the 14.6 percent of operations overall that drained or lanced lumps. This estimate comes from the 29.0 percent of operations that had any goats with abscesses, boils, or lumps (table A.3.a.), of which 50.4 percent of those operations drained or lanced lumps (table A.3.e.).

4. Vaccinations

Vaccines are given to goats primarily to control and prevent infectious diseases caused by bacteria and viruses. Vaccinations administered may depend on the goat age class and the diseases previously seen on the operation. A strong vaccination protocol should be developed in consultation with veterinarians, university/extension, or someone with knowledge of goats and goat diseases specific to the operation.

Slightly less than two-thirds of all operations (60.5 percent) administered any vaccines to any goats in the previous 12 months. There were no differences by herd size or region in the percentage of operations that administered any vaccines to goats in the previous 12 months.

A.4.a. Percentage of operations that administered any vaccines to any goats in the previous 12 months, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
55.7	(4.8)	67.2	(4.4)	63.1	(9.7)	55.9	(6.1)	62.4	(4.0)	60.5 (3.4)

There were no differences by primary production of the operation in the percentage of operations that administered any vaccines to any goats in the previous 12 months.

A.4.b. Percentage of operations that administered any vaccines to any goats in the previous 12 months, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
55.0	(4.5)	67.4	(6.4)	67.1	(6.3)

For operations that administered any vaccines to any goats in the previous 12 months, all operations had does present, and most had nursing kids (89.8 percent), weaned kids (89.1 percent) and adult bucks/wethers (96.4 percent) present. All large operations had nursing kids, weaned kids, adult does, and adult bucks/wethers.

A.4.c. For the 60.5 percent of operations that administered any vaccines to any goats in the previous 12 months (table A.4.a.), percentage of operations that had the given type of goat class on the operation in the previous 12 months, by herd size and region:

Percent Operations												
Goat class	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Nursing kids	84.4	(4.9)	95.0	(2.6)	100.0	(—)	93.3	(4.0)	88.4	(3.7)	89.8	(2.9)
Weaned kids	83.7	(4.9)	94.0	(2.7)	100.0	(—)	89.3	(5.5)	89.0	(3.5)	89.1	(2.9)
Adult does	100.0	(—)	100.0	(—)	100.0	(—)	100.0	(—)	100.0	(—)	100.0	(—)
Adult bucks/wethers	95.8	(1.7)	96.7	(2.8)	100.0	(—)	94.7	(3.0)	97.1	(1.6)	96.4	(1.4)

For operations that administered any vaccines to any goats in the previous 12 months, there were no differences by primary production of the operation in the percentage of operations by goat class present on the operation.

A.4.d. For the 60.5 percent of operations that administered any vaccines to any goats in the previous 12 months (table A.4.a.), percentage of operations that had the given type of goat class on the operation in the previous 12 months, by primary production of the operation:

Percent Operations						
Primary Production						
Goat class	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Nursing kids	95.6	(2.5)	85.0	(7.3)	82.8	(6.6)
Weaned kids	95.8	(2.2)	85.9	(6.6)	78.7	(7.4)
Adult does	100.0	(—)	100.0	(—)	100.0	(—)
Adult bucks/wethers	95.3	(2.8)	96.3	(1.4)	98.8	(0.7)

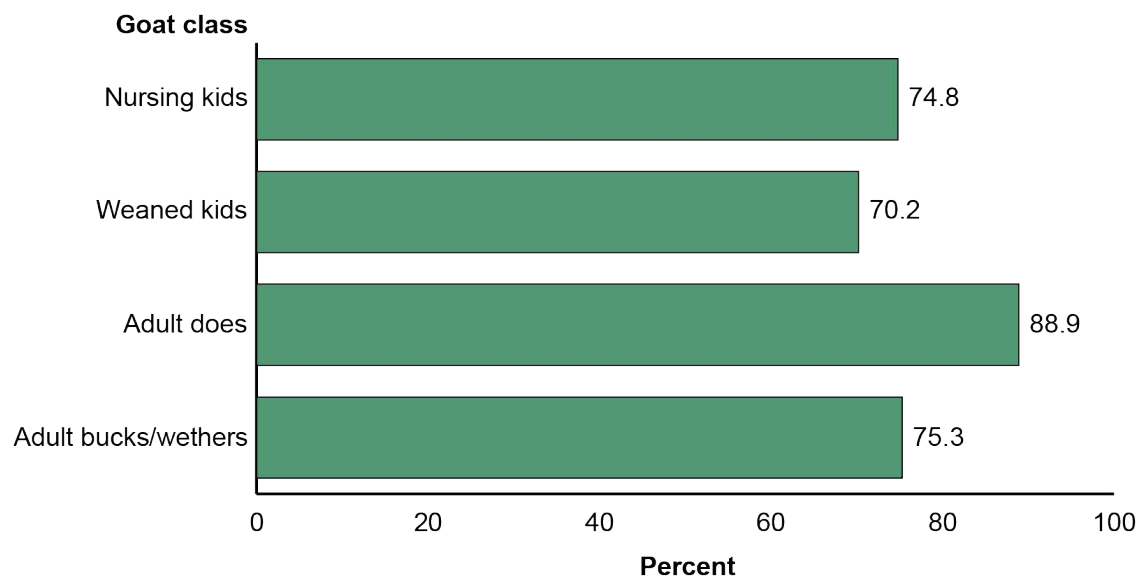
For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months, a higher percentage of all operations administered vaccines to adult does (88.9 percent) than nursing kids, weaned kids, and adult bucks/wethers (74.8, 70.2, 75.3 percent, respectively). There were no differences by herd size or region in the percentage of operations that administered any vaccines to goats in the listed classes in the previous 12 months.

A.4.e. For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months* (table A.4.c.), percentage of operations that administered any vaccines to goats of the given class in the previous 12 months, by herd size and region:

Percent Operations											
Goat class	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Nursing kids	71.6	(6.3)	78.8	(5.0)	72.8	(9.0)	61.6	(6.3)	80.2	(4.3)	74.8 (3.7)
Weaned kids	65.1	(6.7)	74.4	(5.6)	79.5	(4.8)	63.9	(6.4)	72.6	(5.2)	70.2 (4.1)
Adult does	89.1	(3.8)	89.0	(3.5)	87.9	(3.6)	91.3	(3.0)	88.0	(3.2)	88.9 (2.5)
Adult bucks/wethers	71.0	(6.0)	81.1	(4.6)	72.2	(7.0)	70.1	(6.7)	77.2	(4.5)	75.3 (3.8)

*Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months (table A.4.c.), percentage of operations that administered any vaccines to goats of the given class in the previous 12 months



There were no differences by primary production of the operation in the percentage of operations that administered any vaccines to goats in the listed classes in the previous 12 months.

A.4.f. For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months* (table A.4.c.), percentage of operations that administered any vaccines to goats of the given class in the previous 12 months, by primary production of the operation:

Percent Operations						
Primary Production						
Goat class	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Nursing kids	73.0	(5.8)	78.7	(5.7)	75.1	(7.5)
Weaned kids	65.6	(6.3)	78.6	(6.9)	72.6	(7.3)
Adult does	86.8	(4.1)	87.9	(4.9)	94.1	(2.2)
Adult bucks/wethers	70.0	(6.3)	75.5	(6.6)	84.9	(4.5)

*Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

For operations that administered any vaccines to any goats in the previous 12 months, the majority of all operations (98.5 percent) administered a clostridial vaccine to any goats. A higher percentage of all operations administered a *Clostridium* type C and D vaccine for enterotoxemia (82.3 percent) than a Tetanus or 7- or 8-way vaccine (67.4 and 16.6 percent, respectively) to any goats. There were no differences by herd size or region in the percentage of operations that used clostridial vaccines during the previous 12 months for each of the listed goat classes.

A.4.g. For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months¹ (table A.4.c.), percentage of operations that used **clostridial** vaccines during the previous 12 months, by goat class, by vaccine, and by herd size and region:

Vaccine	Percent Operations											
	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Nursing kids												
<i>Clostridium</i> type C and D for enterotoxemia ²	57.9	(6.9)	64.5	(5.7)	57.2	(9.3)	50.8	(6.3)	64.8	(5.2)	60.7	(4.2)
Tetanus (<i>Cl. tetani</i>)	46.0	(6.7)	52.4	(5.7)	46.0	(9.4)	41.8	(6.0)	51.6	(5.3)	48.8	(4.2)
7- or 8-way vaccine ³	9.6	(3.6)	15.7	(4.3)	15.0	(4.3)	11.0	(3.7)	13.3	(3.3)	12.6	(2.6)
Any clostridial vaccine	71.4	(6.3)	78.8	(5.0)	72.5	(9.0)	61.3	(6.3)	80.2	(4.3)	74.7	(3.7)
Any vaccine for <i>Clostridium</i> type C and D ⁴	67.5	(6.7)	78.4	(5.0)	71.8	(9.0)	60.8	(6.3)	77.3	(4.7)	72.6	(3.9)
Weaned kids												
<i>Clostridium</i> type C and D for enterotoxemia ²	56.3	(6.5)	58.9	(6.1)	65.6	(6.2)	55.0	(6.6)	59.3	(5.2)	58.1	(4.2)
Tetanus (<i>Cl. tetani</i>)	46.9	(7.2)	51.0	(5.9)	53.2	(7.7)	48.2	(6.7)	49.5	(5.6)	49.2	(4.4)
7- or 8-way vaccine ³	8.0	(3.6)	15.1	(4.2)	11.2	(3.5)	8.2	(3.5)	12.5	(3.2)	11.3	(2.5)
Any clostridial vaccine	64.9	(6.7)	73.7	(5.6)	77.6	(5.0)	62.6	(6.4)	72.4	(5.2)	69.7	(4.1)
Any vaccine for <i>Clostridium</i> type C and D ⁴	64.3	(6.7)	73.0	(5.6)	76.5	(5.2)	62.2	(6.5)	71.7	(5.2)	69.0	(4.1)

Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

Also known as overeating disease, bloody scours, and pulpy kidney disease.

³Vaccinates against blackleg, malignant edema, *Clostridium chauvoei* and/or *Cl. Septicum* and/or *Cl. novyi* and/or *Cl. Sordellii* and C, D, and T.

Includes operations that administered "Clostridium type C and D for enterotoxemia" and/or "7- or 8-way" vaccines.

A.4.g. (cont'd.) For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months¹ (table A.4.c.), percentage of operations that used **clostridial** vaccines during the previous 12 months, by goat class, by vaccine, and by herd size and region:

Vaccine	Percent Operations						Region					
	Herd size (number of goats and kids)											
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Adult does												
<i>Clostridium</i> type C and D for enterotoxemia ²	70.6	(5.8)	72.1	(5.5)	64.1	(6.2)	80.9	(4.3)	66.8	(4.9)	70.8	(3.8)
Tetanus (<i>Cl. tetani</i>)	59.7	(6.7)	59.6	(5.7)	52.6	(7.6)	73.9	(4.7)	53.5	(5.4)	59.2	(4.2)
7- or 8-way vaccine ³	11.6	(4.3)	17.0	(4.6)	18.8	(4.7)	9.0	(3.2)	16.3	(3.9)	14.3	(2.9)
Any clostridial vaccine	84.7	(4.5)	88.6	(3.5)	80.0	(4.8)	88.7	(3.1)	84.9	(3.7)	86.0	(2.8)
Any vaccine for <i>Clostridium</i> type C and D ⁴	82.1	(4.9)	88.4	(3.6)	80.0	(4.8)	88.7	(3.1)	82.9	(4.0)	84.6	(3.0)
Adult bucks/wethers												
<i>Clostridium</i> type C and D for enterotoxemia ²	51.1	(6.3)	66.9	(5.7)	51.7	(7.6)	56.4	(6.9)	58.1	(5.0)	57.7	(4.1)
Tetanus (<i>Cl. tetani</i>)	46.5	(6.7)	56.0	(5.8)	48.3	(7.8)	56.0	(7.1)	48.5	(5.3)	50.6	(4.3)
7- or 8-way vaccine ³	11.6	(4.4)	14.1	(4.2)	13.7	(4.0)	7.4	(3.3)	14.8	(3.7)	12.7	(2.8)
Any clostridial vaccine	68.9	(6.1)	80.7	(4.6)	66.0	(7.2)	68.1	(6.7)	75.7	(4.6)	73.6	(3.8)
Any vaccine for <i>Clostridium</i> type C and D ⁴	62.7	(6.5)	80.3	(4.6)	64.9	(7.3)	63.2	(6.8)	72.7	(4.9)	70.1	(4.0)
Any goats												
<i>Clostridium</i> type C and D for enterotoxemia ²	84.4	(4.2)	80.0	(4.8)	79.8	(4.9)	87.6	(3.6)	80.2	(3.8)	82.3	(2.9)
Tetanus (<i>Cl. tetani</i>)	67.9	(6.2)	67.5	(5.3)	63.2	(7.4)	77.1	(4.6)	63.7	(5.2)	67.4	(4.0)
7- or 8-way vaccine ³	12.8	(4.3)	21.1	(4.9)	19.2	(4.7)	12.0	(3.6)	18.4	(4.0)	16.6	(3.0)
Any clostridial vaccine	97.9	(2.0)	99.7	(0.3)	96.1	(2.6)	98.4	(0.8)	98.5	(1.4)	98.5	(1.0)
Any vaccine for <i>Clostridium</i> type C and D ⁴	95.2	(3.0)	99.2	(0.4)	95.8	(2.6)	98.1	(0.9)	96.4	(2.1)	96.9	(1.6)

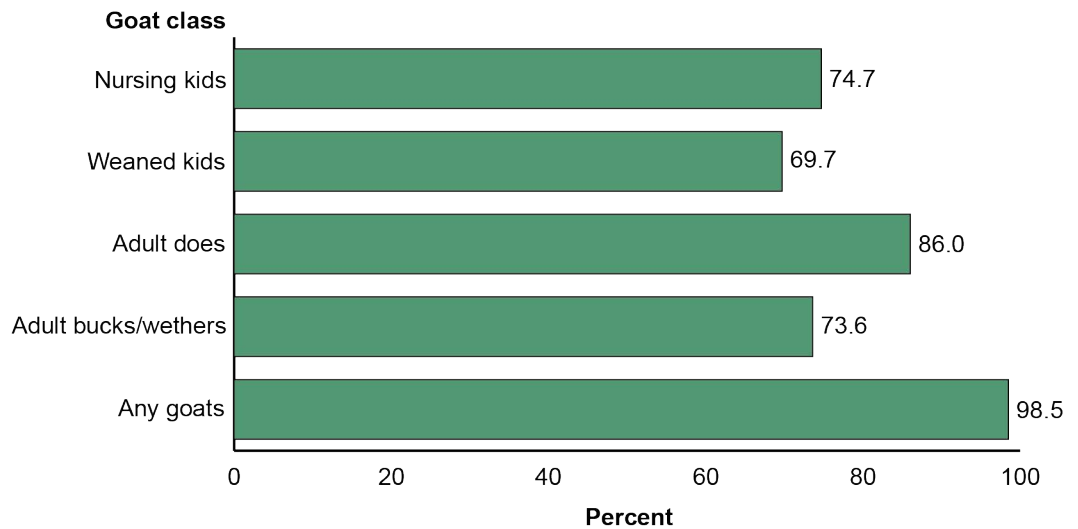
¹Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

²Also known as overeating disease, bloody scours, and pulpy kidney disease.

³Vaccinates against blackleg, malignant edema, *Clostridium chauvoei* and/or *Cl. Septicum* and/or *Cl. novyi* and/or *Cl. Sordellii* and *C. D.* and *T.*

⁴Includes operations that administered “*Clostridium* type C and D for enterotoxemia” and/or “7- or 8-way” vaccines.

For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months (table A.4.c.), percentage of operations that used any clostridial vaccines* during the previous 12 months, by goat class



*Includes operations that administered "*Clostridium* type C and D for enterotoxemia" and/or "7- or 8-way" vaccines.

For operations that administered any vaccines to any goats in the previous 12 months, a higher percentage of dairy operations (93.1 percent) vaccinated any goats with a *Clostridium* type C and D vaccine than other operations (68.9 percent). Alternatively, a higher percentage of other operations (25.9 percent) vaccinated any goats with a 7- or 8-way clostridial vaccine than dairy operations (6.6 percent). There were no differences by primary production of the operation in the percentage of operations that used clostridial vaccines during the previous 12 months by type of vaccine for nursing kids and weaned kids. A higher percentage of other operations vaccinated adult does and adult bucks/wethers (23.0 and 22.1 percent, respectively) using a 7- or 8-way vaccine than dairy operations (6.1 and 5.5 percent, respectively).

A.4.h. For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months¹ (table A.4.c.), percentage of operations that used **clostridial** vaccines during the previous 12 months, by goat class, by vaccine, and by primary production of the operation:

Vaccine	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Nursing kids						
<i>Clostridium</i> type C and D for enterotoxemia ²	60.8	(6.4)	71.5	(5.9)	50.2	(8.0)
Tetanus (<i>Cl. tetani</i>)	51.4	(6.0)	48.1	(7.5)	43.6	(7.6)
7- or 8-way vaccine ³	10.2	(3.2)	6.9	(2.1)	23.8	(7.7)
Any clostridial vaccine	72.8	(5.8)	78.7	(5.7)	75.1	(7.5)
Any vaccine for <i>Clostridium</i> type C and D ⁴	69.7	(6.2)	77.9	(5.7)	74.0	(7.5)
Weaned kids						
<i>Clostridium</i> type C and D for enterotoxemia ²	56.2	(6.3)	70.8	(6.8)	49.7	(7.7)
Tetanus (<i>Cl. tetani</i>)	48.5	(6.6)	55.6	(8.0)	44.0	(7.3)
7- or 8-way vaccine ³	9.4	(3.1)	6.2	(2.0)	21.2	(7.9)
Any clostridial vaccine	65.2	(6.3)	77.4	(6.8)	72.5	(7.3)
Any vaccine for <i>Clostridium</i> type C and D ⁴	65.0	(6.3)	76.5	(6.8)	70.9	(7.4)

¹Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

²Also known as overeating disease, bloody scours, and pulpy kidney disease.

³Vaccinates against blackleg, malignant edema, *Clostridium chauvoei* and/or *Cl. Septicum* and/or *Cl. novyi* and/or *Cl. Sordellii* and *C. D.* and *T.*

⁴Includes operations that administered "*Clostridium* type C and D for enterotoxemia" and/or "7- or 8-way" vaccines.

A.4.h. (cont'd.) For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months¹ (table A.4.c.), percentage of operations that used **clostridial** vaccines during the previous 12 months, by goat class, by vaccine, and by primary production of the operation:

Vaccine	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Adult does						
<i>Clostridium</i> type C and D for enterotoxemia ²	70.7	(5.6)	76.7	(6.3)	65.4	(7.6)
Tetanus (<i>Cl. tetani</i>)	62.9	(6.2)	57.5	(7.9)	53.5	(7.7)
7- or 8-way vaccine ³	13.8	(4.2)	6.1	(1.8)	23.0	(7.3)
Any clostridial vaccine	86.2	(4.1)	82.5	(6.3)	88.9	(4.4)
Any vaccine for <i>Clostridium</i> type C and D ⁴	69.7	(6.2)	77.9	(5.7)	74.0	(7.5)
Weaned kids						
<i>Clostridium</i> type C and D for enterotoxemia ²	55.2	(6.4)	69.1	(6.6)	51.9	(7.7)
Tetanus (<i>Cl. tetani</i>)	51.4	(6.4)	50.0	(8.1)	49.6	(7.6)
7- or 8-way vaccine ³	11.3	(3.9)	5.5	(1.8)	22.1	(7.4)
Any clostridial vaccine	69.4	(6.3)	74.9	(6.6)	80.3	(5.7)
Any vaccine for <i>Clostridium</i> type C and D ⁴	66.2	(6.6)	74.1	(6.6)	73.9	(6.8)
Any goats						
<i>Clostridium</i> type C and D for enterotoxemia ²	83.9	(4.0)	93.1	(1.9)	68.9	(7.7)
Tetanus (<i>Cl. tetani</i>)	73.7	(5.3)	65.9	(7.7)	56.6	(7.7)
7- or 8-way vaccine ³	16.7	(4.4)	6.6	(1.9)	25.9	(7.3)
Any clostridial vaccine	99.3	(0.4)	99.4	(0.5)	95.9	(3.9)
Any vaccine for <i>Clostridium</i> type C and D ⁴	97.0	(2.3)	98.9	(0.6)	94.7	(4.0)

¹Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

²Also known as overeating disease, bloody scours, and pulpy kidney disease.

³Vaccinates against blackleg, malignant edema, *Clostridium chauvoei* and/or *Cl. Septicum* and/or *Cl. novyi* and/or *Cl. Sordellii* and *C. D.* and *T.*

⁴Includes operations that administered "*Clostridium* type C and D for enterotoxemia" and/or "7- or 8-way" vaccines.

For operations that administered any vaccines to any goats in the previous 12 months, a higher percentage of medium and large operations (4.7 and 16.5 percent, respectively) vaccinated any goats against pneumonia than small operations (0.7 percent). Similarly, across all goat classes listed, a higher percentage of large operations used vaccines against pneumonia than small operations. A higher percentage of large operations used any respiratory vaccines in nursing kids and weaned kids (7.2 and 15.6 percent, respectively) than small operations (0.8 and 1.1 percent, respectively). There were no differences by region in the percentage of operations that used respiratory vaccines during the previous 12 months for each goat class listed.

A.4.i. For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months* (table A.4.c.), percentage of operations that used **respiratory** vaccines during the previous 12 months, by goat class, by vaccine, and by herd size and region:

Vaccine	Percent Operations											
	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Nursing kids												
Pneumonia (<i>Pasteurella/Mannheimia</i>)	0.2	(0.2)	3.4	(1.9)	5.7	(2.2)	1.5	(0.6)	2.2	(1.2)	2.0	(0.9)
BRSV	0.3	(0.3)	0.1	(0.1)	0.6	(0.5)	0.1	(0.1)	0.3	(0.2)	0.2	(0.2)
Other respiratory vaccines	0.3	(0.3)	1.2	(1.0)	1.4	(0.6)	0.4	(0.2)	0.9	(0.6)	0.8	(0.4)
Any respiratory vaccine	0.8	(0.4)	3.5	(1.9)	7.2	(2.3)	1.8	(0.7)	2.7	(1.2)	2.4	(0.9)
Weaned kids												
Pneumonia (<i>Pasteurella/Mannheimia</i>)	0.6	(0.4)	2.2	(0.9)	14.7	(8.6)	3.0	(1.5)	2.1	(1.0)	2.3	(0.8)
BRSV	0.0	(—)	0.4	(0.3)	0.0	(—)	0.5	(0.5)	0.1	(0.1)	0.2	(0.1)
Other respiratory vaccines	0.6	(0.4)	1.6	(0.9)	1.2	(0.6)	1.7	(0.9)	0.8	(0.5)	1.1	(0.5)
Any respiratory vaccine	1.1	(0.5)	3.9	(1.4)	15.6	(8.6)	4.9	(1.8)	2.9	(1.1)	3.4	(1.0)
Adult does												
Pneumonia (<i>Pasteurella/Mannheimia</i>)	0.7	(0.4)	2.0	(0.9)	12.9	(8.5)	2.7	(1.3)	1.8	(0.9)	2.1	(0.7)
BRSV	0.0	(—)	0.4	(0.3)	0.5	(0.4)	0.6	(0.4)	0.1	(0.1)	0.2	(0.1)
Other respiratory vaccines	2.5	(2.2)	1.1	(0.8)	2.0	(0.8)	0.5	(0.2)	2.4	(1.7)	1.9	(1.2)
Any respiratory vaccine	3.2	(2.2)	3.3	(1.2)	15.2	(8.5)	3.5	(1.4)	4.2	(1.9)	4.0	(1.4)

*Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

A.4.i. (cont'd.) For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months* (table A.4.c.), percentage of operations that used **respiratory** vaccines during the previous 12 months, by goat class, by vaccine, and by herd size and region:

Percent Operations												
Herd size (number of goats and kids)							Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
Adult bucks/wethers												
Pneumonia (<i>Pasteurella/Mannheimia</i>)	0.5	(0.3)	2.1	(0.9)	11.6	(8.5)	2.5	(1.4)	1.7	(0.9)	1.9	(0.8)
BRSV	0.0	(—)	0.4	(0.3)	0.0	(—)	0.5	(0.5)	0.1	(0.0)	0.2	(0.1)
Other respiratory vaccines	2.3	(2.3)	0.3	(0.2)	2.0	(0.8)	0.6	(0.2)	1.8	(1.7)	1.5	(1.2)
Any respiratory vaccine	2.9	(2.3)	2.6	(1.0)	13.3	(8.5)	3.2	(1.5)	3.6	(1.9)	3.5	(1.4)
Any goats												
Pneumonia (<i>Pasteurella/Mannheimia</i>)	0.7	(0.4)	4.7	(2.0)	16.5	(8.6)	3.3	(1.4)	3.4	(1.4)	3.4	(1.1)
BRSV	0.3	(0.3)	0.4	(0.3)	0.6	(0.5)	0.6	(0.4)	0.3	(0.2)	0.4	(0.2)
Other respiratory vaccines	2.7	(2.2)	2.4	(1.3)	2.2	(0.8)	1.6	(0.8)	2.9	(1.7)	2.6	(1.3)
Any respiratory vaccine	3.6	(2.3)	6.4	(2.2)	18.8	(8.6)	5.2	(1.7)	6.0	(2.2)	5.8	(1.6)

*Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

For operations that administered any vaccines to any goats in the previous 12 months, a higher percentage of dairy operations (1.2 percent) vaccinated any goats against bovine respiratory syncytial virus (BRSV) than meat operations (0.1 percent). Overall, a higher percentage of dairy operations (3.4 percent) administered any respiratory vaccines to nursing kids than other operations (0.3 percent). A higher percentage of meat operations (2.9 percent) vaccinated nursing kids against pneumonia than other operations (0.1 percent) and a higher percentage of dairy operations (0.8 percent) vaccinated against BRSV than meat operations (0.0 percent).

Only dairy operations vaccinated weaned kids against BRSV. A higher percentage of dairy and other operations used other respiratory vaccines in adult does (1.4 and 5.8 percent, respectively) and adult bucks/wethers (0.9 and 4.6 percent, respectively) than meat operations (0.1 and 0.1 percent, respectively).

A.4.j. For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months* (table A.4.c.), percentage of operations that used respiratory vaccines during the previous 12 months, by goat class, by vaccine, and by primary production of the operation:

Percent Operations						
Primary Production						
Vaccine	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Nursing kids						
Pneumonia (<i>Pasteurella/Mannheimia</i>)	2.9	(1.6)	1.7	(0.5)	0.1	(0.1)
BRSV	0.0	(0.0)	0.8	(0.7)	0.1	(0.1)
Other respiratory vaccines	0.9	(0.8)	1.2	(0.7)	0.0	(—)
Any respiratory vaccine	3.0	(1.6)	3.4	(1.1)	0.3	(0.2)
Weaned kids						
Pneumonia (<i>Pasteurella/Mannheimia</i>)	2.0	(1.3)	4.1	(1.8)	1.3	(0.8)
BRSV	0.0	(—)	0.8	(0.6)	0.0	(—)
Other respiratory vaccines	0.4	(0.3)	1.4	(0.7)	2.2	(1.7)
Any respiratory vaccine	2.4	(1.4)	5.9	(2.1)	3.5	(1.9)
Adult does						
Pneumonia (<i>Pasteurella/Mannheimia</i>)	1.7	(1.2)	4.0	(1.6)	1.0	(0.6)
BRSV	0.0	(0.0)	0.7	(0.5)	0.1	(0.1)
Other respiratory vaccines	0.1	(0.1)	1.4	(0.6)	5.8	(4.5)
Any respiratory vaccine	1.8	(1.2)	5.6	(1.9)	7.0	(4.5)

*Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

For operations that administered any vaccines to any goats and had adult does on the operation in the previous 12 months, a higher percentage of medium operations (2.5 percent) vaccinated adult does with a mastitis vaccine against *Staphylococcus aureus* than small operations (0.1 percent), and only medium operations administered gram negative vaccines. Only operations in the East region administered gram negative and other mastitis vaccines.

A.4.k. For operations that administered any vaccines to any goats and had adult does on the operation in the previous 12 months* (table A.4.c.), percentage of operations that administered **mastitis** vaccines to adult does during the previous 12 months, by vaccine, and by herd size and region:

Vaccine	Percent Operations						Region					
	Herd size (number of goats and kids)											
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
<i>Staph. aureus</i>	0.1	(0.1)	2.5	(1.2)	0.9	(0.5)	1.4	(1.2)	1.0	(0.5)	1.1	(0.5)
Gram negative (<i>E. coli</i> , <i>J5</i>)	0.0	(—)	0.1	(0.1)	0.0	(—)	0.0	(—)	0.1	(0.1)	0.0	(0.0)
Other mastitis vaccines	2.2	(2.2)	0.0	(—)	0.8	(0.6)	0.0	(—)	1.7	(1.6)	1.2	(1.2)
Any mastitis vaccine	2.3	(2.2)	2.5	(1.2)	1.7	(0.8)	1.4	(1.2)	2.7	(1.7)	2.3	(1.2)

*Refers to the 60.5 percent of operations overall that had adult does on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 100.0 percent of those operations had adult does on the operation in the previous 12 months (table A.4.c.).

For operations that administered any vaccines to any goats and had adult does on the operation in the previous 12 months, no meat operations administered mastitis vaccines to adult does, and only dairy operations administered gram negative and other mastitis vaccines to adult does. There was no difference in the percentage of dairy and other operations that administered *Staphylococcus aureus* vaccines.

A.4.I. For operations that administered any vaccines to any goats and had adult does on the operation in the previous 12 months* (table A.4.c.), percentage of operations that administered **mastitis** vaccines to adult does during the previous 12 months, by vaccine, and by primary production of the operation:

Vaccine	Percent Operations					
	Meat		Primary Production		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
<i>Staph. aureus</i>	0.0	(—)	2.6	(1.5)	1.9	(1.3)
Gram negative (<i>E. coli</i> , J5)	0.0	(—)	0.2	(0.2)	0.0	(—)
Other mastitis vaccines	0.0	(—)	5.1	(4.7)	0.0	(—)
Any mastitis vaccine	0.0	(—)	7.7	(4.8)	1.9	(1.3)

*Refers to the 60.5 percent of operations overall that had adult does on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 100.0 percent of those operations had adult does on the operation in the previous 12 months (table A.4.c.).

For operations that administered any vaccines to any goats and had adult does on the operation in the previous 12 months, 1.6 percent of operations administered any anti-abortion vaccines to adult does. A higher percentage of large operations (4.5 percent) administered any anti-abortion vaccines to adult does than small operations (0.1 percent). Only large operations administered vaccines against campylobacter fetus/jejuni to adult does. There were no differences by region in the percentage of operations that administered the listed anti-abortion vaccines to adult does.

A.4.m. For operations that administered any vaccines to any goats and had adult does on the operation in the previous 12 months* (table A.4.c.), percentage of operations that administered anti-abortion vaccines to adult does during the previous 12 months, by vaccine, and by herd site and region:

Percent Operations												
Vaccine	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
EAE (<i>Chlamydomphila abortus</i>)	0.0	(—)	0.1	(0.1)	3.0	(2.0)	0.6	(0.5)	0.1	(0.1)	0.2	(0.1)
Leptospirosis	0.1	(0.1)	3.1	(2.8)	1.2	(0.5)	0.3	(0.3)	1.9	(1.6)	1.4	(1.2)
<i>Campylobacter fetus/jejuni</i> (vibrio)	0.0	(—)	0.0	(—)	0.7	(0.5)	0.1	(0.1)	0.0	(0.0)	0.1	(0.0)
Any anti-abortion vaccine	0.1	(0.1)	3.1	(2.8)	4.5	(2.1)	0.9	(0.5)	1.9	(1.6)	1.6	(1.2)

*Refers to the 60.5 percent of operations overall that had adult does on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 100.0 percent of those operations had adult does on the operation in the previous 12 months (table A.4.c.).

For operations that administered any vaccines to any goats and had adult does on the operation in the previous 12 months, operations in the other production category did not administer any anti-abortion vaccines to adult does. Only dairy operations administered vaccines against *Campylobacter fetus/jejuni* to adult does in the previous 12 months.

A.4.n. For operations that administered any vaccines to any goats and had adult does on the operation in the previous 12 months* (table A.4.c.), percentage of operations that administered **anti-abortion** vaccines to adult does during the previous 12 months, by vaccine, and by primary production of the operation:

Vaccine	Percent Operations					
	Meat		Primary Production		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
EAE (<i>Chlamydophila abortus</i>)	0.3	(0.2)	0.5	(0.3)	0.0	(—)
Leptospirosis	2.6	(2.3)	0.4	(0.2)	0.0	(—)
<i>Campylobacter fetus/jejuni</i> (vibrio)	0.0	(—)	0.2	(0.1)	0.0	(—)
Any anti-abortion vaccine	2.9	(2.3)	0.8	(0.3)	0.0	(—)

*Refers to the 60.5 percent of operations overall that had adult does on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 100.0 percent of those operations had adult does on the operation in the previous 12 months (table A.4.c.).

A higher percentage of large operations (28.5 percent) vaccinated any goats with any of the listed vaccines than small and medium operations (4.1 and 4.9 percent, respectively). A higher percentage of large operations vaccinated any goats against CL (caseous lymphadenitis, abscesses) and sore mouth (16.7 and 9.8 percent, respectively) than small (0.0 and 0.0 percent, respectively) and medium operations (0.9 and 0.1 percent, respectively). This general trend continued across most goat classes; a higher percentage of large operations administered any sore mouth vaccines to nursing kids than small and medium operations, and a higher percentage of large operations vaccinated any weaned kids, adult does, and adult bucks/wethers against CL and sore mouth than small and medium operations.

A higher percentage of operations (1.4 percent) in the West region vaccinated any nursing kids against sore mouth than operations in the East region (0.1 percent). Only operations in the East region vaccinated any of the listed goat classes against rabies.

A.4.o. For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months* (table A.4.c.), percentage of operations that used other vaccines during the previous 12 months, by goat class, by vaccine, and by herd size and region:

Vaccine	Percent Operations									
	Herd size (number of goats and kids)						Region			
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Nursing kids										
CL (Abscesses, caseous lymphadenitis)	0.0	(—)	0.5	(0.3)	1.2	(0.6)	0.5	(0.4)	0.2	(0.1)
Sore mouth (contagious ecthyma)	0.0	(—)	0.1	(0.1)	5.7	(2.7)	1.4	(0.7)	0.1	(0.1)
Rabies	1.1	(0.6)	0.1	(0.1)	0.2	(0.2)	0.0	(—)	0.8	(0.4)
Scour control	0.0	(—)	0.0	(—)	2.9	(1.9)	0.6	(0.5)	0.1	(0.0)
Other vaccines	0.0	(—)	2.7	(2.5)	2.7	(1.9)	0.5	(0.5)	1.8	(1.6)
Any of the above	1.1	(0.6)	3.4	(2.5)	10.5	(3.5)	2.5	(1.0)	2.9	(1.6)
Weaned kids										
CL (Abscesses, caseous lymphadenitis)	0.0	(—)	0.6	(0.3)	13.8	(8.7)	1.1	(0.7)	1.4	(1.0)
Sore mouth (contagious ecthyma)	0.0	(—)	0.1	(0.0)	2.6	(1.9)	0.7	(0.5)	0.0	(0.0)
Rabies	1.5	(0.6)	0.7	(0.4)	0.2	(0.2)	0.0	(—)	1.5	(0.5)
Scour control	0.0	(—)	0.1	(0.1)	0.0	(—)	0.0	(—)	0.0	(0.0)
Other vaccines	0.0	(—)	0.1	(0.1)	0.4	(0.3)	0.0	(—)	0.1	(0.1)
Any of the above	1.5	(0.6)	1.5	(0.6)	16.9	(8.7)	1.8	(0.9)	3.0	(1.1)

*Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

A.4.o. (cont'd.). For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months* (table A.4.c.), percentage of operations that used **other** vaccines during the previous 12 months, by goat class, by vaccine, and by herd size and region:

Percent Operations												
Herd size (number of goats and kids)							Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
Vaccine	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Adult does												
CL (Abscesses, caseous lymphadenitis)	0.0	(—)	0.9	(0.4)	15.5	(8.6)	1.3	(0.6)	1.5	(0.9)	1.4	(0.7)
Sore mouth (contagious ecthyma)	0.0	(—)	0.0	(—)	4.6	(2.6)	1.1	(0.6)	0.0	(—)	0.3	(0.2)
Rabies	4.0	(2.0)	0.8	(0.4)	0.2	(0.2)	0.0	(—)	3.3	(1.5)	2.4	(1.1)
Scour control	0.0	(—)	0.0	(—)	0.4	(0.3)	0.0	(—)	0.0	(0.0)	0.0	(0.0)
Other vaccines	0.1	(0.1)	2.8	(2.4)	4.1	(2.6)	1.6	(0.8)	1.5	(1.4)	1.5	(1.0)
Any of the above	4.1	(2.0)	4.5	(2.5)	24.7	(8.9)	4.0	(1.2)	6.3	(2.2)	5.7	(1.6)
Adult bucks/wethers												
CL (Abscesses, caseous lymphadenitis)	0.0	(—)	0.5	(0.3)	15.9	(8.6)	1.4	(0.7)	1.3	(0.9)	1.3	(0.7)
Sore mouth (contagious ecthyma)	0.0	(—)	0.0	(—)	2.3	(1.9)	0.6	(0.5)	0.0	(—)	0.2	(0.1)
Rabies	3.1	(2.1)	0.6	(0.4)	0.2	(0.2)	0.0	(—)	2.6	(1.5)	1.9	(1.1)
Scour control	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)
Other vaccines	0.0	(—)	3.0	(2.5)	4.0	(2.6)	1.4	(0.8)	1.5	(1.4)	1.5	(1.1)
Any of the above	3.1	(2.1)	4.2	(2.5)	22.4	(8.9)	3.4	(1.2)	5.5	(2.2)	4.9	(1.6)
Any goats												
CL (Abscesses, caseous lymphadenitis)	0.0	(—)	0.9	(0.4)	16.7	(8.6)	1.5	(0.7)	1.5	(0.9)	1.5	(0.7)
Sore mouth (contagious ecthyma)	0.0	(—)	0.1	(0.1)	9.8	(3.6)	2.3	(0.9)	0.1	(0.1)	0.7	(0.2)
Rabies	4.0	(2.0)	0.8	(0.4)	0.2	(0.2)	0.0	(—)	3.3	(1.5)	2.4	(1.1)
Scour control	0.0	(—)	0.1	(0.1)	2.9	(1.9)	0.5	(0.5)	0.1	(0.1)	0.2	(0.1)
Other vaccines	0.1	(0.1)	3.1	(2.4)	4.9	(2.7)	1.6	(0.8)	1.7	(1.4)	1.7	(1.0)
Any of the above	4.1	(2.0)	4.9	(2.5)	28.5	(9.0)	4.6	(1.3)	6.7	(2.2)	6.1	(1.6)

*Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

For operations that administered any vaccines to any goats in the previous 12 months, there were no differences by primary production of the operation in the percentage of operations that vaccinated any goats with the listed other vaccines. No other operations vaccinated nursing kids against CL (caseous lymphadenitis, abscesses) and no meat operations vaccinated nursing kids or weaned kids against rabies.

A.4.p. For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months* (table A.4.c.), percentage of operations that used other vaccines during the previous 12 months, by goat class, by vaccine, and by primary production of the operation:

Percent Operations						
Primary Production						
	Meat		Dairy		Other	
Vaccine	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Nursing kids						
CL (Abscesses, caseous lymphadenitis)	0.3	(0.2)	0.5	(0.3)	0.0	(—)
Sore mouth (contagious ecthyma)	0.4	(0.3)	0.3	(0.2)	0.7	(0.6)
Rabies	0.0	(—)	2.2	(1.2)	0.3	(0.2)
Scour control	0.3	(0.3)	0.2	(0.1)	0.0	(—)
Other vaccines	2.4	(2.1)	0.0	(—)	0.5	(0.4)
Any of the above	3.2	(2.1)	3.2	(1.3)	1.5	(0.7)
Weaned kids						
CL (Abscesses, caseous lymphadenitis)	1.6	(1.3)	1.0	0.4	8	(0.7)
Sore mouth (contagious ecthyma)	0.4	(0.3)	0.1	(0.1)	0.0	(—)
Rabies	0.0	(—)	3.3	(1.3)	1.3	(0.8)
Scour control	0.0	(—)	0.0	(—)	0.2	(0.1)
Other vaccines	0.0	(—)	0.3	(0.2)	0.0	(—)
Any of the above	2.0	(1.3)	4.7	(1.4)	2.3	(1.1)
Adult does						
CL (Abscesses, caseous lymphadenitis)	1.7	(1.2)	1.0	(0.3)	1.2	(0.7)
Sore mouth (contagious ecthyma)	0.3	(0.3)	0.1	(0.1)	0.5	(0.5)
Rabies	0.3	(0.3)	3.8	(1.3)	5.3	(3.9)
Scour control	0.0	(—)	0.1	(0.1)	0.0	(—)
Other vaccines	2.7	(2.0)	0.6	(0.4)	0.0	(—)
Any of the above	5.1	(2.4)	5.6	(1.4)	7.0	(4.0)

*Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

A.4.p.(cont'd.) For operations that administered any vaccines to any goats and had the given class of goats on the operation in the previous 12 months* (table A.4.c.), percentage of operations that used **other** vaccines during the previous 12 months, by goat class, by vaccine, and by primary production of the operation:

Vaccine	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Adult bucks/wethers						
CL (Abscesses, caseous lymphadenitis)	1.8	(1.3)	1.2	(0.4)	0.7	(0.5)
Sore mouth (contagious ecthyma)	0.3	(0.3)	0.0	(—)	0.0	(—)
Rabies	0.0	(—)	2.3	(1.1)	5.1	(4.0)
Scour control	0.0	(—)	0.0	(—)	0.0	(—)
Other vaccines	2.9	(2.1)	0.2	(0.2)	0.0	(—)
Any of the above	5.0	(2.5)	3.7	(1.2)	5.8	(4.0)
Any goats						
CL (Abscesses, caseous lymphadenitis)	1.8	(1.2)	1.2	(0.4)	1.2	(0.7)
Sore mouth (contagious ecthyma)	0.7	(0.4)	0.4	(0.2)	1.1	(0.7)
Rabies	0.3	(0.3)	3.8	(1.3)	5.3	(3.9)
Scour control	0.3	(0.3)	0.2	(0.1)	0.1	(0.1)
Other vaccines	2.8	(2.0)	0.8	(0.4)	0.4	(0.3)
Any of the above	5.5	(2.4)	6.0	(1.5)	7.4	(4.0)

*Refers to the 54.3, 53.9, 60.5, and 58.3 percent of operations overall that had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months and administered any vaccines to goats of any class. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class in the previous 12 months (table A.4.a.), of which 89.8, 89.1, 100.0, and 96.4 percent of those operations had nursing kids, weaned kids, adult does, and adult bucks/wethers, respectively, on the operation in the previous 12 months (table A.4.c.).

For operations that vaccinated adult does against *Clostridium* type C and D, regardless of herd size or region, the majority of operations (85.0 percent) vaccinated does annually.

A.4.q. For operations that vaccinated adult does against *Clostridium* type C and D* (table A.4.g.), percentage of operations by frequency of vaccination, and by herd size and region:

Percent Operations												
Frequency	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
3 to 4 times a year	0.0	(—)	0.4	(0.2)	2.1	(1.7)	0.1	(0.1)	0.4	(0.2)	0.3	(0.1)
Twice a year	11.5	(3.7)	16.4	(4.6)	10.7	(3.5)	15.3	(5.3)	12.8	(3.3)	13.5	(2.8)
Annually	88.0	(3.8)	81.8	(4.7)	83.6	(4.8)	82.4	(5.4)	86.1	(3.3)	85.0	(2.8)
Less often than annually	0.6	(0.3)	1.4	(0.8)	3.6	(2.4)	2.2	(0.9)	0.7	(0.5)	1.1	(0.4)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

*Includes operations that administered “*Clostridium* type C and D for enterotoxemia” and/or “7- or 8-way” vaccines. Refers to the 51.2 percent of operations overall that administered any vaccines for *Clostridium* type C and D to adult does in the previous 12 months. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class (table A.4.a.), of which 100.0 percent of those operations had adult does on the operation (table A.4.c.), of which 84.6 percent administered any vaccines for *Clostridium* type C and D in the previous 12 months (table A.4.g.).

For operations that vaccinated adult does against *Clostridium* type C and D, there were no differences by primary production of the operation in the percentage of operations by the frequency of vaccination. No meat operations vaccinated adult does against *Clostridium* type C and D more than twice a year.

A.4.r. For operations that vaccinated adult does against *Clostridium* type C and D* (table A.4.g.), percentage of operations by frequency of vaccination, and by primary production of the operation:

Percent Operations						
Primary Production						
Frequency	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
3 to 4 times a year	0.0	(—)	0.9	(0.5)	0.4	(0.3)
Twice a year	14.5	(4.8)	11.2	(3.1)	13.7	(4.6)
Annually	84.8	(4.8)	86.8	(3.2)	83.8	(4.8)
Less often than annually	0.7	(0.4)	1.1	(0.6)	2.0	(1.3)
Total	100.0		100.0		100.0	

*Includes operations that administered "*Clostridium* type C and D for enterotoxemia" and/or "7- or 8-way" vaccines. Refers to the 51.2 percent of operations overall that administered any vaccines for *Clostridium* type C and D to adult does in the previous 12 months. This estimate comes from the 60.5 percent of operations that administered any vaccines to goats of any class (table A.4.a.), of which 100.0 percent of those operations had adult does on the operation (table A.4.c.), of which 84.6 percent administered any vaccines for *Clostridium* type C and D in the previous 12 months (table A.4.g.).

For operations that vaccinated any goats against sore mouth in the previous 12 months, the vaccine was administered by the owner/operator on 68.7 percent of operations, and it was administered by a farm worker on 36.8 percent of operations. Regardless of who administered the vaccine, gloves were used during vaccine administration on about one-half of operations.

