

9/8

A Study of Smallholdings and their Owners

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Foreword

The report, prepared jointly by AgriQuality New Zealand, Lincoln University and MAF, outlines the findings of a study undertaken in 2003/04 that was commissioned and funded by MAF.

In recent years, numbers of lifestyle blocks and other smallholdings have increased markedly as land around major urban centres has been subdivided into smaller units and sold as lifestyle blocks. In response, several district and city councils have attempted to constrain the 'loss' of farmland through by-laws that specify tight conditions under which subdivisions are to be permitted in future.

However, only a limited amount of research has been conducted on smallholdings and those who live on them. In particular, until this study, our knowledge of smallfarmers and lifestylers has been constrained by a lack of national survey data. Thus, until now, little was known of the biosecurity and land use characteristics of New Zealand smallholdings. Hence, MAF commissioned the study in order to enhance our understanding of smallholdings (defined within the study as properties between 0.4 ha and 30 ha in area) in New Zealand; their numbers, total areas involved, their land use and agricultural production, and levels of biosecurity awareness among those who operate them.

The report contains much valuable information on smallholdings, gathered through analysis of the relevant property registers, implementation of a questionnaire survey, and personal interviews. We hope that it will prove useful to stakeholders in their own policy and planning. However, we emphasise that the views expressed in this report are exclusively those of the authors and do not necessarily represent the views of MAF.

I commend this report to all who have an interest in smallholdings in New Zealand.

Alan Walker
Director, Policy Information and Regions
Ministry of Agriculture and Forestry

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Summary

For the purposes of this study, smallholdings were defined as blocks between 0.4 hectares (ha) and 30 ha in area. Those involved in the study self-identified from five distinct types provided within the questionnaire (lifestyler, hobby farmer, small farmer, farmer, horticulturalist/grower) that engage in different levels of agricultural production. However, property databases such as Quotable Value New Zealand's Valuation Roll and AgriQuality New Zealand's AgriBase database use their own definitions of lifestyle blocks and other holdings so that care must be exercised when comparing the results of our study with information from these databases.

BACKGROUND AND RATIONALE

The motives for the study were as follows:

- Concerns regarding conversion of near-urban farm land to lifestyle blocks and other smallholdings
- Questions concerning the contribution of smallholders to national agricultural production.
- A need to assess smallholders' thinking about biosecurity and environmental issues.

RESEARCH OBJECTIVES

The objectives of the study were to:

- Quantify the number of smallholdings in New Zealand and the area of land involved.
- Assess available land-based registries as to their coverage and accuracy of information on lifestyle blocks.
- Investigate land use on smallholdings.
- Assess smallholder awareness of biosecurity and environmental issues.

RESEARCH METHODS

The study involved the following research approaches:

- Analyse information on lifestyle blocks in the Valuation Roll and AgriBase.
- Conduct a ground-truthing exercise to assess the level of spatial completeness and accuracy (pertaining to smallholdings) of the Land Information Core Record System, the Valuation Roll and AgriBase.
- Conduct a postal questionnaire on a random sample of smallholders.

KEY FINDINGS

- There were 139,868 lifestyle block assessments in the Valuation Roll, totalling over 753,020 ha. The mean block size was 5.53 ha (median = 2.7, range 0.0006 - 955.7 ha).
- There were 22,687 farms with a lifestyle farm type (LIF) in AgriBase. The mean size was 4.97 ha (median = 3.8, range 0.01 – 603.1 ha). In all, AgriBase had some 60,213 properties, either categorised as LIF or ≤ 35 ha, involving 539,506 ha of land.
- Approximately 6,800 new lifestyle blocks are registered in the Valuation Roll annually. This equates to just over 37,600 ha per year converted to lifestyle blocks.
- There are different types of smallholders that have varying engagement in agriculture.
- Many smallholders are engaged in agricultural production, but in general this production does not solely support their households.
- Smallholders take action to control Tb.
- The use of, and intentions to use, organic methods are not as prevalent among smallholders as those of other farmers and growers.
- Most smallholders value the merits of country life, including peace and quiet and clean air, and are involved in country life through association with rural organisations.

- In general, smallholders engage in the management of diseases pests and weeds, and are aware of biosecurity issues and practice. In general, smallholders take appropriate action to alert authorities regarding new exotic diseases, pests or weeds.

Introduction

Smallholdings are becoming increasingly popular, perhaps as relatively affluent families attempt to escape the 'urban jungle' and provide their families with more space and an appreciation for nature and rural life, albeit on a scale smaller than that of their commercial farming neighbours. This trend has seen much productive farmland in close proximity to major urban centres subdivided progressively into smaller blocks and sold for premium land prices. As a result, several district and city councils have moved to curb the loss of productive farmland by instigating by-laws that specify the conditions under which subdivisions are permitted.

Over the last two decades some research on smallholdings (properties up to 20 or 35 ha in size) and smallholders (people living on these properties) has been undertaken. A number of topics have been examined, including planning issues, economic performance, the needs for services, and general descriptive work. However, our knowledge of smallholders and lifestyle blocks is limited by a lack of national survey data. With increasing numbers of such holdings there may be small but significant levels of production. There are also questions about the biosecurity and environmental awareness of smallholders.

This study attempts to answer a number of questions concerning lifestyle blocks and smallholdings in New Zealand.

Part One of the study utilises information extracted from AgriBase and the Valuation Roll to estimate the total number of lifestyle blocks and other smallholdings in New Zealand, the amount of land involved, the rate of increase in lifestyle block numbers across the country, and to determine how long these blocks typically remain in the same ownership.

Part Two of the study investigates the coverage and accuracy of three potential national land-based registries that could be used for developing a frame for lifestyle and smallholder block owners.

Part Three involves a postal questionnaire, sent to some 4,000 randomly selected smallholders around the country. It poses questions on land use, income, knowledge of biosecurity and environmental issues, and length of time in ownership.

Part One: Enumeration

AgriBase is a national spatial farm database, developed and maintained by AgriQuality Limited (Sanson & Pearson, 1997; Sanson, 2000). This database contains the names and addresses of rural properties, their predominant land use, the overall property size, their spatial location(s) and, in the case of agricultural businesses, the numbers of animals by livestock class and areas of land devoted to horticulture, cropping or forestry production. While national coverage of commercial farm businesses is probably high, particularly in sectors where there are active programmes supporting recruitment and maintenance of the data, the level of completeness for lifestyle farms is unknown.

The Valuation Roll is a national database of rateable properties held by Quotable Value (QV). It is updated from information sourced directly from local authorities and during district revaluations. This database includes a category code that indicates land use, the land area, the value of the land and capital improvements, and historical sales information. Lifestyle blocks are identified using a category code 'LI n ', where n indicates the decade in which the dwelling was constructed, or 'LV' that refers to lifestyle blocks without a dwelling at the time of last revaluation.

This study analysed data extracted from these two databases.

METHODS

Total numbers and the size distribution of farms categorised as 'LIF' (lifestyle farming) in AgriBase were calculated. These figures were supplemented with information from other farm types where the total size recorded indicated that a given property could potentially be classified as a smallholding.

AgriQuality also keeps a rural subset of the Valuation Roll. This database is updated monthly from data supplied by QV. Total numbers of LI/LV block numbers per district in the database were counted, and the mean, median and range of sizes calculated.

QV maintains a more comprehensive database on rateable blocks, including rateable values and actual sales dates. Three data extracts were obtained from QV-Online. First, a spreadsheet of total sales numbers by district since 1980, when comprehensive computerised record-keeping began, to allow the investigation of trends in the number of sales over time.

Second, an ASCII text file that listed actual sales dates for individual LI/LV category blocks since 1980. Where multiple sales dates for the same block existed, it was possible to calculate the length of time between sales. However, this ignored information from properties that did not have multiple sales dates recorded since 1980, and therefore possibly underestimated the durations of ownership. Utilising survival analysis techniques (Crowley & Breslow, 1984), the time from the last sale date recorded (whether it was a property that had multiple sales or a property with only one recorded sale) to the date of extract of the sales information from the QV database (namely 26/09/2003) was calculated. This was treated as right-censored information. We were able to exploit the fact that the property had been in single ownership for all that time, even though we did not know the next sale date.

Most districts conduct revaluations every three years. Since district revaluation services were deregulated, a number of councils use third-party valuers. Nevertheless, QV maintains information on all districts. The third report was a spreadsheet that summarised the total

numbers of LI/LV blocks per district at each district revaluation since 1990, in order to provide an indication of the rate of creation of lifestyle blocks by district since then.

RESULTS

As at 19 August 2004, 22,687 farms were recorded in AgriBase, classified with a predominant farm type of 'LIF' (lifestyle farming). The mean size was 4.97 ha (median = 3.8, range 0.01 – 603.1 ha) (see Figure 1). Some 95 percent of farms were between 0.44 and 19 ha. When other livestock types or non-farmed smallholdings ≤ 35 ha (believed to be commercially non-viable) were included, a total of 41,901 farms were recorded. In all, AgriBase had some 60,213 properties, either categorised as LIF or ≤ 35 ha, involving 539,506 ha of land.

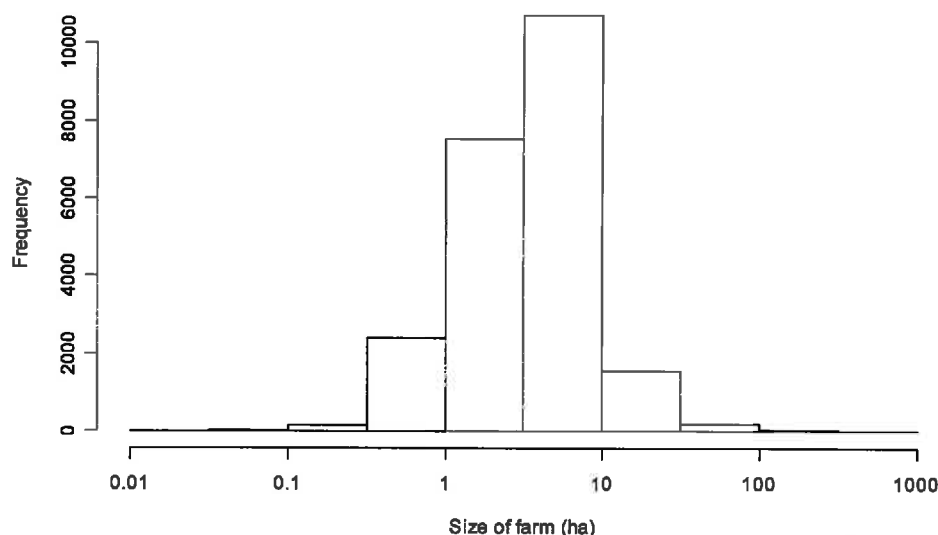


Figure 1: Distribution of LIF Farm Sizes as Recorded in AgriBase

As at 16 August 2004, a total of 139,868 assessments with either a LI or LV code were included in the Valuation Roll (excluding Chatham Islands), covering over 753,020 ha. The overall mean size was 5.53 ha (median = 2.7, range 0.0006 - 955.7 ha). Examining some of the extreme outliers revealed errors in the reported sizes, and 629 assessments had no size record. About 95 percent of blocks were between 0.3 and 25.6 ha. The mean size of LI assessments was 5.11 ha (median = 2.6, range 0.02 – 891.3 ha), whereas the mean size of LV blocks was 6.22 ha (median = 3.11, range 0.0006 – 955.7 ha). This difference was statistically significant (Wilcoxon rank sum test, $p < 0.0001$). Table 1 shows the numbers of LI/LV category blocks, the amount of land and the average block size in the various districts. The overall distribution of sizes is shown in Figure 2.

Table 1: Lifestyle Block Numbers, Total Land and Average Size by District

TLA No	Code	Name	Counts	Total Land (ha)	Mean_size (ha)
1	FN	Far North District	7562	54487.71	7.21
2	WH	Whangarei District	7001	25519.52	3.65
3	KP	Kaipara District	2759	10430.88	3.78
4	RD	Rodney District	10071	52216.67	5.18
5	NS	North Shore City	668	1857.97	2.78
6	WC	Waitakere City	1826	6955.73	3.81
7	AK	Auckland City	792	9351.85	11.81
8	MK	Manukau City	1951	4914.67	2.52
9	PP	Papakura District	1462	3630.41	2.48
10	FR	Franklin District	7231	29176.20	4.03
11	TC	Thames-Coromandel District	2690	27877.45	10.36
12	HR	Hauraki District	1323	6092.35	4.60
13	WK	Waikato District	6394	24311.02	3.80
15	MM	Matamata-Piako District	1497	6226.71	4.16
16	HM	Hamilton City	396	903.07	2.28
17	WP	Waipa District	3152	7739.11	2.46
18	OT	Otorohanga District	823	3351.28	4.07
19	WA	South Waikato District	673	1836.53	2.73
20	WO	Waitomo District	748	3749.39	5.01
21	TP	Taupo District	1453	8292.04	5.71
22	BP	Western Bay of Plenty District	5960	22361.06	3.75
23	TR	Tauranga District	1361	2901.73	2.13
24	RO	Rotorua District	2010	10742.63	5.34
25	WE	Whakatane District	1989	10415.61	5.24
26	KA	Kawerau District	2	12.49	6.24
27	OP	Opotiki District	1391	13762.27	9.89
28	GI	Gisborne District	2200	14274.53	6.49
29	WR	Wairoa District	933	5579.83	5.98
30	HS	Hastings District	1694	8846.14	5.22
31	NA	Napier City	386	846.94	2.19
32	HB	Central Hawke's Bay District	866	3758.70	4.34
33	NP	New Plymouth District	2569	8768.85	3.41
34	ST	Stratford District	442	1268.15	2.87
35	TN	South Taranaki District	1098	3267.20	2.98
36	RU	Ruapehu District	1048	5147.59	4.91
37	WG	Wanganui District	1391	4980.35	3.58
38	RT	Rangitikei District	763	3126.34	4.10
39	MN	Manawatu District	2245	8073.63	3.60
40	PN	Palmerston North City	886	3339.17	3.77
41	TA	Tararua District	1305	3546.61	2.72
42	HO	Horowhenua District	1472	5194.29	3.53
43	KC	Kapiti Coast District	1858	7991.93	4.30
44	PO	Porirua City	433	3246.33	7.50
45	UH	Upper Hutt City	831	6170.30	7.43
46	LH	Lower Hutt City	481	3471.01	7.22
47	WN	Wellington City	383	2974.92	7.77
48	MA	Masterton District	1433	5888.31	4.11
49	CA	Carterton District	740	4304.57	5.82
50	SW	South Wairarapa District	824	4837.63	5.87
51	TS	Tasman District	4164	40984.04	9.84
52	NN	Nelson City	541	6206.65	11.47
53	MB	Marlborough District	2575	45468.90	17.66
54	KK	Kaikoura District	438	5362.49	12.24
55	BU	Buller District	1012	10946.75	10.82
56	GR	Grey District	861	8739.06	10.15

