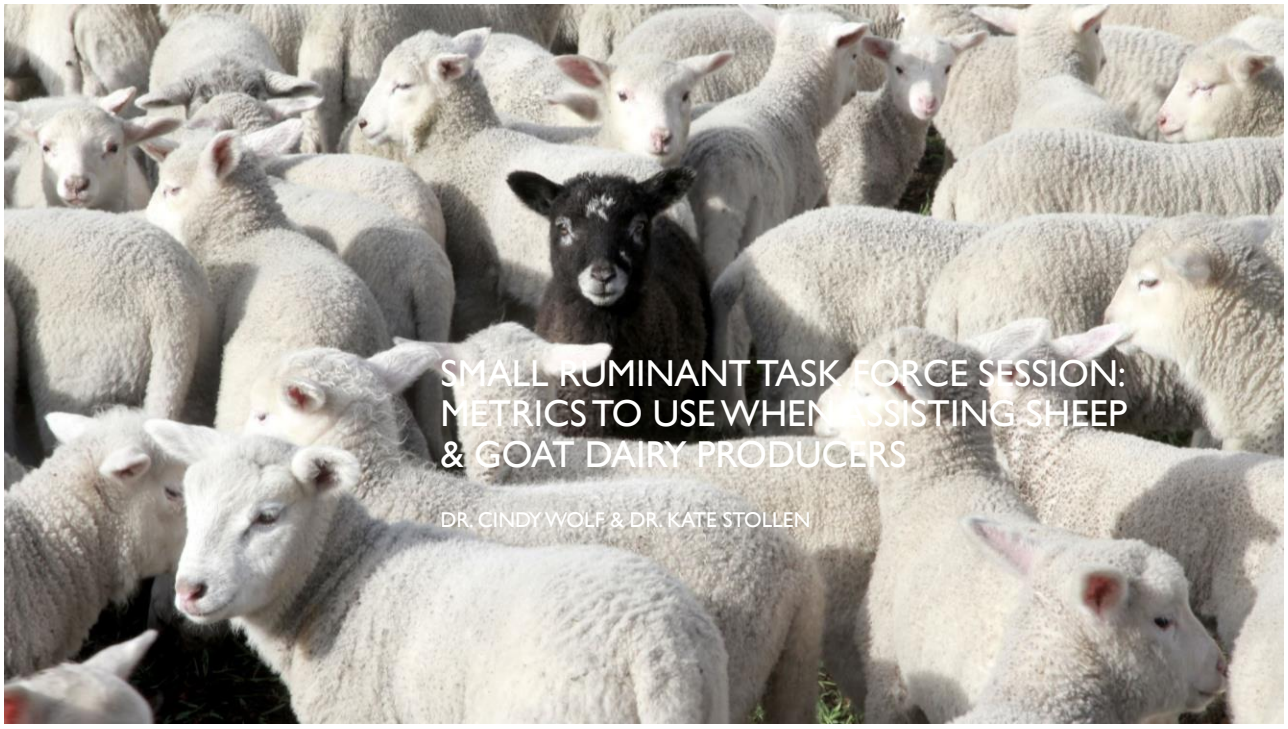


SMALL RUMINANT TASK FORCE SESSION: METRICS TO USE WHEN ASSISTING SHEEP & GOAT DAIRY PRODUCERS

DR. CINDY WOLF & DR. KATE STOLLEN

DR. CINDY WOLF

- Taught Veterinary Students for 35 years at University of Minnesota
- Raises sheep, goats, beef cattle in SE MN
- Solo practitioner working mainly with small ruminants

DR. KATE STOLLEN

Attended vet school at St. George's University; completed clinical year studies at the University of Minnesota

Private practitioner for 4 years (Northeastern WI)

- Interests in all things ruminant and camelid
- Consulted with backyard producers up to 10,000 goat dairy

Holsum Dairies LLC –Staff Dairy Vet

HOW DO THE DPC'S GOALS ALIGN WITH THE SHEEP & DAIRY GOAT INDUSTRY?

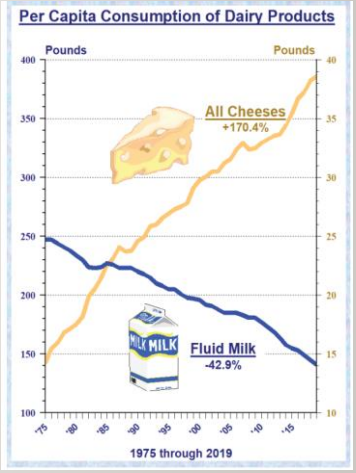
- Mission Statement of the Dairy Practices Council:
  - Develop and disseminate educational guidelines directed to proper and improved sanitation practices in the production/processing of milk, and the manufacture of dairy products.
  - Facilitate the adoption of sound, uniform, and improved procedures related to the production, processing, and distribution of high quality fluid milk and dairy products.
  - The intent of these objectives is a cooperative effort of Industry, Education, and Regulatory. The further interest is not to duplicate, but to cooperate with other organizations which have similar goals.

- Broadly, the sheep and dairy goat industry is a small percentage of the dairy produced in the US (0.08% in a 2011 survey)
- Lack of industry uniformity or general guidelines for sheep and goat production operations
  - Small ruminants are NOT little cows!

References
https://doi.org/10.1016/j.smallrumres.2011.09.033

WHY DO WE CARE?

