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Moisture in Sheep Barns

I'm writing this the day after the very well attended Northeast Kansas Sheep and Goat school. The McLouth school cafeteria was filled with over 70 individuals anxious to learn more about sheep and goat management. This interest surely speaks to the need for a new KSRE Sheep and Goat Extension specialist. South Dakota State recently published a good publication on how moisture effects enclosed sheep facilities and seems like a timely topic to discuss today. You may view the full publication authored by Kelly Froehlich & Xufei Yang at:

<https://extension.sdstate.edu/sites/default/files/2023-03/P-00261.pdf>

While the focus of discussion will be sheep today, the same principles apply to all livestock confined in enclosed facilities. Lambing indoors helps increase lamb survivability, but this comes with challenges of regulating temperature, humidity and comfort. Providing dry, draft-free facilities is key to healthy lambs and ewes mitigating respiratory issues. Moisture accumulation can become a challenge during extreme cold or transitional periods such as winter to spring, as temperatures swing.

Air holds water and moisture issues in barns are the result of condensation as water changes states. Not only do animals need water to survive, so do some undesirable organisms that can cause respiratory and other health concerns, like bacteria, viruses, fungi, etc... Stale, moisture-rich, "recycled" air in closed barns generally lends itself to health issues for livestock.

Making barns comfortable and dry is a balancing act of air temperature, humidity, and ventilation. Periods of extreme cold and/or fluctuating temperatures make moisture issues more of a challenge. Closed barns stay warmer at the expense of less ventilation trapping moisture, increasing humidity, and creating an unhealthy environment. Ventilation draws in cooler, drier air and expels warm moist air, keeping the barn dry but potentially too cold for lambs.

Two options that could help maintain balance in temperature and humidity would be to add heat or increase the amount of insulation to the barn. Adding heat helps maintain a comfortable temperature while allowing for proper ventilation. Increasing insulation in the barn can help to maintain a comfortable temperature as well. When done properly insulation can potentially decrease the formation of condensation on walls and roofs of barns making it drier by simply keeping the barn warmer and increasing the air moisture holding capacity.

Besides adding heat or insulation to help maintain balance, producers can consider a few additional tips:

- Shear ewes prior to housing indoors. Wool can hold up to 30% of its weight in moisture. A sheep with 7 pounds of wool can potentially also hold up to 2.1 pounds of water.
- Fix dripping or leaky waterlines/water fountains as these can add more humidity and moisture.
- Consider grinding bedding materials such as straw. As moisture enters through the cut ends, larger straw stems take more time to absorb moisture and longer to dry out.
- Increase barn ventilation drawing out moisture laden air during the day on warmer days. Unheated barns can be cooler inside than outside during the day, leading to more condensation.
- Note and address any drainage or environmental issues adding to moisture accumulation inside.

Whether you are considering building a new or renovating an old barn, make sure to consider the balance of temperature and moisture to ensure the barn will provide an environment ideal for the type of animals being housed. Thoughtful planning can mean a healthier barn, healthier animals, and increased profits.