Feed the Future Innovation Lab for Livestock Systems

INNOVATION SUMMARY:
NIRS EQUATIONS FOR LOCAL FEED TYPES

Near Infrared Reflectance Spectroscopy (NIRS) machines are programmed with universal FOSS equations developed by the manufacturing companies. These universal equations are crucial for determining the nutritive value of feeds and forages. Extrapolation of these equations outside the range of reference samples reduces the accuracy of predictions, undermining the objective of NIRS analysis. As part of the EQUIP FEED project, reference equations for local feed types are under development in Ethiopia and Burkina Faso that can help increase prediction accuracy for those contexts. During the past 20 years, 70 equations have been developed for local feed types in Ethiopia and Burkina Faso.

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

Although useful in certain circumstances and contexts, universal equations developed for general feed categories may not be adequately accurate for local feed resources in Ethiopia and Burkina Faso. The quality of feeds depends on various factors such as forage breed, soil type, processing technology and stage of maturity of the forage, all of which can be potentially different in the contexts of Ethiopia and Burkina Faso compared to the environment of the reference samples. Extrapolation or use of universal equations outside the range of the reference samples in the universal equations may give inaccurate results. An improved speed, efficiency and accuracy in the analysis of the nutritive value of various local feeds using NIRS equations can help farmers identify the right feeds for undertaking effective least cost rations, thereby improving farm productivity and profitability.

The Innovation and Potential Benefits

New NIRS equations for local feed types can be used by animal nutrition laboratories in Ethiopia and Burkina Faso to improve the accuracy of prediction of nutritive value of fodder. This will improve the effectiveness of ration formulation and ultimately improve livestock productivity and profitability. So far, a total of 80 new equations have been developed for local feed types in Ethiopia and Burkina Faso and are shared in the ILRI NIRS micro site.

Application of the Innovation

This innovation can be applied by animal nutrition laboratories. Adoption of this innovation by animal nutrition laboratories can improve their effectiveness, which can lead to benefits for other livestock stakeholders. Animal nutrition laboratories that joined the NIRS Community of Practice can access the new equations through the networked NIRS systems. More members can be added to the existing network as they appear and avoid the cost and difficulty of building a NIRS system from scratch.