- The demand for sheep and goat milk products continues to grow
  - Goat milk industry globally valued at $8.5 billion in 2018, expected to exceed $11.4 billion by 2026
  - US consumption of all cheese has increased over 18% in the last decade.
- We are not currently meeting our needs and rely heavily on imports
  - The US occupies approx. 42% of the global sheep cheese import market
  - Potential opportunities for an export market
- As the industry gains momentum we need to produce clear guidelines for producers
  - Maintain public trust in the products (Welfare and environmental concerns)
  - Create benchmarks with data collection
  - Drive improvement through research and data analysis



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https://extension.psu.edu/dairy-product-trends-cheese
https://agriculture.vermont.gov/sites/agriculture/files/doc_library/Sheep%20and%20Goat%20Dairy%20Market%20Conditions%20and%20Consumer%20Research%20Report.pdf
https://www.fmmacentral.com/PDFdata/msb202010.pdf

WORLD SURVEY OF DAIRY SHEEP AND GOATS

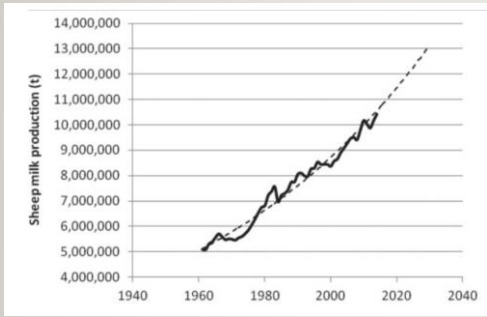
In contrast the US has approximately 9.42 million dairy cows at last market estimation
Sheep and goats represent 1.3% and 1.9% of the world's total milk production respectively

Table 1. World panorama of dairy sheep and goats[1]

	Total[2] [million head (%)]		Dairy [million head (%)]		Milk [Mt (%)]		Yield[3] [L/head]	
Continent	Sheep	Goats	Sheep	Goats	Sheep	Goats	Sheep	Goats
Asia	512 (43.6)	556 (55.4)	135 (54.0)	106 (52.1)	4.73 (45.6)	8.04 (52.7)	35.1	76.2
Africa	352 (30.0)	388 (38.7)	79 (31.7)	80 (39.6)	2.54 (24.5)	3.93 (25.7)	32.2	48.9
Europe	131 (11.2)	17 (1.7)	33 (13.3)	9 (4.3)	3.01 (29.0)	2.54 (16.6)	90.8	290.1
America	84 (7.1)	38 (3.8)	3 (1.1)	8 (4.0)	0.09 (0.9)	0.75 (4.9)	33.0	93.4
Oceania	95 (8.1)	4 (0.4)	<0.1 (0)	<0.1 (0)	<0.01 (0)	<0.01 (0)	—	—
Total	1,173 (100)	1,003 (100)	250 (100)	203 (100)	10.37 (100)	15.26 (100)	41.5	75.3

References
https://doi.org/10.3168/jds.2017-14015
National Milk Producers Federation Oct 2022 Report vol 25 no 10

MILK PRODUCTION GLOBALLY



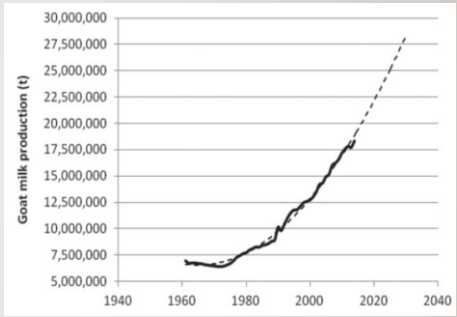
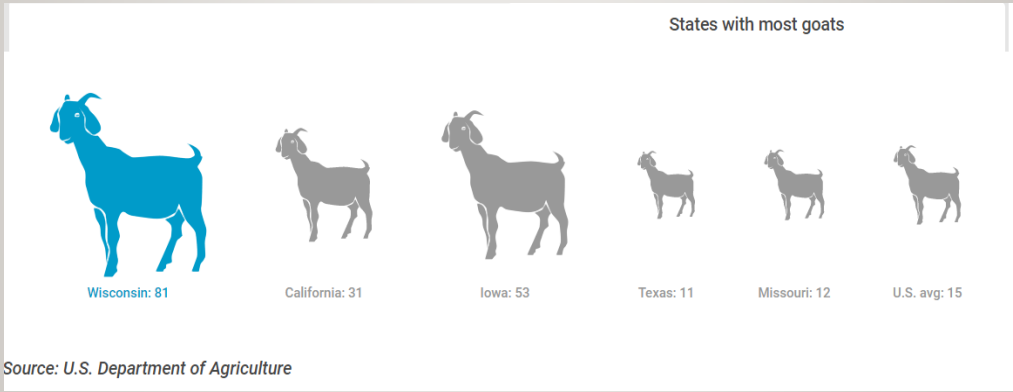


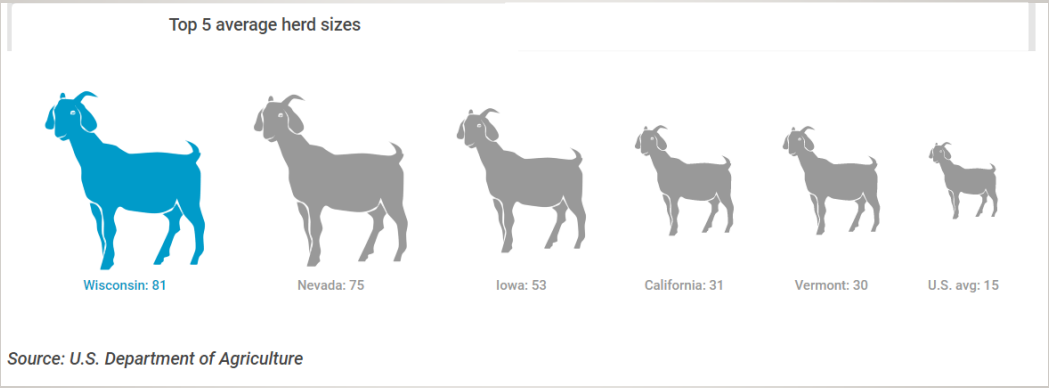
Figure 1. World sheep and goat milk production trends from 1960 to 2016 (solid line) and forecast to 2030 by using time-series model (dashed line) (FAOSTAT, 2018).

