Cargills-NADeP-producer partnership in dairy farming
An assessment of efficiency and returns

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National Agribusiness Development Programme (NADeP)

National Agribusiness Development Programme under the Development and Special Project Division of Presidential Secretariat of Sri Lanka undertakes a partnership approach to dairy farming to increase productivity and incomes of farmers. This is one of the agricultural value chain development efforts implemented as public private people partnership (PPPP) projects throughout the country.

Objective of Dairy Project

The dairy project was implemented jointly with Cargills PLC in 2015. The main purpose of the project is to increase animal productivity, build farmer capacities, enhance feed and feed quality while developing the infrastructure to meet the increasing demand as well as enhancing storage capacity during surplus through a collaborative effort from the private and public sector.

Project Beneficiaries and Key Outcome

Under this project, dairy farmers in Central, Northern, North Central and North Western provinces were selected. Two types of beneficiary farmers are targeted: small scale farmers and medium scale farmers. As small scale farmers, 2000 farmers are selected and as medium scale farmers, 700 farmers are selected. Key outcome of this project is increase milk production by 31,000 liters per day to add 13 million liters per annum by the end of 2 years to national milk production.

Project Benefits


Grass choppers


Milking machines


Milk cans


Cattle sheds

In addition to the equipment provided by NADeP, Cargills PLC establishes necessary chilling centre facilities to purchase milk and expand capacity to accommodate additional milk generated from the project. It provides technical assistance to farmers especially related to equipment use and arranges animal feed, medicine and other basic inputs. Bank loans to farmers under concessionary rates are included in the project package .

Research Study Area and Data Collection

The study is focused on estimating technical efficiency of contract dairy farming, factors determining technical efficiency, benefit cost ratio analysis, farmers' attitude towards the project and their suggestions to improve the project. Five GN divisions in Hettipola area in Kurunegala district were selected as the geographical location for this study and 60 contract dairy farmer beneficiaries were selected using random sampling technique as the sample. Data collection was done with the use of structured questionnaire.

Key Outcomes of the Research Study

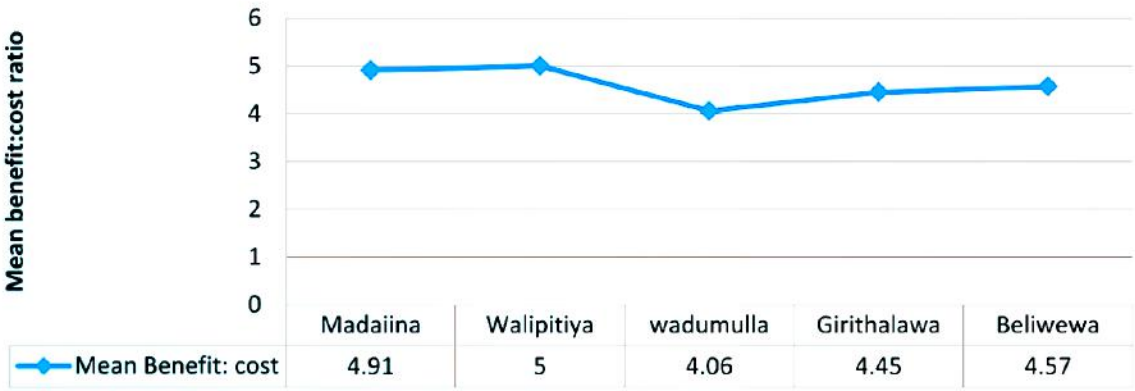
Benefit Cost Ratio Analysis of Dairy Farming.

Cost benefit analysis of smallholder dairy farm is important pre-requisite for policy formulations aimed at improving productivity level of farmers. Concentrate cost per month per herd, mineral cost per month, veterinary cost per month, electricity cost per month, water cost per month are considered as cost components. Two analyses were done with labor wage per month according to labor wage rate in the area and without labor wage per month. Generally, total cash income earned per month from dairy farm is from the sale of raw milk to chilling centre and neighbors. In this area, dairy farming is done using the help of family members. Farmers do not use hired labor for dairy farming activities. According to the analysis, mean benefit cost ratios without labor values are 4.58 and mean benefit cost ratio with labor value is 0.83.

