FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Feed the Future Innovation Lab for Livestock Systems

INNOVATION SUMMARY:

EVALUATION OF PASSIVE TRANSFER OF IMMUNITY STATUS IN NEONATAL CALVES, LAMBS AND GOATS

This innovation utilizes a user-friendly, commercially available kit to measure passive transfer of immunity in neonatal livestock. Upon birth, neonatal ruminants are dependent on ingestion of colostrum to obtain crucial antibodies to support their immune system. Failure of passive transfer of colostral antibodies indicates that a calf is more susceptible to infectious disease early in life. This test helps assess how well colostral antibodies were transferred to the neonate.

INNOVATION QUICK FACTS

Lead Implementing Institution: University of California, Davis

Category: Diagnostic Tool

Applied in: Ethiopia

Innovation Type: Technology

New/Adapted: Adapted

Created for: Women & Men

Nutrition Linkage: Improved Production

THE PROBLEM & ITS IMPORTANCE

In Ethiopia, diarrhea and respiratory disorders are major causes of morbidity and mortality in young livestock less than three months old. These diseases lead to poor weight gain, decreased performance, increased treatment costs, and in severe cases, death. Within the first 24 hours following birth, the neonate must nurse colostrum from the dam to obtain protective antibodies, which provide immediate immune protection. Failure of passive transfer of colostral antibodies from dam to neonate makes young animals much more susceptible to disease and death.

POTENTIAL BENEFITS

This innovation is the gold-standard test for measuring the level of immunity (amount of immunoglobulin G antibodies in serum) the neonate acquired through consuming and absorbing colostrum. This test allows animal health workers and veterinary researchers to make targeted recommendations to improve farm management practices and to ensure neonates get enough colostrum to reduce the incidence of young stock morbidity and mortality. Neonates identified as being deficient in antibodies based on this test should be considered at high-risk, potentially leading to more targeted preventive measures.

APPLICATION OF THE INNOVATION

The innovation can be applied to neonatal ruminants in all production systems in Ethiopia and elsewhere; the kit can also be used to test colostrum quality. Large scale producers, regional veterinary laboratories and academic, private and biotechnology research laboratories can all use this innovation. Kits are available from Radial Immunodiffusion Test, Triple J Farms, for many livestock species including cattle, sheep, goats, pigs, equids, and camelids. Results can be available in less than 24 hours and each kit can test multiple animals over several different testing days. All types of producers will benefit from knowing the passive transfer status of their young animals and can apply improved dam and neonatal management practices to reduce young stock mortality. This will reduce antibiotic use and the risk of antimicrobial resistance, improve productivity, and ultimately save producers time, money, and resources.

Feed the Future Innovation Lab for Livestock Systems | University of Florida | June 2020
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