

Recent Land Use Changes in Rural New Zealand: broad statistics

Adjunct Paper for EDS Conference on *Conflict in Paradise*, Auckland

Charles Crothers
Dept. of Social Sciences
and Economic and Social Statistics Unit
AUT University
May, 2008

The rural landscape of New Zealand is vastly different today than it was several decades ago when farming was largely restricted to dairying, beef and sheep, although with some combinations. More recently, there is much more diversity and a picked-up pace of change. This paper attempts to document some aspects of that change. Future statistical work will be concerned to link land use changes with the social characteristics of different types of rural area, and ones undergoing different types of change. A brief bibliographical overview of NZ studies of rural change is also provided.

Conceptualisation:

Rural change can take several different dimensions, which might include:

- land cover (e.g. grass, indigenous vegetation)
- land use (e.g. livestock and/or crops)
- farming practises/infrastructure: e.g. fertiliser, irrigation
- farm types
- employment, ownership etc.

Land use can be conceptualised as being set between the 'prior', causal factors – environmental, economic, social, cultural etc. - shaping the rural change and also the - environmental, economic, social, cultural etc. - consequences, some of which feedback to effect rural land use. Alongside the more agricultural production land uses are a range of other rural land uses which are of growing importance and whose 'fit' with agricultural production varies widely:

- recreation/leisure
- retirement and 'sea-change'
- rural residential/ small holdings
- tourism
- fishing and other resource extraction, processing etc.

Land use change, its causes and its consequences operate across a range of different spatial scales, with NZ farming particularly affected by global economic forces. In this paper data is presented at national, regional (viz. Regional Council areas), Local Authority, and local (viz. area unit) levels. However, the concentration is at regional level as it is not easy to present patterns at lower spatial levels.

There are three main data sources which can be drawn on in measuring land use and changes:

- the 5 yearly Agricultural Production census (e.g. 2002 and 2007) and Annual Agricultural survey (in intervening years) which includes information on

livestock numbers and different land uses. (One limitation of the agricultural production data is that there are difficulties in accessing it for finer spatial levels. It mainly covers no. of enterprises, areas in different uses, crops and livestock types/numbers.)

- through the annual Business Demographic Statistics survey which collects limited information for each enterprise and/or geographical unit – especially its fte employment and industry type (a detailed classification is used), but also some other information including ownership type and export involvement. A particular concern is that Agriculture has been excluded from its coverage except for 1997/98 and 2000- present (although retrospective tables have been recently released).
- through the 5 yearly census which measures occupations, and also industries (down to a fine level of detail) both of people living in rural areas and those working there (often of course the same people). (Census data can also be used to develop profiles of the social characteristics of rural occupations and/or industries, for NZ as a whole or for various more detailed spatial levels. The census data is vulnerable to changing definitions)

Literature:

There are no thorough up-to-date research reviews of the changing socio-economic characteristics of rural areas in New Zealand. However, relevant projects include:

- University of Otago Rural Sustainability study programme (<http://www.otago.ac.nz/anthropology/research/social/ruralsustainability.html>) which attempts an integrated collaborative approach focusing on cultural/social and ideological/discursive factors influencing rural sustainability.
- Lincoln University's Agribusiness and Economics Research Unit which has carried out a wide range of survey and another analytical work on rural topics;
- University of Canterbury's 1990s research on Studies in Rural Change, Rural Ministry Unit/Dept of Geography
- Universities of Waikato recent program on New Demographic Directions Programme <http://www.waikato.ac.nz/wfass/migration/project-demographic.shtml#2> which has provided a regional synthesis of New Zealand's recent demographic and socio-economic transformations and the current work on <http://wfass.waikato.ac.nz/gtep/research/rtp/>;
- the University of Auckland 1990s project on Land use change in Northland,
- together with a range of contributions from research commissioned by Ministries or regional councils.

Illustrative research material includes the more conceptual framework material (e.g. Curtis, 2004 or Joseph, 1999); work on agricultural/rural restructuring (e.g. Burch et al, 1999; Cloke, 1989; Coombes and Campbell, 1996; Johnsen, 2003; LeHeron and Roche, 1999; Liepins, 2000; and Tipples, 2007); settlement characteristics (e.g. Liu and Temara, 1998; Morris et al, 1997; Mulet-Marquis, 2008; Sampson et al, 2007);, demography and attitudes (e.g. Anderson and Moran, 1984; Chalmers and Joseph

,1997; Cook and Fairweather, 2005; Fairweather, 1995; Keeling, 2001; Moran et al, 1993), and also non-agricultural changes (e.g. Waldegrave and Stuart, 1997).