A.4.s. For operations that vaccinated any goats against sore mouth in the previous 12 months* (table A.4.o.), percentage of operations by personnel who administered the vaccine and, if given, percentage of operations on which gloves were worn when administering the vaccine:

Percent Operations				
Personnel	Gave vaccine		Wore gloves	
	Pct.	Std. Error	Pct.	Std. Error
Veterinarian	0.0	(—)		
Farm worker	36.8	(16.9)	51.1	(26.6)
Owner/operator	68.7	(16.6)	42.2	(22.3)
Other	0.0	(—)		

*Refers to the 0.4 percent of operations overall that administered the sore mouth vaccine. This estimate comes from the 60.5 percent of operations that vaccinated any goats in the previous 12 months (table A.4.a.), of which 0.7 percent of those operations vaccinated any goats against sore mouth (table A.4.o.).

For operations that did not vaccinate any goats against sore mouth in the previous 12 months, the highest percentage of operations (60.0 percent) considered no history of sore mouth as a very important reason for not vaccinating, followed by 35.9 percent of operations that cited they did not know the vaccine was available.

A.4.t. For operations that did not vaccinate any goats against sore mouth in the previous 12 months* (table A.4.o.), percentage of operations by importance of reasons for not vaccinating:

Percent Operations							
Reason	Importance						Total
	Very		Somewhat		Not		
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	
High cost	3.4	(1.3)	11.7	(2.2)	84.9	(2.5)	100.0
Not easily obtainable	2.0	(1.0)	4.3	(1.5)	93.7	(1.8)	100.0
Mode of administration not convenient	3.2	(1.2)	4.4	(1.5)	92.3	(1.9)	100.0
Vaccine is live	5.1	(1.5)	3.5	(1.2)	91.5	(1.9)	100.0
Other goat owner/producer recommended against it	2.1	(1.0)	6.3	(1.8)	91.5	(2.1)	100.0
Veterinarian recommended against it	3.5	(1.2)	4.9	(1.3)	91.5	(1.8)	100.0
No history of sore mouth	60.0	(3.1)	5.9	(1.5)	34.1	(3.1)	100.0
Did not know it was available	35.9	(3.4)	5.5	(1.4)	58.7	(3.4)	100.0

*Refers to the 99.6 percent of operations overall that did not administer the sore mouth vaccine. This estimate comes from the 60.5 percent of operations that vaccinated any goats (table A.4.a.), of which 99.3 percent of those operations did not vaccinate any goats against sore mouth (table A.4.o.), plus $100.0 - 60.5 = 39.5$ percent of operations that did not administer any vaccines to any goats in the previous 12 months (table A.4.a.).

5. Johne's disease

Johne's disease is a contagious disease that affects cattle and other ruminants, including goats, that results in weight loss despite a normal appetite and proper nutrition. Diarrhea can also occur but is less common in goats than in cattle. The disease is caused by the bacterium *Mycobacterium avium* subspecies *paratuberculosis*, which can survive in the environment for up to a year and remain infectious to ruminants. The primary mode of transmission is fecal-oral, including ingestion of contaminated feed, water, or bedding. The bacterium also can be transmitted through milk and colostrum, as well as in utero. Infected animals shed the bacteria for months or years before they develop clinical signs, resulting in heavy contamination of pastures before it is known the disease is present. Therefore, given the length of time between infection and clinical signs, operations may choose to implement a herd health management program and/or specific measures to prevent Johne's disease on the operation.

Overall, 1.3 percent of all operations had a herd health management or certification program specifically to control or prevent Johne's disease. All operations reported that the program was a unique program developed specifically for the operation. There were no differences by herd size or region in the percentage of operations that had a herd health management or certification program specifically to control or prevent Johne's disease.

A.5.a. Percentage of operations that had the following herd health management or certification program(s) **specifically** to control or prevent Johne's disease, by herd size and region:

Percent Operations												
Program	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
A unique program developed specifically for the operation	1.1	(0.7)	1.6	(0.7)	1.8	(0.6)	1.6	(0.8)	1.2	(0.6)	1.3	(0.5)
A State-sponsored certification program	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)
Other	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)
Any	1.1	(0.7)	1.6	(0.7)	1.8	(0.6)	1.6	(0.8)	1.2	(0.6)	1.3	(0.5)

There were no differences by primary production of the operation in the percentage of operations that had a herd health management or certification program specifically to control or prevent Johne's disease.

A.5.b. Percentage of operations that had the following herd health management or certification program(s) **specifically** to control or prevent Johne's disease, by primary production of the operation:

Percent Operations						
Primary Production						
Program	Meat		Dairy		Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
A unique program developed specifically for the operation	0.8	(0.6)	3.5	(1.4)	0.5	(0.4)
A State-sponsored certification program	0.0	(—)	0.0	(—)	0.0	(—)
Other	0.0	(—)	0.0	(—)	0.0	(—)
Any	0.8	(0.6)	3.5	(1.4)	0.5	(0.4)

The most common measures used to prevent Johne's disease in the herd across all operations were to use known, reputable sources of goats (47.2 percent) and to prohibit contact with goats from other operations (40.2 percent). There were no differences by herd size or region in the percentage of operations by measures used to prevent Johne's disease in the herd.

A.5.c. Percentage of operations by measures used to prevent Johne's disease in the herd, and by herd size and region:

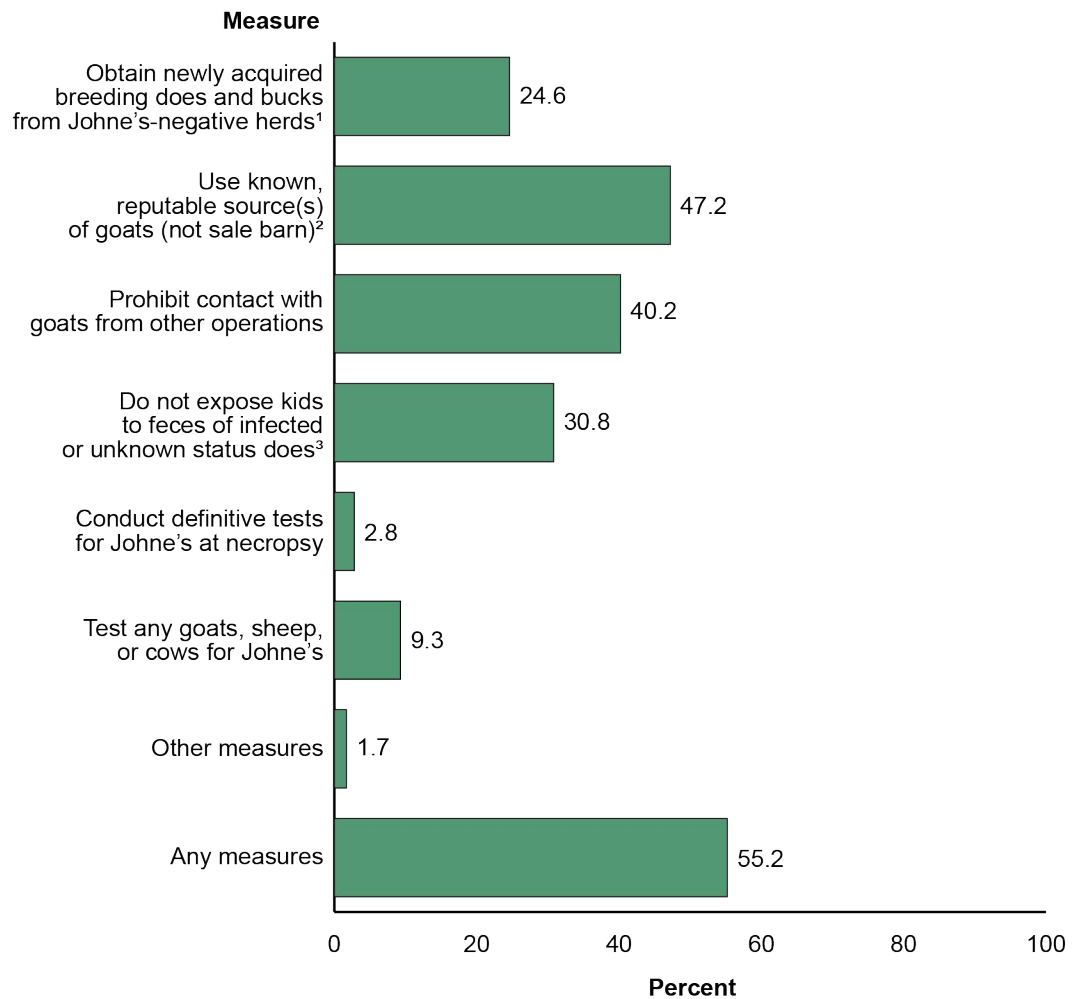
Measure	Percent Operations									
	Herd size (number of goats and kids)						Region			
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Obtain newly acquired breeding does and bucks from Johne's-negative herds ¹	25.6	(5.0)	24.4	(4.0)	18.2	(7.4)	30.6	(6.0)	22.2	(3.6)
Use known, reputable source(s) of goats (not sale barn) ²	45.6	(5.4)	47.0	(5.0)	61.9	(9.0)	50.2	(6.5)	46.0	(4.2)
Prohibit contact with goats from other operations	39.3	(4.5)	40.4	(4.8)	47.5	(9.5)	40.5	(5.4)	40.1	(3.6)
Do not expose kids to feces of infected or unknown status does ³	29.6	(4.4)	31.6	(4.6)	36.2	(10.3)	26.7	(4.6)	32.5	(3.8)
Conduct definitive tests for Johne's at necropsy	3.2	(1.7)	2.5	(1.0)	1.5	(0.6)	1.4	(0.5)	3.5	(1.4)
Test any goats, sheep, or cows for Johne's	6.8	(2.0)	13.9	(3.0)	4.6	(1.2)	8.0	(2.1)	9.8	(2.1)
Other measures	0.1	(0.1)	4.3	(1.8)	1.1	(0.4)	2.9	(1.9)	1.2	(0.5)
Any measures	52.2	(4.8)	58.9	(4.8)	60.5	(8.8)	61.7	(5.6)	52.4	(3.9)

¹Excludes operations that did not acquire breeding does or bucks.

²Excludes operations with no new additions.

³Excludes operations with no kids or no does.

Percentage of operations by measures used to prevent Johne's disease in the herd



¹Excludes operations that did not acquire breeding does or bucks.

²Excludes operations with no new additions.

³Excludes operations with no kids or no does.

A higher percentage of dairy operations used known, reputable source(s) of goats (66.4 percent), prohibited contact with goats from other operations (54.2 percent), and did not expose kids to feces of infected or unknown status does (54.1 percent) as measures to prevent Johne's disease in the herd than meat operations (38.9, 31.1, and 22.4 percent, respectively). A higher percentage of other operations (16.6 percent) tested any goats, sheep, or cows for Johne's disease as a measure to prevent Johne's disease in the herd than meat operations (4.4 percent).

A.5.d. Percentage of operations by measures used to prevent Johne's disease in the herd, and by primary production of the operation:

Measure	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Obtain newly acquired breeding does and bucks from Johne's-negative herds ¹	18.9	(4.2)	33.5	(6.4)	30.8	(6.6)
Use known, reputable source(s) of goats (not sale barn) ²	38.9	(5.1)	66.4	(6.4)	50.4	(7.3)
Prohibit contact with goats from other operations	31.1	(4.3)	54.2	(6.2)	49.0	(6.7)
Do not expose kids to feces of infected or unknown status does ³	22.4	(4.1)	54.1	(6.6)	29.8	(6.3)
Conduct definitive tests for Johne's at necropsy	0.6	(0.5)	5.5	(3.3)	5.7	(3.3)
Test any goats, sheep, or cows for Johne's	4.4	(1.7)	13.7	(4.0)	16.6	(4.4)
Other measures	0.7	(0.5)	1.1	(0.4)	4.8	(2.7)
Any measures	46.4	(4.7)	69.1	(5.9)	62.9	(6.5)

¹Excludes operations that did not acquire breeding does or bucks.

²Excludes operations with no new additions.

³Excludes operations with no kids or no does.

For operations that tested any goats, sheep, or cows for Johne's disease, the highest percentage of operations used a blood test (83.1 percent).

A.5.e. For the 9.3 percent of operations that tested any goats, sheep, or cows for Johne's (table A.5.c.), percentage of operations by type of test used:

Type of test	Percent operations	Std. Error
Fecal	39.4	(10.0)
Blood	83.1	(8.3)
Other	0.6	(0.6)

6. Personnel training

On goat operations, personnel can include paid or unpaid workers, owners, and family members who have direct duties related to raising goats. Training for personnel helps promote goat health and safety. Training can also familiarize individuals with goat behaviors and general procedures to ensure the safety of workers and the goats. Training materials are available through many different organizations, such as university extension programs and goat associations, and can be obtained online or through communication with program specialists.

Overall, 45.8 percent of all operations provided employees with any training in the previous 12 months, but there was no predominant training type. There were no differences by herd size in the percentage of operations that provided training in the previous 12 months by training type. A higher percentage of operations in the East region (16.1 percent) provided employees with training on euthanasia than in the West region (4.1 percent).

A.6.a. Percentage of operations that provided employees¹ with training in the previous 12 months, by training type, and by herd size and region:

Percent Operations												
Training topic	Herd size (number of goats and kids)						Region				All operations	
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East			
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error		
Identifying sick or injured animals	30.0	(4.1)	35.2	(4.2)	51.3	(8.4)	24.4	(3.8)	37.2	(3.9)	33.3	(2.9)
Animal handling	32.0	(4.2)	30.6	(3.9)	42.7	(8.1)	23.1	(3.3)	36.1	(3.8)	32.2	(2.8)
Euthanasia ²	13.7	(3.5)	9.9	(2.5)	18.4	(7.2)	4.1	(1.0)	16.1	(3.1)	12.5	(2.2)
Kid rearing practices ³	23.0	(3.9)	28.7	(3.8)	37.0	(7.7)	19.4	(3.5)	29.2	(3.5)	26.2	(2.7)
Husbandry procedures ⁴	29.9	(4.5)	24.4	(3.6)	35.1	(7.4)	19.5	(3.7)	32.0	(3.8)	28.2	(2.9)
Transportation of goats	15.7	(3.4)	18.7	(3.3)	24.9	(6.6)	11.4	(2.2)	20.0	(3.2)	17.4	(2.4)
Milking routines ⁵	21.8	(4.3)	15.9	(2.7)	21.0	(5.4)	14.9	(3.9)	22.0	(3.6)	19.6	(2.7)
Feeding and nutrition	30.3	(4.0)	33.3	(3.8)	41.4	(8.0)	22.0	(2.8)	36.5	(3.7)	32.2	(2.7)
Goat behavior	26.1	(3.8)	24.4	(3.5)	37.3	(7.7)	19.1	(2.7)	29.3	(3.5)	26.2	(2.6)
Other ⁶	8.5	(2.8)	4.8	(1.9)	3.9	(1.8)	5.6	(2.6)	7.3	(2.2)	6.8	(1.7)
Any training	46.1	(4.7)	43.4	(4.5)	56.7	(8.2)	37.5	(5.3)	49.4	(4.2)	45.8	(3.4)

¹Paid or unpaid personnel, including owners and family members, who had duties directly related to raising goats.

²Excludes operations that did not perform euthanasia.

³Excludes operations that did not rear kids.

⁴For example, disbudding, castration, and tattooing. Excludes operations that did not perform husbandry procedures.

⁵Excludes operations that did not milk goats.

⁶Health management topics such as artificial insemination, FAMACHA® scoring, deworming, biosecurity, and disease testing, and general management topics such as protecting goats from wildlife, grooming, goat safety, and showing goats were common “other” trainings listed.

A higher percentage of dairy operations provided any training to employees in the previous 12 months than meat operations. Specifically, a higher percentage of dairy operations provided employees with training on animal handling, feeding and nutrition, and goat behavior (47.6, 46.0, and 43.9 percent, respectively) than meat operations (26.2, 24.9, and 20.5 percent, respectively). A higher percentage of dairy operations (44.0 percent) provided employees with training on milking routines than meat or other operations (10.7 and 14.6 percent, respectively).

A.6.b. Percentage of operations that provided employees¹ with training in the previous 12 months, by training type, and by primary production of the operation:

Training type	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Identifying sick or injured animals	28.0	(4.0)	44.3	(6.2)	35.2	(6.0)
Animal handling	26.2	(3.9)	47.6	(5.7)	31.4	(5.6)
Euthanasia ²	10.5	(2.9)	16.5	(5.6)	13.7	(4.5)
Kid rearing practices ³	23.9	(4.0)	37.4	(6.0)	20.8	(4.2)
Husbandry procedures ⁴	26.0	(3.9)	33.9	(5.8)	28.0	(5.5)
Transportation of goats	15.3	(3.4)	26.3	(5.4)	13.9	(4.1)
Milking routines ⁵	10.7	(3.3)	44.0	(6.5)	14.6	(3.9)
Feeding and nutrition	24.9	(3.6)	46.0	(5.7)	35.9	(6.0)
Goat behavior	20.5	(3.5)	43.9	(5.7)	22.7	(4.8)
Other ⁶	6.2	(2.3)	9.1	(3.8)	6.1	(3.4)
Any training	39.0	(4.5)	62.4	(6.4)	46.0	(6.5)

¹Paid or unpaid personnel, including owners and family members, who had duties directly related to raising goats.

²Excludes operations that did not perform euthanasia.

³Excludes operations that did not rear kids.

⁴For example, disbudding, castration, and tattooing. Excludes operations that did not perform husbandry procedures.

⁵Excludes operations that did not milk goats.

⁶Health management topics such as artificial insemination, FAMACHA® scoring, deworming, biosecurity, and disease testing, and general management topics such as protecting goats from wildlife, grooming, goat safety, and showing goats were common "other" trainings listed.

For operations that provided employees with the trainings listed in the previous 12 months, in general, owners typically provided the training.

A.6.c. For operations that provided employees¹ with the following types of training in the previous 12 months (table A.6.a.), percentage of operations by primary personnel who conducted the training:

Percent Operations													
Personnel													
	Owner		Manager/ herdsman		Other employees		Veterinarian		University/ extension personnel		Other ⁶		
Training type	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Total
Identifying sick or injured animals	60.3	(5.1)	2.6	(1.5)	0.1	(0.1)	13.3	(3.3)	11.9	(3.7)	11.8	(3.3)	100.0
Animal handling	69.5	(5.0)	3.4	(1.6)	0.4	(0.2)	7.0	(2.5)	8.7	(2.7)	11.0	(3.7)	100.0
Euthanasia ²	66.0	(9.4)	0.3	(0.2)	0.0	(—)	18.2	(7.1)	13.3	(7.5)	2.4	(1.6)	100.0
Kid rearing practices ³	68.7	(4.9)	6.2	(3.3)	0.5	(0.4)	6.8	(2.3)	7.6	(3.2)	10.3	(3.5)	100.0
Husbandry procedures ⁴	59.3	(5.9)	4.2	(2.6)	0.7	(0.4)	12.4	(3.7)	9.5	(3.8)	14.0	(4.4)	100.0
Transportation of goats	80.9	(5.2)	2.5	(1.3)	4.7	(4.0)	6.5	(2.9)	3.1	(1.4)	2.2	(1.2)	100.0
Milking routines ⁵	67.4	(7.2)	5.6	(2.9)	1.5	(0.8)	2.8	(1.4)	2.0	(1.2)	20.7	(7.0)	100.0
Feeding and nutrition	62.6	(5.1)	1.4	(0.5)	0.7	(0.4)	9.2	(3.0)	13.9	(3.8)	12.2	(3.5)	100.0
Goat behavior	71.3	(5.4)	3.5	(1.9)	0.9	(0.5)	4.6	(2.0)	7.4	(3.1)	12.3	(4.1)	100.0
Other ⁷	29.6	(10.4)	1.7	(1.2)	0.2	(0.2)	5.8	(3.8)	48.3	(12.9)	14.3	(9.8)	100.0

¹Paid or unpaid personnel, including owners and family members, who had duties directly related to raising goats.

²Excludes operations that did not perform euthanasia.

³Excludes operations that did not rear kids.

⁴For example, disbudding, castration, and tattooing. Excludes operations that did not perform husbandry procedures.

⁵Excludes operations that did not milk goats.

⁶Associations, such as ADGA or local goat groups, 4-H groups, family members, friends, or other producers, and veterinary technicians/students were common "other" personnel listed.

⁷Health management topics such as artificial insemination, FAMACHA© scoring, deworming, biosecurity, and disease testing, and general management topics such as protecting goats from wildlife, grooming, goat safety, and showing goats were common "other" trainings listed.

B. Kidding Management

Operations that use goats for meat or dairy production rely heavily on their kid crop for income. On meat operations, kids are primarily sold to market, and on dairy operations, buck kids are sold and doe kids are frequently used as replacement does.

Implementing management techniques such as dipping navels, keeping the kidding area clean, and ensuring colostrum is received quickly and effectively may help increase the number of kids that survive to sale. Throughout this section, the term “in the previous 12 months” refers to the period from July 1, 2018, to June 30, 2019. The “most recently completed kidding period” was similar to kids born in the previous 12 months, as most operations have one kidding season per year. However, operations that have multiple kid crops born throughout the year were directed to answer for the most recently completed kidding period.

1. Kids born

As herd size increased, the percentage of operations that had any kids born on the operation in the previous 12 months increased. There were no differences by region in the percentage of operations that had any kids born on the operation in the previous 12 months.

B.1.a. Percentage of operations that had any kids born on the operation in the previous 12 months, by herd size and region:

Percent Operations											
Herd size (number of goats and kids)						Region					
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
77.9	(4.0)	93.5	(2.1)	99.4	(0.3)	84.1	(4.7)	85.5	(3.0)	85.0	(2.6)

There were no differences by primary production of the operation in the percentage of operations that had any kids born on the operation in the previous 12 months.

B.1.b. Percentage of operations that had any kids born on the operation in the previous 12 months, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
88.7	(3.1)	80.0	(6.3)	81.0	(5.5)

All of the 85.0 percent of operations that had any kids born on the operation in the previous 12 months had at least one kid born alive (data not shown). On the 85.0 percent of operations that had any kids born in the previous 12 months, 92.6 percent of kids were born alive **during the most recently completed kidding period**. There were no differences by herd size or region in the percentage of kids born alive during the most recently completed kidding period.

B.1.c. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of kids that were born alive during the most recently completed kidding period, by herd size and region:

Percent Kids											
Herd size (number of goats and kids)						Region					
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
88.7	(2.6)	92.0	(0.9)	94.9	(1.1)	93.6	(1.2)	91.8	(1.1)	92.6	(0.8)

For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months, there were no differences by primary production of the operation in the percentage of kids that were born alive during the most recently completed kidding period.

B.1.d. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of kids that were born alive during the most recently completed kidding period, by primary production of the operation:

Percent Kids					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
91.8	(1.2)	94.8	(0.8)	91.9	(1.5)

2. Newborn management

Managing newborn kids may differ based on the operation's goals and interests. Practices, such as checking kidding areas for newborn kids frequently, dipping navels on newborn kids, and separating kids from does following birth, may be important practices on dairy operations that are milking does and intensively managing kids. However, on meat operations or other operations these practices may be difficult or unnecessary depending on the types of kidding areas used and the overall goals of the operation.

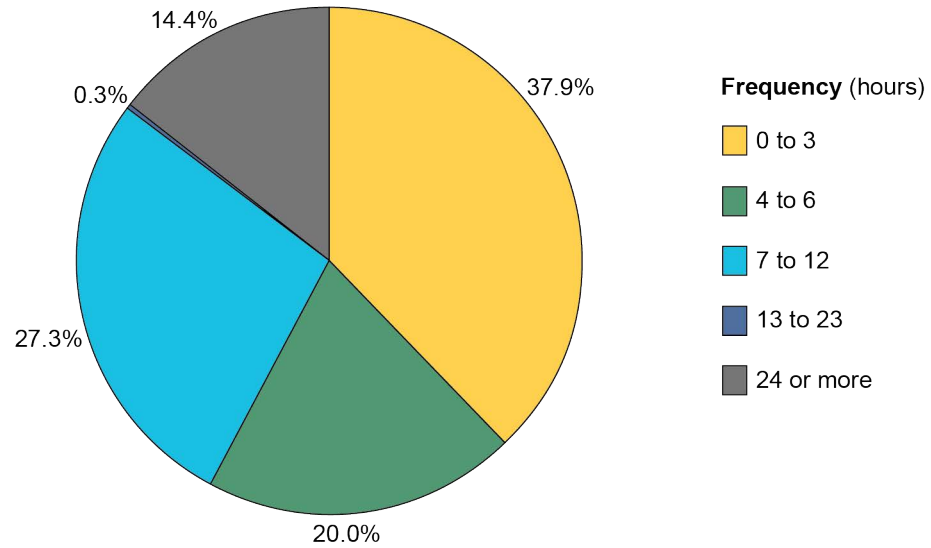
For operations that had any kids born on the operation during the previous 12 months, operations checked the kidding areas for newborns a median of every 4.0 hours during the most recently completed kidding period. The majority of operations (85.2 percent) checked the kidding areas for newborns twice a day or more during the most recently completed kidding period. There were no differences by herd size or region in the percentage of operations by frequency that kidding areas were checked for newborns during the most recently completed kidding period.

B.2.a. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by frequency (in hours) that kidding areas were checked for newborns during the most recently completed kidding period and median frequency kidding areas were checked for newborns, by herd size and region:

Percent Operations

Frequency (hours)	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
0 to 3	41.1	(4.4)	32.1	(4.3)	48.0	(9.7)	38.9	(5.6)	37.5	(3.5)	37.9	(2.9)
4 to 6	22.3	(3.8)	17.2	(3.4)	19.4	(6.9)	11.8	(3.6)	23.5	(3.1)	20.0	(2.4)
7 to 12	22.9	(4.5)	34.5	(4.9)	19.0	(6.1)	30.2	(6.1)	26.1	(3.7)	27.3	(3.1)
13 to 23	0.0	(—)	0.7	(0.5)	0.6	(0.4)	0.2	(0.1)	0.4	(0.3)	0.3	(0.2)
24 or more	13.8	(4.1)	15.4	(3.9)	12.9	(7.6)	18.9	(5.8)	12.5	(3.1)	14.4	(2.8)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Median	3.6	(0.6)	7.0	(0.9)	3.6	(1.0)	5.7	(0.9)	3.9	(0.5)	4.0	(0.5)

For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by frequency (in hours) that kidding areas were checked for newborns during the most recently completed kidding period



For operations that had any kids born on the operation during the previous 12 months, a higher percentage of dairy operations (59.0 percent) checked kidding areas for newborns every 0 to 3 hours than meat operations (28.0 percent). Additionally, dairy operations checked kidding areas for newborns more frequently than meat operations, with dairy operations checking kidding areas a median of every 2.0 hours and meat operations checking kidding areas a median of every 5.9 hours.

B.2.b. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by frequency (in hours) that kidding areas were checked for newborns during the most recently completed kidding period and median frequency kidding areas were checked for newborns, by primary production of the operation:

Percent Operations						
Primary Production						
Frequency (hours)	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
0 to 3	28.0	(4.0)	59.0	(6.1)	44.5	(6.9)
4 to 6	22.5	(3.9)	19.7	(4.6)	13.9	(4.3)
7 to 12	31.3	(4.5)	15.3	(4.4)	28.0	(6.0)
13 to 23	0.1	(0.1)	0.4	(0.2)	1.0	(1.0)
24 or more	18.1	(3.9)	5.5	(4.1)	12.7	(5.6)
Total	100.0		100.0		100.0	
Median	5.9	(0.8)	2.0	(0.5)	3.9	(1.3)

For operations that had any kids born on the operation during the previous 12 months, the highest percentage of operations (52.5 percent) never dipped navels on newborn kids with a chlorhexidine or iodine solution during the most recently completed kidding period. There were no differences by herd size or region in the frequency that navels were dipped on newborn kids.

B.2.c. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by frequency that navels were dipped on newborn kids with a chlorhexidine or iodine solution during the most recently completed kidding period, by herd size and region:

Percent Operations												
Frequency	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Always	36.2	(4.7)	35.1	(4.4)	43.9	(9.7)	36.5	(5.8)	36.3	(3.9)	36.3	(3.3)
Sometimes	9.5	(3.2)	13.9	(3.4)	7.9	(2.6)	13.9	(4.2)	10.1	(2.5)	11.2	(2.2)
Never	54.3	(5.1)	50.9	(4.8)	48.2	(9.5)	49.6	(6.4)	53.7	(4.1)	52.5	(3.4)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

A higher percentage of dairy operations (55.6 percent) always dipped the navels on newborn kids with a chlorhexidine or iodine solution during the most recently completed kidding period than meat operations (27.5 percent), whereas a higher percentage of meat operations (62.2 percent) never dipped the navels on newborn kids with a chlorhexidine or iodine solution during the most recently completed kidding period than dairy operations (31.1 percent).

B.2.d. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by frequency that navels were dipped on newborn kids with a chlorhexidine or iodine solution during the most recently completed kidding period, by primary production of the operation:

Percent Operations						
Primary Production						
	Meat		Dairy		Other	
Frequency	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Always	27.5	(4.2)	55.6	(6.9)	41.7	(6.6)
Sometimes	10.3	(2.9)	13.3	(4.3)	11.8	(4.7)
Never	62.2	(4.5)	31.1	(6.7)	46.6	(7.1)
Total	100.0		100.0		100.0	

For operations that had any kids born on the operation in the previous 12 months, 11.2 percent of all operations physically separated kids from their dams prior to weaning off milk during the most recently completed kidding period. There were no differences by herd size or region in the percentage of operations that physically separated kids from their dams prior to weaning off milk during the most recently completed kidding period.

B.2.e. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations that physically separated* kids from their dams prior to weaning off milk during the most recently completed kidding period, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Std. error
9.7	(2.8)	12.4	(2.2)	15.0	(3.8)	8.7	(2.4)	12.2	(2.2)	(1.7)

*If the respondent reported waiting more than 60 days before separating kids from their dams, those respondents were considered to have weaned those kids rather than separate them from their dams prior to weaning.

For operations that had any kids born on the operation during the previous 12 months, a higher percentage of dairy operations (34.2 percent) physically separated kids from their dams prior to weaning off milk during the most recently completed kidding period than meat and other operations (3.5 and 10.1 percent, respectively).

B.2.f. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations that physically separated* kids from their dams prior to weaning off milk during the most recently completed kidding period, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
3.5	(1.5)	34.2	(6.1)	10.1	(3.4)

*If the respondent reported waiting more than 60 days before separating kids from their dams, those respondents were considered to have weaned those kids rather than separate them from their dams prior to weaning.

For operations that physically separated kids from their dams prior to weaning off milk, there were no differences between doe and buck kids by the number of days following birth that they were separated from their dams. Does were separated from their dams at a median of 2.0 days and bucks were separated from their dams at a median of 2.8 days.

B.2.g. For operations that physically separated kids from their dams prior to weaning off milk¹ (table B.2.e.), percentage of operations by number of days following birth doe and buck kids were separated from their dams and median number of days following birth doe and buck kids were separated from their dams:

Percent Operations				
Goat class				
	Doe kids		Buck kids	
Days ²	Pct.	Std. error	Pct.	Std. error
Removed immediately	51.2	(7.8)	44.5	(7.4)
> 0 to < 3	24.7	(8.5)	25.9	(8.1)
3 to < 45	20.1	(7.5)	17.3	(7.1)
45 to 60	4.0	(2.2)	12.3	(7.1)
Total	100.0		100.0	
Median ³	2.0	(9.0)	2.8	(10.2)

¹Refers to the 9.5 percent of operations overall that physically separated kids from their dams prior to weaning off milk. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 11.2 percent physically separated kids from their dams prior to weaning off milk (table B.2.e.).

²Anything reported over 60 days was considered weaning rather than separating and was excluded from the analysis.

³Excluding kids removed immediately.

3. Kidding area management

NOTE: Kidding areas refer to specific areas where does are moved to kid.

Some operations may choose to use a specific kidding area to minimize contact with non-kidding goats to allow for more frequent checks and to help make cleaning and/or disinfection easier.

For operations that had any kids born in the previous 12 months, there were no differences by herd size or region in the percentage of operations that used a separate area specifically for kidding during the most recently completed kidding period.

B.3.a. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations that used a separate area specifically for kidding during the most recently completed kidding period, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
59.9	(5.2)	65.0	(4.6)	65.5	(7.2)	70.0	(5.3)	59.2	(4.3)	62.4 (3.4)

For operations that had any kids born in the previous 12 months, there were no differences by primary production of the operation in the percentage of operations that used a separate area specifically for kidding during the most recently completed kidding period.

B.3.b. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations that used a separate area specifically for kidding during the most recently completed kidding period, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
62.7	(4.8)	67.0	(6.2)	57.4	(7.0)

For operations that used a separate area specifically for kidding, the highest percentage of operations (57.3 percent) had does in a separate kidding area/pen for 48 hours or more prior to kidding during the most recently completed kidding period.

B.3.c. For operations that used a separate area specifically for kidding¹ (table B.3.a.), percentage of operations by number of hours does were in the separate kidding area/pen prior to kidding during the most recently completed kidding period and median number of hours does were in the separate kidding area/pen prior to kidding during the most recently completed kidding period:

Percent Operations		
Hours before kidding	Pct.	Std. Error
Moved during kidding	10.0	(2.3)
> 0 to < 12	10.9	(2.8)
12 to < 48	21.8	(3.2)
48 or more	57.3	(4.0)
Total	100.0	
Median²	45.1	(4.9)

¹Refers to the 53.0 percent of operations overall that used a separate area specifically for kidding during the last kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 62.4 percent used a separate area specifically for kidding during the last kidding period (table B.3.a.).

²Excludes does moved during kidding.

For operations that used a separate area specifically for kidding, there was no predominant number of days does were in the separate area/pen after kidding. Overall, 46.3 percent of operations kept does in the separate area/pen for less than 7 days, and the median number of days does were in the separate kidding area/pen after kidding was 6.2 days.

B.3.d. For operations that used a separate area specifically for kidding¹ (table B.3.a.), percentage of operations by number of days does were in the separate kidding area/pen after kidding during the most recently completed kidding period and median number of days does were in the separate kidding area/pen after kidding during the most recently completed kidding period:

Percent Operations		
Days after kidding	Pct.	Std. Error
Removed immediately after kidding	1.5	(0.5)
> 0 to < 7	44.8	(4.4)
7 to < 14	24.7	(4.2)
14 or more	29.1	(4.0)
Total	100.0	
Median²	6.2	(0.7)

¹Refers to the 53.0 percent of operations overall that used a separate area specifically for kidding during the last kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 62.4 percent used a separate area specifically for kidding during the last kidding period (table B.3.a.).

²Excludes does and kids removed immediately after kidding.

For operations that used a separate area specifically for kidding, 42.9 percent of operations cleaned after each kidding and 27.4 percent cleaned multiple times throughout the kidding season. However, 63.3 percent of all operations never disinfected the kidding areas during the most recently completed kidding period. There were no differences by herd size or region in the percentage of operations by frequency that kidding areas were cleaned or disinfected during the most recently completed kidding period.

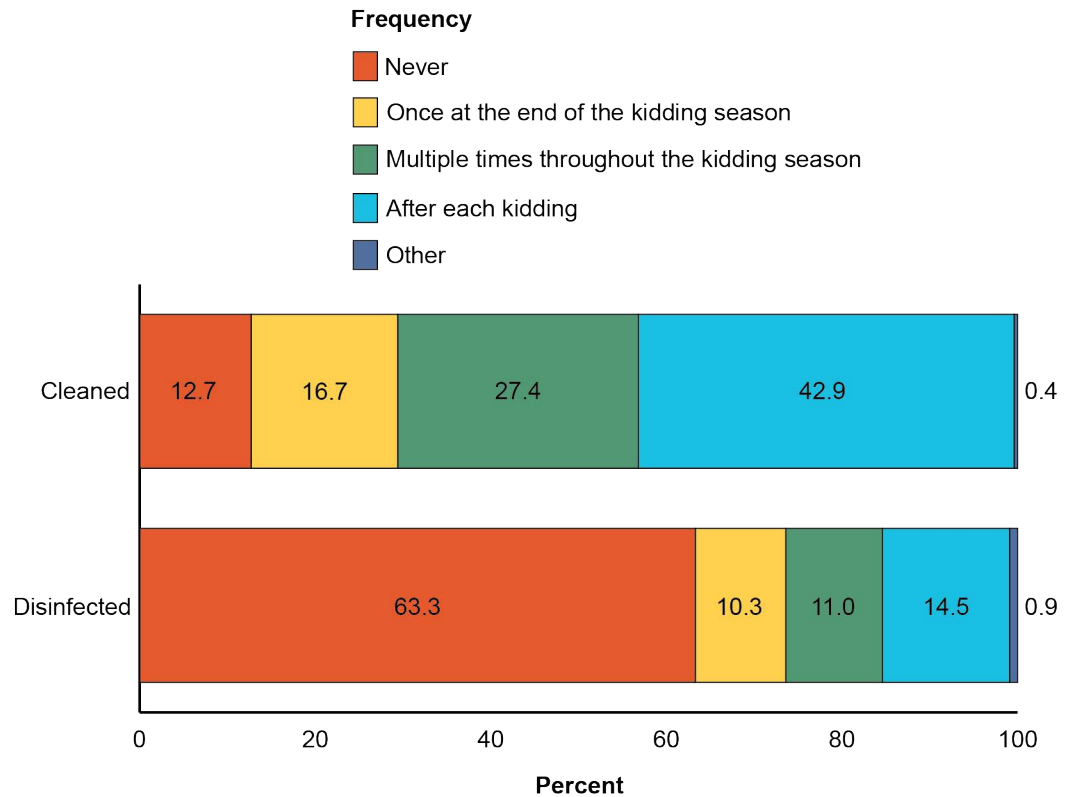
B.3.e. For operations that used a separate area specifically for kidding¹ (table B.3.a.), percentage of operations by frequency that the kidding areas were cleaned or disinfected during the most recently completed kidding period, and by herd size and region:

Percent Operations											
Frequency	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Cleaned											
Never cleaned	8.3	(3.6)	15.2	(4.7)	26.3	(10.8)	14.7	(4.5)	11.6	(3.5)	12.7 (2.8)
Cleaned once at the end of the kidding season	13.4	(3.9)	21.4	(6.0)	12.5	(8.7)	12.9	(5.6)	18.6	(4.2)	16.7 (3.4)
Cleaned multiple times throughout the kidding season	30.5	(5.7)	23.4	(4.7)	29.1	(13.0)	27.1	(6.2)	27.6	(4.5)	27.4 (3.7)
Cleaned after each kidding	47.8	(6.5)	39.2	(6.2)	31.8	(10.7)	44.2	(8.2)	42.2	(5.4)	42.9 (4.5)
Other	0.0	(—)	0.8	(0.5)	0.3	(0.2)	1.0	(0.7)	0.0	(0.0)	0.4 (0.2)
Total	100.0		100.0		100.0		100.0		100.0		100.0
Disinfected ²											
Never disinfected	67.3	(5.8)	59.5	(6.0)	59.1	(11.1)	64.2	(7.4)	62.9	(4.8)	63.3 (4.0)
Disinfected once at the end of the kidding season	6.9	(2.1)	14.8	(5.1)	7.3	(3.4)	11.8	(5.0)	9.5	(2.9)	10.3 (2.5)
Disinfected multiple times throughout the kidding season	13.1	(4.6)	9.2	(2.7)	7.2	(2.8)	8.1	(4.1)	12.5	(3.3)	11.0 (2.6)
Disinfected after each kidding	12.7	(4.4)	16.2	(4.4)	17.5	(9.2)	15.5	(5.3)	14.1	(3.6)	14.5 (3.0)
Other	0.0	(—)	0.4	(0.4)	8.9	(8.6)	0.5	(0.5)	1.1	(1.0)	0.9 (0.7)
Total	100.0		100.0		100.0		100.0		100.0		100.0

¹Refers to the 53.0 percent of operations overall that used a separate area specifically for kidding during the last kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 62.4 percent used a separate area specifically for kidding during the last kidding period (table B.3.a.).

²A chemical disinfectant includes 1:10 bleach dilution, phenolic product (1 Stroke Environ® or SynPhenol-3®), an accelerated hydrogen peroxide product (Intervention®), or lime.

For operations that used a separate area specifically for kidding (table B.3.a.), percentage of operations by frequency that the kidding areas were cleaned or disinfected during the most recently completed kidding period



For operations that used a separate area specifically for kidding, a higher percentage of meat operations never cleaned the kidding areas or cleaned once at the end of kidding season (18.6 and 22.7 percent, respectively) during the most recently completed kidding period than dairy operations (1.5 and 4.6 percent, respectively). A higher percentage of dairy operations (61.9 percent) cleaned after each kidding during the most recently completed kidding period than meat operations (31.5 percent). There were no differences by primary production of the operation in the percentage of operations by the frequency that kidding areas were disinfected during the most recently completed kidding period.

B.3.f. For operations that used a separate area specifically for kidding¹ (table B.3.a.), percentage of operations by frequency that the kidding areas were cleaned or disinfected during the most recently completed kidding period, and by primary production of the operation:

Percent Operations						
Primary Production						
Frequency	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Cleaned						
Never cleaned	18.6	(4.6)	1.5	(0.8)	7.8	(3.1)
Cleaned once at the end of the kidding season	22.7	(5.0)	4.6	(1.9)	12.6	(6.5)
Cleaned multiple times throughout the kidding season	26.9	(4.9)	31.9	(7.7)	24.0	(7.4)
Cleaned after each kidding	31.5	(6.0)	61.9	(7.7)	54.8	(8.4)
Other	0.3	(0.2)	0.1	(0.1)	0.9	(0.9)
Total	100.0		100.0		100.0	
Disinfected ²						
Never disinfected	72.2	(5.2)	56.4	(8.3)	45.5	(8.3)
Disinfected once at the end of the kidding season	7.1	(3.2)	10.7	(4.1)	18.9	(6.7)
Disinfected multiple times throughout the kidding season	7.6	(2.9)	19.3	(6.4)	11.8	(6.5)
Disinfected after each kidding	11.9	(4.1)	13.6	(5.0)	23.0	(7.0)
Other	1.2	(1.2)	0.0	(—)	0.8	(0.8)
Total	100.0		100.0		100.0	

¹Refers to the 53.0 percent of operations overall that used a separate area specifically for kidding during the last kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 62.4 percent used a separate area specifically for kidding during the last kidding period (table B.3.a.).

²A chemical disinfectant includes 1:10 bleach dilution, phenolic product (1 Stroke Environ® or SynPhenol-3®), an accelerated hydrogen peroxide product (Intervention®), or lime.

For operations that used a separate area specifically for kidding, the highest percentage of all operations (52.7 percent) cleaned but never disinfected the kidding areas during the most recently completed kidding period. Only small operations and operations in the East region reported never cleaning but reported disinfecting the kidding area.

B.3.g. For operations that used a separate area specifically for kidding¹ (table B.3.a.), percentage of operations by frequency that the kidding areas were cleaned and/or disinfected during the most recently completed kidding period, and by herd size and region:

Cleaning and Disinfecting Frequency ²	Percent Operations											
	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Never cleaned and never disinfected	5.7	(2.6)	15.6	(4.7)	26.8	(10.9)	15.2	(4.5)	9.7	(3.0)	11.5	(2.5)
Cleaned but never disinfected	61.6	(6.0)	44.3	(6.2)	41.2	(13.7)	49.5	(7.8)	54.3	(5.1)	52.7	(4.3)
Never cleaned but disinfected	2.7	(2.6)	0.0	(—)	0.0	(—)	0.0	(—)	2.0	(2.0)	1.3	(1.3)
Both cleaned and disinfected	30.1	(5.8)	40.2	(6.0)	32.0	(10.7)	35.3	(7.4)	34.1	(4.8)	34.5	(4.0)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

¹Refers to the 53.0 percent of operations overall that used a separate area specifically for kidding during the last kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 62.4 percent used a separate area specifically for kidding during the last kidding period (table B.3.a.).

²For the cleaning and disinfecting combinations, “cleaned” includes if the respondent cleaned kidding areas at all and “disinfected” includes if the respondent disinfected kidding areas at all. “Other” responses were recategorized into one of these categories based upon write-in answers.

For operations that used a separate area specifically for kidding, a higher percentage of meat operations (16.6 percent) never cleaned and never disinfected the kidding areas during the most recently completed kidding period than dairy operations (1.5 percent).

B.3.h For operations that used a separate area specifically for kidding¹ (table B.3.a.), percentage of operations by frequency that the kidding areas were cleaned and/or disinfected during the most recently completed kidding period, and by primary production of the operation:

	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
Cleaning and Disinfecting Frequency ²	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Never cleaned and never disinfected	16.6	(4.2)	1.5	(0.8)	7.8	(3.1)
Cleaned but never disinfected	56.8	(5.9)	54.9	(8.3)	38.5	(7.9)
Never cleaned but disinfected	2.3	(2.3)	0.0	(—)	0.0	(—)
Both cleaned and disinfected	24.3	(5.1)	43.6	(8.3)	53.7	(8.3)
Total	100.0		100.0		100.0	

¹Refers to the 53.0 percent of operations overall that used a separate area specifically for kidding during the last kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 62.4 percent used a separate area specifically for kidding during the last kidding period (table B.3.a.).

²For the cleaning and disinfecting combinations, “cleaned” includes if the respondent cleaned kidding areas at all and “disinfected” includes if the respondent disinfected kidding areas at all. “Other” responses were recategorized into one of these categories based upon write-in answers.

4. Colostrum management

Operations may choose to allow newborn kids to nurse directly from the doe to receive colostrum, or they may choose to milk the doe and hand-feed colostrum or provide a supplemental form of colostrum. Newborn kids that struggle nursing, or operations that are implementing certain disease control programs, may choose to hand-feed newborn kids colostrum. Whichever method is chosen, it is important to ensure that a sufficient amount of colostrum is provided in a timely manner in order to promote transfer of passive immunity and boost the newborn kid's immune system.

For operations that had any kids born on the operation during the previous 12 months, the highest percentage of all operations had kids that nursed only to receive colostrum, with 90.3 percent of all operations for doe kids, 88.3 percent of operations for buck kids, and 89.5 percent of operations for doe or buck kids having some kids that received colostrum exclusively through nursing. A higher percentage of large operations (54.6 percent) used hand-feeding of colostrum for doe kids than small operations (25.7 percent). There were no differences by herd size in the percentage of operations by method of feeding colostrum for buck kids or doe or buck kids. There were no differences by region in the percentage of operations by method of feeding colostrum for doe kids or buck kids. A higher percentage of operations in the East region (19.6 percent) hand-fed colostrum only, where kids were separated from the mothers immediately after birth for doe or buck kids than the West region (8.6 percent).