TLA No	Code	Name	Counts	Total Land (ha)	Mean_size (ha)
57	WS	Westland District	792	7206.78	9.1
58	HU	Hurunui District	1120	7410.68	6.62
59	WI	Waimakariri District	4255	24158.56	5.68
60	CH	Christchurch City	1737	6969.44	4.01
61	BA	Banks Peninsula District	917	7477.33	8.15
62	SE	Selwyn District	5327	34143.13	6.41
63	AS	Ashburton District	1524	7713.46	5.06
64	TI	Timaru District	1717	5152.28	3.00
65	MC	Mackenzie District	290	1237.77	4.27
66	WM	Waimate District	570	2721.76	4.78
68	WT	Waitaki District	1405	6842.51	4.87
69	CO	Central Otago District	1491	10584.54	7.10
70	QU	Queenstown-Lakes District	2039	12968.99	6.36
71	DU	Dunedin City	2178	10915.01	5.01
72	CL	Clutha District	951	4385.95	4.61
73	SL	Southland District	2374	9630.38	4.06
74	GO	Gore District	480	1794.40	3.74
75	IN	Invercargill City	1644	5980.20	3.64

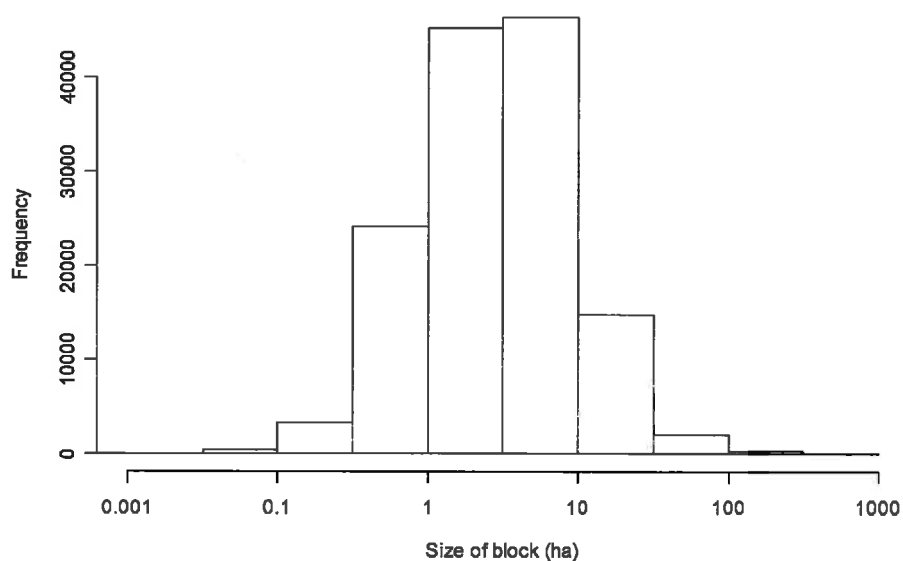


Figure 2: Frequency Histogram of LI/LV Block Sizes Depicted on a Logarithmic x-axis.

Analysis of sales data showed that the annual number of sales of LI/LV blocks has been increasing since 1980 (Figure 3), with a peak of 10,814 sales recorded in 2002.

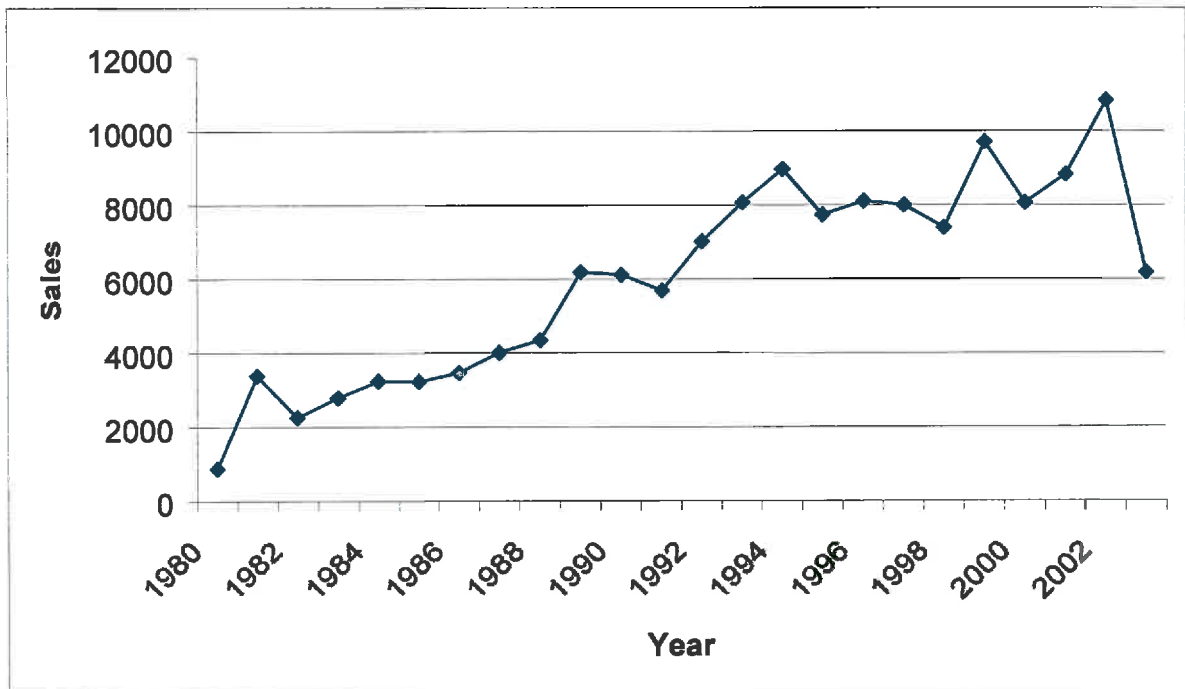


Figure 3: Numbers of Sales of LI/LV Blocks Per Year Since 1980 (data for 2003 only includes sales reported up to September of that year)

Analysis of time between sales (where multiple sales dates were recorded for individual lifestyle blocks since 1980) showed that the mean length of time between sales for LI blocks was 4.92 years (median = 3.98 years) (see Figure 4), whereas the mean length of time between sales for LV blocks was 3.69 years (median = 2.59 years) (see Figure 5).

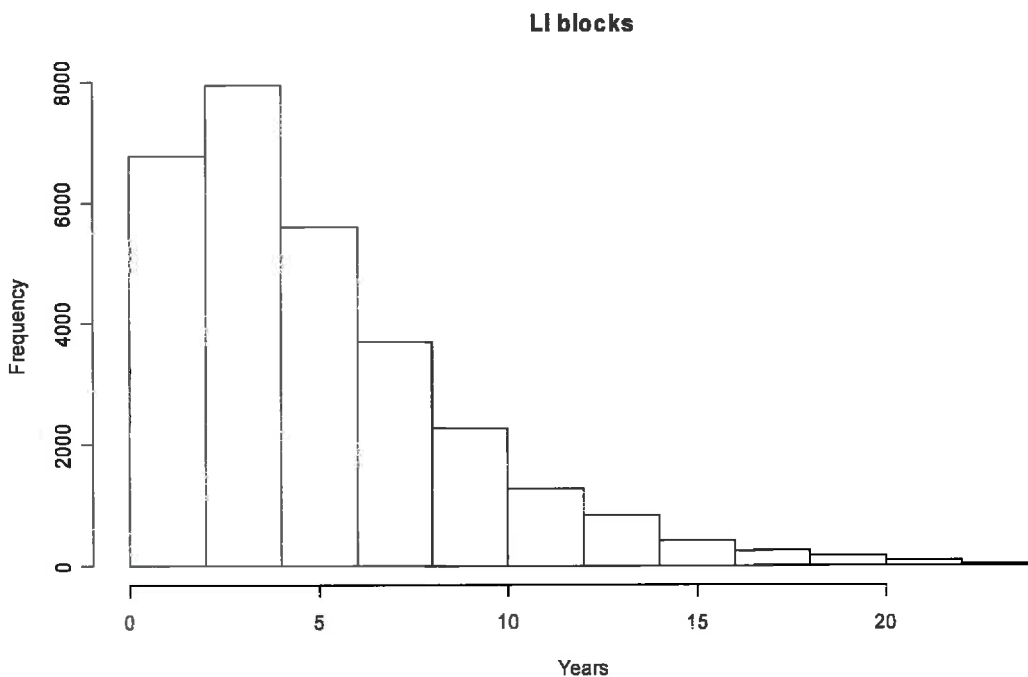


Figure 4: Histogram of Time Between Resale of Individual LI Category Blocks

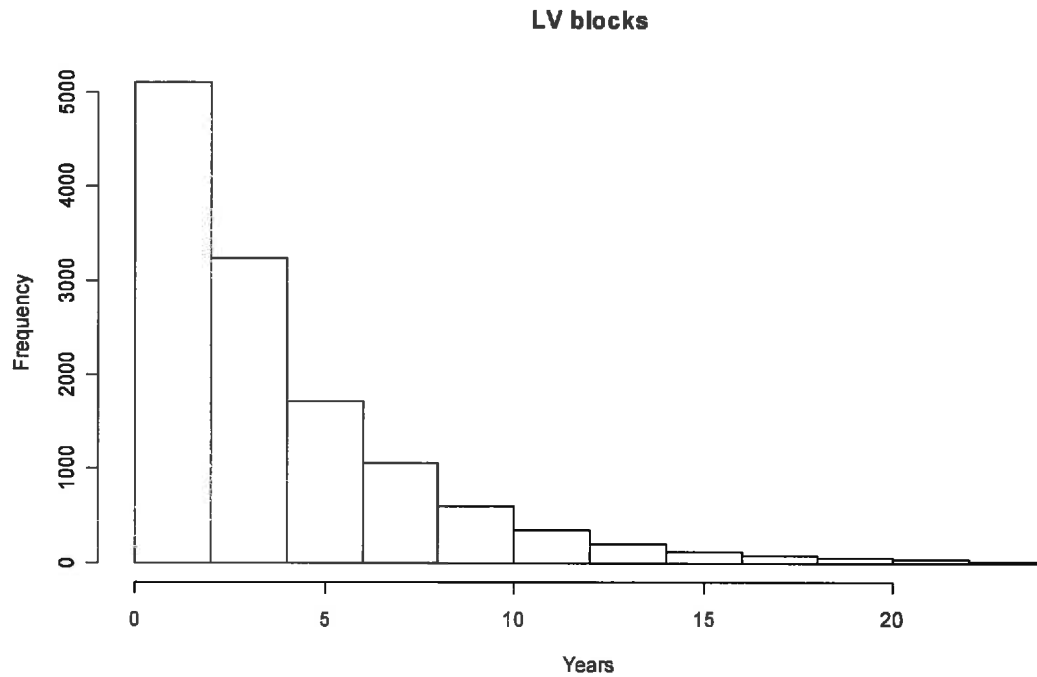


Figure 5: Histogram of Time Between Resale for Individual LV Category Blocks

Survival analysis of 144,484 time periods, comprising 41,729 true inter-sale events and 102,751 censored observations yielded the Kaplan-Meier survival curves for LI and LV blocks shown in Figure 6 below.

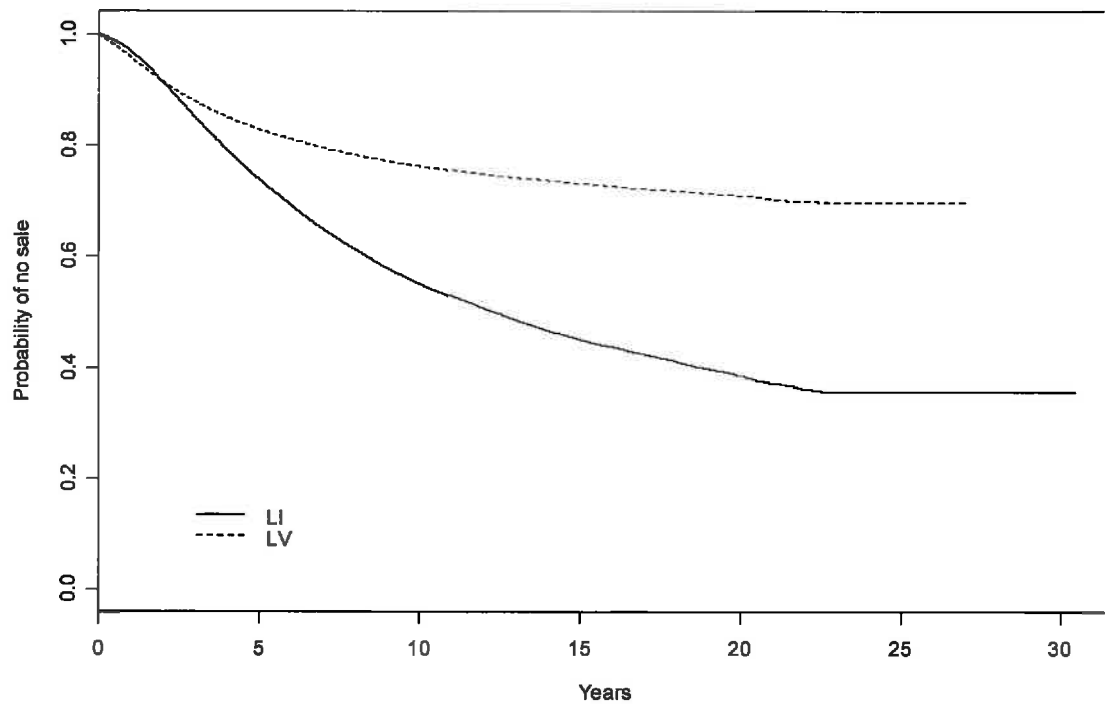


Figure 6: Kaplan-Meier Survival Curves of Time in Same Ownership for LI and LV Blocks

The two curves indicate that there is fairly rapid turnover of approximately 10-15 percent of blocks, with a similar turnover rate between LI and LV blocks. Some 15.1 and 12.2 percent of LI and LV blocks, respectively, changed hands within three years. About 50 percent of LI blocks changed hands within 12.2 years. However, some 35.5 and 69.7 percent of LI and LV blocks, respectively, remained under the same ownership for very long periods.

The total numbers of LI/LV blocks by district based on revaluation years is shown Figure 7.

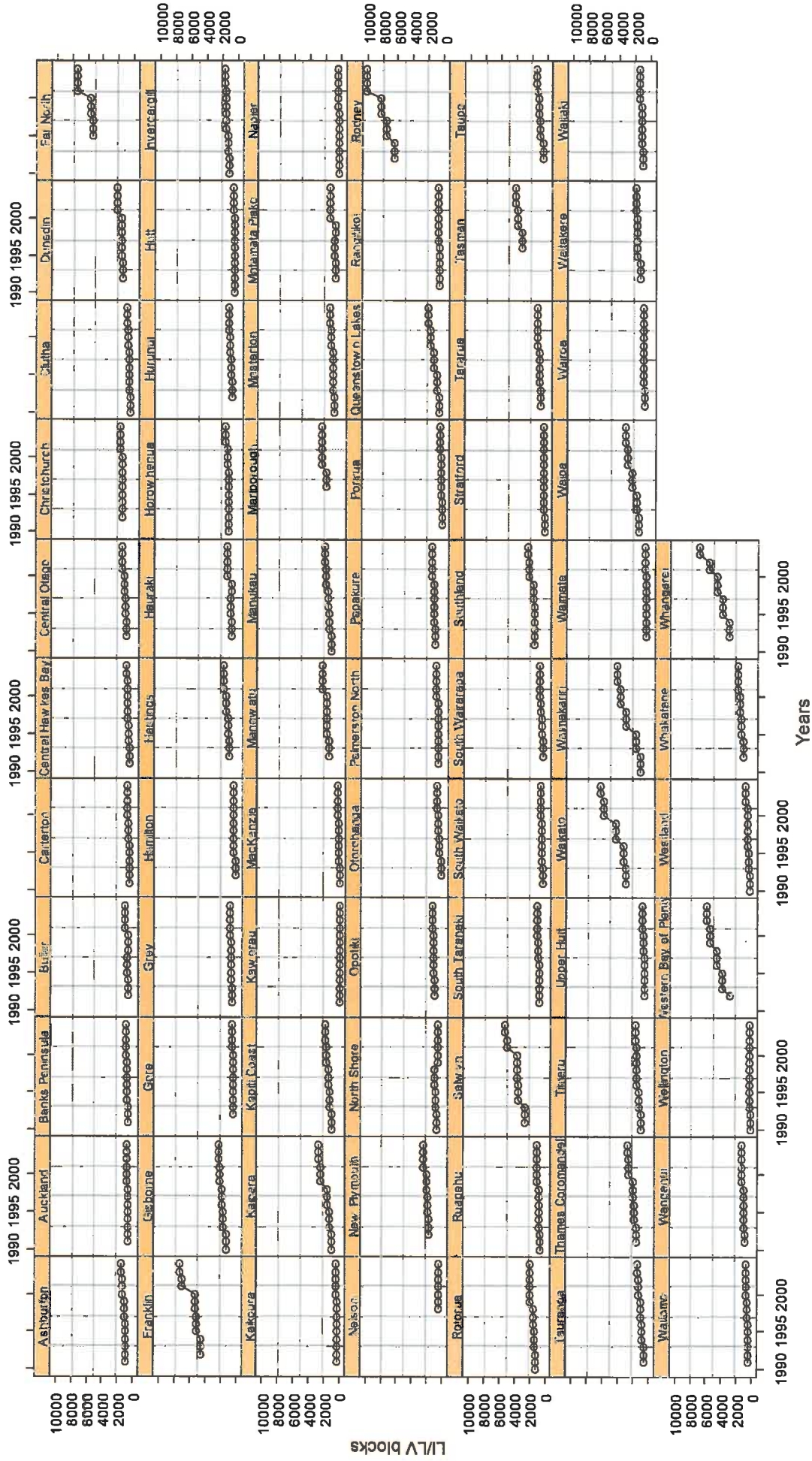


Figure 7: Trellis Graphic Showing Numbers of Lifestyle Blocks (category LI / LV) by District by Year Since 1990

Figure 8 shows the rate of increase in national numbers of LI/LV blocks since 1998 (when figures for all districts became available). The graph shows a fitted line with a slope of 6,802 blocks per year. Using the national mean size of lifestyle blocks (5.53 ha), this equates to just over 37,600 ha per year converted to lifestyle blocks, presumably through subdivision of production farmland.

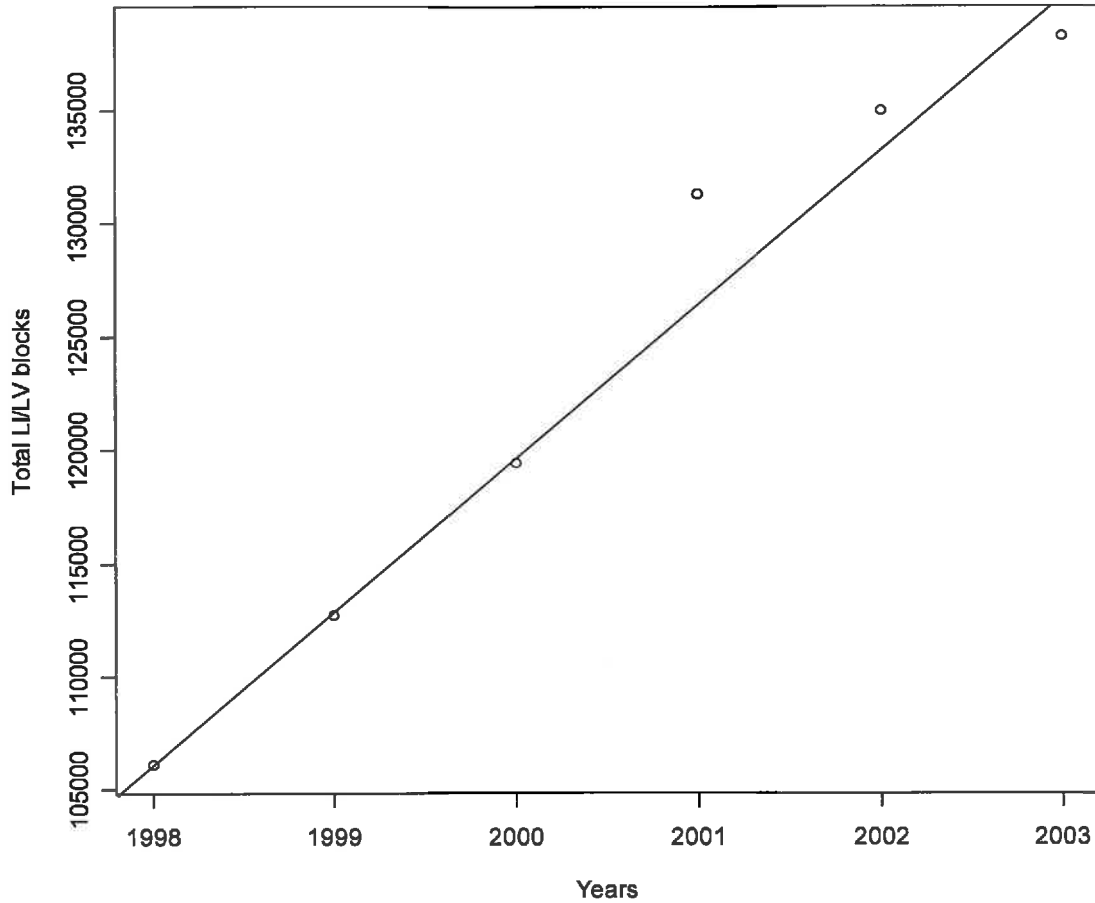


Figure 8: Rate of Increase in Total LI/LV Block Numbers Since 1998, with a best-fit line

Part Two: Ground Truthing

Currently there is no dedicated, nationally complete and accessible data frame suitable for ensuring the inclusion of all lifestyle or smallholder block owners in any future agriculture census. However, certain non-specific national registries could assist the identification of lifestyle block owners. These are:

- The Title Estate dataset, which is part of the Core Record System, maintained by Land Information New Zealand (LINZ).
- The Valuation Roll, which is a database of ratepayers, held by Quotable Value (QV).
- AgriBase, a database of primary producers maintained by AgriQuality Limited.

This study was aimed at investigating the completeness and accuracy of these databases, and assessing their usefulness as a potential frame of rural lifestyle block owners.

METHODS

We selected three areas within New Zealand, each comprising 10-20 km², containing a high proportion of smallholders (0.4-35 ha) and within easy driving reach for the authors. We printed a large-scale field map of each area, depicting an aerial ortho-photo, roads and all candidate land parcels extracted from the LINZ parcel layer. Each area was visited over a 2-3 day period, and we attempted to contact the occupier or user of each land parcel within the designated size range in order to record names and land use.

The findings from the field visits were compared to the data held in AgriBase, the Valuation Roll and the Title Estate table in the LINZ CRS.

For each database we computed the number and percentage of land parcels that were linked to smallholdings (i.e. recorded as part of the smallholdings). Where linkages were present, the number and percentage of records that had the correct owner or occupier name and, in the case of the Valuation Roll and AgriBase, had a similar land use to that observed in the field, was calculated.

Where an owner or occupier name was not discovered, but the LINZ Title Estate data was linked to the land parcel and a Title Estate name was present, we used the latter as the definitive name.

RESULTS

Lincoln area 1 (see Figure 9) yielded information on 95 land parcels within the size range of 0.4-35 ha. The name(s) of the current landowner or occupier was obtained for 22 of the blocks, and information on the current land use was obtained for 92 of the land parcels.

Lincoln area 2 (Figure 10) contained 239 parcels within the designated size range. However, owner contact was made only for 20 of these, so that our analysis compared the databases to these 20.

Newbury, just outside Palmerston North (Figure 11), had 239 parcels between 0.4-35 ha. Useful information was obtained on all of these parcels.

Numbers of parcels for which ground-truthing we obtained information, and the linkage and correctness figures for each of the three study areas are summarised in Table 2.

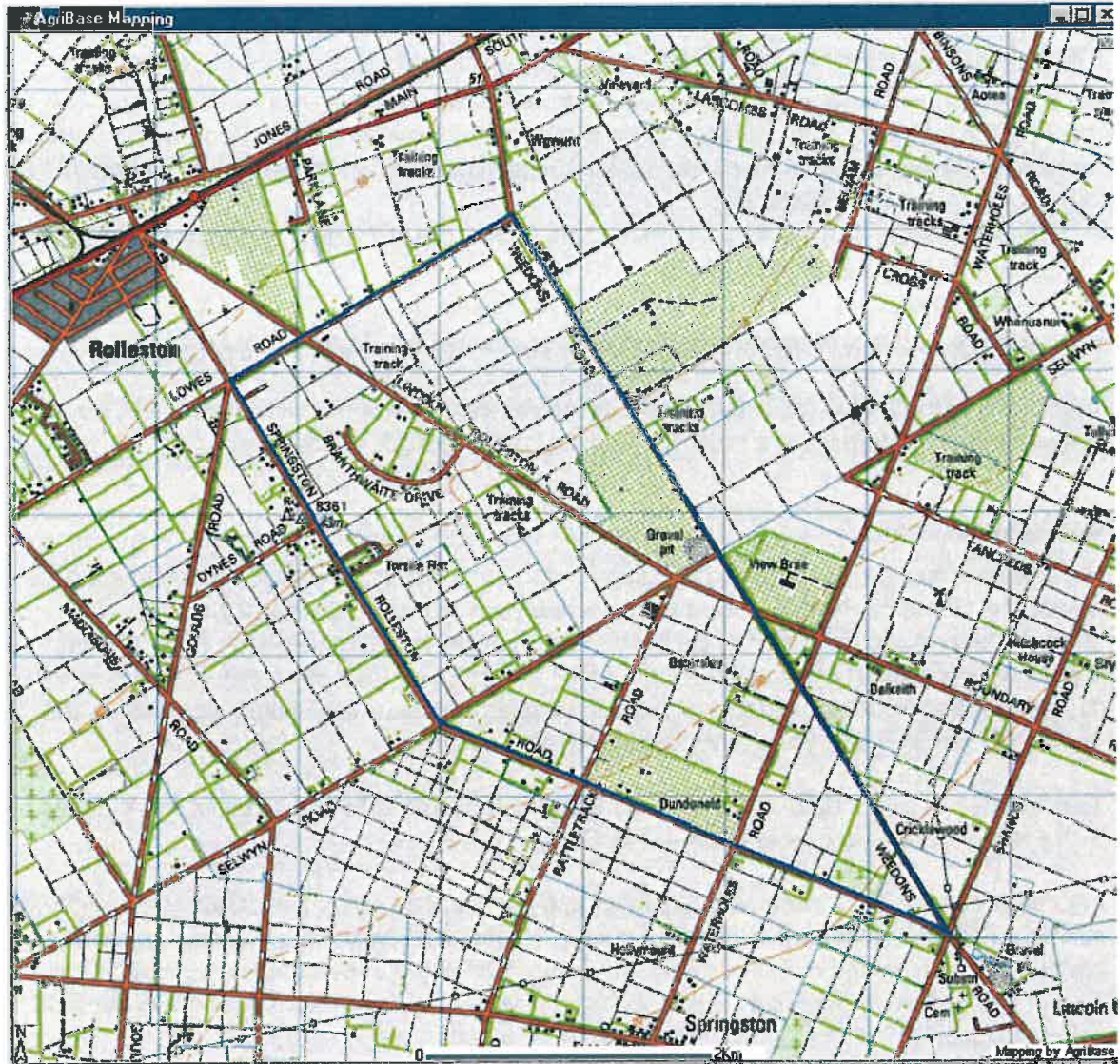


Figure 9: Lincoln Study Area 1

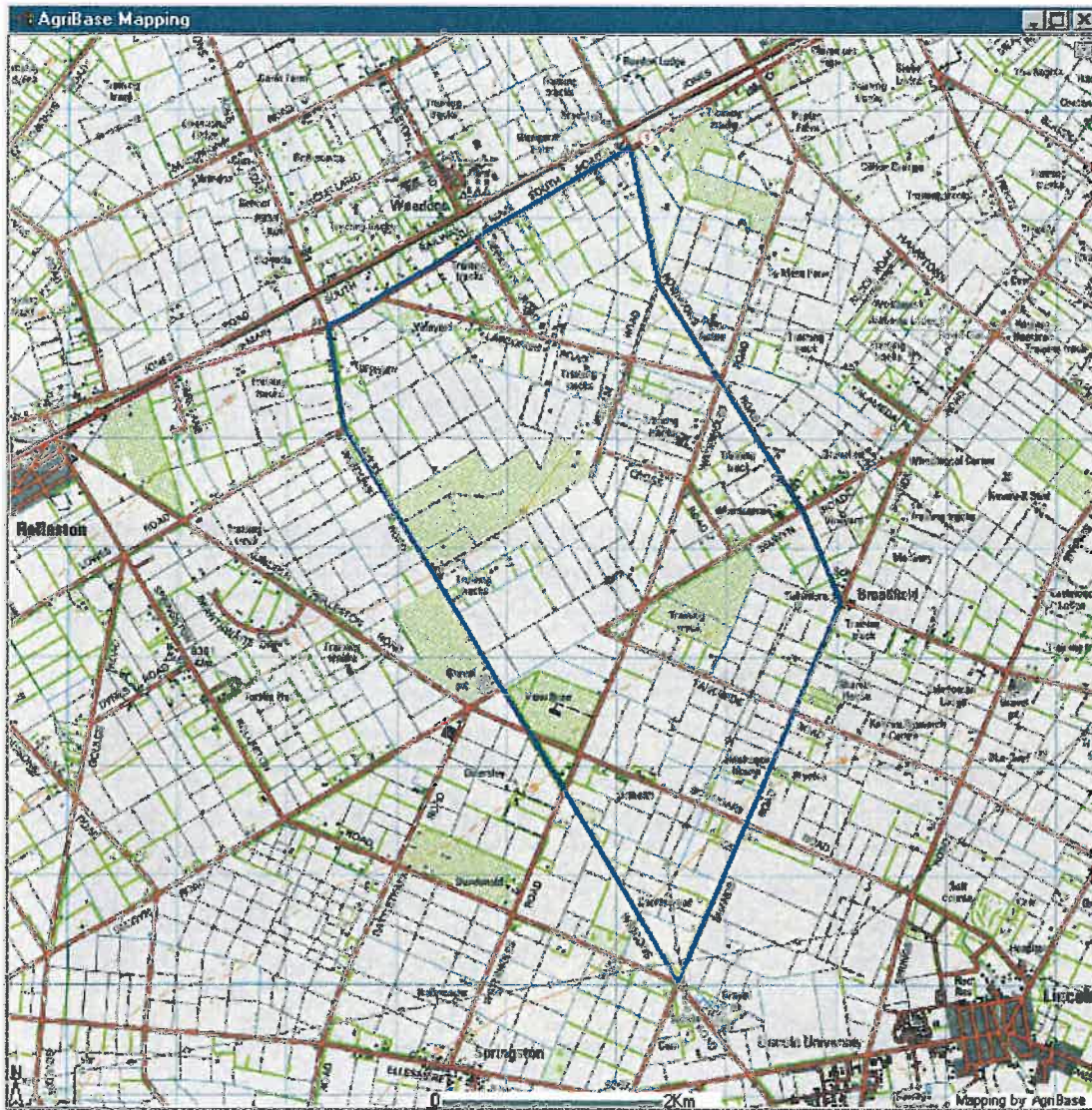


Figure 10: Lincoln Study Area 2

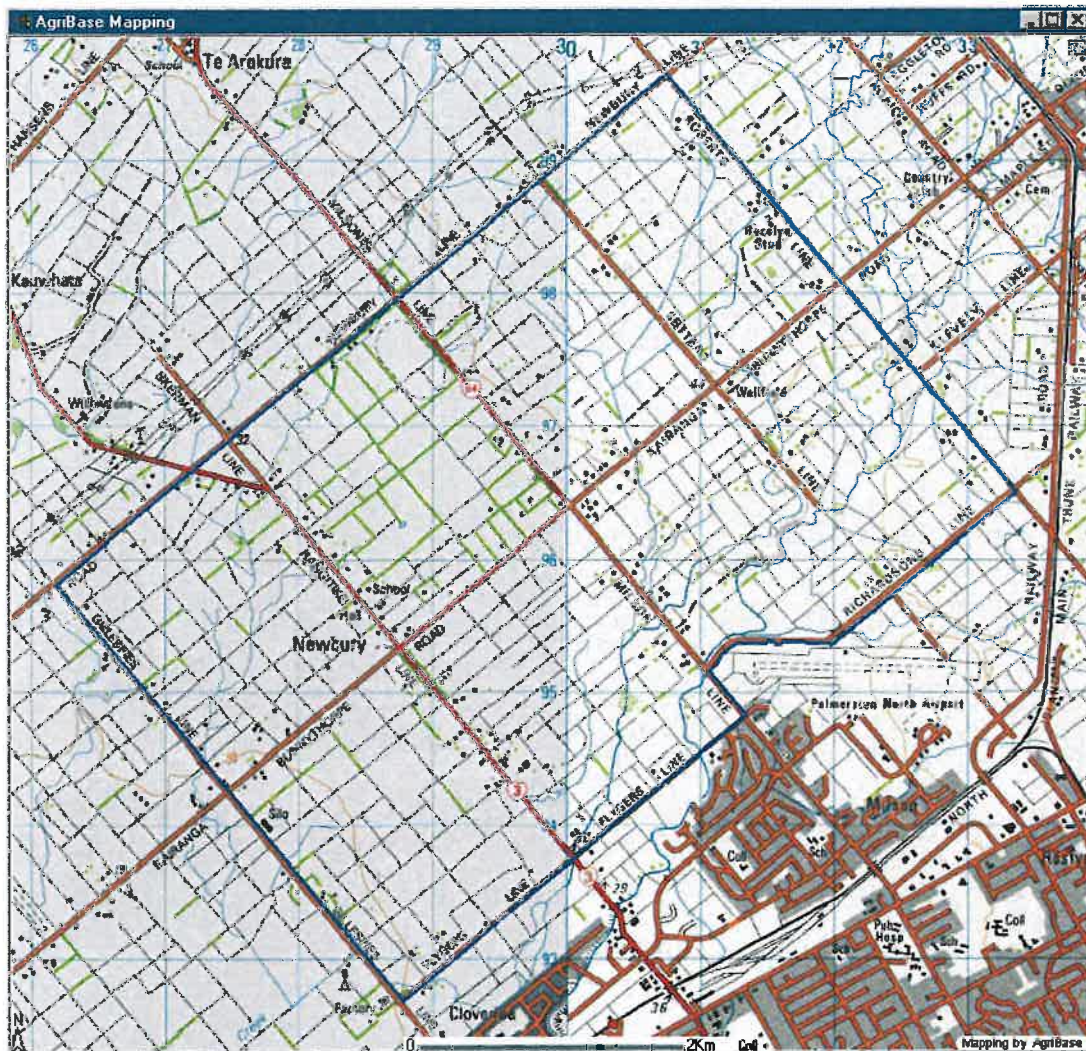


Figure 11: Newbury Study Area

Table 2: Number of parcels investigated, linkage and correctness rates for AgriBase, Valuation Roll and LINZ Title Estate data

Study Area	On-ground			AgriBase			Valuation Roll			LINZ Titles	
	Parcels used	Names recorded	Land use recorded	Linked	Correct Name	Correct Type	Linked	Correct Name	Correct Type	Linked	Correct Name
Lincoln 1	95	22	92	45 (47.4%)	40 (88.9%)	43 (95.6%)	87 (91.6%)	50 (50.7%)	60 (69%)	95 (100%)	91 (95.8%)
Lincoln 2	20	20	20	13 (65%)	12 (92.3%)	11 (84.6%)	20 (100%)	14 (70%)	14 (70%)	20 (100%)	18 (90%)
Newbury	239	237	239	178 (74.5%)	159 (89.3%)	162 (91%)	219 (91.6%)	175 (79.9%)	158 (72.1%)	209 (87.4%)	179 (85.6%)

Part Three: Postal Questionnaire

The main research objectives were to: (1) investigate land use on smallholdings and (2) assess awareness of biosecurity and environmental issues. Smallholdings were defined as land between 0.4 and 35 ha.

This report provides details of the results but limited additional analysis. We have provided an assessment of different types of smallholders and descriptions of some of their characteristics, but more work remains to be done in exploring the nature of smallholders in more detail. However, this report addresses the immediate research objectives fully by giving a detailed account of land use, and general smallholder characteristics, including attitudes and behaviours relating to biosecurity control and environmental issues.

METHOD

The smallholdings investigation was achieved by surveying a random sample from the nationwide smallholding population by means of a postal questionnaire.

QUESTIONNAIRE DESIGN

Question design drew from earlier research (Fairweather & Robertson, 2000), but we modified the original questionnaire to address the present research objectives. The questionnaire (see Appendix 1) was designed to determine the extent of land uses on the smallholding, disease, pest and weed management, and general attitudes (e.g. satisfaction with the smallholding lifestyle; intention to undertake organic production).

Only two open-ended questions were included in the questionnaire. The remaining questions asked for a numeric response, or listed qualitative options for the respondent to choose from.

The questionnaire was divided into five sections. The first section was designed to gain relevant background information about the smallholding from each respondent, including size, length of ownership, and previous farm experience. One question asked about intentions to stay on the smallholding. This first section of the questionnaire asked respondents to provide a self-description; for example, did they see themselves as lifestylers or smallfarmers? The final question asked whether they had noticed any increase in the frequency of occurrence of native birds (potentially an indicator of our native biodiversity).

The second section included questions relating to land and production, either by selling their produce or retaining production for their own use. We designed a table so that respondents could record approximate land area for each land use, and record subsequent sales and/or value of production for their own use. The question was broken down into livestock, plants, and other land uses. Questions on Tb testing were included, as well as questions on whether the household consumed meat from the smallholding, whether they had stock pens, and their intentions regarding the encouragement of native bush and trees. Other questions addressed changes in production levels, levels of capital investment and a variety of farm practices.

The third section covered disease, pest and weed management. Smallholders were asked if they managed or monitored disease, weeds or pests, how important it was to control exotic pests, and how likely these were to occur on their smallholding. They were asked about information sources on exotic pests, whether any exotic disease, pest or weed had occurred on their smallholding, and if it had, what they had done about it. Finally, they were asked whether they knew the 0800 number to report a possible new exotic disease, pest or weed.

The fourth section covered general attitudes, including values, intentions to grow organic crops and the importance of full time employment. Two questions covered the motivations for owning smallholdings and the disadvantages of smallholdings.

The final section covered questions on employment, the average number of hours worked on the property by any person, and whether paid or unpaid. The off-farm employment status (full-time or part-time) of the respondent, their partner, and any other adult members of the household, was also established.

QUESTIONNAIRE TESTING

The smallholding questionnaire was pre-tested by 10 people in order to ensure that the opinions and attitudes of both genders were encompassed. In general, the questionnaire made sense to the respondents. Pre-testing feedback was recorded and formed the basis of the reworked and final version. Minor modifications were made so that the questions were easier to understand, instructions were simplified, and other questions eliminated to improve clarity.

FRAME AND SAMPLE

The smallholding sampling frame consisted of all land parcels from the Land Information New Zealand (LINZ) Core Record System (CRS) within the size range from 0.4-35 ha and that intersected appropriate land cover classes from the Land Cover Database (LCDB) v. 1.1. We excluded land parcels that were part of larger blocks, listed in either AgriQuality's AgriBase farm database or the Valuation Roll. We attached names and addresses to the land parcels using a combination of AgriBase, LINZ's Title Estate database, Telecom White Pages and Marketreach's systems.

Sample size considerations included the need for accurate analysis, and thus we set the target sample size at 300 randomly selected parcels from each of 16 regions (see Figure 12), to give a total of 4,800 nationwide. In the event, names and addresses of owners or occupiers of all 4,800 land parcels could not be ascertained definitively, and the final mail out figure was 3,934. A response rate of 25 percent would yield a sample of 980, which would provide a sound basis for analysis.

MAIL OUT

The questionnaire was posted out on 19 January 2004, accompanied by a letter of invitation to become involved in the study and a freepost reply envelope. A reminder was posted out on 10 February 2004 to those from whom no reply had been received. The accompanying letter explained the purpose of the survey and offered a prize draw. We invited respondents to register on AgriBase, and included a registration form for this purpose. A separate prize draw was provided as an incentive.

Data from returned forms was entered into a purpose built Microsoft Access database. The analysis was conducted in Excel and SPSS v.10

In this report, we provide the mean and standard deviation for interval measures, and report frequency per response category for nominal data. Tests for relationships between various measures were undertaken using t-tests (unequal variance assumed), correlation or chi-square, depending upon whether the tests were of frequency or nominal data. In addition, we categorised written responses for the purposes of inclusion within the analysis. For the purpose of investigating differences between smallholdings with different characteristics and

motivations, smallholding types were based on respondent self-identifications. We then analysed differences in attributes, practices and attitudes of the five types (lifestyler, hobby farmer, smallfarmer, farmer and horticulturalist/grower).

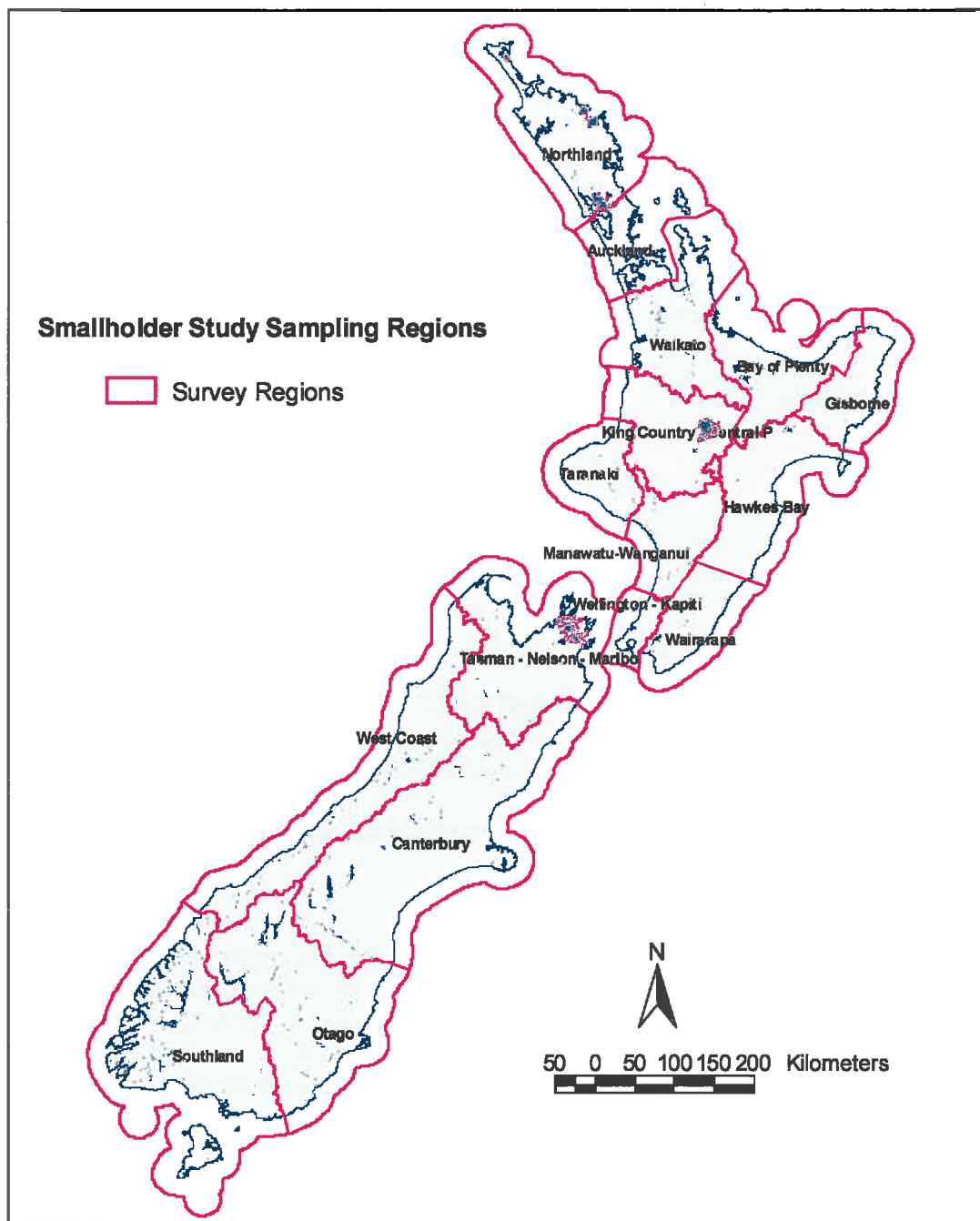


Figure 12: Map Showing Sampling Regions

RESULTS

Some 1,469 questionnaires were returned, giving a raw response rate of 37 percent (Table 3). However, 485 returned questionnaires were discarded for various reasons. Further, 232 questionnaires were returned as undeliverable mail to Lincoln University and labelled 'return to sender', 'gone no address', 'box closed', or 'not a boxholder on rural delivery'. A further 143 questionnaires were returned from people who were not smallholders. These 485 discarded questionnaires accounted for 12 percent of the total of 3,934 questionnaires posted out. Some questionnaires were completed by those with lot sizes larger than 35 ha and were excluded, but those for holdings between 35 ha and 40 ha were retained since these respondents considered themselves smallholders. A total of 947 questionnaires were coded as usable responses, giving a net response rate of 28 percent.

Table 3: Sample Characteristics

	No.	%
Original number in the sample	3,934	
Total number returned	1,469	37
Incorrectly addressed	232	
Not a smallholder	143	
Re-addressed but not returned	110	
Subtotal	485	12
Viable smallholdings	3,449	
Questionnaires returned	984	
Usable questionnaires	947	
Adjusted Response rate		28

The sampling design used in this study worked well in that sufficient replies were received to give a reasonable representation of the smallholding population. While there were some imperfections in the original population list, nevertheless we obtained a useful sample.

There were 947 usable responses, though not all respondents answered every item.

TYPES OF SMALLHOLDER

To identify the different smallholder types, we provided five descriptors for respondents to choose from (lifestyler, hobby farmer, smallfarmer, farmer or horticulturalist/grower), as well as a space for the writing of an 'other' response. As can be seen in Table 4, most of the 947 who answered this question (40 percent) indicated the term 'lifestyler' as their preferred description. The next most popular choice was 'smallfarmer' (20.3 percent), with 'hobby farmer' (13.8 percent) and 'horticulturalist/grower' also preferred by some respondents (12.1 percent). 'Farmer' was the least preferred description (5.9 percent). Fifty-nine respondents (6.2 percent) preferred a description other than the five provided. A summary of the descriptions provided is presented in Table 5.

Table 4: Types of Smallholder

	n	%
Lifestyler (1)	379	40.0
Hobby farmer (2)	131	13.8
Smallfarmer (3)	192	20.3
Farmer (4)	56	5.9
Horticulturalist/grower (5)	115	12.1
Other	59	6.2
Total	947	100.0

Table 5: Summary of Written Smallholder Responses

Summary term	Description	Frequency	Summary term	Description	Frequency
Holiday home (2)	Holiday home	1	Retired (15)	Retired	7
	Bach	1		Retired farmer	1
Equine (5)	Equine	2		Retired horticulturist	1
	Riding for the disabled	1		Retired sheep farmer	1
	Horse Breeder	2		Retired small farmer	5
Leased (5)	Landlord		Other (19)	Inherited owner	1
	Lease out land			Conservationist	1
	Leased for research	1		Employee	1
	Our property is leased	2		Engineer	1
				Garden Centre	1
Farming related (7)	Contractor	1	Residence	1	
	Shearer	1	Residential	2	
	Stock Trader	1	Investment	2	
	Support farm	1	Practising medicine	1	
	Utilise large shed	1	Family	1	
	Holding paddocks	1	Cultural/Environment	1	
			Ecologist	1	
Tourism (4)	Bed and breakfast	1	Educators	2	
	Tourism/stud	1	Native forest restoration	2	
	Tourism/Grazing	1			
	Tourism/Developer	1			

Gender and Age

Males comprised 66.3 percent (628 of 918) of the sample, with an average age of 52.8 years. The youngest respondent was 21 and the oldest was 91. We found no significant differences between the different types of smallholder in terms of either gender or age.

Size of Smallholding

The average size for the smallholdings was 8.50 ha. As shown in Table 6, there were differences in size depending upon the type of smallholder. There was a similar average size for lifestyle (5.20 ha) and hobby farmer (6.31 ha). In addition, as shown by the t-tests, the lifestyle and hobby farm were of smaller size than the small farm. In addition, the lifestyle block was of smaller average size than the horticulturalist/grower block.

Table 6: Size of Smallholding

	n	Mean	Std. Deviation
Overall	883	8.50	8.53
Lifestyle (1)	353	5.20	6.68
Hobby farmer (2)	121	6.31	5.75
Smallfarmer (3)	181	13.01	9.00
Farmer (4)	56	18.11	10.39
Horticulturalist/grower (5)	105	9.81	7.57
Total	816	8.58	8.55
Significant differences (t-test)		1-3, 1-4, 1-5, 2-3, 2-4, 3-4	

Years Lived on Smallholding

The average length of time that the smallholders had lived on their smallholding was 12.2 years, the longest length of stay being 79 years. The results presented in Table 7 show that

farmers (who on average had lived on their properties approximately 20 years) had lived on their properties longer than lifestylers, hobby farmers and smallfarmers, whose average length of stay was less than 14 years. Further, the results show no meaningful difference in length of stay between the lifestyler, hobby farmer, smallfarmer and horticulturalist/grower.

Table 7: Years Lived on Smallholding

	n	Mean	Std. Deviation
Overall	851	12.44	11.34
Lifestyler (1)	352	11.01	10.05
Hobby farmer (2)	119	13.03	10.74
Smallfarmer (3)	171	11.42	9.26
Farmer (4)	47	19.85	19.38
Horticulturalist/grower (5)	106	13.26	11.92
Significant differences (t-test)		1-4, 2-4, 3-4	

Previous Farm Experience

Some 925 smallholders answered the question on previous farm experience. Of these, 659 (71.2 percent) indicated that they had previous farm experience, and 266 (28.8 percent) indicated they had not. Proportionately fewer lifestylers had farm experience than had other smallholders. Of further interest, we found no relationships between farm experience and size, as well as between farm experience and number of years farming (Table 8). Smallholders with farm experience had blocks of larger sizes (t-test, $p < 0.01$) and also had lived on their smallholding for longer periods (t-test, $p < 0.01$).

Table 8: Previous Farm Experience

	Yes	No	Total
Overall	659 71.2%	266 28.8%	925 100%
Lifestyler (1)	226 59.8%	152 40.2%	378 100%
Hobby farmer (2)	98 74.8%	33 25.2%	131 100%
Smallfarmer (3)	154 81.5%	35 18.5%	189 100%
Farmer (4)	52 94.5%	3 5.5%	55 100%
Horticulturalist/grower (5)	83 73.5%	30 26.5%	113 100%

Length of Intended Stay on Smallholding

Smallholders were asked to either indicate whether they intended to stay on their property indefinitely or else to specify the number of years they intended to stay. In reply, the majority indicated 'indefinitely' (735), while the average length of intended stay for the remaining 209 respondents was from nine to 10 years. The results of Table 9 show that farmers intended a shorter stay than the lifestyler, hobby farmer or smallfarmer, but this finding is based on the replies of only eight farmers.

Of interest, the 735 who indicated that they would stay indefinitely had reported a longer period of stay on their smallholding than had those who indicated a specific period of stay (t-test, $p < 0.01$). This result suggests that smallholders who have spent more time on their properties are more likely to stay longer. On the other hand, those who are relatively new to smallholding may well be unsure about their future plans.

Table 9: Length of Intended Stay on Smallholding

	N	Mean	Std. Deviation
Overall	209	8.92	8.45
Lifestyler (1)	81	10.78	9.11
Hobby farmer (2)	28	8.82	9.11
Smallfarmer (3)	40	10.37	7.77
Farmer (4)	8	2.13	2.17
Horticulturalist/grower (5)	21	9.71	5.38
Significant differences (t-test)		1-4, 2-4, 3-4	

Increase in Native Birds

Of the 927 smallholders who answered this question, 471 (50.8 percent) indicated that they had observed an increase in numbers of native birds and 326 (35.2 percent) indicated they had not (Table 10). A small proportion (14 percent) were unsure. Fewer farmers noted increases in bird numbers than other smallholders.

Table 10: Increase in Native Birds

	Yes	No	Unsure	Total
Overall	471 50.8%	326 35.2%	130 14.0%	927 100%
Lifestyler (1)	191 51.3%	130 34.9%	51 13.7%	372 100%
Hobby farmer (2)	72 55.4%	41 31.5%	17 13.1%	130 100%
Smallfarmer (3)	102 54.0%	62 32.8%	25 13.2%	189 100%
Farmer (4)	23 41.1%	26 46.4%	7 12.5%	56 100%
Horticulturalist/grower (5)	55 47.8%	43 37.4%	17 14.8%	115 100%

LAND AND PRODUCTION

We analysed land use and production using three question sets covering livestock, plants and other land uses. For livestock land uses, grazing was the main activity (Table 11). Beef and sheep grazing occurred on many of the smallholdings, though sheep grazing had a lower average value of production than beef grazing. Calf and goat holdings held the largest stock numbers, and dairy and goat holdings had higher average gross incomes.

Table 11: Land Use and Value of Production - Livestock

Livestock	Stock Numbers		Land area		Gross income		Value of Production		Organic
	n	Avg.	n	Avg.	n	Avg.	n	Avg.	n
Dairy	35	45	33	9.09	4	15,033	7	5,656	10
Grazing - beef	274	32	225	6.67	10	6,289	56	4,099	11
Grazing - sheep	353	138	191	5.25	11	3,543	59	909	0
Tussock or danthonia			256	6.65	0				0
Calf rearing	49	171	164	5.81	0	2,613	72	1,952	1
Deer	54	334	70	5.80	1	21,910	43	850	22
Goat	40	245	23	6.44	22	4,070	16	5,091	2
Horses	57	112	41	2.95	2	4,576	13	635	2
Poultry	43	1,070	10	4.53	2	12,74	13	927	1
Pigs	15	208	6	8.00	1	425	3	300	4

For plant uses, the main activity was fruit growing and vineyards (Table 12). Vineyards and fruit growing had high average gross incomes, though the highest gross income derived from nursery crops. Of note, glass and tunnel houses used less land area for their production. In general, fewer smallholders engaged in plant production than those producing or supporting livestock.

Table 12: Land Use and Value of Production - Plants

Plants	Land area in hectares		Gross income		Value of production		Organic
	n	Avg.	n	Avg.	n	Avg.	n
Crops (grain, seed and fodder)	19	3.37	8	5,173	3	4,156	0
Flowers – open air	15	2.43	11	2,693	1	150	0
Glasshouse/greenhouse/tunnelhouse	11	0.64	7	11,613	2	22,571	
Market garden/vegetables	14	5.76	8	91,072	4	403	0
Fruit (pip, berry, kiwifruit, citrus, etc.)	63	4.65	45	198,082	12	5,900	1
Vineyards	42	6.16	40	158,028	3	472	0
Nursery	16	4.75	11	752,413	0		1
Tree crops	4	7.53	2	1,600	2	5,000	0
Other plants	14	4.86	2	4,500	14	338	12

For other land uses few smallholders had native scrub or bush (Table 13), though only 12 of the 947 smallholders indicated that their land was used for this purpose. Very few were engaged in tourism, and only one was engaged in other forms of business not listed in the table. There were also few 'other' land use activities.

Table 13: Land Use and Value of Production – Other land uses

Activity	Land area in hectares		Gross income		Organic
Tourism	3	5.33	1	60,000	0
Mature native bush	5	4.20	0		3
Native scrub and regenerating native bush	12	4.08	0		0
Business activity, not farming, horticulture or tourism	1	5.00	1	20,000	0
All other land	8	3.25	3	5,900	0

Tb Registration

Registration for the purposes of Tb surveillance and/or testing was undertaken by 389 respondents. Of the 571 who answered this question, 143 (25 per cent) indicated that they were not registered and 39 (7 percent) did not know if they were registered.

Of the 588 who responded, 527 (or 89.6 percent) indicated that they would check the source herd's Tb status when purchasing deer or cattle. Slightly fewer (499 of 573, or 87.1 percent) indicated that they would determine when the herd was last tested. In addition, 502 indicated that they would check whether the herd was subject to herd or area Tb movement control restrictions.

Consumption of Meat Products

In answer to our enquiry about the consumption of own meat products and the killing of animals, 400 of 878 (45.6 percent) of the smallholders indicated that they consumed meat products from their smallholding. In addition, of the 428 who answered, 139 indicated that they had killed the stock themselves, while 112 had used an abattoir and another 188 employed another person to do the killing.

Use of Stock Pens

Some 530 of 853 smallholders (56 percent) used their own stock pens. However, 181 of those who did not have stock pens had access to a neighbour's pens.

Encouraging the Growth of Native Bush

Only 53 smallholders did not intend to keep or encourage the growth of native bush, whereas 532 intended to do so. Some 326 smallholders indicated that they did not have any native bush. Table 14 shows how the various smallholder types responded to this question. Horticulturalist/growers, smallfarmers and lifestylers were the most active in encouraging native bush.

Table 14: Encouragement of Native Bush

	Yes	No	No bush	Total
Overall	532	57	326	915
	58.1%	6.2%	35.6%	100%
Lifestyler (1)	216	20	127	363
	59.5%	5.5%	35.0%	100%
Hobby farmer (2)	62	13	52	127
	48.8%	10.2%	40.9%	100%
Smallfarmer (3)	108	12	56	176
	61.4%	6.8%	31.8%	100%
Farmer (4)	23	5	17	45
	51.1%	11.1%	37.8%	100%
Horticulturalist/grower (5)	69	3	39	111
	62.2%	2.7%	35.1%	100%

Intention to Plant Trees

Respondents were asked to indicate whether they intended to plant trees over the next five years. They were also asked to indicate any intention to plant four common tree species (willow, poplar, eucalypt, conifer), as well as fruit and nut trees for production and landscape/decorative species. The results of this enquiry are shown in Table 15.

As shown in the table, a high proportion of growers (60.1 percent) intended to undertake landscaping or plant decorative species in the next five years. A good proportion (30 percent) also planned to plant fruit or nut trees. Some 14.1 percent of respondents intended to plant willows and 19.3 percent intended to plant eucalypts. A further 14.1 percent indicated their intention to plant another species within the next five years.

Table 16 shows the number of smallholders who intended to plant one or more species. While most smallholders (222) intended to undertake one planting, a similar number (215) indicated two plantings, and some 245 intended to undertake three or more plantings. A total of 804 smallholders intended to plant trees in the next five years, or 84.9 percent of the respondents.

Table 15: Intention to Plant Trees

	Intend to plant	%
Willows	137	14.5
Poplar	152	16.1
Eucalypts	183	19.3
Conifers	148	15.6
Fruit or nut trees for production	257	27.1
Landscaping/decorative species	569	60.1
Other	134	14.1

Table 16: Intention to Plant One or More Species

Number of species	N
1	222
2	215
3	122
4	74
5	28
6	21
Total	804

Production Compared to Two Years Ago

As shown in Table 17, 238 (31.7 percent) of the 744 smallholders who provided details about production, indicated that their production was higher than two years ago. Fifty-nine (7.9 percent) indicated their production was about the same, and 453 (60.4 percent) indicated that it was lower than two years ago.

Table 17: Production Compared to Two Years Ago

	Higher	Lower	Same	Total
Overall	238 31.7%	59 7.9%	453 60.4%	744 100%
Lifestyler (1)	104 34.2%	25 8.2%	175 57.6%	304 100%
Hobby farmer (2)	30 28.0%	10 9.3%	67 62.6%	107 100%
Smallfarmer (3)	37 25.7%	9 6.3%	98 68.1%	144 100%
Farmer (4)	14 37.8%	1 2.7%	22 59.5%	37 100%
Horticulturalist/grower (5)	41 46.6%	5 5.7%	42 47.7%	88 100%

Table 18 shows production compared to estimated production two years in the future. Most respondents (63 percent) indicated that their production would be about the same. A small proportion (3 percent) estimated that their production would be lower, but about one third (33 percent) estimated that it would be higher.

Table 18: Production in Two Years Time

	Higher	Lower	Same	Total
Overall	240 33.2%	24 3.3%	458 63.4%	722 100%

Capital Investment in the Last Year

Table 19 shows levels of capital investment for the previous year. Overall, levels of capital investment were low, with most investing less than \$4,999.

Table 19: Capital Investment

	None	Up to \$4,999	\$5,000-9,999	\$10,000-19,000	\$20,000-49,999	\$50,000 or more	Total
Overall	325 38.1%	288 29.9%	105 12.3%	56 6.6%	39 4.6%	41 4.8%	854 100%

Environmental Practices on Smallholdings

Very few smallholders were undertaking environmental practices (Table 20). Overall, the number of respondents undertaking environmental monitoring was so low that it can be said to hardly occur at all. Practices to replace or avoid the use of chemicals were similarly rare.

Table 20: Environmental Practices on Smallholdings

	Yes	No	Total
Received professional instruction on either the use, storage or disposal of chemicals	49 5.9%	777 94.1%	826 100%
Monitored the use of chemicals or fertilisers	8 0.8%	537 98.5%	545 100%
Monitored the soil for chemical residues	0	831 100.0%	831 100%
Monitored water for chemical residues	1 0.1%	814 99.9%	815 100%
Adopted practices to avoid or reduce the use of insecticides	3 0.7%	814 99.3%	817 100%
Adopted practices to avoid or reduce the use of certain herbicides	3 0.3%	457 99.4%	483 100%
Applied manufactured fertiliser to improve the soil	9 3.0%	295 97.0%	304 100%
Applied manure to improve the soil	5 1.1%	453 98.9%	458 100%
Grown legumes to improve the soil	0	761	761
Adopted practices to encourage natural insect predators	3 0.4%	678 99.6%	681 100%
Used animals to manage pest and weed problems	9 0.9%	491 98.2%	500 100%

DISEASE, PEST AND WEED MANAGEMENT

Most smallholders (835 of 962, or 90.7 percent) reported having undertaken pest and weed management. We found no meaningful differences in rates of pest and weed management between farm types. For example, lifestyle farmers and farmers appear to engage in disease pest and weed management to a similar extent.

Monitoring Livestock or Crops for Diseases, Pests or Weeds

Most smallholders (759 of 886 or 85.7 percent) reported monitoring livestock or crops for diseases, pests or weeds. There was no meaningful difference between the various farm types in the numbers engaged in monitoring for diseases, pests or weeds.

Importance of Controlling New Exotic Diseases, Pests or Weeds

In general, respondents considered that controlling new exotic diseases, pests or weeds was very important (mean 4.08, s.d. .98). Only 25 of 927 respondents (2.7 percent) indicated that it was not important at all. Comparison between responses for type of smallholder yielded no evidence of significant differences (t test $p > 0.05$).

Perceived Likelihood of Having a New Exotic Disease, Pest or Weeds

In general, respondents considered it unlikely that a new exotic disease, pest or weed would occur on their smallholding (mean 2.33, s.d. 1.31). Only 39 of the 929 respondents (4.2 percent) considered it very likely. Comparison between responses for type of smallholder yielded no evidence of significant differences (t-test $p > 0.05$).

Information Sources Regarding New Exotic Diseases, Pests or Weeds

The importance of various sources of information about new exotic diseases, pests or weeds is shown in Table 21. Judgements of importance ranged from 'moderately important' to 'very important' for some sources, and from 'slightly important' to 'moderately important' for others. The most important source of information was the respondent's own experience, with a similar level of importance attributed to other farmers and growers and government agencies. Veterinarians and local retailers or suppliers were considered to be the next most important sources of information. The internet and private consultants were considered the least important as sources of information on new exotic diseases, pests or weeds. In addition, 41 respondents nominated other sources of information. Twenty-three indicated farming newspapers as information sources and five respondents indicated field days.

Table 21: Importance of sources of information about new exotic diseases, pests or weeds

	n	Mean	Std. Deviation
Other farmers and growers	839	3.47	1.04
A government agency	822	3.44	1.21
Local retailer or supplier	800	3.03	1.17
A vet	795	3.30	1.39
Private consultant	758	2.29	1.39
The internet	755	2.38	1.27
Own experience	810	3.50	1.09

Suspicion of, and Actions Regarding, a New Exotic Disease, Pest or Weed

Only 49 of 937 respondents (5.1 percent) indicated that they had been suspicious of a new exotic disease, pest or weed on their smallholding. Some 66 respondents indicated that they had taken some form of action if they suspected the presence of a new exotic disease, pest or weed. Twenty-one had taken action themselves, presumably without notifying a government agency. Five had treated Varroa mite and five were suspicious of an incursion but had taken no action. Nineteen had notified their local council, and five had contacted MAF.

In response to the question 'If you thought you had found a new exotic disease, pest or weed would you report it to anybody?', only 35 of 925 respondents (3.8 percent) indicated that they would not report it.

Most respondents (896 or 94.7 percent) indicated that they would report an incursion. The most common response was MAF (362), followed by District or Regional Councils (146). Fifty-one respondents indicated that they would report it to the appropriate authority, and 31 indicated they would report it to DoC. In addition, 52 respondents indicated that they would report their suspicions to a veterinarian. Overall, most respondents indicated that they would take action that presumably would lead to notification of the appropriate authorities.

Eighty-two respondents provided the correct 0800 number for reporting a possible new exotic disease pest or weed.

GENERAL ATTITUDES

Importance of Lifestyle or Land Use

Respondents were asked to indicate whether either lifestyle, land use, or both equally, were most important to them. Of the 928 respondents who answered this question, lifestyle and land use were the most common choices (516 or 55.6 percent in each case), followed by lifestyle (292 or 31.5 percent), with land use identified as the most important by the smallest number of respondents (120 or 31.5 percent).

Identifying with the Rural or Urban Community

Respondents were asked to state whether they identify with rural or urban communities, or with both equally. Overall, of the 932 respondents who answered this question, 'rural' was the most common choice (494 or 53 percent), followed by 'both equally' (354 or 38 percent), with 'urban' the least preferred option (84 or 9 percent).

Satisfaction with the Smallholder Lifestyle

In general, respondents indicated that they tended to be satisfied with their smallholding lifestyle (mean 3.46, s.d. 1.07), although 151 respondents (16.2 percent) were either dissatisfied or strongly dissatisfied. Comparison between responses for type of smallholder found no evidence of significant differences (t test $p > 0.05$), meaning that satisfaction levels did not vary much with smallholder type.

Intention to Undertake Organic Production

Overall, 149 of 918 respondents (16.2 percent) indicated that they intended to undertake organic production within the next five years. Similar proportions of respondents within each of the various farm types intended to undertake organic production (Chi square $p > 0.05$). For example, farmers had similar intentions to undertake organics as other types of smallholders (such as lifestylers).

Importance of Generating Full Time Employment

In general, respondents indicated that they considered it only slightly important to be able to generate full time employment from their smallholding (mean 1.87, s.d. 1.27). Most respondents (568 of 924 or 59 percent) indicated that full time employment was 'not

important at all'. We found no significant difference between the five smallholding types (t test, $p > 0.05$).

Reasons for Living on a Smallholding

Respondents were asked to indicate the relative importance of ten reasons for living on a smallholding. The results of this enquiry are shown in Table 22. Peace, quiet and tranquillity, as well as space, privacy, openness, no close neighbours, and clean air were the most important reasons for living on a smallholding. Rural or country living was rated of moderate importance. Of less importance was having a safe and healthy place to raise children, the ability to keep animals, and having a place that was relaxing with less pressure. It was also generally important, but less important than other reasons, to meet the need to have a larger section and to have a place to retire. Of least importance was learning about farming.

Horticulturalists found space, privacy and no close neighbours of greater importance than did lifestylers and smallfarmers. The opportunity to keep animals was of greater importance to farmers than to lifestylers and smallfarmers. In addition, having a larger section was of more importance to horticulturalists than to farmers.

Table 22: Importance of Reasons for Living on a Smallholding

	n	Mean	Std. Deviation
Rural or country living	898	4.04	.91
Peace and quiet, tranquillity	896	4.14	.91
Space, privacy, openness, no close neighbours	897	4.15	.89
Clean air, no smog	893	4.14	.94
Safe and healthy place to raise children	858	3.68	1.39
Learn about farming	856	2.64	1.28
Can have animals	882	3.40	1.29
Less pressure, relaxing	876	3.57	1.23
Wanted a larger section than you can get in a city or town	856	3.31	1.48
Place to retire	878	3.18	1.46

Disadvantages of Smallholdings

Respondents were also asked to assess nine disadvantages of living on a smallholding. As can be seen from Table 23, unexpected costs and/or problems with local authorities and time required for work, chores and/or property maintenance were generally ranked as the most relevant disadvantages. Lack of services (water/sewerage/refuse) and land use conflict with established farmers and/or their attitudes to newcomers were generally considered the next most relevant disadvantages. Animal manure on roads, limited numbers of local clubs, organisations, sport and/or recreation facilities, distance to primary and/or secondary schools and noise and/or undesirable odours from established farms were less relevant than the other factors.

Interestingly, lifestylers judged distance to primary and/or secondary schools to be a more relevant factor than did smallfarmers.

Table 23: Disadvantages of Living on a Smallholding

	n	Mean	Std. Deviation
Animal manure on the roads	908	1.68	1.00
Land use conflict with established farmers and/or their attitudes to newcomers	903	1.74	1.02
Limited number of local clubs, organisations, sport and/or recreation facilities	898	1.54	.87
Can't subdivide any further	900	1.73	1.09
Unexpected costs and/or problems with local authorities	904	2.28	1.22
Time required for work, chores and/or property maintenance	905	2.35	1.10
Distance to primary and/or secondary schools	881	1.56	.90
Lack of services (water/sewerage/refuse)	901	1.80	1.04
Noise and/or undesirable odours from established farmers	902	1.51	.88

Attitudes Towards Sustainability

'Sustainability' was defined in the questionnaire as the mutual achievement of economic efficiency, environmental quality and social responsibility. Respondents were asked to indicate their present level of sustainability, and to estimate the level of sustainability they would achieve in five years time and in 10 years time. As shown in Table 24, the score for smallholder respondents approached four, or 'sustainable'. The results for the estimate of sustainability in five and 10 years' time show that many respondents project an increase in their levels of sustainability. The results show an expectation that the level of sustainability will increase over time. In general, smallholders of different types gave similar estimates of sustainability.

Table 24: Attitude Towards Sustainability

	n	Mean	Std. Deviation
Sustainability now	868	3.72	.93
Sustainability in 5yrs	829	3.84	.84
Sustainability in 10yrs	809	3.95	.86

Membership of Organisations

In all, 325 respondents provided the name or names of associations or organisations to which they belonged. Respondents reported membership of a wide variety of associations and organisations, and over 200 different associations and organisations were indicated. Some 23 respondents were members of Federated Farmers and 11 were members of the Farm Forestry Association. Ten belonged to the Fruitgrowers' Association, and 19 belonged to the Tree Crops Association. Eight respondents belonged to the New Zealand Deer Farmers Association.

WORK AND INCOME

Number of Hours of Paid Work on the Smallholding

Table 25 shows the average number of hours of paid and unpaid work undertaken on respondent smallholdings. Only a small number (42) reported being engaged in paid work on the smallholding, but the average number of hours (31.04) approached a 40-hour working week. A greater number of partners of respondents were engaged in paid work on the smallholding than respondents themselves, though with a lower average number of hours. An even larger number of other family members engaged in paid work on the smallholding, but their average number of hours was even lower. Eighty-five smallholders employed a contract manager, but for less than 10 hours per week on average.