DATA AS OF 2017



Source: U.S. Department of Agriculture

DATA AS OF 2017



Source: U.S. Department of Agriculture

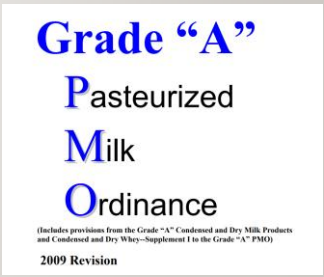
THE ROLE OF REGULATORS

https://www.google.com/url?sa=i&url=https%3A%2F%2Fagriculture.ny.gov%2Fdairy%2Fmilk-inspections&psig=AOvVaw3_V65zAZ8_d1oLI0k9u4GI&ust=1667183909374000&source=images&cd=vfe&ved=0CAwQjRxqFwoTCOCyn6L2hvsCFQAAAAAdAAAAABAD

ROLE OF REGULATORS

Field representatives, Co-ops/Creameries, State/Federal Inspectors & Veterinarians

- Regularly interact with producers
- Uphold standards set in PMO and through creamery
- Perform scheduled evaluations of facilities and have the opportunity to make recommendations for producers
- Drive progress through economic incentives (creameries)
- Enhance public perception that animal welfare concerns are being addressed



https://cdn.backyardgoats.iamcountryside.com/wp-content/uploads/sites/2/2019/03/GettyImages-937254026-e1533153159342.jpg

A FRAMEWORK FOR ASSESSMENT

Create a cohesive guide

- Small ruminant dairy industry lacks a program dedicated to sheep & goats
- Consider the national FARM program utilized by the bovine dairy industry
  - Extrapolate major criteria for evaluation and interpret for sheep & goat producers
- Potential drawbacks
  - Sheep & goats are not cows, so metrics validated and used in the FARM program cannot be applied directly to small ruminants without further study
- At this time?
  - Consider a list of guidelines and current best practices in the industry
  - Future research!

Introduced in 2009

Version 4 guidelines currently in use

MARKETING PROGRAMS

- American Humane
- Certified Humane
- Food Alliance

* Meets the Humane Farm Animal Care Standards, which include nutritious diet without antibiotics, or hormones, animals raised with shelter, resting areas, suffcient space and the ability to engage in natural behaviors.

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FARM PROGRAM: MAJOR CATEGORIES

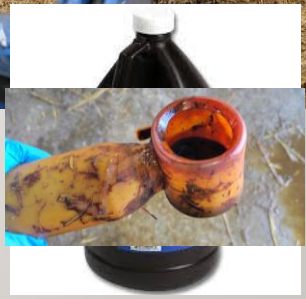
- Animal care
- Biosecurity
- Environmental Stewardship
- Workforce Development
- Antibiotic Stewardship

ANIMAL CARE GUIDELINES

- Essential needs of all animals (youngstock and adults) must be met
  - Access to feed & water, clean dry environment protected from temperature extremes, ability to express natural behaviors
- Facility design is tailored to the animal's age/stage of production
- Disease is diagnosed in a timely fashion and appropriately treated
- Painful procedures are limited and appropriate pain management is considered
- Euthanasia guidelines & animal transport
- Documentation (drug records & protocols)
  - 2 year minimum retention

YOUNGSTOCK CARE

- Critical first colostrum feeding provides antibodies, energy in the form of fat & protein
  - Protocol for colostrum feeding?
  - Species appropriate?
- Hygiene plan for neonatal kid/lamb area
  - Feeding & housing
  - Naval care (Importance of dipping)
- Temperature management
- Official identification



FEEDING RECOMMENDATIONS

RECOMMENDED BRANDS

- Land O Lakes Lamb & Kid colostrum replacer
- Colostrum from a dam (single source vs pooled)
- Heat treated vs raw colostrum
- Testing colostrum quality
- Testing kids for adequate passive transfer
  - Serum total protein vs IgG
  - Lack of standards amongst breeds

SCCL
SCIENCE • NATURE • CARE

FEEDING RECOMMENDATIONS

COLOSTRUM FEEDING SPECIFICS

MORE THAN ONE SUCCESSFUL APPROACH

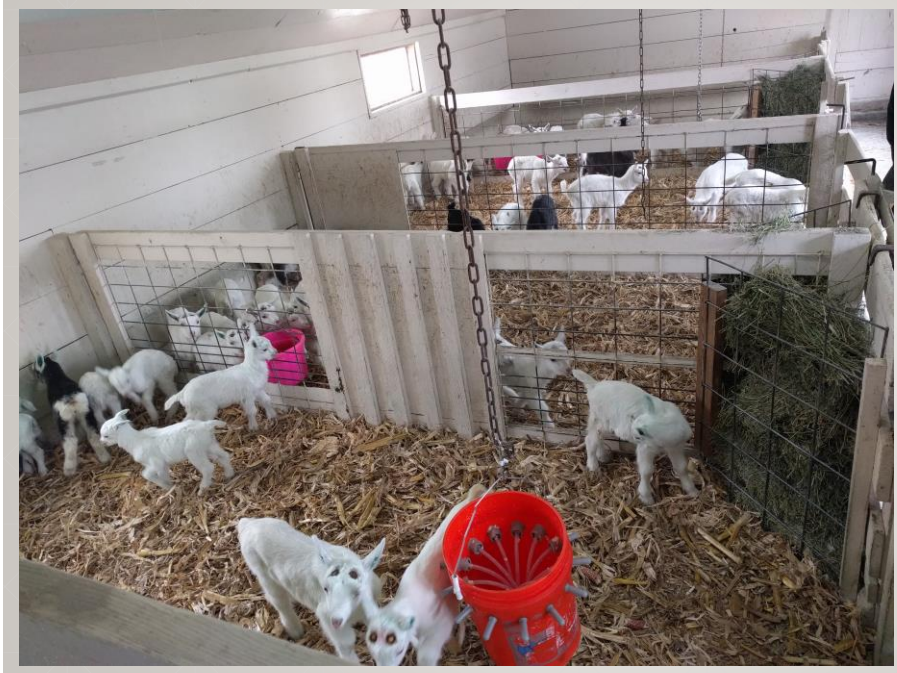
AMOUNT: 1 OUNCE PER POUND BW

REPLACER: MINIMUM 35 GRAMS IGG ON LABEL

CLEAN COLLECTION FROM WELL FED HEALTHY DONOR(S)

