

WHAT DRIVES CHANGE IN FARMERS' MANAGEMENT PRACTICES?

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Background

Farmers do not farm in isolation but are shaped and influenced by a complex web of relationships and influences that include other farmers, markets, industry, the community, regulatory bodies and the environment. Regional Council rules and regulations, including those recently introduced to implement the National Policy Statement for Freshwater Management, are only one of an array of things that are trying to influence farmers' land management practices, therefore regional councils are interested in understanding how best to encourage change.

Objective

The purpose of this study is to identify the networks that farmers are part of, understand how farmers' on-farm practices are influenced by these networks, and help the Hawke's Bay Regional Council (HBRC) understand how it can effectively engage with farmers through those networks to encourage change and adaptation of on-farm practices so as to reduce the impact of farming activities on water quality. The work of Isaac and Dawoe (2011) supports a focus on networks as they argue that social relations are important in the diffusion of information and process of adopting new farm management techniques.

Methods

Resilience & Actor-Network Theory

Resilience thinking is a lens of inquiry recognised as enabling a holistic understanding of both the social and ecological drivers of change in social-ecological systems (Davoudi, 2012). Folke (2016) argues that resilience recognises the interdependency of people and nature, or in this case farmers and their farms, and its use enables understanding, and development of, the capacity of communities to live with and adapt to change. This research will focus on describing the interdependencies between farmers and their farms and how both are transformed by a network of relationships and processes, not limited to humans.

Regional councils have historically been very good at assessing and reporting on the ecological, or physical, state of their region. Regular monitoring and reporting of social indicators is not currently undertaken by HBRC, which suggests that to date the ecological domain of the Hawke's Bay region has been privileged. This research seeks to contribute to the small but growing literature that explores social-ecological resilience in an integrated manner, privileging neither the social or ecological domain.

Darnhofer, Lamine, Strauss, and Navarrete (2016) suggest that actor-network theory (ANT) is one social science approach that can help understand social-ecological systems from a relational perspective. ANT explores the processes of relations or networking by focusing on how actors are brought together, interact with, and affect each other. Stone-Jovicich (2015, p. 1) describes it as focusing on "resilience-in-the-making". ANT considers both human and

nonhuman actors to possess agency, and therefore the capacity to influence the resilience of social-ecological systems. In actor-networks change is more or less constant, therefore understanding the dynamics of change is at the heart of ANT analysis, and is why it could assist this research.

As noted by Darnhofer et al. (2016) the term resilience is increasingly popular in both policy contexts and scientific debates. A case in point is the vision of the Hawke's Bay Regional Council which seeks a "connected and vibrant region with resilient communities, a prosperous economy, and a clean and healthy environment" (Hawke's Bay Regional Council, 2015, p. 3). Utilisation of resilience thinking in this research may also assist organisational understanding of what the concept means in practice.

Research context and data collection

A case study research design is being employed. Data collection is being undertaken in two sub-catchments of the Tukituki Catchment – the Papanui and Makara Sub-catchments. The Tukituki Catchment is the first in the region in which the HBRC is trying to implement the NPSFM, and therefore needs to encourage change in farmers' land management practices to reduce the impact that agriculture has on freshwater quality. The new rules and regulations (called the Tukituki Plan) were introduced in 2015.

HBRC has had different levels of engagement in the two sub-catchments which provides an opportunity to understand the influence (if any) of HBRC on farmers' decisions to adapt or change their land management practices.

Data collection will involve semi-structured interviews with farmers and other key informants. Interviews will continue until new themes cease to emerge. It is expected 20-30 will be completed.



Figure 1: Location of the Papanui and Makara Sub-catchments within the Tukituki Catchment

Papanui Sub-catchment

The Papanui Sub-catchment is relatively flat. It contains about 130 farms, the majority running sheep and beef (80.5%), or cropping (10.2%) (Hawke's Bay Regional Council, 2016). As shown in Figure 1, the Papanui is centrally located in the wider Tukituki Catchment and contains the settlement of Otane which at the time of the last census had a population of 537 (Statistics New Zealand, 2015). The Papanui Stream contributes a disproportionately large phosphorus concentration to the main stem of the Tukituki River (Lynch, 2013b) which is why the sub-catchment has been identified as a 'priority' sub-catchment. As a consequence of this, in 2013 HBRC facilitated the establishment of a sub-catchment group that has drafted a management strategy that sets out a vision for the sub-catchment (W. Hesketh, personal communication, October 23, 2015). The cost of preparing mandatory farm plans has also been subsidised by HBRC in this sub-catchment (C. Tyler, personal communication, February 12, 2016).

Makara Sub-catchment

The Makara Sub-catchment is of a steeper topography and is dominated by extensive hill country farms (86 % run sheep and beef). It is a geographically more isolated sub-catchment but does have a primary school located in the small community of Elsthorpe which had a role of about 50 in 2015 (Ministry of Education, 2016). HBRC does not plan to undertake any particular work in this sub-catchment in relation to the Tukituki Plan, however there is a history of HBRC involvement and activity in this area due to the construction of a flood detention scheme, and associated soil conservation works, by the council in the early 1980s (Hawke's Bay Regional Council, 2012).

Preliminary Results

Of the 13 interviews conducted to date: 12 participants are currently farming; 6 participants farm within the Makara Sub-catchment; and 3 farm in the Papanui Sub-catchment. Preliminary analysis suggests the following factors/themes:

- Major changes in land management practice occur when multiple drivers/influences occur simultaneously.
- Acceptance that very dry Hawke's Bay summers are the norm has driven change in many farming systems.
- Financial considerations have a major influence on on-farm management practice, and can both drive, and create barriers to, change.
- Farmers interactions with other farmers, including through discussion groups, are an important source of information that shapes farmers' thinking and on-farm practice.
- Sub-catchment boundaries appear to have little influence on farmers' social networks. Several farmers didn't know which sub-catchment/s their farm was located in.
- Most farmer's interaction with HBRC prior to the Tukituki Plan had been to access support (eg. poplar poles, funding) to help them undertake conservation work on their farms.
- HBRC's rules and regulations have not been identified by farmers as drivers of change.

These results suggest that farmers have (perhaps unknowingly) adopted a resilience approach and adapted their farming systems to cope with change. Viewed through an actor-network lens, these preliminary results suggest that climate is one non-human actor that appears to have driven change. Farmers' relationships with other farmers, and the information shared through those, have also influenced changes made. Farmers' social networks do not appear to be influenced by geography (ie. sub-catchment boundaries), instead common approaches to

farming practice seem to be important. When asked to describe the farmers from whom they sought advice one farmer described them as “pretty like minded” (Farmer, Makara Sub-catchment), another said “yeah, we [are] all kind of looking at the same kind of stuff” (Farmer, Makara Sub-catchment). HBRC does not appear to play a major role in farmers’ networks which suggests that changes to current council approaches will be needed to enable the regional council to effectively encourage change in on-farm practices.

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