

EMPIRICAL IDENTIFICATION OF ECO-SPECIFIC DAIRY FARMING
SYSTEMS IN SRI LANKA AND ESTIMATION OF THEIR ECONOMIC
PERFORMANCE.

by

DEEPABANDHU RATNAYAKE

Thesis

submitted in partial fulfilment of the requirements
for the degree of

MASTER OF PHILOSOPHY

in the

POSTGRADUATE INSTITUTE OF AGRICULTURE

of the

UNIVERSITY OF PERADENIYA

SRI LANKA

September, 1996

C 338.1771

R17



456673

AGRICULTURE LIBRARY
UNIVERSITY OF PERADENIYA

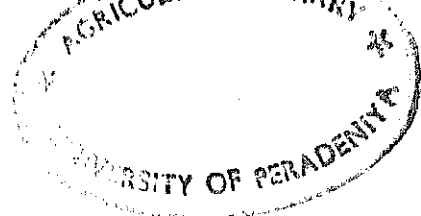
*456673

ABSTRACT

Sri Lanka produces about 35 percent of its national milk requirement. This production has remained static for the past two decades. To enhance milk production in the country, the governments have implemented several dairy development programmes. They have not achieved expected objectives due to several reasons. Among them, weakly defined dairy farming systems plays a crucial role. These farming systems are not capable enough to explain the existing heterogeneity in the dairy sector. This study was designed to identify empirically valid agro-ecologically differentiated dairy farming systems. The objectives of this study are to identify eco-specific dairy farming systems and to find out their output elasticities, production functions and profit margins.

Data were collected through a cross sectional field survey among dairy farmers in 25 agro-ecological zones including the estate sector and the Mahaweli Settlement Scheme. In addition secondary information from various reports was used. Cluster analysis was done to identify unique dairy farming systems. Profit margins were calculated and production functions were fitted using regression analysis.

The cluster analysis identified five dairy farming systems from the data set (excluding Northern and Eastern Provinces). They are the Dry Zone Dairy Farming System (DZDFS), Semi-Dry Dairy Farming System (SDDFS), Wet Zone



Dairy Farming System (WZDFS), Hill Country Dairy Farming System (HCDFS) and the Estate Based Dairy Farming System (EBDFS).

The DZDFS is spread over DL₁, DL₂, and DL_{3,5} agro-ecological zones and 83 percent of the variation in the milk productivity is explained by the independent variables considered. The mean annual expenditure of the system is Rs. 15,500/=, out of which 5,000/= is spent on family labour. On average, a cattle rearing family earns a net profit of Rs. 21,000/= per year. The SDDFS is found in IL₁, IL₂, IL₃, and IM₁ agro-ecological zones and the Mahaweli Irrigation Settlement schemes. The considered model explained 80 percent of the yield variation. The cost of production of milk in the system is Rs. 5.00 per litre. Expenses made on family labour and concentrates feeding are high as 60 percent of the total cost. Profit margin remained at Rs. 9,500/= per annum. Dairy farmers in IM₂, IM₃, WL₁, WL₂, WL₃, WL₄, WM₁ and WU₂ agro-ecological zones are categorized into the WZDFS and 80 percent of production variability is explained by the independent variables in the model. They incur Rs. 22,000/= as the total cost against the profit margin of Rs. 10,000/=. Seventy-nine percent of the total income comes from milk sales. Dairy farmers in IU₂, IU₃, WM₂, WM₃, and WU₃ identified as HCDFS. Seventy-three percent of the variation in the milk productivity is explained by the independent variables in the regression model. Annually, the farmers spend Rs.

25,000/= on the dairy units and 56 percent consists of the cost of family labour and concentrates. The farmers in IU₁ and WU₁ and the estates are categorized into the EBDFS and 81 percent of production variability in the system is explained by the independent variables. Generally, they incur a heavy cost on feeding animals. It is about 44 percent out of Rs. 25,000/=. They are the farmers who spend the highest amount on feeding. However, they obtain a better profit margin through the dairying, at Rs. 22,000/= per annum.