



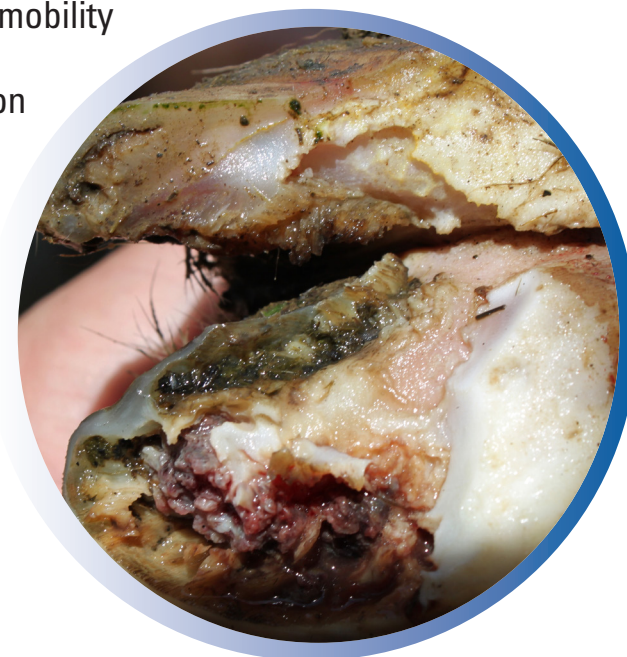
Finding the Genetic Marker for Footrot Resistance in Sheep



Footrot is one of the most costly diseases impacting animal welfare in the small ruminant livestock industry. It is highly contagious, especially in goats, sheep, cattle, deer and other wild ungulates (animals with hooves).

Sheep and goats are especially vulnerable in hot, humid and rainy environments. Frequent footrot outbreaks in Missouri and the region can cause labor and income losses for producers and even ruin their farm enterprises. Footrot infected animals experience debilitating pains, discomfort, and lameness that impede their mobility and ability to forage thus, resulting in loss of production or death. However, sheep with certain genetic variations are resistant to footrot infection.

Below, a sheep's hoof that is deteriorating with severe footrot.



Footrot outbreaks in Missouri can cause loss of income for producers.

Research Methodology, Results and Impacts

This research focused on finding a footrot-resistant genotype (genetic makeup) in sheep. It also produced sheep with a high resistance to footrot disease. This was done using genetic marker-assisted selection (MAS). At Lincoln University's George Washington Carver Farm, footrot-resistant sheep flock was established from a base flock of Katahdin sheep using the DNA gene marker DQA2. During a three-year breeding plan, sheep were screened for this genetic marker. The study found a larger ratio of high genetic resistance to footrot in the selection flock. Flocks owned by 38 Missouri farmers and six from other states were similarly screened.

This research gave producers a long-term, sustainable footrot disease-free production strategy. An evaluation system was developed to describe footrot-resistant and related characteristics. Genetic resistant to disease selection also reduces the need for antibiotic use and, thus, drug contamination in food animals.

Sheep can become immobile and resort to kneeling because of the effects of footrot.



Future Research

An effective strategy will be devised for early detection and prevention of footrot outbreaks in goats and sheep. Technical training and demonstrations will be provided for producers on footrot disease prevention and resistant selection. Future research will focus on genetically selecting sheep that thrive in the Missouri farming environment and are resistant to footrot infections.

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