New Zealand Agricultural & Resource Economics Society (Inc.)
NZARES

Beyond the Tanker Track: the social influence of dairying in Southland, 1992 to 2012

Jill Greenhalgh & Philippa Rawlinson

Paper presented at the 2013 NZARES Conference
Lincoln University – Canterbury, New Zealand. August 28-30, 2013

Beyond the Tanker Track: the social influence of dairying in Southland, 1992 to 2012

Jill Greenhalgh and Philippa Rawlinson

ABSTRACT

The aim of this study was to investigate the social influence that the recent growth of dairying has had in Southland. Over 60 semi-structured and informal interviews were undertaken with a wide cross-section of organisations and individuals. Quantitative data was used to complement the qualitative data. The growth of dairying has provided sheep farmers with more farming options through dairy support and increasing their equity. It has created down-stream employment for dairy services and suppliers and, consequently, more employment opportunities. Rural communities are being revitalised through the influx of younger people. Primary schools are more multicultural and their roll decline has been arrested, but the transience associated with dairying creates problems. Community relationships have been affected by the different values of dairy farmers. Their occupational demands also affect their ability to participate in community activities. Southlanders perceive that dairying does impact on the environment with iwi recognising a loss of some traditional food sources. However, most participants believe environmentally-related compliance is improving. The overall finding is that dairying has revitalised an ailing Southland economy by creating a wider range of employment opportunities, drawing in a more youthful population, and generating a more diversified economic base.

Keywords: Southland, dairy farming, social influences, diversification, employment

INTRODUCTION

DairyNZ chairman John Luxton was invited to speak at the Oxford Farming Conference in January 2013 on the influence of the New Zealand dairy industry in society. In preparation for the seminar DairyNZ approached Lincoln University researcher Dr Rupert Tipples for background information on the social influences of dairying in New Zealand. It was quickly apparent there was limited scholarly literature available on the subject so this study, on the social influences of the growth in dairying in Southland, was commissioned in January 2013 to develop some understanding of the changes dairying has resulted in there.

The early Southland landscape resembled the West Coast with strands of native bush and lush pastures produced by frequent rainfall. Generally, the land was considered to be too wet for sheep farming and the early farmers ran beef cattle and a few dairy cows, with the milk transported to one of the 88 dairy factories dotting the province. A prosperous time for sheep farming after World War Two encouraged many farmers to abandon dairying for sheep farming. Sheep farming remained the predominant land use, with the few dairy farmers considered to be the poor country cousins, until the 1990s when the foundation for the future of dairying in Southland was laid. In an effort to save the last existing dairy factory, Edendale, the province was promoted as suitable for dairying to the traditional established dairy regions in the North Island. Since then, a steady stream of farm conversions has changed the landscape and the rural communities of Southland. This study sought to determine how these changes have affected the people of Southland.

METHOD

The aim of this research was to examine the social influences of the growth of dairying in Southland from 1992 to 2012. This involved identifying the benefits of dairying for service industries, viability of farming; and generation of employment; and the effect of dairying on social services, sport, recreation and leisure activities, the community and infrastructure. To

analyse the influence of the growth of dairying on these factors, we adopted a mixed methods approach to data collection similar to Nick Taylor's approach examining the relationship between communities and their natural resource base (Taylor, McClintock, & McCrostie Little, 2003).

In Taylor's studies of the Waitaki and Amuri areas in Canterbury (McCrostie Little & Taylor, 2001; McClintock, Taylor, & McCrostie Little, 2002; Taylor *et al.*, 2003), they were able to gather a range of Census data to measure the changes that occurred with the growth of dairying. This included such things as the usually resident population, age structure, dairy farmers and workers, qualifications held by residents, employment by industry, median household income and distribution of income (Taylor *et al.*, 2003). The scope of the collection of quantitative data for our study was limited by the shear size of Southland, the limited timeframe and the delay of Census 2011. As a result, any population and demographic data is based on the projections of the Southland District Council and Gore District Council. Significant dairying growth has occurred in Southland since Census 2006 and a truer indication of the demographic changes that have occurred from 2006 to 2012 will be gained when Census 2013 data is released. Our quantitative data included population and demographic data from Statistics New Zealand, employment growth, Gross Domestic Product (GDP), fertiliser sales and school roll data from the Ministry of Education.

For this study, we believed breadth, rather than depth, of data was important. Thus, to obtain as wide a cross section of views as possible within our time frame, we interviewed over 60 participants. Semi-structured interviews were undertaken with participants from regional, professional and community organisations, including representatives from rural supply businesses, education, sport and recreation sectors, and migrant dairy workers in two case study areas.

Winton in Central Southland was the first of our two case study areas (Figure 1). Winton is at the centre of an older more established dairying area and in 2006 the township had a population of 2,088 (Statistics New Zealand, 2006b). Gore, 64 kilometres north east of Invercargill, was our second case study area. It is the newer dairying area, with some development of irrigation in the drought prone Waimea Plains. Gore is the second largest urban area in Southland and had a population of 12,108 in 2006 (Statistics New Zealand, 2006a). Invercargill was not chosen as a case study area because the presence of Tiwai Point and the growth of the Southern Institute of Technology diluted the effect of dairying in Invercargill. We found Gore residents were less aware of the influence of dairying on their township compared to those in Winton. However, at the end of each interview with Invercargill based organisations, participants were asked for their personal opinion on the effect of the growth of dairying.

Figure 1 Map of the study area (Source:Our Way Southland, 2012, p. 12)

LITERATURE REVIEW

Drivers of land use change

In New Zealand, pastoral agriculture has been the backbone of the economy since settlement, but the mix of animals grazed on these pastures continues to change, as farmers respond to changing economic conditions. Our understanding of land use changes is built on the interpretations of theorists in Great Britain, who developed a body of literature to characterise the changes that have occurred since the 1940s (Mackay, Perkins, & Espiner, 2009). Productivism (covers the period from the 1940s to 1970s and 1980s) is characterised by government responses to global food shortages with a series of policy interventions, that insulated domestic markets and encouraged farmers to intensify agricultural production (Ilbery & Bowler, 1998; G. A. Wilson, 2001; Jay, 2004, 2007; G. A. Wilson, 2007). Jay (2004, p 157) identified that New Zealand agriculture was *"geared towards the commercial production of bulk commodities, strongly influenced by scientific research, maintained strong political influence and support, and involved enormous destruction of the pre-agricultural environment"*. In the Waikato, 85 per cent of lowland native forest and wetlands were removed as a result of the pursuit of productivism (Jay, 2005).

The environmental concerns associated with the pursuit of productivism, combined with high commodity costs and surpluses in agricultural production led to a crisis for agriculture in the 1970s and successive governments acted to reverse productivist policy features (G. A. Wilson, 2001, 2007; Bjorkhaug & Richards, 2008). In Europe, it was predicted that without financial aid, farmers would reduce their farming intensity and adopt more environmentally

sustainable post-productivist farming practices (Ilbery & Bowler, 1998; G. A. Wilson, 2001; Argent, 2002; G. A. Wilson, 2007). Scholars predicted the adoption of land uses such as *"the development of farm tourism, on-site farm shops, horse riding centres, on-site food processing, pick-your-own fruit enterprises and craft shops*" (Woods, 2005, p. 55).