B.4.a. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by method any newborn does and bucks received colostrum during the most recently completed kidding period, and by herd size and region:

Method	Percent Operations									
	Herd size (number of goats and kids)						Region			
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids										
Any hand-feeding ¹	25.7	(4.0)	36.4	(4.6)	54.6	(8.4)	29.8	(5.0)	33.5	(3.5)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	12.2	(2.9)	12.6	(2.6)	27.0	(8.9)	7.7	(1.9)	16.1	(2.8)
Both nursing the doe and hand-feeding	17.5	(3.8)	25.1	(4.3)	41.7	(9.1)	22.6	(4.9)	22.5	(3.2)
Nursing only	91.8	(2.3)	89.1	(2.3)	87.9	(3.6)	92.0	(2.4)	89.6	(1.9)
Buck kids										
Any hand-feeding ¹	32.0	(4.8)	34.2	(4.5)	55.1	(8.4)	34.7	(5.6)	34.6	(3.9)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	14.0	(3.6)	10.5	(2.4)	28.5	(8.9)	8.7	(2.1)	15.7	(3.0)
Both nursing the doe and hand-feeding	20.7	(4.4)	24.7	(4.2)	42.5	(9.1)	27.1	(5.5)	22.7	(3.5)
Nursing only	88.1	(3.2)	88.5	(2.4)	88.2	(3.6)	88.1	(3.7)	88.4	(2.2)
Doe or buck kids										
Any hand-feeding ¹	34.1	(4.9)	38.6	(4.7)	57.0	(8.3)	36.8	(5.5)	38.0	(3.9)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	15.4	(3.6)	15.0	(3.2)	29.4	(8.9)	8.6	(2.0)	19.6	(3.3)
Both nursing the doe and hand-feeding	22.6	(4.5)	28.0	(4.5)	44.3	(9.0)	29.3	(5.5)	25.2	(3.6)
Nursing only	89.8	(2.7)	89.5	(2.3)	88.2	(3.6)	91.7	(2.3)	88.6	(2.2)

¹Includes kids that were hand-fed only or that both nursed the doe and were hand-fed.

²For example, by teat feeder, bottle, or tube feeder.

A higher percentage of dairy operations used hand-feeding of colostrum for any doe kids, buck kids, and doe or buck kids (52.3, 55.4, and 55.7 percent, respectively) than meat operations (27.2, 29.1, and 32.0 percent, respectively). A higher percentage of dairy operations (31.2 percent) had some doe kids that only received colostrum through hand-feeding, meaning kids were separated from the mothers immediately after birth and hand-fed, compared to meat and other operations (9.0 and 9.9 percent, respectively). A higher percentage of meat operations had any doe kids, buck kids, and doe or buck kids (96.0, 93.9, and 96.1 percent, respectively) that nursed only than dairy operations (73.6, 69.6, and 70.7 percent, respectively).

B.4.b. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by method any newborn does and bucks received colostrum during the most recently completed kidding period, and by primary production of the operation:

Method	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids						
Any hand-feeding ¹	27.2	(4.2)	52.3	(6.5)	28.5	(5.9)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	9.0	(2.5)	31.2	(5.8)	9.9	(4.0)
Both nursing the doe and hand-feeding	21.4	(3.9)	29.0	(6.7)	20.0	(5.0)
Nursing only	96.0	(1.7)	73.6	(4.8)	90.1	(3.4)
Buck kids						
Any hand-feeding ¹	29.1	(4.5)	55.4	(6.6)	31.2	(6.2)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	11.8	(3.2)	26.6	(5.5)	7.2	(2.0)
Both nursing the doe and hand-feeding	19.7	(3.8)	34.5	(7.3)	25.8	(6.1)
Nursing only	93.9	(2.3)	69.6	(5.8)	89.8	(3.5)
Doe or buck kids						
Any hand-feeding ¹	32.0	(4.6)	55.7	(6.7)	36.0	(6.6)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	13.7	(3.4)	29.2	(5.5)	11.1	(4.0)
Both nursing the doe and hand-feeding	23.5	(4.0)	34.2	(7.1)	26.8	(6.1)
Nursing only	96.1	(1.7)	70.7	(5.7)	89.8	(3.5)

¹Includes kids that were hand-fed only or that both nursed the doe and were hand-fed.

²For example, by teat feeder, bottle, or tube feeder.

For operations that had any kids born on the operation during the previous 12 months, 78.7 percent of doe and buck kids received colostrum by nursing during the most recently completed kidding period. A higher percentage of doe kids on large operations (21.4 percent) were only hand-fed colostrum than doe kids on small and medium operations (6.8 and 7.5 percent, respectively). There were no differences by herd size in the percentage of buck kids by method by which they received colostrum. There were no differences by region in the percentage of doe kids, buck kids, and doe or buck kids by method by which they received colostrum.

B.4.c. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of newborn does and bucks by method by which they received colostrum during the most recently completed kidding period, and by herd size and region:

Percent Kids												
Method	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids												
Any hand-feeding ¹	14.9	(2.9)	16.7	(2.5)	28.3	(6.4)	15.3	(4.6)	26.0	(3.5)	21.3	(2.8)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	6.8	(1.4)	7.5	(1.3)	21.4	(5.6)	8.9	(4.3)	16.6	(2.5)	13.2	(2.4)
Both nursing the doe and hand-feeding	8.1	(2.6)	9.2	(2.2)	6.9	(3.8)	6.3	(2.1)	9.4	(2.8)	8.1	(1.8)
Nursing only	85.1	(2.9)	83.3	(2.5)	71.7	(6.4)	84.7	(4.6)	74.0	(3.5)	78.7	(2.8)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Buck kids												
Any hand-feeding ¹	17.4	(3.4)	17.2	(2.7)	26.9	(6.5)	16.2	(4.7)	25.3	(3.6)	21.3	(2.9)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	8.3	(2.0)	6.9	(1.2)	19.7	(5.6)	8.8	(4.3)	15.4	(2.5)	12.5	(2.4)
Both nursing the doe and hand-feeding	9.2	(2.8)	10.3	(2.5)	7.2	(3.8)	7.4	(2.4)	10.0	(2.9)	8.8	(1.9)
Nursing only	82.6	(3.4)	82.8	(2.7)	73.1	(6.5)	83.8	(4.7)	74.7	(3.6)	78.7	(2.9)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

¹Includes kids that were hand-fed only or that both nursed the doe and were hand-fed.

²For example, by teat feeder, bottle, or tube feeder.

B.4.c. (cont'd.) For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of newborn does and bucks by method by which they received colostrum during the most recently completed kidding period, and by herd size and region:

Percent Kids											
Method	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Doe or buck kids											
Any hand-feeding ¹	16.2	(2.9)	17.0	(2.6)	27.6	(6.4)	15.7	(4.7)	25.7	(3.5)	21.3 (2.9)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	7.5	(1.5)	7.2	(1.2)	20.6	(5.6)	8.9	(4.3)	16.0	(2.5)	12.8 (2.3)
Both nursing the doe and hand-feeding	8.6	(2.7)	9.7	(2.3)	7.0	(3.8)	6.9	(2.2)	9.7	(2.8)	8.4 (1.9)
Nursing only	83.8	(2.9)	83.0	(2.6)	72.4	(6.4)	84.3	(4.7)	74.3	(3.5)	78.7 (2.9)
Total	100.0		100.0		100.0		100.0		100.0		100.0

¹Includes kids that were hand-fed only or that both nursed the doe and were hand-fed.

²For example, by teat feeder, bottle, or tube feeder.

For operations that had any kids born on the operation in the previous 12 months, a higher percentage of doe or buck kids on dairy operations (41.9 percent) received colostrum by hand-feeding only than kids on meat and other operations (1.9 and 3.5 percent, respectively). A higher percentage of doe or buck kids on meat and other operations (92.5 and 85.9 percent, respectively) nursed only to received colostrum than on dairy operations (45.2 percent).

B.4.d. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of newborn does and bucks by method by which they received colostrum during the most recently completed kidding period, and by primary production of the operation:

Percent Kids						
Primary Production of the Operation						
Method	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Any hand-feeding ¹	6.8	(1.6)	56.4	(7.4)	13.9	(4.3)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	1.6	(0.6)	43.9	(7.5)	3.5	(1.1)
Both nursing the doe and hand-feeding	5.2	(1.5)	12.4	(5.6)	10.4	(4.1)
Nursing only	93.2	(1.6)	43.6	(7.4)	86.1	(4.3)
Total	100.0		100.0		100.0	
Buck kids						
Any hand-feeding ¹	8.2	(1.9)	53.3	(7.9)	14.3	(4.4)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	2.2	(0.7)	39.8	(7.7)	3.6	(1.1)
Both nursing the doe and hand-feeding	6.0	(1.8)	13.5	(5.7)	10.7	(4.1)
Nursing only	91.8	(1.9)	46.7	(7.9)	85.7	(4.4)
Total	100.0		100.0		100.0	

¹Includes kids that were hand-fed only or that both nursed the doe and were hand-fed.

²For example, by teat feeder, bottle, or tube feeder.

B.4.d. (cont'd.) For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of newborn does and bucks by method by which they received colostrum during the most recently completed kidding period, and by primary production of the operation:

Doe or buck kids					
Any hand-feeding ¹	7.5	(1.7)	54.8	(7.7)	14.1 (4.3)
Hand-feeding only; kids were separated from the mothers immediately after birth and hand-fed ²	1.9	(0.5)	41.9	(7.6)	3.5 (1.1)
Both nursing the doe and hand-feeding	5.6	(1.6)	12.9	(5.6)	10.6 (4.1)
Nursing only	92.5	(1.7)	45.2	(7.7)	85.9 (4.3)
Total	100.0		100.0		100.0

¹Includes kids that were hand-fed only or that both nursed the doe and were hand-fed.

²For example, by teat feeder, bottle, or tube feeder.

For operations that hand-fed colostrum to doe or buck kids during the most recently completed kidding period, 50.8 percent of all operations fed colostrum to the majority of doe kids immediately following birth and 44.5 percent of all operations fed colostrum to the majority of buck kids immediately following birth. There were no differences by herd size or region for doe kids or buck kids in the percentage of operations by the number of hours following birth that the majority of newborn doe and buck kids received their first hand-feeding of colostrum.

B.4.e. For operations that hand-fed colostrum to doe or buck kids* (table B.4.a.), percentage of operations by number of hours following birth the majority of newborn does and bucks received their first hand-feeding of colostrum during the most recently completed kidding period, and by herd size and region:

Percent Operations											
Hours	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Doe kids											
Fed immediately	57.8	(9.3)	50.4	(8.0)	31.1	(11.6)	45.8	(11.5)	52.8	(6.6)	50.8 (5.8)
> 0 to < 1	6.0	(2.8)	10.8	(5.8)	3.3	(1.4)	2.8	(1.4)	9.9	(4.0)	7.9 (3.0)
1 to < 4	26.1	(8.8)	25.8	(8.0)	52.1	(14.0)	40.4	(11.6)	25.1	(6.5)	29.4 (5.8)
4 or more	10.1	(5.9)	13.0	(6.4)	13.5	(7.2)	11.0	(6.5)	12.2	(4.8)	11.9 (3.9)
Total	100.0		100.0		100.0		100.0		100.0		100.0
Buck kids											
Fed immediately	41.4	(8.4)	52.3	(8.2)	32.0	(11.7)	42.1	(10.7)	45.6	(6.4)	44.5 (5.5)
> 0 to < 1	4.4	(2.2)	5.7	(3.0)	3.7	(1.5)	1.7	(1.0)	6.3	(2.3)	4.8 (1.6)
1 to < 4	26.1	(7.8)	27.7	(8.7)	53.2	(13.7)	39.7	(11.1)	26.0	(6.5)	30.2 (5.7)
4 or more	28.1	(8.5)	14.3	(7.2)	11.1	(6.7)	16.5	(9.2)	22.2	(6.2)	20.4 (5.1)
Total	100.0		100.0		100.0		100.0		100.0		100.0

*Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

For operations that hand-fed colostrum to doe or buck kids, a higher percentage of meat operations (20.4 and 34.3 percent, respectively) hand-fed colostrum four or more hours following birth to newborn doe and buck kids than dairy operations (2.7 and 2.8 percent, respectively) during the most recently completed kidding period.

B.4.f. For operations that hand-fed colostrum to doe or buck kids* (table B.4.a.), percentage of operations by number of hours following birth the majority of newborn does and bucks received their first hand-feeding of colostrum during the most recently completed kidding period, and by primary production of the operation:

Percent Operations						
Primary Production						
Hours	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids						
Fed immediately	43.6	(8.5)	60.9	(9.0)	53.2	(12.0)
> 0 to < 1	8.9	(5.5)	10.5	(3.9)	1.2	(1.2)
1 to < 4	27.0	(8.6)	26.0	(9.3)	40.5	(11.9)
4 or more	20.4	(7.5)	2.7	(1.7)	5.1	(2.8)
Total	100.0		100.0		100.0	
Buck kids						
Fed immediately	36.4	(8.1)	57.7	(9.0)	44.2	(11.6)
> 0 to < 1	3.6	(2.3)	10.3	(3.9)	0.0	(—)
1 to < 4	25.7	(8.6)	29.3	(9.3)	41.9	(11.5)
4 or more	34.3	(9.5)	2.8	(1.6)	13.9	(10.8)
Total	100.0		100.0		100.0	

*Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

For operations that hand-fed colostrum to doe or buck kids, the highest percentage of all operations used a bottle to hand-feed colostrum to doe kids (80.5 percent) and buck kids (83.8 percent). There were no differences by herd size or region for doe or buck kids in the percentage of operations by method normally used to hand-feed colostrum during the most recently completed kidding period.

B.4.g. For operations that hand-fed colostrum to doe or buck kids* (table B.4.a.), percentage of operations by method normally used to hand-feed colostrum to the newborn doe and buck kids during the most recently completed kidding period, and by herd size and region:

Percent Operations											
Method	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Doe kids											
Bottle	85.6	(7.6)	76.8	(7.8)	78.5	(10.7)	81.0	(9.0)	80.3	(6.0)	80.5 (5.0)
Tube-fed	13.9	(7.6)	22.4	(7.8)	20.5	(10.6)	18.1	(9.0)	19.1	(6.0)	18.8 (5.0)
Bucket	0.5	(0.5)	0.8	(0.7)	1.0	(0.7)	1.0	(0.7)	0.6	(0.4)	0.7 (0.4)
Total	100.0		100.0		100.0		100.0		100.0		100.0
Buck kids											
Bottle	87.2	(6.9)	81.2	(7.0)	79.5	(10.6)	89.4	(6.2)	81.6	(5.7)	83.8 (4.5)
Tube-fed	12.4	(6.9)	17.9	(7.0)	19.5	(10.5)	9.8	(6.2)	17.9	(5.7)	15.5 (4.5)
Bucket	0.4	(0.4)	0.9	(0.7)	1.0	(0.7)	0.8	(0.6)	0.6	(0.4)	0.6 (0.3)
Total	100.0		100.0		100.0		100.0		100.0		100.0

*Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

For operations that hand-fed colostrum to doe or buck kids, a higher percentage of dairy operations (95.2 percent) normally used a bottle to hand feed colostrum to newborn doe kids than meat or other operations (74.1 and 72.2 percent, respectively). A higher percentage of meat and other operations (25.9 and 25.2 percent, respectively) normally tube-fed colostrum to newborn doe kids than dairy operations (4.1 percent). There were no differences by primary production of the operation in the method normally used to hand-feed colostrum to newborn buck kids during the most recently completed kidding period. It is worth noting that fewer doe kids on meat and other operations were hand-fed colostrum. Therefore, those needing to be hand-fed colostrum were likely weak or ill, making tube-feeding colostrum the most efficient method. In comparison, more newborn doe kids on dairy operations are hand-fed colostrum, meaning they are likely healthy and able to suckle from a bottle easily. Only weak or ill doe kids on dairy operations would need to be tube-fed.

B.4.h. For operations that hand-fed colostrum to doe or buck kids* (table B.4.a.), percentage of operations by method normally used to hand-feed colostrum to the newborn doe and buck kids during the most recently completed kidding period, by primary production of the operation:

Percent Operations						
Primary Production						
Method	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids						
Bottle	74.1	(8.4)	95.2	(1.2)	72.2	(12.4)
Tube-fed	25.9	(8.4)	4.1	(1.1)	25.2	(12.6)
Bucket	0.0	(—)	0.6	(0.4)	2.7	(2.0)
Total	100.0		100.0		100.0	
Buck kids						
Bottle	79.2	(7.6)	88.3	(7.1)	88.1	(5.6)
Tube-fed	20.8	(7.6)	11.1	(7.2)	9.5	(5.2)
Bucket	0.0	(—)	0.6	(0.3)	2.4	(1.8)
Total	100.0		100.0		100.0	

*Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

For operations that hand-fed colostrum to doe kids, 23.6 percent of all operations allowed doe kids to nurse prior to hand-feeding for their first feeding, and a median of 2.9 ounces of colostrum were fed to doe kids on all operations for their first feeding. There were no differences by herd size or region in the percentage of operations by the amount of colostrum normally fed to doe kids during the first feeding.

The median amount of colostrum provided to doe kids on all operations in subsequent feedings during the first 24 hours was 8.2 ounces. There were no differences by herd size or region in the percentage of operations by the amount of colostrum normally fed to doe kids during subsequent feedings in the first 24 hours.

The median amount of colostrum provided to doe kids on all operations in the first 24 hours was 11.3 ounces. There were no differences by herd size or region in the percentage of operations by the amount of colostrum normally fed to doe kids in the first 24 hours.

B.4.i. For operations that hand-fed colostrum to doe kids¹ (table B.4.a.), percentage of operations by number of ounces of colostrum normally fed by hand to **newborn doe kids** in the first 24 hours during the most recently completed kidding period and median amount of colostrum normally fed by hand to newborn doe kids in the first 24 hours, by feeding timing and by herd size and region:

Percent Operations												
Ounces	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
First feeding												
0 (allowed to nurse prior to hand-feeding)	24.5	(9.1)	23.4	(6.7)	21.9	(11.7)	31.6	(10.8)	20.2	(5.8)	23.6	(5.2)
> 0 to < 4	40.3	(8.9)	43.5	(8.4)	28.8	(11.8)	45.5	(9.6)	38.0	(6.7)	40.2	(5.5)
4 to < 9	18.5	(5.1)	29.6	(6.9)	45.1	(13.7)	15.6	(7.4)	32.4	(5.7)	27.4	(4.7)
9 or more	16.8	(7.9)	3.6	(1.8)	4.2	(1.6)	7.3	(6.1)	9.4	(4.1)	8.8	(3.4)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Median ²	2.7	(1.0)	2.7	(0.5)	3.4	(0.6)	2.2	(1.0)	3.1	(0.4)	2.9	(0.4)

¹Refers to the 27.5 percent of operations overall that hand-fed colostrum to doe kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 32.4 percent hand-fed colostrum to doe kids during the most recently completed kidding period (table B.4.a.).

²Excludes operations that fed zero ounces of colostrum to doe kids in that feeding period.

B.4.i. (cont'd.) For operations that hand-fed colostrum to doe kids¹ (table B.4.a.), percentage of operations by number of ounces of colostrum normally fed by hand to **newborn doe kids** in the first 24 hours during the most recently completed kidding period and median amount of colostrum normally fed by hand to newborn doe kids in the first 24 hours, by feeding timing and by herd size and region:

Percent Operations												
Ounces	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Subsequent feedings in the first 24 hours												
No subsequent feedings	19.2	(8.0)	13.3	(5.0)	15.9	(10.7)	17.3	(8.5)	15.3	(4.6)	15.9	(4.1)
> 0 to < 10	41.7	(9.5)	44.1	(8.2)	43.6	(13.8)	56.7	(9.4)	37.4	(6.5)	43.1	(5.5)
10 to < 20	28.8	(9.2)	32.3	(8.1)	37.7	(14.6)	16.0	(6.1)	38.3	(7.0)	31.7	(5.6)
20 or more	10.4	(4.5)	10.3	(3.4)	2.9	(1.3)	9.9	(5.2)	9.0	(2.5)	9.3	(2.3)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Median ²	8.4	(2.0)	8.1	(2.6)	7.9	(1.6)	3.8	(1.4)	11.1	(1.2)	8.2	(1.6)
Total in the first 24 hours												
Less than 10	40.9	(10.0)	46.5	(8.1)	39.2	(12.1)	55.6	(10.8)	38.1	(6.6)	43.3	(5.9)
10 to < 20	35.3	(9.9)	26.5	(6.9)	51.7	(13.0)	26.9	(9.5)	36.1	(6.8)	33.3	(5.6)
20 or more	23.9	(6.6)	27.0	(7.4)	9.1	(3.2)	17.5	(5.8)	25.8	(5.8)	23.3	(4.5)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Median ²	11.4	(2.4)	11.1	(3.0)	13.1	(2.4)	4.8	(2.2)	13.2	(1.6)	11.3	(1.7)

¹Refers to the 27.5 percent of operations overall that hand-fed colostrum to doe kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 32.4 percent hand-fed colostrum to doe kids during the most recently completed kidding period (table B.4.a.).

²Excludes operations that fed zero ounces of colostrum to doe kids in that feeding period.

There were no differences by primary production of the operation in the percentage of operations by ounces of colostrum normally fed by hand to newborn doe kids at the first feeding, during subsequent feedings in the first 24 hours, or the total fed in the first 24 hours.

B.4.j. For operations that hand-fed colostrum to doe kids¹ (table B.4.a.), percentage of operations by number of ounces of colostrum normally fed by hand to **newborn doe kids** in the first 24 hours during the most recently completed kidding period and median amount of colostrum normally fed by hand to newborn doe kids in the first 24 hours, by feeding timing and by primary production of the operation:

Ounces	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
First feeding						
0 (allowed to nurse prior to hand-feeding)	20.2	(7.5)	20.8	(7.7)	35.5	(11.6)
> 0 to < 4	44.0	(9.1)	32.1	(7.0)	43.4	(11.9)
4 to < 9	23.6	(7.2)	42.1	(8.0)	14.8	(5.2)
9 or more	12.2	(6.6)	5.0	(2.2)	6.4	(4.0)
Total	100.0		100.0		100.0	
Median ²	2.8	(0.6)	3.4	(0.4)	1.7	(0.5)
Subsequent feedings in the first 24 hours						
No subsequent feedings	23.2	(7.0)	9.8	(6.4)	8.2	(4.8)
> 0 to < 10	43.6	(9.1)	35.5	(7.7)	53.1	(11.7)
10 to < 20	28.3	(8.7)	41.9	(9.4)	24.5	(11.4)
20 or more	4.9	(2.8)	12.8	(3.5)	14.2	(7.1)
Total	100.0		100.0		100.0	
Median ²	5.9	(2.9)	11.1	(1.0)	5.7	(2.8)
Total in the first 24 hours						
Less than 10	45.9	(9.1)	33.1	(9.3)	52.3	(11.7)
10 to < 20	28.7	(8.3)	42.8	(9.4)	30.3	(11.5)
20 or more	25.4	(8.3)	24.1	(5.0)	17.4	(7.4)
Total	100.0		100.0		100.0	
Median ²	10.0	(2.5)	13.1	(1.9)	6.5	(3.1)

¹Refers to the 27.5 percent of operations overall that hand-fed colostrum to doe kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 32.4 percent hand-fed colostrum to doe kids during the most recently completed kidding period (table B.4.a.).

²Excludes operations that fed zero ounces of colostrum to doe kids in that feeding period.

For operations that hand-fed colostrum to buck kids, the median amount of colostrum fed to buck kids in the first feeding was 3.0 ounces on all operations, and the median amount of colostrum fed to buck kids in the first 24 hours was 11.6 ounces on all operations. There were no differences by herd size or region in the percentage of operations by ounces of colostrum normally hand-fed to newborn buck kids at the first feeding, subsequent feedings in the first 24 hours, or total amount fed in the first 24 hours.

B.4.k. For operations that hand-fed colostrum to buck kids¹ (table B.4.a.), percentage of operations by number of ounces of colostrum normally fed by hand to **newborn buck kids** in the first 24 hours during the most recently completed kidding period and median amount of colostrum normally fed by hand to newborn buck kids in the first 24 hours, by feeding timing and by herd size and region:

Percent Operations											
Ounces	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
First feeding											
0 (allowed to nurse prior to hand-feeding)	21.9	(7.9)	27.6	(7.4)	22.4	(11.6)	34.3	(10.7)	20.1	(5.7)	24.4 (5.1)
> 0 to < 4	41.4	(9.3)	35.8	(8.5)	30.8	(11.9)	43.7	(9.3)	35.1	(6.9)	37.7 (5.6)
4 to < 9	26.8	(8.5)	32.7	(7.9)	42.9	(13.9)	21.2	(9.2)	35.7	(6.8)	31.4 (5.6)
9 or more	9.8	(5.8)	3.9	(2.0)	3.9	(1.6)	0.8	(0.4)	9.0	(4.0)	6.6 (2.8)
Total	100.0		100.0		100.0		100.0		100.0		100.0
Median ²	2.7	(0.6)	3.0	(0.5)	3.3	(0.7)	2.2	(0.9)	3.2	(0.5)	3.0 (0.4)
Subsequent feedings in the first 24 hours											
No subsequent feedings	17.8	(7.6)	14.2	(5.5)	4.6	(2.6)	10.5	(6.4)	16.2	(5.4)	14.5 (4.2)
> 0 to < 10	34.3	(8.6)	45.8	(8.5)	55.2	(13.7)	55.9	(8.9)	36.0	(6.3)	41.9 (5.3)
10 to < 20	31.5	(9.5)	30.8	(8.3)	37.1	(14.5)	21.5	(8.2)	36.4	(7.3)	32.0 (5.8)
20 or more	16.4	(7.1)	9.2	(3.2)	3.1	(1.3)	12.1	(5.6)	11.4	(4.3)	11.6 (3.5)
Total	100.0		100.0		100.0		100.0		100.0		100.0
Median ²	9.7	(2.0)	7.5	(2.4)	7.1	(1.6)	5.6	(2.0)	9.8	(1.2)	9.2 (1.5)
Total in the first 24 hours											
Less than 10	40.4	(9.2)	48.6	(8.5)	41.1	(12.2)	54.6	(10.6)	39.5	(6.7)	44.0 (5.8)
10 to < 20	32.6	(9.7)	24.0	(6.6)	50.1	(13.1)	26.2	(9.5)	33.5	(7.0)	31.3 (5.7)
20 or more	26.9	(8.0)	27.4	(7.8)	8.8	(3.1)	19.2	(6.2)	27.1	(6.5)	24.7 (5.0)
Total	100.0		100.0		100.0		100.0		100.0		100.0
Median ²	12.9	(2.8)	9.8	(3.3)	9.7	(2.4)	5.6	(2.3)	13.1	(2.0)	11.6 (2.1)

¹Refers to the 29.4 percent of operations overall that hand-fed colostrum to buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 34.6 percent hand-fed colostrum to buck kids during the most recently completed kidding period (table B.4.a.).

²Excludes operations that fed zero ounces of colostrum to buck kids in that feeding period.

For operations that hand-fed colostrum to buck kids, there were no differences by primary production of the operation in the percentage of operations by number of ounces of colostrum normally fed by hand to newborn buck kids at the first feeding, during subsequent feedings in the first 24 hours, or total amount fed in the first 24 hours.

B.4.I. For operations that hand-fed colostrum to buck kids¹ (table B.4.a.), percentage of operations by number of ounces of colostrum normally fed by hand to **newborn buck kids** in the first 24 hours during the most recently completed kidding period and median amount of colostrum normally fed by hand to newborn buck kids in the first 24 hours, by feeding timing and by primary production of the operation:

Ounces	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
First feeding						
0 (allowed to nurse prior to hand-feeding)	20.9	(7.4)	24.1	(8.0)	32.2	(11.0)
> 0 to < 4	39.5	(9.1)	32.6	(7.1)	40.4	(11.6)
4 to < 9	31.7	(8.8)	38.4	(8.3)	21.7	(8.8)
9 or more	7.9	(5.4)	4.9	(2.2)	5.8	(3.7)
Total	100.0		100.0		100.0	
Median ²	3.0	(0.5)	3.3	(0.4)	1.9	(1.0)
Subsequent feedings in the first 24 hours						
No subsequent feedings	22.0	(7.5)	8.7	(6.4)	5.9	(4.1)
> 0 to < 10	44.0	(9.3)	33.7	(7.7)	48.2	(11.5)
10 to < 20	31.0	(9.1)	42.0	(9.7)	20.9	(8.8)
20 or more	3.0	(2.2)	15.6	(4.6)	25.0	(11.4)
Total	100.0		100.0		100.0	
Median ²	5.9	(2.0)	11.2	(0.9)	7.6	(3.9)
Total in the first 24 hours						
Less than 10	49.7	(9.4)	33.0	(9.2)	45.9	(11.5)
10 to < 20	27.6	(8.5)	41.4	(9.7)	26.0	(9.3)
20 or more	22.7	(8.0)	25.6	(5.8)	28.0	(11.3)
Total	100.0		100.0		100.0	
Median ²	9.2	(2.6)	14.1	(1.8)	10.8	(3.8)

¹Refers to the 29.4 percent of operations overall that hand-fed colostrum to buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 34.6 percent hand-fed colostrum to buck kids during the most recently completed kidding period (table B.4.a.).

²Excludes operations that fed zero ounces of colostrum to buck kids in that feeding period.

For operations that hand-fed colostrum to doe or buck kids, the highest percentage of all operations hand-fed individual doe unpasteurized colostrum to doe kids (73.1 percent), buck kids (74.1 percent), and doe or buck kids (74.2 percent). There were no differences by herd size or region in the percentage of operations by sources from which any newborn doe or buck kids received colostrum for the first colostrum feeding.

B.4.m. For operations that hand-fed colostrum to doe or buck kids¹ (table B.4.a.), percentage of operations by sources from which any newborn doe and buck kids received colostrum for the first colostrum feeding, and by herd size and region:

Percent Operations												
Source	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids												
Individual doe unpasteurized colostrum ²	69.8	(8.9)	74.6	(7.4)	77.4	(8.1)	80.5	(8.5)	70.2	(6.4)	73.1	(5.3)
Individual doe pasteurized colostrum	1.4	(1.0)	3.7	(1.3)	2.4	(1.0)	4.2	(1.8)	2.0	(0.8)	2.6	(0.7)
Pooled (mixed from multiple does) unpasteurized colostrum	9.6	(4.2)	12.4	(5.7)	14.4	(7.3)	24.6	(9.3)	6.5	(2.0)	11.6	(3.3)
Pooled (mixed from multiple does) pasteurized colostrum	1.8	(1.1)	1.8	(0.5)	6.6	(2.5)	2.8	(1.1)	2.2	(0.7)	2.4	(0.6)
Commercial colostrum replacer or supplements	23.5	(8.4)	37.6	(8.6)	26.9	(8.9)	23.4	(9.3)	33.4	(7.0)	30.6	(5.7)
Cow colostrum	6.6	(6.2)	6.5	(5.1)	0.2	(0.2)	0.0	(—)	7.9	(4.7)	5.7	(3.5)
Other	0.0	(—)	0.0	(—)	0.8	(0.7)	0.0	(—)	0.2	(0.1)	0.1	(0.1)
Buck kids												
Individual doe unpasteurized colostrum ²	72.7	(8.1)	75.0	(7.4)	76.7	(8.3)	75.8	(9.2)	73.4	(6.1)	74.1	(5.1)
Individual doe pasteurized colostrum	1.3	(0.8)	3.8	(1.4)	1.9	(0.9)	3.4	(1.6)	1.9	(0.7)	2.4	(0.7)
Pooled (mixed from multiple does) unpasteurized colostrum	17.2	(6.8)	7.1	(2.4)	16.4	(7.6)	14.2	(5.2)	12.5	(4.6)	13.0	(3.6)
Pooled (mixed from multiple does) pasteurized colostrum	1.4	(0.9)	1.7	(0.5)	5.9	(2.4)	2.3	(0.9)	2.0	(0.7)	2.1	(0.5)
Commercial colostrum replacer or supplements	22.0	(8.2)	35.2	(8.8)	27.4	(9.0)	26.9	(9.4)	28.4	(6.9)	28.0	(5.6)
Cow colostrum	5.1	(4.9)	5.4	(5.3)	0.2	(0.2)	0.0	(—)	6.6	(4.4)	4.6	(3.2)
Other	0.0	(—)	0.0	(—)	0.8	(0.6)	0.0	(—)	0.1	(0.1)	0.1	(0.1)

¹Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

²Includes operations that had kids nurse at first feeding.

B.4.m. (cont'd.) For operations that hand-fed colostrum to doe or buck kids¹ (table B.4.a.), percentage of operations by sources from which any newborn doe and buck kids received colostrum for the first colostrum feeding, and by herd size and region:

Percent Operations											
Source	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Doe or buck kids											
Individual doe unpasteurized colostrum ²	72.8	(8.1)	75.0	(7.4)	76.7	(8.3)	75.8	(9.2)	73.5	(6.1)	74.2 (5.1)
Individual doe pasteurized colostrum	1.3	(0.8)	4.0	(1.4)	2.4	(1.0)	3.7	(1.6)	2.0	(0.7)	2.5 (0.7)
Pooled (mixed from multiple does) unpasteurized colostrum	17.2	(6.8)	13.3	(6.1)	16.4	(7.6)	22.8	(8.7)	12.5	(4.6)	15.5 (4.2)
Pooled (mixed from multiple does) pasteurized colostrum	1.4	(0.9)	1.7	(0.5)	6.3	(2.5)	2.5	(1.0)	2.0	(0.7)	2.1 (0.5)
Commercial colostrum replacer or supplements	22.0	(8.2)	37.4	(8.8)	28.8	(9.2)	27.0	(9.4)	29.8	(6.9)	29.0 (5.6)
Cow colostrum	5.1	(4.9)	5.4	(5.3)	0.2	(0.2)	0.0	(—)	6.6	(4.4)	4.6 (3.2)
Other	0.0	(—)	0.0	(—)	0.8	(0.6)	0.0	(—)	0.1	(0.1)	0.1 (0.1)

¹Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

²Includes operations that had kids nurse at first feeding.

For operations that hand-fed colostrum to doe or buck kids, a higher percentage of dairy operations (6.5 percent) fed newborn doe kids pooled pasteurized colostrum than meat operations (0.1 percent). A higher percentage of dairy and other operations (5.5 and 1.5 percent, respectively) fed newborn buck kids and newborn buck or doe kids (5.7 and 1.5 percent, respectively) pooled pasteurized colostrum than meat operations (0.1 and 0.1 percent, respectively).

B.4.n. For operations that hand-fed colostrum to doe or buck kids¹ (table B.4.a.), percentage of operations by sources from which any newborn doe and buck kids received colostrum for the first colostrum feeding, and by primary production of the operation:

Source	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids						
Individual doe unpasteurized colostrum ²	73.9	(8.0)	75.4	(7.0)	67.3	(11.9)
Individual doe pasteurized colostrum	0.6	(0.6)	5.3	(1.9)	3.4	(2.1)
Pooled (mixed from multiple does) unpasteurized colostrum	14.2	(6.1)	7.1	(2.5)	12.1	(7.1)
Pooled (mixed from multiple does) pasteurized colostrum	0.1	(0.1)	6.5	(1.9)	1.7	(0.8)
Commercial colostrum replacer or supplements	42.2	(9.1)	15.9	(6.3)	25.0	(11.6)
Cow colostrum	6.2	(4.9)	8.5	(7.8)	0.0	(—)
Other	0.0	(—)	0.3	(0.3)	0.0	(—)
Buck kids						
Individual doe unpasteurized colostrum ²	72.7	(8.3)	78.2	(6.6)	71.1	(10.0)
Individual doe pasteurized colostrum	0.5	(0.5)	4.7	(1.7)	3.1	(1.9)
Pooled (mixed from multiple does) unpasteurized colostrum	13.2	(5.7)	13.5	(6.6)	11.9	(6.6)
Pooled (mixed from multiple does) pasteurized colostrum	0.1	(0.1)	5.5	(1.8)	1.5	(0.7)
Commercial colostrum replacer or supplements	41.1	(9.1)	12.3	(5.8)	20.3	(9.0)
Cow colostrum	4.5	(4.4)	7.9	(7.3)	0.0	(—)
Other	0.0	(—)	0.3	(0.2)	0.0	(—)
Doe or buck kids						
Individual doe unpasteurized colostrum ²	72.7	(8.3)	78.5	(6.6)	71.1	(10.0)
Individual doe pasteurized colostrum	0.5	(0.5)	5.2	(1.8)	3.1	(1.9)
Pooled (mixed from multiple does) unpasteurized colostrum	18.3	(7.2)	13.5	(6.6)	11.9	(6.6)
Pooled (mixed from multiple does) pasteurized colostrum	0.1	(0.1)	5.7	(1.8)	1.5	(0.7)
Commercial colostrum replacer or supplements	42.8	(9.1)	13.1	(5.8)	20.3	(9.0)
Cow colostrum	4.5	(4.4)	7.9	(7.3)	0.0	(—)
Other	0.0	(—)	0.3	(0.2)	0.0	(—)

¹Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

²Includes operations that had kids nurse at first feeding.

For the doe and buck kids that were hand-fed colostrum, the majority of kids received individual doe unpasteurized colostrum, with 67.4 percent of doe kids, 71.0 percent of buck kids, and 69.2 percent of doe or buck kids receiving individual doe unpasteurized colostrum as their first feeding. There were no differences by herd size in the percentage of doe kids, buck kids, and doe or buck kids, by source of first colostrum feeding. A higher percentage of doe kids in the East region (27.5 percent) received commercial colostrum replacer or supplements than in the West region (4.3 percent).

B.4.o. For doe and buck kids that were hand-fed colostrum¹ (table B.4.c.), percentage of doe and buck kids by source of first colostrum feeding, and by herd size and region:

Percent Kids												
Source	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids												
Individual doe unpasteurized colostrum ²	65.2	(8.9)	68.4	(8.7)	67.0	(8.1)	84.8	(4.7)	59.6	(7.1)	67.4	(5.4)
Individual doe pasteurized colostrum	1.2	(0.9)	2.4	(0.9)	1.6	(0.7)	3.2	(1.3)	1.3	(0.4)	1.8	(0.5)
Pooled (mixed from multiple does) unpasteurized colostrum	6.4	(3.9)	4.9	(1.9)	5.7	(2.4)	5.5	(2.8)	5.4	(1.7)	5.4	(1.4)
Pooled (mixed from multiple does) pasteurized colostrum	2.2	(1.4)	1.1	(0.4)	7.1	(3.0)	2.3	(1.0)	5.0	(2.0)	4.1	(1.4)
Commercial colostrum replacer or supplements	21.3	(8.0)	22.8	(9.3)	18.0	(6.3)	4.3	(2.4)	27.5	(6.8)	20.3	(5.0)
Cow colostrum	3.8	(3.6)	0.4	(0.4)	0.2	(0.2)	0.0	(—)	1.0	(0.6)	0.7	(0.4)
Other	0.0	(—)	0.0	(—)	0.4	(0.3)	0.0	(—)	0.3	(0.2)	0.2	(0.2)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Buck kids												
Individual doe unpasteurized colostrum ²	63.1	(7.9)	76.4	(5.6)	69.1	(8.0)	82.0	(5.9)	65.4	(6.3)	71.0	(4.7)
Individual doe pasteurized colostrum	1.3	(0.9)	2.5	(0.9)	1.2	(0.6)	2.5	(1.1)	1.3	(0.4)	1.7	(0.5)

¹Refers to the 21.3 percent of doe and buck kids that were hand-fed colostrum (table B.4.c.) on the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.).

²Includes kids that nursed at the first feeding.

B.4.o. (cont'd.) For doe and buck kids that were hand-fed colostrum¹ (table B.4.c.), percentage of doe and buck kids by source of first colostrum feeding, and by herd size and region:

Percent Kids												
Source	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Pooled (mixed from multiple does) unpasteurized colostrum	10.8	(5.2)	5.8	(2.3)	6.0	(2.5)	4.7	(2.7)	7.4	(2.1)	6.5	(1.7)
Pooled (mixed from multiple does) pasteurized colostrum	1.9	(1.3)	1.1	(0.4)	6.9	(3.0)	1.9	(0.8)	5.3	(2.2)	4.1	(1.5)
Commercial colostrum replacer or supplements	19.5	(7.1)	13.9	(4.8)	16.2	(6.3)	8.8	(4.2)	19.2	(5.2)	15.7	(3.8)
Cow colostrum	3.4	(3.2)	0.5	(0.4)	0.2	(0.2)	0.0	(—)	1.1	(0.7)	0.7	(0.5)
Other	0.0	(—)	0.0	(—)	0.4	(0.3)	0.0	(—)	0.3	(0.2)	0.2	(0.2)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Doe or buck kids												
Individual doe unpasteurized colostrum ²	64.1	(8.0)	72.1	(6.6)	68.1	(8.0)	83.4	(5.1)	62.4	(6.5)	69.2	(4.9)
Individual doe pasteurized colostrum	1.2	(0.9)	2.4	(0.9)	1.4	(0.6)	2.8	(1.2)	1.3	(0.4)	1.8	(0.5)
Pooled (mixed from multiple does) unpasteurized colostrum	8.7	(4.2)	5.3	(2.0)	5.8	(2.4)	5.1	(2.8)	6.3	(1.8)	5.9	(1.5)
Pooled (mixed from multiple does) pasteurized colostrum	2.0	(1.3)	1.1	(0.4)	7.0	(3.0)	2.1	(0.9)	5.1	(2.1)	4.1	(1.4)
Commercial colostrum replacer or supplements	20.4	(7.2)	18.7	(6.4)	17.1	(6.2)	6.6	(3.1)	23.5	(5.7)	18.1	(4.1)
Cow colostrum	3.6	(3.4)	0.5	(0.4)	0.2	(0.2)	0.0	(—)	1.0	(0.7)	0.7	(0.5)
Other	0.0	(—)	0.0	(—)	0.4	(0.3)	0.0	(—)	0.3	(0.2)	0.2	(0.2)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

¹Refers to the 21.3 percent of doe and buck kids that were hand-fed colostrum (table B.4.c.) on the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.).

²Includes kids that nursed at the first feeding.

For the doe and buck kids that were hand-fed colostrum, a higher percentage of doe or buck kids on dairy operations received the first feeding of colostrum from individual doe pasteurized colostrum (3.2 percent) or pooled pasteurized colostrum (8.9 percent) than meat operations (0.0 and 0.0 percent, respectively).

B.4.p. [C12] For doe and buck kids that were hand-fed colostrum¹ (table B.4.c.), percentage of doe and buck kids by source of first colostrum feeding, and primary production of the operation:

Percent Kids						
Primary Production of the Operation						
Source	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids						
Individual doe unpasteurized colostrum ²	74.4	(6.5)	61.9	(8.7)	65.7	(16.5)
Individual doe pasteurized colostrum	0.1	(0.1)	3.3	(1.1)	2.0	(1.3)
Pooled (mixed from multiple does) unpasteurized colostrum	8.8	(3.3)	3.4	(1.2)	3.2	(2.3)
Pooled (mixed from multiple does) pasteurized colostrum	0.0	(0.0)	8.9	(3.4)	1.4	(0.9)
Commercial colostrum replacer or supplements	16.2	(5.1)	20.8	(6.9)	27.6	(17.4)
Cow colostrum	0.5	(0.4)	1.2	(1.0)	0.0	(—)
Other	0.0	(—)	0.5	(0.4)	0.0	(—)
Total	100.0		100.0		100.0	
Buck kids						
Individual doe unpasteurized colostrum ²	72.7	(6.7)	66.0	(8.7)	80.3	(7.3)
Individual doe pasteurized colostrum	0.0	(0.0)	3.0	(1.1)	2.4	(1.5)
Pooled (mixed from multiple does) unpasteurized colostrum	10.1	(3.6)	4.1	(1.4)	3.9	(2.7)
Pooled (mixed from multiple does) pasteurized colostrum	0.0	(0.0)	8.9	(3.6)	1.7	(1.0)
Commercial colostrum replacer or supplements	16.8	(5.2)	16.3	(6.9)	11.6	(6.2)
Cow colostrum	0.4	(0.4)	1.3	(1.0)	0.0	(—)
Other	0.0	(—)	0.5	(0.4)	0.0	(—)
Total	100.0		100.0		100.0	
Doe or buck kids						
Individual doe unpasteurized colostrum ²	73.5	(6.5)	63.9	(8.6)	72.3	(11.3)
Individual doe pasteurized colostrum	0.0	(0.0)	3.2	(1.1)	2.2	(1.3)
Pooled (mixed from multiple does) unpasteurized colostrum	9.5	(3.4)	3.7	(1.3)	3.6	(2.4)
Pooled (mixed from multiple does) pasteurized colostrum	0.0	(0.0)	8.9	(3.5)	1.6	(0.9)
Commercial colostrum replacer or supplements	16.5	(5.0)	18.6	(6.8)	20.4	(11.2)
Cow colostrum	0.4	(0.4)	1.2	(1.0)	0.0	(—)
Other	0.0	(—)	0.5	(0.4)	0.0	(—)
Total	100.0		100.0		100.0	

¹Refers to the 21.3 percent of doe and buck kids that were hand-fed colostrum (table B.4.c.) on the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.).

²Includes kids that nursed at the first feeding.

