

CHAPTER 1 – METHODOLOGY

1.1 Introduction

This was the second Agricultural Census to be conducted in Niue since the last one in 1989. As well as collecting information on agriculture, the census also included some detail information on the population to provide the Government with up-to-date information on some important population parameters.

Although this as only the second agricultural census to be conducted in Niue, the country has a long history of Population activities and has gained experiences in data collection. Nevertheless, Food and Agricultural Organization of the United Nations (FAO) provided technical assistance under TCP/Niue/3101 through the services of an Agricultural Census Expert and a Data Processing Expert.

1.2 Census Administration

The Agricultural Census was conducted by the Statistic Niue (SN) in close collaboration with the Department of Agriculture, Forestry and Fisheries (DAFF). The Niue Government Statistician assumes responsibility for the day-to-day activities of the census including the supervision of the fieldwork and the checking, editing and coding of the completed questionnaires.

The Agricultural census was taken under the authority of the Niue Census Act 2009.

1.3 The Questionnaires

The questionnaire was designed by the FAO Agricultural Statistics Expert in consultation with SN and DAFF. The design followed closely that used in the Samoa Agricultural Census, 1999, with some modifications taking into account the differences in agricultural emphasis in the two countries.

Altogether, three questionnaires were used.

- 1 Household Form
- 2 Holding Form
- 3 Parcel Form.

The following information was required from all households.

- (i) Location of household
- (ii) Date of birth, sex, Age, Decent, Country of Residence for all persons
- (iii) Educational Attainment, Main Activity, Hours worked in the Holding and Operator Status for persons 10 years and over
- (iv) Level of Agricultural Activity
- (v) Livestock, Poultry and Domestic Animals

(vi) Household Fishing Activities (fishing methods, Number of fishing trips, persons involved in fishing, proportion of catch sold, number of canoes ,dinghies and outboard motors owned or hired.

(vii) Number of Uga caught and method of Catching

(viii) Consumption of Major crops(drinking Nuts, Matured Coconuts, Green and Ripe Bananas, Taro, Cassava and Papaya

(ix) Number of Coconuts for Feeding Animals.

Additionally, the households identified as 'agriculturally Active, these information were collect.

(x) Number of Holdings, Number of parcels and method of Operation.

(xi) Total Area of Holding, Land Tenure, Land Use and Proportion of crops Damaged by wild Pigs.

(xii) Labour Inputs by Non-Household Members (wages and Other Benefits)

(xiii) Agricultural Income and Credit

(xiv) Use of Fertilizers and Chemicals (Insecticides, Herbicides and Fungicides)

(xv) Equipment owned, hired or Borrowed (knapsack Sprayer, Wheelbarrow, Chainsaw, Electric Generator, Brush Cutter, Planting Stick and Rotary Hoe)

(xvi) Land clearing Using Bulldozer

(xvii) Crops Grown and Crops Main Use

(xviii) Crop Grown in a Plot, Plot Area, Method of Sowing, Proportion of Mix and Number of Trees/Plants)

(xix) Crops Planted and harvested in 2009 (Area and/or Number of Plants Harvested and Proportion Sold)

The questionnaires were design such that households with no or very little agricultural activities (Non and Minor agricultural households) completed only the Household form.

An Enumeration Manual was also prepared as a reference document.

1.4 Recruitment and Training of Enumerators

Recruitment: The recruitment of census enumerators and other census workers were mainly of government employees from different government departments but more from the Department of Agriculture, Forestry and Fisheries (DAFF) and former employees (now retired) of DAFF. The consideration of their recruitment was based on their:

- experience as enumerators of previous censuses project so the concept was not new to them,
- basic knowledge of the content of the census, the definitions of crops, livestock and others; and
- basic knowledge of their prescribed area of enumeration, the residents and land of use making easy for them to relate to the householders and land they use for agricultural production.

Training: Training was conducted over a period of two weeks in three different days. Day one was in September 2009 for a full day with the census expert from FAO and Day two for the Field Supervisors and Data Operators and Day three for everyone in the team with the Government Statistician and Senior officials from DAFF.

The first training session with the enumerators concentrated on the concepts and definitions employed in the census. The enumerators also conducted mock interviews amongst themselves and completed sample copies of the questionnaires. This not only gave them some necessary practical experience in completing the questionnaires but also served to highlight those aspects of the questionnaires that were not fully understood by all the enumerators.

The second training session was divided into two sections; the first with the field supervisors and the second for the data operators. With the field supervisors, the training at first was similar to that of the above in terms of familiarizing with the concepts and definitions and gradually more on the supervisory and management of the interviewers out in the field doing the interviews and filling of questionnaires. There was a concentration of 'checks' to filled questionnaires and handling of hard cases and /or refusals. With the data operators, there was familiarization with the questionnaires and the flow of questions and codes used in the census.

The third training session served to bring the whole team together so they will know who they are working with and to highlight any aspect of the census that were not fully understood by enumerators, supervisors and data operators.

1.5 The Enumeration

The country was divided to 21 Enumeration Areas (EAs) for the enumeration purposes. This division was based on the Population and Household Census 2006. There were 30 EAs in the first Agriculture

Census in 1989 and the decline of number of EAs to 21 this time was the direct result of the declining population and number of households.

