

Feed the Future Innovation Lab for Livestock Systems

INNOVATION SUMMARY: HANDHELD AND MOBILE NIRS

Despite the advantages and benefits of Near Infrared Reflectance Spectroscopy (NIRS) for feed analysis, bench top NIRS machines require high fixed costs. These high costs limit the ability of potential users to adopt NIRS technology. This innovation validates that handheld or mobile NIRS devices can be used to analyze feed samples with comparable accuracy, with lower fixed costs. Greater use of portable and mobile NIRS will improve the capacity for feed analysis, as it will allow for frequent nutrient analysis. Improvements in the quality of feed nutritive value data can also support improvements in related technologies such as ration formulations, which can lead to greater livestock productivity.



Lead Institution:
International Livestock
Research Institute



Developed In:
Ethiopia &
Burkina Faso



Innovation Type:
Technology



New/Adapted:
Adapted



Created For:
Women and
Men



Nutrition Linkage:
Improved
Productivity

The Problem and Its Importance

Mobile NIRS systems are a fraction of the cost of bench top systems. Handheld or mobile NIRS systems can cost as little as \$2,000 USD, compared to \$70,000 USD for bench top NIRS machines. A reduction in cost of this magnitude greatly increases the affordability of NIRS instruments by researchers in Ethiopia, Burkina Faso and throughout sub-Saharan Africa, as the high fixed costs of these systems has been a critical factor limiting the adoption of NIRS technology. We are experimenting with development of open source prediction software, because proprietary software costs remain a barrier.

The Innovation and Potential Benefits

Not only are the handheld NIRS models significantly cheaper than bench top machines, but they are also easier to use, which can increase the capacity of researchers to take and analyze feed samples. These factors combined can make NIRS analysis easier, more effective, and cheaper. New algorithms are also being developed to enable handheld NIRS devices to estimate nutritional quality from standing crops. A widespread adoption of mobile NIRS in sub-Saharan Africa will revolutionize feed marketing and quality-based pricing that is critically lacking.

Application of the Innovation

This innovation targets animal nutrition laboratories and feed traders as end users. Adoption of this innovation by animal nutrition laboratories can improve their effectiveness, which can lead to benefits for other livestock stakeholders. Moreover, it can be used by scientists and farmers to undertake in situ feed analysis and analysis of standing forage.

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P.O. Box 110910 | Gainesville, Florida | Livestock-lab@ufl.edu | Website: <http://livestocklab.ifas.ufl.edu/>