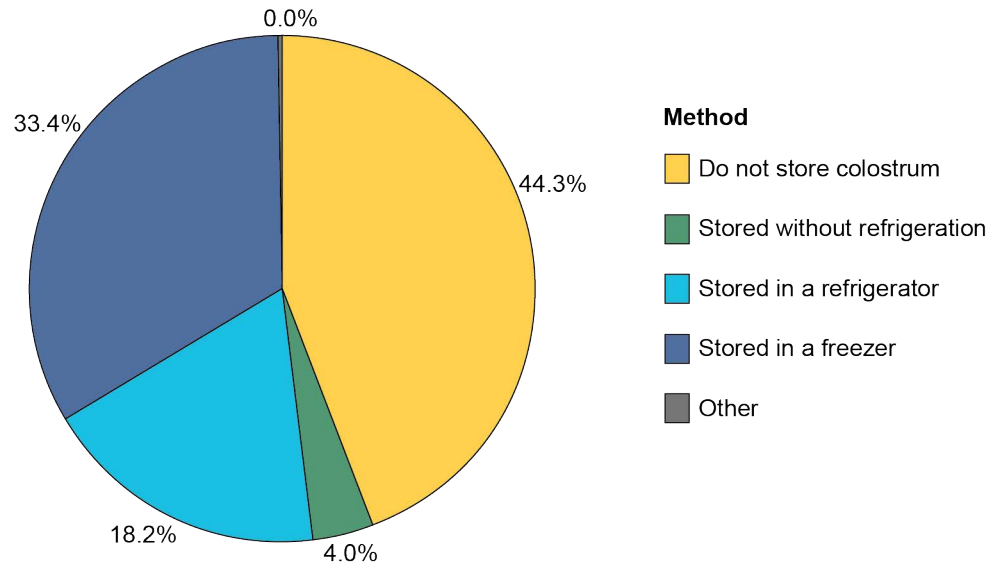
For operations that hand-fed colostrum to doe or buck kids, most operations either did not store colostrum (44.3 percent) or they stored colostrum in the freezer (33.4 percent). There were no differences by herd size or region in the percentage of operations by primary method used to store colostrum.

B.4.q. For operations that hand-fed colostrum to doe or buck kids* (table B.4.a.), percentage of operations by primary method used to store colostrum, and by herd size and region:

Percent Operations												
Method	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Do not store colostrum	52.2	(8.5)	39.9	(7.8)	28.6	(9.2)	32.7	(9.9)	49.8	(6.6)	44.3	(5.6)
Stored without refrigeration	2.3	(1.4)	6.7	(4.0)	1.2	(0.7)	6.3	(5.2)	3.0	(1.4)	4.0	(1.9)
Stored in a refrigerator	17.1	(6.0)	17.4	(6.1)	26.0	(11.7)	13.5	(7.5)	20.5	(4.8)	18.2	(4.1)
Stored in a freezer	28.4	(7.3)	36.0	(7.2)	44.2	(14.1)	47.4	(9.0)	26.8	(5.5)	33.4	(4.9)
Other	0.1	(0.1)	0.0	(—)	0.0	(—)	0.1	(0.1)	0.0	(—)	0.0	(0.0)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

*Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

For operations that hand-fed colostrum to doe or buck kids (table B.4.a.), percentage of operations by primary method used to store colostrum



*Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

For operations that hand-fed colostrum to doe or buck kids, a higher percentage of meat operations (55.2 percent) did not store colostrum than dairy operations (20.0 percent).

B.4.r. For operations that hand-fed colostrum to doe or buck kids* (table B.4.a.), percentage of operations by primary method used to store colostrum, and by primary production of the operation:

Percent Operations						
Primary Production						
Method	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Do not store colostrum	55.2	(8.3)	20.0	(6.7)	52.9	(11.6)
Stored without refrigeration	6.6	(3.6)	1.3	(0.9)	1.6	(1.5)
Stored in a refrigerator	17.2	(6.2)	26.6	(7.9)	8.1	(4.2)
Stored in a freezer	21.0	(6.0)	52.0	(9.5)	37.4	(11.1)
Other	0.0	(—)	0.1	0.1	0.0	(—)
Total	100.0		100.0		100.0	

*Refers to the 32.0 percent of operations overall that hand-fed colostrum to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 37.7 percent hand-fed colostrum to any doe or buck kids during the most recently completed kidding period (table B.4.a.).

5. Liquid diet

While newborn kids require a liquid milk-based diet to survive, the method for administration of the milk-based diet may vary across operations. Some operations may have kids nurse directly from the doe, while others may provide some other type of liquid diet solely, or in addition to nursing. Providing other liquid diets may allow operations to pasteurize milk prior to feeding it, or to feed medicated milk replacer to help control disease, if necessary. A liquid diet may be provided through a bottle, bucket, or other type of feeding system, and this equipment should be cleaned and disinfected regularly.

For operations that had any kids born on the operation in the previous 12 months, the majority of operations had doe kids (91.6 percent), buck kids (89.6 percent), and doe or buck kids (93.0 percent) nurse only as their liquid diet. A higher percentage of medium operations (94.3 percent) had buck kids nurse only for their liquid diet than small operations (86.3 percent). There were no differences by region in the percentage of operations by method used to feed any doe kids, buck kids, and doe or buck kids from the most recent kid crop.

B.5.a. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by method used to feed liquid diets to any doe and buck kids from the most recent kid crop, and by herd size and region:

Method	Percent Operations									
	Herd size (number of goats and kids)						Region			
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids										
Nursing only	90.8	(2.9)	93.8	(1.1)	85.8	(4.0)	95.2	(1.0)	90.1	(2.2)
Both nursing and other liquid diet	14.2	(3.8)	9.4	(2.8)	26.5	(6.9)	12.1	(4.0)	13.6	(2.8)
Other liquid diet only	12.6	(3.3)	22.1	(4.3)	21.1	(4.9)	17.3	(4.6)	17.1	(3.0)
Any liquid diet other than nursing*	24.0	(4.5)	29.1	(4.6)	44.0	(8.2)	25.5	(5.2)	28.6	(3.7)
Buck kids										
Nursing only	86.3	(3.2)	94.3	(1.0)	85.9	(3.9)	88.4	(4.0)	90.1	(1.8)
Both nursing and other liquid diet	15.1	(3.7)	10.0	(3.0)	26.8	(6.9)	12.2	(4.1)	14.6	(2.9)
Other liquid diet only	15.8	(4.0)	21.4	(4.4)	21.9	(5.1)	24.8	(5.4)	16.0	(3.1)
Any liquid diet other than nursing*	29.1	(5.0)	27.8	(4.6)	44.1	(8.2)	30.6	(5.6)	29.3	(4.0)

*Includes “both nursing and other liquid diet” and “other liquid diet only.”

B.5.a. (cont'd.) For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by method used to feed liquid diets to any doe and buck kids from the most recent kid crop, and by herd size and region:

Method	Percent Operations											
	Herd size (number of goats and kids)						Region					
	Small		Medium		Large		West		East		All Operations	
	(5–19)		(20–99)		(100 or More)							
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe or buck kids												
Nursing only	92.9	(2.3)	94.4	(1.0)	85.9	(3.9)	95.2	(1.0)	92.0	(1.8)	93.0	(1.3)
Both nursing and other liquid diet	18.7	(4.0)	11.8	(3.1)	28.4	(7.0)	15.3	(4.6)	17.1	(3.0)	16.6	(2.5)
Other liquid diet only	19.0	(4.2)	23.9	(4.5)	22.5	(5.1)	27.3	(5.4)	18.8	(3.3)	21.3	(2.8)
Any liquid diet other than nursing*	33.7	(5.1)	31.7	(4.7)	45.8	(8.3)	34.9	(5.6)	33.3	(4.0)	33.8	(3.3)

*Includes “both nursing and other liquid diet” and “other liquid diet only.”

For operations that had any kids born on the operation during the previous 12 months, a higher percentage of meat and other operations (99.1 and 94.4 percent, respectively) had doe or buck kids nurse only for their liquid diet than dairy operations (73.4 percent).

B.5.b. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of operations by method used to feed liquid diets to any doe and buck kids from the most recent kid crop, and by primary production of the operation:

Percent Operations						
Primary Production						
Method	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids						
Nursing only	97.6	(1.5)	71.7	(5.7)	93.6	(1.7)
Both nursing and other liquid diet	11.6	(3.2)	22.1	(6.3)	9.4	(2.8)
Other liquid diet only	19.1	(4.1)	21.7	(3.6)	8.2	(2.8)
Any liquid diet other than nursing*	26.5	(4.6)	43.3	(6.4)	17.2	(4.0)
Buck kids						
Nursing only	96.0	(2.0)	66.4	(5.7)	93.3	(1.9)
Both nursing and other liquid diet	10.2	(3.1)	27.3	(6.0)	11.8	(3.8)
Other liquid diet only	22.2	(4.3)	17.9	(3.1)	9.9	(3.4)
Any liquid diet other than nursing*	28.8	(4.7)	45.1	(6.1)	18.6	(4.4)
Doe or buck kids						
Nursing only	99.1	(0.4)	73.4	(5.6)	94.4	(1.6)
Both nursing and other liquid diet	13.3	(3.4)	29.1	(6.1)	14.4	(4.0)
Other liquid diet only	24.1	(4.4)	23.8	(4.0)	12.1	(3.9)
Any liquid diet other than nursing*	32.9	(4.9)	47.6	(6.2)	23.2	(5.0)

*Includes "both nursing and other liquid diet" and "other liquid diet only."

For operations that had any kids born on the operation in the previous 12 months, the highest percentage of doe kids (79.5 percent), buck kids (79.0 percent), and doe or buck kids (79.3 percent) nursed only for their liquid diet. A higher percentage of doe kids on large operations (30.5 percent) than doe kids on medium operations (13.0 percent) received any liquid diet other than nursing. A higher percentage of buck kids on large operations (27.6 percent) received an “other liquid diet only” than buck kids on small and medium operations (8.8 and 9.1 percent, respectively). A higher percentage of buck or doe kids on large operations (28.1 percent) received an “other liquid diet only” than buck or doe kids on small or medium operations (8.1 and 9.2 percent, respectively). There were no differences by region in the percentage of doe kids, buck kids, and doe or buck kids by method used to feed liquid diets.

B.5.c. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of kids by method used to feed liquid diets to doe and buck kids from the most recent kid crop, and by herd size and region:

Percent Kids												
Method	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids												
Nursing only	85.8	(2.9)	87.0	(2.1)	69.5	(6.8)	83.4	(4.8)	76.4	(3.6)	79.5	(2.9)
Both nursing and other liquid diet	6.8	(2.3)	3.6	(1.0)	2.0	(0.6)	2.5	(0.8)	4.2	(0.9)	3.4	(0.6)
Other liquid diet only	7.4	(1.9)	9.4	(1.5)	28.5	(6.7)	14.1	(4.7)	19.4	(3.5)	17.1	(2.9)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Any liquid diet other than nursing*	14.2	(2.9)	13.0	(2.1)	30.5	(6.8)	16.6	(4.8)	23.6	(3.6)	20.5	(2.9)
Buck kids												
Nursing only	83.5	(2.9)	86.7	(2.4)	69.6	(6.7)	82.0	(5.0)	76.7	(3.5)	79.0	(2.9)
Both nursing and other liquid diet	7.7	(2.2)	4.2	(1.2)	2.8	(1.0)	2.9	(1.0)	5.1	(1.1)	4.1	(0.8)
Other liquid diet only	8.8	(2.1)	9.1	(1.6)	27.6	(6.7)	15.1	(4.8)	18.2	(3.6)	16.8	(2.9)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Any liquid diet other than nursing*	16.5	(2.9)	13.3	(2.4)	30.4	(6.7)	18.0	(5.0)	23.3	(3.5)	21.0	(2.9)
Doe or buck kids												
Nursing only	84.6	(2.7)	86.9	(2.2)	69.6	(6.7)	82.7	(4.9)	76.5	(3.5)	79.3	(2.9)
Both nursing and other liquid diet	7.2	(2.2)	3.9	(1.1)	2.4	(0.7)	2.7	(0.9)	4.6	(1.0)	3.8	(0.7)
Other liquid diet only	8.1	(1.8)	9.2	(1.5)	28.1	(6.7)	14.6	(4.7)	18.8	(3.5)	17.0	(2.9)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Any liquid diet other than nursing*	15.4	(2.7)	13.1	(2.2)	30.4	(6.7)	17.3	(4.9)	23.5	(3.5)	20.7	(2.9)

*Includes “both nursing and other liquid diet” and “other liquid diet only.”

For operations that had any kids born on the operation during the previous 12 months, a higher percentage of doe or buck kids on meat and other operations (94.9 and 92.2 percent, respectively) nursed only than doe or buck kids on dairy operations (38.1 percent). A higher percentage of doe or buck kids on dairy operations (53.1 percent) received an “other liquid diet only” compared with doe or buck kids on meat or other operations (3.6 and 4.4 percent, respectively).

B.5.d. For the 85.0 percent of operations that had any kids born on the operation during the previous 12 months (table B.1.a.), percentage of kids by method used to feed liquid diets to doe and buck kids from the most recent kid crop, and by primary production of the operation:

Percent Kids						
Primary Production						
Method	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Doe kids						
Nursing only	95.3	(1.4)	37.8	(7.9)	92.5	(2.1)
Both nursing and other liquid diet	1.4	(0.6)	7.8	(2.1)	3.3	(1.3)
Other liquid diet only	3.3	(1.0)	54.3	(8.0)	4.2	(1.5)
Total	100.0		100.0		100.0	
Any liquid diet other than nursing*	4.7	(1.4)	62.2	(7.9)	7.5	(2.1)
Buck kids						
Nursing only	94.5	(1.7)	38.3	(7.9)	91.8	(2.2)
Both nursing and other liquid diet	1.6	(0.7)	9.8	(2.5)	3.6	(1.3)
Other liquid diet only	3.8	(1.1)	51.9	(8.0)	4.6	(1.6)
Total	100.0		100.0		100.0	
Any liquid diet other than nursing*	5.5	(1.7)	61.7	(7.9)	8.2	(2.2)
Doe or buck kids						
Nursing only	94.9	(1.5)	38.1	(7.9)	92.2	(2.1)
Both nursing and other liquid diet	1.5	(0.7)	8.8	(2.2)	3.4	(1.3)
Other liquid diet only	3.6	(1.0)	53.1	(8.0)	4.4	(1.5)
Total	100.0		100.0		100.0	
Any liquid diet other than nursing*	5.1	(1.5)	61.9	(7.9)	7.8	(2.1)

*Includes “both nursing and other liquid diet” and “other liquid diet only.”

For operations that fed any liquid diet other than nursing only, 35.1 percent of all operations, representing 27.1 percent of doe or buck kids, fed unpasteurized goat milk. A higher percentage of doe or buck kids were fed unpasteurized goat milk (27.1 percent) than pasteurized goat milk (8.8 percent), unpasteurized waste goat milk (0.4 percent), or pasteurized waste goat milk (1.8 percent).

B.5.e. For operations that fed any liquid diet other than nursing only¹ (table B.5.a.), percentage of operations that fed any doe or buck kids the following types of liquid diet, and percentage of doe kids, buck kids, and doe or buck kids, by type of liquid diet fed:

Liquid Diet	Percent operations		Percent doe kids²		Percent buck kids²		Percent doe or buck kids²	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Unpasteurized goat milk	35.1	(5.1)	26.4	(5.3)	27.8	(5.4)	27.1	(5.3)
Pasteurized goat milk	6.6	(1.4)	8.9	(2.0)	8.7	(2.0)	8.8	(2.0)
Unpasteurized waste goat milk	0.4	(0.2)	0.3	(0.2)	0.5	(0.2)	0.4	(0.2)
Pasteurized waste goat milk	0.4	(0.2)	1.9	(1.4)	1.6	(1.4)	1.8	(1.4)
Cow milk	18.8	(4.9)	11.1	(2.7)	10.4	(2.6)	10.7	(2.6)
Nonmedicated goat milk replacer	29.9	(5.4)	29.0	(6.1)	31.3	(6.2)	30.1	(6.1)
Medicated goat milk replacer	14.9	(4.1)	21.9	(5.9)	19.1	(5.9)	20.5	(5.9)
Nonmedicated cow milk replacer	6.6	(3.4)	6.7	(3.3)	6.4	(3.3)	6.6	(3.3)
Medicated cow milk replacer	3.6	(2.6)	5.0	(2.8)	5.0	(2.8)	5.0	(2.8)
Other liquid diet ³	6.6	(3.2)	8.7	(5.1)	8.7	(5.2)	8.7	(5.2)

¹Refers to the 28.7 percent of operations overall that hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 33.8 percent hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period (table B.5.a.).

²Kids may have been fed multiple diet types.

³Common "other" liquid diets listed included cross-species or other species milk replacer, and various supplements, such as buttermilk, whole milk, evaporated milk, yogurt, and Gatorade®.

For operations that fed medicated cow milk replacer, the highest percentage of operations (82.0 percent) fed a milk replacer that contained Deccox®. An operation could select more than one of the listed medications.

B.5.f. For operations that fed medicated cow milk replacer* (table B.5.e.), percentage of operations by type of medications in the milk replacer:

Medication	Percent operations	Std. error
CTC (chlortetracycline)	0.0	(—)
OTC (oxytetracycline)	0.0	(—)
NT, Neo-Terramycin®, Neo-Oxy (neomycin and oxytetracycline)	3.2	(3.1)
Deccox® (decoquinat)	82.0	(14.7)
Bovatec® (lasalocid)	8.7	(7.2)
Other	0.0	(—)

*Refers to the 1.0 percent of operations overall that fed medicated cow milk replacer. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 33.8 percent hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period (table B.5.a.), of which 3.6 percent fed medicated cow milk replacer (table B.5.e.).

For operations that fed any liquid diet other than nursing only, most operations (91.0 percent) used a bottle to feed kids, representing 72.6 percent of doe kids and 72.2 percent of buck kids.

B.5.g. For operations that fed any liquid diet other than nursing only¹ (table B.5.a.), percentage of operations that used the following types of equipment to feed any doe or buck kids, and percentage of doe kids, buck kids, and doe or buck kids, by type of equipment used to feed liquid diet:

Equipment	Percent operations		Percent doe kids ²		Percent buck kids ²		Percent doe or buck kids ²	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Bottle	91.0	(2.8)	72.6	(6.2)	72.2	(6.2)	72.4	(6.2)
Bucket	10.9	(3.6)	10.9	(2.5)	10.8	(2.5)	10.9	(2.5)
Trough or mob feeder (e.g., milk bar)	6.3	(1.3)	26.5	(6.3)	26.5	(6.3)	26.5	(6.3)
In-line milk feeding system (free choice)	0.8	(0.4)	4.5	(2.4)	4.4	(2.4)	4.4	(2.4)
Other ³	1.3	(0.9)	0.6	(0.6)	0.8	(0.6)	0.7	(0.6)

¹Refers to the 28.7 percent of operations overall that hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 33.8 percent hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period (table B.5.a.).

²Kids may have been fed using more than one method.

³Common "other" equipment listed included syringe, cup-feeding, and tube-feeding.

For operations that fed any liquid diet other than nursing only, the highest percentage of all operations (80.3 percent) cleaned the milk feeding equipment after each feeding. A higher percentage of large operations (94.9 percent) cleaned the feeding equipment after each feeding than medium operations (77.5 percent). Only operations in the West region (0.4 percent) cleaned the feeding equipment after kids were moved. For operations that fed any liquid diet other than nursing only, most operations never disinfected feeding equipment (47.5 percent) or disinfected feeding equipment after each feeding (34.5 percent). There were no differences by herd size or region in frequency that the feeding equipment was disinfected.

B.5.h. For operations that fed any liquid diet other than nursing only¹ (table B.5.a.), percentage of operations by frequency that the milk feeding equipment was cleaned or disinfected, and by herd size and region:

Percent Operations											
Frequency	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Cleaned											
Never cleaned	5.0	(4.8)	0.6	(0.6)	0.0	(—)	8.2	(7.9)	0.4	(0.4)	2.8 (2.6)
After the kids were weaned and moved	0.0	(0.0)	0.3	(0.3)	0.0	(—)	0.4	(0.4)	0.0	(—)	0.1 (0.1)
Less than once a day	5.6	(4.7)	4.7	(2.9)	1.6	(0.8)	0.7	(0.3)	6.7	(3.8)	4.8 (2.7)
Once a day	9.9	(5.1)	16.9	(6.5)	3.6	(1.8)	4.0	(1.8)	15.5	(5.2)	11.9 (3.7)
After each feeding	79.5	(7.9)	77.5	(6.9)	94.9	(2.0)	86.8	(8.0)	77.4	(6.1)	80.3 (4.9)
Other	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)	0.0 (—)
Total	100.0		100.0		100.0		100.0		100.0		100.0
Disinfected ³											
Never disinfected	51.0	(9.1)	46.9	(8.7)	32.6	(7.3)	46.2	(10.9)	48.1	(6.7)	47.5 (5.8)
After the kids were weaned and moved	0.7	(0.7)	1.1	(0.5)	2.0	(0.9)	0.8	(0.4)	1.1	(0.6)	1.0 (0.4)
Less than once a day	4.8	(4.7)	6.3	(2.0)	18.7	(11.5)	3.2	(1.3)	8.4	(4.1)	6.8 (2.9)
Once a day	6.3	(2.2)	14.3	(6.7)	10.8	(6.2)	12.4	(8.0)	8.6	(2.4)	9.8 (3.0)
After each feeding	37.2	(8.8)	31.1	(7.9)	33.3	(11.5)	36.0	(11.1)	33.8	(6.4)	34.5 (5.6)
Other ²	0.0	(—)	0.3	(0.3)	2.6	(2.6)	1.2	(0.9)	0.0	(—)	0.4 (0.3)
Total	100.0		100.0		100.0		100.0		100.0		100.0

¹Refers to the 28.7 percent of operations overall that hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 33.8 percent hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period (table B.5.a.).

²Substantial “other” disinfection frequencies included as needed.

³A chemical disinfectant includes 1:10 bleach dilution, phenolic product (1 Stroke Environ® or SynPhenol-3®) or an accelerated hydrogen peroxide product (Intervention®).

For operations that fed a liquid diet other than nursing only, there were no differences by primary production of the operation in the percentage of operations by the frequency that milk feeding equipment was cleaned or disinfected.

B.5.i. For operations that fed any liquid diet other than nursing only¹ (table B.5.a.), percentage of operations by frequency that the milk feeding equipment was cleaned or disinfected, and by primary production of the operation:

Percent Operations						
Primary Production						
Frequency	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Cleaned						
Never cleaned	4.6	(4.5)	0.8	(0.8)	0.0	(—)
After the kids were weaned and moved	0.0	(—)	0.4	(0.4)	0.0	(—)
Less than once a day	7.9	(4.7)	1.1	(0.4)	0.6	(0.6)
Once a day	7.3	(4.5)	20.5	(8.5)	12.4	(6.0)
After each feeding	80.2	(7.4)	77.1	(8.6)	87.0	(6.0)
Other	0.0	(—)	0.0	(—)	0.0	(—)
Total	100.0		100.0		100.0	
Disinfected ³						
Never disinfected	54.4	(9.0)	42.8	(7.9)	31.4	(10.4)
After the kids were weaned and moved	1.0	(0.6)	1.3	(0.6)	0.5	(0.5)
Less than once a day	7.9	(5.0)	5.9	(1.5)	4.5	(2.4)
Once a day	6.9	(4.7)	13.8	(4.2)	12.7	(5.9)
After each feeding	29.3	(8.5)	35.9	(8.6)	50.9	(10.6)
Other ²	0.5	(0.5)	0.4	(0.4)	0.0	(—)
Total	100.0		100.0		100.0	

¹Refers to the 28.7 percent of operations overall that hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 33.8 percent hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period (table B.5.a.).

²Substantial "other" disinfection frequencies included as needed.

³A chemical disinfectant includes 1:10 bleach dilution, phenolic product (1 Stroke Environ® or SynPhenol-3®) or an accelerated hydrogen peroxide product (Intervention®).

For operations that fed any liquid diet other than nursing only, about half of all operations (49.9 percent) both cleaned and disinfected the milk feeding equipment and about half of all operations (47.3 percent) cleaned but never disinfected feeding equipment. Only small operations (5.0 percent) and operations in the West region (8.2 percent) never cleaned but disinfected feeding equipment.

B.5.j. For operations that fed any liquid diet other than nursing only¹ (table B.5.a.), percentage of operations by frequency that the milk feeding equipment was cleaned and/or disinfected, and by herd size and region:

Percent Operations

Cleaning and Disinfecting Frequency ²	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Never cleaned and never disinfected	0.0	(—)	0.6	(0.6)	0.0	(—)	0.0	(—)	0.4	(0.4)	0.2	(0.2)
Cleaned but never disinfected	51.0	(9.1)	46.2	(8.7)	32.6	(7.3)	46.2	(10.9)	47.8	(6.7)	47.3	(5.8)
Never cleaned but disinfected	5.0	(4.8)	0.0	(—)	0.0	(—)	8.2	(7.9)	0.0	(—)	2.6	(2.5)
Both cleaned and disinfected	44.1	(9.0)	53.1	(8.7)	67.4	(7.3)	45.5	(11.2)	51.9	(6.7)	49.9	(5.8)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Both cleaned and disinfected after each feeding	32.2	(8.5)	30.8	(7.9)	33.2	(11.5)	27.8	(10.0)	33.6	(6.4)	31.8	(5.4)

¹Refers to the 28.7 percent of operations overall that hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 33.8 percent hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period (table B.5.a.).

²For the cleaning and disinfecting combinations, “cleaned” includes if the respondent cleaned kidding areas at all and “disinfected” includes if the respondent disinfected kidding areas at all. “Other” responses were recategorized into one of these categories based upon write-in answers.

For operations that fed any liquid diet other than nursing only, only dairy operations (0.8 percent) never cleaned and never disinfected the feeding equipment and only meat operations (4.6 percent) never cleaned but disinfected feeding equipment.

B.5.k. For operations that fed any liquid diet other than nursing only¹ (table B.5.a.), percentage of operations by frequency that the milk feeding equipment was cleaned and/or disinfected, and by primary production of the operation:

	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
Cleaning and Disinfecting Frequency ²	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Never cleaned and never disinfected	0.0	(—)	0.8	(0.8)	0.0	(—)
Cleaned but never disinfected	54.4	(9.0)	42.0	(7.9)	31.4	(10.4)
Never cleaned but disinfected	4.6	(4.5)	0.0	(—)	0.0	(—)
Both cleaned and disinfected	41.0	(9.0)	57.1	(7.9)	68.6	(10.4)
Total	100.0		100.0		100.0	
Both cleaned and disinfected after each feeding	24.6	(7.9)	35.8	(8.7)	50.3	(10.6)

¹Refers to the 28.7 percent of operations overall that hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period. This estimate comes from the 85.0 percent of operations that had any kids born on the operation in the previous 12 months (table B.1.a.), of which 33.8 percent hand-fed liquid diet to any doe or buck kids during the most recently completed kidding period (table B.5.a.).

²For the cleaning and disinfecting combinations, "cleaned" includes if the respondent cleaned kidding areas at all and "disinfected" includes if the respondent disinfected kidding areas at all. "Other" responses were recategorized into one of these categories based upon write-in answers.

C. Parasite Control

Internal parasites, also referred to as gastrointestinal or GI parasites, are a major health concern for goats and sheep worldwide. Parasites have become resistant to anthelmintics commonly used to treat internal parasites in goats, resulting in herds with increased parasite burdens. Ultimately, increased parasite burdens lead to increased production costs and lower profits. There are various tools and management techniques operators can implement to minimize parasite burdens on their operation. More information regarding parasite control in small ruminants can be found at <https://www.wormx.info/>

1. FAMACHA® card

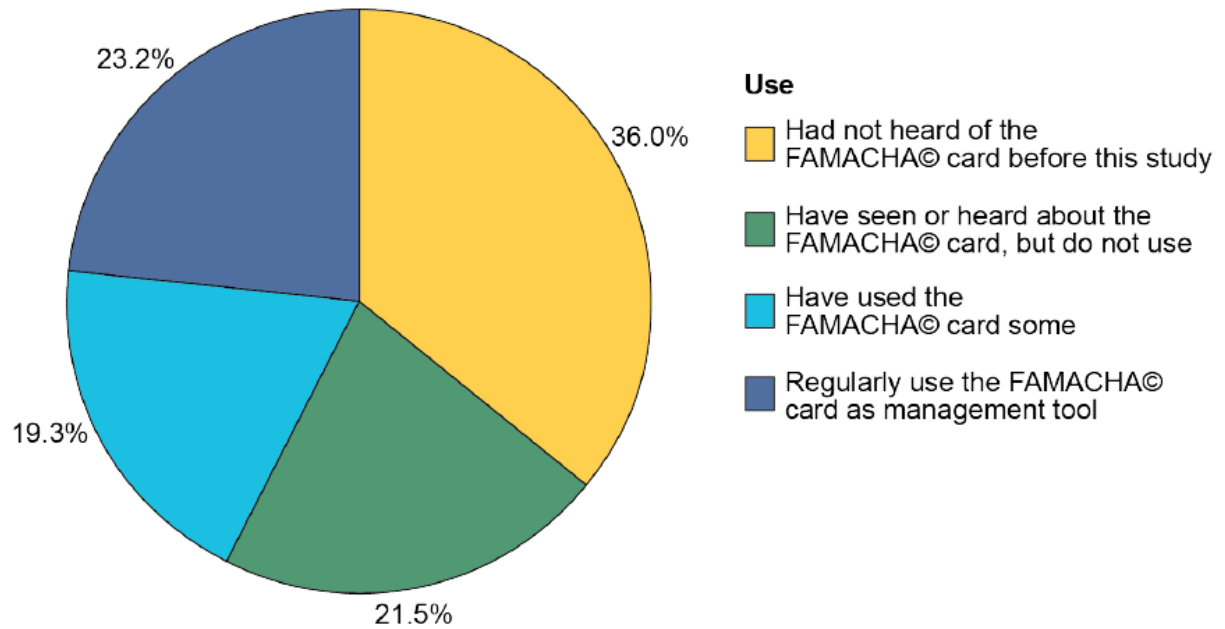
The FAMACHA® card/eye color score is a relatively simple method for classifying the level of anemia in goats and provides a method for selectively deworming clinically parasitized animals. *Haemonchus contortus*, the barberpole worm, is the primary gastrointestinal parasite of concern found in U.S. goats. Common symptoms of barberpole worm infection include anemia (pale mucous membranes), edema (bottle jaw), and death. The FAMACHA® card can be used to classify the level of clinical anemia in goats, and in conjunction with Integrated Parasite Management (IPM), help decide which goats should be dewormed or culled thereby reducing the use of dewormers, saving money, and reducing opportunities for resistance to develop.

While the highest percentage of all operations (36.0 percent) had not heard of the FAMACHA® card before this study, 23.2 percent of all operations regularly use the FAMACHA® card as a management tool. There were no differences by herd size in the percentage of operations by use of the FAMACHA® card/eye color score. A higher percentage of operations in the East region (29.1 percent) regularly use the FAMACHA® card as a management tool than operations in the West region (9.4 percent).

C.1.a. Percentage of operations by use of the FAMACHA® card/eye color score, and by herd size and region:

Use	Percent Operations									
	Herd size (number of goats and kids)						Region			
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Had not heard of the FAMACHA® card before this study	39.5	(4.6)	32.0	(4.9)	27.8	(7.8)	45.0	(5.7)	32.0	(3.8)
Have seen or heard about the FAMACHA® card, but do not use	19.4	(3.6)	22.3	(3.9)	35.9	(9.3)	25.4	(5.1)	19.8	(3.2)
Have used the FAMACHA® card some	20.9	(4.2)	18.6	(3.6)	9.6	(2.7)	20.1	(4.6)	19.0	(3.4)
Regularly use the FAMACHA® card as management tool	20.2	(3.3)	27.1	(4.1)	26.6	(6.9)	9.4	(2.8)	29.1	(3.3)
Total	100.0		100.0		100.0		100.0		100.0	
Any use of the FAMACHA® card*	41.1	(4.6)	45.7	(4.8)	36.3	(7.6)	29.5	(4.9)	48.2	(3.9)

*Includes if the respondent selected either that they had used the FAMACHA® card some or regularly use the FAMACHA® card as a management tool.

Percentage of operations by use of the FAMACHA® card/eye color score

There were no differences by primary production of the operation in the percentage of operations by use of the FAMACHA® card/eye color score.

C.1.b. Percentage of operations by use of the FAMACHA® card/eye color score, and by primary production of the operation:

Percent Operations						
Primary Production						
Use	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Had not heard of the FAMACHA® card before this study	41.9	(4.7)	24.0	(5.9)	32.9	(6.1)
Have seen or heard about the FAMACHA® card, but do not use	18.6	(3.5)	31.5	(6.3)	19.3	(4.7)
Have used the FAMACHA® card some	19.4	(3.8)	20.4	(4.7)	18.2	(5.5)
Regularly use the FAMACHA® card as management tool	20.2	(3.2)	24.1	(5.9)	29.6	(6.0)
Total	100.0		100.0		100.0	
Any use of the FAMACHA® card*	39.5	(4.4)	44.5	(6.9)	47.8	(6.6)

*Includes if the respondent selected either that they had used the FAMACHA® card some or regularly use the FAMACHA® card as a management tool.

For operations that used the FAMACHA® card, the most common purpose for use of the FAMACHA® card on all operations (86.1 percent) was to selectively deworm goats or kids (i.e., only goats with certain scores are dewormed).

C.1.c. For the 42.5 percent of operations that used the FAMACHA® card (table C.1.a.), percentage of operations by purpose:

Purpose	Percent operations	Std. error
Identify or cull worm-susceptible goats or kids	51.9	(4.5)
Selectively deworm goats or kids (e.g., only goats with certain scores are dewormed)	86.1	(3.2)
Other*	8.3	(2.8)

*Common "other" purposes listed included general health assessment, identify when to deworm the whole herd, to monitor parasite problems, to select for fecal testing, as a learning tool to know more about their herd, and as a response to poor health.

2. Testing for internal parasites

Anthelmintic resistance results in herds with increased parasite burdens which lead to increased production costs and lower profits. Testing goats for internal parasites can help producers selectively deworm the goats with the highest parasite loads. Additionally, a fecal egg count reduction test (FECRT) or a DrenchRite® test can help an operation know which anthelmintics will be effective on their operation.

Overall, 21.6 percent of operations tested any goats for internal parasites by any fecal test method during the previous 12 months. There were no differences by herd size or region in the percentage of operations that tested any goats for internal parasites by any fecal test method during the previous 12 months.

C.2.a. Percentage of operations that tested any goats for internal parasites by any fecal test method during the previous 12 months, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
17.4	(3.4)	26.8	(4.3)	29.0	(6.3)	19.8	(4.1)	22.4	(3.3)	21.6 (2.6)

There were no differences by primary production of the operation in the percentage of operations that tested any goats for internal parasites by any fecal test method during the previous 12 months.

C.2.b. Percentage of operations that tested any goats for internal parasites by any fecal test method during the previous 12 months, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
18.2	(3.5)	28.5	(5.9)	23.8	(5.4)

A higher percentage of goats on small and medium operations (7.0 and 10.7 percent, respectively) were tested for internal parasites by any fecal test method than goats on large operations (1.3 percent). There were no differences by region in the percentage of goats tested for internal parasites by any fecal test method during the previous 12 months.

C.2.c. Percentage of goats* tested for internal parasites by any fecal test method during the previous 12 months, by herd size and region:

Percent Goats*											
Herd size (number of goats and kids)						Region					
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
7.0	(1.5)	10.7	(4.2)	1.3	(0.3)	3.7	(1.4)	7.1	(2.6)	5.6	(1.6)

*Note that this percentage represents the percentage of all goats across all operations that were tested by any fecal test for internal parasites, not the percentage of goats on any one operation. It is the percentage of goats tested taken out of the total number of goats and kids on operations on the day of the interview.

There were no differences by primary production of the operation in the percentage of goats tested for internal parasites by any fecal test method during the previous 12 months.

C.2.d. Percentage of goats* tested for internal parasites by any fecal test method during the previous 12 months, by primary production of the operation:

Percent Goats*					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
3.6	(1.2)	5.1	(1.5)	11.6	(7.1)

*Note that this percentage represents the percentage of all goats across all operations that were tested by any fecal test for internal parasites, not the percentage of goats on any one operation. It is the percentage of goats tested taken out of the total number of goats and kids on operations on the day of the interview.

For operations that tested any goats for internal parasites during the previous 12 months, the highest percentage of all operations (48.1 percent) tested 10 to 49 percent of goats on the operation for internal parasites by any fecal test. The median percentage of goats tested for internal parasites using any fecal test was 21.0 percent. It is possible to test more than 100 percent of goats if they tested more goats during the year than they had on hand the day of the interview, or if goats are being tested multiple times throughout the year or being tested with multiple types of tests. A higher percentage of small operations (67.9 percent) tested 10 to 49 percent of goats on the operation for internal parasites by any fecal test than large operations (11.5 percent). There were no differences by region in the percentage of goats on the operation tested for internal parasites using any fecal test.

C.2.e. For the 21.6 percent of operations that tested any goats for internal parasites during the previous 12 months (table C.2.a.), percentage of operations by percentage of goats on that operation that were tested for internal parasites by any fecal test and median percentage of goats that were tested for internal parasites by any fecal test, and by herd size and region:

Percent Operations												
Percent goats tested ¹	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Less than 5	0.0	(—)	8.0	(3.1)	73.2	(7.7)	13.0	(4.0)	8.6	(2.7)	9.8	(2.2)
5 to 9	4.8	(2.1)	32.4	(9.2)	13.7	(6.1)	22.4	(10.5)	16.6	(5.5)	18.2	(5.0)
10 to 49	67.9	(10.1)	35.2	(8.5)	11.5	(4.8)	48.5	(11.2)	48.0	(8.0)	48.1	(6.6)
50 to 99	7.6	(6.9)	14.6	(6.0)	0.7	(0.6)	13.5	(8.6)	9.0	(4.7)	10.2	(4.2)
100 or more ²	19.7	(8.8)	9.8	(6.7)	0.9	(0.8)	2.6	(1.6)	17.8	(6.9)	13.6	(5.1)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Median	23.5	(5.4)	14.6	(4.8)	2.3	(0.8)	13.7	(4.8)	21.6	(4.2)	21.0	(3.2)

¹Percentage of goats tested using the total number of goats and kids on the operation on the day of the interview. The percentage could be higher than 100% if more goats were tested in the previous 12 months than were present on the day of the interview, or if goats were tested multiple times during the previous 12 months or being tested with multiple types of tests.

²The percentage could be higher than 100% if more goats were tested in the previous 12 months than were present on the day of the interview, or if goats were tested multiple times during the previous 12 months or being tested with multiple types of tests.

For operations that tested any goats for internal parasites during the previous 12 months, only dairy and other operations (19.4 and 32.5 percent, respectively) tested 100 percent or more of the goats on the operation for internal parasites by any fecal tests. It is possible to test more than 100 percent of goats if they tested more goats during the year than they had on hand the day of the interview, or if goats are being tested multiple times throughout the year or being tested with multiple types of tests.

C.2.f. For the 21.6 percent of operations that tested any goats for internal parasites during the previous 12 months (table C.2.a.), percentage of operations by percentage of goats on that operation that were tested for internal parasites by any fecal test and median percentage of goats that were tested for internal parasites by any fecal test, and by primary production of the operation:

Percent Operations						
Primary Production						
Percent goats tested ¹	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Less than 5	13.6	(4.5)	7.3	(2.2)	5.7	(2.7)
5 to 9	28.1	(9.5)	8.7	(2.9)	10.4	(5.4)
10 to 49	42.6	(10.2)	57.4	(10.3)	48.4	(12.8)
50 to 99	15.8	(8.2)	7.3	(4.1)	3.1	(2.2)
100 or more ²	0.0	(—)	19.4	(10.1)	32.5	(13.5)
Total	100.0		100.0		100.0	
Median	14.0	(3.6)	28.3	(5.7)	26.1	(19.7)

¹Percentage of goats tested taken out of the total number of goats and kids on the operation on the day of the interview.

²The percentage could be higher than 100% if more goats were tested in the previous 12 months than were present on the day of the interview, or if goats were tested multiple times during the previous 12 months or being tested with multiple types of tests.

For operations that tested any goats for internal parasites during the previous 12 months, the highest percentage of operations used a fecal flotation or a fecal egg count (FEC) to test goats for internal parasites. A higher percentage of medium operations (27.1 percent) tested goats by a fecal egg count reduction test (FECRT) than small operations (6.5 percent). Only operations in the West region (2.8 percent) tested goats for internal parasites using the DrenchRite® test. Other tests used included an unknown test completed by a veterinarian and necropsy.

C.2.g. For the 21.6 percent of operations that tested any goats for internal parasites during the previous 12 months (table C.2.a.), percentage of operations by type of test used, and by herd size and region:

Percent Operations

Test	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Fecal flotation or fecal egg count	96.9	(1.9)	82.8	(6.2)	94.1	(4.3)	87.9	(8.0)	91.1	(3.0)	90.2	(3.1)
Fecal egg count reduction test	6.5	(2.7)	27.1	(7.7)	15.1	(6.3)	28.7	(10.3)	12.0	(3.5)	16.7	(4.1)
DrenchRite® (lab test for resistance to dewormers)	0.0	(—)	0.9	(0.9)	4.3	(4.2)	2.8	(2.0)	0.0	(—)	0.8	(0.5)
Other	0.9	(0.8)	2.6	(1.7)	0.0	(—)	0.3	(0.2)	2.1	(1.2)	1.6	(0.9)
Any fecal flotations, fecal egg count, or fecal egg count reduction tests	99.1	(0.8)	97.7	(1.7)	100.0	(—)	99.7	(0.2)	98.1	(1.2)	98.6	(0.8)

For operations that tested any goats for internal parasites during the previous 12 months, only meat operations (1.6 percent) tested goats for internal parasites using the DrenchRite® test. Other tests used included an unknown test completed by a veterinarian and necropsy.

C.2.h. For the 21.6 percent of operations that tested any goats for internal parasites during the previous 12 months (table C.2.a.), percentage of operations by type of test used, and by primary production of the operation:

Percent Operations						
Primary Production						
Test	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Fecal flotation or fecal egg count	89.7	(5.6)	94.0	(2.9)	86.8	(6.2)
Fecal egg count reduction test	20.5	(7.4)	11.4	(4.6)	15.4	(6.5)
DrenchRite® (lab test for resistance to dewormers)	1.6	(1.2)	0.0	(—)	0.0	(—)
Other	0.0	(—)	4.5	(2.9)	1.4	(1.4)
Any fecal flotations, fecal egg count, or fecal egg count reduction tests	100.0	(—)	96.1	(2.8)	98.6	(1.4)

For the goats tested for internal parasites by any fecal test during the previous 12 months, an average of 1.4 tests per goat were completed. There were no differences by herd size or region in the average number of tests per goat.

C.2.i. For the goats tested for internal parasites by any fecal test during the previous 12 months¹ (table C.2.c.), average number of tests per goat, by herd size and region:

Operation-level Average Number of Tests per Goat ²												
Test	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error
Fecal flotation or fecal egg count	1.1	(0.1)	1.1	(0.1)	1.3	(0.4)	1.3	(0.2)	1.1	(0.1)	1.1	(0.1)
Fecal egg count reduction test	0.1	(0.0)	0.3	(0.2)	0.0	(0.0)	0.2	(0.1)	0.2	(0.1)	0.2	(0.1)
DrenchRite® (lab test for resistance to dewormers)	0.0	(—)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(—)	0.0	(0.0)
Other	0.0	(0.0)	0.0	(0.0)	0.0	(—)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Any	1.2	(0.1)	1.5	(0.3)	1.4	(0.4)	1.5	(0.2)	1.3	(0.2)	1.4	(0.2)

¹Refers to the 5.6 percent of goats that were tested for internal parasites by any fecal test (table C.2.c.) on the 21.6 percent of operations that tested any goats for internal parasites during the previous 12 months (table C.2.a.).

²Average number of tests performed in the previous 12 months out of the total number of goats and kids on operations on the day of the interview.

For the goats tested for internal parasites by any fecal test during the previous 12 months, there were no differences by primary production of the operation in the average number of tests per goat.

C.2.j. For the goats tested for internal parasites by any fecal test during the previous 12 months¹ (table C.2.c.), average number of tests per goat, by primary production of the operation:

Operation-level Average Number of Tests per Goat²						
Primary Production of the Operation						
Test	Meat		Dairy		Other	
	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error
Fecal flotation or fecal egg count	1.1	(0.2)	1.5	(0.3)	1.0	(0.0)
Fecal egg count reduction test	0.2	(0.1)	0.4	(0.2)	0.1	(0.1)
DrenchRite® (lab test for resistance to dewormers)	0.0	(0.0)	0.0	(—)	0.0	(—)
Other	0.0	(—)	0.0	(0.0)	0.0	(0.0)
Any	1.3	(0.1)	2.0	(0.6)	1.1	(0.1)

¹Refers to the 5.6 percent of goats that were tested for internal parasites by any fecal test (table C.2.c.) on the 21.6 percent of operations that tested any goats for internal parasites during the previous 12 months (table C.2.a.).

²Average number of tests performed in the previous 12 months out of the total number of goats and kids on operations on the day of the interview.

For operations that tested any goats for internal parasites during the previous 12 months, the majority of operations performed > 0 to 1 fecal test per goat. There were no differences by herd size or region in the percentage of operations by number of fecal tests performed per goat.

C.2.k. For the 21.6 percent of operations that tested any goats for internal parasites during the previous 12 months (table C.2.a.), percentage of operations by number of fecal tests performed per goat, and by herd size and region:

Percent Operations												
Number of tests per goat*	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
> 0 to 1	75.3	(9.5)	80.4	(6.4)	82.0	(7.2)	68.7	(10.6)	81.9	(6.1)	78.2	(5.4)
> 1 to 2	22.5	(9.5)	15.4	(6.1)	13.7	(6.2)	24.1	(10.1)	16.3	(6.1)	18.5	(5.3)
More than 2	2.1	(1.5)	4.3	(2.2)	4.3	(4.2)	7.2	(4.2)	1.8	(0.7)	3.3	(1.3)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

*Number of tests performed in the previous 12 months out of the total number of goats tested for internal parasites by any fecal test method.

For operations that tested any goats for internal parasites during the previous 12 months, there were no differences by primary production of the operation in the percentage of operations by number of fecal tests performed per goat.

C.2.l. For the 21.6 percent of operations that tested any goats for internal parasites during the previous 12 months (table C.2.a.), percentage of operations by number of fecal tests performed per goat, and by primary production of the operation:

Percent Operations						
Primary Production						
Number of tests per goat*	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
> 0 to 1	73.1	(9.5)	80.1	(6.7)	85.7	(8.4)
> 1 to 2	25.0	(9.5)	12.9	(5.0)	12.4	(8.3)
More than 2	1.9	(1.4)	7.0	(4.0)	1.9	(1.1)
Total	100.0		100.0		100.0	

*Number of tests performed in the previous 12 months out of the total number of goats tested for internal parasites by any fecal test method.

