

Mastitis

Mastitis isn't something we're thinking about after the lambs and ewes have been turned out of the shed. Rightfully so, one might expect the worst of the ewes to have been identified at lambing and pulled when unfit to raise the lamb. Nevertheless, with weaning approaching, increased mastitis susceptibility is around the corner.

Mastitis can be classified into two categories 1) clinical 2) sub-clinical. The most apparent clinical mastitis can be observed by abnormalities in the milk and on the udder. Viscosity of milk clots and globules with minor swelling but apparent sensitivity signal sub-acute mastitis. Whereas severe swelling, isolated heat, and hardness indicate more acute clinical signs. A severe clinical case will also be accompanied with a fever, going off feed, and weakness. But what about the sub-clinical silent type that eats away at milk production and lamb growth?

In 1985 it was estimated mastitis cost the U.S. sheep industry \$20-25 million annually as a result of production losses (death of ewes and lambs, treatment costs, decreased milk and lamb weaning weights). Thirty years later, 2015 losses due to mastitis would more closely resemble \$44-55 million. What is mastitis in your flock costing you?

Data summarized by Leo Timms at Iowa State University reported that 29% of ewes exhibited mastitis at lambing, and 21% at weaning. Out of these ewes infected at lambing, 40% still had mastitis at weaning time. Milk production losses of 12% when one udder half was infected and 58% when both halves were infected further siphon profits (Timms, 2015). What about starvation of lambs from infected ewes? We have all seen poor mothering contribute to lamb abandonment, many of which are a direct result of udder health. An Australian study found lamb death loss to be 34% with 24% of the dead lambs coming from ewes with un-sound udders (Moule, 1954). Some of the most efficient, rapid lamb gains while nursing are reduced due to mastitis. Lambing time infections resulted in lambs having 19% less average daily gain than lambs nursing uninfected ewes. Lambs born to ewes with mastitis that persisted from lambing until weaning had 24% lower average daily gain (Timms, 2015).

Bacterial Culprits

For range operators, the occasional "blue bag" is caused by *Pasteurella haemolytica* which gives

the udder the discoloration due to obstructed blood flow. The *Staphylococcus aureus* species is the major culprit behind the gangrenous mastitis. Coagulase negative staphylococcus is thought to

be a major player in the sub-clinical mastitis. Sore mouth (contagious ecthyma) is a viral culprit that is a secondary type infection transferred from mouth lesions on nursing lamb, ultimately-causing trauma to the teat. Seldom is the infection a result of a lone bacterial species but rather a bacterial community. The organism must get within the teat to cause mastitis. Thus, the two greatest risk periods are 1) immediately prior to lambing "bagging up" 2) 24 to 72 h post weaning "plug formation" at dry off.

An ounce of prevention is worth a pound of cure. But really truly, bacteria need a hospitable environment to colonize hoping to gain entry to the teat and preventing the environment conducive for the bacteria is first real step in prevention. Moisture, temperature and bedding are all factors to consider in the mastitis prevention program. Moisture is an enemy in the lambing barn and trying to keep both the ground and air dry in the lambing barn dry is easier said than done. Ventilation will facilitate evaporation on the ground reduce the frequency of bedding and favorable environment for bacterial growth. Even a handful of ewes will raise the humidity in the lambing barn let alone full capacity at lambing time. But moving the air around especially drying out the bedding areas will help prevent the favorable environment for bacterial growth. Shed lambing in the early spring has never been for the faint of heart and although a warm cozy lambing shed is the objective for lamb survival it is also a favorable environment for exponential bacterial growth. Intuitively bedding is the best management line of defense. Various bedding material can make a difference. Sand, conifer sawdust, and newspaper are good options because they are not conducive to bacterial growth, but these are not always cost effective/available alternatives.

A dry pasture or pen at weaning is just as important for mastitis prevention as at lambing. The leaky water trough making belly deep mud, watering hole or any other bacterial haven in the dry-off lot can be an opportunity for teat infection.

Weaning Management for Mastitis Prevention

Research Report



Whit C. Stewart

At dry off the udder undergoes a period of involution or shrinkage. This period of remodeling and repair of damaged or mature epithelial cells in the udder is essential for future lactations. Increased milk accumulation in the udder at dry off will dilate the teat orifice and duct increasing the risk of pathogen entry. Furthermore, teat damage (trauma) from aggressive lambs nursing can also predispose the teat for bacterial entry at weaning.

Peak lactation will vary across breeds but generally ewes will reach peak lactation at approximately 21-28 d after lambing (Cardellino and Benson, 2002). Thus, trying to dry off ewes closer to this time frame presents greatest risk for mastitis as biologically they are producing at maximum capacity.

Reducing the quality of the diet to facilitate decreased milk production at weaning is one strategy that can reduce the risk of infection. Fibrous forages of low digestibility (straw, corn stover, cotton seed hulls, mature grass hay) fed prior to weaning will decrease nutrient precursors that fuel milk production. The slower rate of passage and decreased crude protein (<7%) with these types of feed will very quickly slow milk production. Some producer's initiate feeding the lower quality feed a week prior to weaning however this might be detrimental to lamb growth unless a creep feed or pasture can be provided.

Palpating udders after 14 days might be a good strategy to identify hardness, abscesses and nodules indicative of clinical infection. It's a bit of a guessing game as to which ewe's udders might make it through another lambing season. Often times a couple nodules or fibrotic lumps might be overlooked whereas a lopsided bag with one half fully retracted might represent culling criteria. A simple scoring system of (yes, no, maybe) at jug turn out and another score at weaning might help make more informed culling decisions.

Treatment

When ewes are treated with antibiotics at dry-off, the literature suggests treatment will reduce mammary gland infections. The literature points to greatest efficacy in intra-mammary administration rather than subcutaneous antibiotic administration. This is in part because the antibiotic will be in contact with the bacteria for longer periods at weaning, rather than treating during lactation where nursing flushes liquid from the teat. However all treatment should include veterinary consult as sanitation and reinfection with needle insertion can exacerbate the problem.

Teat sealants can prevent bacteria from entering the teat during these high-risk post-weaning

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periods. External sealants coat the teat and act as a barrier to bacteria until the keratin plug is fully formed in the teat. However, there is a chance that the sealant may rub off as the ewes lie down. An effective alternative method is an internal teat sealant (OrbeSeal, Zoetis), which acts as an artificial plug until a keratin plug is fully formed in the teat canal. Added therapeutic inputs and labor resources with treatment should be weighed depending on the ewe and the ability of treatment to prolong genetic contributions to the flock. Again all treatment procedures should include the involvement of your local veterinarian.

Complete eradication of mastitis in the flock may be too lofty a goal to accomplish. But, identifying risk periods and tweaking management to reduce infection can be a simple step in the right direction. More pounds of lamb marketed and increased ewe longevity are a good incentive to be on the look out for mastitis in the coming months. Happy weaning!

References

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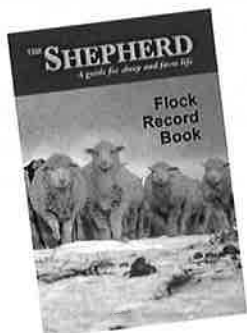
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