In Australia and New Zealand, post-productivism has failed as a descriptor for rural land use change because these diversification strategies, outside areas of high amenity value (Mackay *et al.*, 2009), could *"never be seriously considered because they are literally unthinkable"* (G. A. Wilson, 2001, p. 87). Holmes (2002) addressed the inadequacies of post-productivism and then in 2006 presented an alternative position from the Australian experience (Holmes, 2006). He saw how the changes in rural areas could be termed the multifunctional rural transition (Holmes, 2006). In this context, rural spaces no longer have a singular function, but multiple functions. They are places of food and fibre production, landscape and biodiversity maintenance, socio-economic viability and vitality and a generator of employment (Holmes, 2006; G. A. Wilson, 2007; Bjorkhaug & Richards, 2008).

Productivism, dairying and the environment

Instead of diversifying to the post-productivist land uses predicted by those British scholars, New Zealand farmers have adopted more intensive land use practices in order to survive. Dairy farming is one such intensive land use and Jay (2007, p 268) finds that these farms are managed and operated according to some of the virtues of productivist farming; they are *"managed primarily for commercial value as opposed to non-material values such as cultural or natural heritage, personal or group identity, recreation or enjoyment or quality of life"*. This emphasis of farming as a business rather than a lifestyle results in dairying having differing values and attitudes to sheep farmers. Sheep farmers are surprised when their dairy farming neighbours do not honour the informal contractual relationships common to sheep farming (Greenhalgh, 2010; Rawlinson, 2011). Dairy farmers have increased the use of irrigation, fertilisers and chemicals to modify natural processes to increase production (Jay, 2007). This method of farming has raised concerns about the results of these inputs on our environment (Jay & Morad, 2007; Landcare Research, 2009; Ministry for the Environment, 2009). Particular concerns relate to *"the erosion of topsoil, loss of soil fertility, water pollution, loss of biodiversity and dependence on non-renewable fossil fuels"* (Parliamentary Commissioner for the Environment, 2004, p. 3).

Industry leaders are trying to improve the environmental performance of dairy farmers (Ministry for Primary Industries, 2013). One such example is the Dairying and Clean Streams Accord initiative between Fonterra, Regional Councils, Ministry for the Environment and Ministry of Agriculture and Forestry, that sought to reduce *"the impacts of dairying on the quality of New Zealand streams, rivers, lakes, ground water and wet lands"* (Fonterra, Regional Councils, Ministry for the Environment, & Ministry of Agriculture and Forestry, 2003, p. 1). These organisations targeted having 90 per cent of waterways fenced off from dairy cows and by 2011/12 87 per cent of water ways were fenced off (Ministry for Primary Industries, 2013). Non-compliance with regional council rules and consent conditions is also improving (Ministry for Primary Industries, 2013).

Dairying and the New Zealand Economy

The success of the New Zealand dairy industry influences every New Zealander. The wider industry directly employs 35,000 people (Schilling, Zucollo, & Nixon, 2010) and this does not include the estimated 10,000 self-employed dairy farmers. In South Taranaki, Waimate and Otorohanga, the dairy industry accounts for one in four jobs (Schilling *et al.*, 2010). In

2012, the nation's dairy herd produced 1.7 billion kilograms of milk solids, and generated $13 billion in exports and contributed $5 billion to New Zealand's GDP (DairyNZ, 2013). The recent forecast $1.70 increase to the Fonterra milk price is expected to *"boost the economy by around $3.4 billion or around 1.6 per cent of nominal GDP"* (Gray, 2013).

The environmental and economic influences of dairying are well established, but what about the deeper social influences of dairying? How has the change to dairying influenced the people in our rural communities? Unlike the environmental and economic influences of dairying, we still do not have an in-depth understanding of the social changes that occur as a result of the growth of dairying. The following paragraphs outline the social influences of dairying in new dairying areas of Canterbury.

SOCIAL INFLUENCE OF DAIRYING

Population Change

Taylor Baines and Associates were the first to investigate land use change that occurred following the introduction of irrigation in areas of Waitaki and Amuri (McCrostie Little & Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003). The Rangitata Diversion Race scheme (RDR) in mid-Canterbury was the first government irrigation scheme to be completed, but farmers tended to use this irrigation water as a method of insurance against drought (Evans & Cant, 1981; Cant & Evans, 1983), rather than a tool to increase production. The improving efficiencies of irrigation encouraged farmers to convert to dairying from sheep farming (McCrostie Little & Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003; Rawlinson, 2011). Dairying has greater on and off farm labour requirements and, as a result, draws in a new population of employees who immediately boost the population of area.

The population of the Amuri area grew by 6 per cent from 1991 to 1996 and then by 6.7 per cent from 1996 to 2001 (Taylor *et al.*, 2003). This population growth increased primary school rolls as the new population was younger than the population they replaced (Taylor *et al.*, 2003). The school roll at Amuri Area School increased by 150 per cent and helped re-position the school *"at the centre of the district's identity"* (McCrostie Little & Taylor, 2001, p. 7). After this initial population growth, subsequent growth mirrored the growth of the New Zealand population (McCrostie Little & Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003).

Occupational change

Rural communities experiencing this change to dairying, quickly find that dairying is a very different occupation from the one it replaces. Dairy cows are milked twice a day from July until May and employees will often find themselves working 12 hours a day, for 11 or more days in a row (Tipples & Greenhalgh, 2011). This is unlike sheep, beef or crop farming with their sporadic busy periods throughout the year depending on seasonal demands and willingness to help neighbours should they require it. Members of the community quickly identify that dairy farmers and their employees have little free time to participate in school, community or sporting activities (McCrostie Little & Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003; Rawlinson, 2011). This is a source of friction in the community where people had time to participate in these activities.

Gypsy Day, dairying and the community

In addition to the lack of involvement by dairy farmers in the community, the end of the dairy season brings about the annual migration of dairy farmers, their children and possessions to

new places of employment. Otherwise known as Gypsy Day, June 1st is the day when some rural schools may experience a roll turnover of up to 50 per cent (Ward, 2011). This can be problematic for the school if new students have learning problems, disabilities, behavioural issues or require English language lessons (Rawlinson, 2011; Ward, 2011). Those students who are moving frequently to new schools on Gypsy day can then miss on learning a certain subject each year (Allan, 2004; Rawlinson, 2011). Some suggested the school teaching year could be shifted to fit around dairying, so students did not miss out on certain subjects (Allan, 2004; Rawlinson, 2011).

