Winter 2020 – Volume 32, Issue 1

Hoof Print

The Small Ruminant Magazine

WINTER
SHELTER

ALTERNATIVE
PARASITE CONTROL

IS CREEP FEEDING
LAMBS PROFITABLE

Start the New Year Off Right

sale dates • moon signs • due dates & more

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KGPA & KSWPA members will receive a calendar with new memberships and renewals for 2020. Additional calendars can be purchased at

WWW.KYSHEEPANDGOAT.ORG

Kentucky Sheep & Goat Development Office

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Hoof **Print** Magazine
Published Quarterly
$24 per year
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***Hoof*Print**: *The Small Ruminant Magazine* is a periodical to promote better animal health, husbandry, and knowledge among sheep and goat producers. ***Hoof*Print** is the joint effort of members of the sheep and goat industries and serves as a united voice for all small ruminant producers.

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Hoof **Print**
The Small Ruminant Magazine

ISSUE FOCUS:

Special Features

Tales from The Kentucky Fiber Trail

NEWS TO EWES

Health & Management

Association News & More

Merry Christmas from Tennessee!

Tennessee Sheep Producers Association

As they say around here, if you don't like the weather, stick around a while and it will certainly change. We went from hot and dry to cold and wet pretty quick here in Middle Tennessee. Many of us had to feed hay early as our cool season pastures failed to thrive in the hot, dry days of September. Concerns about hay supplies have been swirling so here's hoping you were blessed with good growing conditions on your farm.

Our TSPA board of directors held the 2019 Annual Conference and State meeting at the James E. Ward Agricultural Center in Lebanon on December 6th and 7th 2019. The gathering started off with lamb hors d'oeurvres served by our very own Reyes and Carla Rich of Ginny Ridge Farm. Mr. Jim Percival from the American Lamb Board gave us an update on the ALB and also shared his experiences on a recent trip to tour the lamb industry in Australia. Jessy Shanks, Senior Lecturer, from UT Animal Science, updated us on reproductive technologies. We then were able to view an outstanding live demonstration of proper CIDR application, as well as, laparoscopic AI (Lap AI) provided by Dr. Jennifer Hatcher and Dr. Jonathan Pribluda of Rock-N-Country Veterinary Services, College Grove, TN.

Mr. Kevin Ferguson, UT Extension Area Specialist-Farm Management, gave a great presentation on bookkeeping and farm records followed by Dr. Liz Eckelkamp, UT Dairy Extension Specialist educated us on mastitis management in sheep.

The annual meeting was held before lunch and ballots were taken for new board members. The TSPA board includes Robert Walker, Alpine-President and ASI rep; Debbie Joines, Lebanon-Vice President; Mark Powell, Watertown- Sec/Treasurer. Others on the board are Thomas Greenlee, Rutledge; Mark Shedden, Knoxville; Dwight Loveday, Louisville; Kevin Durrett, Cottontown; Dennis Fennewald- TN Tech; Dee Wolters, Culleoka and Brandon Tavelin, College Grove.

Steve Officer and Randall Kimes grilled an awesome meal of lamb chops which was enjoyed by all attendees. If you have any questions about the Tennessee Sheep Producers Association or are interesting in joining our group, visit tennesseesheep.org for more information.

Have a wonderful happy and healthy holiday season!

Debbie Joines, Vice President
Tennessee Sheep Producers Association

Live demonstration of proper CIDR application, as well as, laparoscopic AI (Lap AI) provided by Dr. Jennifer Hatcher and Dr. Jonathan Pribluda

Jessy Shanks, UT Animal Science, discussing reproduction technologies in sheep at the TSPA 2019 Annual Conference.

2020 TSPA Board of Directors

President/ ASI Rep.
Robert Walker, Alpine, TN
robert.walker@westforkfarms.com

Vice President
Deborah Joines, Mt. Juliet, TN
djoines@utk.edu

Secretary/ Treasurer
Mark R. Powell, Watertown, TN
shepherdboy1@yahoo.com

Tennessee Sheep Producers Association

2020 TSPA Board Members

- Thomas Greenlee, *Rutledge, TN* – jgreenl4@utk.edu
- Mark Shedden, *Knoxville, TN* – rmnps@bellsouth.net
- Dwight Loveday, *Louisville, TN* – hloveday@tennessee.edu
- Kevin Durett,*Cottontown, TN* – kevin.durrett@ymail.com
- Dennis Fennewald, *TN Tech* – dfennewald@tntech.edu
- Dee Wolters. *Culleoka, TN* – twolters@bellsouthnet
- Brandon Tavalin, *College Grove, TN* – tavalintails@gmail.com

JOIN ONLINE TODAY!

Tennessee Sheep Producers Association

TSPA Membership Application

Annual Dues: Adult: $30.00 Junior $10.00

Name: _____

Address: _____

City:_____State: _____ Zip: _____

Phone: _____E-Mail: _____

Breed(s) of Sheep: _____

Please enclose a check for amount made out to TSPA and mail to:
Tennessee Sheep Producer's Association • 4233 Poplar Hill Road, Watertown, TN 37184

If you are interested in a committee please select below:

_____ Wool _____ Youth _____ Publicity
_____ Jr. Expo _____ Sale _____ Annual Meeting
_____ Production Education _____ Membership/Revenue

Pay dues and join online at www.tennesseesheep.org/joinonline.htm

Say Hello to Our New Board Member for 2020

KSWPA hosted their annual business meeting on October 26, 2019 at the Clark County Extension Office during the 2019 Annual Producer Conference. You can read the minutes from the meeting at https://www.kysheepandgoat.org/kswpa-annual-meeting

Congratulations to Harry Fredrick for being elected to the 2020 Board of Directors. You can learn more about Harry at https://www.kysheepandgoat.org/kswpa-annual-meeting.

Harry Fredrick

KSWPA Officers 2020

President –

Madeline Rosenberg, Shelby County – madeline.ballyhoofarm@gmail.com

Vice President –

Eileen O'Donohue, Washington County – eod1954@yahoo.com

Treasurer –

Dorothy Vale, Jessamine County – valerdv@aol.com

Secretary –

Sue Churchill, Woodford County – thistlesend@gmail.com

KSWPA Directors

- Kathy Meyer, Bourbon County – 1tkmeyer@bellsouth.net
- Warren Adcock, Henry Co. – wadcock6307@hotmail.com
- University of Kentucky Representative: Matt Hamilton
- Bill Decker (Past President, Ex officio), Shelby County – bdecker@cisco.com
- Richard Popham, Meade County – richard@circlepkatahdin.com
- Harry Frederick, Monroe County – windingcreekfarmsKY@gmail.com

Kentucky SHEEP & WOOL PRODUCERS ASSOCIATION

Kentucky SHEEP & WOOL PRODUCERS ASSOCIATION

JOIN or RENEW TODAY!

Visit www.kysheepandgoat.org

KSWPA Membership Benefits

- Quarterly issues of HoofPrint Magazine plus the newly designed 2020 Sheep and Goat Management Calendar
- A unified voice for the sheep industry and representation on important state and national committees
- Assistance with new marketing opportunities such as The Kentucky Sheep and Fiber Festival and HoofTrader.com
- Receive a membership to the American Sheep Industry, our national lobbying, marketing and promotional support system.
- Support of various educational and youth activities

Name: _____ **Phone:** _____

E-Mail: _____

Address: _____ **City :** _____ **State:** _____ **Zip:** _____

Please enclose a check for $30.00 made out to KSWPA and mail to:
Kentucky Sheep and Goat Development Office
P.O. Box 4709, Frankfort, KY 40604-4709.

PRESIDENT'S LETTER

Dear Shepherd,

Congratulations! You made it! In many ways this year has felt relentless; I hope that you are making time to rest and enjoy the holiday season. As the carol goes: God rest ye merry gentlemen, let nothing you dismay; the drought is now behind us, we're going to be okay.

