

Herd Health Management

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Small ruminant producers need to establish herd-specific protocols to keep their animals healthy and productive. This presentation will cover components of the herd health program and how to involve your veterinarian in the process throughout the year. Included will be a brief discussion of animal identification and record keeping, nutritional systems and feed evaluation, basic vaccination programs, monitoring and control of internal and external parasites, care and fertility evaluation of the male, pregnancy diagnosis and planning for parturition, care of the neonates, culling criteria, monitoring causes of mortality, and biosecurity practices to prevent infectious diseases from entering the herd. For producers living in New York State, participation in the New York State Sheep and Goat Health Assurance Program (NYSSGHAP) will be encouraged.

When producers think of herd health programs they often concentrate on vaccination and deworming protocols, but there are many other management factors that influence the health and productivity of the herd. Any one of these topics could warrant a full talk.

Identification and Record Keeping

Every sheep or goat on the farm needs a tattoo or tag and every animal leaving the farm needs a scrapie tag or RFID implant. Scrapie tags can be ordered from https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/sheep-and-goat-health/national-scrapie-eradication-program/CT_To_Order_Ear_Tags

In a notebook or on a computer, record the birth date, breeding dates, parturition dates and results, shearing and foot trimming dates, and all treatments with dewormers, vaccines, antibiotics, and the like. Record body weights if possible and otherwise body condition scores each time the animal is handled. Also record the final disposition of the animal and cause of death if it died. For each drug or vaccine given record the meat and milk withdrawal. Take the time to summarize herd performance, including age at first parturition, kidding or lambing rate and percentage (e.g. what percentage of females put to the male kidded or lambed, and how many kids or lambs were produced per female at parturition.) You treasure what you measure.

Nutritional Systems and Requirements

Be aware of the problems associated with various systems of feeding sheep and goats. Pasture can be cheap and easy but comes with risks of predator attacks, meningeal worm from the

whitetail deer, and gastrointestinal worms. You may need to invest in a livestock guardian dog or llama. Feeding in confinement will require adequate feeder space and feed of the appropriate quality for the animals being fed. Weaned lambs and kids will starve to death on low quality hay if not supplemented with grain. High grain feeding risks urolithiasis in intact males and wethers. Baylage may be of a better quality than hay because it can be cut earlier in the Northeast but if not made and stored properly will result in listeriosis, causing abortions or killing animals. Trace mineralized salt should be available daily. Water must be clean and unfrozen.

Feed Evaluation

Date and save every feed tag that comes on the farm. Do the same for mineral mixes. Your veterinarian will need to see these tags when trouble shooting health or production problems. Store your hay inside, under cover and if possible get a forage analysis on each batch. A special hay bale corer can be borrowed for obtaining representative samples from 20 bales. Submit the combined sample to a forage testing lab such as Dairy One in Ithaca NY [<https://dairyone.com/>](https://dairyone.com/). Seek advice from your veterinarian or nutritionist to adjust the diet once you know what nutrients the forage supplies. Goats in particular will get better forage if allowed to pick through what is offered, so if quality is low, feed more than they will eat and replace uneaten hay with fresh forage the next day.

Dr. Mike Thonney has created a computer program (requires Microsoft Access) to balance rations by the substitution method. It can be downloaded for free from the Cornell Sheep website at [<http://sheep.cornell.edu/management/feeding/feedform-diet-formultion-method-and-tool/>](http://sheep.cornell.edu/management/feeding/feedform-diet-formultion-method-and-tool/). Langston University has a goat feeding program and lessons on nutrition available at [<http://www.luresext.edu/?q=content/introduction-goat-nutrition>](http://www.luresext.edu/?q=content/introduction-goat-nutrition).

Vaccination Programs

The most basic vaccination program is for enterotoxemia and tetanus, CD tetanus. Commonly this vaccine is given under the skin at 2 and 3 months of age, and then a month prepartum or annually, whichever comes first. Lambs and kids that did not get colostrum from boosted mothers should get an extra dose at 1 month of age. Note that the protection against enterotoxemia is far less than a year, so if the pasture is lush or the concentrate feeding heavy, the CD portion should be repeated every three months.

Show animals and pets will need a rabies vaccine. Imrab® subcutaneously is preferred, because in sheep the vaccine lasts for 3 years after the first booster. Imrab® is also used on goats, though not approved for them, and with annual boosters. In New York, rabies vaccine must be given by a veterinarian, and the decision as to which sheep or goats over 3 months of age are to be vaccinated will be partially driven by economics.

Some farms may use a soremouth (orf) vaccine, but this is a live virus and will introduce the disease to the farm. Some herds vaccinate for caseous lymphadenitis (CLA) as a means of controlling the disease. Because vaccinated animals are usually positive on blood tests, this practice will restrict sales to many farms trying to avoid introduction of CLA. As a word of warning, most farms that vaccinate for CLA have the disease and buying from them is a risk.

Other possible vaccines are *Campylobacter* (especially for sheep) and *Chlamydia* vaccines to prevent abortions caused by these agents.