For operations that performed fecal flotations, fecal egg count (FEC), or fecal egg count reduction tests (FECRT), private veterinarians completed the majority of fecal flotations or fecal egg counts on over two-thirds (67.7 percent) of all operations.

C.2.m. For operations that performed fecal flotation, fecal egg count, or fecal egg count reduction tests¹ (table C.2.g.), percentage of operations by personnel who completed the majority of the fecal flotations or fecal egg counts:

Personnel	Percent operations	Std. error
Self or employee on the operation	23.3	(5.8)
Private veterinarian	67.7	(6.0)
State/university laboratory	6.3	(2.4)
Private laboratory	1.6	(0.7)
Other ²	1.1	(0.6)
Total	100.0	

¹Refers to the 21.3 percent of operations overall that tested any goats with fecal flotation, fecal egg count, or fecal egg count reduction tests. This estimate comes from the 21.6 percent of operations that tested any goats for internal parasites during the previous 12 months (table C.2.a.), of which 98.6 percent tested any goats with fecal flotation, fecal egg count, or fecal egg count reduction tests (table C.2.g.).

²Common other personnel included veterinary technicians and veterinary students.

3. Deworming

There are many pharmaceutical and natural or alternative dewormers available for goat producers, though natural or alternative dewormers have not been studied in-depth, and efficacy of these products is not well known. And while pharmaceutical dewormers may be a producer's best option for managing gastrointestinal parasites on their operation, the majority of pharmaceutical dewormers on the market are not approved for use in goats. Therefore, most pharmaceutical deworming in goats is considered extra-label use and should be done under the advice of a veterinarian. Additionally, gastrointestinal parasites have developed some level of resistance against the majority of dewormers available.

Most operations had dewormed goats or kids with medication or natural/alternative dewormers during the previous 3 years (96.6 percent) and previous 12 months (91.5 percent). A higher percentage of medium operations dewormed any goats or kids with medications or natural/alternative dewormers during the previous 3 years and the previous 12 months (98.5 and 95.3 percent, respectively) than large operations (85.7 and 73.1 percent, respectively). A higher percentage of operations in the East region (99.1 percent) dewormed any goats or kids with medications or natural/alternative dewormers during the previous three years than the West region (90.8 percent).

C.3.a. Percentage of operations that dewormed any goats or kids with medications or natural/alternative dewormers during the **previous 3 years** and percentage of operations that dewormed any goats or kids during the **previous 12 months**, by herd size and region:

Percent Operations											
Timeframe	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Previous 3 years	96.7	(1.5)	98.5	(0.7)	85.7	(7.3)	90.8	(3.3)	99.1	(0.4)	96.6 (1.0)
Previous 12 months	91.2	(2.5)	95.3	(1.3)	73.1	(10.3)	89.0	(3.3)	92.6	(2.1)	91.5 (1.8)

There were no differences by primary production of the operation in the percentage of operations that dewormed any goats or kids with medications or natural/alternative dewormers during the previous 3 years or previous 12 months.

C.3.b. Percentage of operations that dewormed any goats or kids with medications or natural/alternative dewormers during the **previous 3 years** and percentage of operations that dewormed any goats or kids during the **previous 12 months**, by primary production of the operation:

Percent Operations						
Primary Production						
Timeframe	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Previous 3 years	97.5	(1.1)	94.3	(3.3)	96.6	(1.8)
Previous 12 months	94.3	(1.9)	89.3	(4.6)	86.9	(4.1)

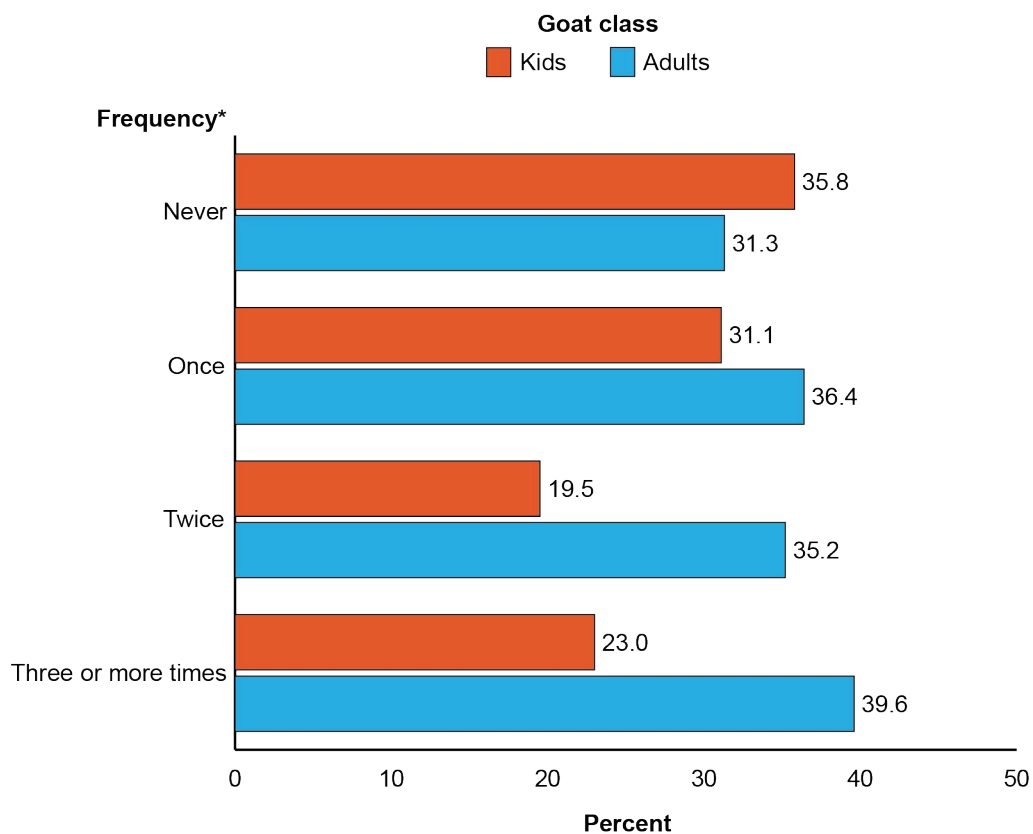
For operations that dewormed any goats or kids in the previous 3 years, there was no predominant deworming frequency for kid goats or adult goats in the previous 12 months. There were no differences by herd size or region in the percentage of operations by frequency that kids or adult goats were dewormed during the previous 12 months.

C.3.c. For the 96.6 percent of operations that dewormed any goats in the previous 3 years (table C.3.a.), percentage of operations that dewormed any kids and adult goats in the previous 12 months, by frequency of deworming and by herd size and region:

Percent Operations											
Frequency*	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Kids											
Never	33.9	(4.4)	35.3	(4.6)	55.3	(9.3)	42.6	(6.5)	33.2	(3.5)	35.8 (3.1)
Once	28.5	(4.7)	35.2	(4.6)	28.8	(6.5)	40.0	(6.6)	27.8	(3.5)	31.1 (3.2)
Twice	15.5	(3.5)	24.0	(3.9)	26.3	(8.2)	13.2	(3.4)	21.8	(3.1)	19.5 (2.5)
Three or more times	18.4	(4.0)	28.7	(4.3)	28.0	(8.3)	17.7	(4.9)	25.0	(3.4)	23.0 (2.8)
Adults											
Never	28.6	(4.0)	33.9	(4.6)	41.4	(9.4)	29.9	(4.7)	31.9	(3.5)	31.3 (2.8)
Once	35.5	(4.7)	37.6	(4.7)	37.7	(8.8)	46.6	(6.2)	32.4	(3.8)	36.4 (3.3)
Twice	34.7	(4.9)	36.2	(4.6)	34.4	(8.4)	37.6	(5.5)	34.3	(3.9)	35.2 (3.2)
Three or more times	34.7	(5.0)	46.9	(4.7)	40.2	(9.2)	33.4	(5.7)	42.0	(4.2)	39.6 (3.4)

*Column sums can exceed 100.0 percent because goats on the same operation could have been dewormed at different frequencies.

For the 96.6 percent of operations that dewormed any goats in the previous 3 years (table C.3.a.), percentage of operations that dewormed any kids and adult goats in the previous 12 months, by frequency of deworming



*Sums can exceed 100.0 percent because goats on the same operation could have been dewormed at different frequencies.

For operations that dewormed any goats in the previous 3 years, there were no differences by primary production of the operation in the percentage of operations by frequency that kids or adult goats were dewormed during the previous 12 months.

C.3.d. For the 96.6 percent of operations that dewormed any goats in the previous 3 years (table C.3.a.), percentage of operations that dewormed any kids and adult goats in the previous 12 months, by frequency of deworming and by primary production of the operation:

Percent Operations						
Primary Production						
Frequency*	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Kids						
Never	37.5	(4.4)	30.4	(5.6)	36.5	(6.5)
Once	36.0	(4.6)	31.2	(6.4)	18.8	(5.3)
Twice	18.9	(3.5)	18.3	(5.2)	21.9	(4.9)
Three or more times	23.7	(4.0)	21.0	(4.5)	23.2	(5.5)
Adults						
Never	28.2	(3.7)	30.9	(5.9)	39.3	(6.5)
Once	35.4	(4.6)	44.5	(6.2)	31.4	(6.2)
Twice	34.4	(4.5)	36.9	(6.2)	35.8	(6.2)
Three or more times	44.8	(4.6)	28.9	(5.3)	36.6	(6.4)

*Column sums can exceed 100.0 percent because goats on the same operation could have been dewormed at different frequencies.

For operations that dewormed any goats in the previous 3 years, the percentage of kids and adult goats by frequency of deworming during the previous 12 months was evenly split across all frequency classes for kids and adults. There were no differences by herd size or region in the percentage of kids and adult goats by frequency of deworming in the previous 12 months.

C.3.e. For the 96.6 percent of operations that dewormed any goats in the previous 3 years (table C.3.a.), percentage of kids and adult goats by frequency of deworming during the previous 12 months and by herd size and region:

Percent Goats												
Frequency	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Kids ¹												
Never	30.7	(5.5)	26.8	(4.5)	42.2	(6.8)	35.6	(6.1)	31.4	(4.3)	33.0	(3.5)
Once	25.2	(5.1)	28.2	(5.6)	16.4	(3.7)	29.7	(6.3)	19.5	(3.1)	23.4	(3.2)
Twice	16.5	(4.0)	21.5	(5.3)	26.7	(7.4)	14.6	(4.5)	27.5	(5.3)	22.5	(3.8)
Three or more times	27.6	(6.9)	23.6	(5.3)	14.7	(4.0)	20.1	(5.4)	21.6	(4.0)	21.0	(3.2)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Adults ²												
Never	14.9	(2.9)	13.8	(2.3)	28.4	(9.2)	23.0	(7.4)	18.5	(5.0)	20.2	(4.2)
Once	25.5	(4.4)	26.3	(5.2)	21.4	(6.2)	27.6	(5.9)	21.9	(4.0)	24.1	(3.4)
Twice	25.4	(4.2)	26.8	(4.9)	28.0	(10.3)	20.3	(4.6)	31.1	(6.9)	27.0	(4.8)
Three or more times	34.1	(5.4)	33.1	(5.4)	22.2	(6.4)	29.1	(6.4)	28.4	(4.8)	28.7	(3.8)
Total	100.0		100.0		100.0		100.0		100.0		100.0	

¹As a percent of total kid inventory during the previous 12 months.

²As a percent of total adult goat inventory during the previous 12 months.

For operations that dewormed any goats in the previous 3 years, a higher percentage of kids on dairy operations (52.0 percent) were never dewormed in the previous 12 months than kids on meat operations (28.4 percent). A higher percentage of kids on meat operations (31.0 percent) were dewormed once in the previous 12 months than on dairy operations (13.5 percent). Additionally, a higher percentage of adult goats on meat operations (33.7 percent) were dewormed 3 or more times in the previous 12 months than on dairy operations (13.5 percent).

C.3.f. For the 96.6 percent of operations that dewormed any goats in the previous 3 years (table C.3.a.) percentage of kids and adult goats by frequency of deworming during the previous 12 months and by primary production of the operation:

Percent Goats						
Primary Production						
Frequency	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Kids¹						
Never	28.4	(4.1)	52.0	(6.9)	25.9	(8.0)
Once	31.0	(4.8)	13.5	(3.1)	13.1	(5.4)
Twice	15.2	(2.8)	20.9	(7.4)	44.1	(10.8)
Three or more times	25.4	(4.8)	13.6	(4.1)	16.9	(5.4)
Total	100.0		100.0		100.0	
Adults²						
Never	17.1	(4.8)	25.3	(11.0)	21.0	(8.2)
Once	25.9	(4.3)	25.1	(7.9)	18.8	(6.5)
Twice	23.3	(3.8)	36.0	(13.5)	24.7	(7.5)
Three or more times	33.7	(4.8)	13.5	(5.0)	35.6	(9.0)
Total	100.0		100.0		100.0	

¹As a percent of total kid inventory during the previous 12 months.

²As a percent of total adult goat inventory during the previous 12 months.

For operations that dewormed any goats in the previous 12 months, the highest percentage of all operations dewormed goats with Avermectins (73.6 percent) and Benzimidazoles (61.0 percent). A higher percentage of large operations dewormed any goats with Avermectins and Imidazothiazoles (88.4 and 37.3 percent, respectively) in the previous 12 months than small operations (66.8 and 12.5 percent, respectively). A higher percentage of operations in the East region (7.5 percent) dewormed any goats with Benzenesulphonamides in the previous 12 months than in the West region (1.5 percent). Other natural and alternative substances included minerals and food substances like pumpkin and garlic. Other pharmaceutical products included small animal and equine dewormers.

C.3.g. For the 91.5 percent of operations that dewormed any goats in the previous 12 months (table C.3.a.), percentage of operations by products used and by herd size and region:

Percent Operations												
Product	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
High tannin concentrate plants (e.g., lespedeza, birdsfoot trefoil)	5.0	(2.2)	7.8	(2.5)	13.1	(7.5)	2.8	(1.0)	8.0	(2.3)	6.5	(1.7)
Any natural or alternative substances	20.8	(3.7)	22.9	(3.5)	30.8	(8.5)	18.6	(3.8)	23.6	(3.2)	22.1	(2.5)
Diatomaceous earth	10.1	(3.0)	5.9	(1.4)	8.2	(2.7)	4.0	(2.0)	10.2	(2.4)	8.4	(1.8)
Botanicals/herbs/ cayenne pepper	8.2	(2.4)	2.6	(0.8)	2.2	(1.6)	5.0	(1.7)	6.1	(1.8)	5.8	(1.4)
Copper oxide particles	7.7	(2.3)	17.0	(3.3)	24.1	(8.6)	12.1	(3.4)	12.1	(2.2)	12.1	(1.8)
Other natural or alternative substances	0.3	(0.2)	0.5	(0.2)	0.3	(0.2)	0.2	(0.2)	0.5	(0.2)	0.4	(0.2)
Avermectins (e.g., Ivomec® Cydectin® Dectomax®)	66.8	(4.4)	81.8	(4.0)	88.4	(3.3)	65.5	(5.8)	77.0	(3.4)	73.6	(3.0)
Benzimidazoles (e.g., Panacur®/Safeguard®/Valbazen®)	56.3	(4.6)	65.8	(4.8)	77.2	(6.2)	61.5	(6.3)	60.8	(3.7)	61.0	(3.2)
Imidazothiazoles (e.g., Levasole®—levamisole)	12.5	(3.3)	23.6	(4.3)	37.3	(8.7)	18.5	(5.1)	17.9	(3.0)	18.0	(2.6)
Benzenesulphonamides (e.g., Curatrem®, Ivomec Plus®)	4.4	(2.0)	6.1	(2.1)	17.4	(8.7)	1.5	(0.5)	7.5	(2.1)	5.7	(1.5)
Tetrahydropyrimidines (e.g., Rumatel®)	4.6	(2.1)	1.8	(0.8)	0.6	(0.5)	5.6	(3.2)	2.4	(1.2)	3.3	(1.2)
Other	2.5	(1.5)	4.3	(2.3)	0.6	(0.4)	0.9	(0.4)	4.0	(1.7)	3.1	(1.2)

For operations that dewormed any goats in the previous 12 months, a higher percentage of dairy operations (44.2 percent) used any natural or alternative substances than meat or other operations (16.1 and 16.7 percent, respectively).

C.3.h. For the 91.5 percent of operations that dewormed any goats in the previous 12 months (table C.3.a.), percentage of operations by products used and by primary production of the operation:

Product	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
High tannin concentrate plants (e.g., lespedeza, birdsfoot trefoil)	5.8	(2.1)	11.4	(4.8)	3.6	(1.5)
Any natural or alternative substances	16.1	(3.2)	44.2	(6.6)	16.7	(3.8)
Diatomaceous earth	4.9	(2.2)	16.8	(5.3)	9.5	(2.5)
Botanicals/herbs/cayenne pepper	2.1	(0.8)	18.5	(5.3)	3.1	(1.9)
Copper oxide particles	10.0	(2.5)	21.0	(4.4)	9.0	(2.9)
Other natural or alternative substances	0.0	(0.0)	1.7	(0.8)	0.1	(0.1)
Avermectins (e.g., Ivomec®, Cydectin®, Dectomax®)	78.5	(4.0)	65.6	(5.4)	68.6	(6.6)
Benzimidazoles (e.g., Panacur®, Safeguard®, Valbazen®)	59.5	(4.4)	52.7	(7.0)	73.1	(6.3)
Imidazothiazoles (e.g., Levasole®—levamisole)	17.3	(3.3)	17.4	(5.2)	20.6	(5.7)
Benzenesulphonamides (e.g., Curatrem®, Ivomec Plus®)	2.7	(1.5)	3.7	(1.2)	15.6	(5.3)
Tetrahydropyrimidines (e.g., Rumatel®)	3.3	(1.9)	5.3	(2.5)	1.4	(0.7)
Other	2.9	(1.6)	1.3	(0.5)	5.2	(3.6)

For operations that used Avermectins or Benzimidazoles to deworm any goats during the previous 12 months, a drench/paste was the most common route used for administration (80.4 and 96.7 percent of operations, respectively).

C.3.i. For operations that used the following products to deworm any goats during the previous 12 months¹ (table C.3.g.), percentage of operations by route of administration:

Route	Percent Operations					
	Product					
	Avermectins		Benzimidazoles		Imidazothiazoles	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Drench/paste	80.4	(3.4)	96.7	(1.4)	NA	
Injection	25.7	(3.4)	NA		13.6	(5.3)
Pour on	11.0	(2.4)	NA		NA	
In feed	NA ²		2.4	(0.8)	NA	
Oral	NA		NA		88.7	(4.9)
Other	NA		4.3	(1.9)	NA	

¹Refers to the 67.3, 55.8, and 16.5 percent of operations overall that dewormed any goats with Avermectins, Benzimidazoles, and Imidazothiazoles, respectively. This estimate comes from the 91.5 percent of operations that dewormed any goats (table C.3.a.), of which 73.6, 61.0, and 18.0 percent of those operations dewormed with Avermectins, Benzimidazoles, and Imidazothiazoles, respectively (table C.3.g.).

²Route not applicable for the given product.

For operations that dewormed any goats in the previous 12 months, 50.0 percent of all operations spent less than 5 dollars per goat on deworming products in the previous 12 months and the median amount spent was 4.9 dollars per goat. A higher percentage of large operations (44.7 percent) spent less than 2 dollars per goat on deworming products in the previous 12 months than small operations (18.8 percent). A higher percentage of small and medium operations (24.4 and 19.2 percent, respectively) spent 7 to 14.99 dollars per goat on deworming products administered to goats in the previous 12 months than large operations (2.5 percent). There were no differences by region in the percentage of operations by amount spent per goat on deworming products administered to goats in the previous 12 months.

C.3.j. For the 91.5 percent of operations that dewormed any goats in the previous 12 months (table C.3.a.), percentage of operations by amount spent per goat on deworming products administered to goats (including those administered by a veterinarian) in the previous 12 months, median amount spent per goat, and by herd size and region:

Percent Operations

Amount spent per goat* (\$)	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Less than 2	18.8	(3.9)	31.6	(5.0)	44.7	(7.2)	36.1	(6.3)	20.3	(3.3)	24.9	(3.0)
2 to < 5	22.3	(4.2)	27.9	(4.8)	35.7	(8.5)	28.1	(5.8)	23.8	(3.6)	25.1	(3.0)
5 to < 7	20.6	(4.4)	12.2	(3.2)	15.0	(8.1)	10.6	(4.1)	19.8	(3.7)	17.2	(2.9)
7 to < 15	24.4	(5.0)	19.2	(3.5)	2.5	(1.0)	15.8	(4.8)	23.7	(4.1)	21.4	(3.2)
15 or more	13.9	(3.5)	9.1	(2.5)	2.2	(0.8)	9.4	(3.1)	12.4	(2.9)	11.5	(2.2)
Total	100.0		100.0		100.0		100.0		100.0		100.0	
Median	5.6	(0.6)	3.8	(0.5)	2.4	(0.4)	3.3	(0.6)	5.5	(0.5)	4.9	(0.4)

*Amount spent for each of the goats that were dewormed in the previous 12 months.

For operations that dewormed any goats in the previous 12 months, there were no differences by primary production of the operation in the percentage of operations by amount spent per goat on deworming products administered to goats in the previous 12 months.

C.3.k. For the 91.5 percent of operations that dewormed any goats in the previous 12 months (table C.3.a.), percentage of operations by amount spent per goat on deworming products administered to goats (including those administered by a veterinarian) in the previous 12 months, median amount spent per goat, and by primary production of the operation:

Percent Operations						
Primary Production						
Amount spent per goat* (\$)	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Less than 2	26.2	(4.4)	29.3	(6.6)	17.1	(4.6)
2 to < 5	24.4	(4.3)	26.8	(5.6)	25.0	(6.2)
5 to < 7	17.1	(4.0)	12.7	(4.9)	21.6	(5.9)
7 to < 15	22.0	(4.1)	21.0	(6.2)	20.1	(6.1)
15 or more	10.3	(3.0)	10.1	(2.2)	16.2	(5.8)
Total	100.0		100.0		100.0	
Median	4.8	(0.6)	3.9	(0.7)	5.6	(0.9)

*Amount spent for each of the goats that were dewormed in the previous 12 months.

Producers were asked to select their top three reasons that they use to decide which goats to deworm. For operations that dewormed any goats in the previous 12 months, the highest percentage of operations (45.9 percent) listed the most important reason for deworming goats was all goats were treated on a regular schedule as a preventative measure. There were no differences by herd size in the percentage of operations by top three reasons for deworming goats. A higher percentage of medium operations (5.2 percent) listed bottle jaw as the most important reason for deworming goats than small operations (0.3 percent).

A higher percentage of operations in the East region (42.0 percent) listed FAMACHA® card system/eye anemia score as a top three reason to deworm goats than operations in the West region (19.3 percent). There were no differences by region in the percentage of operations by most important reason for deworming goats.

C.3.I. For the 91.5 percent of operations that dewormed any goats in the previous 12 months (table C.3.a.), percentage of operations by reason for deworming (whether that reason was in the top 3 reasons and most important reason), and by herd size and region:

Percent Operations

Reason	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
In top 3 reasons												
All goats treated on a regular schedule as a preventative measure (e.g., seasonally, annually)	61.2	(5.3)	57.7	(4.7)	49.0	(7.2)	70.0	(5.8)	54.7	(4.4)	59.2	(3.5)
Worms were seen	13.5	(3.7)	14.6	(3.5)	10.4	(2.1)	17.2	(5.2)	12.3	(2.8)	13.7	(2.5)
When the goat's hair coat or body condition are poor	70.2	(4.5)	75.4	(4.2)	74.2	(6.8)	73.7	(5.8)	71.9	(3.6)	72.4	(3.0)
Fecal consistency (diarrhea)	47.8	(4.6)	47.3	(5.0)	39.6	(8.4)	34.3	(5.3)	52.6	(3.9)	47.2	(3.2)
Based on fecal tests (e.g., fecal floats, FECRT)	11.6	(3.0)	17.1	(4.0)	13.4	(3.9)	12.7	(3.8)	14.3	(2.9)	13.8	(2.4)
Based on FAMACHA® card system/eye anemia score	34.0	(4.7)	36.8	(4.7)	39.0	(7.5)	19.3	(4.5)	42.0	(4.0)	35.3	(3.2)
Bottle jaw (edema)	14.2	(3.5)	24.0	(4.3)	36.6	(8.9)	16.3	(4.4)	20.2	(3.3)	19.1	(2.7)
Other*	17.4	(3.8)	14.8	(3.1)	15.3	(6.0)	21.1	(5.3)	14.3	(2.8)	16.3	(2.5)

*Common "other" reasons for deworming included as a general preventative, 4-H recommendation for show goats, in response to clinical signs such as sick kids, abortions, respiratory signs, neurological signs, going off feed, gum or eye color (not FAMACHA®), or in response to animal movement on or off the farm, when mites were seen, and in preparation for breeding season or milking.

C.3.I. (cont'd.) For the 91.5 percent of operations that dewormed any goats in the previous 12 months (table C.3.a.), percentage of operations by reason for deworming (whether that reason was in the top 3 reasons and most important reason), and by herd size and region:

Reason	Percent Operations									
	Herd size (number of goats and kids)						Region			
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Most important reason										
All goats treated on a regular schedule as a preventative measure (e.g., seasonally, annually)	48.0	(5.4)	44.2	(4.9)	34.1	(6.2)	55.6	(6.5)	41.8	(4.2)
Worms were seen	0.2	(0.2)	0.7	(0.3)	1.9	(0.7)	0.5	(0.3)	0.5	(0.2)
When the goat's hair coat or body condition are poor	15.8	(3.8)	15.1	(3.6)	17.3	(4.3)	14.1	(3.6)	16.2	(3.3)
Fecal consistency (diarrhea)	13.6	(3.3)	13.8	(3.7)	6.2	(2.3)	9.0	(3.3)	15.2	(3.0)
Based on fecal tests (e.g., fecal floats, FECRT)	3.2	(1.6)	2.4	(0.8)	2.5	(1.8)	3.9	(1.8)	2.4	(1.2)
Based on FAMACHA® card system/eye anemia score	10.7	(3.3)	16.5	(3.6)	25.3	(7.8)	7.6	(3.4)	16.2	(3.0)
Bottle jaw (edema)	0.3	(0.2)	5.2	(2.3)	4.6	(2.1)	2.3	(1.0)	2.5	(1.2)
Other*	8.1	(2.8)	2.1	(0.9)	8.0	(5.8)	7.0	(3.7)	5.3	(1.8)
Total	100.0		100.0		100.0		100.0		100.0	

*Common "other" reasons for deworming included 4-H recommendation for show goats, in response to clinical signs such as sick kids, abortions, respiratory signs, neurological signs, going off feed, gum or eye color (not FAMACHA®), or in response to animal movement on or off the farm, when mites were seen, and in preparation for breeding season or milking.

For operations that dewormed any goats in the previous 12 months, a higher percentage of meat operations (26.2 percent) listed bottle jaw as one of their top three reasons for deworming goats than dairy operations (5.7 percent). A higher percentage of meat operations (19.9 percent) stated that they dewormed goats when the goat's hair coat or body condition was poor as their most important reason for deworming than dairy operations (6.8 percent).

C.3.m. For the 91.5 percent of operations that dewormed any goats in the previous 12 months (table C.3.a.), percentage of operations by reason for deworming (whether that reason was in the top 3 reasons and most important reason), and by primary production of the operation:

Reason	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
All goats treated on a regular schedule as a preventative measure (e.g., seasonally, annually)	56.1	(4.9)	61.3	(6.5)	65.5	(6.5)
Worms were seen	11.7	(3.5)	15.7	(4.1)	17.2	(5.2)
When the goat's hair coat or body condition are poor	76.5	(4.2)	67.5	(6.2)	66.5	(6.6)
Fecal consistency (diarrhea)	47.9	(4.3)	50.3	(7.2)	42.4	(7.1)
Based on fecal tests (e.g., fecal floats, FECRT)	9.5	(2.8)	23.5	(6.1)	15.6	(4.6)
Based on FAMACHA® card system/eye anemia score	32.3	(4.5)	38.1	(6.9)	40.4	(7.0)
Bottle jaw	26.2	(4.1)	5.7	(1.6)	13.4	(4.4)
Other*	17.8	(3.9)	14.7	(3.9)	14.1	(4.4)
Most important reason						
All goats treated on a regular schedule as a preventative measure (e.g., seasonally, annually)	43.4	(4.8)	47.1	(6.5)	51.3	(7.0)
Worms were seen	0.1	(0.0)	1.8	(0.7)	0.2	(0.1)
When the goat's hair coat or body condition are poor	19.9	(3.9)	6.8	(1.6)	13.0	(4.2)
Fecal consistency (diarrhea)	13.4	(3.3)	16.0	(5.4)	10.6	(4.7)
Based on fecal tests (e.g., fecal floats, FECRT)	0.4	(0.2)	7.6	(3.7)	4.6	(2.5)
Based on FAMACHA® card system/eye anemia score	13.9	(3.3)	14.1	(5.0)	12.5	(4.2)
Bottle jaw	3.5	(1.5)	0.9	(0.5)	0.9	(0.7)
Other*	5.4	(2.4)	5.6	(2.7)	7.0	(3.9)
Total	100.0		100.0		100.0	

*Common "other" reasons for deworming included 4-H recommendation for show goats, in response to clinical signs such as sick kids, abortions, respiratory signs, neurological signs, going off feed, gum or eye color (not FAMACHA®), or in response to animal movement on or off of the farm, when mites were seen, and in preparation for breeding season or milking.

4. Internal parasite control program

To minimize the impacts of gastrointestinal parasites, it is best to implement a complete internal parasite control program alongside deworming practices. What practices will work best for an operation may depend on the location, management style, and overall goals of the operation.

Overall, 88.5 percent of all operations used one or more of the listed practices during the previous 12 months to control internal parasites. A higher percentage of large operations (65.3 percent) used a higher dose of dewormer in goats than the labeled dose recommended for sheep than small operations (30.3 percent). A higher percentage of medium and large operations (29.4 and 40.7 percent, respectively) gave a combination of two or more dewormer drugs at once than small operations (9.3 percent). A higher percentage of medium and large operations (34.0 and 34.2 percent, respectively) left animals in a dry lot after deworming for 24 to 48 hours than small operations (11.2 percent). There were no differences by region in the percentage of operations by practices used during the previous 12 months to control internal parasites.

C.4.a. Percentage of operations by practice used during the previous 12 months to control internal parasites, and by herd size and region:

Practice	Percent Operations									
	Herd size (number of goats and kids)						Region			
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Rotate pastures ¹	43.3	(4.9)	55.4	(5.2)	59.2	(7.7)	40.2	(5.7)	52.2	(4.0)
Select for parasite-resistant goats or cull worm-susceptible goats	23.7	(4.1)	33.6	(4.7)	32.6	(7.2)	23.1	(4.7)	30.0	(3.7)
Use a higher dose of dewormer in goats than the labeled dose recommended for sheep	30.3	(4.5)	49.0	(4.9)	65.3	(7.8)	32.2	(5.0)	42.6	(4.0)
Give a combination of two or more dewormer drugs at once	9.3	(2.6)	29.4	(4.0)	40.7	(9.0)	16.5	(4.1)	19.8	(2.8)
Rotate dewormers	47.7	(4.7)	49.3	(4.8)	62.3	(7.9)	40.1	(5.4)	53.2	(3.7)
Graze multiple species on the same pasture ¹	46.8	(5.1)	39.2	(5.0)	51.9	(8.0)	40.0	(6.3)	46.3	(4.4)
Leave animals in a dry lot after deworming for 24 to 48 hours	11.2	(2.6)	34.0	(4.7)	34.2	(9.8)	23.5	(4.0)	20.1	(3.2)
Change kidding season to reduce the risk of high parasite exposure	13.9	(3.6)	12.8	(3.4)	17.4	(9.5)	11.9	(4.2)	14.5	(3.0)
Provide additional protein supplement to increase resistance	31.3	(4.4)	33.3	(4.5)	42.2	(8.5)	29.9	(5.3)	34.0	(3.5)
Feed a biological control product such as BioWorma® (<i>Duddingtonia flagrans</i>)	2.8	(1.8)	0.1	(0.1)	0.2	(0.2)	0.3	(0.2)	2.2	(1.4)
Other ²	1.0	(0.4)	4.8	(2.2)	13.2	(9.6)	1.4	(0.5)	4.0	(1.6)
Any of the above ³	84.1	(3.3)	94.7	(2.2)	91.4	(3.3)	83.6	(4.1)	90.7	(2.4)

¹ For operations that let goats on pasture in the previous 12 months.

² Common "other" practices listed included avoiding overgrazing/grazing short grass, breeding resistant goats, changing bedding, baling/mowing the pastures, cleaning regularly (housing, feeding areas and equipment), dry lot housing, encouraging browsing vs. grazing, responding quickly with deworming practices based on signs, sourcing good hay, and keeping goats off pasture totally or until green.

³ Includes operations that did not let goats on pasture in the previous 12 months. If an operation did not have goats on pasture and did not use any of the other practices listed above, they were counted as not having practiced any of the above.

There were no differences by primary production of the operation in the percentage of operations by practices used during the previous 12 months to control internal parasites. Almost half (47.9 percent) of dairy operations that let goats on pasture in the previous 12 months grazed multiple species on the same pasture.

C.4.b. Percentage of operations by practice used during the previous 12 months to control internal parasites, and by primary production of the operation:

Practice	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Rotate pastures ¹	51.0	(4.4)	45.7	(7.1)	44.9	(6.7)
Select for parasite-resistant goats or cull worm-susceptible goats	34.8	(4.2)	19.4	(5.0)	19.3	(5.3)
Use a higher dose of dewormer in goats than the labeled dose recommended for sheep	43.1	(4.4)	31.5	(5.9)	38.2	(6.3)
Give a combination of two or more dewormer drugs at once	19.6	(3.3)	15.8	(4.1)	19.6	(4.8)
Rotate dewormers	51.8	(4.7)	47.8	(5.5)	44.5	(6.5)
Grazed multiple species on the same pasture ¹	42.0	(5.1)	47.9	(7.4)	47.4	(7.0)
Leave animals in a dry lot after deworming for 24 to 48 hours	19.8	(3.5)	24.6	(5.8)	21.1	(5.1)
Change kidding season to reduce the risk of high parasite exposure	12.8	(3.2)	17.5	(5.8)	12.5	(4.3)
Provide additional protein supplement to increase resistance	40.0	(4.6)	23.9	(5.6)	23.5	(5.4)
Feed a biological control product such as BioWorma® (<i>Duddingtonia flagrans</i>)	1.4	(1.3)	0.7	(0.5)	3.1	(3.0)
Other ²	1.4	(0.8)	6.2	(3.4)	4.7	(3.0)
Any of the above ³	91.9	(2.7)	85.6	(4.1)	83.3	(4.8)

¹For operations that let goats on pasture in the previous 12 months.

²Substantial "other" practices listed included avoiding overgrazing/grazing short grass, breeding resistant goats, changing bedding, baling/mowing the pastures, cleaning regularly (housing, feeding areas and equipment), dry lot housing, encouraging browsing vs. grazing, responding quickly with deworming practices based on signs, sourcing good hay, and keeping goats off pasture totally or until green.

³Includes operations that did not let goats on pasture in the previous 12 months. If an operation did not have goats on pasture and did not use any of the other practices listed above, they were counted as not having practiced any of the above.

5. External parasites

External parasites, such as lice, mites, and ticks, can cause wounds and skin irritation in goats. These external parasites can reduce weight gain and milk production and can spread disease from sick to healthy goats.

Lice were the most common external parasite observed on goats on all operations (27.9 percent) and slightly under half of all operations (43.6 percent) observed any external parasites on goats in the previous 12 months. A higher percentage of medium and large operations (38.1 and 51.5 percent, respectively) had observed lice on goats in the previous 12 months than small operations (18.4 percent). A higher percentage of operations in the East region (19.5 percent) had observed ticks on goats in the previous 12 months than the West region (4.7 percent).

C.5.a. Percentage of operations by type of external parasites observed on goats in the previous 12 months, and by herd size and region:

Percent Operations												
Parasite	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Lice	18.4	(3.7)	38.1	(4.6)	51.5	(8.6)	24.2	(4.5)	29.5	(3.6)	27.9	(2.9)
Mites	7.5	(2.3)	21.0	(4.2)	19.3	(5.0)	12.7	(4.1)	13.5	(2.6)	13.3	(2.2)
Ticks	12.9	(3.3)	17.1	(3.2)	21.7	(6.6)	4.7	(1.1)	19.5	(3.2)	15.1	(2.2)
Any of the above	35.2	(4.5)	52.4	(4.6)	65.8	(8.1)	33.9	(5.3)	47.7	(4.0)	43.6	(3.2)

There were no differences by primary production of the operation in the percentage of operations by type of external parasites observed on goats in the previous 12 months.

C.5.b. Percentage of operations by type of external parasites observed on goats in the previous 12 months, and by primary production of the operation:

Percent Operations						
Primary Production						
Parasite	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Lice	28.3	(4.1)	26.3	(5.5)	28.3	(5.4)
Mites	12.7	(3.1)	9.4	(2.5)	18.4	(4.7)
Ticks	17.4	(3.3)	11.5	(3.1)	12.9	(4.4)
Any of the above	45.4	(4.2)	38.3	(6.4)	44.0	(6.3)

D. Goat and Herd Health

Individual goat health and herd health are important to help meet the production goals of an operation, and health issues, such as mastitis, abortions, and infectious diseases can reduce the productivity of goats. Additionally, certain infectious diseases, such as Q fever and sore mouth, are zoonotic and can spread to humans through direct or indirect contact with goats or goat products. Additionally, promoting goat health and herd health on the operation will decrease costs and promote healthier goats. Working with a veterinarian to develop a herd health management plan to address infectious diseases can help maintain healthy goats and protect humans on the operation.

1. Mastitis

Mastitis is inflammation of the udder, usually caused by bacteria, that reduces milk production and milk quality. Clinical mastitis is detected by visible abnormalities in the milk or udder, such as clots in milk or udder swelling. Subclinical mastitis, which may cause few visible abnormalities, is usually detected by increased numbers of somatic cells in milk, referred to as a high somatic cell count (SCC). The primary economic loss caused by mastitis occurs from decreased milk production which is a concern for operations selling milk or operations that are growing kids.

As herd size increased, the percentage of operations that had any does in milk during the previous 12 months increased with 80.5 percent of small operations, 94.5 percent of medium operations, and 99.4 percent of large operations having any does in milk during the previous 12 months. There were no differences by region in the percentage of operations that had any does in milk during the previous 12 months.

D.1.a. Percentage of operations that had any does in milk during the previous 12 months, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
80.5	(3.9)	94.5	(2.0)	99.4	(0.3)	87.8	(4.4)	86.5	(3.0)	86.9 (2.5)

There were no differences by primary production of the operation in the percentage of operations that had any does in milk during the previous 12 months. However, only 82.6 percent of dairy operations had any does in milk during the previous 12 months. Explanations may include that even if the operation is primarily a dairy operation, they may have chosen not to milk goats during the previous 12 months for various reasons.

D.1.b. Percentage of operations that had any does in milk during the previous 12 months, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
90.3	(3.0)	82.6	(6.3)	82.6	(5.5)

For operations that had any does in milk during the previous 12 months, a higher percentage of large operations (78.8 percent) had any does that had clinical mastitis than small and medium operations (17.5 and 29.4 percent, respectively). There were no differences by region in the percentage of operations with any does that had clinical mastitis.

D.1.c. For the 86.9 percent of operations that had any does in milk during the previous 12 months (table D.1.a.), percentage of operations with any does that had clinical mastitis (abnormal milk or swollen udder), by herd size and region:

Percent Operations											
Herd size (number of goats and kids)						Region					
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
17.5	(3.9)	29.4	(4.5)	78.8	(4.7)	32.3	(5.3)	24.4	(3.4)	26.8	(2.9)

For operations that had any does in milk during the previous 12 months, there were no differences by primary production of the operation in the percentage of operations with any does that had clinical mastitis.

D.1.d. For the 86.9 percent of operations that had any does in milk during the previous 12 months (table D.1.a.), percentage of operations with any does that had clinical mastitis (abnormal milk or swollen udder), by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
24.8	(4.1)	26.9	(5.2)	31.8	(6.3)

For operations that had any does in milk during the previous 12 months, there were no differences by herd size or region in the percentage of does that had clinical mastitis.

D.1.e. For the 86.9 percent of operations that had any does in milk during the previous 12 months (table D.1.a.), percentage of does* that had clinical mastitis (abnormal milk or swollen udder), by herd size and region:

Percent Does in Milk											
Herd size (number of goats and kids)						Region					
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
3.9	(0.9)	3.5	(0.9)	2.3	(0.3)	2.6	(0.4)	3.3	(0.6)	3.0	(0.4)

*Excluding operations that selected “don’t know.”

For operations that had any does in milk during the previous 12 months, there were no differences by primary production of the operation in the percentage of does that had clinical mastitis.

D.1.f. For the 86.9 percent of operations that had any does in milk during the previous 12 months (table D.1.a.), percentage of does* that had clinical mastitis (abnormal milk or swollen udder), by primary production of the operation:

Percent Does in Milk					
Primary Production of the Operation					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
2.6	(0.4)	2.5	(0.5)	4.8	(1.5)

*Excluding operations that selected “don’t know.”

For operations that had any does with clinical mastitis, almost all (95.1 percent) operations used visual observation of the udder and/or milk to diagnose mastitis most often.

D.1.g. For operations that had any does with clinical mastitis* (table D.1.c.), percentage of operations by method **most often** used to diagnose mastitis:

Method	Percent operations	Std. error
Visual observation of udder and/or milk	95.1	(1.3)
California mastitis test (CMT) or somatic cell count (SCC)	2.7	(0.8)
Culture of milk	1.7	(0.9)
Other	0.4	(0.3)
Total	100.0	

*Refers to the 23.3 percent of operations overall that had any does with clinical mastitis. This estimate comes from the 86.9 percent of operations that had any does in milk (table D.1.a.), of which 26.8 percent of those operations had any does with clinical mastitis (table D.1.c.).

2. Abortions

There are many different causes for abortions in goats, including infectious diseases. To prevent the spread of infectious diseases that cause abortion, certain practices, such as removing the placenta and fetus as soon as possible, are recommended.

The percentage of operations that had any bred does in the previous 12 months increased as herd size increased, with 85.3 percent of small, 98.7 percent of medium, and 99.7 percent of large operations having any bred does. There were no differences by region in the percentage of operations that had any bred does during the previous 12 months.

D.2.a. Percentage of operations that had any bred does during the previous 12 months, by herd size and region:

Percent Operations											
Herd size (number of goats and kids)						Region					
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
85.3	(3.5)	98.7	(0.7)	99.7	(0.2)	91.0	(3.7)	91.2	(2.5)	91.2	(2.1)

There were no differences by primary production of the operation in the percentage of operations that had any bred does during the previous 12 months.

D.2.b. Percentage of operations that had any bred does during the previous 12 months, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
95.2	(2.3)	89.1	(4.8)	83.6	(5.5)

For operations that had any bred does during the previous 12 months, a higher percentage of medium and large operations (26.3 and 48.9 percent, respectively) had any bred does abort than small operations (8.0 percent). There were no regional differences in the percentage of operations that had any does abort.

D.2.c. For the 91.2 percent of operations that had any bred does during the previous 12 months (table D.2.a.), percentage of operations that had any bred does abort, by herd size and region:

Percent Operations											
Herd size (number of goats and kids)						Region					
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
8.0	(2.6)	26.3	(3.9)	48.9	(8.7)	21.7	(4.6)	16.6	(2.4)	18.2	(2.2)

For operations that had any bred does during the previous 12 months, there were no differences by primary production of the operation in the percentage of operations that had any bred does abort.

D.2.d. For the 91.2 percent of operations that had any bred does during the previous 12 months (table D.2.a.), percentage of operations that had any bred does abort, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
19.5	(3.3)	16.6	(3.9)	16.0	(4.2)

For operations that had any does abort in the previous 12 months, the highest percentage of operations (85.4 percent) removed placentas or fetuses as soon as possible.

D.2.e. For operations that had any does abort in the previous 12 months* (table D.2.c.), percentage of operations by steps taken for aborting does:

Steps	Percent operations	Std. error
Removed placentas or fetuses as soon as possible	85.4	(3.7)
Cleaned the area by removing bedding and/or dirt	50.5	(6.5)
Disinfected the area	28.0	(6.5)
Physically separated does that aborted from other does	34.7	(6.2)
Any of the above	86.5	(3.6)

*Refers to the 16.6 percent of operations overall that had any does abort. This estimate comes from the 91.2 percent of operations that bred any does (table D.2.a.), of which 18.2 percent of those operations had any does abort (table D.2.c.).

For operations that physically separated does that aborted from other does, the highest percentage of operations (78.1 percent) separated them and then returned them to the herd.

D.2.f. For operations that physically separated does that aborted from other does* (table D.2.e.), percentage of operations by removal practice:

Practice	Percent operations	Std. error
Permanently removed from the herd	8.8	(3.1)
Not returned to the herd for the rest of the kidding season	13.1	(8.3)
Separated and then returned to the herd	78.1	(8.6)
Total	100.0	

*Refers to the 5.8 percent of operations overall that physically separated does that aborted from other does. This estimate comes from the 91.2 percent of operations that had any bred does (table D.2.a.), of which 18.2 percent of those operations had any does abort (table D.2.c.), of which 34.7 percent of those operations physically separated does that aborted from other does (table D.2.e.).

For operations that separated does that aborted and then returned them to the herd, the operation median number of days separated was 8.8 days.

D.2.g. For operations that separated does that aborted and then returned them to the herd* (table D.2.f.), operation median number of days separated:

Operation Median Number of Days	Std. error
8.8	(5.4)

*Refers to the 4.5 percent of operations overall that physically separated does that aborted and then returned them to the herd. This estimate comes from the 91.2 percent of operations that had any bred does (table D.2.a.), of which 18.2 percent of those operations had any does abort (table D.2.c.), of which 34.7 percent of those operations physically separated does that aborted from other does (table D.2.e.), of which 78.1 percent of those operations returned the separated does to the herd (table D.2.f.).

For operations that had any does abort in the previous 12 months, 52.8 percent of operations reported an unknown cause of abortion and 25.8 percent of operations reported an “other – non-disease-related” cause of abortion. Overall, 11.6 percent of operations that suspected a disease-related cause had the cause of abortion diagnosed by a veterinarian or laboratory.

