WHOLE FARM PLANNING

FOR A LARGE SCALE SHEEP AND BEEF CATTLE FARM

"A CASE STUDY"

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1991

A thesis presented in partial fulfilment
of the requirements for the degree of
Master of Agricultural Science in
Farm Management
at
Massey University, New Zealand

ABSTRACT

The use of pasture by grazing animals is the basis of New Zealand pastoral agriculture. Therefore, a major part of the management of pastoral-based farms concerns decisions about the allocation of feed to livestock.

The aims of this study were first, to develop a linear programming (LP) model for the case study farm. Secondly, to use this model to determine optimal farm plans and associated information. Thirdly, to evaluate the technique as to its suitability as an aid to farm planning.

The LP model developed in this study was built to investigate alternative means of increasing farm profitability for Limestone Downs, a large sheep and beef cattle property situated on Raglan County. The model allows pasture to be used by grazing animals in 12 periods throughout the year, subject to maximum and minimum constraints on pasture cover which have the effect of limiting the amount of feed that can be transferred from one period to the next. Supplementary feed activities within the model include hay and nitrogen.

The animal production activities considered by the model were: (1) a breeding sheep system producing meat and wool; (2) a beef cattle system comprising breeding and finishing stock; and (3) a bull beef system.

The model was used to optimise farm surplus ($/farm).

The results demonstrated that farm profitability could be substancially increased in direct proportion to the rate at which bull beef substitutes for, firstly sheep, and secondly breeding and finishing cattle.

However, to attain higher profits, current management constraints, in particular the maximum number of Friesian bulls and/or the minimum number of breeding ewes on the property will have to be overcome. Investigation of these issues as well as the effect of climatic variability on the various plans derived are clearly identified as areas requiring further study and consideration.

ACKNOWLEDGMENTS

I wish to express my gratitude to Mr. Kevin I. Lowe, Associate Professor in Farm Management, Massey University, for his guidance and assistance in all aspects of this study. We both travelled a long way to make this study possible. He is also responsible for a considerable improvement in my oral comprehension of the Kiwi English.

Also to the staff at Limestone Downs who shared their experience and good humour and willingly gave their time during the many times I was there.

I benefited from discussions with several other staff members at Massey University, in particular Mr. Alan F. McRae, from the numerous times I knocked on his door.

I am also very grateful to Professor Frank M. Anderson for his time and patience in introducing me to linear programming in the early stages of this study.

Special thanks to Dr. Ian Brookes, who developed the models used to calculate animal feed requirements.

Other thanks go to:

Denise and Christine,
my classmates for useful discussions and a bit of distraction,
my flatmates and friends for their friendship and help,

and

my parents, for their encouragement and "financial" support.

Partial funding of this study was provided by the Ministry of External Relations and Trade.

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