The household list of the 2006 census was update and used for this Agriculture census. The final updating of the household lists was carried out by the statistics office staff and the enumerators on the evening of the 4th of November 2009 and the pre-census count of the population and households was done. However the 'Census Night' for the count of the population and households was set for the weekend of 21 November 2009.

The enumeration and filling of questionnaires of households began on the 9th November and concludes 22nd November 2009 for period of 2 weeks. This period of the survey was thought to be necessary as the enumerators were expected to work 2 to 3 hours in the evenings considering the appropriate time respondents of households returned home from their normal day activities.

There were 3 different questionnaires: The Household form, The Holding form and The Parcel form to be completed for each of the households depending on the level of Agricultural activity of the household. The enumerator is expected to take about up to an hour to complete the three questionnaires. No major problems were experienced with the enumeration and all households were covered during the allotted time.

The tasks of the enumerators were undoubtedly facilitated by the fact that not only they were selected from the EAs there were familiar with but with less than 500 households in Niue most individuals knew each other and their activities. The field supervisors were tasked to make regular checks with the enumerators about the progress of their work and report to the Census manager (Government Statistician) on a day to day basis.

Overall the standard of enumeration was very high. The enumerators and field supervisors have ensured not only to collect from respondents of households' accurate and complete information but also to observe and uphold the legal provisions of taking the census.

1.6 Checking, Editing and Coding.

It is standard practice that as each enumeration area was completed the forms were first checked by the field supervisors for missing information and obvious inconsistencies. Omissions and errors identified at this stage were corrected by the enumerators.

The next stage was for the field supervisors to go through the completed forms again in the office to check in more detail for omissions and logical inconsistencies. Where they were found, the supervisors were responsible to take the necessary action.

Once the questionnaires had been thoroughly checked and edited, they were then coded in preparation for data processing.

Checking, editing and coding of the questionnaires in office were done after normal working hours as to ensure that the confidentiality of the survey is well observed.

1.7 Data Processing.

The data was entered using two office computers of Statistics Niue with a custom designed CSPro database software by a computer programmer from The National Statistics office of the Philippines . Data entry was successfully done in a week.

The next stage of processing, on line editing and cleaning in preparation for tabulation was not straight forward as expected because of these issues: the programmer assigned by FAO for the census was based in the Philippines and was only available on part time basis, the census expert (consultant) was based in Samoa and was also available on part time basis while the rest of the team was in the Niue office. The 'distance' between the parties, the day and time differences had become a hurdle to the smooth running of the final stages of data processing, cleaning and tabulation of the data and not to mention the difficulties in the communication systems. The progress was very much depended on the availability of internet communications and they were times it has broken down. These composite issues have delayed the final stages of data processing dramatically.

1.8 The Post-Enumeration Survey.

As with all major fieldwork exercises it is important to conduct an independent assessment of the quality of the information gathered. In the case of the Agriculture Census, the most important component to be evaluated was the estimates of land area and root crops sown.

Whilst the census was conducted on an interview basis it was felt desirable that the post-enumeration survey should use objective measurement techniques (compass and tape-measure) to measure the physical area of the selected parcels of land. The office was very aware of the timing involved in conducting such survey so it was decided to enumerate only 20 parcels and plots contained therein, 10 parcels with crops currently growing in, 5 fallow parcels and 5 new parcels. Both the total area of the parcel and the area of plots were measured. A count of crops was done to 3 parcels with crops growing on it.

The results of the survey revealed some differences between the areas recorded in the census interview and the physical area as measured. This was very obvious on the areas that were slashed and burnt, and areas where there were bush or wild fires. The areas cleared by a bulldozer were fairly accurate.

On the basis of the results of this small post-enumeration survey it can be concluded that whilst individual area estimates may differ considerable from the actual physical area, within the country as a whole, and to a lesser extent individual village areas, these differences can be expected to balance each other out with little overall effect on the results. There is a slight exception in the cases of fallow parcels/land and new parcels where there were some evidence to conclude that the areas were probably underestimated.

CHAPTER 2 – POPULATION CHARACTERISTICS.

2.1 Introduction

As part of the 2009 agricultural census, a population count was undertaken and some basic demographic information obtained. Population agricultural information was collected together in the week before the census night on midnight November 22, 2009.

2.2 Population

A total of 1,536 persons were enumerated in Niue at the time of the census. Females accounted for 50.1% and 49.9 % for males. The village population ranges from 378 persons in Alofi South to 12 persons in Namukulu.

Niue experienced an overall population loss of 89 people or 5.5% since the 2006 population census, with an annual growth rate of -1.9%.

Seven villages had net population loss of more than 10 percent, with Tamakautoga and Toi recording the greatest loss of more than 20 percent.

Four villages experienced population growth with Vaeia and Liku recording the highest growth of 37 percent.