Dairying and community change

The change to dairy is having a great influence on our communities. Previously, these communities were home to stable groups of families, some of whom had lived in the community for multiple generations and often held knowledge of important community traditions, events and history (Barlow & Cocklin, 2003; Woods, 2005; Rawlinson, 2011). The pattern of land ownership changes, as generational farming families sell their farms to land owners with no previous connection to the area and who may not even live in the area. The growth of dairying is challenging the commitment and ability of sheep farming families to keep land in their family as the value of rural land increases (Rawlinson, 2011; Forney, 2012). The literature has examined the rural issues relating to declining numbers of farms, the aging of farmers and the general movement of resources away from farming (Nettle, Paine, & Petheram, 2005; Greenhalgh, 2010; Nettle, 2012). It identifies the need for *"vibrant rural communities, requiring educational facilities, employment, transport and telecommunications infrastructure, and health and welfare services*" (Alston, 2007).

These changes create a feeling of dislocation amongst those left behind who feel *"good community members …* [are] *lost and replaced by undesirables"* (Barlow & Cocklin, 2003, p. 510). The first dairy farmers into the Amuri area did little to change the perception of locals, they were found to treat employees badly and left the area with unpaid debts (Edkins, 2003). Others have had problems with drugs, alcohol and introduced a criminal element to rural areas (Rawlinson, 2011; Fegan, 2013).

The growth of dairying throughout New Zealand has placed pressure on the supply of skilled dairy farm labour. To breach this gap, dairy farmers have been able to recruit skilled migrants to work on their dairy farms. These workers have come to New Zealand primarily from the Philippines, but also from South America, Asia, Europe and Africa (Tipples & Morriss, 2002; Tipples & Lucock, 2004; Tipples & Greenhalgh, 2011; Rawlinson, Tipples, Greenhalgh, & Trafford, 2012). Migrant workers have tended to cluster both on farms, and in particular areas. We know there are concentrations of Filipino workers in Southland and Canterbury (Cropp, 2010; Tipples & Greenhalgh, 2011; Rawlinson *et al.*, 2012). Our studies have indicated these workers find it difficult to integrate into rural communities (Rawlinson *et al.*, 2012). Their lack of English language exposure prohibits communication with locals, who themselves, because of the frequent movement of dairy farm employees, cease getting to know any newcomers to the community (Rawlinson, 2011; Rawlinson *et al.*, 2012). However, the introduction of migrant workers into these previously mono-cultural communities benefits rural areas as it provides *"opportunities for cross-cultural interaction and consequent increase on the part of locals, in levels of cultural difference"* (Rawlinson, 2011, p. 119).

DISCUSSION OF RESULTS

When analysing the responses of farmers to the removal of farm subsidies, participants of Wilson (1994) and Campbell (1994) did not consider dairying as a viable land use in Southland and Canterbury. However, as we now know, dairying has grown significantly in the last 20 years. From virtually nothing, Southland is now home to 10.9 per cent of the New Zealand dairy herd (LIC, 2012). What precisely has driven this growth? The drivers of change to dairying in Southland differ from other areas of New Zealand. In Canterbury, improving irrigation efficiencies facilitated the growth of dairying (Rawlinson, 2011; Pangborn, 2012). Southland, with its reliable rainfall has little requirement for irrigation and the driver to dairying was initiated by the need to upgrade the Edendale Dairy Factory and, since 2006, the continued strength of dairy commodity prices in comparison to the continued tough times for sheep farming. These two periods of growth are illustrated by the number of conversions completed each dairy season in Figure 2 below.

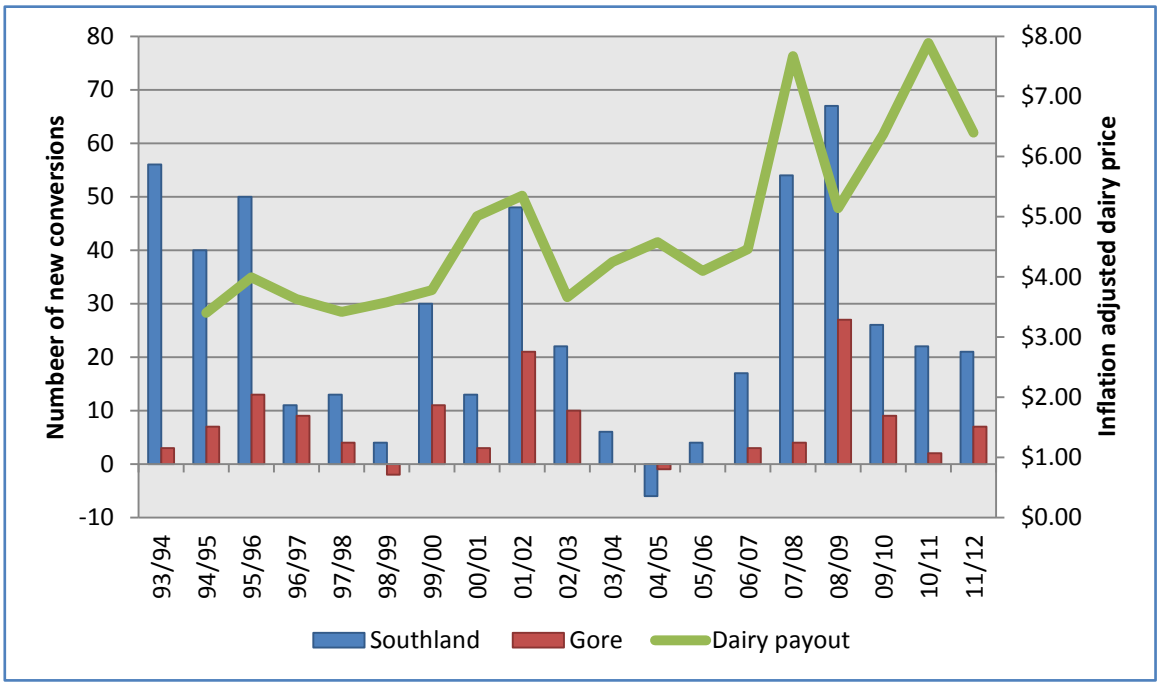

Figure 2 Conversion rate in Southland and Gore TAs in comparison to payout 1992 to 2012 (Source: LIC, 1993-2012)

To fund the upgrade of the Edendale Dairy Factory, the Southland Dairy Cooperative needed new suppliers so a promotions team was dispatched to the North Island to recruit dairy farmers south. For these ground breaking dairy farmers, Southland represented the land of opportunity, milk and money. The region provided them with the opportunity to purchase larger farms, since five hectares in Southland cost the equivalent of one hectare in the North Island, and to pursue their dairying careers. One dairy farmer who moved to Southland in 1994 now has a herd of 4000 dairy cows, in a dairy business that generates employment for 26 families. Surprisingly, the Southland climate was an attraction for North Islanders who had had enough of successive droughts. The daily chore of moving irrigation equipment was a push factor away from Canterbury for some dairy farmers. As was the case for Wilson (1994), we found most Southland sheep farmers were not interested in dairying at this time. One participant, who carried out an early conversion, did so to maintain the financial viability of his farm.

