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Understanding sheep/beef management using causal maps

Introduction

ARGOS is undertaking a long-term investigation of the sustainability of agriculture in NZ. For the sheep/beef sector, three main systems of conventional, integrated and organic management are being compared. The results from the first interviews of each ARGOS farmer by the social science team gave a detailed account of many aspects of farming, including management. Subsequently, we used a type of cognitive mapping called causal mapping to develop a better understanding of farm management, broadly defined to include economic, environmental and social factors, as seen by farmers.

Method

The mapping method we used allows farmers to first identify the factors important in the management of their farm system broadly defined, and then by making their own map by connecting factors that causally influence each other. We used a score from 1 to 10 to show how strong the factors were causally linked. Each farmer completed a map and data from each map was then used to prepare an aggregated or group map for all ARGOS farmers, then for each panel of farmers (those using one management system).

Results

The group map is shown in Figure 1 over the page. It shows all the factors linked by

scores of three or more. Group map data provide a measure of the overall importance of each factor using the sum of the weights of linkages to and from the factors. The most important factors, shown in red, include: farmer as decision maker, quality and quantity of production and satisfaction. Next in importance are those factors in green including financial aspects (cash farm income, farm working expenses), farm environmental health, fertiliser and soil fertility health, weather and climate and family needs.

Key features of the group map are:

- At the core of the map are personal and production factors.
- There is a strong production orientation.
- The environment is very important.
- Satisfaction is derived from varied factors.

There were some differences in the map for the three panels. The key themes were:

- Conventional: importance of weed and pest management, and customers and marketing, while the environment was less of an issue.
- Integrated: high quality and quantity of production and managing expenses to meet family needs and gain satisfaction.
- Organic: farm health to achieve off-farm product quality with lower expenses.

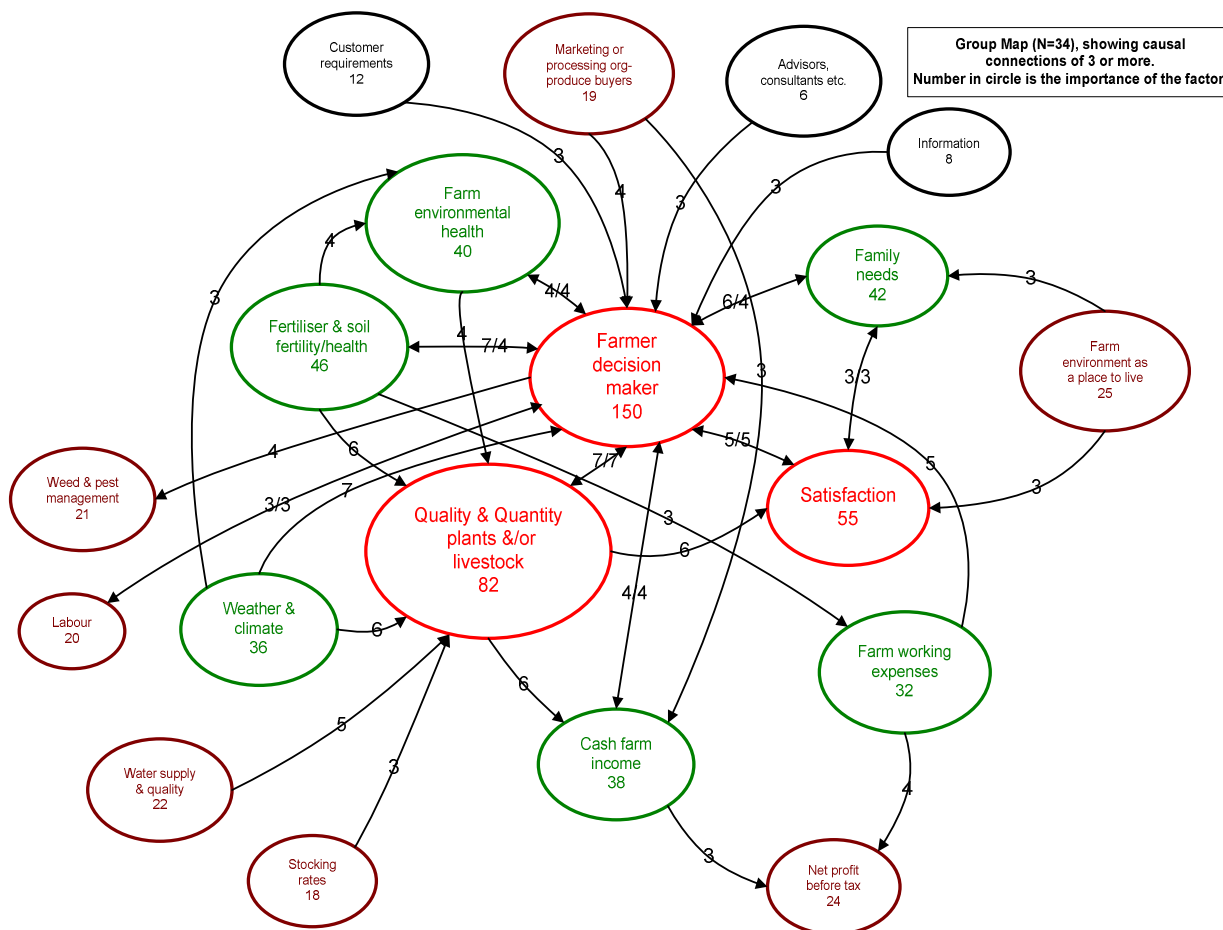
There were also differences among farmers based on further analysis of the data which identified four types (to be described more fully in another Argonote). The key themes for each were:

- Type 1, Conventional, external influences important (N=8, 1 organic, 3 integrated, 4 conventional).
- Type 2, off-farm work important (N=4, 1 organic, 2 integrated, 1 conventional).
- Type 3, external orientation (N=5, 2 organic, 1 integrated, 2 conventional).
- Type 4, ecological concern (N=10, 6 organic, 2 integrated, 2 conventional).

Conclusion

Many of the core factors in the map are connected with bidirectional arrows so they

are in a dynamic and complex relationship with each other. Changes in one factor would necessitate changes in nearby factors. Sheep/beef farmers are juggling many factors in the day-to-day and longer-term planning and management of their farms. It is because of this complexity of factors that farmers create ways through the complexity by developing a strategy or approach that makes sense to them and appears to meet their needs. These different strategies mean that there are distinctive and unique ways that farmers combine and relate factors despite having some core similarities. The results of this research for the panels and the types illustrate these different strategies.



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See the ARGOS website www.argos.org.nz for an overview of the project, and the full report, or contact:

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