

# **Sustaining Our Social and Natural Capital: Enhancing the Resilience of Dairy Farmers**

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In recent years, a number of industry and government initiatives have been implemented to develop the knowledge and skills of dairy farmers so they are better able to adapt their farming practices to align with society's expectations for improved natural resource management. The literature suggests that what causes people to positively adapt to a challenging situation is not just education to improve performance, but a degree of resilience, i.e. the capacity for renewal in the face of significant change. This paper discusses a research project that has been instigated to develop a better understanding of the resilience of dairy farmers in the face of critical issues, including natural resource management challenges. It outlines a conceptual framework that includes the attributes of resilience and questions these give rise to for our research into the resilience of dairy farm businesses.

## **Introduction**

**I**ncreasingly society expects of dairy farmers that they manage natural resources in a sustainable way. Natural resource management poses a significant challenge to the dairy industry as it often requires considerable changes in dairy practices and systems. A number of industry and government initiatives have been implemented to develop the knowledge and skills of dairy farmers to adapt their farming practices in order to align with society's expectations for improved natural resource management. The literature suggests that what causes people to positively adapt to a challenging situation is not just education to improve performance, but a degree of resilience, i.e. the capacity for renewal in the face of significant change, or as Coutu (2003:13) defines it, the 'skill and the capacity to be robust under conditions of enormous stress and change'.

This paper reports on a research project that has recently been established with the aim of developing a better understanding of the factors that contribute to the resilience of dairy farmers. The research is funded by Dairy Australia and is embedded within their 'People in Dairy' and 'Natural Resource Management' programs. Working within these programs allows us to inform the development of a range of extension and capacity building initiatives. Below we discuss the conceptual framework that we have developed and the research questions this gives rise to.

## **Conceptual framework on resilience**

**D**airy farmers are operating in an increasingly uncertain environment where often the only available strategy for management is 'to accept the inevitability of surprise, and concentrate on building the capacity of the system – society, economy and environment – to cope with whatever happens' (Beratan *et al.*

2004:182). In the face of uncertainty and complexity, the conventional command and control approach that aims to predict what lies ahead in order to plan for it, is increasingly inadequate. The uncertainty and complexity of the current rural change context demands that farmers are able to cope with whatever emerges. Beratan *et al.*(2004:182) refer to this capacity to cope as resilience. In Adger's words, resilience is the 'ability of a system to evolve in order to accommodate perturbation or to expand the range of variability within which it can cope' (in Armitage 2005:706).

In what follows we will outline the attributes that have been associated with resilience in the literature. A distinction is made between individual attributes, on the one hand, and attributes of the social setting in which people operate on the other (cf. Sonn and Fisher 1998). However, while we recognise that certain attributes are manifest within individuals, and others within social settings, we do not consider the attributes of the individual as inherent, essentialist characteristics of a person, but as the product of the social setting in which the person operates. Consequently, we expect their manifestation within people to be highly variable and inconsistent. Our aim is therefore not to develop a typology of farmers that would allow us to 'diagnose' a farmer's inherent and stable resilience attributes, but to develop a better understanding of the contextual and social factors that contribute to a farmer's resilience in a particular situation.

## **Individual attributes**

### **Willingness to face 'reality' of uncertainty and ambiguity**

**A**ccording to Coutu (2003:6), resilient people are characterised by a staunch acceptance of reality. Organisation theorists have argued that the capacity of organisations to adapt to changing circumstances is dependent on their ability to become 'learning organisations' (Leeuwis 2003:15), which means that they accept that uncertainty and ambiguity are inescapable. Organisational learning is based on reflective practice, which ensures that uncertainties and ambiguities are not suppressed or circumvented, but are worked out. An organisational learning approach brings these to the surface in order to deal with them (Schön 1991:254). As Leeuwis (2003:15) argues, this sounds very simplistic, yet in many organisations ambiguities and difficult situations are seen as a sign of weakness and therefore they are obscured and ignored (Schön 1991:69). This leads to a failure to learn and adapt.