TUBE OR BOTTLE ASAP AFTER BIRTH

3-4 x/24 HOURS OF LIFE



Biggest Wreck

- Not having a big enough kid space
- Not having solid feed in place
- Age old debate whole goats' milk vs. milk replacer
- Sanitation/hygiene plan

DISBUDDING PROCEDURE

- Ideally disbudding is performed as early in life as possible. Horn removal makes handling of the animals safer as adults and reduces the risk of animal injury.
- Gold standards of care: anesthesia & analgesia
- Electrocautery (burner) and paste are recommended
  - If using electrocautery recommended 5-6 seconds of contact time per side (copper ring)
- Procedure should be preceded by NSAID administration approximately 1-2 hours earlier to reduce pain. (Meloxicam is commonly used extra-label, Banamine may also be used).
  - Contact FARAD/Work with herd veterinarian to establish withdrawal times
- Alu-spray over cauterized horn buds creates a protective barrier while the tissue heals
- A duct tape bonnet can be used for caustic paste application to prevent smearing or contact with other animals in group pens. Maintain for a minimum of 4 hours prior to removal

References
https://doi.org/10.3389/fvets.2020.568750

Dehorn calves with paste

A. Villarroel

Be sure to wear gloves when using the paste: it is very caustic. This picture shows everything you need to dehorn with caustic paste: gloves, clippers, a marker, and the paste.

It's a good idea to dehorn cattle that live in confined areas to prevent injuries to humans and other animals. Of the various dehorning methods, dehorning with paste is easy, effective, and economical as well as low-stress to the animal.

Here are the main points to consider when using dehorning paste.

- Apply dehorning paste before calves are 2 days old. After 2 days, calves have figured out how to scratch their heads against something to rub the paste off, and they can also stand on three legs to scratch with the other.
- Using too much paste is the most common mistake beginners make. The result is a big bald spot around the horn area (although the hair will grow back in time). The amount of paste to apply on each horn is about the size of a dime, as indicated in the package insert.
- Don't let the calves get wet for 24 hours after applying the paste. If rain falls on active dehorning paste, it can run off into the eyes and blind the calf. The paste dries in 1 day, after which it is no longer necessary to keep calves dry.
- Apply paste just before feeding the calves with a bottle. It takes a couple of minutes for the paste to start burning, so if you apply it immediately before feeding, calves are kept busy working on the bottle, and they forget about their discomfort. By the time they are done with the bottle, the paste is almost done with the dehorning process, and they will not notice it that much.

Additionally, research performed with human babies shows that giving breast milk, glucose, or sucrose before a single painful procedure significantly reduces heart rate and crying time compared to using distilled water, a pacifier, or swaddling. So, applying the paste immediately before feeding milk with the bottle may help in two ways: the calves are so busy working on the bottle that they forget their discomfort, and the sugar in the milk may help reduce the pain.

Producers who have switched to using paste to dehorn calves at birth report great success with no complications, and they like that calves are "done" without showing obvious signs of pain. Only minor head shaking was reported.

If you have any questions, please contact: (541) 737-1931 or aurora.villarroel@oregonstate.edu

Dehorn newborn or 1-day-old calves.
Apply the dehorning paste *right before feeding*.
Make sure the paste doesn't get wet for 24 hours.

Aurora Villarroel, DVM, MPVM, PhD, Dipl. ACVPM; Extension veterinarian, Oregon State University.

1. Locate horn buds

2. Clip hair

3. Outline sites with a marker

4. Apply paste

5. Fresh paste

6. Paste after 24 hours

A Pacific Northwest Extension Publication
Oregon State University • Washington State University • University of Idaho

PNW 626 ◆ Published March 2011

PHOTOS


IDEAL
AluShield
Aerosol Bandage
CAUTION
FLAMMABLE
CONTENTS UNDER PRESSURE


DEHORNING
PASTE

KID ASSESSMENT SOP

- Demeanor (ear position, eye brightness, posture, playfulness, group interaction)
- Appetite
- Over-the fence RR
- HR
- Temp
- Fecal consistency
- Abdominal fullness

Assessing goat kid health

www.ontariogoat.ca

27

OBSERVE

HEALTHY	SICK
Appetite	
Strong suckle Ready for meals, finished meals	Poor suckle response Unfinished meals, drinks slower
Manure	
Newborn kids: dark and sticky (meconium) Kids drinking milk: yellow, formed, slightly soft Kids on milk and/ or solids: yellow to brown, small pellets	Increased frequency, increased quantity, watery, pasty, clay-like, yellow, white, green, bloody, contains mucous
Posture and demeanour	
Reactive to people and other kids Lays with front legs tucked under its chest Stands upright, with equal weight in all legs	Depressed, lethargic, indifferent, slow to respond, cannot hold it's head up, difficulty rising, stands with back arched, stands with hind feet well back, uncoordinated movement, swollen joints, lame
Eyes, ears, nose, and coat	
Eyes: Prominent, bright, clear **Ears:** Pricked position **Nose:** Clean, moist **Coat:** Shiny, smooth, clean, dry	**Eyes:** Dull, sunken, discharge **Ears:** Droopy, cold to touch **Nose:** Cold, wet, crusty, discharge, excess mucous **Coat:** Dull, matted, dirty, rough
Navel	
Cord soft, thin and non-painful	Hot, hard, or painful (kicks at the navel, kicks or struggles when navel is touched)