D.2.h. For operations that had any does abort in the previous 12 months¹ (table D.2.c.), percentage of operations by suspected cause of the abortion, and if a cause was suspected, percentage of operations that used a veterinarian or laboratory to diagnose the cause:

Cause	Percent Operations			
	Cause Suspected		Diagnosed by veterinarian or laboratory	
	Pct.	Std. error	Pct.	Std. error
Campylobacteriosis (vibrio abortion)	2.9	(2.3)	8.5	(7.8)
Chlamydiosis (enzootic abortion)	10.8	(4.0)	4.1	(2.2)
Toxoplasmosis	6.0	(3.1)	31.1	(20.9)
Q fever	4.1	(2.4)	13.6	(9.3)
Salmonellosis	0.4	(0.3)	(D) ²	(D)
Listeriosis	2.4	(2.2)	(D)	(D)
Cache Valley virus	0.3	(0.3)	(D)	(D)
Other – disease-related ³	8.5	(3.5)	3.1	(2.4)
Other – non-disease-related ⁴	25.8	(6.2)	4.8	(3.1)
Unknown	52.8	(6.6)	0.0	(—)
Any of the above	100.0	(—)	4.0	(1.5)
Any disease-related cause above	23.6	(5.3)	11.6	(5.6)

¹Refers to the 16.6 percent of operations overall that had any does abort. This estimate comes from the 91.2 percent of operations that had any bred does (table D.2.a.), of which 18.2 percent of those operations had any does abort (table D.2.c.).

²Values of (D) denote too few to report.

³Common “other – disease-related” causes included blue tongue, leptospirosis, overeating disease, calcium and copper deficiencies, and plant or weed toxicities.

⁴Common “other – non-disease-related” causes included injuries and accidents, weather and heat-related stress, and fitness of the doe.

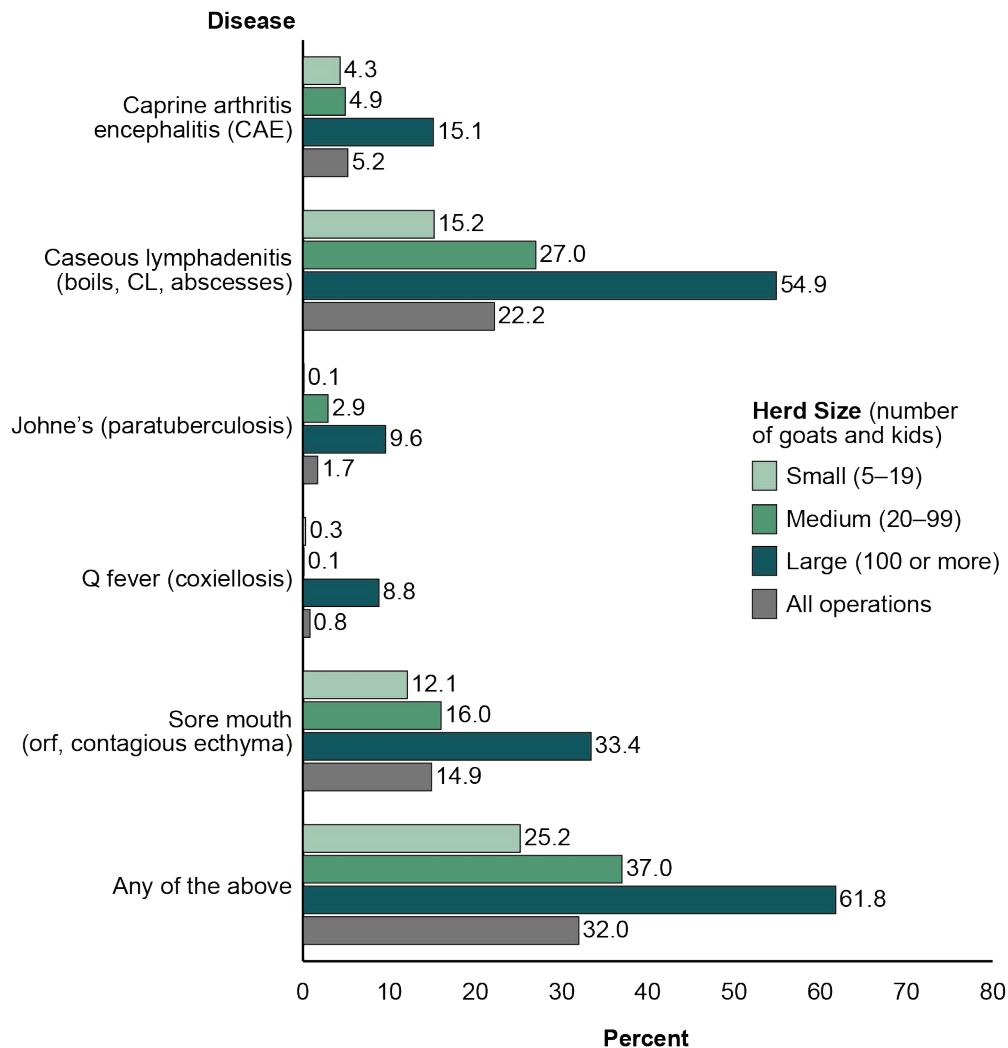
3. Diseases in the previous three years

The highest percentage of all operations had suspected or confirmed caseous lymphadenitis (22.2 percent) or sore mouth (14.9 percent) in the herd during the previous three years. A higher percentage of large operations (54.9 percent) had suspected or confirmed caseous lymphadenitis in the herd during the previous three years than small and medium operations (15.2 and 27.0 percent, respectively). A higher percentage of large operations (8.8 percent) had suspected or confirmed Q fever in the herd during the previous three years than small and medium operations (0.3 and 0.1 percent, respectively). A higher percentage of operations in the East region (6.7 percent) had suspected or confirmed caprine arthritis encephalitis (CAE) in the herd during the previous 3 years than operations in the West region (1.8 percent).

D.3.a. Percentage of operations that had the following diseases (suspected or confirmed) in the herd during the previous **three years**, by herd size and region:

Disease	Percent Operations											
	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Caprine arthritis encephalitis (CAE)	4.3	(1.8)	4.9	(1.2)	15.1	(3.9)	1.8	(0.5)	6.7	(1.6)	5.2	(1.1)
Caseous lymphadenitis (boils, CL, abscesses)	15.2	(3.5)	27.0	(4.1)	54.9	(9.0)	23.4	(4.7)	21.7	(3.0)	22.2	(2.6)
Johne's (paratuberculosis)	0.1	(0.1)	2.9	(1.5)	9.6	(4.9)	2.2	(1.6)	1.6	(0.6)	1.7	(0.6)
Q fever (coxiellosis)	0.3	(0.3)	0.1	(0.1)	8.8	(5.6)	0.4	(0.1)	1.0	(0.6)	0.8	(0.4)
Sore mouth (orf, contagious ecthyma)	12.1	(3.5)	16.0	(3.6)	33.4	(7.9)	24.5	(5.0)	10.8	(2.6)	14.9	(2.4)
Any of the above	25.2	(3.7)	37.0	(4.5)	61.8	(9.4)	37.2	(5.6)	29.7	(3.1)	32.0	(2.8)

Percentage of operations that had the following diseases (suspected or confirmed) in the herd during the previous three years, by herd size



A higher percentage of dairy operations (12.8 percent) suspected or confirmed caprine arthritis encephalitis (CAE) in the herd during the previous three years than meat operations (1.7 percent).

D.3.b. Percentage of operations that had the following diseases (suspected or confirmed) in the herd during the previous **three years**, by primary production of the operation:

Disease	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Caprine arthritis encephalitis (CAE)	1.7	(0.7)	12.8	(3.2)	6.6	(3.2)
Caseous lymphadenitis (boils, CL, abscesses)	20.5	(3.3)	25.7	(5.4)	22.9	(5.4)
Johne's (paratuberculosis)	1.1	(0.9)	2.1	(1.0)	3.0	(1.7)
Q fever (coxiellosis)	0.5	(0.3)	0.6	(0.2)	1.7	(1.6)
Sore mouth (orf, contagious ecthyma)	13.8	(3.1)	10.5	(3.8)	21.6	(5.7)
Any of the above	27.6	(3.8)	38.1	(6.2)	36.5	(6.3)

For operations that had any of the listed diseases suspected or confirmed in their herds during the previous three years, 25.6 percent had the disease diagnosed by a veterinarian or a laboratory. For operations that had caprine arthritis encephalitis suspected or confirmed in the herd during the previous three years, 51.3 percent had the disease diagnosed by a veterinarian or a laboratory.

D.3.c. For operations that had the following diseases (suspected or confirmed) in the herd during the previous **three years** (table D.3.a.), percentage of operations that had the disease diagnosed by a veterinarian or laboratory:

Disease	Percent operations	Std. error
Caprine arthritis encephalitis (CAE)	51.3	(11.0)
Caseous lymphadenitis (boils, CL, abscesses)	23.8	(5.7)
Johne's (paratuberculosis)	18.6	(11.7)
Q fever (coxiellosis)	21.4	(12.1)
Sore mouth (orf, contagious ecthyma)	15.0	(6.2)
Any of the above	25.6	(4.5)

4. Sore mouth (Orf, Contagious Ecthyma)

Scabs around the mouth, feet, or udder may be a sign of poxvirus infection, a cause of contagious ecthyma, also known as orf or sore mouth. Sore mouth is a zoonotic disease, meaning it is capable of infecting people as well as goats. Therefore, people should take precautions such as wearing gloves, washing their hands, and covering cuts and scrapes when handling goats with scabs. More information on sore mouth in humans is available at: <https://www.cdc.gov/poxvirus/orf-virus/>

Less than 10 percent of all operations had any goats or kids with sore mouth in the previous 12 months. There were no differences by herd size or region in the percentage of operations that had any goats or kids with sore mouth during the previous 12 months.

D.4.a. Percentage of operations that had any goats or kids with sore mouth (suspected or confirmed) during the previous 12 months, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
7.4	(2.9)	5.0	(1.7)	26.6	(7.5)	12.2	(4.1)	5.9	(1.9)	7.8 (1.8)

There were no differences by primary production of the operation in the percentage of operations that had any goats or kids with sore mouth during the previous 12 months.

D.4.b. Percentage of operations that had any goats or kids with sore mouth (suspected or confirmed) during the previous 12 months, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
6.3	(2.1)	5.8	(3.3)	13.0	(4.7)

Overall, 1.9 percent of goats and kids had sore mouth during the previous 12 months. There were no differences by herd size or region in the percentage of goats and kids that had sore mouth during the previous 12 months.

D.4.c. Percentage of goats and kids that had sore mouth (suspected or confirmed) during the previous 12 months, by herd size and region:

Percent Goats*											
Herd size (number of goats and kids)						Region					
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
0.9	(0.4)	0.9	(0.3)	2.9	(1.0)	2.2	(0.8)	1.7	(0.5)	1.9	(0.5)

*Number of goats and kids with sore mouth in the previous 12 months divided by the goat and kid inventory on the day of the interview.

The percentage of goats and kids that had sore mouth during the previous 12 months did not differ by primary production of the operation.

D.4.d. Percentage of goats and kids that had sore mouth (suspected or confirmed) during the previous 12 months, by primary production of the operation:

Percent Goats*					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
1.3	(0.5)	2.7	(1.4)	2.3	(0.7)

*Number of goats and kids with sore mouth in the previous 12 months divided by the goat and kid inventory on the day of the interview.

For operations that had any goats or kids with sore mouth during the previous 12 months, 7.2 percent of those operations had any infected goats or kids die.

D.4.e. For the 7.8 percent of operations that had any goats or kids with sore mouth (suspected or confirmed) during the previous 12 months (table D.4.a.), percentage of operations that had any of those infected goats or kids die:

Percent Operations	Std. error
7.2	(4.0)

Overall, of the goats and kids that had sore mouth during the previous 12 months, 4.7 percent died.

D.4.f. For the 1.9 percent of goats and kids that had sore mouth (suspected or confirmed) during the previous 12 months (table D.4.c.), percentage of goats and kids that died:

Percent Goats	Std. error
4.7	(3.6)

5. Human infections

Q fever and sore mouth are both zoonotic and can be spread to humans through direct or indirect contact with goats or goat products. Q fever is caused by the bacterium *Coxiella burnetii* and 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. The bacteria are hardy organisms which can survive in the environment for long periods. 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 flu-like illness and pneumonia. More information on Q fever and other zoonotic diseases is available at www.cdc.gov.

Overall, 4.5 percent of all operations have ever had an operator, family members, or employee infected with Q fever or sore mouth. A higher percentage of large operations (22.3 percent) had an operator, any family members, or employees who had ever been infected with sore mouth than small operations (1.8 percent). There were no differences by region in the percentage of operations that had an operator, any family members, or employees who had ever been infected with Q fever or sore mouth.

D.5.a. Percentage of operations on which the operator or any family members or employees have ever been infected with Q fever or sore mouth (orf, contagious ecthyma), by herd size and region:

Percent Operations												
Disease	Herd size (number of goats and kids)						Region					
	Small		Medium		Large		West		East		All Operations	
	(5–19)		(20–99)		(100 or More)							
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Q fever	0.0	(—)	2.3	(1.9)	1.0	(0.5)	0.5	(0.3)	1.1	(1.0)	0.9	(0.7)
Sore mouth (orf, contagious ecthyma)	1.8	(1.3)	3.2	(1.9)	22.3	(10.3)	1.8	(0.6)	4.4	(1.6)	3.6	(1.1)
Any of the above	1.8	(1.3)	5.5	(2.7)	23.0	(10.3)	2.3	(0.7)	5.4	(1.8)	4.5	(1.3)

There were no differences by primary production of the operation in the percentage of operations on which the operator or any family members or employees have ever been infected with Q fever or sore mouth.

D.5.b. Percentage of operations on which the operator or any family members or employees have ever been infected with Q fever or sore mouth (orf, contagious ecthyma), by primary production of the operation:

Percent Operations						
Primary Production						
Disease	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Q fever	1.5	(1.3)	0.3	(0.1)	0.0	(0.0)
Sore mouth (orf, contagious ecthyma)	2.6	(1.4)	7.6	(4.5)	2.2	(1.6)
Any of the above	4.1	(1.8)	7.8	(4.5)	2.3	(1.6)

For operations on which the operator or any family members or employees had ever been infected with Q fever or sore mouth, just over three-quarters of operations had the infected person diagnosed by a doctor.

D.5.c. For the 4.5 percent of operations on which the operator or any family members or employees have ever been infected with Q fever or sore mouth (table D.5.a.), percentage of operations that had the disease **diagnosed by a doctor**:

Disease	Percent operations	Std. error
Q fever	98.5	(1.7)
Sore mouth (orf, contagious ecthyma)	70.9	(11.8)
Any of the above	76.7	(9.8)

6. Injections

Goats may be given injections for various reasons, including illness and preventive care, such as vaccines. It is recommended that a new needle be used for each goat to prevent the spread of bloodborne diseases and to ensure that the needle is clean and not contaminated with dirt or debris in between injections.

There were no differences by herd size or region in the percentage of operations that gave any goats injections during the previous 12 months.

D.6.a. Percentage of operations that gave any goats injections during the previous 12 months, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
71.9	(4.3)	82.5	(3.6)	87.9	(7.3)	68.7	(5.4)	80.4	(3.3)	76.9 (2.8)

A higher percentage of dairy operations (87.2 percent) gave any goats injections during the previous 12 months than meat operations (70.5 percent).

D.6.b. Percentage of operations that gave any goats injections during the previous 12 months, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
70.5	(4.2)	87.2	(3.6)	82.4	(5.0)

For operations that gave any goats injections, the majority of all operations (67.4 percent) used a new needle for each goat injected. There were no differences by herd size or region in the percentage of operations that used a new needle for each goat injected.

D.6.c. For the 76.9 percent of operations that gave any goats injections (table D.6.a.), percentage of operations that used a new needle for each goat injected, by herd size and region:

Percent Operations											
New needle usage	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Yes	75.7	(4.4)	58.2	(5.1)	57.8	(7.9)	74.8	(5.9)	64.7	(3.9)	67.4 (3.2)
No	24.3	(4.4)	41.8	(5.1)	42.2	(7.9)	25.2	(5.9)	35.3	(3.9)	32.6 (3.2)
Total	100.0		100.0		100.0		100.0		100.0		100.0

For operations that gave any goats injections, the percentage of operations that used a new needle for each goat injected did not differ by primary production of the operation.

D.6.d. For the 76.9 percent of operations that gave any goats injections (table D.6.a.), percentage of operations that used a new needle for each goat injected, by primary production of the operation:

Percent Operations						
Primary Production						
New needle usage	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Yes	60.8	(4.8)	72.9	(6.3)	75.5	(5.1)
No	39.2	(4.8)	27.1	(6.3)	24.5	(5.1)
Total	100.0		100.0		100.0	

For operations that did not use a new needle for each goat injected, 10.9 percent of operations chemically disinfected the needles between goats.

D.6.e. For operations that did **not** use a new needle for each goat injected¹ (table D.6.c.), percentage of operations that chemically disinfected² the needles between goats:

Percent Operations	Std. error
10.9	(3.1)

¹Refers to the 25.1 percent of operations overall that did not use a new needle for each goat injected. This estimate comes from the 76.9 percent of operations that gave any goats injections (table D.6.a.), of which 32.6 percent of those operations did not use a new needle for each goat injected (table D.6.c.).

²The use of a chemical solution (e.g., Betadine, Nolvasan, bleach) used to kill disease-causing organisms.

7. Shared equipment

Sharing equipment, such as tractors, livestock trailers, manure spreaders, hoof trimmers, clippers, etc., presents a risk of spreading disease between operations. Producers were asked if they shared any equipment with other livestock owners and about the cleaning practices prior to using the shared equipment.

There were no differences by herd size or region in the percentage of operations that shared any equipment with other livestock owners.

D.7.a. Percentage of operations that shared any equipment* with other livestock owners during the previous 12 months, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
17.4	(3.4)	16.2	(2.8)	13.9	(4.1)	17.7	(3.8)	16.3	(2.6)	16.7 (2.1)

*For example, tractors, feeding equipment, manure spreaders, trailers, clippers, hoof trimmers, dehorers.

There were no differences by primary production of the operation in the percentage of operations that shared any equipment with other livestock owners.

D.7.b. Percentage of operations that shared any equipment* with other livestock owners during the previous 12 months, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
13.6	(2.7)	25.0	(5.4)	16.5	(4.2)

*For example, tractors, feeding equipment, manure spreaders, trailers, clippers, hoof trimmers, dehorers.

For operations that shared any equipment with other livestock owners, about one-third of operations (34.3 percent) cleaned the equipment prior to use. The percentage of operations that cleaned shared equipment prior to use did not differ by herd size or region.

D.7.c. For the 16.7 percent of operations that shared any equipment with other livestock owners during the previous 12 months (table D.7.a.), percentage of operations that cleaned shared equipment prior to use, by herd size and region:

Percent Operations											
Herd size (number of goats and kids)						Region					
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
37.9	(10.4)	30.6	(6.8)	19.5	(6.4)	32.3	(10.7)	35.2	(8.3)	34.3	(6.6)

For operations that shared any equipment with other livestock owners, the percentage of operations that cleaned shared equipment prior to use did not differ by primary production of the operation.

D.7.d. For the 16.7 percent of operations that shared any equipment with other livestock owners during the previous 12 months (table D.7.a.), percentage of operations that cleaned shared equipment prior to use, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
33.1	(11.2)	37.5	(9.9)	32.1	(12.2)

For operations that cleaned shared equipment prior to use, 39.6 percent of operations washed equipment with water (with or without soap) or steam only.

D.7.e. For operations that cleaned shared equipment prior to use¹ (table D.7.c.), percentage of operations by cleaning procedure used:

Procedure	Percent operations	Std. error
Wash equipment with water (with or without soap) or steam only	39.6	(10.4)
Chemically disinfect equipment only	15.2	(6.5)
Wash and chemically disinfect equipment	24.8	(8.1)
Other ²	20.3	(8.1)
Total	100.0	

¹Refers to the 5.7 percent of operations overall that cleaned shared equipment prior to use. This estimate comes from the 16.7 percent of operations that shared any equipment with other livestock owners during the previous 12 months (table D.7.a.), of which 34.3 percent of those operations cleaned the shared equipment prior to use (table D.7.c.).

²Common "other" cleaning procedures included alcohol, heat-based methods, sanitizer wipes, and methods dependent upon the equipment being cleaned.

E. Antimicrobial Use in the Feed and Water

1. Coccidiostats

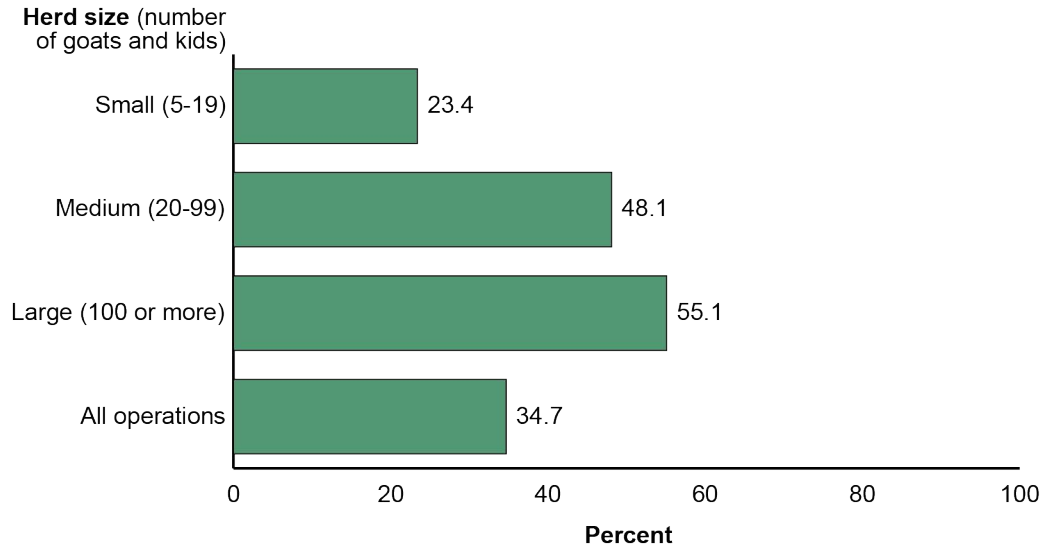
Coccidiostats are a group of chemical agents used to control parasitic coccidiosis in animals. Coccidiostats inhibit the growth but do not kill the coccidia (*Eimeria* spp). Coccidiosis is one of the most common causes of diarrhea in goats between three weeks and five months of age. Coccidiosis is commonly seen around the time of weaning due to increased stress.

A higher percentage of medium and large operations (48.1 and 55.1 percent, respectively) used a coccidiostat in the feed or water from September 1, 2018, through August 31, 2019, than small operations (23.4 percent). The percentage of operations that used a coccidiostat in the feed or water from September 1, 2018, through August 31, 2019, did not differ by region.

E.1.a. Percentage of operations that used a coccidiostat in the feed (including milk, milk replacer, or starter/creep feed) or water from September 1, 2018, through August 31, 2019, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
23.4	(3.6)	48.1	(4.8)	55.1	(9.1)	33.0	(5.3)	35.4	(3.4)	34.7 (2.9)

Percentage of operations that used a coccidiostat in the feed (including milk, milk replacer, or starter/creep feed) or water from September 1, 2018, through August 31, 2019, by herd size



A higher percentage of meat operations (42.5 percent) used a coccidiostat in the feed or water from September 1, 2018, through August 31, 2019, than dairy operations (23.4 percent).

E.1.b. Percentage of operations that used a coccidiostat in the feed (including milk, milk replacer, or starter/creep feed) or water from September 1, 2018, through August 31, 2019, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
42.5	(4.5)	23.4	(3.3)	26.6	(5.2)

For operations that used a coccidiostat in the feed or water, the highest percentage of operations used Decoquinatate or Ionophores in the feed (42.5 and 32.8 percent, respectively) or Amprolium in the water (40.8 percent). A higher percentage of large operations (21.7 percent) used sulfa drugs in the water than small and medium operations (1.2 and 4.3 percent, respectively). There were no differences by region in the percentage of operations by coccidiostat used in the feed or water.

E.1.c. For the 34.7 percent of operations that used a coccidiostat in the feed (including milk, milk replacer, or starter/creep feed) or water (table E.1.a.), percentage of operations by product used, and by herd size and region:

Percent Operations												
Product	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All Operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Feed												
Ionophores (Rumensin®, Bovatec®)	27.1	(9.4)	38.9	(6.7)	23.6	(5.1)	16.7	(5.0)	39.4	(6.5)	32.8	(5.0)
Decoquinatate (Deccox®)	47.4	(9.7)	38.7	(6.7)	43.9	(10.4)	56.5	(9.5)	36.8	(6.1)	42.5	(5.2)
Amprolium (Corid®)	7.2	(2.8)	5.6	(2.5)	20.0	(9.9)	7.5	(2.3)	7.8	(2.7)	7.7	(2.0)
Sulfa drugs (Albon®, Sulmet®, etc.)	1.7	(0.9)	4.1	(2.0)	6.6	(3.0)	4.8	(1.8)	2.9	(1.4)	3.4	(1.1)
Other	0.0	(—)	1.0	(0.9)	0.3	(0.3)	0.3	(0.3)	0.7	(0.6)	0.6	(0.5)
Any coccidiostats in the feed	76.7	(8.1)	78.6	(5.5)	68.5	(10.8)	75.6	(9.0)	77.3	(04.9)	76.9	(4.3)
Water												
Amprolium (Corid®)	36.8	(10.3)	46.6	(7.1)	26.9	(5.9)	33.3	(9.2)	43.9	(6.7)	40.8	(5.5)
Sulfa drugs (Albon®, Sulmet®, etc.)	1.2	(0.8)	4.3	(2.0)	21.7	(7.1)	5.4	(1.9)	4.7	(1.8)	4.9	(1.4)
Other	0.0	(—)	0.1	(0.0)	10.4	(9.8)	0.1	(0.1)	1.5	(1.5)	1.1	(1.1)
Any coccidiostats in the water	36.8	(10.3)	47.1	(7.1)	54.3	(10.4)	37.3	(9.3)	47.1	(6.7)	44.2	(5.5)

For operations that used a coccidiostat in the feed or water, a higher percentage of dairy operations (19.3 percent) used Amprolium in the feed than other operations (1.5 percent).

E.1.d. For the 34.7 percent of operations that used a coccidiostat in the feed (including milk, milk replacer, or starter/creep feed) or water (table E.1.a.), percentage of operations by product used, and by primary production of the operation:

Percent Operations						
Primary Production						
Product	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Feed						
Ionophores (Rumensin®, Bovatec®)	36.7	(7.1)	24.0	(4.0)	25.5	(8.3)
Decoquinate (Deccox®)	36.4	(7.0)	43.8	(6.2)	64.9	(9.9)
Amprolium (Corid®)	6.8	(2.6)	19.3	(5.2)	1.5	(1.2)
Sulfa drugs (Albon®, Sulmet®, etc.)	1.6	(1.4)	8.0	(2.5)	6.5	(2.8)
Other	0.1	(0.0)	3.7	(3.0)	0.0	(—)
Any coccidiostats in the feed	72.3	(6.0)	82.3	(5.4)	89.6	(6.4)
Water						
Amprolium (Corid®)	45.7	(7.6)	32.7	(6.2)	28.8	(10.8)
Sulfa drugs (Albon®, Sulmet®, etc.)	4.1	(1.8)	8.8	(3.0)	5.0	(2.4)
Other	0.0	(—)	0.2	(0.2)	6.0	(5.8)
Any coccidiostats in the water	47.6	(7.6)	34.8	(6.2)	39.3	(11.1)

For operations that used sulfa drugs as a coccidiostat, on average, the drug was administered in the feed for 5.0 days and the water for 6.3 days. The average number of days sulfa drugs were administered did not differ by herd size, region, or route of administration.

E.1.e. For operations that used sulfa drugs as a coccidiostat¹ (table E.1.c.), operation average number of days treated with sulfa drugs by route of administration via feed (including milk, milk replacer, or starter/creep feed) or water, and by herd size and region:

Operation Average Number of Days Treated with Sulfa Drugs²

Route	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error
Feed	3.1	(1.0)	5.7	(0.6)	4.7	(0.2)	4.5	(0.6)	5.4	(0.8)	5.0	(0.6)
Water	5.3	(0.3)	7.3	(0.9)	5.4	(0.2)	6.9	(1.2)	6.0	(0.4)	6.3	(0.5)

¹Refers to the 1.2 and 1.7 percent of operations overall that used sulfa drugs as a coccidiostat in the feed and water, respectively. This estimate comes from the 34.7 percent of operations that used a coccidiostat in feed or water (table E.1.a.), of which 3.4 and 4.9 percent of those operations used sulfa drugs as a coccidiostat in feed and water, respectively (table E.1.c.).

²Treatments starting and ending on the same day are counted as one day.

For operations that used sulfa drugs as a coccidiostat, the average number of days goats were treated with sulfa drugs via feed was longer on meat operations (6.6 days) than dairy operations (4.7 days). The average number of days sulfa drugs were administered via water did not differ by primary production of the operation.

E.1.f. For operations that used sulfa drugs as a coccidiostat¹ (table E.1.c.), operation average number of days treated with sulfa drugs by route of administration via feed (including milk, milk replacer, or starter/creep feed) or water, and by primary production of the operation:

Operation Average Number of Days Treated with Sulfa Drugs²

Route	Primary Production of the Operation					
	Meat		Dairy		Other	
	Avg.	Std. error	Avg.	Std. error	Avg.	Std. error
Feed	6.6	(0.4)	4.7	(0.3)	3.9	(0.7)
Water	6.3	(0.5)	5.3	(0.2)	7.7	(2.0)

For operations that used sulfa drugs as a coccidiostat, 100.0 percent of operations administered sulfa drugs in the feed to kids, whereas about half of operations (46.1 percent) administered sulfa drugs in the feed to adults.

E.1.g. For operations that used sulfa drugs as a coccidiostat* (table E.1.c.), percentage of operations that administered a sulfa drug as a coccidiostat in the feed (including milk, milk replacer, or starter/creep feed) and in water, by goat age class:

Percent Operations				
Age Class				
Kids			Adults	
Route	Pct.	Std. error	Pct.	Std. error
Feed	100.0	(—)	46.1	(18.1)
Water	97.8	(1.6)	53.1	(13.8)

*Refers to the 1.2 and 1.7 percent of operations overall that used sulfa drugs as a coccidiostat in the feed and water, respectively. This estimate comes from the 34.7 percent of operations that used a coccidiostat in feed or water (table E.1.a.), of which 3.4 and 4.9 percent of those operations used sulfa drugs as a coccidiostat in feed and water, respectively (table E.1.c.).

For operations that used sulfa drugs as a coccidiostat, a higher percentage of kid goats (43.0 percent) were administered a sulfa drug in the water than adult goats (8.3 percent).

E.1.h. For operations that used sulfa drugs as a coccidiostat¹ (table E.1.c.), percentage of kids and adult goats that were administered a sulfa drug as a coccidiostat in the feed (including milk, milk replacer, or starter/creep feed) and in water:

Percent				
Kids ²			Adults ³	
Route	Pct.	Std. error	Pct.	Std. error
Feed	87.9	(3.7)	67.4	(19.9)
Water	43.0	(10.7)	8.3	(4.6)

¹Refers to the 1.2 and 1.7 percent of operations overall that used sulfa drugs as a coccidiostat in the feed and water, respectively. This estimate comes from the 34.7 percent of operations that used a coccidiostat in feed or water (table E.1.a.), of which 3.4 and 4.9 percent of those operations used sulfa drugs as a coccidiostat in feed and water, respectively (table E.1.c.).

²As a percentage of kids born alive during the most recently completed kidding period.

³As a percentage of adult goat inventory on the day of the interview.

2. Ionophores for growth promotion

Ionophores are administered in the feed and promote the efficient use of feedstuffs by altering the fermentation pattern of the rumen. Ionophores are commonly used to help control coccidiosis but can also be used to promote growth. Ionophores are not categorized by the FDA as medically important antimicrobials for humans.

Overall, only 1.9 percent of operations used any ionophores as growth promotants in the feed. The percentage of operations that used any ionophores as growth promotants in the feed did not differ by herd size or region.

E.2.a. Percentage of operations that used any ionophores as growth promotants **in feed**, from September 1, 2018, through August 31, 2019, by herd size and region:

Percent Operations										
Herd size (number of goats and kids)						Region				
Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
0.6	(0.4)	3.6	(2.0)	3.6	(1.5)	1.0	(0.4)	2.3	(1.1)	1.9 (0.8)

The percentage of operations that used any ionophores as growth promotants in the feed did not differ by primary production of the operation.

E.2.b. Percentage of operations that used any ionophores as growth promotants **in feed**, from September 1, 2018, through August 31, 2019, by primary production of the operation:

Percent Operations					
Primary Production					
Meat		Dairy		Other	
Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
3.0	(1.4)	1.1	(0.4)	0.1	(0.1)

3. Antibiotics in the drinking water

Administering antibiotics in the drinking water allows for treatment of a group of animals to prevent, control, or treat a specific disease or disorder. When antibiotics are needed on poultry or swine operations, it is common to administer them in the drinking water, and as of January 1, 2017, the use of medically important antibiotics in livestock drinking water requires a veterinary prescription.

Overall, 1.0 percent of all operations gave kids or adult goats any antibiotics in drinking water to prevent, control, or treat a disease or disorder. The percentage of operations that gave kids or adults any antibiotics in drinking water to prevent, control, or treat a disease or disorder by age class did not differ by herd size or region.

E.3.a. Percentage of operations that gave kids or adults any antibiotics (other than ionophores) in drinking water to prevent, control, or treat a disease or disorder, from September 1, 2018, through August 31, 2019, by goat age class, and by herd size and region:

Percent Operations												
Age class	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Kids	0.7	(0.7)	0.8	(0.6)	2.6	(1.3)	0.4	(0.3)	1.0	(0.6)	0.8	(0.4)
Adults	0.7	(0.7)	0.8	(0.6)	1.5	(1.1)	0.4	(0.2)	0.9	(0.6)	0.8	(0.4)
Either	0.7	(0.7)	0.8	(0.6)	4.1	(1.8)	0.8	(0.4)	1.0	(0.6)	1.0	(0.4)

The percentage of operations that gave kids or adult goats any antibiotics in drinking water to prevent, control, or treat a disease or disorder did not differ by primary production of the operation.

E.3.b. Percentage of operations that gave kids or adults any antibiotics (other than ionophores) in drinking water to prevent, control, or treat a disease or disorder, from September 1, 2018, through August 31, 2019, by goat age class, and by primary production of the operation:

Percent Operations						
Primary Production						
Age class	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Kids	1.1	(0.7)	0.3	(0.1)	0.8	(0.5)
Adults	1.0	(0.7)	0.1	(0.1)	0.8	(0.5)
Either	1.1	(0.7)	0.4	(0.1)	1.1	(0.6)

For operations that gave kids any antibiotics in the drinking water, the reason for administration on operations was primarily respiratory disease and digestive disease (42.0 and 56.8 percent, respectively). For operations that gave adults antibiotics in the drinking water, 14.7 percent of operations listed “other” reasons. Abortion was the main “other” reason listed.

E.3.c. For the 1.0 percent of operations that gave kids or adults any antibiotics (other than ionophores) in drinking water (table E.3.a.), percentage of operations by reason for administration and by goat age class:

Percent Operations				
Age Class				
Reason	Kids		Adults	
	Pct.	Std. error	Pct.	Std. error
Respiratory disease	42.0	(24.0)	36.9	(24.9)
Digestive disease	56.8	(24.2)	48.3	(28.5)
Other*	1.2	(1.2)	14.7	(11.5)

*No common “other” reasons were listed for kids. Common “other” reasons for adults included abortions.

For operations that gave kids or adults any antibiotics in the drinking water, 14.5 percent of kid goats and 28.6 percent of adult goats received antibiotics for respiratory disease.

E.3.d. For the 1.0 percent of operations that gave kids or adults any antibiotics (other than ionophores) in drinking water (table E.3.a.), percentage of kids and percentage of adults by reason for administration:

Reason	Percent			
	Kids ¹		Adults ²	
	Pct.	Std. error	Pct.	Std. error
Respiratory disease	14.5	(5.5)	28.6	(17.3)
Digestive disease	8.4	(6.1)	11.5	(11.0)
Other ³	14.5	(11.6)	30.4	(15.9)

¹As a percentage of kids born alive during the most recently completed kidding period.

²As a percentage of adult goat inventory on the day of the interview.

³No common "other" reasons were listed for kids. Common "other" reasons for adults included abortions.

For operations that gave kids or adults any antibiotics in the drinking water, sulfonamides were administered an average of 5.8 days and tetracyclines 10.9 days.

E.3.e. For the 1.0 percent of operations that gave kids or adults any antibiotics (other than ionophores) in drinking water (table E.3.a.), operation average number of days the following antibiotic classes were administered in drinking water:

Antibiotic class	Operation average number of days	Std. error
Sulfonamides	5.8	(0.6)
Tetracyclines	10.9	(2.9)
Other	(D)*	(D)

*Values of (D) denote too few to report.

For operations that gave kids or adults any antibiotics in the drinking water, the average number of days antibiotics were administered in the drinking water did not differ by age class.

E.3.f. For the 1.0 percent of operations that gave kids or adults any antibiotics (other than ionophores) in drinking water (table E.3.a.), operation average number of days any antibiotics were administered in drinking water, by goat age class:

Age class	Operation average number of days	Std. error
Kids	6.6	(0.7)
Adults	10.3	(2.3)

For operations that gave kids or adults any antibiotics in the drinking water, the average number of days antibiotics were administered in the drinking water was longer for respiratory disease (7.1 days) than digestive disease (4.8 days)

E.3.g. For the 1.0 percent of operations that gave kids or adults any antibiotics (other than ionophores) in drinking water (table E.3.a.), operation average number of days any antibiotics were administered in drinking water, by reason for administration:

Reason	Operation average number of days	Std. error
Respiratory disease	7.1	(0.5)
Digestive disease	4.8	(0.3)
Other	17.0	(7.3)

4. Antibiotics in the feed

On January 1, 2017, the U.S. Food and Drug Administration (FDA) implemented policy changes regarding the use of antibiotics in food-producing animals. These changes included eliminating the use of medically important antibiotics for growth promotion purposes in food-producing animals and requiring veterinary oversight for use of medically important antibiotics in animal feed or water. The FDA defines “medically important” antibiotics as those important for therapeutic use in human medicine. Antibiotics in the feed can be administered to a group of animals to prevent, control, or treat a disease or disorder, such as respiratory or digestive disease in young goats, or abortion storms in does. Goat producers should work closely with their veterinarians to receive approval for administration of antibiotics in the feed.

Overall, 0.9 percent of operations gave kids or adults any antibiotics in feed to prevent, control or treat a disease or disorder. A higher percentage of large operations (4.5 percent) gave any goats antibiotics in feed to prevent, control, or treat a disease or disorder than small operations (0.4 percent). A higher percentage of large operations (2.5 percent) gave preweaned kids any antibiotics in the feed to prevent, control, or treat a disease or disorder than small and medium operations (0.1 and 0.2 percent, respectively). There were no differences by region in the percentage of operations that gave any of the listed age classes antibiotics in the feed to prevent, control, or treat a disease or disorder.

E.4.a. Percentage of operations that gave kids or adults any antibiotics (other than ionophores) in feed (including milk, milk replacer, or starter/creep feed) to prevent, control, or treat a disease or disorder, from September 1, 2018, through August 31, 2019, by goat age class, and by herd size and region:

Percent Operations											
Age class	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Preweaned Kids	0.1	(0.1)	0.2	(0.1)	2.5	(0.8)	0.3	(0.2)	0.3	(0.1)	0.3 (0.1)
Weaned kids	0.0	(—)	0.3	(0.3)	0.5	(0.3)	0.3	(0.3)	0.1	(0.0)	0.2 (0.1)
Adults	0.4	(0.3)	0.9	(0.6)	2.2	(1.2)	0.7	(0.4)	0.7	(0.4)	0.7 (0.3)
Any	0.4	(0.3)	1.1	(0.6)	4.5	(1.5)	0.8	(0.4)	0.9	(0.4)	0.9 (0.3)

Very few dairy and other operations gave preweaned kids and weaned kids antibiotics in the feed to prevent, control, or treat a disease or disorder.

E.4.b. Percentage of operations that gave kids or adults any antibiotics (other than ionophores) in feed (including milk, milk replacer, or starter/creep feed) to prevent, control, or treat a disease or disorder, from September 1, 2018, through August 31, 2019, by goat age class, and by primary production of the operation:

Percent Operations						
Primary Production						
Age class	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Preweaned Kids	0.0	(—)	1.2	(0.3)	0.1	(0.1)
Weaned kids	0.0	(—)	0.2	(0.1)	0.5	(0.4)
Adults	0.7	(0.4)	0.6	(0.3)	0.7	(0.5)
Any	0.7	(0.4)	1.6	(0.4)	0.8	(0.5)

For operations that gave kids or adults any antibiotics in feed, the majority of operations (86.9 percent) gave preweaned kids antibiotics in the feed due to digestive disease. For operations that gave kids or adults any antibiotics in feed, 80.5 percent of operations gave adults antibiotics in the feed for “other” reasons, with abortions being the most common “other” reason listed.

E.4.c. For the 0.9 percent of operations that gave kids or adults any antibiotics (other than ionophores) in feed (including milk, milk replacer, or starter/creep feed) (table E.4.a.), percentage of operations by goat age class and by reason for administration:

Percent Operations						
Age Class						
Reason	Preweaned kids		Weaned kids		Adults	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Respiratory disease	16.8	(8.2)	57.6	(27.0)	1.2	(1.2)
Digestive disease	86.9	(7.6)	86.7	(13.4)	18.3	(13.1)
Other*	0.0	(—)	13.3	(13.4)	80.5	(13.2)

*No common “other” reasons were listed for preweaned kids and weaned kids. A common “other” reason for adults was abortion.

For operations that gave kids or adults any antibiotics in feed, there were no differences in the percentage of preweaned kids and weaned kids treated by reason of treatment. A higher percentage of adult goats (67.7 percent) received antibiotics in the feed due to other reasons than respiratory or digestive disease.

E.4.d. For the 0.9 percent of operations that gave kids or adults any antibiotics (other than ionophores) in feed (including milk, milk replacer, or starter/creep feed) (table E.4.a.), percentage of preweaned kids, weaned kids, and adults by reason for administration:

Reason	Percent					
	Preweaned kids ¹		Weaned kids ¹		Adults ²	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Respiratory disease	20.5	(6.1)	5.1	(3.4)	0.4	(0.4)
Digestive disease	23.8	(7.0)	18.5	(9.0)	2.5	(1.9)
Other ³	0.0	(—)	15.6	(17.5)	67.7	(14.2)

¹As a percentage of kids born alive during the most recently completed kidding period.

²As a percentage of adult goat inventory on the day of the interview.

³No common "other" reasons were listed for preweaned kids and weaned kids. A common "other" reason for adults was abortion.

For the 0.9 percent of operations that gave kids or adults any antibiotics in feed, the predominant antibiotic used on operations was a tetracycline (81.8 percent).

E.4.e. For the 0.9 percent of operations that gave kids or adults any antibiotics (other than ionophores) in feed (including milk, milk replacer, or starter/creep feed) (table E.4.a.), percentage of operations by primary antibiotic class used:

Antibiotic class	Percent operations	Std. error
Tetracyclines	81.8	(7.2)
Aminoglycosides	10.2	(9.5)
Other	23.5	(9.2)

For operations that gave kids or adults the following antibiotics, tetracyclines were administered in feed for an average of 30.7 days.

E.4.f. For operations that gave kids or adults the following antibiotic classes (other than ionophores) in feed (including milk, milk replacer, or starter/creep feed)¹ (table E.4.e.), operation average number of days the following antibiotic classes were administered in feed:

Antibiotic class	Operation average number of days	Std. error
Tetracyclines	30.7	(9.5)
Aminoglycosides	(D) ²	(D)
Other	14.4	(4.4)

¹Refers to the 0.7, 0.1, and 0.2 percent of operations overall that used tetracyclines, aminoglycosides, and other as the primary antibiotic in feed, respectively. This estimate comes from the 0.9 percent of operations that gave any antibiotics in the feed (table E.4.a.), of which 81.8, 10.2, and 23.5 percent of those operations used tetracyclines, aminoglycosides, and other as the primary antibiotic, respectively (table E.4.e.).

²Values of (D) denote too few to report.

For operations that gave kids or adults any antibiotics in feed, weaned kids received antibiotics in the feed for a shorter duration, an average of 3.7 days, whereas adults received antibiotics in feed for an average of 32.0 days.

E.4.g. For the 0.9 percent of operations that gave kids or adults any antibiotics (other than ionophores) in feed (including milk, milk replacer, or starter/creep feed) (table E.4.a.), operation average number of days any antibiotics were administered in feed, by goat age class:

Age class	Operation average number of days	Std. error
Preweaned kids	13.1	(3.6)
Weaned kids	3.7	(1.2)
Adults	32.0	(9.5)

For operations that gave kids or adults any antibiotics in feed, operations administered antibiotics in feed for a longer timeframe, on average, for other diseases (38.3 days) than for respiratory or digestive diseases (9.7 and 8.1 days, respectively).

E.4.h. For the 0.9 percent of operations that gave kids or adults any antibiotics (other than ionophores) in feed (including milk, milk replacer, or starter/creep feed) (table E.4.a.), operation average number of days any antibiotics were administered in feed, by reason for administration:

Reason	Operation average number of days	Std. error
Respiratory disease	9.7	(5.2)
Digestive disease	8.1	(2.6)
Other	38.3	(9.1)

F. Deaths and Losses

Deaths and losses are common and are expected when raising goats. Losses are instances of stolen goats or cases in which goats are killed by a predator and remains are never found. Nonpredator losses are goats that died or were euthanized due to nonpredator causes. Specific information regarding goat deaths and losses can be found through the “Goat and Kid Predator and Nonpredator Death Loss, 2020” report. This report is located on the NAHMS Goat webpage (www.aphis.usda.gov/nahms).

