



©FAO Bhutan

## STRENGTHENING CAPACITY FOR ENHANCED ANIMAL NUTRITION SERVICES

May 2022

SDGs:



Country:

Bhutan

Project Code:

TCP/BHU/3704

FAO Contribution:

USD 200 000

Duration:

1 January 2019 – 31 December 2021

Contact Info:

FAO Representation in Bhutan  
FAO-BT@fao.org

### Implementing Partners

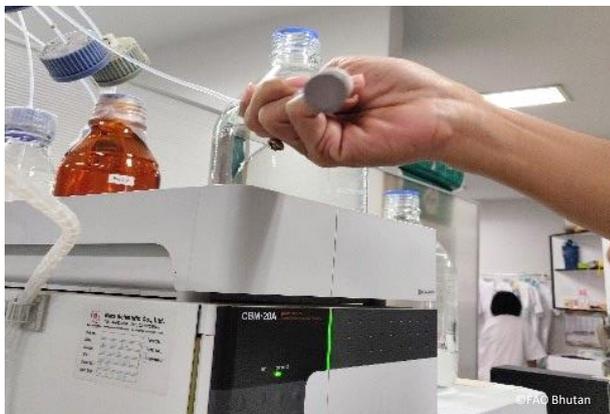
Ministry of Agriculture and Forests.

### Beneficiaries

Livestock farmers and animal nutrition services in Bhutan.

### Country Programming Framework (CPF) Outputs

CPF Outcome 4: Sustainable use of natural resources through institutional and community based approach and alternatives.



### BACKGROUND

Bhutanese farmers practise mixed farming, with crops and livestock rearing forming an integral part of their livelihoods, particularly in rural communities. At farmers' level, agriculture, livestock and forest interventions are integrated; farmers depend on livestock for manure for soil fertility, and dairy products for nutrition and income, while forests provide feed and fodder for animals, timber for construction, wood for heating and cooking, and non-wood forest products for consumption and sale. Communities in higher altitudes depend more on livestock as the farming of crops has limited scope. In semi-urban areas, commercial dairy and other livestock products have also emerged with improved breeds. Animal nutrition has thus become more important than ever before.

The only animal nutrition laboratory (ANL) equipped to analyse feed and fodder samples in the country is in Jakar, in north-central Bhutan. However, the laboratory lacks capacity in terms of both institutional and human resources. Owing to insufficient government funding, the ANL is not fully functional and, despite the important national mandate of the laboratory, the government has not been able to equip it adequately, nor train personnel to carry out important feed analysis functions. Some of the existing equipment is obsolete and not serviceable, while laboratory staff members have not received adequate training in the use of the laboratory facilities. The ANL needs equipment for the analysis of feed and fodder samples. Training and refresher courses are also required to ensure that laboratory staff members are kept abreast of the latest developments in livestock nutrition.

FAO assistance was therefore requested to build the institutional capacity of the ANL and the human resources capacity of 32 ANL staff members. The senior bureaucrats are now aware of the importance of livestock nutrition and its positive impact on productivity.

### IMPACT

The project has successfully enhanced the capacity of the animal nutrition services of Bhutan, ensuring the availability of good-quality and safe animal feed by providing training and equipment, and thus contributing to the country's sustainable food security and management of natural resources.

### ACHIEVEMENT OF RESULTS

The project had two outputs, both of which were achieved. The first regarded the capacity development of ANL personnel. Under this output, training was provided to three staff members in the use of High-Performance Liquid Chromatography (HPLC) to determine the amino acid content of feed and fodder samples. The training was conducted in Thailand by the Department of Livestock Development (DLD). Test kits were then procured for the analysis of aflatoxin in feed and training in their use was provided to 32 laboratory personnel by the three trained ANL staff members. The second output concerned the strengthening of institutional capacity within the ANL. To this end, the project supplied and installed HPLC equipment for amino acid analysis at the ANL and provided training in its use to four laboratory personnel.

### IMPLEMENTATION OF WORK PLAN AND BUDGET

As a result of the COVID-19 pandemic, delays occurred in the recruitment of experts and the procurement and distribution of materials. A no-cost extension was requested to ensure that all project activities could be completed. This was granted and the project successfully achieved the envisaged outputs. All activities were implemented within the planned budget.

All risks, including those caused by the COVID-19 pandemic, were managed by the project team, which sourced inter-country expertise wherever possible to mitigate the travel restrictions imposed in response to the pandemic.

### FOLLOW-UP FOR GOVERNMENT ATTENTION

It is recommended that the government continue to sustain the institutional and human resources capacity of the ANL. The government's promotion of commercial livestock farms will require more laboratory services in improving animal nutrition.