The major period of dairying growth has occurred in Southland since 2006. Despite the belief amongst sheep farmers that conditions would improve (O. Wilson, 1994), this had not occurred. Southland sheep farmers who saw no future in sheep farming have either converted to dairying or sold their properties. The number of sheep in Southland is decreasing. After peaking at nine million in the 1980s, there are now 4.1 million sheep in Southland; the last five years has seen a 23.1 per cent decline in the number of sheep in Southland (Infometrics, 2012). Unlike sheep farming, dairy farming provides farmers with a regular cash flow plus financial security into the future. As is illustrated by Figure 2, the rate of conversions is slowing, linked to the dairy payout and the emerging raft of environmental regulations.

Many sheep farmers appear to have benefitted from the growth of dairying in Southland. The increase in land values and the resulting increase equity in land enabling those who want to sell their farms, with an opportunity to leave and retire comfortably, or to purchase larger sheep farms further inland. Dairying has also provided sheep farmers with an opportunity to diversify without converting to dairying; they can grow dairy fodder, offer dairy support, or enter a dairy equity partnership. This diversification of rural land uses means rural Southland is no longer solely dependent on sheep farming, but on sheep **plus** dairy **plus** dairy support.

Rural Southland is characteristic of a multifunctional rural space as explained by Holmes (2006). It is a place of food and fibre production; landscape and biodiversity maintenance; socio-economic viability and vitality and a generator of employment (Holmes, 2006; G. A. Wilson, 2007; Bjorkhaug & Richards, 2008). Our participants recognised these features of rural Southland. Most acknowledged the socio-economic benefits dairying has brought, particularly its role as a generator of employment. The farmers interviewed saw the land, first and foremost, as a source of production of milk, meat and wool. Other participants valued its amenity values for water-based activities such as fishing, food collecting, swimming and boating; and for duck-shooting, hunting and tramping. With over 6 per cent of the population taking part in duck-shooting, this is an important social and recreational event on Southland's calendar year. The tendency of the early dairy farmers to bulldoze in the farm duck ponds created alarm in the duck-shooting fraternity. The visual changes in the landscape and the loss of biodiversity concerned several participants.

It is clear that while Southland is a production-oriented province, consumption aspects are also important to its inhabitants and its economy. As a result, the protection strategies put in place to protect consumption, particularly by Environment Southland, have created tensions between farmers and the general public. The Southland Times has taken on the role of watchdog for the public, fuelling these tensions. However, as the dairy sector matures, there are hints of change, such as the presence of dairy farmers in the top environmental awards in 2013. Southland has just experienced, perhaps, its greatest upheaval in recent times, but land use and community relationships will continue to evolve. The rest of this article examines some of this multifunctionality in more detail.

Dairying and the environment

Soil, land and water directly underpin our agricultural sector and provide services of environmental, social and cultural value (Landcare Research, 2009). It is clear that intensification of dairying is affecting the environment (Parliamentary Commissioner for the Environment, 2004; Jay & Morad, 2007; Ministry for the Environment, 2009). The intensification and expansion of dairying has put additional pressures on Southland's freshwater ecosystems through: dairying spreading into marginal land; water abstraction for

irrigation; loss of vegetation (reducing biodiversity and increasing run-off); drainage of wet areas and wetlands; and the requirement for dairy support (Environment Southland & Te Ao Marama Inc, 2011).

The participants in this project generally showed concern about water quality but the perceptions of aspects of water quality varied greatly with no real consensus on whether water quality/quantity had deteriorated significantly or not, although iwi recognise that their traditional food sources are no longer safe to eat in some areas, particularly estuaries. There was more consensus regarding improving levels of effluent storage and disposal compliance. Environment Southland is continually improving and refining their monitoring systems but so far are unable *"to fully quantify the impact farming practices are having on freshwater ecosystems"* (Environment Southland & Te Ao Marama Inc, 2011, p. 91).

Hunting and fishing are important recreational and economic activities in Southland. Fish and Game surveys show a decline in the number of mallard ducks but not in fish numbers. However, there has been a move from lowland fishing to increased fishing in the headwaters, suggesting fishermen perceive a loss of water quality downstream.

Dairying and the economy

Southland still has three times as many sheep and beef and cropping farms as dairy farms (Statistics New Zealand, personal communication, March 2013) but the growth of dairying has had a significant influence on employment opportunities in both the on-farm and off-farm agriculturally-related sectors through dairying's different requirements for supplies and services compared to sheep farming. Infometrics (2012) notes that, between 2009 and 2010, "*Agriculture … has been a major source of growth in demand for highly skilled farm owners and managers but also lower skilled farm workers"* with an increase of 220 jobs in that year alone. Of this, "dairy cattle farming" was the largest creator of jobs in Southland between 2009 and 2010, generating an additional 236 positions. There was a loss of nearly 500 workers in the sheep sub-industry from 2002-2007, some on-farm employees, but also from Meat Processing (Infometrics, 2008). The quantitative data indicates that the Southland economy has performed well over the past half-decade in comparison to other regions. Unemployment is low and GDP growth has been strong, above the New Zealand average (Infometrics, 2012).

SOCIAL INFLUENCES OF THE GROWTH OF DAIRYING

Population growth and employment opportunities

Previous literature shows that the Waitaki, Amuri and mid-Canterbury areas all experienced a substantial population growth after their conversion to dairying (McCrostie Little & Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003; Ashburton District Council, 2008; Ashburton District Council Community Planning Team., 2011; Rawlinson, 2011). Unlike these areas, Southland's population reached its lowest point in 2001 and since then has climbed slightly. Statistics New Zealand predicts that while the total Southland and Invercargill city populations will decline slightly up until 2031, Southland District will remain stable and Gore District will decline slightly (Figure 3).