Protocols for use of syringes and needles should be designed to prevent abscess formation and disease transfer (OPP and CAE). That means a new needle for each animal. Vaccines obviously need to be stored in a refrigerator and only sterile needles introduced into the vials to avoid contamination.

Monitoring and Control of Internal Parasites

All animals in the herd should be examined frequently for body condition, using a 1 to 5 scale where 3 is ideal for most 'working' animals and 5 is fat. Look for evidence of diarrhea ("mucky butt") which can signify coccidiosis or worms other than *Haemonchus*, the blood sucking worm in the abomasum. Learn how to do FAMACHA scoring (on line course from Rhode Island at <https://sites.google.com/site/easctc/class-announcements/famachacertification-online>) where 5 is fatal. Use the cover, push, pull, pop approach and deworm those that have scores of 4 or 5. Record which sheep and goats get treated each time and the drug(s) used. In some herds 3s will also need deworming. Learn how to do fecal exams to detect which animals have heavy loads of worms and should be treated or culled. A repeat fecal 10 to 14 days after treatment should show over 90% reduction in worm egg numbers. Parasitologists are currently recommending the use of at least two classes of dewormers simultaneously, to avoid the development of resistance. Note that the dose of fenbendazole on the Safeguard® bottle is WRONG. Give at least twice that much to a goat, at least two days in a row. Culling is important because 80% of the worms are in 20% of the animals. Animals without good nutrition will have heavier worm burdens, so check the quality of the hay or pasture and the availability of minerals. Both sheep and goats need selenium for good immune function. Copper is also important, but because sheep are susceptible to copper poisoning, consult with your veterinarian for guidance and testing of liver samples. Some herds will benefit from copper oxide wire particles (COWP) once or twice a year to control *Haemonchus* if they are not already overloaded with copper. All will benefit from larger pastures and a 60 day or greater rotation period before returning to a previously grazed area. Find more information about parasite control at <www.wormx.info>.

Monitoring and Control of External Parasites

Lice and keds are big enough to see without a microscope. They also cause the animal to feel itchy and rub on posts and fences. A flea comb aids in collecting samples that can be taken to better light for examination. Sucking lice and keds have a dark blue-black body filled with digesting blood. They can be killed with an oral ivermectin product every two weeks, but this will select for resistant gastrointestinal worms. Biting lice are tan and are not killed by the systemic products. All of these parasites can be controlled with topical permethrins such as Ultraboss®, which is labeled for sheep and goats. Repeated treatments are necessary because eggs attached to the hair or wool are not killed. It is ideal to treat directly after shearing has removed most of the parasites from fiber animals.

Chorioptic mange mites require a microscope to see and live on the surface. They will be discussed in the skin disease talk.

Care and Fertility Evaluation of the Male

The ram or buck needs to be foot trimmed, vaccinated and monitored routinely for parasites. A repeated need to deworm a breeding male should be taken as a sign that his genetics are not needed on the farm. Fencing needs to be very good to avoid unwanted breedings. Water must be clean at all times and a trace mineralized salt supplied. Limit concentrate feeding to decrease the risk of urinary obstruction by stones.

Ideally, breeding soundness exams should be done by your veterinarian on all rams and bucks before the beginning of the breeding season and while there is still time to acquire and quarantine additional males if necessary. At the very least the producer should palpate the scrotal contents, including the tail of the epididymis of rams, for abnormalities and record body condition and scrotal circumference. A minimum scrotal circumference is 30 cm for ram lambs weighing more than 70 kg, 33 cm for 12- to 18-month-old rams, and 36 cm for adults weighing more than 110 kg. Larger (undiseased) testes usually produce more sperm. Subfertile rams, if dominant, can have a serious detrimental effect on reproduction even when multiple rams are used. The ram percentage needed will vary with the age of the ram and the terrain. Young rams that have passed a breeding soundness exam can handle 25 ewes, while adults can serve 50 to 100, depending on how flat the pasture is.

Less data is available for bucks, but in general big is beautiful, resilience of the testicles is respectable, mobility is meaningful, and softness is suspicious. In both sheep and goats the scrotal circumference is lowest in February and increases with the fall breeding season.

Pregnancy Diagnosis

Knowing which small ruminants are pregnant and which are open allows you to cull or rebreed the open animals in a timely fashion. You will need good handling facilities or plenty of helpers to get the job done. Hinged panels are especially helpful if a chute is not available. Veterinarians can ultrasound to determine pregnancy status and number and viability of the embryos. A good time to ultrasound the herd is beginning 40 to 45 days after removal of the male. If the breeding season is long, it will be difficult to count fetuses for the animals that are a lot further pregnant. If the male is still in the group, an animal cannot be diagnosed as not pregnant unless a false pregnancy is detected; this can be treated with prostaglandin and the animal rebred.