How can I be so sure? At a time when other commodities are seeing drastic failures, our numbers are increasing. The Kentucky Sheep and Fiber Festival continues to grow in both size and reach, our graded sales brought financial relief to drought-stricken producers, we have arguably the best new producer education in the country through our Small Ruminant For Profit School, and we have a group of volunteers that work tirelessly on every level to help you achieve your goals.

Do you have ideas to help us reach more producers? Richard Popham, KSWPA board member, is passionate about increasing our membership and quality of outreach. Got a question about how your membership dues are used? Dorothy Vale knows our finances like the back of her hand. In my early years as a shepherd, our veteran board members – Jim Mansfield, Kathy Meyer, and Warren Adcock – were not only a treasure trove of information, but a calming force as well. No matter how sideways things went, I could look to them and know there was a way forward.

As we step into the New Year (and decade), I intend for KSWPA to be a shepherd's lantern, guiding our membership forward to success. We as a board heard you in the member surveys last October and are excited to implement new programs tailored to your needs. We are actively seeking avenues of continued and increased income for both lamb and wool. Kelley Yates, KSGDO Executive Director, and I are fighting for policies that protect your ability to treat your animals, keep trade doors open, and give you access to help when and if you need it.

While we try our best to make winter the season of Light, the reality is many in agriculture feel like they're in a dark place. If you are feeling down, please know that you can reach out to anyone on the board. We will do our best to help you find the resources you need, whether it's animal or finance or whole farm related. I dare say all of us have had our head in our hands at one time or another, wondering if and how we could go on. You have ten good shepherds ready to serve, whether you need a mentor, a shoulder, or a friend you can call at four in the morning when you're on your stomach in the lambing shed. You are not alone.

Wishing you and yours peace at this season and prosperity in 2020,

Madeline Rosenberg,
KSWPA President

Madeline Rosenberg raises heritage breed wool sheep in Shelby County. She hosts a sheep related podcast, Ovinology, and serves on the Shelby Co. Horticultural and Agricultural Advisory Council. Madeline runs a successful fiber business, Ballyhoo Fiber Emporium and is a freelance author, speaker, and instructor. She loves God, her husband, and sheep and she is passionate about ensuring the future of KY agriculture through public education and service to her fellow producers.

CALENDAR OF EVENTS

JANUARY

9	graded sale Bowling Green
13	graded sale Richmond
18	graded sale Springfield
21	graded sale West Kentucky Auction Barn
21	UK Lambing School
22-25	American Sheep Industry Convention, Scottsdale, AZ, https://sheepusa.org/events/asi-annual-convention
23	graded sale Bowling Green
27	graded sale Bluegrass - Richmond
28	graded sale Paris

FEBRUARY

10	graded sale Richmond
13	graded sale Bowling Green
15	graded sale Springfield
18	graded sale West Kentucky Auction Barn
20	20- Alfalfa and Stored Forage Conference, registration info: https://pss.ca.uky.edu/
24	graded sale Bowling Green
25	graded sale Paris
27	graded sale Bluegrass - Richmond

MARCH

9	graded sale Richmond
12	graded sale Bowling Green
17	graded sale West Kentucky Auction Barn
19	KSU Third Thursday Goat Field Day
21	graded sale Springfield
23	graded sale Bluegrass - Richmond
24	graded sale Paris
26	graded sale Bowling Green

Be on the lookout! 2020 Wool Pool dates coming soon!

New Year and New Board Members

KGPA held their annual business meeting on October 26, 2019 at the Clark County Extension Office during the 2019 Annual Producer Conference. You can see highlights from that meeting at https://www.kysheepandgoat.org/kgpa-annual-meeting.

Congratulations to Rochelle, Kay, Beth, and Angie for being elected to the 2020 KGPA Board of Directors. You can learn more about each new directors at https://www.kysheepandgoat.org/kgpa-annual-meeting

Current Board of Directors

Dee Daniels,
dee.daniels71@gmail.com, Barren County
Kay DeMoss,
kaydemoss1@windstream.net, Jessamine County
Angie Downs,
kygirlfarm@gmail.com, Marion County
Rochelle Boland-Heilers,
rochbol@yahoo.com, Adair County
Beth Johnson,
Bethc.johnson@ky.gov, Boyle County
Christina Morris,
Blessedacreskikofarm@gmail.com, Christian County
Chris Stewart,
cbstew06@hotmail.com, Lyon County
Vicki Watson,
dvwatson@logantele.com, Logan County

Angie Downs

Beth Johnson

Kay DeMoss

Rochelle Boland-Heilers

KENTUCKY GOAT PRODUCERS ASSOCIATION

JOIN or RENEW TODAY!

KGPA Membership Application

Your $30 membership includes:

- 4 issues of the *Hoof***Print** Magazine plus the newly designed 2020 Sheep and Goat Management Calendar
- A unified voice for the goat industry on the state and national level
- Representation on important committees such as the Check-Off and the Animal Care Standards boards
- Support of various educational and youth activities
- Youth Membership forms can be found at kysheepandgoat.org/KGPA.html
- **And much, much more!**

Name: _____

Address: _____City: _____
State: _____ Zip:_____

Phone: _____

E-Mail: _____

Please enclose a check for $30 made out to KGPA and mail to:

Kentucky Sheep and Goat Development Office
P.O. Box 4709, Frankfort, KY 40604-4709.

Mail form or Visit www.kysheepandgoat.org to join today!

Letter from the President

KGPA NOTE'S FROM THE KIDDING BARN

Dear KGPA Members,

I hope that you and your family had a wonderful holiday season with family and friends and are looking forward to the New Year. Most of us are through with the breeding season and are anxiously waiting to see what the future holds with the new offspring born this coming year.

The North American International Livestock Show held in November at the fairgrounds in Louisville was another huge success with many sheep and goats exhibited in their respective shows. It is such a joy to see all of the producers bring their diverse genetics from all over the United States and Canada to this international event each year. If you have never visited this event mark it down on your calendar as a must see next year in November.

Along with winter comes many challenges with our animals and on the farm. We have to provide shelter from the wind, cold and rain/snow. We have to provide adequate nutrition to support maintenance, gestation and lactation to our goats which always are increased in the winter time. I can only hope that you were able to harvest or store enough hay or some form of forage for your animals for this winter. From all reports, hay will be in short supply this winter. If you are one of many that were unable to harvest/store enough discuss this with your nutritionist or feed distributer and look at alternatives to extend your hay supply. Let's all hope that the winter does not last for very long and before you know it the grass will be green and lush again!

Hoping you have a prosperous, kidful New Year!

Beth Johnson, DVM
KGPA President

CALENDAR OF EVENTS

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23	graded sale Bluegrass - Richmond
24	graded sale Paris
26	graded sale Bowling Green

Contact us to add your event or meeting to the calendar of events.

Sorry for Our Error

We would like to print a correction for an error appearing in the Fall 2019 issue of *HoofPrint* magazine. The 2019 Grand Champion KY Proud Market Goat was exhibited by Avery Holman.

Grand Champion KY Proud Market Goat exhibited by Avery Holman

WINTER SHELTER

by Emily Clement, MPA, LVT

While a dense tree line can provide goats and sheep protection from the sun and rain in warmer months, it is not adequate shelter for the winter, in our area. Healthy adult goats and sheep are able to maintain a constant body temperature throughout the cold months as long as good nutrients are available and shelter is provided for cover from the inclement elements. Sheltering needs will vary from one herd to the next, due to the type and breed of the animals present. Though fiber, meat, and dairy animals may have slightly different housing needs; they all need shelter from the cold, wind, and wetness of winter. It must be easily accessible for you to manage daily maintenance checks, clean bedding, and handle the water and feed needs of the animals, if not feeding and watering outside of the shelter.

