



## Hatching new ideas about herb pastures: Learning together in a community of New Zealand farmers and agricultural scientists



A.M. Sewell <sup>a,\*</sup>, D.I. Gray <sup>b</sup>, H.T. Blair <sup>c</sup>, P.D. Kemp <sup>b</sup>, P.R. Kenyon <sup>c</sup>, S.T. Morris <sup>c</sup>, B.A. Wood <sup>b</sup>

<sup>a</sup> Institute of Education, College of Humanities and Social Sciences, Massey University, New Zealand

<sup>b</sup> Institute of Agriculture and Environment, College of Sciences, Massey University, New Zealand

<sup>c</sup> Institute of Veterinary, Animal and Biomedical Sciences, College of Sciences, Massey University, New Zealand

### ARTICLE INFO

#### Article history:

Received 5 February 2013

Received in revised form 8 August 2013

Accepted 2 December 2013

Available online 11 January 2014

#### Keywords:

Agriculture

Pastoral farmers

Learning

Innovation

Community of practice

Adoption

### ABSTRACT

Historically, farmers are slow to adopt new and evidence-based pastoral farming practices. While there is a long history of research on extension and technology transfer to farmers, a fresh and innovative approach is needed to ensure that farmers learn about, adopt and adapt highly effective technologies. Little is known about how pastoral farmers learn about new evidence-based ideas – insights that need to inform the design of new models of extension. An 18-month pilot study brought together agricultural scientists and social scientists to investigate how farmers learn and effective ways to support their learning. An innovative participatory programme was designed for 18 farmers to promote improved management practices of herb-mix pastures containing chicory, plantain and red and white clover. Results showed that farmers' learning was promoted when they: (1) participated in a learning community with agricultural scientists, (2) made connections between evidence-based ideas and their own farming systems, (3) were interested in the learning focus and became part of a shared inquiry, and (4) revisited important concepts and engaged in a range of multi-sensorial activities that were aligned to important pastoral outcomes. These findings are examined against contemporary educational theories to suggest a set of principles to develop educationally-informed and innovative approaches to farmer learning.

© 2013 Elsevier Ltd. All rights reserved.

### 1. Introduction

The rapidly changing and globalised business environment for agriculture requires New Zealand pastoral farmers to develop management practices that will allow them to successfully compete in the international market place. New Zealand's future economy is determined by farmers' ability to increase on-farm productivity and to sustain these improved farm systems over time. Recent research by agronomists and animal scientists has shown how pastoral farmers can increase lamb production per ha using herb-mix pastures (e.g. Kemp et al., 2010). However, slow adoption rates of evidence-based ideas continue as a source of frustration for researchers as well as a cause of lost productivity and profitability to farmers, the industry and to the economy (Pannell et al., 2006; Llewellyn, 2007).

Much of what happens in the name of agricultural extension falls well short of the conditions necessary for learning and lasting change in farmer practice (Leeuwis and Aarts, 2011). It is acknowledged that sustained management of innovation and change is a difficult, dynamic and complex process involving personal, social,

cultural and other contextual factors. It is important, therefore, to identify an approach to farmers' learning that promotes engagement with, and understanding of, innovative research information and practices. The aim of the research reported in this paper is to understand how New Zealand pastoral farmers learn new technologies, and to draw upon educational theories to inform the design of new and evidence-based approaches to agricultural extension.

Little attention has been given to understanding how theories of learning might inform agricultural research and extension activities. Hunt et al. (2012) noted the undulating trajectory of extension activities as reflecting the rhythms of society, rather than what is known about how people learn. The transfer of technology approach that served agriculture until the mid-1980s is a poor fit for today's complex, changing and diverse agricultural systems (Stantiall, 1999). Contemporary thinking to develop agricultural extension and innovation adoption, points to the value of transforming industry partnerships with universities (Pannell et al., 2006; Llewellyn, 2007; Lyon et al., 2010; Hunt et al., 2012). These authors argue for joint participation with both sides of the partnership (agricultural scientists and farmers) active and drawing upon research evidence and farmers' localised knowledge.

While there is international research highlighting the efficacy of learning partnerships between farmers and agricultural scientists (e.g. Franz et al., 2010; Lyon et al., 2010), there is a gap in

\* Corresponding author. Address: Institute of Education, Massey University, Private Bag 11 222, Palmerston North 4442, New Zealand. Tel.: +64 6 3569099.

E-mail address: [a.m.sewell@massey.ac.nz](mailto:a.m.sewell@massey.ac.nz) (A.M. Sewell).

understanding about how to develop and sustain learning focused scientist–farmer relationships in New Zealand. An 18-month pilot study was conducted that brought together farmers, agricultural scientists and social scientists in a sequence of planned innovative learning experiences. Of key importance to this study was the introduction of educational theories and research to the agricultural extension and innovation systems literature. The learning focus of this pilot study was the management of herb-mix forage (chicory, plantain and clover) to improve feed quality for optimal lamb production. Participation in this innovative learning design enabled three social scientists to observe the farmer–scientist interaction, and to talk with farmers about their learning.

The paper begins by summarising key characteristics of agricultural extension models. The pilot study is then described with a particular focus on the experiences designed to promote farmer learning. An analysis of the data set identifies key factors that supported farmers to learn about herb-mix pastures. These findings are discussed in relation to contemporary educational literature. The prime motivation for this study was to find out how farmers learn and how these new insights might inform new and evidence-informed models of extension that promote farmer learning.

