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**A review of the nature of beef cattle industry in the Solomon
Islands with emphasis on Soil Fertility factors influencing pasture
production on selected farms**

**A thesis presented in partial fulfilment of the
requirements for the Masters Degree in Soil Science**

at Massey University

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ABSTRACT

A general review of primary production in the Solomon Islands indicated that cattle grazing is mainly an activity involving smallholder farmers for cash income and consumption for their extended families. The review and a farm survey indicated that the productive capacity of pasture soils and many agricultural soils in Solomon Islands, continues to decline because poor, near-subsistence, farmers are unable, for economic reasons and lack of training, to provide land management strategies for crops and grazed pastures that maintain or improve soil fertility.

This thesis reports on three investigations undertaken to assess the fertility levels of some pasture soils in Solomon Islands. This knowledge is required to develop soil fertility management strategies to assist in sustaining the productivity of grazed pasture and the beef cattle industry in the country. The review indicated that most soils are developed from volcanic materials and a few from corals. Most land considered suitable for agricultural use has not been characterised and recorded. Increasingly, the soils require additional sources of nutrients as they only obtain nutrients from decomposed organic matter and weathering soil minerals.

Four farms (ASI, ILA, NAC, and STJT) were selected and surveyed focussing on examining their general background information, identification of pasture species, and evaluating the efficiency of record keeping practices. The pasture grass/legume species identified on the farms are T-grass, Carpet grass, Paragrass, White clover, Pueru, Centro and Mimosa. Attempts to maintain soil fertility were based on traditional methods of using local waste materials as organic manures. The survey indicated that farmers are lacking in knowledge and did not value the importance of farm record keeping. Therefore, farm records were not available to provide sufficient information to construct a nutrient budget for each farm.

Soils and herbage samples were collected in different places within the study areas. Soils were collected at 0-7.5 cm and 7.5-15 cm depths. These samples were chemically analysed and used in a glasshouse trial to test the growth response of white clover (*T.Repens*) to phosphate (P) and potassium (K) and sulphur (S) fertilizer additions. Low soil P test values were common, however analysis of the field sampled herbage did not confirm P deficiency. In the glasshouse trial, however legume growth was highly responsive to soil type, initial soil P status and added P fertiliser. Legume growth was non-responsive to application of K and S.

Recommendations relating to farm record keeping, soils and herbage tests results, and alternative strategies to improve/maintain the soil fertility are discussed. Future research directions that should be taken to boost the production of pasture and beef cattle industry are also discussed.

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