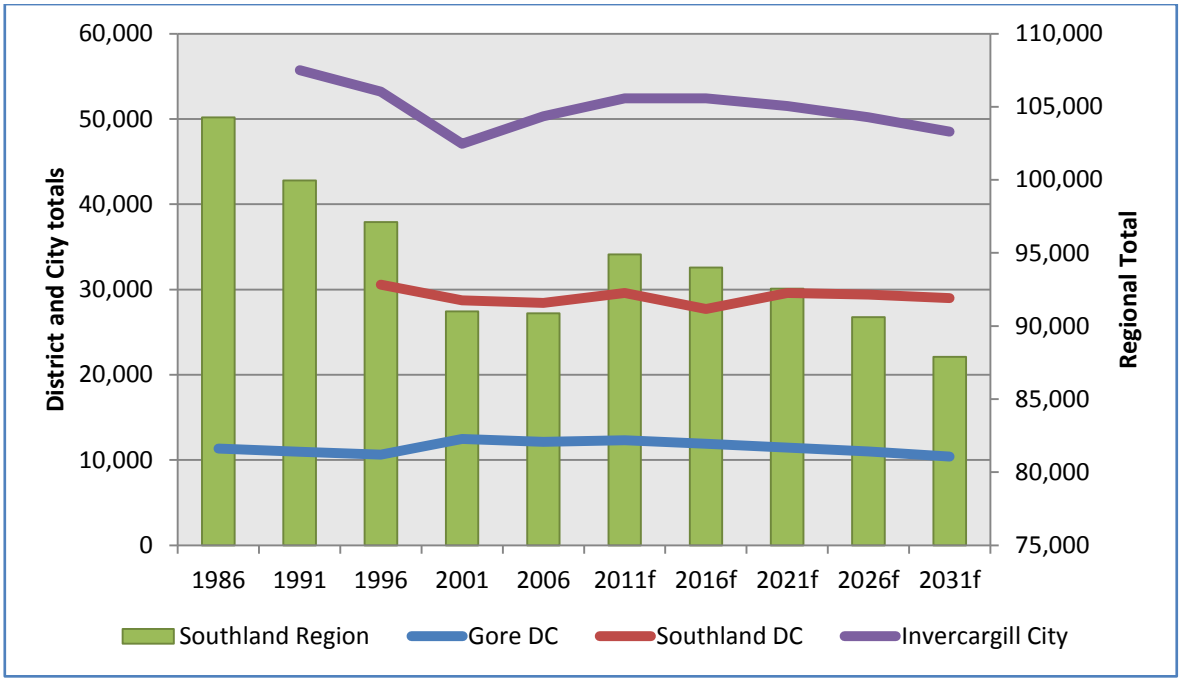

Figure 3 Population changes and forecast change in Gore District, Southland District, Invercargill City and Southland Region (Source: Statistics New Zealand, personal communication, March 2013; Our Way Southland, 2012)

As there has been no significant economic growth in other sectors of Southland, it seems likely that the arrest of the population decline could be attributed to the growth of dairying. The rate of annual population growth in Southland has outstripped the rate of growth in New Zealand since 2006.

Dairy farm infrastructure, such as sheds, milking machines, lanes, effluent ponds and irrigation systems, requires more maintenance than sheep farm infrastructure. Fertiliser requirements are substantially higher, as indicated in Figure 4, providing greater employment for fertiliser reps, transport operators and contractors. Transport operators have diversified into lane and effluent pond construction and maintenance to compensate for the loss of sheep cartage. Dairying recruits its tanker drivers from these contractors. Shearing contractors and those offering sheep spraying, have also suffered, whereas most other contractors, particularly those involved in forage harvesting, have benefitted. There has been growth in the requirement of professional services such as rural bankers, accountants and farm consultancy. One of the main veterinary businesses has grown by over 300 per cent due to the higher veterinary requirements in dairying. The growth in the number of young professionals has boosted house sales in the rural towns.

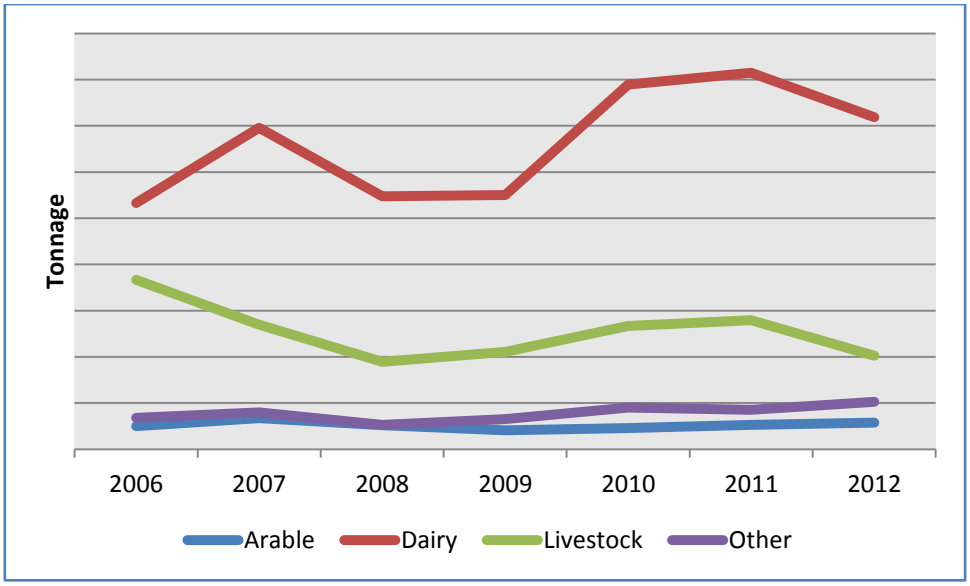

Figure 4 Ravensdown Tonnage Sales by farm type in Southland 2006 to 2012 (Source: Ravensdown, personal communication, 17 May 2013)

The effect of changing demographics

While Alston (2007) outlined the need for vibrant rural communities in Australia, more locally, the work with the ARGOS farmers identified their need for a sense of belonging, as some saw their local communities dying while other communities were being revitalised by an influx of young families (Hunt, Rosin, Fairweather, & Campbell, 2006). Southland is experiencing this revitalisation as the aging sheep farmers are being replaced by younger dairy farmers with their relatively youthful employees. This is apparent from the difference between the top-heavy age pyramid for sheep farmers when compared with the more balanced, almost inverse, age pyramid for dairy farmers in 2006 (Figure 5). We can also see that in Winton, the demographics of the population have changed slightly from 2001 to 2006. Despite the population declining by 0.5 per cent from 2001 to 2006, there was a 7 per cent increase in the number of residents aged 25 to 34 (Statistics New Zealand, 2006a), perhaps attributable to the influence of dairying.