## 2. Literature review

### 2.1. Agricultural extension

During the 1980s and 1990s New Zealand privatised its state-funded extension service and replaced it with commercially-based services that focused primarily on economic goals and productivity (Hall et al., 1999). Today, the pluralistic model used in New Zealand provides a plethora of approaches to extension, but they are typically either farmer levy-funded or industry-funded extension provided to groups of farmers at occasional meetings, web-based resource material, professional development short courses or advice to individual farmers by private consultants. In more recent times, funding bodies have emphasised the need for research scientists to build greater capability for participatory approaches into their projects (Pannell et al., 2006; McEntee, 2010). These participatory approaches facilitate the creation of learning partnerships that acknowledge the different goals and knowledge cultures of farmers and scientists (Tsouvalis et al., 2000). Despite this support, the implementation of participatory approaches in New Zealand remains poorly understood (McEntee, 2010).

Internationally, writers in the field of extension also uphold the importance of participatory and collaborative frameworks that focus on learning, change and innovation. Central to their arguments is the value of knowledge exchange between farmers and agricultural scientists (e.g. Sherson et al., 2002; Röling, 2009; Franz et al., 2010; Lyon et al., 2010; Eastwood et al., 2012). Such partnerships enable information to be shared, new ideas to be discussed and new actions to be negotiated. Crucial to these partnerships is the dual role of “informal everyday communicative interactions among stakeholders” alongside the “communicative efforts of professionals” (Leeuwis and Aarts, 2011). These authors argue that it is by re-thinking the role of communication in innovation processes, that a discursive space can be created in which farmers and scientists can co-construct new ideas. Traditional modes of communication between farmers and scientists need to be reconceptualised from transmitting information in a linear, depersonalised, top-down fashion (e.g. field days, seminars, newsletters), to joint participation models where new ideas and can be discussed, co-constructed and challenged (Llewellyn, 2007; Leeuwis and Aarts, 2011). Coutts (2000) argues that such mutual and responsive interactions are “the oil that makes things happen”.

Recent international research into farmer learning indicates encouraging results when interactive and dialogic participation were adopted. For instance, Eastwood et al. (2012), used a qualitative case study method in an Australian setting to show that networks of practice with strong links to researchers and farmers enabled knowledge to be exchanged and new ideas to be co-constructed. In North America, Lyon et al. (2010) found that learning happened when traditional power relationships were transformed within participatory research between researchers and farmers. Of importance in their research was the value of responding to the interests of both researchers and farmers. Similarly, Franz et al. (2010), who used participatory action research guided by a steering committee of farmers and agricultural educators, identified the importance of farmers engaging in first-hand experiences, learning about cutting edge research and engaging in social interaction to share practical ways of knowing.

There are few, if any, opportunities for farmers other than those new to the industry that meet these kinds of collaborative and participatory parameters (Stantiall, 1999). One New Zealand study identified that farmers’ learning comprised of two steps: first, the development of understanding about an area of management (e.g. grazing management principles), and second, the translation of this understanding into management decisions that put learning into practice (Gray et al., 2003). A gap exists in our understanding of the conditions in which New Zealand farmers’ learning and practice change can best be promoted.

### 2.2. Sociocultural theories of learning

Sociocultural theories of learning provide a theoretical framework for this study in its central premise that learning is a conjoint activity – a process of participation *with* others. The works of Dewey (1916) and Vygotsky (1978) provide an historic platform justifying this sociocultural approach. Dewey (1916) argued that people learn best through the experience of democratic participation where the content and method of learning can be mutually decided. Similarly, Vygotsky (1978) saw the importance of the social and cultural community – a context for learning in which social interaction with more competent ‘others’ can be internalised and mediated through cultural tools such as dialogue.

Sociocultural scholars argue that dialogue is not only a means of communication, but it is also a means to *generate* new ideas, negotiate understandings and build knowledge (Wells, 2000). Furthermore, they argue that learning is *embedded* in social, cultural and historical contexts, and that people learn and change through their ongoing participation in these contexts (Rogoff, 2003). From this perspective, teaching takes on more equitable power relationships with students where authority is delegated so that learning decisions and responsibilities are shared with each bringing their expertise to the classroom as purposeful members of a learning community (Aitken and Sinnema, 2008). Today’s educational researchers continue to build on these ideas by emphasising the importance of relationships, responsibility and joint participation wherein dialogue is a key tool to co-construct shared understandings (Hedegaard and Fleer, 2008; Sewell et al., 2013). Rethinking the roles of communication, power-relationships and knowledge construction in agricultural extension research, is well justified in contemporary educational theories (Wells, 1999; Wells and Claxton, 2002; Mercer and Littleton, 2007; Aitken and Sinnema, 2008; Alexander, 2008).

One sociocultural practice that builds individual and collective capacity is the development of professional learning communities (PLC) (Rogoff, 1998; Stoll et al., 2006). While PLCs vary across different contexts, they have in common a group of people who struggle with similar issues, and share and critically interrogate their practice in ongoing, collaborative, learning-oriented and mutually

Download English Version:

<https://daneshyari.com/en/article/4491284>

Download Persian Version:

<https://daneshyari.com/article/4491284>

[Daneshyari.com](https://daneshyari.com)