CHECK

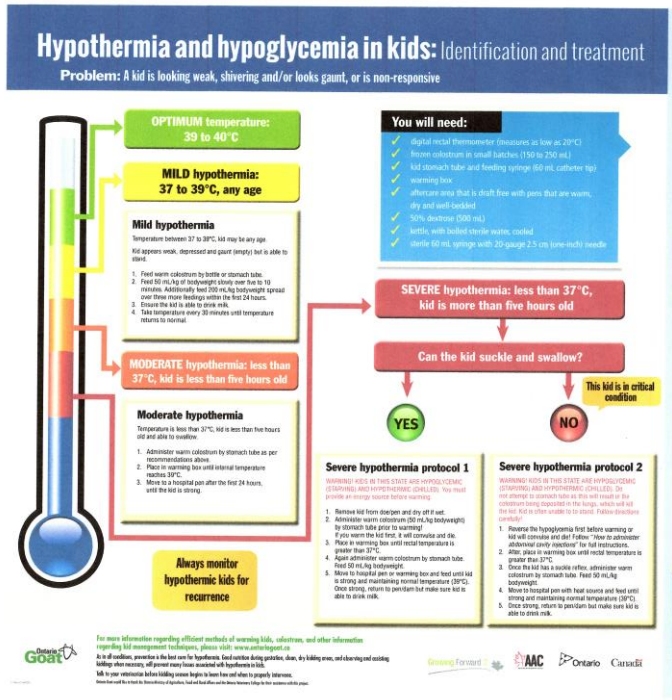
Hydration	
Skin flattens immediately when pinched	Skin is tented for two seconds or more
Rectal temperature	
39 to 40°C (102.2 to 104°F)	Hypothermia: <39°C (102.2°F) High temperature: >40°C (104°F)
Breathing	
Calm, even, respiratory rate 20 to 40 breaths/minute	Coughing, grunting, flaring nostrils, extending head and neck, wheezing

ACT

Work with a veterinarian to create protocols for monitoring and treating sick kids. Contact a veterinarian immediately if a kid is displaying severe signs of illness, or more than 10% of kids are sick.

For more information:

Growing Forward 2 · Ontario Goat · AAC · Ontario · Canada


Hypothermia and hypoglycemia in kids: Identification and treatment
Problem: A kid is looking weak, shivering and/or looks gaunt, or is non-responsive
OPTIMUM temperature: 39 to 40°C
MILD hypothermia: 37 to 39°C, any age
Mild hypothermia
Temperature between 37 to 39°C, kid may be any age.
Kid appears weak, depressed and gaunt (empty) but is able to stand.
1. Feed warm colostrum by bottle or stomach tube.
2. Feed 50 mL/kg of bodyweight slowly over five to 10 minutes. Additionally feed 200 mL/kg bodyweight spread over three more feedings within the first 24 hours.
3. Ensure the kid is able to drink milk.
4. Take temperature every 30 minutes until temperature returns to normal.
MODERATE hypothermia: less than 37°C, kid is less than five hours old
Moderate hypothermia
Temperature is less than 37°C, kid is less than five hours old and able to swallow.
1. Administer warm colostrum by stomach tube as per recommendations above.
2. Place in warming box until internal temperature reaches 39°C.
3. Move to a hospital pen after the first 24 hours, until the kid is strong.
Always monitor hypothermic kids for recurrence
You will need:
digital rectal thermometer (measures as low as 20°C)
frozen colostrum in small batches (150 to 250 mL)
kid stomach tube and feeding syringe (60 mL catheter tip)
warming box
aftercare area that is draft free with pens that are warm, dry and well-bedded
50% dextrose (500 mL)
kettle, with boiled sterile water, cooled
sterile 60 mL syringe with 20-gauge 2.5 cm (one-inch) needle
SEVERE hypothermia: less than 37°C, kid is more than five hours old
Can the kid suckle and swallow?
This kid is in critical condition
YES
NO
Severe hypothermia protocol 1
WARNING! KIDS IN THIS STATE ARE HYPOGLYCEMIC (STARVING) AND HYPOTHERMIC (CHILLED). You must provide an energy source before warming.
1. Remove kid from doe/pen and dry off if wet.
2. Administer warm colostrum (50 mL/kg bodyweight) by stomach tube prior to warming!
If you warm the kid first, it will convulse and die.
3. Place in warming box until rectal temperature is greater than 37°C.
4. Again administer warm colostrum by stomach tube. Feed 50 mL/kg bodyweight.
5. Move to hospital pen or warming box and feed until kid is strong and maintaining normal temperature (39°C). Once strong, return to pen/dam but make sure kid is able to drink milk.
Severe hypothermia protocol 2
WARNING! KIDS IN THIS STATE ARE HYPOGLYCEMIC (STARVING) AND HYPOTHERMIC (CHILLED). Do not attempt to stomach tube as this will result in the colostrum being deposited in the lungs, which will kill the kid. Kid is often unable to be stood. Follow directions carefully!
1. Reverse the hypoglycemia first before warming or kid will convulse and die! Follow "How to administer abdominal cavity injections" for full instructions.
2. After, place in warming box until rectal temperature is greater than 37°C.
3. Once the kid has a suckle reflex, administer warm colostrum by stomach tube. Feed 50 mL/kg bodyweight.
4. Move to hospital pen with heat source and feed until strong and maintaining normal temperature (39°C).
5. Once strong, return to pen/dam but make sure kid is able to drink milk.
Ontario Goat
For more information regarding efficient methods of warming kids, colostrum, and other information regarding kid management techniques, please visit: www.ontariogoat.ca
As in all conditions, prevention is the best cure for hypothermia. Good nutrition during gestation, clean, dry kidding areas, and observing and assisting kiddings when necessary, will prevent many losses associated with hypothermia in kids.
Talk to your veterinarian before kidding season begins to learn how and when to properly intervene.
Growing Forward
AAC
Ontario
CanadaEd
Warning! DO NOT microwave colostrum. Thaw colostrum in a hot water bath until it reaches 39°C.
Using a stomach tube
NOTE: The tube should move easily. ANY resistance or COUGHING indicates that the tube has entered the windpipe and it should be removed immediately.
1. Sit with the kid restrained on your lap. Measure the tube against the kid's body to get an idea of how far to insert the tube.
2. Pass the tube into the side of the mouth in the space between the front and side teeth.
3. Using gentle pressure slide the tube into the esophagus and down to the stomach.
4. Place fingers on each side of the kid's throat. Feel the tube pass through the esophagus to the left/back of the windpipe.
5. Slowly administer the warm colostrum either using a 60 mL feeding syringe (catheter tip) or a 250 mL squeeze bottle.
6. Crimp the end of the tube and, in one downward sweeping motion, pull the tube gently from the esophagus.
How to administer abdominal cavity injections
1. With a sterile 60 mL syringe, draw up 20 mL of sterile 50% dextrose using a sterile needle.
2. Boil clean water and draw up 30 mL of this water into the same syringe with the dextrose in it. This will provide 50 mL of warm (38 to 40°C) 20% dextrose solution.
3. Administer the solution at 10 mL/kg bodyweight.
4. Suspend the kid by holding under the forelimbs, allowing the rest of the body to press against your front.
5. The injection site is 2.5 cm (one-inch) below and to the side of the navel.
6. Using a 20-gauge one-inch needle, insert at a 45° angle to the body wall. The needle is pointed in the direction of the kid's pelvis (see photo).
7. Slowly inject the solution.