Winter shelter does not need to be elaborate, by any means. A three or four sided structure, with a roof of some sort, is sufficient as long as it faces away from the prevailing wind and is easily accessible to the animals, throughout the day. A variety of shelter structures options are commercially available, as well as, modest plans for do-it-yourself can be found, online. Some designs are portable and on sleds, easily hooked up to and pulled with a utility vehicle. Sleds aid in moving the shelter from field to field, or to a different location, reducing the wear and tear upon the land. The shelter needs to be clean, dry, and as draft free as possible. Adding insulation, in the form of foam and fiberglass, is not recommended. Tarps and/or ply wood can reduce drafts, without much additional expense. While the need to make shelters as draft-free as possible exists, so does the need to ventilate. Decreased ventilation as a result of over insulation can wreak havoc on the health of the animals we intended to be protected.

Considerations inside the shelter

The space needed for each animal should be considered when deciding what type of shelter you can provide for your animals' optimum health. Generally, 8 ft.2 for each full-sized adult, and 6 ft.2 for each kid or lamb, is sufficient for winter shelter space (University of Arkansas Cooperative Extension Service, 2014). Realize they will not stay in their "assigned space" and will bunch up for warming purposes. The increase in density of animals utilizing one space, not only creates heat that benefits the animals, but moisture and vapor that are cause for some health concerns.

Bedding

Animals clustering together in the colder weather, creates densely soiled areas within the shelter. These areas quickly become a source of elevated ammonia levels. Ammonia build quickly, from urine and decomposing manure. These fumes irritate the respiratory tract of animals, increasing their risk of contracting pneumonia. High ammonia levels can also be toxic to animals and people. If the stench is high enough to reach the human nose, imagine the pungency and burn at their level. To avoid ammonia build up, check for odor frequently, clean regularly, and insure good ventilation.

Clean, dry, bedding is important to the warmth, comfort, and overall health of your animals in winter. Inside the shelter should stay as dry as possible. Straw or woodchips are a good bedding choice for insulating against the ground temperature and moisture, as well as absorbing urine. Using

a bedding material eases cleanout tasks and increases the sanitation of the area. The number of animals, size of structure, and weather will dictate the frequency of bedding changes and maintenance time required. Do not to use old moldy hay as bedding; it increases the risk of disease as they nibble on their surroundings.

Heat Lamps

The use of heat lamps comes with great risk and are not generally necessary, especially with adults. Young stock can benefit from heat lamps until they are able to regulate their own body temperature. Animals are known to: chew cords risking electrocution, burn themselves on bulbs, knock lamps loose to fall in hay, bedding, or water. A lamp hanging too low can catch bedding materials and or hay on fire. Safety heat lamps, specifically for livestock are available commercially. They have features such as domed light covers and wire coiled around the electrical cord. Your individual situation may dictate whether or not the risk of having them, outweighs the benefits. See Heat Lamp Safety Tips (Light, 2016).

Water

Goats, nor sheep, can drink ice. Water must be accessible at all times for optimal health and production. Heated waters are ideal, however not always practical if you do not have an electrical source. If water is frozen, you must break and remove the ice, at least twice daily. This allows for the necessary water intake needed for the animals to sustain themselves, biologically. Keep in mind, as the water temperature cools, the animal's intake decreases (Rob Hawk, 2014). Warm the water, if possible, to encourage the needed intake, especially for the animals in advanced production. Electricity and waterlines, with frost free hydrants, make providing winter care to the animals much easier. Not every situation has these luxuries, and must make adjustments by hauling water, running (then draining) hoses, breaking and clearing ice, then refilling. Keep in mind, without adequate water consumption, digestion is compromised. This increases risks of dehydration, urinary calculi, and inefficient use of feedstuff for energy and gain. The nutritional requirements of goats and sheep during the winter months are beyond the scope of this article, however good, research- based information can be found (Kelley please reference Hoofprints articles from Dr. Van Saun).

Heat Lamp Safety Tips

1. Clean up dust and cobwebs.
2. Keep wires out of reach.
3. Double secure the lamp.
4. Never put a water bucket under a heat lamp.
5. Use heat lamps ONLY with cages.
6. Keep lamps away for bedding.
7. Check lamps frequently for frayed wires.

(Light, 2016)

Winter Shelter Checklist

- At least 3 sided structure
- Roof- not leaking
- Bedding (straw or wood chips)
- Safe electrical access if possible
- Access to water, hoses, hauling or transport containers
- Enough space per animal
- Insulation
- Ventilation
- Windbreak
- Draft free
- Easy to clean
- Easy for animal to access during inclement weather

Other Considerations

Advanced production stages

A sturdy and accessible shelter is imperative when animals are in an advance production states such as: pregnancy, lactation, or newly born, because they are undergoing increased physical and metabolic pressures in addition to the ones brought on by inclement weather. Their need for assistance regulating their body temperature with a draft free shelter, along with plenty of drinkable water and nutritious feed, cannot be overlooked. Kids and lambs born in the winter and early spring need extra care. Neonates cannot regulate their body temperature by themselves for several weeks. A draft-free shelter, with or without heat lamps, will give the young and dam the best chance at surviving the elements.

Safety

When using a portable shelter; do not leave the old bedding and hay behind for animals to access. This decomposing materials are a perfect source of listeria (Kelley to add Listeriosis reference link for Hoofprints article). Visually check the inside of the shelter daily to make sure the animals that are in there can get up, and are not showing signs of illness. Do not assume they are just cold and hunkered down. Do not be alarmed if you see animals out of the shelter laying down or roaming around during the day in the cooler weather. Having the access to the wind-break and cover from precipitation when they need it, is key.

Disease Prevention

The precipitation paired with the increase of animal bodies in a decreased space, can be recipe for several serious health risks. Moist bedding, not only loses its effectiveness in keeping animals warm when it is wet, but it can also

Winter Shelter continues on pg. 12

harbor pathogens that cause debilitating disease. The increased risk of respiratory disease previously discussed should not be overlooked. In addition, foot rot, mastitis, and numerous other bacterial, viral, and parasitic diseases can take hold in these conditions and be devastating to your animals. Louse populations increase in winter and can vary dependent upon the condition of the animals. They can easily gain a foothold in winter month's more crowded conditions. The stress brought on by lower nutrition and more bodies packed smaller spaces greatly increases the chances that if one is affected, they will all be affected. These external parasites cause irritation, itching, discomfort, hair loss, and anemia. Check you animals' coats frequently and ensure frequent bedding changes.

Winter management is no small undertaking. It requires planning, and resources, to ensure good nutrition, access to clean and ice-free water, and shelter that is free of drafts. Whether you have access to, or can build the Taj Mahal of shelters, or are on less than a shoestring budget, you can provide a safe and protective shelter for your animals this winter. If you have any questions or concerns about your particular situation, feel free to reach out to me at: emily.clement@kysu.edu.

Emily Clement, MPA, LVT, *Animal Science Co-Investigator and Extension Associate Kentucky State University - College of Agriculture, Communities, and the Environment*

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Become a Mentor

Remember your first couple of years in your sheep or goat operation? Ever have some nerve wracking experiences and times when you just really needed to talk to someone? Or, maybe you did have a mentor available that helped make the nerve wracking moments much easier to handle with just a simple phone call or email?

KSWPA and KGPA need your help! With the increasing population of goats and sheep in our state, there are lots of people who could benefit from your knowledge. Consider becoming a mentor so that we can continue to strengthen and grow our industries.