Findings:

This paper includes only a few key tables but others have been posted on the AUT Economic and Social Statistics Unit website (<http://www.ipp.org.nz/essu.htm>). The most recent data on land-use is only available for 2002. Table 1 shows the expected pattern of widespread pastoral land use with particular regional pockets of horticultural and forest production. Shifts over the 1994-2002 period include a broad rollback of agricultural land in general and especially grazing land, a mixed picture in relation to horticulture and increases in the other two categories of land use.

Table 1: Land Use Patterns: Percents of each Region: 2002
Source: SNZ, Agriculture Census

Region	Grazing, arable, fodder and fallow land -02	Horticultural 02	Planted production forest 02	Other land 02
Northland	61.73	.61	23.15	14.52
Auckland	64.90	2.98	17.13	14.72
Waikato	69.11	.58	19.06	11.24
Bay of Plenty	40.83	2.44	44.47	12.25
Gisborne	60.89	1.15	22.43	15.53
Hawke's Bay	74.37	1.85	12.82	10.97
Taranaki	77.51	.25	5.75	16.50
Manawatu-Wanganui	78.42	.32	9.14	12.11
Wellington	70.08	.48	13.66	15.77
Total North Island	68.38	.96	17.70	12.97
Tasman	41.52	2.51	36.51	19.41
Nelson	23.37	.	54.13	23.37
Marlborough	73.27	1.41	9.30	16.02
West Coast	56.68	.	.	.
Canterbury	88.58	.39	3.44	7.59
Otago	88.26	.22	5.62	5.88
Southland	88.72	.11	5.92	5.25
Chatham Islands	60.71	.	.	.
Total South Island	84.26	.45	6.60	8.68
Total New Zealand	76.52	.70	12.01	10.77

Data on land-use is supplemented by data on changes across several aspects of rural land-use. It is important to get a long term perspective on rural change, with Table 2 showing the expected almost halving of the national sheep flock, the decline in beef numbers compared to an almost doubling of the national dairy herd and massive increase in deer numbers. Whereas sheep decline is fairly uniform across both islands the expected boom in south island dairying is shown very clearly. Closer examination of the overtime pattern (not reported here) suggests that within this period there have been spatial shifts in the over-time pattern.

Table 2: Long-Term Changes in Livestock Numbers: 1981-2007
Source: SNZ, Agricultural Censuses

Livestock Nos. (000s)	1981	2007	% Change
<i>Totals</i>			
sheep	69883	38460	-44.97
dairy	2922	5261	80.04
beef	5113	4394	-14.07
deer	109	1396	1178.88

Regional level detail of these changes for the 2002-2007 period show that the major changes involve dairy and beef. Forestry activity has declined in most regions over the last period; as have crops, with the exception of a north north island increase in maize production. Apart from wine grapes, the production of orcharding in most regions has declined, as has the production of other crops with some detailed exceptions.

It is possible to profile 2000-2007 changes of different agricultural industries in terms of enterprises, geographical units, and employment FTEs. Growth industries include services to agriculture in general, grape growing, beery fruit growing, beef farms, and dairy farm employment (though not units). While changes in enterprises and geographical units go hand-in-hand, changes in employment are often somewhat unrelated.

Further analyses, which will be reported on the Economic and Social Statistics website (<http://www.ipp.org.nz/essu.htm>) when they are available will examine the spatial distribution of changes in major agricultural types by Local Authority level, including drilling down to the further level of area units to provide a summary of the extent to which change is happening at these more detailed levels, but which may not be so apparent when the spatial scale is left at a more general level reported here.

The final two analyses of change indicate further possibilities when appropriate census data is deployed. When agriculture-related occupations and how these have shifted since 1996 are examined the main message seems to be the decline in traditional farming occupations but an increase in other occupation groups.

Finally, Table 3 reports on the way in which population numbers are changing. Since 1996 rural areas have grown almost as fast as the expansion in main urban areas, while slipping very slightly in relative terms. Rural centres are also growing, although the slowest growing of the different types of area unit, with the median rural center losing population.

Table 3: Population Change 1996-2007: Percent Change

Type of Area Unit	1991-2006 Percent Change of Total Population	Median, Census Usually Resident Population Count
Major Urban Area	24.0%	7.1646
Secondary Urban Area	5.6%	.0000
Tertiary Urban Area	8.6%	-1.7833
Rural Center	5.2%	-6.0662
Rural Area	18.4%	2.0710
Total	20.4%	2.3568

It is clearly not enough merely to document these several dimensions of change, but to connect them up and to trace through causes and consequences. But this is a further task.