TAIL DOCKING & PAIN MANAGEMENT

- Tail docking is specific to lamb management.
- Recommendation to perform as young as possible assuming lamb is nursing normally, administer meloxicam beforehand
- Protocol-elastrator band placed at or below distal caudal tail fold, or hot dock or emasculator crush and cut
- House in clean dry environment to prevent infections

https://upload.wikimedia.org/wikipedia/commons/thumb/a/a0/Two_lambs_rubber_ring_tail_docking%2C_cropped.jpg/1200px-Two_lambs_rubber_ring_tail_docking%2C_cropped.jpg?20090427112648

CASTRATION PRACTICES

- Multiple options available
- Protocol-elastrator band, emasculator crush and cut, burdizzo crush spermatic cords, cut scrotum and pull testicles out
- Oral meloxicam 1-2 hours beforehand
- House in clean dry environment to prevent infections

ANIMAL CARE TREATMENTS & RECORDS

- Create a list of common diseases seen in sheep/goats and treated on the premise.
- Work with herd veterinarian to create farm specific protocols for disease treatment
- List appropriate meat withdrawal times for any antibiotics
- Utilize an on farm record of treatments (Dairy Comp, Bovisync, excel spreadsheet, Google doc, etc.)
  - Include animal ID, date treated, diagnosis, medication used, route of administration and dosage.
- AASRP working toward creating protocol templates producers can customize with their herd veterinarian.

ADULT ANIMALS

- Access to feed and water at all times in pen
- Clean, dry bedding used, new bedding is added regularly
- Hygiene scoring (3 pt scale) fecal soiling, skin lesions, udder contamination
- Lameness-prevalence & hoof trimming frequency (2x/year minimum)
- Stocking density- pen space 21.5 ft² (2 m²), feed bunk 16" (12" youngstock)
- Climate control through protection from the elements as well as ventilation strategies to reduce heat stress during summer
  - Minimum 4 air exchanges per hour in winter months
  - Multiple fans & natural ventilation options during summer
- Thermoneutral zone (depending on region and time of year & humidity)
  - 50-68°F Goats
  - 70-88°F Sheep
- Use of fly and ectoparasite control programs

Reference
https://www.canr.msu.edu/news/animal-welfare-at-the-fair-thermoregulation-and-thermoneutral-zone
https://www.journalofdairyscience.org/article/S0022-0302(16)30819-0/pdf

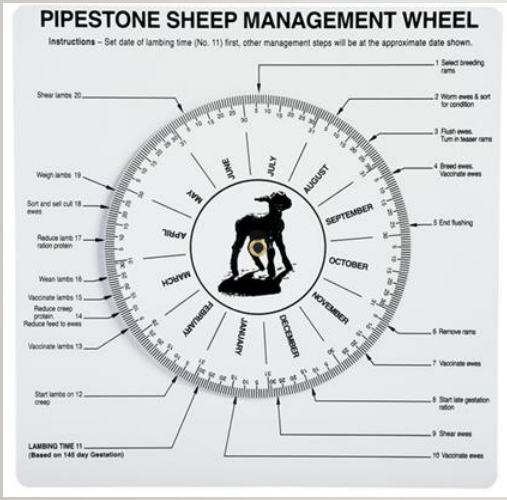
VACCINE & DISEASE TREATMENT PROTOCOLS

- Disease detection and treatment
  - Mastitis, metritis, ketosis (pregnancy toxemia), retained placenta, foot rot, etc.
- Vaccination protocols
  - CD&T at a minimum, consider risk based vaccinations (poor availability of SR specific vaccines)
- Recording system for medications, vaccinations and protocols used on farm
  - No current metric for evaluating prevalence of lameness on sheep and goat dairies in USA
    - Hoof trim recommendations-Minimum 2x per year, assess for hoof pathology
  - Good recording systems allow for data analysis and participation in national producer surveys

