

Public Abstract

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Graduation Term:FS 2014

Department:Animal Sciences

Degree:PhD

Title:BIOLOGICAL CHARACTERISTICS OF KATAHDIN SHEEP SELECTED FOR FOOTROT RESISTANCE

Footrot, a highly contagious disease affecting the feet of hoofed animals, has significant economic and animal welfare impacts on the small ruminant livestock industry and is responsible for 10% production losses in body weight and wool growth in affected animals. The infection is largely specific to sheep and goats, although it has also been reported in other species including cattle, horses, pigs, deer, and mouflon. Footrot in sheep and goats is caused mainly by infection with bacteria *Dichelobacter nodosus* and *Fusobacterium necrophorum*. The disease is more prevalent in areas with a mean daily temperature above 10°C following two to three months of rainfall exceeding about 50 mm per month, similar to Midwest U.S. environmental conditions. There is a genetic component to resistance of footrot and a genetic marker developed in New Zealand is commercially available. In this study we used a challenge experiment, electron microscopy, and a study of white blood cell phagocytic efficiency to determine the biological characteristics of Katahdin and Katahdin cross sheep differing in genetic marker score as part of a larger study to develop a footrot resistant sheep flock. There was increased phagocytic efficiency of sheep with the favorable gene marker, but we were largely unsuccessful in inducing severe footrot in this flock of sheep, regardless of gene marker score.