## SUSTAINABILITY

### 1. Capacity development

The Livestock Act legislates for the capacity development of a quality control laboratory. The sustainability of the ANL is thus ensured by government support. Government policies on the promotion of rural livelihoods through climate-resilient agriculture also provide an enabling framework for the promotion of precision farming, for which quality control is essential. In terms of institutional sustainability, the project was implemented in the National Research and Development Centre for Animal Nutrition, one of the primary organizations under the Department of Livestock.

Feed millers and farmers have benefited significantly from the enhanced quality of feed raw materials and complete feed. The analysis of feed and the benefits deriving from this have created an alliance that will help to ensure project sustainability.

During project implementation, various research centres and organization within the Ministry of Agriculture and Forests liaised with the project through the sourcing of expertise and collaborative work. This has helped to embed the project results at an institutional level. Finally, sustainability will be ensured by the increased emphasis on skill and human resources development.

### 2. Gender equality

Most project beneficiaries in terms of access to training and materials were women.

### 3. Environmental sustainability

The project had no impact on the environment.



### 4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

The project has ensured safe food production through the analysis of feed samples and has greatly helped livestock farmers as a result. Overall, the project has contributed to sustainable food security and rural livelihoods through the promotion of Good Agricultural Practices, safe feed production and feed safety.

### 5. Technological sustainability

Under the project, some technologies, such as the production of ingredients that are safe for livestock and humans, were improvised locally.

Capacity development activities involving rural youth and communities were initiated under the project. Extension officials at grassroot level were also trained and will continue to provide support after the end of the project.

### 6. Economic sustainability

To ensure that the facilities provided by the project are fully utilized, the government has provided funding to procure laboratory consumables for analysis. Regular support to food security and the promotion of appropriate farm technologies and capacity-building also feature strongly in government programmes.

Some of the technologies improvised with project support can be afforded by local communities.



## ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

<b>Expected Impact</b>	<b>Sustainable food security and natural resources management in Bhutan</b>		
<b>Outcome</b>	Enhanced capacity of Animal Nutrition Services in Bhutan		
	<b>Indicator</b>	The functional capacity of the National Animal Nutrition Laboratory (ANL) is enhanced.	
	<b>Baseline</b>	0	
	<b>End Target</b>	1	
	<b>Comments and follow-up action to be taken</b>	The laboratory has received the HPLC equipment for the analysis of feed samples to determine the presence of amino acids, aflatoxin and antibiotics. Training has also been provided to ANL personnel.	
<b>Output 1</b>			
Human resource capacity strengthened for animal nutrition laboratory services			
<b>Indicators</b>		<b>Target</b>	<b>Achieved</b>
Capacity of 32 staff of animal nutrition laboratory strengthened.		32	Yes
<b>Baseline</b>	0		
<b>Comments</b>	This output was fully achieved.		
<b>Activity 1.1</b>			
Using HPLC for determining Amino Acid content of feed and fodder samples			
<b>Achieved</b>		Yes	
<b>Comments</b>		The capacity of three staff members of the ANL was strengthened by a 15-day training course in the use of HPLC to determine the amino acid content of feed and fodder samples. Training was conducted in Thailand by DLD, Thailand.	
<b>Activity 1.2</b>			
Use of test kits for analysis of antibiotics in feed			
<b>Achieved</b>		Yes	
<b>Comments</b>		Test kits were procured and used for qualitative assessment of aflatoxin in feeds. A total of 32 ANL personnel received training provided by the three previously trained ANL staff members.	
<b>Activity 1.3</b>			
Reporting to FAO			
<b>Achieved</b>		Yes	
<b>Comments</b>		Two progress reports were submitted.	
<b>Output 2</b>			
Institutional capacity of animal nutrition laboratory strengthened for providing enhanced animal nutrition services			
<b>Indicators</b>		<b>Target</b>	<b>Achieved</b>
ANL equipped with necessary equipment for analysis of feed and fodder samples.		1	Yes
<b>Baseline</b>	0		
<b>Comments</b>	The ANL can now analyse two amino acids (lysine and methionine), which are sulphur-limiting amino acids and critical in animal nutrition.		
<b>Activity 2.1</b>			
High Performance Liquid Chromatography (HPLC) for Amino Acid analysis			
<b>Achieved</b>		Yes	
<b>Comments</b>		The ANL can analyse two amino acids (lysine and methionine) which are sulphur-limiting amino acids and critical in animal nutrition.	
<b>Activity 2.2</b>			
Installation of HPLC			
<b>Achieved</b>		Yes	
<b>Comments</b>		HPLC equipment was supplied and installed by Pacific Commercial Company (P) Ltd. based in Nepal. Four laboratory personnel from the ANL were trained to operate the HPLC for the analysis of amino acids.	

**Partnerships and Outreach**

For more information, please contact: [Reporting@fao.org](mailto:Reporting@fao.org)

**Food and Agriculture Organization of the United Nations**

Viale delle Terme di Caracalla

00153 Rome, Italy