"You cannot improve what you do not measure." –Temple Grandin

VACCINE RECOMMENDATIONS

CORE VACCINE CHOICES



KID VACCINATIONS

- Ideal: Pre-kidding clostridial vaccination of doe at dry off or 30 days before kidding (CDT)
- Vaccinate kids that have had COLOSTRUM first at 10-12 weeks of age, 4 weeks later and every 6 months for the rest of their productive lives
- Soremouth vaccination only used if it's known to exist on the farm
- Other vaccines are farm dependent based on historical problems
- Inforce 3 strategically to kids prior to stress/movement/risk
- Consider VIMCO Staph. Aureus

ADVERTISED BENEFITS OF VIMCO STAPH. AUREUS BACTERIN

- "The combination of the **VIMCO®** vaccination against Staphylococca mastitis with a **mastitis control program** can lead to:
- Fewer clinical and subclinical mastitis cases (minimizes the need for antibiotics and NSAIDs)
- A reduction in the severity of clinical signs (udder and milk aspect)
- Less discarded milk from high somatic cell counts
- Less bacterial shedding
- Fewer replacement animals required (fewer culls)
- Increased profits from milk production, reduces milk loss (from SCC)
- Healthier animals" from PREMIER

RECOMMENDATIONS

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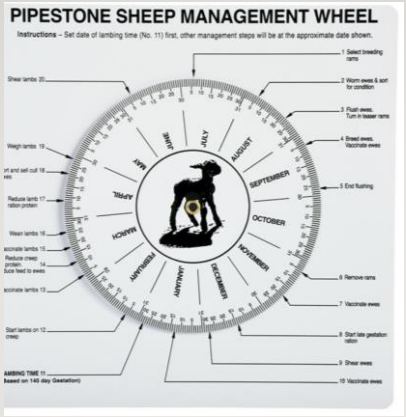
- Labelled for dairy and meat goats
- Give 5 weeks prior to kidding IM
- Repeat 3 weeks after 1st dose
- Bring to RT prior to use
- Use entire contents within 12 hr of opening bottle
- In Europe is also labelled for sheep
- Off label use in US sheep
- $2.60/dose



PRE-BREEDING VACCINATION
REPEAT @ 90 DAYS GESTATION ESP. MODERATE-HIGH RISK POP.

Why? late-term abortions

BODY CONDITION SCORE

- Body Condition Scoring system (BCS) used to muscle and fat development
  - Scale of 1 to 5 with 0.5 increments 1=thin, 5=obese
  - Goal <5% score 1 BCS on a farm
- Look at each stage of lactation
- Consider long lactation animals
- Transition period-dry sheep/goats
- Use to identify areas of opportunity

Nutritional Component

- While scoring, assess hair/fleece appearance
  - Mineral deficiencies, ectoparasites, malnourishment

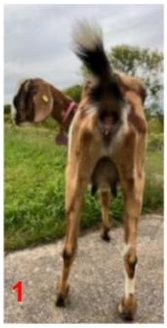
Reference
https://doi.org/10.1016/j.cvfa.2020.11.001

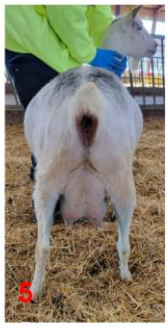
Dairy Goat Body Condition Score (1-5)

There are 3 areas to palpate when evaluating BCS in dairy goats. The goats must be standing for evaluation.

1. Chest (sternum)
2. Back (lumbar spine)
3. Ribcage (intercostal spaces)

A goat cannot be accurately evaluated without a hands on examination. A fluffy hair coat can hide true BCS and a goat lying down cannot be fully visualized or palpated. The goat is evaluated and ranked on a 5 point scale (1=thin and 5=fat). Increments of 0.5 can be utilized.





BCS 1 = The goat is very thin and weak, the sternum has no fat pad. The backbone is clearly visible and forms a sharp, continuous ridge. The flank is hollow and ribs are clearly visible. There is no fat cover and fingers can easily push deeply between ribs.

BCS 2 = The chest has no fat and the sternum is easily palpated. The goat's backbone is still visible with a continuous ridge. Some ribs can be seen and there is a small amount of fat cover. Ribs are still felt and intercostal spaces are smooth, but fingers can sink in between ribs.

BCS 3 = The chest has a thin layer of fat over the sternum. The backbone is not prominent, ribs are barely discernible and an even layer of fat covers the ribs. Space between the ribs can only be felt with pressure on the fingertips.

BCS 4 = Light pressure is needed to feel the sternum. The backbone and ribs cannot be seen. The side of the animal is sleek in appearance. Hips and pelvis have a rounded rather than angled appearance.

BCS 5 = Pressure on the chest is needed to feel the sternum. The backbone is buried in fat and the ribs are not visible. The rib cage is covered with excessive fat. The goat has a generally round appearance.

FITNESS TO TRANSPORT & EUTHANASIA

- Animals leaving the premises should be ambulatory, severely lame or down animals should not be sold
- Animals that cannot get up on their own must be handled using manual lifting, a skidsteer bucket or cart. No animal should ever be dragged
- Animals should be assessed for injury or inability to stand in a timely fashion and the decision to euthanize should be made based on the animals' level of pain and prognosis for recovery
- Lambs and kids should be handled gently and never picked up solely by a limb or the neck.