Selected References on Rural Change in New Zealand

- Anderson, Grant; Moran, Warren Farming systems of Northland and their demographic relationships *New Zealand Population Review*, Jul 1984; v.10 n.2:p.50-64
- Burch, David; Goss, Jasper; Lawrence, Geoffrey; Rickson, Roy E. Introduction: The Global Restructuring of Food and Agriculture: Contingencies and Parallels in Australia and New Zealand *Rural Sociology*, vol. 64, no. 2, pp. 179-185, June 1999
- Chalmers, A. I.; Joseph, Alun E. Rural Change and the Elderly in Rural Places: Commentaries from New Zealand *Journal of Rural Studies*, vol. 14, no. 2, pp. 155-165, Apr 1998
- Chalmers, Lex; Joseph, Alun Population Dynamics and Settlement Systems: A Case Study in the Waikato *New Zealand Geographer*, vol. 53, no. 1, pp. 14-21, Apr 1997
- Cloke, Paul State Deregulation and New Zealand's Agricultural Sector *Sociologia Ruralis*, vol. 29, no. 1, pp. 34-48, 1989
- Cook, Andrew J. Characteristics of smallholdings in New Zealand: results from a nationwide survey / Andrew J. Cook and John R. Fairweather. [Lincoln] N.Z.: Agribusiness and Economics Research Unit, Lincoln University, [2005]
- Coombes, Brad; Campbell, Hugh Pluriactivity In (and Beyond?) A Regulationist Crisis *New Zealand Geographer*, vol. 52, no. 2, pp. 11-17, Oct 1996
- Curtis, Bruce (2004) Rural sociology: a partial review. *New Zealand Sociology*, 2004; v.19 n.2:p.180-196 (Special Issue on Rural Sociology in NZ)
- Fairweather, John R. Changes in the Age of Farmers in New Zealand, 1971-1991 *New Zealand Geographer*, vol. 51, no. 1, pp. 24-27, Apr 1995
- Johnsen, Sarah Contingency Revealed: New Zealand Farmers' Experiences of Agricultural Restructuring *Sociologia Ruralis*, vol. 43, no. 2, pp. 128-153, Apr 2003
- Joseph, A. E. Toward an understanding of the interrelated dynamics of change in agriculture and rural communities Hamilton, N.Z.: Population Studies Centre, University of Waikato, [1999]
- Keeling, Sally Relative Distance: Ageing in Rural New Zealand *Ageing and Society*, vol. 21, no. 5, pp. 605-619, Sept 2001
- Le Heron, Richard; Roche, Michael Rapid Reregulation, Agricultural Restructuring, and the Reimaging of Agriculture in New Zealand *Rural Sociology*, vol. 64, no. 2, pp. 203-218, June 1999
- Liepins, Ruth Exploring Rurality through 'Community': Discourses, Practices and Spaces Shaping Australian and New Zealand Rural 'Communities. *Journal of Rural Studies*, vol. 16, no. 3, pp. 325-341, July 2000
- Liu, James H.; Temara, Pou Leadership, Colonization, and Tradition: Identity and Economic Change in Ruatoki and Ruatahuna *Canadian Journal of Native Education*, vol. 22, no. 1, pp. 138-150, 1998
- Moran, Warren; Blunden, Greg; Greenwood, Julie The Role of Family Farming in Agrarian Change *Progress in Human Geography*, vol. 17, no. 1, pp. 22-42, 1993
- Morris, Carolyn Margaret; John R. Fairweather and Simon R. Swaffiel. Investigating community: imperatives for but constraints against land use change in the Mackenzie/Waitaki Basin / Carolyn Morris, [Lincoln] N.Z.: Agribusiness and Economics Research Unit, Lincoln University, [1997]
- Mulet-Marquis, Stephanie. New Zealand farm structure change and intensification /Stephanie Mulet-Marquis, John, R. Fairweather. Lincoln, N.Z.: Agribusiness and Economics Research Unit, Lincoln University, [2008]
- Sampson, Kaylene A.; Goodrich, Colin G.; Taylor, Nicholas C. A Social Assessment of Community Response to Forest Policy Change in South Westland, New

Zealand Society and Natural Resources, vol. 20, no. 3, pp. 199-212, Mar 2007

Tipples, Rupert The Further Re-regulation of Farming Employment Relations in New Zealand *Sociologia Ruralis*, vol. 47, no. 1, pp. 63-79, Jan 2007

Waldegrave, Charles; Stuart, Shane. Out of the Rat Race: The Migration of Low Income Urban Families to Small Town Wairarapa *New Zealand Geographer*, vol. 53, no. 1, pp. 22-29, Apr 1997