### **Ability to make meaning of events in a way that builds a bridge to the future**

Related to the above, is the suggestion that resilient people are able to make meaning out of emerging events in a way that builds a bridge to the future (cf. Coutu 2003:10). The shift from production focused agriculture to an emphasis on sustainable development has challenged the existing agricultural narratives or meaning schemes that construct the farmer as an autonomous agent in the rural landscape, whose main concern is agricultural production. Within a complex rural landscape farmers are now one stakeholder group among many; they operate in an arena they share with global economic interests, broader national interests, conservationists and indigenous interests (Halpin and Martin 1999). As Lane *et al.*(2004:110) argue, "rurality" in Australia is now a space inhabited by diverse communities pursuing

diverse practices; the rural landscape is a mosaic not a monoculture.’

The post-modern landscape forces upon farmers a learning process that they cannot avoid if they are to build their bridge to the future. They have to learn to negotiate their way within a growing number of communities of meaning (cf. Dessewffy 1998), and this involves what has been referred to as ‘double loop learning’ (Ison *et al.* 2000:39). Double loop learning is a process whereby people become aware of and learn to deal with the contingency of their own representations of the world. It involves ‘...the deliberate breaking down and restructuring of mental models that support worldviews’ (*ibid.*: 39). What this means is that for farmers to build a bridge with the future, their sensemaking needs to extend well beyond existing meaning schemes.

In terms of assessing the resilience of dairy farm businesses it is important to explore what meaning schemes or cultural narratives are constructed within a dairy community or dairy farm business and how these shape the way farmers make sense of and respond to the challenges they face.

### **A concept of self that is compatible with the current structural changes in agriculture**

We mentioned above that the learning process that is required involves farmers learning new roles in a way that challenges their identity and cultural foundations (Dessewffy 1998). In fact, as farmers are required to take on multiple roles, they may need to develop the capacity to live with a more fluid sense of self and community (cf. Shaw 2002). Burton and Wilson (2006) argue that farmers’ self-concepts and attitudes are not compatible with the current structural changes in agriculture. Their research in the United Kingdom demonstrates that farmers’ self-concepts are still dominated by production – oriented identities. While the Australian situation is likely to be very different, this nevertheless raises questions about the identity narratives dairy farm businesses may have access to or construct within a specific social setting; the extent to which these are compatible with current structural changes in agriculture; and how these contribute to their response to dealing with significant issues.

### **Sense of self-efficacy**

The literature suggests that a strong sense of self efficacy plays a significant role in ensuring the well-being of people during significant change events. Self efficacy is associated with peoples’ beliefs about their ability to influence positive outcomes. A strong sense of self efficacy positively affects the ways in which people behave, feel, think and motivate themselves, and often results in difficult tasks or problems being approached as challenges (Bandura 1997). A low sense of self efficacy usually results in problem avoidance, low aspirations, possible depression and a weak commitment to any goals that may want to be pursued (*ibid.*).

### **Inventiveness**

A further aspect of resilience is the ability ‘to make do with whatever is at hand’ (Coutu 2003:14). It requires inventiveness to improvise a solution without necessarily having all the right tools and materials; it is an ability to muddle through.

## **Social and institutional connectedness**

The literature suggests that the degree to which people are connected to their neighbours, their community and the institutional infrastructure is another attribute of resilience (Beratan *et al.* 2004). Coutu (2003:6) suggests resilient people are able to form attachments to others and are able to get others to help them out. Social and institutional connectedness is particularly important in dealing with natural resource management issues as these require a multi-stakeholder response.

## **Environmental efficacy**

The literature suggests that farmers will only adapt and change their practices if they have confidence in the functioning of the broader change process and the networks, organisations and institutions that manage and support this process. Leeuwis (2003:157) refers to this as environmental efficacy. Farmers also need to have confidence that their peers will engage in the change process. Leeuwis (2003:157) suggests that in the context of multi-stakeholder issues such as natural resource management, if farmers believe their peers will not change their practices, then they are unlikely to do so themselves.

Anecdotal information suggests that farmers' confidence in the broader social system may be low. For example, farmers often express a lack of confidence in government institutions and processes. It is possible that the lack of confidence in the broader social system around natural resource management is quite widespread amongst dairy farmers, and this is likely to have significant implications for the way in which farmers adapt to natural resource management issues.

## **Attributes of the social system**

**E**ffective natural resource management is dependent on the coordinated activities of a number of diverse stakeholders. The change management process associated with natural resource management must therefore be understood in terms of a '... complex, social process – one occurring among a variety of stakeholders' (Engel 1997:125).