MENTOR JOB DESCRIPTION

A KSWPA and KGPA Mentor is a person who:

- has a passion for the sheep and goat industries in the nation, and more specifically in Kentucky
- be a person that is willing to help other producers become successful in their operations
- will give time and talent to new producers to help the new producer implement management practices into his/her operation that will ultimately benefit the new producer

Qualifications:

- Mentors must be a KSWPA or KGPA member
- Mentors must have been in the sheep or goat industries for a minimum of 5 years
- Mentors can have backgrounds in meat, dairy and fiber operations
- Mentors must be willing to provide contact information to new members seeking a mentor

To become a Mentor, complete the application below and mail to KSGDO, PO Box 4709 Frankfort, KY 40604, or go to www.kysheepandgoat.org/become-a-mentor

Mentorship Application

Name:_____ Farm Name:_____

County: _____ Years in Business:_____

Type of Operation (commercial, purebred, dairy, fiber, etc.):
Breeds:

Email:_____ Phone:(_____)_____–_____

Comments (anything else you want people to know):

Alternative Parasite Control

by Susan Schoenian, Sheep & Goat Specialist - University of Maryland Ext.

While dewormers are usually an essential part of internal parasite control in sheep/goats, they aren't the only option, and their use should be limited to treatment of clinically-parasitized animals. The goal of all sheep and goat producers should be to develop alternative strategies for controlling parasites so that dewormer use is minimized and dewormers remain effective. Alternative strategies are usually aimed at reducing exposure to infective worm larvae and/or enhancing host immunity.

Immunity

Lambs/kids are born worm-free. They get infected with worms when they ingest infective third stage larvae (L3) from their environment. They develop immunity (resistance) to parasites with continuous exposure to low levels of infective larvae. If the level of exposure is too high, their immune systems get overwhelmed and they develop clinical symptoms, sometimes even die. Called the "periparturient egg rise," females suffer a temporary loss of immunity around the time of parturition.

The ability of a sheep/goat to develop immunity to parasites varies. As close grazers, it is inevitable that sheep/lambs continuously ingest worm larvae from their environment. Their evolutionary response is to rely on their immunity to reduce the impact of the worms. However, it takes time (and continuous exposure) to develop immunity. Goats tend to be more susceptible to worms (than sheep) because as browsers, their natural strategy is to avoid ingestion of infective worm larvae by grazing higher up in the canopy. It is when they are "forced" to graze that they usually develop parasite problems. Their immunity kicks in, but their response is poorer than sheep.

Genetics

Immunity (resistance) varies by breed and individual. One way to reduce the risk of internal parasitism is to raise a more resistant breed or cross. Breeds of Caribbean origin (St. Croix and Barbados Blackbelly) are the sheep breeds most resistant to parasitic infection. The Katahdin is a composite breed, whose parasite resistance lies somewhere between hair sheep and wool-type sheep. While the only wool-type (medium) sheep with documented resistance to internal parasites is the Gulf Coast Native (and similar strains), there is some evidence that Texel-sired lambs may have less problems with parasites than lambs sired by other terminal sire breeds, such as the Suffolk. On the goat side, Tennessee State University researchers determined Myotonic, Kiko, and Spanish goats to be more resistant than Boers.

If raising or crossing with a more resistant breed is not an option, individual differences in parasite resistance can be exploited. It is often said that there is as much difference within breeds as between breeds. Fecal egg counts are not evenly dispersed in a flock/herd. Twenty to 30 percent of the flock/herd is usually responsible for depositing 70 to 80 percent of the worm eggs. If the low or high egg shedders can be identified, they can be favored for breeding or removed from the

flock/herd. Parasite resistance (fecal egg count) is a moderately heritable trait. Some breeds of sheep (e.g. Katahdin) have EBVs (estimated breeding values) for parasite resistance.

It goes without saying that animals that require frequent deworming should be culled. Culling standards should be more stringent for stud males, as they contribute the majority of genetics to the flock/herd. Higher producing females are more likely to need deworming and should not be penalized for their superior performance. The same would be true of lambs/kids from larger litters and first-time moms. Parasite resilience, the ability to maintain health and productivity despite a worm burden, is also a heritable trait. However, resilient animals may still shed a lot of eggs onto the pasture, so greater genetic progress will be made if animals with low (or high) fecal egg counts can be identified.

Pasture and grazing management

Since sheep/goats become infected with internal parasites when they graze, effective parasite control obviously starts with good pasture and grazing management. It is generally accepted that a well-designed rotational grazing program will significantly reduce parasite burdens in grazing animals. Because it takes as few as 3 to 4 days for worm eggs (deposited in feces) to develop into infective third stage larvae (L3), it is often recommended that sheep/goats not be allowed to graze a paddock for more than 4 days. Longer grazing periods can be justified, if weather conditions are less conducive to larval development.

Short-term grazing coupled with sufficiently long rest periods (2 to 3 months) should ensure that most infective worm larvae will have died off by the time the animals return to the same paddock. The downside to long rest periods is that pasture plants may become overly mature. In this situation, another species could be allowed to graze or a hay crop could be removed. Haying also allows sunlight and heat to penetrate the soil, causing larvae to dry out and die. One of the challenges to short-duration grazing is the need for many paddocks (15 under the described scenario), each with the need for water and shelter.

Annual forages can help to reduce parasite burdens by providing nutritious forage and clean grazing. Any time the soil is disturbed (with tillage or herbicide application), worm larvae will be killed off. Warm season annuals (e.g. dwarf pearl millet) can provide nutritious, palatable forage when cool season plants are less active. A winter annual (e.g. cereal rye)

can provide larvae-free pasture for spring grazing. Brassicas (e.g. turnips) are another good annual crop that can fill forage gaps and provide clean grazing.

Browsing is an important strategy for controlling internal parasites in goats. If goats are allowed to browse, they are less likely to ingest infective larvae. Ideally, all goat farms have woodlot vegetation that they can incorporate into their rotational grazing programs. Browsing will give other pastures a rest, while allowing goats to forage cleanly.

Grazing height itself is an important aspect of parasite control. Though it varies by environmental conditions, larvae are only capable of migrating a short distance up the plant. In fact, most studies show that worm larvae stay near the base of the sward. For this reason, sheep/goats should not be allowed to graze pastures that are too short, generally less than 3 to 4 inches (ideally, 4 to 6 inches; taller for some plant species). If pastures are shorter than this, animals should be moved to a sacrifice lot or zero grazing area.

Mixed or multi-species grazing is another grazing strategy that has the potential to reduce worm burdens in sheep/goats. Because adult cattle and horses are not affected by the same parasites as sheep/goats they can be grazed alongside sheep/goats or in rotation, with cattle/horses grazing second. When other animals ingest the larvae of sheep/goat parasites, they kill the parasites, essentially vacuuming the pastures of infective larvae. There is added benefit in that cattle and sheep/goats usually have complementary grazing behavior. If the animals stay together in the field, there can be some added protection from predators.

It is important to avoid "hot spots" on pasture. Ideally, low-lying areas of pasture should be fenced off. The concentration of feces is likely to be higher around water troughs, mineral feeders, and shelter/shade. Leaky waterers should be repaired. If possible, feeders, shelters, and shade structures should be moved around to prevent animals from always congregating in the same area(s). Grazing systems that utilize central laneways or watering areas need to be aware of the risks that these common areas pose with regards to parasites, including coccidia.

Bioactive forages

Bioactive forages are another option for parasite control. These are forages with secondary compounds that have anti-parasitic effects. In particular, forages containing condensed tannins have been shown to reduce barber pole worm infections in sheep/goats. Sericea lespedeza (*Lespedeza cuneata*; AU Grazer) has been studied extensively by members of the American Consortium for Small Ruminant Parasite Control (ACSRPC). Sericea lespedeza is a perennial, warm-season legume that grows under some-optimal fertility. It is sometimes called "poor man's alfalfa." It is classified as a noxious weed in some states.