Table 1: Niue Population by Village 2006 and 2009

Village	Total Population		Population Change		Population Distribution
	2006	2009	Number	%	%
Total	1,625	1,536	-89	-5.5	100
Alofi South	434	378	-56	-12.9	24.6
Alofi North	147	168	21	14.3	10.9
Makefu	62	60	-2	-3.2	3.9
Tuapa	120	111	-9	-7.5	7.2
Namukulu	14	12	-2	-14.3	0.8
Hikutavake	56	49	-7	-12.5	3.2
Toi	31	24	-7	-22.6	1.6
Mutalau	85	93	8	9.4	6.1
Lakepa	72	65	-7	-9.7	4.2
Liku	62	85	23	37.1	5.5
Hakupu	162	138	-24	-14.8	9.0
Vaiea	59	81	22	37.3	5.3
Avatele	164	152	-12	-7.3	9.9
Tamakautoga	157	120	-37	-23.6	7.8

2.3 Population Profile

The census recorded 1,239 (80.7%) persons of Niuean decent with 297 from other ethnic groups.

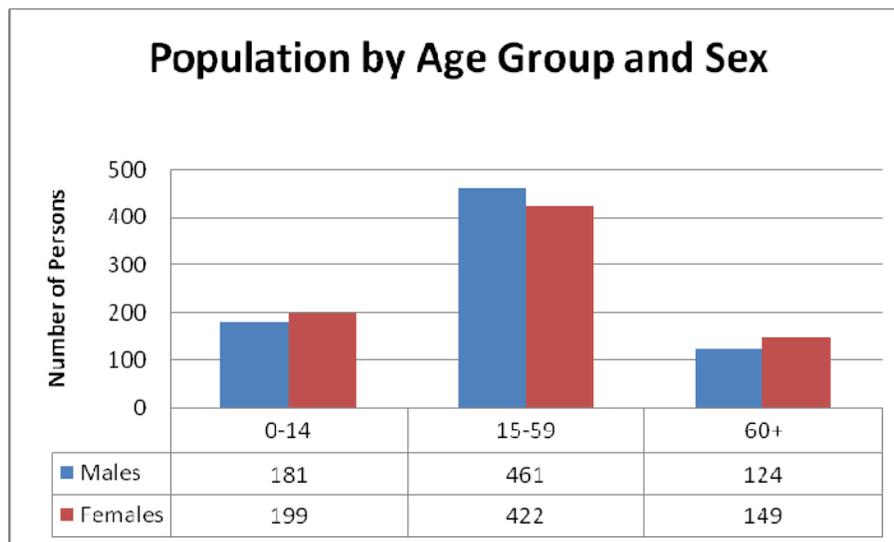
Table 2: Population by ethnicity and sex 2006 and 2009.

	2006						2009					
	Total	%	Males	%	Females	%	Total	%	Males	%	Females	%
Total	1,538	100	756	100	782	100	1,536	100	766	100	770	100
Niuean	1246	81	588	77.8	658	84.1	1239	80.7	600	78.3	639	83
Non-Niuean	292	19	168	22.2	124	15.9	297	19.3	166	21.7	131	17

Overall, there was no significant change in the proportion of the Niuean population in terms of ethnicity from the 2006 population census. However, one of the villages, Vaiea, recorded only 30% of its population are of Niuean decent.

The population of Niue comprises of 25% below fifteen years of age, 57% in the labour force age group and the remaining 12% in the 60+ age group.

Figure 1



Niue's resident population in 2009 consisted of 766 males and 770 females reflecting a sex ratio of 99, that is, 99 resident males to every 100 resident females.

2.4 Country of Residence

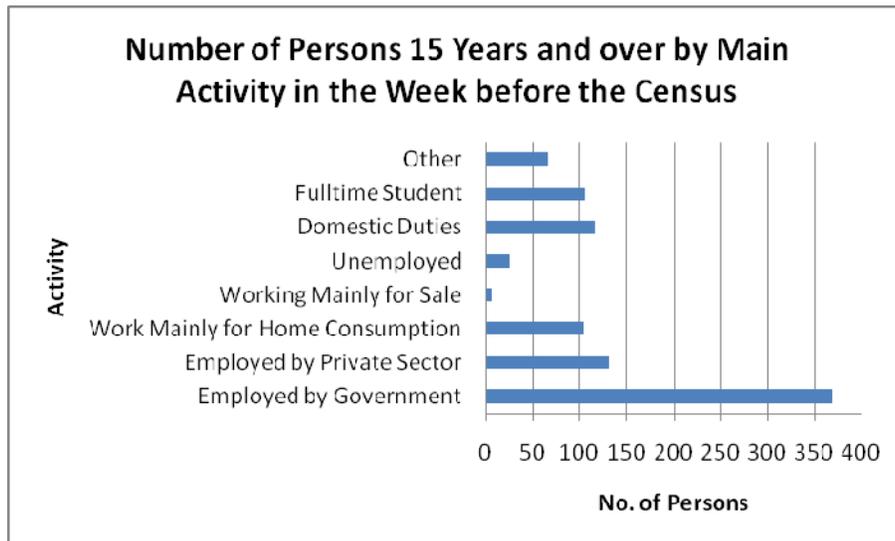
Some 1466, or 95 percent of the population indicated Niue as their country of residence at the time of the census with 70 persons describing their place of residence as being outside of Niue(43 from New Zealand)

Of the total population of 1536 at the time of the census, 1383 or 90 percent were resident of Niue a year earlier. The majority of the remaining 10 percent were resident in New Zealand, accounting for 64 percent.