Below we discuss four attributes that contribute to the resilience of the broader social system in terms of dealing with natural resource management issues: effective networks and relationships that connect people and organizations; effective institutional arrangements that support the social system; a recognition of mutual interdependence between people in the social system; and finally, diversity within the system.

## **Networks**

Social capital theorists have argued that networks and social ties provide people with a resource that can be used to achieve specific goals (Field 2003). In the agricultural context, Engel's analysis of innovation revealed that it involves a social process that '... emerges from diffuse social interactions among many different actors' (1997:11). He argues that farmers innovate and change their practices through networking with other actors. Through the interplay between various actors in a network, the influence of available information is mediated, i.e. the network mediates the meaning making process described as critical to resilience above. Engel

emphasises the value of *networking* as a process, rather than networks as a resource (*ibid.*:110) and in doing so highlights the emergent nature of networks. He challenges the notion of networks that is implicit in much of the social capital literature that considers networks to exist prior to the social interaction between stakeholders. Instead he emphasises how these networks are the product of this interaction.

### **Institutional arrangements**

The effectiveness of the networks and social system is influenced by the institutional arrangements within which they are embedded (Macadam *et al.* 2004). Institutional arrangements refer to 'the complex of laws, customs, markets, norms and associated organisations that channel our energy toward social goals and the way we relate to others' (*ibid.*: 23). Nettle (2003:77) suggests that current institutional relationships between research, extension, farming and the community are 'a significant hindrance to eco-agricultural progress'. In Boxelaar (2004:172) it is argued that the natural resource management context is characterized by fragmented institutional arrangements, where relations of mutual engagement and accountability are yet to be established between the diverse yet interdependent stakeholders and agencies involved.

### **Recognition of mutuality and interdependence**

Because improved natural resource management is dependent on the activities of a number of different, yet interdependent stakeholders, it is important that each of these stakeholders recognise that they have a role to play in addressing the issue. In addition, each of the stakeholder groups needs to recognise the legitimacy of other parties to participate in the change process. What is required then is recognition of mutuality (Aarts and van Woerkum 2002:421), or mutually experienced interdependence (Leeuwis 2003:157).

Sampson refers to this mutually experienced interdependence as collective efficacy, which includes a number of qualities, including affinity, shared identity, reciprocity, trust, informal social control and willingness to act for the good of the group (in Vinson 2004:32).

### **Diversity**

A final attribute of the social system that we discuss here is diversity. The literature suggests that social resilience is enhanced with the availability of a diversity of programs or pathways to adapt (Beratan *et al.* 2004). For example, Adger (2000:352) suggests that communities that rely on a single underground mineral resource have severely limited capacity to adapt to shocks or challenges.

Overall, a number of attributes have been linked with resilience. Table summarises these attributes and outlines the questions they raise for our research.

### **Research design**

**T**he framework above provides the basis for empirical work which will be conducted over the next two years. Our research will utilise a case study approach, and comprises an in-depth exploration of four dairy regions in Australia, where farmers are dealing with a variety of critical issues, including succession

|                   | <b>Attribute</b>  | <b>Questions to inform our research</b>   |
|-------------------|---|---|
| <b>Individual</b> | Willingness to face 'reality' of uncertainty and ambiguity                        | <ul style="list-style-type: none"> <li>• To what extent do farmers and extension officers acknowledge the fact that uncertainty and change are inescapable? What stops them from acknowledging this?</li> <li>• To what extent do extension programs acknowledge that they need to build the capacity of farm businesses to become learning organisations; rather than provide farmers with a once off set of skills and knowledge to deal with a particular issue?</li> </ul>  |
|                   | Ability to make meaning of events in a way that builds a bridge to the future     | <ul style="list-style-type: none"> <li>• What meaning schemes or cultural narratives are available within a specific dairy community and how do these shape the way farmers make sense of and respond to the challenges they face?</li> <li>• How can extension practitioners ensure that a setting is created that provides engagement with positive and constructive cultural narratives?</li> </ul>  |
|                   | A sense of self that is compatible with current structural changes in agriculture | <ul style="list-style-type: none"> <li>• What identity narratives are available to farmers within the case study regions and how do these shape the way farmers make sense of and respond to the challenges they face?</li> <li>• What change is needed in terms of how farmers perform their identities, if they are to be more resilient in dealing with critical issues?</li> <li>• How can extension practitioners ensure that a setting is created that facilitates engagement with identity narratives that are compatible with the current structural changes in agriculture?</li> </ul> |
|                   | Self-efficacy   | <ul style="list-style-type: none"> <li>• How confident are farmers in their ability to affect change and to influence or manage issues around natural resource management?</li> <li>• What can extension practitioners do to increase farmers' confidence, so that they are more likely to engage with these issues and change their practices?</li> </ul>  |
|                   | Inventiveness   | <ul style="list-style-type: none"> <li>• To what extent are farmers able to make do with whatever is at hand?</li> <li>• To what extent do extension strategies build the capacity for improvisation and inventiveness?</li> </ul>  |