Animals consuming sericea lespedeza have been shown to have reduced fecal egg counts and (coccidia) oocysts counts. The anti-parasitic effects of sericea have been demonstrated in fresh pasture, hay, silage, and leaf meal pellets. To have an effect on worms, it is recommended that diets include at least 25 percent sericea. Sericea is best grazed in rotation, as long term consumption may have negative effects on growth. To help control coccidia, Sericea needs to be fed several weeks before the anticipated period of risk, similar to other coccidiostats. Plants with similar effects as sericea lespedeza include birdsfoot trefoil, chicory, and sainfoin.

Biological control

Biological control of parasites is now possible with Bioworma®, a new product that contains a fungus (*Duddingtonia flagrans*) that traps and kills roundworm larvae. BioWorma® is a feed-through product that has no effect in the animal, but prevents reinfection of pastures by destroying worm larvae in the feces. In research trials, BioWorma® has reduced pasture infectivity (larvae) by 86 and 68 percent, respectively, on goat and sheep farms.

Since BioWorma® is regulated by the EPA, its distribution is limited to veterinarians, feed mills, and premixers. A second product called, Livamol® with BioWorma® is available for purchase by producers. Livamol® is a nutritional supplement. BioWorma® must be fed daily to livestock as

a top-dress or mixed in the feed, however it cannot get wet or be incorporated into a pellet. BioWorma® should be fed during periods of peak worm transmission (<40°F) and to animals at greatest risk for parasite infection: periparturient females and lambs/kids. The American Consortium for Small Ruminant Parasite Control recommends that it be fed for at least 60 days. The cost-effectiveness of BioWorma® will vary by farm.

Zero grazing

On farms with limited acreage, confinement or zero grazing should not be overlooked as a parasite control strategy. Even on large acreage farms, confinement is a good strategy for the animals that are most susceptible to parasitic infection. In fact, in the sheep industry, it is common to wean lambs early and put them in a dry lot for finishing.

Because worm larvae does not survive well in hay or silage, sheep/goats raised in confinement or a dry lot generally do not get infected with worms. However, it is important that all sources of vegetation be removed, as it only takes a small amount of vegetation to support larvae survival. Also, coccidia is more likely to be a problem since animals are more densely stocked and the oocysts can survive easily in the bedding and be picked up from various surfaces.

Management

The season of lambing/kidding can have a marked effect on parasite risk. Parasite problems are usually maximized with spring lambing/kidding and summer grazing, while less problems are usually encountered when lambing/kidding occurs in the winter or fall months. Lambing/kidding indoors also reduces the risk of worm transmission. Weaning impacts worm burdens. If lambs/kids will be put to pasture for growing/finishing, later weaning (e.g. 120 days) is preferable to early weaning (e.g. 60 days). Early weaned lambs/kids should probably be marketed early or put into a dry lot for finishing.

Nutrition

There is a nutritional cost to internal parasitism, especially protein. When nutrients are allocated to immune system response, there is less available for pregnancy, growth, and lactation. Parasites reduce feed intake and can affect nutrient absorption. Low body condition scores (≤2) are indicative of a nutrition problem and these animals are more prone to parasitic infection. Animals with low body condition and on a poor plane of nutrition are less able to cope with the effects of a parasite burden.

It is well-known that supplemental protein can help to negate the effects of internal parasitism, as well as boost the immune system to prevent infection. Feedstuffs higher in rumen by-pass protein have been shown to be especially beneficial. Energy supplementation tends to improve body condition and resilience to parasites. Supplementation should always be aimed at the animals that are most susceptible to parasitic infection. While less is known about the role of minerals and vitamins, it is important that animals consume adequate amounts of these essential nutrients.

Copper oxide wire particles

While there are many claims of "natural dewormers," only copper oxide wire particles (COWP) have been proven to have consistent efficacy against worms and only adult barber pole worms (*Haemonchus contortus*). Copper oxide wire particles are tiny metal rods of copper, put in a capsule. They are available as copper supplements for cattle and goats. These larger capsules can be repackaged into smaller doses for deworming sheep/goats. It is recommended that the smallest effective dose be given. Dose is based on age, not weight: 0.5 to 1 gram for lamb/kids and 1 to 2 grams for mature animals. Only animals showing clinical signs of barber pole worm infection should be dewormed with COWP.

Before incorporating COWP into a control program, it is recommended that farms (especially sheep) determine their copper status by submitting livers (or kidneys) to a diagnostic lab for a mineral profile. Fortunately, COWP poses a low risk of copper toxicity, since the copper is slow release and poorly absorbed, in contrast with copper sulfate, a historical dewormer that poses greater risk of copper toxicity.

More on Parasite Management

For more information about internal parasite control in small ruminants, visit the web site of the American Consortium for Small Ruminant Parasite Control (ACSRPC) at www.wormx.info.

Susan Schoenian. *Susan is a Sheep and Goat Specialist at the University of Maryland's Western Maryland Research & Education Center. . She maintains several web sites, including the Maryland Small Ruminant Page, Sheep 101/201, and the web site of the American Consortium for Small Ruminant Parasite Control.*

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Kentucky SHEEP & GOAT DEVELOPMENT OFFICE

tales from
The Kentucky Fiber Trail
Winter 2020

A Bright Future for the Kentucky Fiber Trail

As this winter comes in and we close out the holiday season, we often look ahead to the new year with big plans, new hopes and great expectations for the future. As some of you know, we have been seeking new funding sources for the Kentucky Fiber Trail as our launching grant duration came to a close. We are seeking to grow the Kentucky Fiber Trail and our efforts even more by launching an educational fiber center here in Kentucky for use with and by the members of the growing trail.

This fall, we applied for grant funds with the Kentucky Agriculture Development Fund. The Kentucky Sheep and Goat Development Office was assured by the Ag Development Board that the Ag Development Fund would support the submitted grant request for monies to be used in part to develop the Kentucky Natural Fiber Center in Millersburg, Kentucky at Mustard Seed Hill.

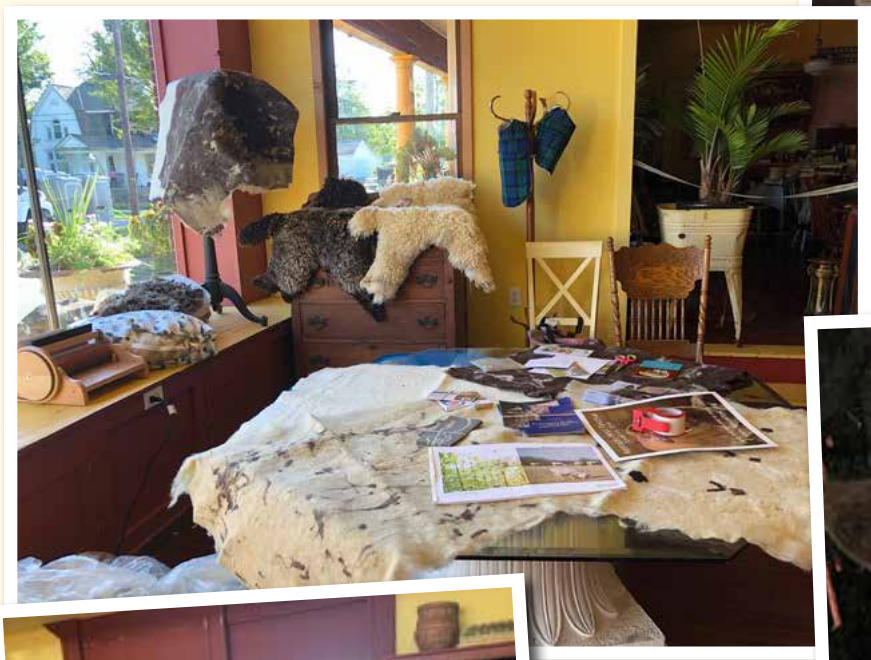
Mustard Seed Hill © Lulu Bell Photography

Mustard Seed Hill is located in the former Millersburg Military Institute and is being refurbished beautifully into a multiuse venue. Our plan with the Kentucky Natural Fiber Center is to have classroom and studio space within the facility for all kinds of fiber processing and promotion. The staff at Mustard Seed Hill is excited to have us on board and we will begin course development and will begin building our Kentucky Natural Fiber Center Committee this spring. We are very excited for the new opportunities to promote Kentucky Fiber!

