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**DAIRY PRODUCTION IN TONGA,
MAINLY FROM GRAZED PASTURES:
WITH ANALYSES AND RECOMMENDATIONS
BASED ON EVIDENCE FROM
TROPICAL AND TEMPERATE CONDITIONS**

**A thesis presented in partial fulfilment of the requirements for the degree of
Master of Applied Science in Animal Science
at Massey University, Palmerston North, New Zealand.**



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This thesis is dedicated to my parents, Halafīhi and Melape Fisi'ihoi,
who devoted their lives to educating us in all dimensions of life,
physically, mentally and spiritually.

ABSTRACT

This study **aimed** to combine information from temperate and tropical dairy farming systems as a means to improve milk production in Tonga. Modern management techniques have been established and used successfully in larger tropical dairy industries (e.g. in Australia), optimising milk yields. Similarly, in temperate countries such as New Zealand, expert management techniques have been applied to increase production, particularly in feeding and grazing management. The intention of the present study is to identify methods which are relevant to dairy farming in Tonga, specifically, methods of management and resource control.

This study was conducted through a review of published literature, which analysed, compared and contrasted various systems of dairying management in temperate and tropical conditions. The recommendations and management techniques discussed here were selected on the basis of their feasibility, simplicity and profitability in relation to the environment and potential resources in Tonga.

The **results** obtained in this research reveal that milk production can be increased in Tonga. Several studies have examined various management techniques aimed at optimising milk yield in both tropical and temperate countries and produced excellent results. Production can be increased when cows of heat tolerant breeds are given shade, sprinkled with water, grazed in higher quality pastures and provided with improved feeding systems. Not only is the milk yield increased by using such methods, but live weight, feed intake, health and fertility are also all improved. Pasture feeding value can be improved by management techniques such as mowing or slashing pastures, proper timing of rotational grazing, increased use of grass-legumes mixtures and maintaining nutrient cycling within the pasture ecosystem.

In **conclusion**, the improvement of milk production in Tonga will depend on the influence of environmental factors, financial resources and skilful management of the cows and their environment by farmers. Milk yields will not be as high as those in temperate regions, but the improvements are expected to benefit both animals and

farmers and result in an increase in current production levels. The recommended management systems mentioned in this paper will undoubtedly increase milk yields, but it is the farmers' responsibility to modify and incorporate these recommendations in relation to the environmental temperatures, feeding systems and available resources. Not all dairying techniques can be used, but an awareness of them may be useful for future dairy farming development and research. Lastly, it is the individuals' responsibility to challenge the use of various techniques and to face the difficulties of farming dairy cattle in the tropics.

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