2.5 Main Activity

Every person 10 years and over was asked of their main activity in the week before the census. Of the 649 persons formally employed, 65% were employed by Government, with males accounting for 54% of government's workforce.

Figure 2



Government remain the main employer which accounted for 36 percent of the total population in the working age group (15 and above). Of the 419 persons employed by government, about 95 percent were of Niuean decent. However, a much less percentage of Niuean was employed in the private sector accounting for about 57 percent of the private sector employment.

Table 3: Niuean population 15 Years and Above By Main activity

Main Activity	Males		Females		Total	
	Number	%	Number	%	Number	%
Working						
-Government	198	43.9	171	36.1	369	39.9
-Private Sector	65	14.4	66	13.9	131	14.2
-Mainly for home consumption	57	12.6	48	10.1	105	11.4
-Mainly for sales	1	0.2	5	1.1	6	0.6
Total Working	321	71.2	290	61.2	611	66.1
Unemployed	14	3.1	12	2.5	26	2.8
Total Economically Active	335	74.3	302	63.7	637	68.9
Non Economically Active						
-Domestic	22	4.9	94	19.8	116	12.5
-Students	61	13.5	45	9.9	106	11.5
Others	33	7.3	33	7.0	66	7.1
Total Non Economically Active	116	25.7	172	36.3	288	31.1
TOTAL	451	100	474	100	925	100

The above table indicated some difference of employment by sex. Males were more likely to have a job, with 71 percent working in the week before the census compared to 61 percent of females. Not surprisingly, therefore, more males were employed by Government accounting for 54 percent of Government's workforce. However, the percentage of males and females employed in the private sector were the same.

The situation was reversed in the non economic sector, where the numbers of females were considerably higher than males. Most of them were classified as working in domestic duties.



CHAPTER 3 - RESULT OF THE CENSUS

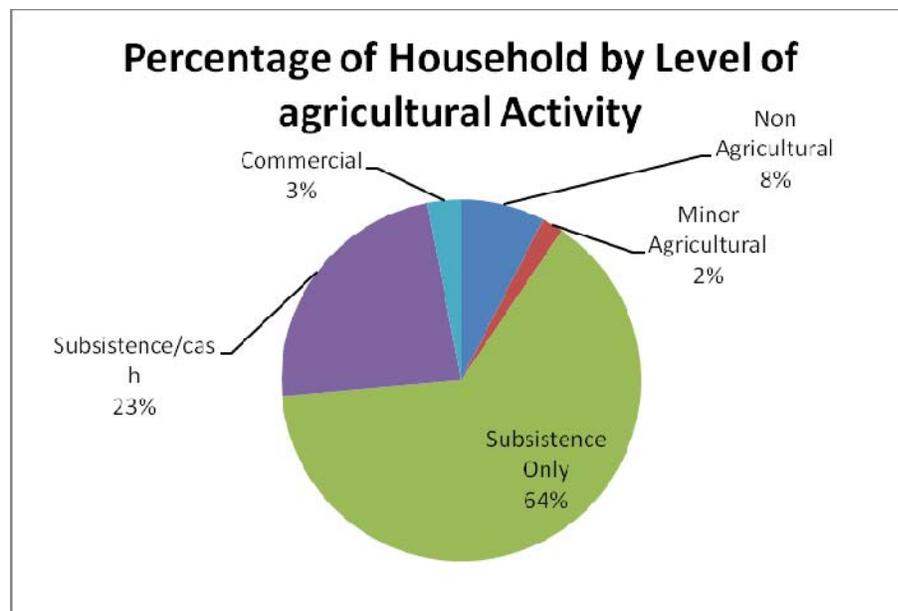
3.1 Introduction

The agricultural Census 2009 collected a large amount of information relating to the agricultural sector in Niue. However this chapter provides only the main findings of the census relating to the agricultural sector (excluding establishments).

3.2 Agricultural Activity

Households Agricultural Activities were classified into five categories namely Non agricultural, minor Agricultural, Subsistence, Subsistence and Cash and Commercial. Some 44 households (9.4%) were classified as either non agricultural or engaged in minor agricultural activities. Most of these households (84%) were located in the town area of Alofi.

Figure 3



Of the ninety one percent of the households recorded as agriculturally active, the majority (299 households) are engaged solely in subsistence activities with few crops, if any being grown for sales. Hundred and nine households were classified as being engaged both in subsistence and cash activities and fourteen households in commercial agricultural activities.

This reflects the extent of the involvement of the local population in the agricultural sector and the subsistence nature of their activities. The Table below indicates a similar pattern in the agricultural

activity in the urban and rural areas. However, agricultural involvement was very much higher in the rural area

Table 4: Number of Households by level of agricultural Activity

Level of agricultural Activity	Alofi	Rest of Niue	Niue
Non Agricultural	29	6	35
Minor Agricultural	8	1	9
Subsistence Only	117	182	299
Subsistence/Cash	14	95	109
Commercial	3	11	14
Number of Households	171	295	466

3.3 Domestic Animals.

Forty seven percent of households were keeping a cat and thirty four percent kept a dog at the day of enumeration. For the households keeping cats, the average number of cats kept is between 2 and 3. The average number of dogs kept by those households keeping dogs is between 1 and 2.