We will host an open house and tour later in the spring, please be sure to check the Kentucky Fiber Trail website for more information.

Christmas at Mustard Seed Hill

Photos from the Trail



NEWS TO EWES

Is Creep Feeding Lambs a Profitable Undertaking?

by Dr. Donald G. Ely and Endre Fink

Creep feeding is a technique of providing feed to nursing lambs to supplement the milk they consume. Creep-fed lambs grow faster than noncreep-feds and are more aggressive in nursing ewes. This aggression stimulates greater ewe milk production which, in turn, increases creep feed intake because these lambs will be bigger at a given ages.

Typically, the creep diet is a grain-protein supplement mixture and is made available in an area constructed so lambs can enter, but ewes cannot. Some situations when it may be economical to creep feed are described below.

Lambs weaned before 90 days of age need to be creep-fed. This is especially so when producers wean at 56 to 70 days. Weaning abruptly from milk to dry feed or pasture at 56 to 90 days can result in severe weight losses for a couple of weeks after weaning. These losses will not be recovered before marketing. But, if lambs have had access to a palatable creep diet all their life, these post-weaning weight losses do not occur and, thus, allows them to reach market weights quicker than noncreep-fed lambs.

- Lambs born in late fall and winter need creep feed so they gain 0.1 to 0.2 lb/hd/day faster than noncreep-feds. Lambs need to reach 100-to 120-lb slaughter weights in April, May, and June when prices are typically higher than later in July and August. Additional benefits of rapid gains are more efficient feed utilization and less feed cost/lb of gain.
- Creep feed purebred and registered lambs to maximize gain. Lambs that are well grown (large for their age) can be put into production as replacement ewes and rams at earlier ages than those managed for less than maximum pre-weaning gains.
- Although ewes that have twins can usually produce enough milk for both lambs, creep feeding can produce at least 5-to 10-lb heavier lambs at 56 days of age. This effect is magnified for triplets. Although it is true that some ewes can raise triplets, invariably these lambs are smaller than their counterparts at weaning. Access to a palatable and nutritious creep feed from birth is required if weights of these lambs are even close to those of singles and twins at weaning.
- Lambs born late in a 6-to 8-week lambing season should be separated from older ones and creep-fed. Maintain separation after weaning and until marketing because sale value is usually higher if lambs are marketed in uniform weight lots.
- If milk-fed slaughter lambs are to be marketed at 100 to120 lb, they should be creep-fed from birth even though they may have access to excellent spring pasture in April and May. The extra gain from creep feeding produces 100-to 120-lb market lambs 30 to 35 days earlier than the same kind of lambs that were not creep-fed. Because creep-fed lambs can be marketed sooner, there is less chance for internal parasite, foot rot, and hot weather problems to arise.
- The younger the lambs, the more efficient the conversion of feed to gain. For example, it takes only 2 to 4 lb of feed to produce each pound of gain before lambs are 120 days old. Conversely, if they stay on the farm until 6 to 7 months, it may take 6 to 8 lb of feed to produce each pound of gain. **Take advantage of lambs' feed conversion capabilities during their early life.**

Creep feeding stall system

CREEP FEEDING TECHNIQUES

Lambs should have access to creep feed as soon as they come out of the lambing pen. By the time lambs are a week old, they can be found chewing on a stem of bedding straw or stem of the ewes' hay. Curiosity causes them to stick their noses into creep feed, if available. If the feed is in meal form, a small amount will stick on their noses, they will lick it off, and swallow it. This process stimulates their appetite and "kick-starts" rumen development. Young lambs usually exhibit more curiosity than older ones, thus are easier to start on creep feed. If offered creep feed from the time they leave the lambing pen, lambs consume only about 1.0 lb each of total creep feed for the first 28 days, but this is enough to stimulate rumen development and the habit of eating dry feed.

Creep feed intake can be influenced by the design, location, and size of the creep area as well as the type of feed provided. If ewes and lambs run in and out of the barn during the day, construct the creep in a high traffic area of the barn where lambs naturally find their way to it. This area should be dry, well-bedded, and protected from wind drafts. Ideally, the creep area should be large enough for the majority of lambs to get into it at one time.

Openings into the creep area should be wide enough for lambs to enter, but narrow enough to keep ewes out. Openings that are 4 to 6 inches will be wide enough for lambs up to 56 days of age. Creep gates with rollers allow larger lambs to enter through a smaller space (note the darker, larger roller bars in the accompanying picture). Width of the openings can present a management problem as lambs increase in weight from 40 to 50 to 60 lb and age to 56 to 70 to 90 days. In these situations, openings have to be widened to accommodate the increased size of lambs, but narrow enough to prevent thin lactating ewes from entering. If an opening is just wide enough for a ewe to squeeze through, disastrous wrecks are likely to occur – that is, the ewes cannot get back out before they are found dead from enterotoxemia! **If openings have to be wider than 7 inches, it is time to wean the lambs.**

The creep feeder can be a self-feeder or a portable trough placed in a creep area. If self-

feeding, only 4 inches of feeder space is required per lamb. Continual availability of the creep diet in a trough can also be a form of self-feeding. Make sure the trough is at least 8 to 12 inches off the ground and stable enough so it can't be overturned by the lambs. Allow 12 inches of linear trough space per lamb and assume lambs will eat from both sides.

Ingredient	%	lb/ton
Ground/cracked shelled corn [a]	81.1	1636
Soybean meal [b]	10.0	200
Distillers dried grains with solubles	5.0	100
Complete mineral mix [c]	2.5	50
Ammonium chloride [d]	0.5	10
Vitamin E [e]	0.12	2.4
Vitamin A, D, E premix [f]	0.05	1.0

[a] Ground through a hammer mill without screen.
[b] 48% crude protein.
[c] Composed of 22.25% calcium; 6.00% phosphorus; 23.50% salt; 1.00% magnesium; 1.00% sulfur; 30 ppm Iodine; 6 ppm cobalt; 32 ppm selenium; 1,800 ppm zinc; 1,500 ppm manganese; 302,000 IU vitamin A/lb; 25,000 IU vitamin D3/lb; and 200 IU vitamin E/lb.
[d] For preventing urinary calculi in wether and ram lambs.
[e] 20,000 IU/lb.
[f] Vitamin A = 4,000,000 IU/lb; vitamin D3 = 800,000 IU/lb; and vitamin E = 500 IU/lb.

An example of a grain mix that can be fed to both creep-fed lambs and their lactating mothers.

CREEP DIETS

Young lambs find soybean meal to be very palatable. Other feeds high on the palatability scale include ground shelled corn, cracked corn, alfalfa hay, and molasses. Soybean meal is a great source of protein. Corn is a superb source of energy. Alfalfa is a highly palatable fiber source that lambs love. It provides protein and maximum amounts of calcium. Molasses is a source of energy relished by lambs. It is effective in decreasing the dust associated with diets fed in a meal form, but it is an expensive source of energy.