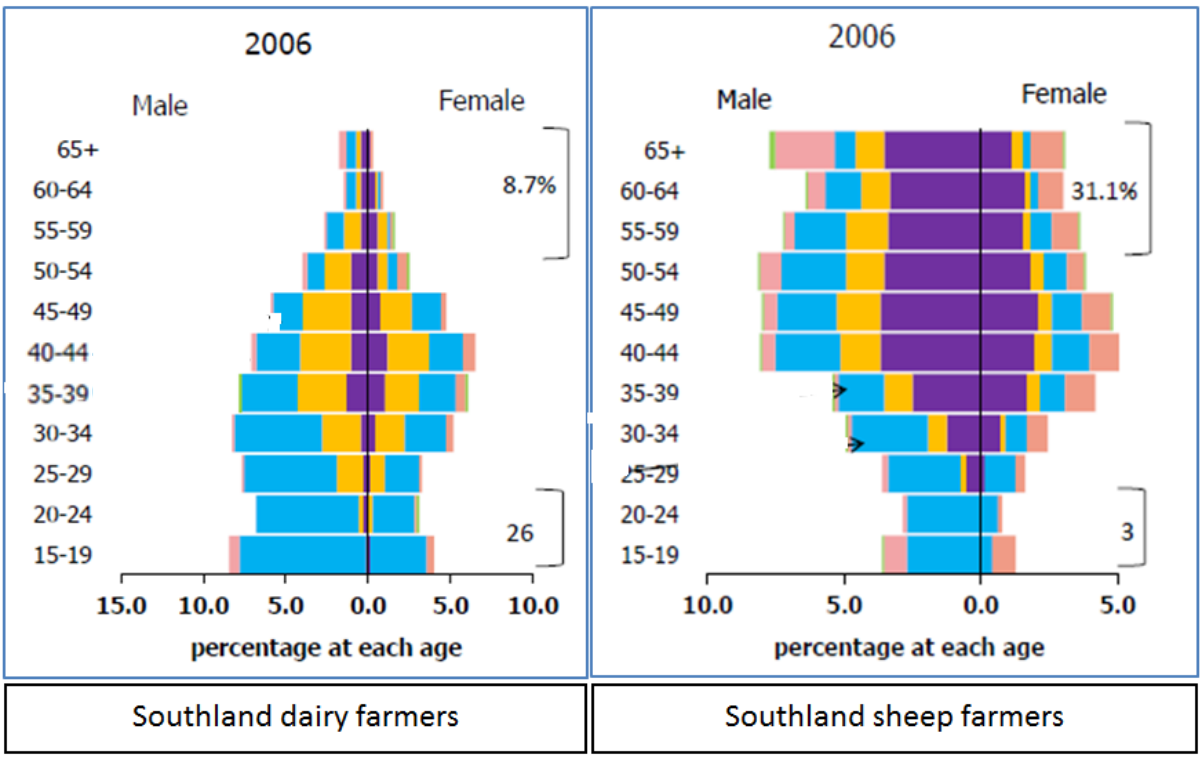

Figure 5 Farmers age by occupation (Source: Jackson, 2012)

Rural Schools

The rural schools show evidence of this revitalisation in a slower rate of decline of their rolls (e.g., the schools in the Winton and Gore areas) compared to the total Southland school rolls (Figure 7). As identified in the literature, the improved roll situation and the value of a multicultural classroom, come at a cost of greater transiency (Kearns, Lewis, McCreanor, & Witten, 2009; Rawlinson, 2011; Ward, 2011). One rural primary school in Southland experienced 20 to 30 per cent student movement into and out of the school every year over a five year period. Students who are highly mobile are more likely to have special educational, behavioural and social needs, with up to 41 per cent of them being low achievers (Smith, 2010). However, transiency is socially disruptive for all students and also creates significant resourcing difficulties for the schools.

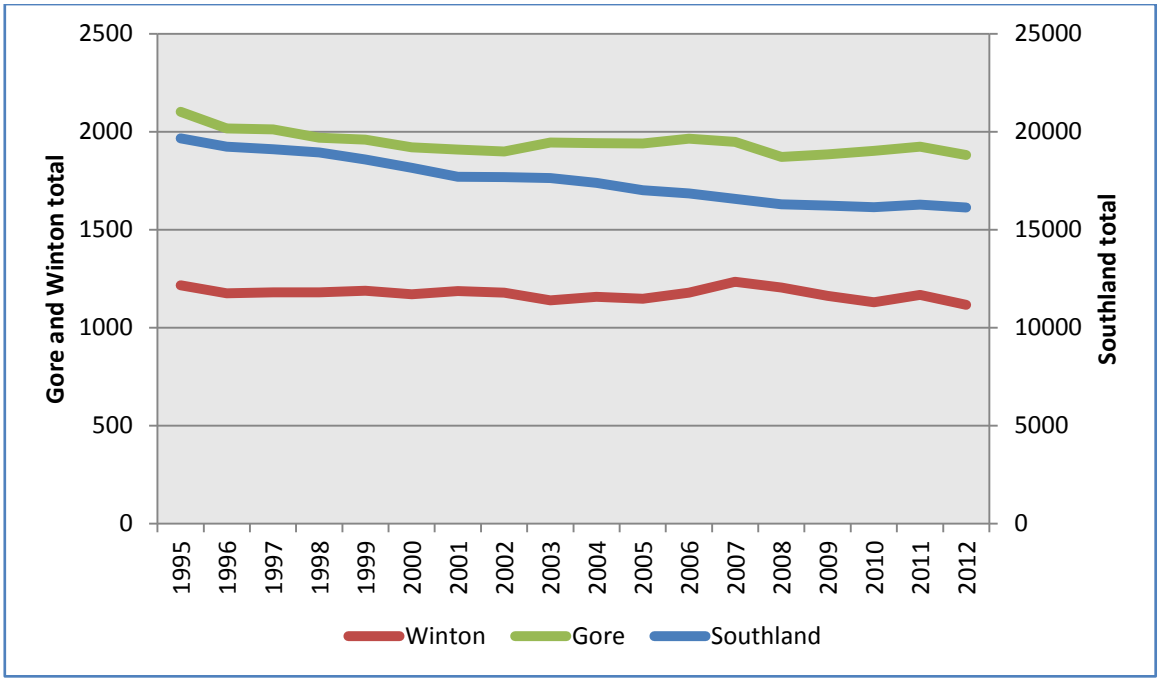

Figure 6 School rolls in Winton, Southland and Gore 1995 to 2012 (Source: Ministry of Education, personal communication, February 2013)

Community based challenges

We know the introduction of dairying into new areas has the potential to create a number of conflicts in the community. There was evidence that some North Island farmers who moved into existing dairying areas found greater acceptance then those moving into newer dairying areas. This differs from other studies where dairying was the new land use and conflicts arose (McCrostie Little & Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003; Rawlinson, 2011). Positive community relationships have developed in Southland where there is strong informal leadership. Examples of community-based actions included quarterly community barbeques, and Gypsy day gatherings where newcomers were welcomed and provided with a book about the area's history. The importance of these informal leaders in migrant communities was indicated by the loss of community interaction when the leaders moved to different areas in Southland.

In Southland, the future is bright for the cultural diversity that the dairy industry has helped to create. Not only were migrant workers used to fill vacancies on dairy farms, but their wives and partners were also employed in supermarkets, rest homes and at the district council. These *"fantastic people"* have opened Southlanders' eyes to the different cultures and places in the world.

There was no strong evidence that the growth of dairying in Southland has had a contributing influence on the rates of volunteering in community organisations, as was the case in Amuri and Waitaki (McCrostie Little & Taylor, 2001; McClintock *et al.*, 2002; Taylor *et al.*, 2003). Some local fire brigades in Southland have strong support and we found one dairy farm employee who would take proximity to a rural fire brigade into consideration when he moves to a new position. In general, it is the reluctance of the wider community to participate in voluntary activities that is having a greater influence rather than dairy farming.

In addition, Southland has some *"fantastic"* new sporting facilities in Winton, Gore and Invercargill. Gore has a strong sporting culture and the growth of young professionals has helped to strengthen local sporting groups. We found dairy farmers who had the time to participate in sporting activities with their children or local sports clubs and the Filipino community have their own basketball league. This contradicts the perception that dairy farmers have little time to engage in sporting or community activities (McClintock *et al.*, 2002; Taylor *et al.*, 2003; Allan, 2004; Rawlinson, 2011).

CONCLUSION

The goal of this investigation was to explore the social influence of the growth of dairying, and the consequent loss of sheep and beef farming. In other words, how dairying has affected the lives of Southlanders. Despite conducting 60 semi-formal interviews and speaking to many people informally, we realise that this has not produced the complete picture.