In comparison to the 1989 agricultural census, the number of households keeping cats decreases by one third with a corresponding decline in the number of cats of one third. On the other hand, the number of households keeping dogs and the number of dogs decreases by forty six percent.

Table 5: Number of Domestic Animals kept, 2009 and 1989

Census Year	Number of Households Keeping Dogs	Number of Dogs	Number of Households Keeping Cats	Number of Cats
2009	159	282	220	515
1989	295	527	330	766

3.4 Livestock.

As with most Pacific Island Nations, the keeping of livestock is an integral part of subsistence agriculture. It does not only provide for household consumption but more importantly for cultural obligation. The census collected information on three main livestock normally kept by households namely pigs, chicken and cattle.

Altogether, 336 households or 72 percent of all households in Niue kept some form of livestock.

3.4.1 Pigs

Two hundred and thirty seven households were recorded to be keeping a total of 1743 pigs at the day of enumeration or an average of 4 pigs per household or 7 pigs per household keeping pigs. Of the total of 1743 pigs, 229 were boars, 379 were sows and the remaining was classified as 'other pigs'.

Figure 4

Most households keeping pigs had between 1 and 4 pigs (121 households or 51 percent of households keeping pigs. A further 58 households (24 %) kept between 5 and 9 pigs, 33 households between 10 and 19 (14%) and 20 households or 11% claimed to have kept 20 or more pigs at the time of the census.

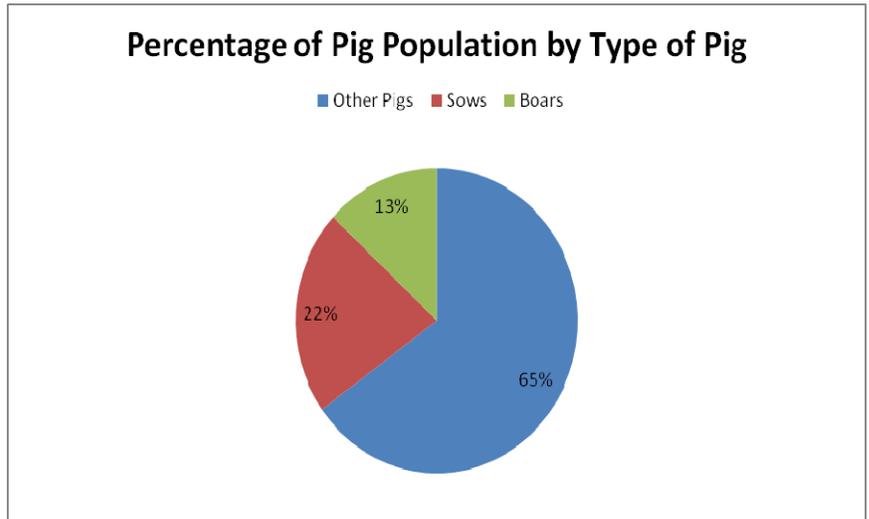
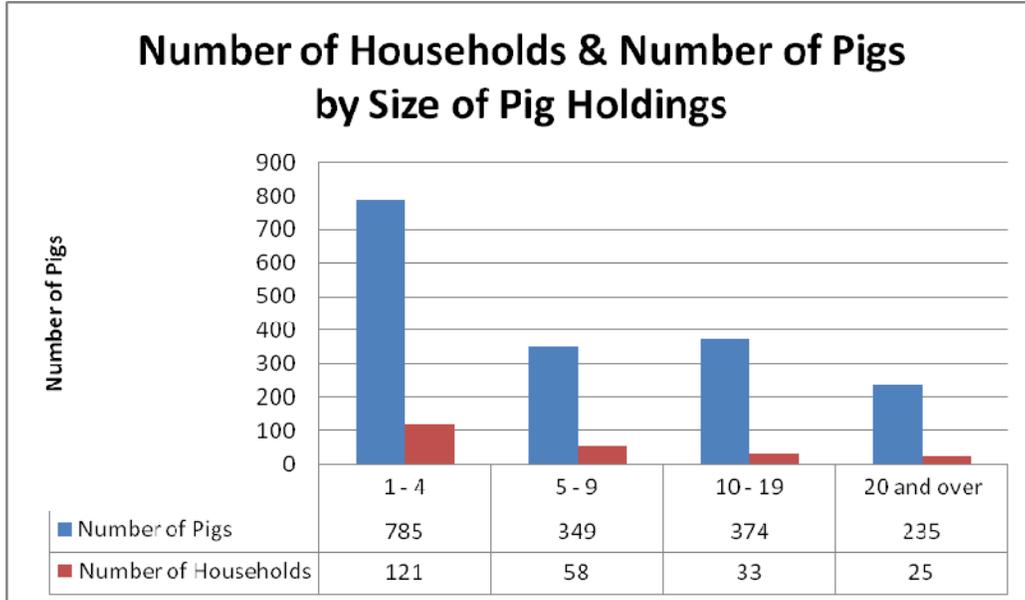


Figure 5



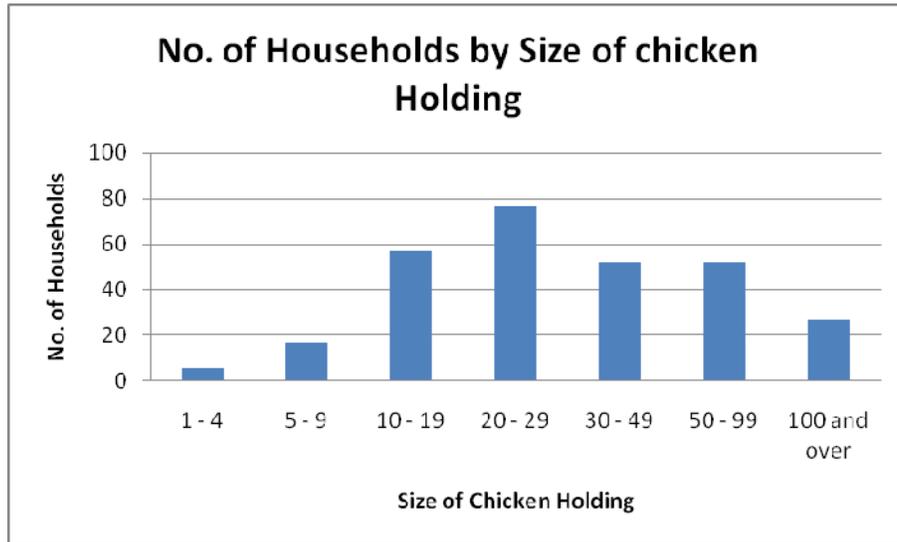
3.4.2 Chickens

Two hundred and eighty eight households (52 % of all households) were recorded to have kept 12,018 chickens at the time of enumeration; an average of 42 chickens per households for those households keeping chickens and an average of 26 for the total number of households.

Most of the households kept their chickens' free range. Of the total number of chickens, some 93 % are free range.

In terms of chicken population, the largest concentration of chickens was found in the 50-59 size groups. However the 10-19, 20-29, 30-49 and over 100 size groups were also significant.

Figure 6



3.4.3 Cattle

In terms of cattle, only seven households were recorded to have kept a total of seven cattle, or one cattle each. Keeping of cattle in Niue is not common it was way back in 1989 when 129 were known to have been kept in Niue. It was established that the handful of cattle kept this time around was known as not being kept as a source of food but more of a weed control activity around the coconut plantations and around the homes.

3.5 Consumption

3.5.1 Coconut

The coconut palm is still the single most important tree not only in Niue but other Pacific Islands. Coconut oil derived from the dried flesh of the matured coconut and dried copra are some of the major exports in many Pacific Islands and the primary source of income for many households. However, this is not the case with Niue as producing coconut oil is done in a very small scale and dried copra was a thing of the past. Nevertheless coconut is still very important as a source of food, livestock feed, firewood, etc. Therefore, the census looked at the two main uses of coconuts, that for human consumption and that for feeding animals.

A total of 423 household (91%) were reported to have consumed a total of 7,275 young coconuts per week or 17 young coconuts per household per week.

A significantly less numbered of households (24%) uses 6,696 matured coconuts for human consumption or for cooking. This equates to an average weekly consumption of 19 nuts per household per week, similar to the rate of consumption of young coconuts per household.

The census recorded 302 or 65% of households as using some thirty thousand coconuts for feeding animals per week or an average of hundred coconuts per household per week. Given that 336 households were recorded to have kept any type of livestock, this emphasizes the almost universal use of coconuts as a regular component of animal feed.

3.5.2 Taro

Apart from coconut, consumption of other crops namely taro, green and ripe bananas, cassava and papaya were included in the census. The household was asked to estimate the number of meals each crop was consumed per week in the last month.

Taro is a staple food in Niue. This is reflected in the high percentage (96%) of households consuming taro in the month prior to enumeration with an average number of meals per week in which taro was consumed of 12.

3.5.3 Green Bananas

A total of 311 households consumed green bananas in the month prior to enumeration with an average of 6 meals per week in which green banana was consumed.

3.5.4 Ripe Banana

The number of households consuming ripe banana is slightly more than those consuming green banana with a slightly higher average of 8 meals per week.

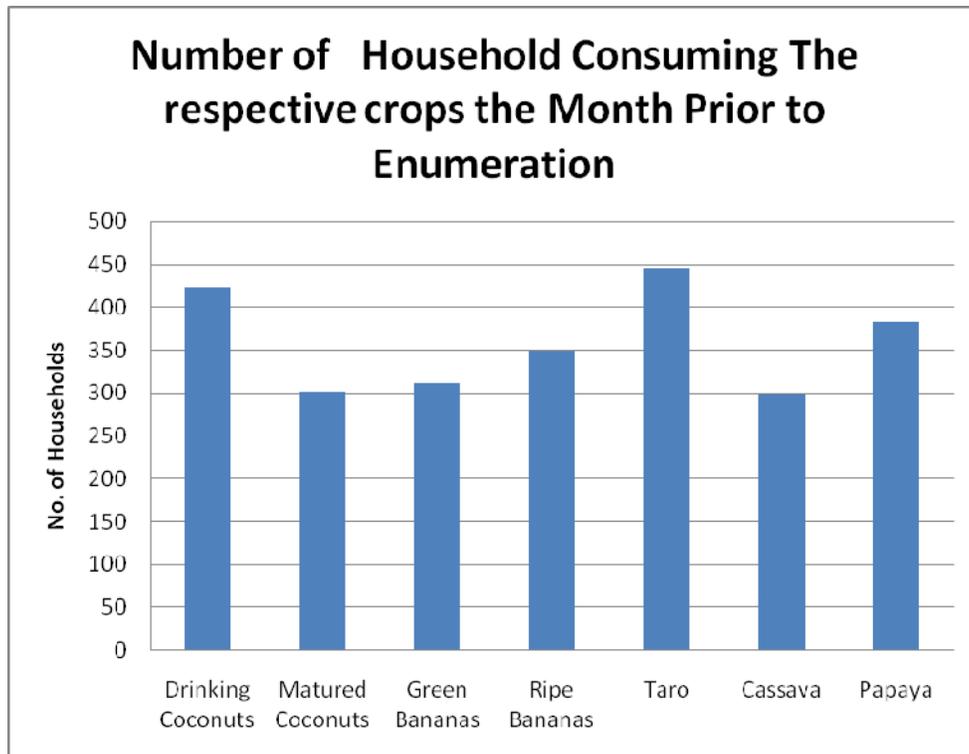
3.5.5 Cassava.

Cassava is another staple, to a lesser extent, source of carbohydrates in the Niuean diet. Sixty four percent of Niuean households were recorded to have consumed cassava a month prior to enumeration, with an average of 5 meals per week in which cassava was consumed.

3.5.6 Papaya.

Eighty two percent of households were recorded to have consumed papaya on an average of four meals per week, in the month prior to enumeration.

Figure 6



3.6 Coconut Crab Hunting.

Coconut crabs are also an important feature of Niuean agriculture and diet. Coconut crab hunting remains to be a subsistence activity of households around Niue. The census recorded 60% of the households engaged in coconut crab hunting, catching over 12,000 crabs in the month prior to enumeration, or an average of 44 crabs caught per household per month involved in crab hunting. Most households engaged in coconut crab hunting by setting up hunting trails (85%) which caught 93% of the total number of coconut crabs caught during the month prior to enumeration.

Figure 7

The national average number of coconut crabs caught in the month prior to the census was 44. The numbers caught in villages of Hakupu, Hikutavake, Liku, Avatele, Mutalau and Makefu were higher than the national average, with Hakupu recorded 19.1% of the total numbers caught.

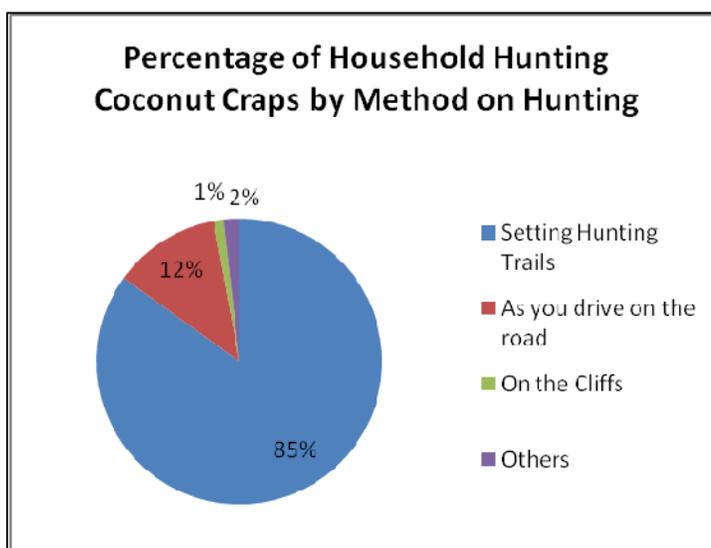


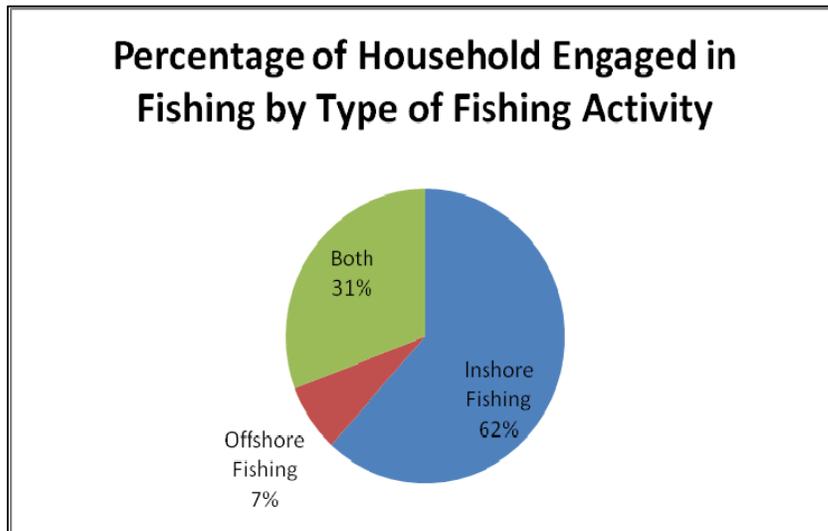
Table 6: Average Number of Coconut Crabs Caught by Households Engaged in Coconut Crab hunting During the Month Prior to Enumeration.