Overall, the highest percentage of all operations had any adult does (99.3 percent) on the operation from September 1, 2018, through August 31, 2019, than any other goat class. The percentage of operations that had any preweaned kids on the operation increased as herd size increased, with 75.6 percent of small operations, 90.1 percent of medium operations, and 99.1 percent of large operations. A higher percentage of medium and large operations (93.0 and 97.2 percent, respectively) had weaned kids than small operations (76.4 percent). All medium and large operations had adult does on the operation. The percentage of operations that had adult bucks/wethers did not differ by herd size. All operations in the West region had adult does on the operation and a higher percentage of operations in the East region had adult bucks/wethers present on the operation.

F.1. Percentage of operations that had one or more animals of the following goat classes on the operation from September 1, 2018, through August 31, 2019, by herd size and region:

Goat class	Percent Operations											
	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Preweaned kids	75.6	(4.2)	90.1	(2.8)	99.1	(0.4)	77.6	(5.3)	84.6	(3.1)	82.5	(2.7)
Weaned kids	76.4	(4.0)	93.0	(2.1)	97.2	(1.7)	80.5	(4.9)	85.4	(3.0)	83.9	(2.6)
Adult does	98.7	(1.1)	100.0	(—)	100.0	(—)	100.0	(—)	99.0	(0.9)	99.3	(0.6)
Adult bucks/wethers	89.7	(2.9)	97.5	(1.2)	98.6	(1.2)	85.0	(5.0)	96.8	(1.2)	93.2	(1.7)

All dairy operations had does present on the operation from September 1, 2018, through August 31, 2019. There were no differences by primary production of the operation in the percentage of operations that had any preweaned kids, weaned kids, or adult bucks or wethers on the operation from September 1, 2018, through August 31, 2019.

F.2. Percentage of operations that had one or more animals of the following goat classes on the operation from September 1, 2018, through August 31, 2019, by primary production of the operation:

Percent Operations						
Primary Production						
Goat class	Meat		Dairy		Other	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Preweaned kids	87.8	(3.2)	77.3	(6.6)	74.5	(6.2)
Weaned kids	87.4	(3.1)	83.7	(5.7)	75.6	(6.2)
Adult does	98.9	(1.1)	100.0	(—)	99.7	(0.3)
Adult bucks/wethers	92.9	(2.4)	89.6	(4.5)	97.2	(1.2)

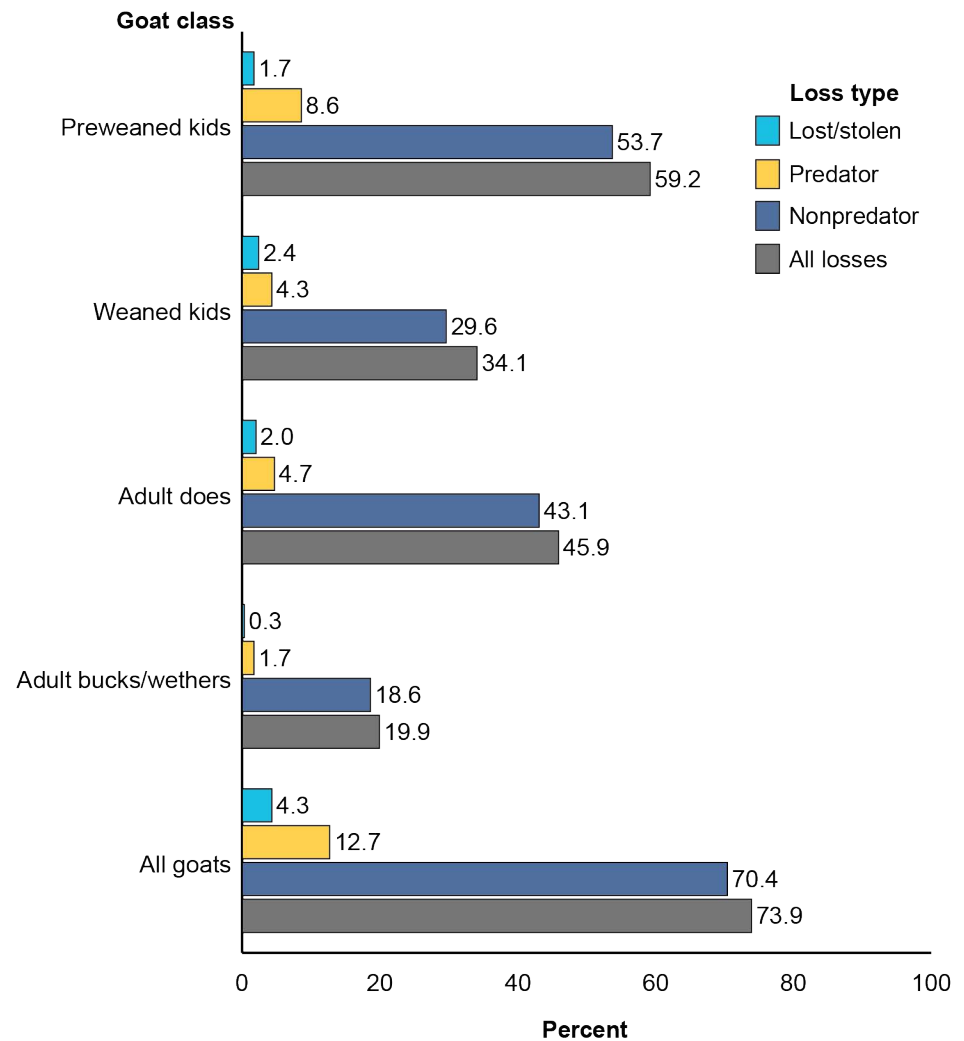
Overall, 73.9 percent of all operations had at least one goat or kid that was lost for any reason (e.g., lost/stolen, predator causes, nonpredator causes) between September 1, 2018, and August 31, 2019. A higher percentage of all operations had any goats that died or were euthanized due to nonpredator causes (70.4 percent) than goats that were lost/stolen or died due to predator causes (4.3 and 12.7 percent, respectively). The percentage of operations that had any losses (goats that died or were lost, stolen, or euthanized) increased as herd size increased. A higher percentage of large operations (7.9 percent) had any preweaned kids that were lost or stolen than small operations (0.2 percent). A higher percentage of large operations (55.8 percent) had any preweaned kids that died or were euthanized from nonpredator causes than small operations (24.1 percent). A higher percentage of medium and large operations (53.9 and 78.3 percent, respectively) had any adult does that died or were euthanized from nonpredator causes than small operations (31.5 percent). There were no differences by region in the percentage of operations that lost any goats by loss type (e.g., lost/stolen, predator losses, nonpredator losses, any losses).

F.3. For operations that had each of the following goat classes (table F.1.), percentage of operations that had one or more animals of the following goat classes lost, stolen, died, or euthanized from all causes* from September 1, 2018, through August 31, 2019, by herd size and region:

Loss type	Percent Operations											
	Herd size (number of goats and kids)						Region					
	Small		Medium		Large		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Preweaned kids												
Lost/stolen	0.2	(0.1)	2.5	(1.5)	7.9	(5.7)	3.0	(2.0)	1.2	(0.7)	1.7	(0.8)
Predator	6.2	(2.6)	9.3	(2.6)	21.8	(7.3)	12.7	(4.5)	7.0	(1.8)	8.6	(1.8)
Nonpredator	46.1	(5.6)	61.5	(4.9)	64.4	(9.9)	59.7	(5.0)	51.4	(4.3)	53.7	(3.4)
All losses	49.5	(5.3)	68.0	(4.7)	78.0	(9.3)	68.3	(6.0)	55.6	(4.0)	59.2	(3.4)
Weaned kids												
Lost/stolen	2.3	(1.7)	2.5	(1.4)	2.7	(1.7)	1.0	(0.5)	2.9	(1.5)	2.4	(1.1)
Predator	2.6	(1.6)	4.9	(2.1)	13.2	(5.0)	7.3	(2.9)	3.1	(1.3)	4.3	(1.2)
Nonpredator	24.1	(5.0)	31.7	(4.7)	55.8	(9.2)	17.2	(4.2)	34.7	(4.3)	29.6	(3.3)
All losses	28.0	(5.0)	36.8	(4.9)	61.4	(9.6)	21.3	(4.4)	39.4	(4.3)	34.1	(3.3)
Adult does												
Lost/stolen	1.2	(1.2)	2.6	(1.3)	5.2	(2.3)	1.6	(0.6)	2.2	(1.2)	2.0	(0.8)
Predator	4.1	(1.8)	5.4	(2.4)	6.3	(2.1)	4.4	(1.8)	4.9	(1.8)	4.7	(1.4)
Nonpredator	31.9	(4.5)	53.9	(4.8)	78.3	(8.6)	43.1	(5.4)	43.1	(3.6)	43.1	(3.0)
All losses	32.6	(4.5)	59.8	(4.7)	81.4	(8.6)	46.6	(5.4)	45.6	(3.6)	45.9	(3.0)
Adult bucks/wethers												
Lost/stolen	0.0	(—)	0.7	(0.4)	0.3	(0.2)	0.3	(0.3)	0.3	(0.2)	0.3	(0.2)
Predator	0.9	(0.4)	2.1	(1.5)	5.0	(2.3)	4.0	(2.1)	0.8	(0.4)	1.7	(0.7)
Nonpredator	14.3	(3.6)	21.1	(3.7)	38.5	(9.0)	16.9	(4.1)	19.2	(2.9)	18.6	(2.4)
All losses	15.0	(3.6)	23.0	(3.9)	40.9	(9.0)	20.0	(4.5)	19.8	(2.9)	19.9	(2.4)
All goats												
Lost/stolen	3.0	(1.8)	4.8	(1.8)	12.0	(6.0)	4.2	(1.7)	4.3	(1.7)	4.3	(1.3)
Predator	9.6	(2.6)	14.7	(3.2)	28.7	(7.6)	15.9	(3.9)	11.3	(2.3)	12.7	(2.0)
Nonpredator	60.7	(4.7)	80.7	(4.1)	97.1	(1.0)	67.2	(5.1)	71.8	(3.6)	70.4	(3.0)
All losses	64.2	(4.4)	84.4	(3.9)	98.7	(0.5)	73.3	(5.4)	74.1	(3.5)	73.9	(2.9)

*Excluding kids born dead and slaughtered goats.

For operations that had each of the following goat classes, percentage of operations that had one or more animals of the following goat classes lost, stolen, died, or euthanized from all causes* from September 1, 2018, through August 31, 2019



*Excluding kids born dead and slaughtered goats.

Overall, a higher percentage of meat operations (5.6 percent) had any goats that were lost/stolen than dairy operations (0.9 percent). A higher percentage of meat operations (2.4 percent) had any weaned kids that were lost/stolen than dairy operations (0.3 percent). Otherwise, there were no differences by primary production of the operation in the percentage of operations that had one more preweaned kids, adult does, or adult bucks/wethers lost/stolen or died/euthanized due to predator or nonpredator causes.

F.4. For operations that had each of the following goat classes (table F.1.), percentage of operations that had one or more animals of the following goat classes lost, stolen, died, or euthanized from all causes* from September 1, 2018, through August 31, 2019, by primary production of the operation:

Loss type	Percent Operations Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Preweaned kids						
Lost/stolen	2.6	(1.3)	0.4	(0.3)	0.5	(0.4)
Predator	8.8	(2.1)	6.7	(4.2)	9.9	(4.5)
Nonpredator	59.4	(4.5)	43.0	(6.7)	48.1	(7.1)
All losses	63.8	(4.5)	48.3	(7.0)	56.8	(6.9)
Weaned kids						
Lost/stolen	2.4	(1.1)	0.3	(0.2)	4.5	(3.9)
Predator	4.9	(2.0)	1.7	(0.9)	5.4	(2.2)
Nonpredator	33.8	(4.5)	27.3	(6.5)	20.3	(5.5)
All losses	38.9	(4.8)	29.0	(6.5)	26.2	(6.3)
Adult does						
Lost/stolen	3.1	(1.5)	0.4	(0.2)	0.8	(0.5)
Predator	6.3	(2.4)	2.6	(1.0)	2.8	(1.2)
Nonpredator	47.9	(4.7)	40.9	(5.4)	33.8	(5.5)
All losses	51.9	(4.6)	42.8	(5.5)	34.6	(5.6)
Adult bucks/wethers						
Lost/stolen	0.4	(0.3)	0.1	(0.1)	0.0	(0.0)
Predator	1.8	(1.1)	1.6	(1.0)	1.4	(0.7)
Nonpredator	17.0	(3.6)	19.7	(2.5)	21.2	(5.0)
All losses	18.5	(3.7)	21.5	(2.8)	21.5	(5.0)
All goats						
Lost/stolen	5.6	(1.9)	0.9	(0.3)	4.2	(3.0)
Predator	14.4	(3.0)	8.9	(3.4)	12.1	(3.6)
Nonpredator	75.1	(4.5)	63.9	(5.8)	65.3	(6.3)
All losses	77.0	(4.4)	69.4	(5.5)	70.5	(6.1)

*Excluding kids born dead and slaughtered goats.

Overall, a higher percentage of all goats (9.8 percent) died or were euthanized due to nonpredator causes than the percentage of all goats that were lost/stolen or died/euthanized due to predator causes (0.2 and 1.1 percent, respectively). A higher percentage of weaned kids in the East region (4.4 percent) died or were euthanized from nonpredator causes than kids in the West region (2.1 percent).

F.5. For operations that had each of the following goat classes (table F.1.), percentage of kids and adult goats that were lost, stolen, died, or euthanized from all causes¹ from September 1, 2018, through August 31, 2019, by herd size and region:

Percent Goats											
Loss type	Herd size (number of goats and kids)						Region				
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct. Std. error
Preweaned kids²											
Lost/stolen	0.0	(0.0)	0.2	(0.1)	0.1	(0.1)	0.2	(0.1)	0.1	(0.0)	0.1 (0.1)
Predator	1.9	(0.8)	1.4	(0.6)	1.0	(0.3)	1.7	(0.5)	1.0	(0.3)	1.3 (0.3)
Nonpredator	16.7	(3.4)	11.6	(1.4)	8.0	(1.7)	9.7	(1.9)	11.5	(1.5)	10.7 (1.2)
All losses	18.6	(3.5)	13.2	(1.4)	9.1	(1.8)	11.6	(2.0)	12.6	(1.5)	12.1 (1.2)
Weaned kids²											
Lost/stolen	0.3	(0.3)	0.1	(0.1)	0.1	(0.1)	0.1	(0.1)	0.2	(0.1)	0.2 (0.1)
Predator	0.4	(0.2)	0.8	(0.4)	0.7	(0.3)	1.2	(0.5)	0.3	(0.1)	0.7 (0.2)
Nonpredator	5.3	(1.4)	3.1	(0.5)	3.1	(0.7)	2.1	(0.5)	4.4	(0.6)	3.4 (0.4)
All losses	6.1	(1.4)	4.1	(0.7)	3.9	(0.8)	3.5	(0.8)	4.9	(0.6)	4.3 (0.5)
Adult does³											
Lost/stolen	0.2	(0.2)	0.1	(0.1)	0.3	(0.2)	0.3	(0.2)	0.1	(0.1)	0.2 (0.1)
Predator	0.6	(0.3)	0.6	(0.3)	0.1	(0.0)	0.4	(0.3)	0.3	(0.1)	0.4 (0.1)
Nonpredator	7.2	(1.2)	7.7	(1.0)	4.7	(0.8)	5.2	(1.0)	6.9	(0.6)	6.2 (0.6)
All losses	8.1	(1.3)	8.4	(1.0)	5.1	(0.8)	6.0	(1.0)	7.3	(0.7)	6.7 (0.6)
Adult bucks/wethers⁴											
Lost/stolen	0.0	(—)	0.4	(0.3)	0.1	(0.0)	0.2	(0.2)	0.1	(0.1)	0.2 (0.1)
Predator	0.5	(0.2)	0.7	(0.6)	0.7	(0.4)	1.2	(0.6)	0.3	(0.2)	0.7 (0.2)
Nonpredator	8.0	(1.9)	12.2	(2.2)	9.5	(1.6)	9.6	(1.7)	10.2	(1.5)	10.0 (1.2)
All losses	8.5	(1.9)	13.3	(2.4)	10.2	(1.6)	11.0	(1.8)	10.6	(1.6)	10.8 (1.2)
All goats⁵											
Lost/stolen	0.2	(0.1)	0.2	(0.1)	0.2	(0.1)	0.3	(0.1)	0.2	(0.1)	0.2 (0.1)
Predator	1.2	(0.4)	1.4	(0.5)	0.8	(0.2)	1.5	(0.4)	0.8	(0.2)	1.1 (0.2)
Nonpredator	12.7	(1.8)	11.1	(1.1)	7.7	(1.1)	8.1	(1.3)	11.1	(0.9)	9.8 (0.8)
All losses	14.1	(1.8)	12.8	(1.2)	8.7	(1.1)	10.0	(1.4)	12.1	(0.9)	11.2 (0.8)

¹Excluding kids born dead and slaughtered goats.

²As a percentage of kids born alive during the most recently completed kidding period.

³As a percentage of adult doe inventory on the day of the interview.

⁴As a percentage of adult buck/wether inventory on the day of the interview.

⁵As a percentage of kids born alive during the most recently completed kidding period and adult doe and buck/wether inventory on the day of the interview.

A higher percentage of weaned kids on meat operations (5.4 percent) were lost, stolen, died, or euthanized from all causes (all losses) compared to weaned kids on dairy operations (2.3 percent). A higher percentage of any goats on meat operations (1.6 percent) died or were euthanized due to predator causes compared to any goats on dairy operations (0.3 percent). A higher percentage of any goats on meat operations (13.4 percent) were lost, stolen, died, or euthanized (all losses) compared to any goats on dairy operations (8.5 percent).

F.6. For operations that had each of the following goat classes (table F.1.), percentage of kids and adult goats that were lost, stolen, died, or euthanized from all causes¹ from September 1, 2018, through August 31, 2019, by primary production of the operation:

Percent Goats						
Primary Production of the Operation						
Loss type	Meat		Dairy		Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Preweaned kids²						
Lost/stolen	0.2	(0.1)	0.0	(0.0)	0.0	(0.0)
Predator	1.8	(0.5)	0.4	(0.3)	1.0	(0.4)
Nonpredator	12.7	(1.8)	8.8	(2.3)	7.4	(1.5)
All losses	14.7	(1.8)	9.2	(2.3)	8.4	(1.4)
Weaned kids²						
Lost/stolen	0.2	(0.1)	0.0	(0.0)	0.2	(0.2)
Predator	1.0	(0.4)	0.1	(0.0)	0.8	(0.3)
Nonpredator	4.2	(0.7)	2.2	(0.4)	3.0	(0.7)
All losses	5.4	(0.9)	2.3	(0.4)	4.0	(0.8)
Adult does³						
Lost/stolen	0.4	(0.2)	0.0	(0.0)	0.1	(0.0)
Predator	0.6	(0.2)	0.1	(0.1)	0.2	(0.1)
Nonpredator	6.7	(1.0)	5.9	(0.5)	5.1	(1.1)
All losses	7.6	(1.0)	6.0	(0.5)	5.4	(1.1)
Adult bucks/wethers⁴						
Lost/stolen	0.3	(0.2)	0.0	(0.0)	0.0	(0.0)
Predator	0.9	(0.5)	0.5	(0.3)	0.5	(0.3)
Nonpredator	10.4	(2.2)	7.6	(1.2)	11.0	(1.8)
All losses	11.6	(2.3)	8.1	(1.3)	11.5	(1.8)
All goats⁵						
Lost/stolen	0.4	(0.1)	0.0	(0.0)	0.1	(0.1)
Predator	1.6	(0.4)	0.3	(0.1)	0.8	(0.3)
Nonpredator	11.5	(1.4)	8.1	(1.0)	7.8	(1.1)
All losses	13.4	(1.4)	8.5	(1.0)	8.7	(1.1)

¹Excluding kids born dead and slaughtered goats.

²As a percentage of kids born alive during the most recently completed kidding period.

³As a percentage of adult doe inventory on the day of the interview.

⁴As a percentage of adult buck/wether inventory on the day of the interview.

⁵As a percentage of kids born alive during the most recently completed kidding period and adult doe and buck/wether inventory on the day of the interview.

For operations that lost any goats to nonpredator causes, 11.4 percent of operations performed a necropsy to determine cause of death for at least one goat, and there were no differences by herd size or region in the percentage of operations that performed a necropsy exam to determine cause of death. For the 9.8 percent of goats that died of nonpredator causes, there were no differences by herd size or region in the percentage of deaths that underwent a necropsy.

F.7. For the 70.4 percent of operations that lost any goats to nonpredator causes (table F.3.), percentage of operations that performed a necropsy exam to determine the cause of death for any goats, and for the 9.8 percent of goats that died of nonpredator causes (table F.5.), percentage of deaths that underwent a necropsy, by herd size and region:

	Herd size (number of goats and kids)						Region					
	Small		Medium		Large		West		East		All operations	
	(5–19)		(20–99)		(100 or More)							
Percent	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Operations that completed a necropsy	7.5	(3.1)	14.1	(3.7)	19.6	(6.0)	9.5	(2.5)	12.1	(2.7)	11.4	(2.0)
Deaths that had a necropsy completed	6.9	(4.6)	5.3	(1.8)	5.6	(1.8)	3.3	(1.2)	7.1	(1.8)	5.7	(1.2)

For operations that lost any goats to nonpredator causes, there were no differences by primary production of the operation in the percentage of operations that performed a necropsy exam to determine cause of death. For the 9.8 percent of goats that died of nonpredator causes, there were no differences by primary production of the operation in the percentage of deaths that underwent a necropsy.

F.8. For the 70.4 percent of operations that lost any goats to nonpredator causes (table F.3.), percentage of operations that performed a necropsy exam to determine the cause of death for any goats, and for the 9.8 percent of goats that died of nonpredator causes (table F.5.), percentage of deaths that underwent a necropsy, by primary production of the operation:

Primary Production of the Operation						
Meat			Dairy		Other	
Percent	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Operations	11.7	(2.7)	10.0	(4.3)	11.9	(3.5)
Deaths	6.9	(1.9)	3.4	(1.0)	4.6	(1.4)

G. Health Conditions

For this section, goat producers were asked to report the number of goats affected, how many received an antibiotic, how many died, and how many were culled, by each condition listed for each age class. It is important to note that a single goat could have been reported for more than one condition. Even if a goat had died or been culled experiencing more than one condition, producers listed a single primary cause. Additionally, regarding antibiotics administered, producers excluded antibiotics administered in the feed or water, as those are accounted for in the previous section. Producers included intramammary antibiotics, antibiotics used topically, and antibiotics used by injection, bolus, or drench that were used as treatment for the listed conditions.

1. Preweaned kids

For the 82.5 percent of operations that had any preweaned kids, 67.1 percent of all operations had preweaned kids affected with any of the listed conditions. Digestive problems affected preweaned kids on 29.0 percent of operations and kidding problems or other perinatal conditions affected preweaned kids on 18.6 percent of operations. A higher percentage of large operations (93.7 percent) had any preweaned kids affected with the listed conditions than small and medium operations (58.7 and 72.7 percent, respectively). A higher percentage of large operations (63.3 percent) reported any preweaned kids with digestive problems than small and medium operations (19.2 and 35.1 percent, respectively). A higher percentage of large operations reported any preweaned kids with respiratory problems and lameness (20.0 and 16.1 percent, respectively) than small operations (4.2 and 2.3 percent, respectively). A higher percentage of operations in the East region (2.8 percent) had preweaned kids with navel infections than operations in the West region (0.2 percent).

G.1.a. For the 82.5 percent of operations that had any preweaned kids (table F.1.), percentage of operations by conditions that affected preweaned kids on the operation from September 1, 2018, through August 31, 2019, and by herd size and region:

Percent Operations												
Condition	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West.		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Digestive problems (e.g., scours, overeating/ enterotoxemia, coccidia)	19.2	(3.9)	35.1	(4.7)	63.3	(7.8)	25.2	(4.7)	30.6	(3.5)	29.0	(2.9)
Navel infection	1.9	(1.6)	2.1	(0.8)	3.2	(0.9)	0.2	(0.1)	2.8	(1.3)	2.1	(0.9)
Kidding problems or other perinatal conditions (e.g., floppy kid syndrome, weak kids)	15.7	(4.0)	19.8	(4.1)	31.7	(9.0)	27.1	(5.8)	15.2	(3.1)	18.6	(2.8)
Eye conditions (e.g., pinkeye, conjunctivitis)	2.2	(1.2)	4.5	(1.3)	11.2	(3.9)	6.4	(2.3)	2.8	(0.8)	3.8	(0.9)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	4.2	(2.0)	13.0	(2.9)	20.0	(4.8)	8.7	(2.5)	9.1	(2.0)	9.0	(1.6)
Lameness (e.g., joint swelling, wound, trauma)	2.3	(1.1)	9.0	(3.1)	16.1	(5.0)	12.9	(4.5)	3.4	(1.0)	6.1	(1.5)
Weather-related, starvation causes (e.g., chilling, drowning, lightning)	12.8	(3.5)	11.7	(3.1)	15.4	(5.0)	18.3	(4.3)	10.3	(2.6)	12.5	(2.2)
Other known conditions*	5.2	(2.4)	15.6	(3.7)	8.5	(2.7)	10.3	(3.8)	9.4	(2.3)	9.7	(2.0)
Unknown conditions (e.g., found dead)	18.8	(4.3)	24.9	(3.9)	29.3	(7.5)	20.9	(4.7)	22.6	(3.4)	22.1	(2.8)
Any of the above	58.7	(5.2)	72.7	(4.7)	93.7	(2.3)	75.1	(4.2)	63.9	(4.1)	67.1	(3.2)

*Common "other" known conditions listed included accidents/trauma, parasites, poison, and diseases not listed, such as sore mouth, metabolic conditions, and birth defects, such as cleft palate .

For the 82.5 percent of operations that had any preweaned kids, a higher percentage of meat and dairy operations (24.7 and 16.4 percent, respectively) had preweaned kids affected with kidding problems or other perinatal conditions than other operations (3.4 percent).

G.1.b. For the 82.5 percent of operations that had any preweaned kids (table F.1.), percentage of operations by conditions that affected preweaned kids on the operation from September 1, 2018, through August 31, 2019, and by primary production of the operation:

Percent Operations						
Primary Production						
Condition	Meat		Dairy		Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (e.g., scours, overeating/enterotoxemia, coccidia)	27.2	(4.1)	40.6	(6.5)	23.1	(5.7)
Navel infection	2.0	(1.5)	2.2	(0.8)	2.0	(1.3)
Kidding problems or other perinatal conditions (e.g., floppy kid syndrome, weak kids)	24.7	(4.3)	16.4	(4.4)	3.4	(1.3)
Eye conditions (e.g., pinkeye, conjunctivitis)	3.3	(1.2)	5.1	(1.7)	4.0	(1.7)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	6.5	(1.9)	13.0	(2.7)	12.3	(4.9)
Lameness (e.g., joint swelling, wound, trauma)	5.9	(2.2)	8.4	(3.0)	4.4	(2.0)
Weather-related, starvation causes (e.g., chilling, drowning, lightning)	13.1	(3.1)	8.5	(3.8)	15.0	(5.2)
Other known conditions*	11.3	(2.9)	8.7	(4.2)	5.8	(3.0)
Unknown conditions (e.g., found dead)	23.6	(3.9)	12.5	(2.5)	27.1	(7.0)
Any of the above	70.4	(4.6)	61.4	(7.3)	63.0	(6.6)

*Common "other" known conditions listed included accidents/trauma, parasites, poison, and diseases not listed, such as sore mouth, metabolic conditions, and birth defects, such as cleft palate.

For the 82.5 percent of operations that had any preweaned kids, 20.7 percent of preweaned kids were affected with any of the listed conditions and 43.3 percent of those affected kids received an antibiotic. There was no predominant condition that affected kids. A higher percentage of preweaned kids affected with respiratory problems received antibiotics (87.8 percent) than preweaned kids affected with digestive problems and navel infection (54.4 and 19.1 percent, respectively). Of the conditions listed, the highest percentage of preweaned kids (96.9 percent) affected with unknown conditions died, followed by preweaned kids affected with kidding problems or other perinatal conditions (65.2 percent). There were no differences in percentage of preweaned kids culled by condition.

G.1.c. For the 82.5 percent of operations that had any preweaned kids (table F.1.), percentage of preweaned kids affected with the following conditions from September 1, 2018, through August 31, 2019, and **for those affected**, percentage of preweaned kids that were treated with an antibiotic, percentage that died, and percentage removed (culled):

Condition	Percent Preweaned Kids							
	Affected ¹		Received antibiotic ²		Died		Culled	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive problems (e.g., scours, overeating/enterotoxemia, coccidia)	8.8	(1.4)	54.4	(7.3)	32.6	(4.5)	2.0	(1.5)
Navel infection	0.2	(0.1)	19.1	(11.8)	(D) ³	(D)	0.9	(0.8)
Kidding problems or other perinatal conditions (e.g., floppy kid syndrome, weak kids)	2.4	(0.5)	6.0	(2.9)	65.2	(8.1)	2.7	(1.9)
Eye conditions (e.g., pinkeye, conjunctivitis)	0.3	(0.1)	68.0	(8.1)	10.4	(6.1)	2.9	(2.9)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	4.0	(1.8)	87.8	(6.1)	24.5	(8.0)	0.3	(0.3)
Lameness (e.g., joint swelling, wound, trauma)	0.6	(0.3)	72.3	(13.3)	9.8	(5.1)	12.9	(5.6)
Weather-related, starvation causes (e.g., chilling, drowning, lightning)	2.4	(0.8)			(D)	(D)	0.1	(0.1)
Other known conditions ⁴	1.3	(0.5)	3.6	(1.9)	(D)	(D)	0.0	(—)
Unknown conditions (e.g., found dead)	2.5	(0.4)	2.6	(1.6)	96.9	(1.4)	0.0	(—)
Any of the above	20.7	(3.2)	43.3	(8.0)	49.5	(5.5)	1.7	(0.9)

¹As a percentage of kids born alive during the most recently completed kidding period.

²Includes antibiotics used topically (including ophthalmic), and antibiotics used by injection, bolus, or drench.

³Values of (D) denote too few to report.

⁴Common "other" known conditions listed included accidents/trauma, parasites, poison, and diseases not listed, such as sore mouth, metabolic conditions, and birth defects, such as cleft palate.

For preweaned kids that were treated with an antibiotic, there was no predominant antibiotic class used on operations. The percentage of preweaned kids treated did not differ by antibiotic class.

G.1.d. For preweaned kids that were treated with an antibiotic from September 1, 2018, through August 31, 2019* (table G.1.c.), percentage of operations that treated any preweaned kids and percentage of preweaned kids treated on those operations, by primary antibiotic class used:

Primary antibiotic class	Percent			
	Operations		Preweaned kids	
	Pct.	Std. Error	Pct.	Std. Error
Sulfonamides	15.0	(4.5)	20.5	(6.1)
Tetracyclines	21.1	(5.1)	18.1	(7.0)
Aminoglycosides	7.6	(3.0)	4.8	(2.2)
Lincosamides	0.9	(0.8)	0.5	(0.4)
Beta-lactams	30.3	(6.1)	16.0	(6.6)
Macrolides	6.0	(3.9)	8.5	(5.1)
Cephalosporins	9.5	(3.5)	2.1	(0.9)
Florfenicol	13.8	(5.0)	23.1	(11.8)
Topical ointments	1.6	(1.1)	0.2	(0.1)
Eye drops/ointments	3.0	(1.4)	0.4	(0.2)
Other	13.5	(4.5)	5.8	(2.4)
Total			100.0	

*Refers to the 9.0 percent of preweaned kids that were treated with an antibiotic on the 82.5 percent of operations that had any preweaned kids. The first estimate comes from the 20.7 percent of preweaned kids that were affected by “any of the above” conditions (table G.1.c.), of which 43.3 percent of those preweaned kids were treated with any antibiotic (table G.1.c.).

For preweaned kids that were treated with an antibiotic for digestive or respiratory problems, there were no predominant primary antibiotics used. However, sulfonamides were used to treat a higher percentage of kids with digestive issues (38.9 percent) than respiratory problems (0.7 percent), and florfenicol was used to treat a higher percentage of kids with respiratory problems (56.7 percent) than digestive problems (0.7 percent).

G.1.e. For preweaned kids that were treated with an antibiotic for the following conditions from September 1, 2018, through August 31, 2019¹ (table G.1.c.), percentage of preweaned kids by primary antibiotic class used:

Primary antibiotic class	Percent Preweaned Kids			
	Digestive problems ²		Respiratory problems ³	
	Pct.	Std. Error	Pct.	Std. Error
Sulfonamides	38.9	(14.9)	0.7	(0.6)
Tetracyclines	22.2	(11.1)	11.7	(7.0)
Aminoglycosides	9.2	(4.0)	0.0	(—)
Lincosamides	0.9	(0.8)	0.0	(—)
Beta-lactams	19.3	(7.2)	4.1	(2.9)
Macrolides	0.2	(0.2)	22.0	(16.0)
Cephalosporins	0.7	(0.5)	3.2	(2.0)
Florfenicol	0.7	(0.4)	56.7	(23.3)
Topical ointments	0.0	(—)	0.0	(—)
Eye drops/ointments	0.0	(—)	0.0	(—)
Other	7.9	(3.5)	1.6	(1.2)
Total	100.0		100.0	

¹Refers to the 4.8 and 3.5 percent of preweaned kids that were treated with an antibiotic for digestive issues and respiratory problems, respectively, on the 82.5 percent of operations that had any preweaned kids. This estimate comes from the 8.8 and 4.0 percent of preweaned kids that were affected by digestive issues and respiratory problems, respectively (table G.1.c.), of which 54.4 and 87.8 percent of those preweaned kids were treated with any antibiotic, respectively (table G.1.c.).

²For example, scours, overeating/enterotoxemia, and coccidia.

³For example, pneumonia, shipping fever, and runny nose.

2. Weaned kids

For the 83.9 percent of operations that had any weaned kids, 38.4 percent of operations had weaned kids affected with any of the listed conditions. The most common conditions were intestinal worms, other digestive problems, such as scours and overeating, and unknown conditions reported on 14.9, 8.9 and 12.9 percent of all operations, respectively.

A higher percentage of large operations (78.8 percent) had weaned kids affected with any of the listed conditions than small and medium operations (38.4 and 50.6 percent, respectively). Specifically, a higher percentage of large operations (44.8 percent) had weaned kids affected with intestinal worms than small operations (14.9 percent). A higher percentage of large operations (36.5 percent) had weaned kids affected with other digestive problems, such as scours and overeating, than small operations (8.9 percent). A higher percentage of medium and large operations (11.1 and 26.0 percent, respectively) had weaned kids affected with respiratory problems than small operations (2.2 percent).

A higher percentage of operations in the East region (52.1 percent) had weaned kids affected with any of the listed conditions than operations in the West region (32.4 percent). A higher percentage of operations in the East region (25.8 percent) had weaned kids affected with intestinal worms than operations in the West region (8.4 percent). A higher percentage of operations in the West region (5.1 percent) had weaned kids affected with pinkeye than operations in the East region (1.0 percent).

G.2.a. For the 83.9 percent of operations that had any weaned kids (table F.1.), percentage of operations by conditions that affected weaned kids on the operation from September 1, 2018, through August 31, 2019, and by herd size and region:

Percent Operations												
Condition	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Digestive: intestinal worms	14.9	(4.4)	23.6	(4.5)	44.8	(9.7)	8.4	(2.5)	25.8	(4.0)	20.7	(2.9)
Other digestive problems (e.g., scours, overeating/enterotoxemia)	8.9	(3.2)	21.2	(3.8)	36.5	(9.9)	14.1	(4.0)	16.8	(3.1)	16.0	(2.5)
Pinkeye	1.1	(1.1)	2.1	(1.3)	11.1	(6.0)	5.1	(0.6)	1.0	(0.6)	2.2	(0.5)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	2.2	(1.2)	11.1	(2.8)	26.0	(7.4)	8.6	(3.0)	7.3	(1.7)	7.6	(1.5)
Lameness: Footrot	0.6	(0.6)	2.6	(1.3)	9.4	(5.0)	0.3	(0.1)	2.8	(1.0)	2.1	(0.7)
Other lameness (e.g., joint swelling, wound)	1.1	(0.5)	4.3	(1.4)	16.8	(6.7)	2.6	(0.9)	4.0	(1.0)	3.6	(0.8)
Central nervous system signs (e.g., uncoordinated, staggering, swaying, falling down, circling, blindness)	1.9	(1.6)	1.7	(0.9)	8.8	(4.1)	1.4	(0.6)	2.7	(1.4)	2.3	(1.0)
Weather-related and poisoning/toxicity causes (e.g., chilling, drowning, lightning, noxious feeds/weeds)	2.7	(1.8)	3.1	(2.1)	18.4	(7.7)	4.4	(3.0)	3.9	(1.6)	4.0	(1.4)
Other known conditions*	4.8	(2.4)	1.8	(1.0)	9.8	(4.3)	1.7	(0.7)	4.9	(1.9)	4.0	(1.3)
Unknown conditions (e.g., found dead)	12.9	(3.9)	16.2	(3.8)	25.2	(7.3)	10.3	(3.0)	17.2	(3.4)	15.2	(2.6)
Any of the above	38.4	(5.3)	50.6	(5.1)	78.8	(7.5)	32.4	(4.9)	52.1	(4.3)	46.4	(3.4)

*Common "other" known conditions listed included accidents/trauma, metabolic conditions, parasites, and diseases not listed, such as sore mouth.

For the 83.9 percent of operations that had any weaned kids, a higher percentage of meat operations (5.0 percent) had any weaned kids with weather-related and poisoning/toxicity conditions than dairy operations (0.8 percent).

G.2.b. For the 83.9 percent of operations that had any weaned kids (table F.1.), percentage of operations by conditions that affected weaned kids on the operation from September 1, 2018, through August 31, 2019, and by primary production of the operation:

Condition	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive: intestinal worms	25.0	(4.2)	19.7	(6.0)	9.8	(3.1)
Other digestive problems (e.g., scours, overeating/enterotoxemia)	13.9	(3.2)	21.0	(5.6)	16.7	(5.2)
Pinkeye	1.5	(1.0)	1.7	(0.5)	4.8	(3.3)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	5.8	(1.8)	8.4	(1.6)	11.8	(4.6)
Lameness: Footrot	2.4	(1.0)	1.2	(1.1)	2.3	(1.6)
Other lameness (e.g., joint swelling, wound)	2.5	(0.9)	4.6	(1.5)	5.6	(2.7)
Central nervous system signs (e.g., uncoordinated, staggering, swaying, falling down, circling, blindness)	3.1	(1.7)	1.4	(0.5)	0.9	(0.5)
Weather-related and poisoning/toxicity causes (e.g., chilling, drowning, lightning, noxious feeds/weeds)	5.0	(2.3)	0.8	(0.4)	4.7	(2.7)
Other known conditions*	4.3	(1.8)	5.1	(3.7)	2.0	(1.0)
Unknown conditions (e.g., found dead)	17.2	(3.8)	14.1	(4.7)	10.9	(4.8)
Any of the above	48.2	(4.6)	51.6	(6.5)	36.0	(6.4)

*Common "other" known conditions listed included accidents/trauma, metabolic conditions, parasites, and diseases not listed, such as sore mouth.

Overall, 14.2 percent of weaned kids became affected with any of the listed conditions and 29.3 percent of affected weaned kids received an antibiotic. The highest percentage of weaned kids had intestinal worms (8.0 percent). A higher percentage of weaned kids with central nervous system signs and unknown conditions (79.1 and 90.3 percent, respectively) died than kids with any other listed condition. There were no differences in the percentage of weaned kids culled by condition.

G.2.c. For the 83.9 percent of operations that had any weaned kids (table F.1.), percentage of weaned kids that became affected with the following conditions from September 1, 2018, through August 31, 2019, and **for those affected**, percentage of weaned kids that were treated with an antibiotic, percentage that died, and percentage removed (culled):

Condition	Percent Weaned Kids							
	Affected ¹		Received antibiotic ²		Died		Culled	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive: intestinal worms	8.0	(1.7)			8.4	(2.4)	3.2	(2.6)
Other digestive problems (e.g., scours, overeating/enterotoxemia)	3.1	(0.6)	61.1	(6.5)	17.1	(4.5)	2.3	(1.5)
Pinkeye	0.4	(0.2)	92.2	(4.4)	8.2	(7.7)	0.7	(0.5)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	1.8	(0.4)	75.9	(9.3)	20.2	(4.6)	0.2	(0.2)
Lameness: Footrot	0.3	(0.1)	84.0	(8.3)	20.9	(15.8)	0.0	(—)
Other lameness (e.g., joint swelling, wound)	0.2	(0.1)	6.7	(3.4)	9.5	(4.6)	20.4	(8.2)
Central nervous system signs (e.g., uncoordinated, staggering, swaying, falling down, circling, blindness)	0.2	(0.1)	18.8	(9.3)	79.1	(9.2)	0.0	(—)
Weather-related and poisoning/toxicity causes (e.g., chilling, drowning, lightning, noxious feeds/weeds)	0.4	(0.2)			(D) ³	(D)	0.0	(—)
Other known conditions ⁴	0.5	(0.2)	70.6	(14.7)	(D)	(D)	6.5	(4.7)
Unknown conditions (e.g., found dead)	1.2	(0.2)	3.0	(2.8)	90.3	(4.3)	0.0	(—)
Any of the above	14.2	(1.8)	29.3	(4.2)	23.8	(3.1)	2.9	(1.5)

¹As a percentage of kids born alive during the most recently completed kidding period.

²Includes antibiotics used topically (including ophthalmic), and antibiotics used by injection, bolus, or drench.

³Values of (D) denote too few to report.

⁴Common "other" known conditions listed included accidents/trauma, metabolic conditions, parasites, and diseases not listed, such as sore mouth.

For weaned kids that were treated with an antibiotic, there were no differences in the percentage of operations that treated any weaned kids by primary antibiotic used. There were no differences in the percentage of weaned kids treated on those operations by primary antibiotic used.

G.2.d. For weaned kids that were treated with an antibiotic from September 1, 2018, through August 31, 2019* (table G.2.c.), percentage of operations that treated any weaned kids and percentage of weaned kids treated on those operations, by primary antibiotic class used:

Primary antibiotic class	Percent			
	Operations		Weaned kids	
	Pct.	Std. Error	Pct.	Std. Error
Sulfonamides	21.7	(7.0)	25.5	(8.9)
Tetracyclines	12.8	(4.0)	12.2	(3.3)
Aminoglycosides	16.9	(6.1)	8.9	(3.5)
Lincosamides	1.2	(1.0)	0.9	(0.9)
Beta-lactams	21.4	(6.4)	14.5	(5.8)
Macrolides	12.3	(5.4)	14.2	(5.2)
Cephalosporins	4.9	(2.5)	2.1	(0.8)
Florfenicol	14.5	(4.4)	6.5	(2.0)
Topical ointments	4.5	(3.7)	0.7	(0.6)
Eye drops/ointments	1.0	(0.4)	0.4	(0.2)
Other	8.4	(3.2)	14.1	(7.0)
Total			100.0	

*Refers to the 4.2 percent of weaned kids that were treated with an antibiotic on the 83.9 percent of operations that had any weaned kids. The first estimate comes from the 14.2 percent of weaned kids that were affected by "any of the above" conditions (table G.2.c.), of which 29.3 percent of those weaned kids were treated with any antibiotic (table G.2.c.).

For weaned kids that were treated with antibiotics for other digestive problems, such as scours and overeating, and for respiratory problems, there were no predominant antibiotics used to treat those kids. However, sulfonamides were used to treat a higher percentage of preweaned kids with other digestive problems (54.0 percent) than respiratory problems (0.8 percent) and macrolides were used to treat a higher percentage of preweaned kids with respiratory problems (43.2 percent) than other digestive problems (0.9 percent).

G.2.e. For weaned kids that were treated with an antibiotic for the following conditions from September 1, 2018, through August 31, 2019¹ (table G.2.c.), percentage of weaned kids by primary antibiotic class used:

Primary antibiotic class	Percent Weaned Kids			
	Condition			
	Other digestive problems ²		Respiratory problems ³	
	Pct.	Std. Error	Pct.	Std. Error
Sulfonamides	54.0	(13.9)	0.8	(0.7)
Tetracyclines	3.6	(1.9)	20.0	(6.2)
Aminoglycosides	16.6	(7.4)	0.2	(0.2)
Lincosamides	2.1	(2.0)	0.0	(—)
Beta-lactams	6.6	(3.4)	11.3	(4.5)
Macrolides	0.9	(0.4)	43.2	(10.9)
Cephalosporins	1.3	(0.8)	2.4	(1.0)
Florfenicol	0.1	(0.0)	16.5	(5.0)
Topical ointments	0.0	(—)	0.0	(—)
Eye drops/ointments	0.0	(—)	0.0	(—)
Other	14.9	(8.5)	5.5	(4.0)
Total	100.0		100.0	

¹Refers to the 1.9 and 1.4 percent of weaned kids that were treated with an antibiotic for digestive issues and respiratory problems, respectively, on the 83.9 percent of operations that had any weaned kids. This estimate comes from the 3.1 and 1.8 percent of weaned kids that were affected by digestive issues and respiratory problems, respectively (table G.2.c.), of which 61.1 and 75.9 percent of those weaned kids were treated with any antibiotic, respectively (table G.2.c.).

²Other than intestinal worms (e.g., scours, overeating/enterotoxemia).

³For example, pneumonia, shipping fever, and runny nose.

3. Adult does

For the 99.3 percent of operations that had any adult does, 72.0 percent of all operations had any adult does affected with the listed conditions. The highest percentage of all operations (33.3 percent) had does with intestinal worms. A higher percentage of medium and large operations (6.1 and 9.3 percent, respectively) had any adult does affected with pinkeye than small operations (0.2 percent). A higher percentage of medium and large operations (15.2 and 35.3 percent, respectively) had any adult does affected with respiratory problems than small operations (4.7 percent). A higher percentage of large operations (41.1 percent) had does with abortions than small and medium operations (7.1 and 15.8 percent, respectively). A higher percentage of large operations had does with other reproductive problems, mastitis, and metabolic problems (36.8, 45.2, and 19.2 percent, respectively) than small operations (6.0, 11.1, and 2.1 percent, respectively). A higher percentage of operations in the East region had does with intestinal worms and footrot (41.4 and 11.9 percent, respectively) than operations in the West region (14.9 and 3.0 percent, respectively).