Item	Mean	Standard deviation	Minimum	Maximum
Benefit cost ratio with labor	0.83	0.66	0.16	2.86
Benefit cost ratio without labor	4.58	3.28	0.38	16.51

Benefit Cost Ratio Analysis According to Grama Niladari Divisions.

Contract dairy farmer beneficiaries in the sample are divided according to GN divisions they belong and mean benefit cost ratios of farmers are calculated in each GN divisions. One of the common characteristics of all the GN divisions is that farmers do not use hired labor. Highest mean benefit cost ratio is reported from Walipitiya GN division. Majority of the farmers in Walipitiya GN division have experience between 5 to 10 years in dairy farming. It is helpful to minimize unnecessary costs by practicing good management and they earn more income by selling manure in addition.



Technical Efficiency Analysis

➤ Stochastic Production Frontier.

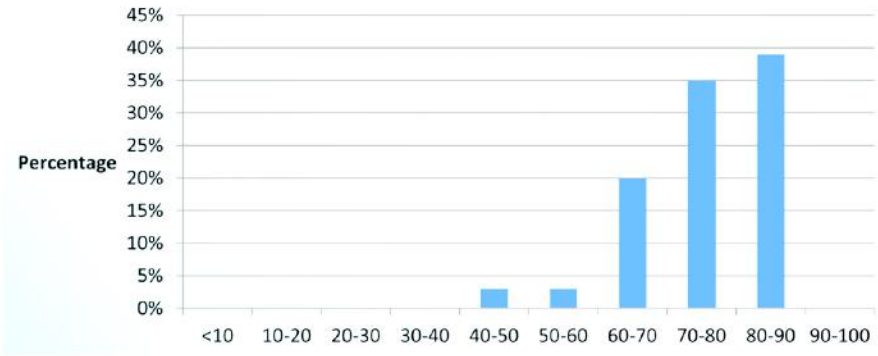
Technical efficiency analysis of each farm has been calculated using stochastic frontier with Cobb-Douglas specification model. A maximum likelihood estimation of the stochastic frontier model was carried out for milk production per day per cow as a function of fodder amount per day, concentrate amount per day, mineral amount per day, family hours per day, veterinary cost per day as input using Cobb-Douglas specification The results show that only the family labor hours per day is significant determinant of milk production at 90% level of probability. Other variables are not significant at 90% level of probability.

➤ Factors determining the technical efficiency.

The determinants of technical efficiency such as education level of farmers, age, experience in dairy farming, experience in contract farming, number of training and NADeP input were investigated NADeP input is the only variable which is significantly affecting the technical efficiency at 90% level of probability. It is positively correlated with technical efficiency.

➤ Distribution of efficiency levels.

Efficiency levels of farms have a right skewed distribution.39% of farmers lie between 80%-90% efficiency level. 35% of farmers lie between 70%-80% efficiency level. 20% of farmers lie between 60%-70% efficiency level. Mean technical efficiency of farm is 75.01%. The lowest technical efficiency value is 42.88 % and the highest technical efficiency value is 89.37%. According to the mean of technical efficiency in the sample, there is a possibility to increase further technical efficiency in farmers by 24.99%. NADeP can plan its future project target to increase the efficiency level by increasing farmers' technological adoption and efficient labour use.



Farmers' attitude towards the project and Farmers' expected benefits.

90% of the farmers in the sample are satisfied with the project. According to the value which is allocated for the farmers' preferences using reverse scoring method, highest value is allocated for financial support. Higher price for the product, access to input, support to expand dairy farming are secondary. Farmers expect to purchase especially the improved breeds.