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

Feed the Future Innovation Lab for Livestock Systems

INNOVATION SUMMARY:

PATHASURE® KITS FOR DIAGNOSING PATHOGENS CAUSING DIARRHEA IN CALVES

The innovation is a user-friendly calf diarrhea diagnostic kit, called Pathasure® Enteritis 4[1] produced by BioVet (St. Hyacinthe, Quebec, Canada). Calf diarrhea is an important cause of morbidity and mortality that can severely reduce the incomes of smallholder producers through treatment costs, ill-thrift, poor weight gain, and calf deaths. Better understanding of the underlying causes of calf diarrhea will help to prevent and control the disease and improve incomes of small to large cattle producers.

INNOVATION QUICK FACTS

Lead Implementing Institution: University of California – Davis

Category: Disease Management

Applied in: Ethiopia

Innovation Type: Technology

New/Adapted: Adapted

Created for: Women & Men

THE PROBLEM & ITS IMPORTANCE

Diarrhea and respiratory disorders are causes of morbidity and mortality in young calves less than three months old in Ethiopia. Diarrhea can lead to poor weight gain, decreased performance, and in severe cases, death. In addition, some pathogens that cause calf diarrhea are zoonotic and pose a health risk to humans handling those animals. Applying this innovation allows producers to know the exact cause of diarrhea to implement improved prevention strategies, such as vaccination, provide more specific treatment of sick animals, and develop appropriate measures that prevent disease outbreaks. As a result, livestock health and productivity will improve.

POTENTIAL BENEFITS

Pathasure® Enteritis 4 kit is a highly sensitive and specific enzyme-linked immunosorbent assay (ELISA), that is intended for the detection of *Escherichia coli* K99, Rotavirus, Coronavirus, and *Cryptosporidium parvum* in calf feces. This indirect ELISA enables rapid, qualitative detection of antigens to these pathogens through binding to highly specific antibodies coated on a 96-well plate. A positive reaction is indicated by a blue color change in the well that can be detected by eye, without the need for an ELISA reader. By using the Pathasure® Enteritis 4 kit, researchers can estimate infection levels due to these four pathogens that play a role in neonatal diarrhea in young calves.

APPLICATION OF THE INNOVATION

The innovation can be applied to calves in all production systems in Ethiopia and elsewhere. Fecal samples can be tested for pathogens in a nearby laboratory. Calves displaying signs of diarrhea are sampled and those fecal samples are tested using the Pathasure® Enteritis 4 kit. This test is applicable for use in very small farms with few animals as well as larger peri-urban farms. This assay can increase the capacity of veterinarians and regional laboratories to accurately and rapidly diagnose common causes of calf diarrhea, thereby improving appropriate treatment of affected calves through supportive therapy and judicious use of antibiotics for bacterial causes of diarrhea. This will save producers money and will reduce the potential for creation of antimicrobial resistance through the inappropriate use of antibiotics.

[1] https://www.biovet-inc.com/en/product/pathasure-enteritis-4/

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