G.3.a. For the 99.3 percent of operations that had any adult does (table F.1.), percentage of operations by conditions that affected adult does on the operation from September 1, 2018, through August 31, 2019, and by herd size and region:

Condition	Percent Operations											
	Herd size (number of goats and kids)						Region					
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East		All operations	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Digestive: intestinal worms	26.6	(4.3)	40.7	(4.5)	49.0	(9.3)	14.9	(3.0)	41.4	(3.9)	33.3	(2.9)
Other digestive problems (e.g., scours, overeating/enterotoxemia)	8.4	(2.6)	19.4	(3.9)	26.1	(9.0)	16.8	(3.9)	12.3	(2.6)	13.7	(2.2)
Pinkeye	0.2	(0.1)	6.1	(1.8)	9.3	(2.8)	4.8	(1.8)	2.2	(0.6)	3.0	(0.7)
Central nervous system signs (e.g., uncoordinated, staggering, swaying, falling down, circling, blindness)	4.5	(1.7)	4.9	(1.1)	10.9	(3.7)	2.1	(0.7)	6.3	(1.5)	5.1	(1.1)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	4.7	(1.7)	15.2	(3.3)	35.3	(7.7)	15.6	(4.1)	8.4	(1.6)	10.6	(1.7)
Reproductive problems: abortions	7.1	(2.3)	15.8	(3.2)	41.1	(9.5)	15.0	(4.0)	11.5	(2.2)	12.6	(2.0)
Other reproductive problems (e.g., retained placenta/uterine infection, dystocia)	6.0	(2.2)	14.6	(3.4)	36.8	(9.0)	14.2	(3.9)	9.9	(2.3)	11.2	(2.0)
Mastitis	11.1	(2.9)	23.4	(4.1)	45.2	(8.9)	22.7	(4.9)	15.8	(2.7)	17.9	(2.4)
Metabolic problems (e.g., milk fever, twin kid disease, pregnancy toxemia)	2.1	(1.3)	7.9	(2.5)	19.2	(6.1)	3.6	(1.8)	6.1	(1.6)	5.4	(1.3)
Lameness: Footrot	5.9	(2.1)	12.9	(3.1)	17.2	(5.4)	3.0	(0.8)	11.9	(2.4)	9.2	(1.7)
Other lameness (e.g., joint swelling, wound)	4.2	(1.8)	8.2	(2.1)	19.9	(5.5)	6.6	(2.0)	6.8	(1.7)	6.7	(1.3)
Weather-related causes or poisoning/toxicity (e.g., chilling, drowning, lightning, noxious feeds/weeds)	0.5	(0.3)	2.3	(1.1)	10.4	(4.3)	1.7	(0.6)	1.8	(0.7)	1.8	(0.5)
Chronic weight loss	4.5	(1.9)	12.5	(3.0)	28.2	(9.4)	7.4	(2.6)	9.7	(1.7)	9.0	(1.4)
Other known conditions*	13.1	(3.5)	10.7	(3.0)	12.7	(3.4)	14.6	(4.4)	11.1	(2.7)	12.2	(2.3)
Unknown conditions (e.g., found dead)	11.0	(3.0)	17.3	(3.6)	37.7	(8.9)	19.8	(4.6)	13.0	(2.6)	15.1	(2.3)
Any of the above	63.2	(4.9)	82.2	(3.8)	90.2	(7.2)	69.1	(5.4)	73.3	(3.8)	72.0	(3.1)

*Common "other" known conditions listed included abscesses, accidents/trauma, diseases not listed such as caprine arthritis encephalitis, caseous lymphadenitis, sore mouth, and cancer, old age, and metabolic conditions not listed.

For the 99.3 percent of operations that had any adult does, a higher percentage of meat operations (38.0 percent) had any does with intestinal worms than other operations (18.2 percent).

G.3.b. For the 99.3 percent of operations that had any adult does (table F.1.), percentage of operations by conditions that affected adult does on the operation from September 1, 2018, through August 31, 2019, and by primary production of the operation:

Condition	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive: intestinal worms	38.0	(4.0)	37.6	(7.0)	18.2	(4.4)
Other digestive problems (e.g., scours, overeating/enterotoxemia)	9.6	(2.4)	17.8	(5.0)	19.5	(5.5)
Pinkeye	3.5	(1.1)	3.2	(1.1)	1.5	(0.7)
Central nervous system signs (e.g., uncoordinated, staggering, swaying, falling down, circling, blindness)	4.8	(1.6)	5.2	(1.5)	5.5	(2.3)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	11.3	(2.6)	9.2	(1.8)	10.1	(3.6)
Reproductive problems: abortions	13.7	(2.9)	14.8	(4.7)	7.9	(2.5)
Other reproductive problems (e.g., retained placenta/uterine infection, dystocia)	8.9	(2.7)	13.7	(4.2)	14.2	(4.4)
Mastitis	16.8	(3.5)	17.7	(3.6)	20.6	(5.1)
Metabolic problems (e.g., milk fever, twin kid disease, pregnancy toxemia)	2.9	(0.9)	8.3	(3.4)	8.4	(3.9)
Lameness: Footrot	11.4	(2.7)	4.3	(1.2)	8.6	(2.5)
Other lameness (e.g., joint swelling, wound)	6.6	(1.9)	8.1	(1.7)	5.7	(2.9)
Weather-related causes or poisoning/toxicity (e.g., chilling, drowning, lightning, noxious feeds/weeds)	1.9	(0.8)	0.6	(0.2)	2.6	(1.1)
Chronic weight loss	8.8	(2.3)	12.6	(1.7)	6.1	(2.0)
Other known conditions*	11.0	(3.1)	14.5	(5.0)	12.8	(4.4)
Unknown conditions (e.g., found dead)	20.7	(3.7)	9.7	(3.6)	6.8	(2.2)
Any of the above	73.9	(4.4)	77.9	(5.2)	62.0	(6.6)

*Common "other" known conditions listed included abscesses, accidents/trauma, diseases not listed such as caprine arthritis encephalitis, caseous lymphadenitis, sore mouth, and cancer, old age, and metabolic conditions not listed.

Overall, 30.2 percent of does were affected with any of the conditions listed and 26.0 percent of affected does were treated with antibiotics. For each of the listed conditions, the highest percentage of does died due to unknown conditions (93.9 percent), and 5.9 percent of does were culled for any of the listed conditions.

G.3.c. For the 99.3 percent of operations that had any adult does (table F.1.), percentage of adult does that became affected with the following conditions from September 1, 2018, through August 31, 2019, and **for those affected**, percentage of adult does that were treated with an antibiotic, percentage that died, and percentage removed (culled):

Condition	Percent Does							
	Affected ¹		Received antibiotic ²		Died		Culled	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive: intestinal worms	13.3	(1.8)			9.1	(2.2)	2.8	(1.0)
Other digestive problems (e.g., scours, overeating/enterotoxemia)	3.6	(1.1)	40.7	(6.7)	16.4	(7.0)	1.9	(1.1)
Pinkeye	0.9	(0.4)	88.8	(6.8)	0.1	(0.1)	2.4	(1.6)
Central nervous system signs (e.g., uncoordinated, staggering, swaying, falling down, circling, blindness)	0.4	(0.1)	52.2	(12.0)	56.2	(11.1)	2.4	(1.8)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	2.0	(0.3)	62.6	(8.5)	23.7	(7.0)	2.8	(1.2)
Reproductive problems: abortions	1.5	(0.3)	27.6	(8.5)	10.2	(5.0)	3.3	(1.2)
Other reproductive problems (e.g., retained placenta/uterine infection, dystocia)	2.3	(0.5)	44.4	(10.1)	17.6	(6.6)	4.2	(2.0)
Mastitis	5.8	(3.7)	19.1	(13.5)	1.6	(1.1)	8.0	(5.9)
Metabolic problems (e.g., milk fever, twin kid disease, pregnancy toxemia)	0.6	(0.1)	14.2	(5.7)	32.8	(8.7)	3.5	(2.5)
Lameness: Footrot	3.0	(0.7)	48.4	(10.4)	0.2	(0.2)	8.1	(6.8)
Other lameness (e.g., joint swelling, wound)	0.7	(0.1)	5.2	(2.0)	4.2	(1.5)	13.3	(5.7)
Weather-related causes or poisoning/toxicity (e.g., chilling, drowning, lightning, noxious feeds/weeds)	0.5	(0.3)			29.0	(19.7)	0.0	(—)
Chronic weight loss	1.1	(0.2)	16.5	(8.8)	51.6	(10.5)	19.2	(7.9)
Other known conditions ³	0.9	(0.2)	28.8	(7.9)	45.3	(8.4)	7.8	(4.9)
Unknown conditions (e.g., found dead)	1.4	(0.2)	1.8	(1.3)	93.9	(3.3)	0.3	(0.3)
Any of the above	30.2	(2.3)	26.0	(2.7)	19.0	(1.7)	5.9	(1.4)

¹As a percentage of adult doe inventory on the day of the interview.

²Includes antibiotics used topically (including ophthalmic), intramammary antibiotics, and antibiotics used by injection, bolus, or drench.

³Common "other" known conditions listed included abscesses, accidents/trauma, diseases not listed such as caprine arthritis encephalitis, caseous lymphadenitis, sore mouth, and cancer, old age, and metabolic conditions not listed.

For adult does treated with antibiotics, the highest percentage of operations treated adult does with tetracyclines and beta-lactams (28.0 and 37.0 percent, respectively) as the primary antibiotic. However, there was no difference in the percentage of does treated by primary antibiotic used.

G.3.d.[G8] For adult does that were treated with an antibiotic from September 1, 2018, through August 31, 2019* (table G.3.c.), percentage of operations that treated any adult does and percentage of adult does treated on those operations, by primary antibiotic class used:

Primary antibiotic class	Percent			
	Operations		Adult does	
	Pct.	Std. Error	Pct.	Std. Error
Sulfonamides	4.5	(2.2)	4.8	(2.9)
Tetracyclines	28.0	(4.6)	23.7	(4.3)
Aminoglycosides	3.5	(2.0)	2.8	(1.6)
Lincosamides	1.4	(1.1)	3.9	(3.5)
Beta-lactams	37.0	(5.4)	24.3	(4.2)
Macrolides	6.4	(2.6)	2.9	(1.0)
Cephalosporins	8.6	(2.5)	9.0	(2.9)
Florfenicol	8.5	(2.4)	7.1	(2.0)
Topical ointments	1.3	(0.7)	0.5	(0.2)
Eye drops/ointments	0.9	(0.6)	1.1	(0.5)
Lactating intramammary products	11.4	(3.3)	4.5	(1.5)
Dry doe intramammary products	1.4	(0.8)	0.7	(0.4)
Other	16.7	(4.1)	14.7	(5.6)
Total			100.0	

*Refers to the 7.9 percent of adult does that were treated with an antibiotic on the 99.3 percent of operations that had any adult does. The first estimate comes from the 30.2 percent of adult does that were affected by "any of the above" conditions (table G.3.c.), of which 26.0 percent of those adult does were treated with any antibiotic (table G.3.c.).

For adult does that were treated with an antibiotic for the following conditions, there was no predominant antibiotic used to treat does with other digestive problems, respiratory problems, other reproductive conditions, or mastitis. However, sulfonamides were used to treat a higher percentage of does with other digestive problems (25.6 percent) than respiratory problems, other reproductive problems, or mastitis (0.1, 0.8, and 0.3 percent, respectively).

G.3.e. For adult does that were treated with an antibiotic for the following conditions from September 1, 2018, through August 31, 2019¹ (table G.3.c.), percentage of adult does by primary antibiotic class used:

Primary antibiotic class	Percent Does							
	Condition							
	Other digestive problems ²		Respiratory problems ³		Other reproductive problems ⁴		Mastitis	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Sulfonamides	25.6	(15.1)	0.1	(0.2)	0.8	(0.7)	0.3	(0.3)
Tetracyclines	2.9	(1.5)	44.0	(10.2)	14.2	(7.5)	5.4	(2.4)
Aminoglycosides	15.0	(9.2)	0.0	(—)	0.0	(—)	0.0	(—)
Lincosamides	1.6	(1.7)	0.0	(—)	0.0	(—)	0.0	(—)
Beta-lactams	40.7	(19.3)	10.6	(5.1)	41.2	(14.3)	41.1	(14.4)
Macrolides	0.7	(0.6)	8.7	(3.7)	0.3	(0.2)	5.3	(3.4)
Cephalosporins	3.9	(2.7)	6.6	(3.6)	38.6	(17.7)	6.4	(3.1)
Florfenicol	0.4	(0.4)	19.7	(7.9)	1.1	(0.6)	3.3	(1.8)
Topical ointments	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)
Eye drops/ointments	0.0	(—)	0.0	(—)	0.0	(—)	0.0	(—)
Lactating intramammary products	0.0	(—)	0.0	(—)	0.2	(0.2)	24.9	(7.7)
Dry doe intramammary products	0.0	(—)	0.0	(—)	0.0	(0.0)	5.4	(3.3)
Other	9.3	(6.5)	10.2	(8.8)	3.7	(3.2)	7.9	(3.9)
Total	100.0		100.0		100.0		100.0	

¹Refers to the 1.5, 1.3, 1.0, and 1.1 percent of adult does overall that were treated with an antibiotic for other digestive problems, respiratory problems, other reproductive problems, and mastitis, respectively, on the 99.3 percent of operations that had any adult does. This estimate comes from the 3.6, 2.0, 2.3, and 5.8 percent of adult does that were affected by other digestive problems, respiratory problems, other reproductive problems, and mastitis, respectively (table G.3.c.), of which 40.7, 62.6, 44.4, and 19.1 percent of those adult does were treated with any antibiotic, respectively (table G.3.c.).

²Other than intestinal worms (e.g., scours, overeating/enterotoxemia).

³For example, pneumonia, shipping fever, and runny nose.

⁴Other than abortions (e.g., retained placenta/uterine infection, dystocia).

4. Adult bucks/wethers

For the 93.2 percent of operations that had any adult bucks/wethers, 43.0 percent of all operations had bucks or wethers with any of the listed conditions. The highest percentage of all operations (16.9 percent) had bucks or wethers with intestinal worms. A higher percentage of medium and large operations (3.1 and 2.6 percent, respectively) had any bucks or wethers with central nervous system signs than small operations (0.4 percent). A higher percentage of large operations (24.7 percent) had any bucks or wethers with unknown conditions than medium operations (3.5 percent).

For the 93.2 percent of operations that had any adult bucks/wethers, a higher percentage of operations in the East region had any bucks or wethers with intestinal worms, other digestive problems, and footrot (20.6, 8.3, and 7.2 percent, respectively) than operations in the West region (7.1, 2.7, and 0.9 percent, respectively).

G.4.a. For the 93.2 percent of operations that had any adult bucks/wethers (table F.1.), percentage of operations by conditions that affected adult bucks/wethers on the operation from September 1, 2018, through August 31, 2019, and by herd size and region:

Condition	Percent Operations									
	Herd size (number of goats and kids)						Region			
	Small (5–19)		Medium (20–99)		Large (100 or More)		West		East	
	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error	Pct.	Std. error
Digestive: intestinal worms	16.5	(3.8)	15.6	(2.5)	27.3	(9.4)	7.1	(1.6)	20.6	(3.2)
Other digestive problems (e.g., scours, overeating/enterotoxemia)	6.2	(2.5)	7.2	(2.4)	8.6	(4.1)	2.7	(0.7)	8.3	(2.3)
Pinkeye	1.0	(0.8)	2.0	(0.9)	5.0	(1.8)	3.1	(1.8)	1.1	(0.5)
Central nervous system signs (e.g., uncoordinated, staggering, swaying, falling down, circling, blindness)	0.4	(0.2)	3.1	(1.5)	2.6	(1.0)	2.5	(1.8)	1.2	(0.4)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	3.5	(1.6)	5.7	(1.6)	8.0	(2.5)	4.6	(1.7)	4.7	(1.3)
Reproductive problems (e.g., penile or testicular disorders, urinary calculi)	1.5	(1.4)	0.8	(0.4)	3.4	(1.4)	1.4	(0.6)	1.3	(1.0)
Lameness: Footrot	4.7	(2.2)	6.1	(2.1)	7.7	(4.2)	0.9	(0.5)	7.2	(2.0)
Other lameness (e.g., joint swelling, wound)	2.9	(1.6)	4.4	(1.3)	19.4	(9.6)	4.3	(1.8)	4.7	(1.7)
Weather-related causes and poisoning/toxicity (e.g., chilling, drowning, lightning, noxious feeds/weeds)	0.2	(0.1)	0.6	(0.3)	2.1	(1.3)	1.2	(0.5)	0.2	(0.1)
Chronic weight loss	2.7	(1.7)	3.5	(1.3)	3.4	(1.5)	1.3	(0.6)	3.7	(1.4)
Other known conditions*	2.3	(1.5)	6.1	(2.7)	5.8	(2.0)	3.0	(0.8)	4.4	(1.8)
Unknown conditions (e.g., found dead)	9.9	(3.3)	3.5	(1.1)	24.7	(9.5)	8.7	(3.5)	8.3	(2.0)
Any of the above	42.3	(5.5)	42.3	(4.3)	52.0	(8.7)	31.1	(4.7)	47.5	(4.2)

*Common "other" known conditions included accidents/trauma, abscesses, metabolic conditions, diseases such as caprine arthritis encephalitis, caseous lymphadenitis, and cancer and old age.

The percentage of operations that had adult bucks or wethers affected with any of the listed conditions did not differ by primary production of the operation.

G.4.b. For the 93.2 percent of operations that had any adult bucks/wethers (table F.1.), percentage of operations by conditions that affected adult bucks/wethers on the operation from September 1, 2018, through August 31, 2019, and by primary production of the operation:

Condition	Percent Operations					
	Primary Production					
	Meat		Dairy		Other	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive: intestinal worms	18.3	(3.5)	21.4	(6.0)	9.9	(2.8)
Other digestive problems (e.g., scours, overeating/enterotoxemia)	7.0	(2.5)	8.1	(3.7)	4.9	(2.3)
Pinkeye	1.5	(0.6)	3.1	(2.2)	0.8	(0.5)
Central nervous system signs (e.g., uncoordinated, staggering, swaying, falling down, circling, blindness)	1.5	(1.0)	2.0	(0.7)	1.3	(0.8)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	2.4	(1.0)	5.2	(1.3)	9.6	(3.7)
Reproductive problems (e.g., penile or testicular disorders, urinary calculi)	0.3	(0.2)	1.3	(0.4)	3.9	(3.1)
Lameness: Footrot	6.8	(2.4)	2.2	(1.0)	5.2	(1.9)
Other lameness (e.g., joint swelling, wound)	2.2	(0.9)	11.0	(4.5)	4.6	(3.1)
Weather-related causes and poisoning/toxicity (e.g., chilling, drowning, lightning, noxious feeds/weeds)	0.2	(0.1)	0.4	(0.2)	1.1	(0.6)
Chronic weight loss	2.9	(1.3)	4.9	(3.5)	1.8	(1.3)
Other known conditions*	3.4	(1.9)	3.7	(1.0)	5.6	(3.2)
Unknown conditions (e.g., found dead)	7.0	(2.6)	10.5	(1.3)	9.8	(3.7)
Any of the above	41.3	(4.7)	49.6	(5.9)	41.1	(6.3)

*Common "other" known conditions included accidents/trauma, abscesses, metabolic conditions, diseases such as caprine arthritis encephalitis, caseous lymphadenitis, and cancer and old age.

For the 93.2 percent of operations that had any adult bucks/wethers, 32.5 percent of bucks/wethers were affected with any of the listed conditions and 20.5 percent of those affected received antibiotics for the condition. The highest percentage of bucks/wethers had intestinal worms (15.9 percent). There was no predominant condition for which bucks/wethers received antibiotics. There was no predominant condition from which bucks/wethers died or were culled.

G.4.c. For the 93.2 percent of operations that had any adult bucks/wethers (table F.1.), percentage of adult bucks/wethers that became affected with the following conditions from September 1, 2018, through August 31, 2019, and **for those affected**, percentage of adult bucks/wethers that were treated with an antibiotic, percentage that died, and percentage removed (culled):

Condition	Percent Bucks/Wethers							
	Affected ¹		Received antibiotic ²		Died		Culled	
	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error	Pct.	Std. Error
Digestive: intestinal worms	15.9	(3.6)			10.5	(3.6)	5.0	(4.5)
Other digestive problems (e.g., scours, overeating/ enterotoxemia)	3.3	(0.8)	32.0	(10.5)	29.3	(9.6)	7.4	(7.0)
Pinkeye	0.7	(0.2)	90.9	(5.6)	0.0	(—)	0.0	(—)
Central nervous system signs (e.g., uncoordinated, staggering, swaying, falling down, circling, blindness)	0.8	(0.4)	60.8	(18.4)	67.0	(17.4)	0.0	(—)
Respiratory problems (e.g., pneumonia, shipping fever, runny nose)	2.2	(0.4)	77.8	(7.5)	19.1	(7.2)	2.8	(2.2)
Reproductive problems (e.g., penile or testicular disorders, urinary calculi)	0.7	(0.3)	21.6	(13.8)	31.7	(14.8)	4.5	(2.6)
Lameness: Footrot	3.3	(1.0)	62.1	(13.2)	1.3	(1.1)	1.7	(1.7)
Other lameness (e.g., joint swelling, wound)	2.3	(0.8)	5.8	(4.0)	5.3	(3.7)	14.7	(10.5)
Weather-related causes and poisoning/ toxicity (e.g., chilling, drowning, lightning, noxious feeds/weeds)	0.9	(0.5)			99.7	(0.3)	0.0	(—)
Chronic weight loss	2.5	(1.0)	4.7	(2.9)	33.2	(19.1)	2.6	(1.7)
Other known conditions ³	1.6	(0.5)	25.3	(13.3)	58.2	(13.6)	20.2	(13.5)
Unknown conditions (e.g., found dead)	3.4	(0.6)	2.9	(2.0)	94.1	(3.1)	0.0	(—)
Any of the above	32.5	(3.3)	20.5	(3.8)	30.1	(4.6)	5.9	(2.6)

¹As a percentage of adult buck/wether inventory on the day of the interview.

²Includes antibiotics used topically (including ophthalmic), and antibiotics used by injection, bolus, or drench.

³Common "other" known conditions included accidents/trauma, abscesses, metabolic conditions, diseases such as caprine arthritis encephalitis, caseous lymphadenitis, and cancer and old age.

Overall, 34.5 percent of bucks/wethers treated with an antibiotic received tetracyclines, though there was no predominant antibiotic used to treat bucks/wethers.

G.4.d. For adult bucks/wethers that were treated with an antibiotic from September 1, 2018, through August 31, 2019* (table G.4.c.), percentage of operations that treated any adult bucks/wethers and percentage of adult bucks/wethers treated on those operations, by primary antibiotic class used:

Primary antibiotic class	Percent			
	Operations		Bucks/Wethers	
	Pct.	Std. Error	Pct.	Std. Error
Sulfonamides	8.2	(5.9)	5.7	(3.7)
Tetracyclines	26.6	(6.8)	34.5	(9.8)
Aminoglycosides	1.6	(1.4)	4.8	(4.5)
Lincosamides	1.4	(1.2)	0.9	(0.7)
Beta-lactams	20.5	(6.6)	18.4	(5.6)
Macrolides	5.1	(2.4)	6.6	(2.9)
Cephalosporins	5.2	(3.0)	5.2	(3.4)
Florfenicol	9.6	(4.1)	7.4	(2.8)
Topical ointments	2.7	(1.8)	1.5	(1.0)
Eye drops/ointments	5.0	(3.7)	4.4	(2.6)
Other	17.0	(6.5)	10.5	(4.2)
Total			100.0	

*Refers to the 6.6 percent of adult bucks/wethers that were treated with an antibiotic on the 93.2 percent of operations that had any adult bucks/wethers. The first estimate comes from the 32.5 percent of adult bucks/wethers that were affected by "any of the above" conditions (table G.4.c.), of which 20.5 percent of those adult bucks/wethers were treated with any antibiotic (table G.4.c.).

For adult bucks/wethers that were treated with an antibiotic for respiratory problems, there was no predominant antibiotic used for treatment. However, no bucks/wethers received aminoglycosides or lincosamides as a treatment for respiratory problems.

G.4.e. For adult bucks/wethers that were treated with an antibiotic for respiratory problems from September 1, 2018, through August 31, 2019¹ (table G.4.c.), percentage of adult bucks/wethers by primary antibiotic class used:

Percent Bucks/Wethers		
Respiratory problems ²		
Primary antibiotic class	Pct.	Std. Error
Sulfonamides	14.0	(12.3)
Tetracyclines	15.9	(5.9)
Aminoglycosides	0.0	(—)
Lincosamides	0.0	(—)
Beta-lactams	13.2	(8.0)
Macrolides	22.5	(9.0)
Cephalosporins	5.9	(3.0)
Florfenicol	24.7	(9.6)
Topical ointments	0.0	(—)
Eye drops/ointments	0.0	(—)
Other	3.8	(2.7)
Total	100.0	

¹Refers to the 1.7 percent of adult bucks/wethers that were treated with an antibiotic for respiratory problems on the 93.2 percent of operations that had any adult bucks/wethers. This estimate comes from the 2.2 percent of adult bucks/wethers that were affected by respiratory problems (table G.4.c.), of which 77.8 percent of those adult bucks/wethers were treated with any antibiotic (table G.4.c.).

²For example, pneumonia, shipping fever, and runny nose.

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. A driving force of the needs assessment was the desire of NAHMS to receive as much input as possible from a variety of operators, as well as from industry experts and representatives, veterinarians, extension specialists, universities, goat organizations, allied industry groups, and other stakeholders. Information was collected via a needs-assessment survey.

The objective of the needs assessment survey for the NAHMS Goat 2019 study was to identify critical information needs concerning goat management and health. The online survey gathered opinions from a variety of stakeholders regarding goat management priorities, health priorities, industry burdens, and participation incentives for the study. The survey was available online from July 31, 2017, through September 8, 2017. The online questionnaire was distributed via email lists, newsletters, and goat associations, including breed, fiber, dairy, meat, and pack goat associations. All individuals involved in the goat industry were encouraged to participate, regardless of goat ownership. In total, 1,272 individuals from 50 States completed the study's needs-assessment survey.

Respondents to the needs assessment survey represented the following affiliations:

- Goat owner (operators, hobby/pet owners)—80 percent of respondents
- Veterinarians/nutritionists—11 percent of respondents
- Government and university employees—8 percent of respondents
- Other affiliation—1 percent of respondents

A complete report on the needs assessment survey can be found on the NAHMS Goat 2019 study Web site, or by clicking this link:
https://www.aphis.usda.gov/animal_health/nahms/goats/downloads/goat19/Goat19_NeedsAssess.pdf

Based on input from the needs assessment, reviews from the scientific literature, and input from government and industry researchers, primary study objectives were identified:

1. Describe changes in animal health, nutrition, and management practices in the U.S. goat industry from 2009-2019.
2. Describe practices operators use to control internal parasites and reduce anthelmintic resistance.
 - a. Examine anthelmintic treatment efficacy through fecal egg count reduction test.
 - b. Examine cost of parasitism and resistance in the United States.
3. Describe antimicrobial stewardship on goat operations and estimate the prevalence of enteric pathogens and patterns of antimicrobial resistance.
 - a. Estimate the prevalence of *Salmonella*, *E. coli*, *Campylobacter*, *Giardia*, and *Cryptosporidium* in the United States.
 - b. Examine antibiotic susceptibility in *Enterococcus*, *Salmonella*, *E. coli*, and *Campylobacter*.
4. Describe management practices associated with economically important goat diseases.
 - a. Describe the prevalence of scrapie-resistant codons S146 and K222 in U.S. goats by breed.
5. Characterize the U.S. dairy goat industry.
6. Provide a serologic bank for future research.

**B. Sampling
and
Estimation****1. State selection**

The goal for NAHMS national studies is to include States that account for at least 70 percent of the animals and operations being studied. This method helps to ensure that the representation of the sample collected, and the statistical inferences made based on the sample data, can be generalized to the target population.

Using population data held by the National Agricultural Statistics Service (NASS), States were selected for inclusion in the study based on their percentage of U.S. goat inventory and operations, their geographic and primary production type representativeness, and expected response burden. A memo identifying these States was provided 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.

The final 24 states selected for study inclusion were Alabama, California, Colorado, Connecticut, Florida, Georgia, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Vermont, Virginia, Washington, and Wisconsin. These States represented 80.4 percent of U.S. goats on operations with five or more goats and 75.8 percent of the U.S. goat operations with five or more goats (individual State counts of operations and inventory not shown, but proxy counts are presented in Appendix II). In addition, because the study's needs assessment indicated a desire for a focus on dairy operations, the 24 participating States represent at least 70.0 percent of goat inventory and goat operations within each of the primary production types: dairy, meat, and other.

2. Operation selection

The list frame from which operations were sampled is managed by NASS and was updated with information from the 2017 Census of Agriculture prior to sample selection. A stratified random sampling design was planned, and 4,770 operations were selected to be part of the sample. Stratification was State-based on primary production (dairy, meat, other, and unknown), and herd size (5-19, 20-99, and 100 or more adult goats).

The total sample size was computed to achieve prespecified precision criteria at the 95-percent confidence level, while accounting for the estimated population size, design effect, and expected response rate. The sample size was allocated to strata approximately proportional to size, based on a weighted average number of goat operations and the total goat inventory within the strata. This sampling design allows for logistical efficiencies in administering the survey, prespecified precision for estimates, and oversampling of larger operations. Both larger operations and dairy operations were selected in the sample at a higher rate than they appear in the population, to ensure that they were adequately represented in the sample.

3. Population inferences

Goat operations in the United States with five or more adult goats were the study's target population. Operations with fewer than five adult goats are most likely to keep goats as pets or for other noncommercial uses and were not targeted in the study.

Inferences cover the population of operations with at least 5 adult goats in the study's 24 participating States. These States accounted for 80.4 percent of U.S. goats on operations with five or more goats and 75.8 percent of the U.S. goat operations with five or more goats.

The inverse of the probability of selection (with probabilities being approximately proportional to stratum size) was used as the initial weight. Nonresponse was accounted for using an additional adjustment according to the proportion of nonrespondents within each stratum, using a propensity score model. Calibration to population totals was performed using information available for respondents and nonrespondents.

SUDAAN software (RTI, version 11.0.3) was used to produce population estimates and their standard errors. The SUDAAN software allows estimation of standard errors for complex sampling designs using Taylor series linearization.

a. Phase I: General Goat Management Questionnaire

Estimates for Phase I represent 62.5 percent of U.S. goat operations with five or more adult goats in the 24 study States, after taking into account the survey design and weighting (see Section II.E.1 for more information on the calculation of the weighted response rate).

b. Phase IIa: VS Initial Questionnaire

Estimates for Phase IIa represent 61.9 percent of U.S. goat operations with five or more adult goats in the 24 study States, after taking into account the survey design and weighting (see Section II.E.2 for more information on the calculation of the weighted response rate).

Turnover weights were constructed by adjusting the Phase I response rates for nonresponse of operations turning over consent forms for the opportunity to participate in Phase IIa of the study. The sampling weights for Phase IIa start with these turnover weights, which were adjusted for nonresponse at the second phase of the study using a propensity score model, trimmed for outlying weights, and calibrated to original weight totals as the final weights used for the analysis presented in this report.

**C. Data
Collection****1. Phase I: General Goat Management Questionnaire**

From July 1, 2019, through August 9, 2019, NASS enumerators administered the NAHMS Goat 2019 general management questionnaire via personal interviews. The interview took an average of 115 minutes to complete.

2. Phase IIa: VS Initial Questionnaire

Producers who indicated during Phase I that they would like to participate in Phase IIa of the Goat 2019 study were contacted by VS Veterinary Medical Officers (VMOs) and/or Animal Health Technicians (AHTs) from September 10, 2019, through March 20, 2020. The VMOs/AHTs set up a time that was convenient for the producers to make a face-to-face visit to the operation to administer the Phase IIa questionnaire. The Phase IIa questionnaire interview took an average of 87 minutes to complete.

D. Data Analysis

1. Validation

Phase I data were entered by NASS staff into a SAS data file and checked for validity. For Phase IIa, VMOs/AHTs sent the completed questionnaires to their respective NAHMS State Coordinators, who reviewed the questionnaire responses for accuracy. Reviewed questionnaires were then sent to NAHMS headquarters and were reviewed independently by NAHMS staff and entered into a SAS electronic database.

For all phases of the study, NAHMS staff independently performed data validation checks on the data set to identify consistency and statistical issues. Consistency issues include logical inconsistencies within a survey and were identified using summaries of responses to check for invalid responses (e.g., a response of '3' for a 0/1 response variable); threshold checks (e.g., identifying invalid total sums of goat inventory); and if-then checks (e.g., if no buck kids will be castrated on the operation, then there should not be a reported average age of buck kids at castration).

Statistical issues were identified by investigating summary measures of responses for variables; extreme outliers were investigated by data analysts and subject-matter experts. Inconsistencies were identified using SAS software, and hard copies of questionnaires were reviewed by data analysts and subject-matter experts. Identified inconsistencies were addressed using item-level imputation measures if appropriate values could not be logically deduced.

2. Estimation and confidence interval calculations

Summarization and estimation were performed using SUDAAN software, which accounts for the stratified sampling study design. Confidence intervals were computed for estimate proportions, means, and ratios using the methods described in detail in the SUDAAN Language Manual for SUDAAN version 11¹ and described briefly here. For percentages, a logit transformation was used to enforce bounding of the confidence interval bounds between 0 and 1. Student's t confidence interval bounds are computed on the logit scale and are then back-transformed to the percentage scale. For means and ratios, standard Student's t confidence intervals are computed directly on the scale of the data.

Estimates were generated by one analyst, with numbers and estimation code reviewed by a second analyst to ensure accurate reporting of estimates.

¹Research Triangle Institute (2012). SUDAAN Language Manual, Volumes 1 and 2, Release 11. Research Triangle Park, NC: Research Triangle Institute.

E. Sample Evaluation

The purpose of this section is to provide counts and percentages of operations by response category, which can be used to compute various measures of response. Historically, the term “response rate” was used as a catch-all parameter, but there are many ways to define and calculate response rates. Therefore, counts and percentages of operations by response code category are presented below so that response rates can be calculated according to the preferred definition of “response rate.”

Additionally, the Office of Management and Budget (OMB) has provided guidance regarding the calculation and reporting of response rates in their Standards and Guidelines for Statistical Surveys (2006), Section 3.2. The response rate advocated in the OMB guidance estimates the percentage of eligible operations that completed the questionnaire. The calculation of this specific response rate is presented for Phases I and IIa of the study below.

1. Phase I response rates

Of the 4,770 operations selected for participation, 1,515 were ineligible (no goats, out of business, or otherwise out of scope). Of the 3,255 eligible operations, 532 were not contacted (office holds, purposefully not contacted, and inaccessible operations). Of the 2,723 eligible operations that were contacted, 1,840 (1,320 + 520) provided complete questionnaire data. Of those, 1,320 operations agreed to be contacted for Phase II of the study.

Response category group label	Response category group	Response Category	Number operations	Percent operations	Weighted percent operations*
(a)	In-scope-complete	Completed NASS interview for baseline report, signed consent for Phase II	1,320	27.7	22.0
		Completed NASS interview for baseline report, refused consent for Phase II	520	10.9	10.6
(b)	In-scope-refused	Refused	883	18.5	13.9
(c)	Out of scope	Zero adult goats on hand on July 1, 2019	490	10.3	12.4
		Out of business	522	10.9	16.2
		Out of scope (including having more than 0 total goats, but fewer than 5 adult goats on July 1, 2019)	503	10.6	14.2
(d)	Not contacted	Office hold	55	1.1	1.1
		Inaccessible	477	10.0	9.7
		Total	4,770	100.0	100.0

*Weighted percentages calculated using the initial sampling weights.

According to the OMB guidance, the response rate for this study would be calculated according to the following formula:

$$\frac{a}{(a+b)+\rho*(d)},$$

Letters a , b , and d represent the counts (or percentages) of operations in each response-category group in the table above and ρ is the proportion of the noncontacted operations expected to be in-scope. Specifically,

$$\rho = \frac{(a+b)}{(a+b+c)} = \frac{2,723}{4,238} \approx 0.643.$$

Thus, the OMB guidance-based response rate for Phase I of the NAHMS Goat 2019 study is calculated as follows:

$$\frac{1,840}{2,723+0.643*532} = 0.600.$$

Approximately 60.0 percent of eligible operations completed the Phase I questionnaire. The weighted OMB guidance-based response rate for Phase I of the NAHMS Goat 2019 study is 62.5 percent (calculated using the initial sampling weights), which means that Phase I questionnaire information is available for approximately 62.5 percent of goat operations with at least 5 adult goats in the 24 participating States, after taking into account the survey design and weighting.

2. Phase IIa response rates

Of the 1,320 operations that elected to turn their contact information over to participate in Phase IIa of the Goat 2019 study, 26 were ineligible (no goats). Of the 1,294 eligible operations, 243 were not contacted (inaccessible operations). Of the 1,051 eligible operations that were contacted, 779 provided complete questionnaire data.

Response category group label	Response category group	Response Category	Number operations	Percent operations	Weighted percent operations*
(a)	In-scope-complete	Completed VS interview for health and management practices report	779	59.0	59.8
(b)	In-scope-refused	Poor time of year or no time	108	8.2	6.1
		Does not want anyone on the operation	8	0.6	0.5
		Bad experience with government veterinarians	3	0.2	0.1
		Does not want to do another survey or divulge information	45	3.4	2.7
		Told NASS they did not want to be contacted	0	0.0	0.0
		Other reason	108	8.2	6.9
(c)	Out of scope	Ineligible (no goats)	26	2.0	2.7
(d)	Not contacted	Inaccessible	243	18.4	21.2
		Total	1,320	100.0	100.0

*Weighted percentages calculated using the turnover weights.

Using the same approach to calculate the OMB guidance-based response rate as above in Section II.E.1, the proportion of the non-contacted operations expected to be in-scope is as follows

$$\rho = \frac{1,051}{1,077} \approx 0.976.$$

Thus, the OMB guidance-based response rate for Phase IIa of the NAHMS Goat 2019 study is calculated as follows:

$$\frac{779}{1,051 + 0.976 * 243} = 0.605.$$

Approximately 60.5 percent of eligible operations completed the Phase IIa questionnaire. The weighted OMB guidance-based response rate for Phase IIa of the NAHMS Goat 2019 study is 61.9 percent (calculated using the turnover weights), which means that Phase IIa questionnaire information is available for approximately 61.9 percent of goat operations with at least 5 adult goats in the 24 participating States, after taking into account the survey design and weighting.

3. Communicating response rates

The unweighted response rates of 60.0 and 60.5 for Phase I and Phase IIa, respectively, will be used to communicate response rates for the NAHMS Goat 2019 study. The unweighted response rate represents the likelihood that eligible operations completed each study phase.

4. Nonresponse bias analysis

NAHMS staff performed an analysis to identify potential sources of nonresponse bias using information collected for all sampled goat operations by NASS. This analysis was performed to identify whether there were differences in response behaviors based on known factors for respondents and nonrespondents and whether those differences could be accounted for using analysis techniques.

There were three response rates used to identify differences in response behaviors among three stratification variables (see Section II.B.2.). The three response rates were the contact rate, the in-scope rate, and the completion rate. The stratification variables included herd size, region, and primary production type. The analysis was performed using a logistic regression model accounting for survey weighting and the complex survey design and performing pairwise comparison tests for the differences between each pair of stratification variable levels at the 95-percent confidence level.

To account for the observed differences, initial sampling weights were adjusted for nonresponse and calibrated to population totals. Bias was measured using

$$\text{Bias} = \frac{|\hat{\lambda} - \hat{p}|}{\hat{\lambda}},$$

where $\hat{\lambda}$ is the value estimated using information from both respondents and nonrespondents, and $\hat{p}$ is the statistic estimated using information from respondents only.

a. Phase I: General Goat Management Questionnaire

For Phase I, differences observed included small operations (5-19 head) having lower in-scope rates than medium operations (20-99 head) and medium operations having lower in-scope rates than large operations (100 or more head). Also, small operations had lower completion rates than medium and large operations. Operations with an unknown type (not conclusively meat, dairy, or other) displayed lower contact, in-scope, and completion rates. Thus, if left uncorrected, there was evidence that response behavior differed by the levels of the stratification variables.

Bias was calculated for 17 estimates derived from 10 variables, including total land owned and operated, farm sales, total goat inventory, production expenses, an indicator for internet access, and whether the operation sold value-added products. The particular weight adjustments performed best compared to a number of different weight-adjustment techniques, after comparing the average, minimum, and maximum bias and the standard deviation of the weights.

After weight adjustments, the average bias was minimized among the weight adjustment options for the variables using the baseline weights adjusted for nonresponse with calibration to population totals. These variables were not used in the weight adjustment process, making these out-of-sample bias estimates. The average bias was 14.1 percent, with the minimum and maximum bias over the 17 estimates being 2.5 and 32.0 percent, respectively, and the standard deviation of the weights was 36.

b. Phase IIa: VS Initial Questionnaire

For Phase IIa, differences observed included large operations having higher in-scope rates than both medium and small operations. Also, dairy operations had higher contact rates than meat or unknown operations.

Bias was calculated for 17 estimates derived from 10 variables. After weight adjustments, the average bias was minimized among the weight adjustment options for the variables using the Phase I weights adjusted for nonresponse with calibration to population totals. These variables were not used in the weight adjustment process, making these out-of-sample bias estimates. The average bias was 29.1 percent, with the minimum and maximum bias over the 17 estimates being 2.1 and 54.4 percent, respectively, and the standard deviation of the weights was 100.

Appendix I: Sample Profile

1. Herd Size

Number of Responding Operations		
Herd Size (total adult goat inventory)	Phase I	Phase IIa
Small (5-19)	562	245
Medium (20-99)	820	360
Large (100 or more)	458	174
Total	1,840	779

2. Region

Number of Responding Operations		
Region*	Phase I	Phase IIa
West (CA, CO, OK, OR, TX, WA)	729	281
East (AL, CT, FL, GA, IN, IA, KY, MI, MN, MO, NY, NC, OH, OK, PA, TN, TX, VA, VT, WI)	1,111	498
Total	1,840	779

*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 East region. For more detailed information regarding the counties involved, see Appendix II.

3. Primary Production

Number of Responding Operations		
Primary Production	Phase I	Phase IIa
Meat	808	321
Dairy	614	413
Other	418	45
Total	1,840	779

Appendix II: U.S. Goat Population and Operations

		Number of Goats		Number of Operations	
Region	State	On operations with 1 or more head ¹	On operations with 5 or more head ²	With 1 or more head ¹	With 5 or more head ²
West	California	133,330	130,385	3,938	2,763
	Colorado	48,869	46,456	2,803	1,856
	Oklahoma – West ³	40,302	– ⁵	1,878	– ⁵
	Oregon	45,378	42,157	3,289	1,987
	Texas – West ⁴	677,375	– ⁵	15,179	– ⁵
	Washington	29,392	26,544	2,609	1,440
East	Alabama	51,316	49,757	3,279	2,676
	Connecticut	5,524	4,836	592	326
	Florida	61,159	58,455	4,366	3,298
	Georgia	70,182	68,130	4,063	3,318
	Indiana	41,180	39,079	2,833	1,954
	Iowa	81,428	79,988	2,400	1,823
	Kentucky	59,822	56,508	4,330	3,031
	Michigan	29,226	26,510	2,614	1,462
	Minnesota	36,312	34,538	1,996	1,336
	Missouri	76,838	74,069	4,132	3,044
	New York	30,490	28,353	2,192	1,315
	North Carolina	57,717	54,857	4,084	3,007
	Ohio	59,612	55,355	4,841	3,087
	Oklahoma – East ³	56,452	– ⁵	3,520	– ⁵
	Pennsylvania	52,613	49,250	3,749	2,355
	Tennessee	97,880	94,644	5,802	4,570
	Texas – East ⁴	160,514	– ⁵	10,964	– ⁵
	Vermont	9,801	9,385	480	315

	Virginia	48,945	46,384	3,449	2,416
	Wisconsin	100,438	97,915	2,586	1,503
	Texas – Entire State	-	824,775 ⁵	-	21,032 ⁵
	Oklahoma – Entire State	-	93,310 ⁵	-	4,063 ⁵
Total (24 States)		2,162,095	2,091,640	101,968	73,977
Total U.S. (50 States)		2,698,636	2,600,846	136,442	97,546
24 States as a % of 50 States		80.1	80.4	74.7	75.8

¹Source: NASS, 2017 Census of Agriculture. State level estimates only available in conjunction with the Census of Agriculture every 5 years.

²Source: NASS, special tabulation for number of operations and inventory on operations with five or more goats from the 2017 Census of Agriculture.

³Eastern OK counties include Adair, Atoka, 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, Seminole, Tulsa, Wagoner, Washington. All other OK counties were included in the OK-West region.

⁴Eastern TX counties include Anderson, Angelina, Arkansas, Atascosa, Austin, Bastrop, Bee, Bowie, Brazoria, Brazos, Brooks, Burleson, Caldwell, Calhoun, Cameron, Camp, Cass, Chambers, Cherokee, Collin, Colorado, Dallas, Delta, De Witt, Duval, Ellis, Fannin, Fayette, Fort Bend, Franklin, Freestone, Galveston, Goliad, Gonzales, Grayson, Gregg, Grimes, Guadalupe, Hardin, Harris, Harrison, Henderson, Hidalgo, Hopkins, Houston, Hunt, Jackson, Jasper, Jefferson, Jim Hogg, Jim Wells, Karnes, Kaufman, Kenedy, Kleberg, Lamar, Lavaca, Lee, Leon, Liberty, Limestone, Live Oak, Madison, Marion, Matagorda, McMullen, Milam, Montgomery, Morris, Nacogdoches, Navarro, Newton, Nueces, Orange, Panola, Polk, Rains, Red River, Refugio, Robertson, Rockwall, Rusk, Sabine, San Augustine, San Jacinto, San Patricio, Shelby, Smith, Starr, Titus, Trinity, Tyler, Upshur, Van Zandt, Victoria, Walker, Waller, Washington, Wharton, Willacy, Wilson, Wood, Zapata. All other TX counties were included in the TX-West region.

⁵Numbers of operations and numbers of goats on operations with five or more goats were available only at the State-level for Texas and Oklahoma.