One of the benefits of the growth of dairying is the diversification of land use options; both offering existing sheep farmers greater opportunities for land use as well as increasing their equity, and providing Southland with the greater resilience to economic shocks and weather events.

The early dairy farmers were not warmly welcomed into many Southland communities as they were seen as having different values and cultures to the generational, traditional Southland sheep farmers. Even today, some resentment is still evident as some dairy farmers, carrying heavy debt loads, tend to prefer transactional contracts in preference to the relational long-lasting, trust contracts favoured by the traditional farmers.

The major obvious changes in off-farm employment can be found in all three urban areas with the growth of rural supplies and services. Less obvious is the growth of tradespeople and professional services such as vets, accountants, lawyers, bankers and a range of consultants.

The increase in on-farm employment can be seen through the proliferation of farm accommodation across the countryside. This has created revitalised rural communities across Southland, replacing the previous communities which were losing schools and services. Dairying requires a younger workforce so aging dairy farmers will continue to employ younger staff into the future and, hopefully, maintain strong rural communities.

Primary schools have benefitted from the arrest of declining rolls and from the diversity that both New Zealand and overseas migrants have brought to the classrooms. However, the transiency associated with dairying affects school resourcing and impacts negatively on learning and social relationships.

While the "dirty dairying" tag has been used in Southland, this research found that the perceptions of Southlanders were that dairy farmers are making an effort to improve compliance levels. While there is evidence of degradation of waterways, there has been insufficient monitoring to determine the degree of pollution and the trends of water quality. This was reflected in the responses of participants; there was no consensus on the overall environmental effect of dairying.

Dairying remains a very new industry in Southland. It is still settling into its place in the multifunctional Southland landscape, and its farmers into their niche in Southland society. Further change is to be expected yet, but it is apparent that Southlanders recognise the

economic benefits it brings and are slowly beginning to accept the social changes accompanying the land use changes.

Acknowledgement
We would like to thank DairyNZ for funding this project.

REFERENCE LIST

Allan, S. J. (2004). *The boundaryless nature of the dairy farming career and its impact on the individual, the family, and the community: an ethnographical case study of Culverden, a rural North Canterbury town.* (Master of Commerce in Management), University of Canterbury.

Alston, M. (2007). Maintaining vibrant rural communities. In D. L. Swain, E. Charmley, J. W. Steele & S. G. Coffey (Eds.), *Redesigning animal agriculture: The challenge of the 21st century* (pp. 18-29). Oxfordshire: CAB International.

Argent, N. (2002). From Pillar to Post? In search of the post-productivist countryside in Australia. *Australian Geographer, 33*(1), 97-114.

Ashburton District Council. (2008). District Population Facts and Figures. Ashburton: Ashburton District Council

Ashburton District Council Community Planning Team. (2011). District Facts and Figures. from www.ashburtondc.govt.nz

Barlow, K., & Cocklin, C. (2003). Reconstructing rurality and community: plantation forestry in Victoria,Australia. *Journal of Rural Studies, 19*, 503-519.

Bjorkhaug, H., & Richards, C. A. (2008). Multifunctional agriculture in policy and practice? A comparative analysis of Norway and Australia. *Journal of Rural Studies, 24*, 98-111.

Cant, G., & Evans, M. (1983). Plans for the plains: the irrigation debates. In R. D. Bedford & A. P. Sturman (Eds.), *Canterbury at the Crossroads: issues for the Eighties*. Christchurch: New Zealand Geographical Society.

Cropp, A. (2010, 1 July). Muddy Waters, *The Press*, p. 13.

DairyNZ. (2013). New Dairy Industry Strategy sets ambitious agenda [Press release]

Edkins, R. (2003). *Dairying and Employment in the Amuri district, North Canterbury: 1983 to 2002.* (Master of Commerce (Agricultural)), Lincoln University, Lincoln.

Environment Southland, & Te Ao Marama Inc. (2011). Our Ecosystems: How healthy is the life in our water and our freshwater ecosystems? Part 2 of Southland Water 2010: Report on the State of Southland's Freshwater Environment. Invercargill: Environment Southland Publication number 2011/7.

Evans, M., & Cant, G. (1981). The Effect of Irrigation on Farm Production and Rural Settlement in Mid Canterbury: A Comparison of the Irrigated and Dryland Farming Zones in the Lyndhurst-Pendarves Area, 1945-1976. *New Zealand Geographer, 37*(2), 58-66.

Fegan, J. (2013). The changing face of the New Zealand dairy farm employee. *Primary Industry Management, 17*(1), 8-9.

Fonterra, Regional Councils, Ministry for the Environment, & Ministry of Agriculture and Forestry. (2003). Dairying and Clean Streams ACCORD between Fonterra Co-operative Group, Regional Councils, Ministry for the Environment, and Ministry of Agriculture and Forestry. http://www.mfe.govt.nz/issues/land/rural/dairying-accord-may03.pdf.

Forney, J. (2012). The Conversion of Family Farms in Southland: A case study for "Rural Futures: Building adaptive management capability to deliver sustainable pastoral farm

systems". Dunedin, New Zealand: Centre for Sustainability: Agriculture, Food, Energy, Environment, University of Otago.
Gray, J. (2013, Wednesday 13 July). Fonterra payout lift big boost for NZ economy, *The New Zealand herald*, *http://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=10906047*.
Greenhalgh, I. J. (2010). *The role of the rural contractor in flexible labour use on South Island sheep and beef farms.* (Master of Applied Science in International Rural Development), Lincoln University, Lincoln
Holmes, J. (2002). Diversity and change in Australia's rangelands: a post-productivist transition with a difference? *Transactions of the Institute of British Geographers, 27*, 362-284.
Holmes, J. (2006). Impulses towards a multifunctional transition in rural Australia: Gaps in the research agenda. *Journal of Rural Studies, 22*, 142-160.
Hunt, L., Rosin, C., Fairweather, J., & Campbell, A. J. (2006). Understanding approaches to sheep/beef production in New Zealand: Report on first qualitative interviews with sheep/beef participants (ARGOS Research Report No. 06/01): Agribusiness Group, Lincoln University & University of Otago, New Zealand: Agricultural Research Group on Sustainability. Retrieved from http://www.argos.org.nz/pdf_files/Research_Report_06_01_Qual1_SB.pdf
Ilbery, B., & Bowler, I. (1998). From agricultural productivism to post-productivism. In B. Ilbery (Ed.), *The Geography of Rural Change*. Harlow, London.: Pearson Education Limited.
Infometrics. (2008). An Assessment for the Demand for and Supply of Labour in Southland region: Report prepared for Venture Southland, available from: http://www.infometrics.co.nz/reports/southland_labour.pdf.
Infometrics. (2012). Labour Market and Economic Profile: Southland: Infometrics Limited, available from: http://www.infometrics.co.nz/reports/regional/TEC/Southland-Revised-Jun2012.pdf.
Jackson, N. (2012). *Demographic trends and implications for Southland*. Paper presented at the Presentation to Southland Leaders Forum, Invercargill, available from: http://www.ourwaysouthland.org.nz/documents/2012-southland-demographic.pdf.
Jay, M. (2004). Productivist and Post-productivist Conceptualisations of Agriculture from a New Zealand Perspective. In G. Kearsley & B. Fitzharris (Eds.), *Glimpses of a Gaian World, Essays in Honour of Peter Holland* (pp. 151-170). Dunedin: School of Social Science.
Jay, M. (2005). Remnants of the Waikato: Native forest survival in a production landscape. *New Zealand Geographer, 61*(1), 14-28.
Jay, M. (2007). The political economy of a productivist agriculture: New Zealand dairy discourses. *Food Policy, 32*, 266-279.
Jay, M., & Morad, M. (2007). Crying over split milk: A critical assessment of the ecological modernization of New Zealand's Dairy Industry. *Society and Natural Resources, 20*(5), 469-478.
Kearns, R. A., Lewis, N., McCreanor, T., & Witten, K. (2009). 'The status quo is not an option': Community impacts of school closure in South Taranaki, New Zealand. *Journal of Rural Studies, 25*, 131-140.
Landcare Research. (2009). The Economy and The Environment, Annual Report Part One: http://www.landcareresearch.co.nz/__data/assets/pdf_file/0004/42367/Web_Annual_Report_2009.pdf.
LIC. (2012). New Zealand Dairy Statistics 2011-2012. Hamilton, New Zealand: LIC & DairyNZ.