If a veterinarian with an ultrasound machine is not available, a blood test can be used. Progesterone is not a pregnancy test, but if the animal has no progesterone it is not pregnant. The hormone most commonly used is pregnancy specific protein B, which can be detected in blood samples after 30 days. Unfortunately PSPB cannot tell you how far pregnant the animal is or how many fetuses are present. Also, the test remains positive for several weeks after abortion or parturition. It is available from Biopryn for approximately \$6.50 plus shipping.

Planning for Parturition

The first part of parturition planning is done when the date is chosen for introduction of the male to the females. If you don't want to go to the barn and deal with dystocias in subzero weather,

delay breeding until later in the fall. Record when the males go in and when they come out, including when bucks jump fences. Gestation will be 5 months for goats, a few days less for sheep.

Have on hand a tote with a disinfectant soap to clean the vulva, lube, and sterile sleeves for examining the animal that seems to be in dystocia. In general, delivery should occur within 30 minutes after placenta or part of the fetus is first seen at the vulva. If this has not happened, wash the vulva and gently examine the birth canal for how far open the cervix is and the position of the fetus. A more experienced producer or a veterinarian can help you decide if you can manage the dystocia yourself or need to call for assistance, even possibly a cesarian section (but ask about price in advance). There should be no more than 30 minutes between lambs or kids in the litter.

Record each parturition in a lambing/kidding book, including date, young born and their tags, and assistance needed. You can print your own book using this file:
<http://faculty.vet.cornell.edu/smith/Sheep%20and%20Goat%20Course/Lecture%205%20Female%20Repro/Lambing%20record%20book%20version%204.pdf>

Care of the Neonate

The good mother will lick the lamb or kid dry, but you may need to help if the mother is weak or inexperienced or the temperature very cold. Dip the navel in iodine unless you have never had umbilical problems and, if indoors, pen mother and young together for a few days to establish maternal bonds and prevent stealing by other females near parturition. Mark the young so you know whose they are. Tube feed colostrum at 1 ounce per pound three times in the first day if they are not obviously nursing well, as shown by a full belly. Do a quick check for cleft palate and entropion (in-rolled eyelid).

Culling Criteria

Cull to slaughter animals that cannot perform in accordance with the farm goals. Cull those that don't produce the lambs or kids you want each year. Cull animals that are thin despite having free access to good feed and parasite control - they have bad teeth or chronic, usually incurable disease that may endanger others in the herd. Cull for leg and udder conformation and for disposition. You don't need more ewes that abandon their lambs or goats that jump fences.

Monitoring Mortality

Anything that dies on farm should have a necropsy done by a veterinarian or a trained owner before the body is disposed of by composting, burning or burial. Directions for a digital necropsy can be found at
<http://goatdocs.ansci.cornell.edu/CSGSymposium/DigitalFarmerNecropsyExamSheepWForm.pdf>

If your veterinarian does not have time to do the necropsy, he or she can help you interpret the findings with the aid of good photos. Record the causes of mortality. How many lambs or kids were stillborn, how many died from starvation (no body fat), how many of pneumonia? Your veterinarian can help you design programs to limit these losses in the future.

Biosecurity

Preventing the introduction of infectious diseases will prevent future losses. A closed herd is ideal from a biosecurity standpoint but rarely exists. Owners need to be sensitized to the risks associated with buying replacements, trading or purchasing rams and bucks, and showing any sheep or goats. Other livestock on the farm can also introduce diseases, such as paratuberculosis from cattle.

A biosecurity plan will include quarantine and examination/testing protocols for all incoming or returning animals. Soremouth, pinkeye, caprine arthritis-encephalitis virus (CAE) and ovine progressive pneumonia virus (OPP), foot rot, caseous lymphadenitis, and Johne's disease (paratuberculosis) can all be bought and paid for. Ask the seller about these diseases and seek advice from your veterinarian as to which tests are worth doing. Resistant worms can also arrive with new animals, so treat and do fecal egg counts on all animals while they are in quarantine.

Sanitation of pens and feeders between groups, and manure management are also important aspects of biosecurity. Visitors to the farm, including shearers, should wear clean clothes and footwear, and shearing equipment should be sanitized. Footbaths for people do almost nothing to kill germs, while plastic boots or provision of thoroughly sanitized rubber overboots for visitors will avoid the introduction of fecal-transmitted diseases. Disposal of deadstock, including aborted fetuses and placentas, should be prompt, by burial or composting.

NYSSGHAP for Producers Living in New York

New York State Department of Agriculture and Markets sponsors a sheep and goat health assurance program patterned after the NYSCHAP program for cattle. The producer, the herd veterinarian, and a state veterinarian get together once a year to discuss the goals of the herd, the performance over the last year, problems identified, and measures to improve welfare and productivity in the future. The program is free to the producer and stresses biosecurity and disease prevention or control. For more information visit <https://www.vet.cornell.edu/animal-health-diagnostic-center/programs/nyschap/modules-and-documents>.

and scroll down to Small Ruminants. The contact information for the state veterinarian responsible for your county is provided at <https://www.vet.cornell.edu/animal-health-diagnostic-center/programs/nyschap>