Creep diets need not be complex. In fact, lamb performance is usually as good with "simple" creeps as with "complex" ones. The creep diet that has been used most successfully by Kentucky producers contains 90% ground or cracked corn and 10% soybean meal or pellets. Adding 1.0 lb of Aureomycin-50 crumbles/ton of this mix allows lambs to consume between 10 and 25 milligrams of antibiotic activity per pound of daily feed. Research has shown this is the optimum level of antibiotic for lamb growth promotion. If the shelled corn is to be fed in ground form, mix it with soybean meal. If cracked corn is fed, mix it with soybean meal in pelleted form. To get lambs started, it is best to feed the diet in meal form. Then, as they reach 4 to 6 weeks of age, coarser diets become more palatable (cracked corn and soybean meal pellets). However, if corn is cracked and the soybean meal is pelleted, the cost of the diet will increase. Any extra gain obtained usually does not pay for the extra cost of the cracked corn and pellets.

The 90:10 diet contains 12.5% crude protein. This may seem low, but it should be remembered the main reason for creep feeding is to provide lambs with energy above that supplied through the ewes' milk. There may be times when it is more convenient to feed the lactating ewe grain mix as a creep feed rather than mixing a separate diet just for creep-fed lambs. An example of a grain mix that can be fed to both creep-fed lambs and their lactating mothers is shown above.

Even though using this mix as a creep diet may be handy, in practice it may be "over-kill", especially if the main reason for creep feeding is to provide supplemental energy. An illustration of creep feeding the same grain mix as fed to lactating ewes or a specific creep pellet is presented in Table 1. Lambs that consumed the pelleted creep diet had a higher ADG and

DCFI than those fed the ewe grain mix. However, lambs consuming the ewe grain mix were 8% more efficient in converting feed into gain and resultant cost per pound of lamb gain was only 53% of that of the pelleted creep diet. This example shows commercial creep diets can be loaded with nutrients that promote maximum gains from maximum feed intakes. However, costs of ingredients used in these diets may be prohibitive. Another benefit of creep feeding with a ewe grain mix is that it can serve as a post-weaning growing/finishing diet. In this scenario, the transition of lambs from pre-weaning to post-weaning phases should proceed smoothly.

Table 1. Performance of Lambs Creep-Fed a Lactating Ewe Grain Mix (Meal) and a Commercial, Pelleted Creep Diet

	Diet	
Item	Ewe Grain Mix	Pellet
Number of lambs	120	120
Initial weight, lb	21.8	20.6
Weaning weight, lb	52.9	56.2
Total gain, lb	31.1	35.6
Number days (average)	39.1	40.6
ADG, lb [a]	0.80	0.88
DCFI, lb [a]	0.87	1.04
F/G, lb/lb [a]	1.09	1.18
CF cost/hd/d, cents [a]	13.00	26.00
CF cost/lb gain [a]	16.00	30.00

[a] ADG = average daily gain; DCFI = daily creep feed intake; F/G = feed/gain; CF = creep feed.

SUMMARY

Creep feeding can be beneficial in many different production situations. One of the greatest benefits is obtained when lambs are to be weaned at 56 days. Lambs weaned this early must be creep-fed to reduce weaning stress. Numerous creep diets with many ingredient combinations are available in different forms with varying costs. It should be remembered that the main reason to creep feed is to supply energy to nursing lambs. Simple diets based on corn and soybean will usually be the most cost efficient.

If a marketing goal is to produce 100-to 120-lb lambs 30 to 35 days earlier than those not creep-fed, creep feeding may not make ewes' jobs any easier, but it will make the sheep enterprise more profitable.

Dr. Donald G. Ely, *Professor in the Department of Animal and Food Sciences at the University of Kentucky*

Hand Rearing Orphan Lambs & Kids:

Can It Be Done Successfully?

Dr. Beth Johnson, DVM

Every year sheep and goat producers must raise lambs or kids on supplemental milk because of multiple births (i.e. triplets), death of the dam, weak newborns, or rejected offspring. At times we really question whether it is worth the effort involving time, energy, emotional trauma and cost into raising these orphans. With market prices high and the increased price for show animals, it does seem more cost effective now than it used to be, but how do we raise these little ones so that they turn out to be a productive animal?

It is extremely important that we start them off on the right hoof. On day 1, be sure they get adequate colostrum either from their dam or a "colostrum bank" which is frozen colostrum that you or another producer have saved from another source. Fresh colostrum can be stored in the refrigerator for several days or frozen for at least one year. If freezing be sure to freeze in small quantities since frozen colostrum should not be thawed and then refrozen.

Colostrum is the "first milk" that all female mammals produce after birth (parturition). It has a high level of several nutrients that are important for the newborn health and performance, contains a high concentration of antibodies against a variety of infectious agents and also the first source of Vitamin E. The iron content of colostrum is 10 to 17 times higher in colostrum than normal milk and also because of its laxative properties, colostrum helps to eliminate fecal matter in the newborn's digestive tract. If you have to thaw out frozen colostrum it should be thawed slowly in a warm water bath (feeding temperature: 102-103°F, 39-40°C) because direct heat destroys the precious antibodies contained within colostrum.

Lambs and kids should receive 10% of their weight in colostrum within 24 hours after birth. To accomplish this, give 2 to 4 ounces at 3- to 4-hour intervals for the first 24 hours of life. A Pritchard nipple or lambar nipple works great on a 24 oz. pop bottle or use a tube feeder if suck reflex is poor. Be sure and provide a warm, draft free area for the lamb/kid to prevent chilling. If colostrum is not available, there are colostrum replacers available commercially. Just be sure to utilize a "Replacer" and not "supplement". In Figure 1., there are some commercial products which are available commercially in the United States. The Saskatoon Colostrum Company in Canada also has a commercially available colostrum replacer.

Figure 1. Commercially available Colostrum Replacer

If you find a newborn that is unable to suck due to hypothermia, trauma, selenium deficiency, or other physical or medical reason, tube feeding the newborn is a must to save the kid or lamb. Although it sounds difficult, tube feeding with the right tools can be performed with minimal skill. Use a 14 gauge catheter tube and measure the distance from the tip of the nose to the last rib of the kid or lamb. Place a mark on the tube that marks the distance. Start passing the tube through the mouth and if the newborn is alert enough allow it to chew on the tube while passing it down the throat. If you are able to pass the tube all the way to the mark you should be in the stomach. Also if the kid/lamb is able to vocalize, the tube should be in the esophagus. Once the tube is in the stomach dispense the milk/colostrum through the tube. I usually do not tube feed more than 2-4 oz at one time. A tube feeder and syringe are exhibited in Figure 2.

Figure 2. 14 Gauge tube feeder/syringe used for tube feeding newborn lambs/kids.

I recommend feeding straight goat milk (lambs perform very well on goat milk) for 2-3 days and offer all they want to drink every 6 hours up to 24 ounces. After the third day, the kids or lambs can be slowly introduced to a commercial kid or lamb milk replacer. The list below gives some guidelines to think about when selecting a milk replacer to use:

1. **More doesn't always mean better.** Be aware when comparing products that more of a nutrient does not mean that the product is necessarily better. Certain fat soluble vitamins in a milk replacer may approach toxic levels, so just because one product has an acceptable level of Vitamin A, for example, doesn't mean that another product which has a much higher level of Vitamin A is better. This is also true for fat content as explained below.

2. **Analyze the research.** Ask to see the research behind the product. Look for research that has been conducted on the animal you are looking to feed. Highly reputable companies will invest in animal-specific research, giving you confidence that the positive results are repeatable in your herd or flock.

3. **Identify the supplier.** Identify the milk

replacer supplier. Are technical staff members available to assist if challenges occur? Also be sure the milk replacer has not been sitting on the shelf for a long period of time.

