RISK-RETURN ANALYSIS OF HIGH PERFORMING ORGANIC AND CONVENTIONAL MEAT PRODUCTION SYSTEMS

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Applied Science

in

Agricultural Systems and Management

at Massey University, Palmerston North, New Zealand

Vasco Beheregaray Neto

2001

ABSTRACT

Demand for organic meat is growing rapidly and so is the interest of New Zealand farmers in producing it. However, information on the advantages of such a system is limited. Studies that have evaluated organic farming systems were either carried out overseas under different conditions or were solely based on comparisons of before versus after the conversion to organic farming, instead of organic versus alternative investment options. The present study examines the economic viability of options available to commercial meat producers of high performance organic systems and a high performance conventional farming system in New Zealand. This involved a robust analysis evaluating the risk-return profiles of strategic enterprise changes and linking these to the risk-preferences of the managers. The Stockpol® model was used to simulate the biological feasibility and undertake a preliminary economic assessment of the alternatives: (i) Full organic and (ii) Intensive beef cattle and lamb finishing systems. A spreadsheet (Excel®) model was developed to undertake a full economic and risk analysis (@Risk®) of those options. Both the full organic and intensive conventional options had a greater chance of achieving long-term target sustainable business growth (SBG) for both case study farms than their base systems (status quo). Continuation of the base system had lower net operating profit after tax (NOPAT) for both case study farms and a lower probability of achieving acceptable levels of business growth. On Case Farm One, the NOPAT mean of the conventional was higher and exhibited greater variation than the full organic alternative. On Case Farm Two, the NOPAT mean of the full organic was also slightly lower than the conventional option but both options exhibited a very similar risk-return profile. The sensitivity regression analysis revealed for both farmers that market uncertainty had the greatest impact on NOPAT mean variability followed by premium price for organic farms, then production risk. So, premium price is an important factor influencing farm profitability. The Activity-Based Costing (ABC) has shown that organic farming had higher production costs than conventional farming because of changes in the enterprise structure. The cumulative distribution function of production costs showed greater variability for lamb meat under the full organic option while beef production costs has more variation under the conventional alternative. The challenges of organic farming are significant e.g. animal health, weeds, and marketing. Therefore, it requires progressive managers to develop business skills associated with strategic management to enhance their proactive production approach. Managers must be thinking differently in terms of product and market and an open mind and willingness to learn are essential requisites to cope with organic farming. Further research could involve this approach using other livestock enterprises and the models developed could be used to quantify the benefits gained from improvements to the system such as selection for parasite resistance.

Title:	Risk-return analysis of high performing organic and conventional meat production systems
Degree:	Master of Applied Science in Agricultural Systems and Management
Author:	Vasco Beheregaray-Neto
Year:	2001
Key words:	organic farming, activity based costing, strategic plan, modelling, model, progressive farmers, New Zealand, risk-return profile, sustainable business growth

ACKNOWLEDGEMENTS

I would like to express my utmost appreciation and deepest gratitude to my chief supervisor Nicola Shadbolt for her excellent guidance, advice, patience and accurate comments throughout the course of this research. This thesis has been a very rewarding learning experience and I have learnt a lot from you during my time at Massey University.

I also wish to express my gratitude to Dr. Alec Mackay for his encouragement and constructive criticism during the completion of this study.

I would like to acknowledge both the case study farmers and their families for participating in this study. Thank you very much for your hospitality during the farm visits.

I also wish to express my appreciation to my many friends in Brazil and New Zealand for providing an enjoyable environment, which enabled me to complete this study.
My major thanks to Wagner and Angela for their friendship and support since I first came to New Zealand. My special thanks to Patricia and Melissa for their constant humour, friendship and support, which was invaluable to me. My warmest gratitude to Gabriela for her moral support, patience, encouragement and love during the completion of this work.

I am grateful to the New Zealand Official Development Assistance (NZODA) of the Ministry of Foreign Affairs and Trade for the scholarship that allowed me to pursue this study.

Finally, I would like to express my immense gratitude to my family. These are my father Vasco, my mother Maria da Graça, stepmother Odete, sister Wanessa, my brother Sinuê and sister-in-law Leda. Your constant support, love and education throughout my life have been greatly appreciated.

This dream would not have been possible without you all.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES