

## **VOLUNTEER EXPERT SCOPE OF WORK**

### **Assessment of Dietary Requirements of Dairy Cattle and Formulation of Feed to Meet Identified Nutritional Requirements**

**Location of Assignment:** Sri Lanka

**Proposed Level of Effort:** about 8 weeks

**Anticipated Start Date:** August 2020 (tentative)

**Anticipated End Date:** October 2020 (tentative)

#### **Objectives of the Assignment:**

The objective of this activity is to assess nutritional feed deficiencies for Sri Lankan dairy cows as per their dietary requirements at different stages of the lactation cycle. Based on the findings, the volunteer expert will formulate a range of feeds in the form of pelleted concentrates and using by-products from the fish processing industry as the main protein source to meet those requirements.

#### **Background:**

International Executive Service Corps (IESC) is implementing a U.S. Department of Agriculture (USDA) Food for Progress funded project in Sri Lanka. The four and a half-year Market-Oriented Dairy (MOD) Project supports farmers and enterprises to meet the increased demand for dairy and aims to catalyze sustainable growth in Sri Lanka's dairy sector. The project will increase productivity and expand the trade of milk and milk products in Sri Lanka. In partnership with the private and public sector, the project will increase milk production of participating farmers and farms to 83,400 metric tons by 2022—an average annual growth of 18 percent, for a life of project growth of 127 percent. The project will ensure 80 percent of beneficiary farmers are earning a price premium due to milk quality.

In meeting MOD's target of increasing milk production to almost 84,000 MT during a short period of just four years, it is imperative that the project considers a portfolio of beneficiaries ranging from 5,400 small farmers as well as large farms in the country.

#### **Problem Statement:**

The productivity and economic contribution of the dairy sector in Sri Lanka is significantly below its potential. This is primarily due to industry constraints that include: insufficient amount of feed and seasonal variation in the availability of quality feed, poor animal health, inefficient management and utilization of available resources for livestock production, and limited extension services which lead to poor linkages between technology sources such as research centers and end users. Among these constraints, the scarcity of high-quality feed along with improper (inadequate and unbalanced) feed management is considered a major impediment for increasing livestock productivity.

Based on the findings from an assessment report prepared by the University of Florida faculty members, significant knowledge gaps exist in animal nutrition among dairy producers. In addition, the concept of nutrient-balanced diet formulation is lacking, resulting in inadequate levels of nutrients supplied to the dairy cows.

To address these nutrition gaps, most farmers use concentrate feed and silage available in the market. Farmers find concentrate feed very costly and, in most instances, lacking a range of products to suite different stages in the cows' lactation cycle.

Understanding these gaps in the market, Eco Extract (Pvt) Ltd., whose management team has extensive experience in the fish processing industry, is investing in developing cost-effective nutritional feed for dairy cattle. Equipment and machinery have already been purchased. As a partner of the Market-Oriented Dairy (MOD) Project, they have requested technical assistance to develop a range of concentrate feed and silage primarily based on fish and other ingredients such as full crop silage, soybean meal, and maize meal available locally.

MOD is proposing to obtain the services of an experienced Volunteer Ruminant/Livestock Nutritionist to assist Eco Extracts to develop a range of high quality feed products that can be price competitive in the market, making them more affordable to small scale farmers who generally have a multi species concept on their farms.

### **Approach:**

The volunteer ruminant nutritionist will liaise with Eco Extract Senior Management to obtain a firsthand understanding of the feed formulation equipment they have ordered, details on the ingredients and type of products the company plans to produce prior to arrival in country. The volunteer will have a strong background in the nutritional requirements of dairy cattle at different physiological stages including growth, pregnancy, and lactation. When in country and in consultation with the Eco Extract team, he/she will conduct farm visits at various MOD affiliated dairy farms to assess the nutrient deficiencies of dairy cows. He/She may also meet with relevant government officials to understand what is required of commercial animal feed in the country and to obtain information on dairy cow nutrition related issues in the country. The Volunteer Expert will consider the dairy management systems in Sri Lanka and nutritional feeding deficiencies that go with it in order to formulate concentrates that will provide the extra energy and protein that dairy cows need in addition to the feed they forage and to meet modern production levels. Following the formulation of the feed concentrates, the Volunteer Expert will conduct trial runs evaluating the efficacy of the newly developed concentrates in improving production of lactating dairy cows. The results from these trial runs will help to prepare for the commercial production of the new concentrates.

The Volunteer Expert will also conduct a general seminar to industry stakeholders with the MOD project on the importance of animal nutrition and methods of addressing any gaps. In addition, the volunteer will emphasize the importance of using good quality concentrates to meet specific nutrient deficiencies in dairy cattle.

**Tasks:**

- Acquire good understanding of nutrient requirements at different physiological stages of dairy cattle including growth, pregnancy, and lactation
- Assess the quantity and quality of feed required at different physiological stages and determine nutritional feed gaps of dairy cattle in Sri Lanka
- Formulate rations for dairy cows in various physiological stages in their lactation cycle with special emphasis on increasing milk yields of animals
- Assist in the analysis of nutritional values of proposed feed concentrate ingredients
- Assist in developing laboratory manuals for specific feed concentrate ingredient analysis and testing
- Train Eco Extract staff in analysis and formulation of feed concentrate ingredients
- Conduct a research trial to evaluate the efficacy of proposed commercial concentrate in improving production from dairy cattle
- Prepare guidelines for the inclusion limit and proper dilution of the commercial concentrate in diet offered to dairy cows
- Conduct a general seminar for industry stakeholders on the importance of nutritional feeding and milk production

**Deliverables:**

- A brief assessment report on nutrient requirements and specific nutritional gaps of Sri Lankan dairy cows
- Guidelines for using commercial concentrates and silage for increasing milk production, to include a discussion on quantity and quality
- A laboratory manual detailing the process of analyzing specific feed ingredients once the feed composition is finalized and before the concentrate is made
- A power point presentation on the importance of nutritional feeding and milk production
- A brief trip report including results of the research trial and a list of persons met (all company specific confidential information should not be included)

**Level of Effort:**

The assignment will commence on/about early August and will continue through October 30 of 2020 – this is tentative and based on COVID-19 and international travel restrictions.

The level of effort for the assignment is about eight weeks, which includes work and travel days. This assignment could potentially be split into two separate trips of four weeks each.

**Reporting Relationship:**

The Nutrition Volunteer Expert will report to the Project Director of the MOD Project and will work closely with Deputy Project Director and others as required.

## **Administration and Logistics:**

The MOD Project Office in Colombo will provide hotel accommodation for the volunteer when in Colombo. All accommodation including meals will be provided by the respective partner when visiting farms and other public and private sector officials, as well as when working with the partner at the plant. Accommodation will be paid for by the project when the volunteer is not with the project partner. He/She must have his/her own computer and all reports are to be submitted using Microsoft Office. Volunteer airfare to and from Sri Lanka will be purchased by the project and a per diem will be provided to the volunteer based on US Department of State per diem rates.

## **Qualifications:**

- At least 5 years of experience in feed formulation for dairy cattle at a commercial level
- Knowledge of rendering marine species and poultry during feed formulation
- A degree in Animal Science with a focus on ruminant and livestock nutrition (including monogastric species)
- Good knowledge of ruminant nutrition physiology and in the feed resources nutritive value and utilization techniques
- Prior experience working in the dairy sector
- Ability to work effectively in cross-cultural contexts and prior experience working in a developing country context is preferable
- Excellent interpersonal and communication skills in English, including writing reports
- Ability to address issues, challenges, questions, and concerns in a professional, respectful, logical, and timely manner.