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**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

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in
Agricultural Systems and Management**

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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.

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