APPROPRIATE MEANS OF EUTHANASIA

- AVMA & AABP guidelines can be used as a framework for small ruminants
  - Recognizing the need to provide euthanasia
  - Primary means and secondary means of euthanasia
  - Confirm that animal is deceased
  - Training for euthanasia (herdspeople/managers only)
- Food producing animals
  - Concern for barbiturate use
- Appropriate disposal
  - Dead stock have a designated place on farms, are removed from pens promptly and safely disposed of, using a renderer or other means
  - Consider local ordinances when creating farm specific euthanasia protocols

CAPTIVE BOLT & GUNSHOT LOCATIONS

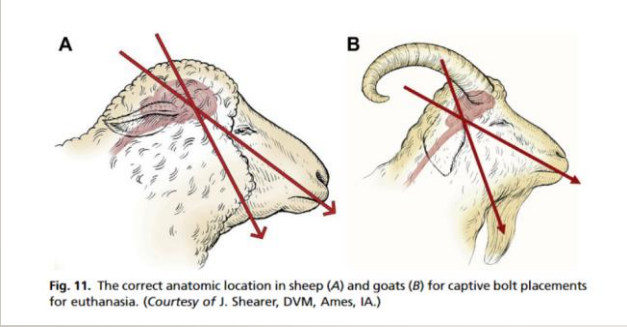
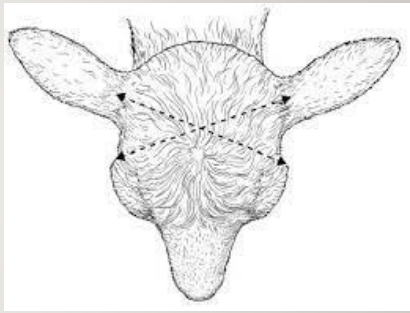


Fig. 11. The correct anatomic location in sheep (*A*) and goats (*B*) for captive bolt placements for euthanasia. (*Courtesy of* J. Shearer, DVM, Ames, IA.)

Location for adult sheep & goats



Site for lambs and kids

BIOSECURITY

- Hygiene-Importance of good cleaning practices on the farm
- Much like a parlor wash cycle, multiple steps should be taken when deep cleaning between groups of neonatal kids/lambs
  - Soak, cool rinse, alkaline detergent, rinse, acid, final rinse
- Limit employee crossover between different age groups
  - If necessary work youngest to oldest
- Have dedicated farm clothing and clean regularly (consider bibs or overalls)
- Train employees on zoonotic disease risks and proper personal protective
- Schedule visitors and restrict to low risk areas of the farm
- Visitors should have disposable boot covers or boots that can be disinfecte
- Do NOT bring new animals onto premise without a quarantine plan
  - Disease introduction (implement screening tests)

DISASTER MANAGEMENT PLAN

- Have contact information easily visible in congregating areas of the farm for owners/managers, fire department, DNR, etc.
- List local utility services
- List meeting location and tornado sheltering locations
- Contact info for herd veterinarian
- Consider translations for all non-English speakers

https://encrypted-tbn0.gstatic.com/images?q=tbn:ANd9GcSkzhF-ycZiZGI_BxKJNXcltLBrYLvy5_YMw&usqp=CAU

CONTINUING EDUCATION ON FARM

- Provide annual updates to farm producers based on new best practices
- Animal welfare contracts (sign annually)
- Annual review of euthanasia and down animal management
- Provide regular training for employees relevant to their role
  - Milker
  - Maternity
  - Herdspeople

Date: _____

https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.sanpedrosun.com%2Fgovernment%2F2019%2F08%2F08%2Ftraining-workshop-on-sheep-management%2F&psig=AOvVaw0uAshBF4-8OLXprAPmFPHK&ust=1667266354643000&source=images&cd=vfe&ved=0CAwQjRxqFwoTCKDzgrWpifsCFQAAAAAdAAAAABAD

HELPFUL RESOURCES FOR ANTIMICROBIAL USAGE

- Herd veterinarian (VCPR)
  - Set protocols in place that have a defined disease and treatment plan to encourage judicious use of antibiotics
- What to do with treatment failures? AMDUCA (Animal Medical Drug Use Clarification Act) 1994
  - Extra-label drug usage & minor species
  - ELDU describes the use of an approved drug in a manner that is not in accordance with the approved labeling, yet meets the conditions set forth by (AMDUCA)
- FARAD (Food Animal Residue Avoidance Database)
  - Contact with particulars for a treatment to receive a recommendation for milk and meat withdrawal via the herd veterinarian

WHAT IS A VCPR?

- VCPR-Veterinary Client Patient Relationship
  - Defines an annual visit to premises by veterinarian to gain familiarity with operation, provide ability to consult on cases and prescribe antibiotics
    - 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
    - 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)
    - 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.
  - Producer does not need to buy their antibiotics from their vet, they will just need a prescription if using farm stores, online drop ship sites, etc.

Reference
https://www.canr.msu.edu/news/food-animal-producers-will-require-a-veterinary-prescription-to-access-over-the-counter-antibiotics#:~:text=As%20of%20June%2011%2C%202023,infections%20in%20humans%20and%20animals.

GUIDANCE DOCUMENT

CVM GFI #263 Recommendations for Sponsors of Medically Important Antimicrobial Drugs Approved for Use in Animals to Voluntarily Bring Under Veterinary Oversight All Products That Continue to be Available Over-the-Counter

JUNE 2021

- Introduced in 2018
  - Initially transitioned antibiotics used in feed and water to prescription only
  - VFD (Veterinary Feed Directive) 2017
  - June 2023 over the counter medically important antibiotics will no longer be obtainable without a prescription.
  - What does this mean for producers? They will need to prepare WITH their veterinarian in the next six months!

https://www.fda.gov/regulatory-information/search-fda-guidance-documents/cvm-gfi-263-recommendations-sponsors-medically-important-antimicrobial-drugs-approved-use-animals

IN SUMMARY…

- Consider surveys of producer operations
- Future data used to make benchmark recommendations
- Work as a liaison from producer to veterinarian to enhance animal welfare, production and public perception

THANK YOU FOR YOUR TIME

- Looking for more information? Contact us!
- Kate Stollen, DVM @ stollenvet@gmail.com
- Cindy Wolf, DVM @ wolfx006@umn.edu

- AASRP.ORG
- AVMA.ORG
- AABP.ORG
- FARAD 1-888-USFARAD (or farad.org)