4. **Is the milk replacer made for lambs or kids?** Make sure that the milk replacer purchased has been specifically formulated for the animals that you raise.
   - Milk replacer formulated for kids will mimic the composition of doe's milk and is better for the kid. At a minimum, goat milk replacer should have 25 percent protein and 28 percent fat.
   - Milk replacer formulated for lambs will mimic the composition of ewe's milk and is better for the lamb. At a minimum, lamb milk replacer should have 25 percent protein and 30 percent fat.
5. **How does the milk replacer mix?** This is especially true if you are using a self-feeding protocol. Examine how the milk replacer mixes in warm water to shed additional light on the quality of product. If the product disappears right away in the water, there is the possibility that the product will separate, that is fat molecules will float to the top and protein will settle to the bottom. The separation of the fat and protein molecules is problematic because it prevents kids and lambs from receiving consistent nutrition at each feeding. Minimal fluid separation is a good indicator of a quality product.
6. **Does the milk replacer have a preservative system?** Inquire if the milk replacer has a preservative system. This is especially important if you use self-feeding/free-choice because the milk replacer needs to stay fresh throughout the day.
7. **What is the copper content?** Examine the copper level in the milk replacer. For sheep producers, the copper level is important, but not just because of the toxicity; the lamb actually needs 8 to 11 parts per million of copper for normal growth. Milk ingredients often are deficient in copper for lambs so, milk replacer actually needs a small amount added to provide for proper growth. If the milk replacer has added copper, it is not necessarily bad, and in fact, may be better than products without the added copper, as long as it is at proper level.
8. **Look for milk replacers that consist mainly of dairy ingredients** like skim or whey as these are the best sources of protein in milk replacers because they contain a higher level of essential amino acids and can be highly digestible.

When transitioning over to milk replacer, mix the goat milk with the milk replacer slowly increasing the amount of milk replacer being fed to half and half by the end of the second week.

- Lambs do much better if fed four times daily and worked up to 16 ounces every 6 hours until they are 3-4 weeks old. At this time they can be adjusted to feeding twice daily approximately 48oz daily.
- Goat kids can be worked up to twice a day feeding by two weeks of age at 24 ounces twice daily.

Also try to minimize the amount of air they ingest while feeding and be sure your nipple holes are not too big in order to prevent aspiration pneumonia. If you are feeding orphans on a lambar (bucket with nipples around the outside), be sure to remove lambar after they have emptied the bucket to minimize sucking air.

If a producer has a large number of orphans or if time is an issue, lambs and kids can be raised on a self-feeding protocol. The milk is offered cold and they are provided enough milk to consume throughout the day in frequent small feedings as they desire. It is important that the milk remains cold, especially as the environmental temperature increases. This can be accomplished by dropping a frozen, water filled 2-liter pop bottle into the milk.

Self-feeding system

A word of warning to producers who are using dairy goats or ewes as their source of milk to feed their orphan lambs/kids: Be sure to have your goats/sheep tested for Caprine Arthritis Encephalitis (CAE) or OPP. CAE is a viral disease which is in the same family as the virus that causes Ovine Progressive Pneumonia (OPP). One of the major routes of transmission is through ingestion of milk from a CAE positive doe. The viral particles for CAE and OPP

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Table 1. Recipe for kid milk replacer Free-Choice System:

Resource: Denise Martin/ Martin Meadow Farms

1 gallon Vitamin D Whole Milk
1 cup Buttermilk
One can evaporated milk
Kid milk replacer
One empty gallon jug

- **Pour half of the whole milk into the empty gallon.**
- **Add 1/2 cup of buttermilk to both half gallons.**
- **Add 1/2 can of evaporated milk to both halves.**
- **Top off gallons with mixed, as directed, kid's milk replacer.**
- **Refrigerate.**
- **After feeding, completely break down the bucket and thoroughly clean all the valves and nipples every day.**

This formula can be used for individual feeding or free-choice systems.

Premier One® has the buckets, nipples and valves and a good video on this process.

Note: In the summer time, you can use gallons of frozen formula with holes punched in the bottom to keep the milk cold. As it melts it refills the bucket.

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are extremely high in colostrum, therefore be sure that the colostrum you use is from a negative doe/ewe. Consult with your veterinarian to have your sheep/goat tested. To test a doe/ewe, send a blood sample to a diagnostic laboratory. If a goat is positive for CAE or sheep positive for OPP, the milk should not be used and any animals that may have been fed milk from an infected doe/ewe should be tested after 9 months of age. Nothing is more frustrating than raising an orphan kid/lamb and then find out it is positive to these diseases.

When bottle babies are 1-2 weeks of age, start offering a creep feed designed for young lambs or kids which is medicated with a coccidiostat (Decoquinate (Deccox®) for kids, Lasalocid (Bovatec®) for lambs). My experience is that by 8 weeks of age, kids can be reduced to once a day feeding in order to increase concentrate consumption, which in turn reduces the risk of bloat. The concentrate being offered should be 16-18% Crude Protein.

Kids and lambs should also have free choice access to hay and clean fresh water. If there is a history of coccidiosis on the farm, be sure to treat all young kids or lambs at 4 weeks of age for coccidiosis. When the young animals are ingesting approximately 4-8 ounces of grain daily they can be weaned from milk. This usually occurs after 8 weeks of age. Grain amounts can be increased if restricted amounts are fed. Otherwise utilize a creep feeder for young kids and lambs.

Self-feeding system

Vaccinations against enterotoxemia and tetanus are extremely important in young lambs and kids. An antitoxin can be given at birth if there has been a problem with either of these diseases on the farm. An initial CD&T toxoid vaccination should be given at 4 weeks and a booster given at 8 weeks of age. Contact your local veterinarian if you are not sure about available vaccines in your area.

Summary

Artificially raising lambs and kids is a task that can reap benefits for producers who are willing to take the time and effort to raise them properly. With proper management and feeding, orphans can create a return on the investment. Hopefully this article will help in developing your bottle babies into productive animals that you are proud of!

Dr. Beth Johnson *is a Staff Veterinarian in the Kentucky Department of Agriculture and has 40 years of experience raising and treating small ruminants. Her family farms in Parksville, KY where she raises Gelbvieh cattle and Boer goats.*

MARKETPLACE

HoofTrader
KY Sheep & Goat Dev. Office
502-682-7780 • info@kysheepandgoat.org

Kalmbach Feeds
419-310-4676 • www.kalmbachfeeds.com

Katahdin Hair Sheep International
717-335-8280 • info@katahdins.org

Kentucky Goat Producers Association
www.kysheepandgoat.org

Kentucky Sheep & Goat Check-Off
www.kysheepandgoat.org

Kentucky Sheep & Wool Producers Association
www.kysheepandgoat.org

Ketcham's
ketchamssheepequipment.com
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Simms Brothers
www.simsbrothers.com

Tennessee Sheep Producers Association
www.tennesseesheep.org

United Producers, Inc.
270-843-3224

University of Kentucky
www.uky.edu/AnimalSciences/sheep/sheep.html
www.uky.edu/AnimalSciences/goat/goat.html
www.ca.uky.edu

The Kentucky Sheep and Goat Check-Off Program

began in 2010 and collects $.50 for every $100 worth of sheep and goats sold in the Commonwealth. According to Kentucky law, Check-Off funds must be used for the purpose of promoting the increased use and sale of sheep and goats.

TO DATE, CHECK-OFF HAS PROVIDED:

- **$50,000 in New Farmer Recruitment loans** have been given to 25 new/ beginning producers in Kentucky since 2012
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- **$10,800** spent in promotion of sheep & goat products in 2018
- **$3,000** given to conduct parasite research

KY Sheep & Goat Check-Off Sponsors the Try Something Different Tonight marketing campaign
# of people who tasted lamb and goat products: **25,000**
# of people who have learned about products and cooking techniques: **5 million**

To learn more about the Kentucky Sheep and Goat Check-off Program visit
www.kysheepandgoat.org/Check_Off.html

KY Sheep & Goat CHECK-OFF

BREEDERS PAGE

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