Mackay, M., Perkins, H. C., & Espiner, S. (2009). The Study of Rural Change from a Social Scientific Perspective: A Literature Review and Annotated Bibliography. Lincoln, Christchurch: Department of Social Science, Parks, Recreation, Tourism and Sport, Faculty of Environment, Society and Design, Lincoln University

McClintock, W., Taylor, N., & McCrostie Little, H. (2002). Social Assessment of land use change under irrigation. New Zealand: Working Paper 33.

McCrostie Little, H., & Taylor, N. (2001). *Social and Economic Impacts Associated with Irrigated Land Use Change*. Paper presented at the New Zealand Association for Agricultural and Resource Economics (NZAERS) Conference, Blenheim.

Ministry for Primary Industries. (2013). The Dairying and Clean Streams Accord: Snapshot of progress 2011/2012. http://www.mpi.govt.nz/news-resources/publications.aspx?title=Dairying%20and%20Clean%20Streams%20Accord .

Ministry for the Environment. (2009). Water Quality in Selected Dairy Farming Catchments: A baseline to support future water-quality trend assessments. Wellington, New Zealand http://www.mfe.govt.nz/publications/land/water-quality-selected-dairying-farming-catchments/water-quality-selected-dairying-farming-catchments.pdf.

Nettle, R. (2012). *Farmers growing farmers: The role of employment practices in reproducing dairy farming in Australia*. Paper presented at the International Farming Systems Association, Aarhus, Denmark, available from: http://ifsa.boku.ac.at/cms/fileadmin/Proceeding2012/IFSA2012_WS3.2_Nettle.pdf.

Nettle, R., Paine, M. S., & Petheram, J. (2005). The employment relationship - a conceptual model developed from farming case studies. *New Zealand Journal of Employment Relations, 30*(2), 19-35.

Our Way Southland. (2012). Southland's Community Outcomes: Monitoring Report 2009-2012. Invercargill, New Zealand Report for Environment Southland, Invercargill City Council, Southland District Council and Gore District Council, available from: http://www.ourwaysouthland.org.nz/documents/ows-community-outcomes-report-2009-12.pdf.

Pangborn, M. C. (2012). *Growth and Innovation in the Canterbury Dairy Industry.* (A thesis submitted for Doctor of Philosophy), Lincoln University. Retrieved from http://researcharchive.lincoln.ac.nz/dspace/bitstream/10182/5130/3/Pangborn_PhD.pdf

Parliamentary Commissioner for the Environment. (2004). Growing for good: summary of key messages. Wellington, New Zealand: http://www.pce.parliament.nz/assets/Uploads/Reports/pdf/GfG_summary.pdf.

Rawlinson, P. J. (2011). *The influence of the Black and White tide: dairy farming, landscape and community change.* (Thesis submitted as part of Master of Social Science degree), Lincoln University, Christchurch.

Rawlinson, P. J., Tipples, R., Greenhalgh, J., & Trafford, S. (2012). Migrant Workers and the growth of dairy farming in Southland, New Zealand: Report prepared for the Centre of Excellence in Farm Business Management, Lincoln University and Massey University.

Schilling, C., Zucollo, J., & Nixon, C. (2010). Dairy's role in sustaining New Zealand - the Sector's contribution to the economy. Wellington: Report to Fonterra and Dairy New Zealand.

Smith, J. (2010). Is there a need for RTLB to develop systems to help transient students assimulate into their new schools on Gypsy day in my Central Southland cluster? Southland, New Zealand: Report for Primary Teachers Sabbatical Term Three 2010.

Statistics New Zealand. (2006a). QuickStats about Gore District. Retrieved 4 August, 2013, from http://www.stats.govt.nz/Census/2006CensusHomePage/QuickStats/AboutAPlace/SnapShot.aspx?id=2000074

Statistics New Zealand. (2006b). Winton Quick Stats. Retrieved 4 August, 2013, from http://www.stats.govt.nz/Census/2006CensusHomePage/QuickStats/AboutAPlace/SnapShot.aspx?pdf=1&type=au&ParentID=1000015&ss=y&tab=PopulationDwellings&id=3610500

Taylor, N., McClintock, W., & McCrostie Little, H. (2003). *Assessing the social impacts of irrigation - a framework based on New Zealand cases*. Paper presented at the Paper presented to the International Association for Impact Assessment Annual Meeting, Marrakech, Morocco.

Tipples, R., & Greenhalgh, J. (2011). Establishing a baseline for measuring employees' experiences of "people management" practices in dairy farming: Dairy New Zealand & Lincoln University.

Tipples, R., & Lucock, D. (2004). Foreign workers and dairy farming. *Primary Industry Management, 7*(4), 42-44.

Tipples, R., & Morriss, S. (2002). The Farm Labour Crisis. *Primary Industry Management, 5*(4), 25-27.

Ward, K. (2011). What impact has the increase in dairying had on rural schools and their communities in New Zealand. Ashburton, New Zealand: Principal's Sabbatical Report for the Ministry of Education

Wilson, G. A. (2001). From productivism to post-productivism . . .and back again? Exploring the (un)changed natural and mental landscapes of European agriculture. *Transactions of the Institute of British Geographers, 26*, 77-102.

Wilson, G. A. (2007). *Multifunctional Agriculture: a transition theory perspective*. England: CABI.

Wilson, O. (1994). 'They Changed the Rules' Farm Family Responses to Agricultural Deregulation in Southland, New Zealand. *New Zealand Geographer, 50*(1), 3-13.

Woods, M. (2005). *Rural Geography: Processes, Responses and Experiences of Rural Restructuring*. London: Sage Publications.