The table shows that on average, respondents undertake approximately 15 hours of unpaid work on the smallholding per week.

Table 25: Hours of Work on the Smallholding Per Week

	Paid		Unpaid	
	n	Avg.	N	Avg.
The respondent	42	31.04	280	15.14
Partner	90	22.22	476	11.61
Other	103	13.74	471	2.78
Contracted manager	85	8.16		

Off-farm Employment Status

Of the 405 respondents who answered the enquiry into off-farm employment status, more were employed full time than part time (see Table 26).

Table 26: Off-farm Employment Status

	Full time	Part time	Not employed off-farm	Total
The respondent	183 45.2%	85 21.0%	137 33.8%	405 100%
Partner	87 36.9%	64 27.1%	85 36.0%	236 100%
Other	23 39.7%	5 8.6%	30 51.7%	58 100%

Off-farm Income

A large proportion of respondents reported gaining income other than that received from their smallholding (see Table 27). Of the 881 who answered this question, 780 (87.4 percent) reported having received off-farm income. Of these, many had a substantial income, some 382 (43 percent of the total) receiving an off-farm income over \$40,000 per annum.

Table 27: Off-farm Income (Respondent)

Annual income	Frequency	%
Under \$20,000	190	21.6
\$20,000-39,999	208	23.6
\$40,000-59,999	177	20.1
\$60,000-79,999	94	10.7
\$80,000-99,999	39	4.4
\$100,000 and above	72	8.2
Not applicable	101	11.5
Total	881	100.0

Table 28 shows the results of our enquiry into the off-farm income of respondents' partners. Slightly more partners than respondents indicated that the income question was not applicable, and slightly fewer partners (655) than respondents (700) reported receiving income. A smaller proportion of partners receive income over \$40,000, with 31.6 percent in this higher income group. Overall, the off-farm incomes of smallholders is substantial.

Table 28: Off-farm Income (Partner)

Annual income	Frequency	%
Under \$20,000	252	29.9
\$20,000-39,999	196	23.3
\$40,000-59,999	109	12.9
\$60,000-79,999	42	5.0
\$80,000-99,999	27	3.2
\$100,000 and above	29	3.4
Not applicable	187	22.2
Total	842	100.0

GST Registration

Five hundred and one of 902 respondents (55.5 percent) indicated that they were GST-registered. Of these, 324 indicated that their GST registration pertained solely to income from their smallholding.

Discussion

BLOCK NUMBERS AND AREAS

Based on the Valuation Roll as at 16 August 2004, the total number of lifestyle blocks in New Zealand was 139,868, accounting for more than 753,000 ha. The mean block size was 5.53 ha (median = 2.7, range 0.0006 - 955.7 ha). LV blocks (without dwellings) were marginally larger than LI blocks (with dwellings), a statistically significant result. There is, of course, an issue of definition about what constitutes a lifestyle block as opposed to other types of smallholding. It seems that any large near-urban section, with or without a house, qualifies as an LI/LV block in the Valuation Roll. Large vacant tracts of land with no indication of an enterprise are likely to have a similar category code. This accounts for the huge size range of 0.0006 to 955.7 ha recorded against LI/LV blocks in the Valuation Roll. Effectively, registration within the Valuation Roll is compulsory for all rateable blocks, due to the requirement of territorial local authorities to collect rates.

In contrast some 22,687 farms in AgriBase were classified with a predominant farm type as 'LIF' (lifestyle farming). The mean size was 4.97 ha (median = 3.8, range 0.01 – 603.1 ha) (see Figure 1). However, when other livestock farm types and non-farmed properties ≤ 35 ha were included, the figure rose to 42,094 farms. In all, AgriBase held records on 60,213 properties, either categorised as LIF or ≤ 35 ha, involving 539,506 ha of land.

When AgriBase was first launched in 1993, agricultural properties over 4 ha (10 acres) were targeted. Since then, this constraint has been removed and the goal is now to register all rural properties involved in some form of primary production, regardless of size. In practice, farms are registered on the basis of industry sector programmes or contact opportunities, such as through rural helicopter rescue trust mail outs. Unless they are involved in trading livestock, lifestyle block owners are often missed. The ground-truthing exercise showed that 47.4, 65 and 74.5 percent of the smallholdings were already registered in AgriBase for the three sample areas respectively. Of the 694 questionnaire survey respondents who returned AgriBase registration forms, 538 (77.5 percent) were already recorded in the database. This indicates that AgriBase holds records on between 47.4 and 77.5 percent of all smallholders.

SALES AND OWNERSHIP DURATIONS

Sales of lifestyle blocks nationwide have been increasing steadily since 1980 (see Figure 3). While some of this is undoubtedly due to re-sales of the same blocks, the total numbers of blocks have also been increasing (see Figures 7 & 8). The districts showing the most dramatic increases in absolute numbers are Far North, Franklin, Rodney, Selwyn, Waikato, Waimakariri, Western Bay of Plenty and Whangarei. Based on mean block sizes, it is estimated that an additional 6,800 lifestyle blocks are created each year nationwide, accounting for some 37,600 ha. If we assumed that this was all productive farmland, the area going into lifestyle blocks is equivalent to the loss of 247 dairy farms per year, based on a mean dairy farm size of 152ha (data extracted from AgriBase).

The absence of actual creation dates of lifestyle blocks in the data extracts from QV-Online meant that it was not possible to determine whether the mean size of lifestyle block is changing over time. However, anecdotal evidence is that block sizes are getting smaller.

A large number of blocks change hands within a relatively short period of time (see Figures 4 & 5), although a proportion of lifestyle assessments do stay in the same ownership for longer

than 20 years (Figure 6). From this analysis, it appears that LV blocks are generally held by the same owners for longer periods than LI blocks.

THE GROUND TRUTHING EXERCISE

The ground-truthing exercise involved a sample of three readily accessible areas with high proportions of smallholdings between 0.4 ha and 35 ha, many of which were clearly lifestyle properties.

A large number of new houses were located on smallholdings within the two South Island areas, located between Rolleston and Lincoln. There was also some building activity at Newbury, just to the west of Palmerston North. It was not always possible to contact each owner directly, particularly when visits were conducted on a weekday. In these cases, names were elicited from neighbours or, failing that, the predominant land use observable over the fence was recorded.

DATABASE VALIDATION

LINZ title data were linked to every land parcel in the two Lincoln study areas. This was an exceptional finding, perhaps because the areas were close to Christchurch city where there had been a large number of recent subdivisions. LINZ acknowledges that complete linkage is not the case for all areas of New Zealand (B. Tercel, pers. comm., 3/02/04). This was borne out at Newbury, where only 87.4 percent of the parcels were linked. Reasons for incorrect names in the Title Estate table included recent sales not yet reflected in the dataset available to the authors, company or trust names that could not be verified, and situations where the land parcel in question had been leased to somebody else (the Title register only records the legal land owner). Other deficiencies in this register for frame development are that no postal addresses or phone numbers are included in some cases, listing of companies or trusts instead of individuals (and these are difficult to validate and utilise) and, finally, lack of any indication of land use.

Valuation Roll numbers were available for 91.6, 100 and 91.6 percent of the land parcels for Lincoln areas 1 and 2 and Newbury respectively. These were excellent match rates, utilising AgriQuality's national Valuation Roll to Land Parcel matching programme. However, the actual names and addresses (by implication) were available for only 57.5, 70 and 79.9 percent of those linked parcels. Since the privatisation of valuation services a few years ago, a number of District Councils use alternative providers to QV. Selwyn District Council is one such council. Consequently, Valuation Roll information for this District (within which the two Lincoln areas fell) is no longer kept completely up-to-date. In contrast, QV still provides rating services to the Manawatu and Palmerston North Districts, and the percentage of names still current in the Newbury area reflected this service. Notwithstanding this initiative, the usefulness of the Valuation Roll as a contact frame has been severely curtailed because of changes to the Local Government Rating Act which came into effect in April 2003. Those changes restrict Local Authorities from providing bulk names and addresses from the District rating databases to third parties.

Land-use information in the Valuation Roll only provides a rough indication of the smallholding sector. For example, lifestyle blocks usually have a category code such as 'LI' and an indication of the age and value of the dwelling, or 'LV' in the case of lifestyle blocks without a dwelling. The land use information was correct for 69, 70 and 72.1 percent of the linked records for Lincoln areas 1, 2 and Newbury, respectively. Formerly, the Lincoln study areas had a large number of apple growers who were contracted to Applefields (a Canterbury-

based apple growing enterprise no longer in operation). Since the demise of that company, many of the apple orchards have reverted to non-orchard-based smallholder blocks. These transitions were not reflected in the database.

Some 47.4, 65.0 and 74.5 percent of the parcels from Lincoln areas 1, 2 and Newbury, respectively, were registered in AgriBase. Of these, the name and address details were still current for 88.9, 92.3 and 89.3 percent of cases within the three areas, and the land use information was correct for 95.6, 84.6 and 91.0 percent of the records, respectively. AgriBase is the only database that holds comprehensive information, including names and addresses, the dominant farm type (industry), as well as actual numbers of animals by species or class and, in the case of planted crops, the hectares of plantings by species or variety. AgriBase was established to assist the collection of agricultural statistics, and hence is potentially the most useful of the databases as an agriculture frame.

The ground-truthing exercise showed that currently no single database would suffice as a complete frame of smallholders. However, as the authors were able to do, combining field visits with access to all of the existing frames would allow one of the databases – say AgriBase – to become more complete. Achieving this objective is simply an issue of resourcing.

RESEARCH OBJECTIVES AND FINDINGS

The main research objectives of the postal questionnaire study were to: (1) investigate land use on smallholdings and (2) assess awareness of biosecurity and environmental issues. The survey and analysis of the results worked well to meet these objectives.

The main limitation in surveying smallholders is the accurate identification of smallholding properties. Considerable effort was expended in identifying a representative sample of smallholders. However, the present growth in the number of smallholdings means that the findings of this study will require updating in the near future.

This report provides many results, but gives limited additional analysis. There is an assessment of different types of smallholders and description of some of their characteristics, but more work remains to be done by taking the analysis a little deeper in order to explore the characteristics of smallholders in greater detail.

The survey was conducted using a comprehensive sample to ensure good representation. The 28 percent return rate, close to the usual response rate of 30 percent for rural surveys, provided a sound basis to make projections about the smallholder population from the results of the survey.

Smallholding Types

Self-classification into five smallholding types provided a useful basis for analysis. Smallholders of different types had different sizes of smallholding. Lifestylers and hobby farmers had smaller land areas, while those more seriously involved in production had larger smallholdings.

We found that farmers reside on their smallholdings longer than other types of smallholders. This suggests that types other than farmers are a new phenomenon for smallholding. Further, lifestylers had less farm experience than smallholders of other types, probably because of the newness of this group compared to farmers. Lifestylers are also less interested in production and occupy smaller areas of land.

The finding that intended length of stay varied depending upon prior length of stay can presumably be explained as follows: those who wanted to give up small holdings had already left, leaving the remainder who intended to stay. Amongst the recent smallholders there remains a group who are unsure about how long they will stay.

Income from Agricultural Production

Our land use and production figures show that many smallholders are engaged in serious production activities. Livestock, particularly sheep and beef, were prevalent. However, apart from fruit and market gardening, gross incomes from activities on smallholdings per se are generally insufficient to support smallholding households. As the off-farm income measures show, many smallholders gain substantial income from other sources. Indeed, although many smallholders identify with a rural lifestyle, it is likely that many work in urban areas while choosing to live a rural lifestyle.

For about one third of the sample, production had increased over the last two years. Future projections of production are generally optimistic, with only three percent indicating lower production and about one third indicating an increase in production. However, capital investment was generally low, perhaps reflecting the small scale production conducted on smallholdings.

Tb Registration and Meat Consumption

A sizable proportion of smallholders undertook Tb registration, although approximately 10 percent were unsure about registration. Almost all of the relevant smallholders knew to check for Tb registration at the point of sale and only slightly fewer knew to determine when a herd was last tested. Although not every smallholder knew of Tb procedures, most appeared conversant with required practice.

Almost half of the smallholders consumed meat from animals raised on their property. Of these, about one quarter had killed the animals themselves.

Some 20 percent of the smallholders did not have access to stock yards, which really are necessary for good animal management (e.g. for Tb testing and worm drenching).

Native Bush and Trees

Most smallholders indicated that they would encourage the growth of native bush. Hobby farmers were less likely to encourage native bush, possibly because of the smaller size of their properties and because they are focussed on farming activity. Farmers were also less likely to encourage growth, possibly because of their intention to use their land for production.

Most smallholders intended to plant decorative or landscape trees on their properties. Just under one third intended to plant fruit or nut species, and more than ten percent intended to plant other tree species. Overall, almost 85 percent of the smallholders intended to plant trees of some kind in the next five years, suggesting that this fraction of the rural community will contribute significantly to tree planting in the future.

Environmental Practices

We found that very few were monitoring voluntarily and engaging in environmentally friendly practices. A national survey of farmers and growers conducted in 2000 found much

higher proportions undertaking these activities (Cook, Fairweather and Campbell, 2000). For example, in the 2000 survey 46 percent of farmers monitored the use of chemicals or fertilisers, whereas only 0.8 percent of smallholders did so.

Disease, Pest and Weed Management

Most smallholders indicated that they engage in disease, pest and weed management and indicated that they monitored for diseases, pests or weeds. Generally, it was considered important to control new exotic diseases pests or weeds, though most thought it unlikely that one would occur on their property. Other farmers and growers and government agencies were considered the most important source of information about new exotic diseases, pests or weeds. Other important sources included one's own experience. Only about five percent had at some time been suspicious of such an incursion, and the most common action taken on suspicion of a new exotic disease pest or weed was to contact a government agency. Most indicated that they would contact MAF, and some (8.6 percent) were able to provide the correct 0800 number. Overall, smallholders appear to engage in the management of diseases, pests and weeds and know the appropriate responses to their encountering new exotic varieties.

Identification with the Rural or Urban Environments

The enquiry into general attitudes showed that smallholders tended to give equal weight to both land use and lifestyle. Smallholders identified overwhelmingly with the rural environment, rather than urban. In general, smallholders were satisfied with their smallholding lifestyle, although approximately 16 percent were not satisfied.