|               |  |  |
|---------------|--|--|
|               | Social and institutional connectedness           | <ul style="list-style-type: none"> <li>• How well connected are farmers within their region and how does this shape the way in which they respond to critical issues?</li> <li>• How can extension programs enhance the social and institutional connectedness of dairy farmers?</li> </ul>  |
|               | Environmental efficacy                           | <ul style="list-style-type: none"> <li>• Do farmers have confidence in the functioning of the broader social system, including their peers, the organisations and other stakeholders involved – to achieve natural resource management outcomes?</li> <li>• What can be done to improve levels of environmental efficacy amongst dairy farmers?</li> </ul>   |
| Social system | Networks   | <ul style="list-style-type: none"> <li>• How are farmers socially organized around natural resource management issues?</li> <li>• How can the networking between farmers and other stakeholders be improved to enhance the capacity of the broader social system and of farmers themselves to address natural resource management issues?</li> </ul>   |
|               | Institutional arrangements                       | <ul style="list-style-type: none"> <li>• How do current institutional arrangements support the farmers and the broader social system to achieve natural resource management outcomes?</li> <li>• What can be done to improve the institutional arrangements?</li> </ul>  |
|               | Sense of mutuality / collective efficacy         | <ul style="list-style-type: none"> <li>• Do stakeholders and farmers recognise that they have a role to play in natural resource management?</li> <li>• Does each of the stakeholder groups recognise the legitimacy of other parties to participate in decision making around natural resource management?</li> <li>• What needs to be done to ensure a sense of mutual interdependence?</li> </ul> |
|               | Diversity of pathways to adapt to critical issue | <ul style="list-style-type: none"> <li>• What can be done to improve the diversity of available pathways to respond to a critical issue?</li> </ul>  |

**Table 1** *Attributes of resilience*

planning, water reform, and natural resource management challenges. It is anticipated that initial scoping of the issues within each case study will assist in prioritising specific research questions from the table above. We will be observing meetings of extension projects and conducting interviews and focus groups with farmers and service providers in each of the four regions. Transcripts and notes of these events will be analysed using NVivo software to identify key themes in the data. In addition, a narrative strategy (cf. Bojé 2001; Boxelaar 2004) will be used to examine the stories that people invoke or tell explicitly about themselves and the way in which they make sense of the critical issues they are dealing with. This will allow for an exploration of the systems of meaning that operate in dairy communities.

In order to ensure that our research findings are implemented and utilised by program managers, extension officers and service providers, we will be implementing a participatory action research approach (Foote-Whyte 1991; Reason and Bradbury 2001). This approach was developed in response to traditional academic research, which separates the development of new knowledge from its implementation in practice. Action researchers ensure that the link with practice is built in as a structural component of the research process. The link with practice is achieved by actively involving research 'clients' (in this case, program managers, service providers and extension practitioners) in the research process. Within each case study region a participatory action research team will be established that comprises relevant service providers, extension staff, consultants, milk company field staff, rural counsellors, financial service providers and others. The team will assess the extent to which the current mix of services enhances the resilience of diverse dairy farm businesses, and it will develop and trial strategies to address any gaps.

## Conclusion

In this paper we have discussed a framework that outlines the attributes of resilience, which will provide the basis for field work to be conducted in four case study dairy regions in Australia. It is anticipated that this integration of social research within existing dairy extension programs is likely to make a significant contribution to unlocking some of the constraints to change.

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