ANALYSIS OF FARMER COGNITIVE STRUCTURES WITH RESPECT TO HIGH FECUNDITY SHEEP MANAGEMENT SYSTEMS

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ABSTRACT

The object of the research presented in this thesis is to evaluate three multivariate techniques for representing and analysing farmer cognitive structures. The context involves representation of farmer belief and attitude relationships relative to their overall attitude towards high fecundity sheep production systems. Modelling of behavioural determinants positions this research within the soft component of management and is aimed at moving from the 'art' to the 'science' (as defined by Nix, 1979) of soft systems management research.

Reviews of high fecundity production systems are presented such that the 'act' of high fecundity was defined as: "to maximise the weight of lamb weaned within flocks with a potential of 140% Lambs Born per Ewe Weaned."

The Fishbein and Ajzen (1979) model of reasoned action is extended to incorporate the differentiation of input and outcome concepts. Galileo Methodology (Woelfel et al, 1977), involving a system of interview methods and questionnaires in association with a Metric Multidimensional Scaling program, was used to measure the belief and attitude relationships and then spatially represent the cognitive structures of a sample of Western Hawkes Bay Farmers and a group of Experts.

The extension objective of this research is to identify differing cognitive structures between groups of farmers with and without experience of the act relative to an Expert group. Increasing levels of farmer experience resulted in stronger overall attitudes to the act.

Multiple Discriminant Analysis and Metric Multidimensional Scaling incorporating Procrustes rotations of spatial representations, identified the concepts of Maintaining Ewe Body Condition during Pregnancy, Reduced Stocking Rates and Multiple Lamb Survival as having the least degree of alignment. The

cognitive structures of the Experts and Inexperienced farmers are in closest alignment, contrary to the predicted result from the experiential learning theories discussed. It is hypothesised that individuals with similar cognitive structures may have differing overall attitudes. The Management of the extension process is discussed relative to this hypothesis, as the extensionist may need to assist managers to learn the 'right' relationships not just assist managers to learn, if the efficiency of learning processes are to be enhanced.

Extension messages for each group, derived by Linear Aggregation theory (Woelfel and Fink, 1980), relating the act to the concepts of Multiple Lamb Survival, Later Lambing, Multiple Lamb Growth Rates and Summer Pasture Control are predicted to strengthen the overall attitudes towards the act for both farmer groups.

A multiple regression version of the Fishbein and Ajzen model is presented as another means of predicting change in the overall attitude as a result of belief and attitude changes.

The conclusion from this study is that Multiple Discriminant Analysis and Multidimensional Scaling offer significant opportunities to develop soft systems research in a descriptive sense, provided issues regarding measurement adequacy are resolved.

The potential of multivariate analysis for predicting cognitive change appears to exist but requires validation through time series data analysis, and resolution of the behaviour determinants and how these change through time.

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All omissions and errors are the sole responsibility of the author.