Organic Production

Some 72 of 947 (7.6 percent) were engaged in some form of organic production, and just over 16 percent intended to take up organic production. In comparison, in 2000 ten percent of New Zealand farmers and growers were engaged in some form of organic production, and almost 38 percent intended to use organic methods (Cook, Fairweather and Campbell, 2000). This comparison suggests again that smallholders' attitudes towards production are different to those of other farmers and growers. Indeed, although size is most likely a caveat, most smallholders indicated that it was not important to generate full-time income from their properties. However, in general, smallholders were committed to increasing their levels of sustainability in the near future.

Advantages and Disadvantages of Smallholdings

There is a variety of reasons for, and disadvantages of, living on a smallholding. Smallholders value peace and quiet, space and privacy, and clean air. Unexpected costs and problems with local authorities were common disadvantages that possibly reflect a need for authorities to monitor carefully and create an environment that supports agricultural production, while balancing the lifestyle preferences of smallholders.

Membership of Organisations

Almost half of the smallholders gave the names of organisations and associations to which they belong. The variety of responses showed the varied interests of smallholders, and demonstrated that many smallholders are involved in rural communities through membership of rural organisations and associations.

Employment

Only a small number were engaged in paid employment on the small holding, but on average their hours approached full-time employment. Less unpaid smallholding work was undertaken than paid work, but was undertaken by about 30 percent of smallholders. Less than half of the smallholders were employed off-farm, but their income was generally high, with almost 40 percent earning more than \$40,000 per annum. Finally, more than half had GST registration, almost two thirds of these registered solely for their smallholding. Our land use data shows that most smallholdings are run as a productive business, but few serve to support solely their households.

Environmental Practices and Biosecurity

Smallholders are a clearly distinguishable group in rural New Zealand. Their lifestyles usually involve producing from the land as well as gaining income from other sources. Smallholders are different from other farmers and growers and, by nature of the size of their properties, are not solely dedicated to production. However, they do intend to plant trees and are likely to add significantly to the New Zealand landscape.

At times smallholders may come into conflict with authorities over the negative impacts of agricultural production. Perhaps smallholders feel that local authorities do not act in their interests. Nevertheless, smallholders seem to be conscious of their responsibilities regarding Tb control and are aware of, and active in, addressing biosecurity issues. In these areas smallholders are responsible members of the rural community.

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References

- Cook, A. Fairweather, J. R., Campbell, H. R. (2000), *New Zealand Farmer and Grower Intentions to Use Genetic Engineering Technology and Organic Farming Methods*. AERU Research Report No, 243, Lincoln University.
- Crowley, J. and Breslow, N. (1984) *Statistical analysis of survival data*. Annual Review Public Health, 5, 385-411.
- Fairweather, John R., Robertson, Nicola (2000), *Smallholders in Canterbury: Characteristics, Motivations, Land Use and Intentions to Move*. AERU Research Report No 245, Lincoln University.
- Sanson, R. and Pearson, A. (1997) *Agribase - a national spatial farm database*. Proceedings of 8th International Symposium on Veterinary Epidemiology and Economics, Paris, 7-11 July 1997. *Epidémiologie et Santé Animale* 31-32, 12.16.1-12.16.3.
- Sanson, R.L. (2000) *Agribase – Introduction and history*. In: *Proceedings of the New Zealand Veterinary Association Epidemiology and Animal Health Management Branch Seminar, Wallaceville, Upper Hutt, New Zealand, 23-24 November 2000*. Foundation for Continuing Education of the NZVA, Publication No. 205, 61-64.

Appendix 1

The Questionnaire

Dear Smallholder or Farmer

In 2000 I completed a study of smallholders around Christchurch in order to understand what people experience and value about smallholding. Now I would like to survey a New Zealand-wide sample in order to assess the situation more broadly.

A smallholding is defined as any rural land up to 30 hectares used for **any** purpose. I want to hear from all types of landowners including lifestylers, smallholders, and farmers/horticulturalists. (If your land is used for some other purpose, **please send back** the questionnaire anyway with a note to us as to what the land is used for).

This questionnaire is one way to make a record of the present smallholding situation. The questions are not complicated. They ask such things as descriptive information, land use, management, employment and some general information. I think you will find the questions interesting. Any adult member of the household may respond.

We are conducting this survey on behalf of AgriQuality (an organisation which certifies production quality and collects data about land use in New Zealand) which has received funding from the Ministry of Agriculture and Forestry. I assure you that answers to the questions in the main questionnaire will remain confidential and the published data will not be able to be linked to any individual. Please note that AgriQuality invite you to also fill out their Agribase Farm Registration form, which is included in your envelope. They plan to use the results from their form to improve their database. They need this to help enhance New Zealand's agricultural productivity, to manage rural emergencies and to produce agricultural statistics. Please send the form directly to AgriQuality.

We appreciate your time given to this study so we are providing prizes for participants. All respondents to the main questionnaire will go in a draw for a prize (chainsaw valued at \$1,000). In addition, all respondents who fill out the Agribase Farm Registration form will go in a draw for another prize (an electric fence energiser, and vouchers for other goods from any Wrightsons store, to the value of \$1,000).

Please fill out the questionnaire at your earliest convenience and post it to me in the envelope provided (free of charge) as soon as possible. It is important to the success of this research that people respond promptly. This way I can provide an accurate account of the general characteristics of smallholdings in New Zealand.

Thank you for your assistance.

Yours sincerely

John Fairweather (Ph.D.)

(Principal Research Sociologist)

NATIONWIDE SMALLHOLDING SURVEY

November 2003

Instructions: For each question, please select one option and put the corresponding number in the box on the right hand side of the page. In some cases, answer directly in the box or write in the space provided.

A. Background

1. What is the approximate size of your smallholding? (hectares)
2. How many years have you lived on your smallholding?
3. Before buying a smallholding did you or another person in your household have previous farming experience or live on a farm? (1) Yes (2) No
4. How long do you intend to stay on your smallholding? Please specify the approximate number of years. If indefinitely, put 99.
5. Which of the following terms best describes you?
 (1) Lifestyler (2) Hobby farmer (3) Smallfarmer (4) Farmer
 (5) Horticulturalist/grower
 (6) Other, please specify _____
6. Have you noticed an increase in the frequency of occurrence of native birds on your smallholding in recent years? (1) Yes (2) No (3) Unsure

B. Land and Production

1. What was your land used for last season? Please indicate the approximate land area involved and the approximate income for each of the options listed

Livestock	Stock Nos.	Approx. Land Area Ha	Approx. Gross Annual Income, 2002/03	
			\$	Value of production for own use
Dairy				
Grazing - beef				
Grazing - sheep				
<i>Please note area in tussock or danthonia (whether oversown or not)</i>				
Calf rearing				
Deer				
Goat				
Horses				
Poultry				
Pigs				
Other animals (1)				
(please specify) (2)				
(3)				

Plants	Approx. Land Area			Approx. Gross Annual Income, 2002/03	
	Ha	OR	M ²	\$	Value of production for own use
Crops (grain, seed and fodder)					
Flowers – open air					
Glasshouse/greenhouse/tunnelhouse					
Market garden/vegetables					
Fruit (pip, berry, kiwifruit, citrus, etc.)					
Vineyards					
Nursery					
Tree crops (1) (list main species)(2) (3)					
Exotic trees for (1) forestry/firewood (2) (list main species)(3)					
Other plants (1) (please specify) (2) (3)					

Other Land Uses	Approx. Land Area	Approx. Gross Annual Income, 2002/03
	Ha	\$
Tourism		
Mature native bush		
Native scrub and regenerating native bush		
Business activity, not farming, horticulture or tourism		
All other land (e.g., houses, domestic gardens, farm buildings, conservation plantings, shelter belts).		

2. Which of the above land uses are organic? _____
3. If you have cattle and/or deer on your property, are you registered with the Animal Health Board for the purposes of bovine Tb surveillance/testing and official animal identification?
(1) Yes (2) No (3) Don't know
4. If you were purchasing cattle or deer, please indicate if you would do each of the following.
(1) Yes (2) No
- Check the source herd's Tb status
- Determine if or when the animals were last Tb tested

Check whether the source herd was subject to herd or area Tb movement control restrictions

5. Does your household consume any meat products from your smallholding?
(1) Yes* (2) No
- * If yes, what animals? _____
- * Do you kill the stock? (1) Yes (2) No*
- * If no, who kills the stock? (1) Abattoir (2) Other person
6. Do you have your own stock pens? (1) Yes (2) No*
* If no, do you have access to a neighbour's stock pens? (1) Yes (2) No
7. Do you intend to keep or encourage the growth of native bush on your smallholding?
(1) Yes (2) No (3) I have no native bush
8. Which, if any, of the following tree species do you intend to plant in the next five years
(1) Yes (2) No
- Willows
 - Poplar
 - Eucalypts
 - Conifers
 - Fruit or nut trees for production
 - Landscaping/decorative species
 - Other - please specify
9. Please compare production levels two years ago, and anticipated production in two years, with current levels. Do you estimate production to be higher, lower or about the same?
(1) Higher (2) Lower (3) About the same
- My production now compared to two years ago is...
- Compared to now, my production in two years time will be...
10. What capital investment in production have you made in the last year?
(1) None (4) \$10,000-19,000
(2) Up to \$4,999 (5) \$20,000-49,999
(3) \$5,000-9,999 (6) \$50,000 or more
11. Please indicate whether each of the following have been undertaken on your smallholding. (1) Yes (2) No
- Received professional instruction on either the use, storage or disposal of chemicals
 - Monitored the use of chemicals or fertilisers
 - Monitored the soil for chemical residues
 - Monitored water for chemical residues
 - Adopted practices to avoid or reduce the use of insecticides
 - Adopted practices to avoid or reduce the use of certain herbicides
 - Applied manufactured fertiliser to improve the soil
 - Applied manure to improve the soil

C. Disease, pest and weed management

1. Is disease, pest or weed management undertaken on your smallholding?
 (1) Yes (2) No
2. Do you monitor your livestock or crops for diseases, pests or weeds?
 (1) Yes (2) No
3. How important to you is it to control new exotic diseases, pests or weeds on your smallholding?
 (1) Not at all important (4) Very important
 (2) Slightly important (5) Extremely important
 (3) Moderately important
4. How likely do you think it would be for a new exotic disease, pest or weed to occur on your smallholding?
 (1) Very unlikely (4) Likely
 (2) Unlikely (5) Very likely
 (3) Neither likely nor unlikely
5. How important are each of the following as sources of information about new exotic diseases, pests or weeds?
 (1) Not at all important (4) Very important
 (2) Slightly Important (5) Extremely Important
 (3) Moderately important
- Other farmers and growers
 A government agency
 Local supplier or retailer
 A vet
 Private consultant
 The internet
 Own experience
 Other - please specify
6. Have you ever had reason to suspect that any new exotic disease, pest or weed has occurred on your smallholding? (1) Yes (2) No
7. If you have seen or suspected that you had a new exotic disease, pest or weed on your smallholding, what did you do about it?

8. If you thought you had found a new exotic disease, pest or weed would you report it to anybody? (1) Yes* (2) No
- * If yes, to whom would you report it?
9. An 0800 number is available for reporting a possible new exotic disease, pest weed. To help us check how many people know this number, please write it down if you know it.

D. General Attitudes

1. In terms of the balance between lifestyle and land use (production), which is **most** important to you? (1) Lifestyle (2) Land use (3) Both equally important
2. Which community do you identify **most** with? (1) Rural (2) Urban (3) Both equally
3. How satisfied or dissatisfied are you with your smallholding lifestyle now?
 - (1) Strongly dissatisfied (4) Satisfied
 - (2) Dissatisfied (5) Strongly satisfied
 - (3) Neither dissatisfied or satisfied
4. Do you intend to undertake organic production in the next five years? (1) Yes (2) No
5. How important is generating full time employment from your smallholding?
6. We are interested in motivation for smallholding. How important to you is **each** of the following reasons for living on your smallholding?
 - (1) Not at all important (4) Very important
 - (2) Slightly Important (5) Extremely Important
 - (3) Moderately important
 - Rural or country living
 - Peace and quiet, tranquillity
 - Space, privacy, openness, no close neighbours
 - Clean air, no smog
 - Safe and healthy place to raise children
 - Learn about farming
 - Can have animals
 - Less pressure, relaxing
 - Wanted a larger section than you can get in a city or town
 - Place to retire
7. We are interested in the disadvantages of smallholding. How relevant to you is **each** of the following disadvantages?
 - (1) Not at all relevant (4) Very relevant
 - (2) Slightly relevant (5) Extremely relevant
 - (3) Moderately relevant
 - Animal manure on the roads
 - Land use conflict with established farmers and/or their attitudes to newcomers
 - Limited number of local clubs, organisations, sport and/or recreation facilities
 - Can't subdivide any further
 - Unexpected costs and/or problems with local authorities
 - Time required for work, chores and/or property maintenance
 - Distance to primary and/or secondary schools
 - Lack of services (water/sewerage/refuse)
 - Noise and/or undesirable odours from established farmers
8. Sustainability refers to the mutual achievement of the goals of economic efficiency, environmental quality and social responsibility. Please indicate the level of sustainability of your farming system now and in the future.
 - (1) Completely unsustainable (4) Sustainable
 - (2) Unsustainable (5) Completely sustainable

(3) Neither unsustainable nor sustainable

Now	
In five year's time	
In ten year's time	
9. Please name up to two farming or industry related associations or organisations to which you belong	

E. Respondent Characteristics

1. Gender:	(1) Male	(2)	
Female			
2. Please state your age:			
(Years)			
3. How many hours per week on average do the following people work on your property doing either paid or unpaid work?			
You			
Your partner			
Other family member			
Other people, please specify (1) _____			
(2) _____			
(3) _____			
Contracted management			
4. What is the off-farm employment status of the following people in your household?			
(1) Full-time (2) Part-time (3) Not employed off-farm			
You			
Your partner			
Other family member			
Other people, please specify (1) _____			
please specify (2) _____			
please specify (3) _____			
5. We would like to assess how significant your off-farm income is so we can compare it with on-farm income. Please select the appropriate range for your off-farm annual income:			
(1) Under \$20,000 (5) \$80,000-99,999			
(2) \$20,000-39,999 (6) \$100,000 and above			
(3) \$40,000-59,999 (7) Not applicable			
(4) \$60,000-79,999			
6. Please select the appropriate range for the total of your partner's off-farm annual			

income:

(1) Under \$20,000

(5) \$80,000-99,999

(2) \$20,000-39,999

(6) \$100,000 and above

(3) \$40,000-59,999

(7) Not applicable

(4) \$60,000-79,999

7. Is the income from your smallholding GST registered? (1) Yes* (2) No

*If yes, is this registration solely for income from your smallholding?

(1) Yes (2) No

THANK YOU FOR RESPONDING TO OUR QUESTIONNAIRE.