Village	No. of Coconut Crabs Caught	No. of household Engaged in Coconut Crab Hunting	Average No. of Coconut crabs caught
Alofi South	1,221	52	23
Alofi North	646	26	25
Makefu	715	15	48
Tuapa	654	19	34
Namukulu	15	1	15
Hikutavake	710	11	65
Toi	305	8	38
Mutalau	1,043	19	55
Lakepa	278	10	28
Liku	1,078	18	60
Hakupu	2,365	30	79
Vaiea	363	10	36
Avatele	2,027	35	58
Tamakautoga	964	25	39
NIUE	12,384	279	44

3.7 Fishing Activities

Fishing is another important activity in Niue and 296 households were recorded as having engaged in fishing activity from January 2009 to the day of enumeration. Most of the household were engaged in inshore fishing (62%), 31% were involved in both inshore and offshore with the remaining 7% being involved in offshore fishing only. This showed that fishing in Niue is still more of a subsistence activity as oppose to commercial fishing. Whilst all villages are close to the sea, much of the coastline prohibits easy access to the water particularly along the north and east coast.

Figure 8



Household participation in fishing activity was very high across the country with only one village (Lakepa) with less than 50 percent participation rate.

Toi had the highest participation rate of 89 percent where 8 out of 9 household were involved in fishing in the last 10 months.

Fishing is male dominated activity as indicated by 64% of persons engaged in fishing are males.

Table 7: Persons Engaged in Fishing Activity Prior to the Census by Sex

Persons Engaged in Fishing Activity		
Total	Female	Male
564	201	363

Fishing households were also asked for the number of fishing trips made in the month prior to enumeration. Vaiea had the highest average number of fishing trips in the month prior to the census which was more that double the national average.

Table 8: Percentage of Households Engaged in Fishing any time from January 2009 to the Day of Enumeration and Average Number of Fishing Trips in the month Prior to the Census by Village.

Village	Percent Fishing	Average No. of Fishing Trips
Alofi South	56	5
Alofi North	63	4
Makefu	76	5
Tuapa	79	6
Namukulu	75	4
Hikutavake	72	6
Toi	89	4
Mutalau	56	3
Lakepa	47	7
Liku	62	2
Hakupu	53	2
Vaiea	53	11
Avatele	83	6
Tamakautoga	66	7
NIUE	67	5

It must be noted that participation in fishing activities is also very much dependent on the weather.

The census also sought information on the fishing method used. The two most common fishing methods used were hook and line and reef gleaning with 252 (85%) and 210 (71%) households engaged in each respectively. Other fishing methods used were bottom fishing ((3%), Trolling (3%) and fish net and spears each with 2%. (Note that a household may employed more than one fishing methods.)

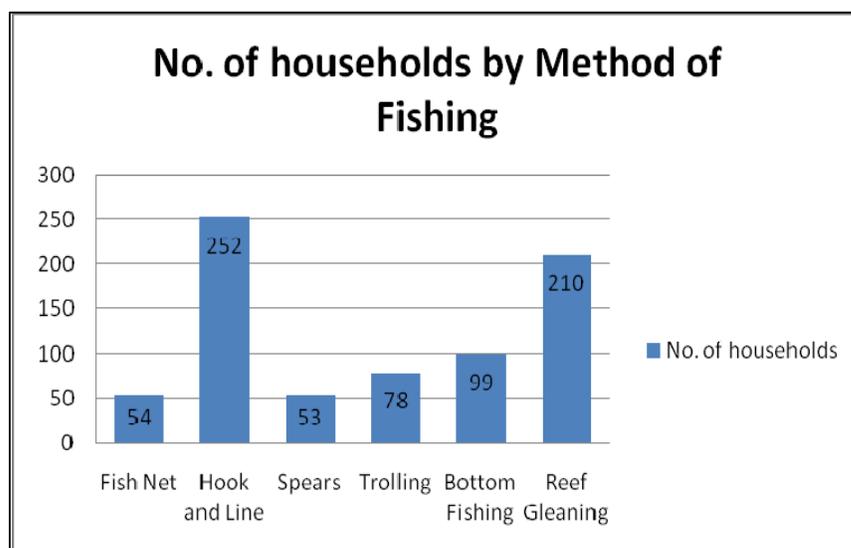


Figure 9

The main purpose of household fishing activity were for home consumption accounting for 82% of fishing households with 16% selling some of their catches with the remaining 2% of fishing households mainly for sale. This is also reflected in the majority of fishing household (80%) who

did not sell any of their catch in the month prior to the census.

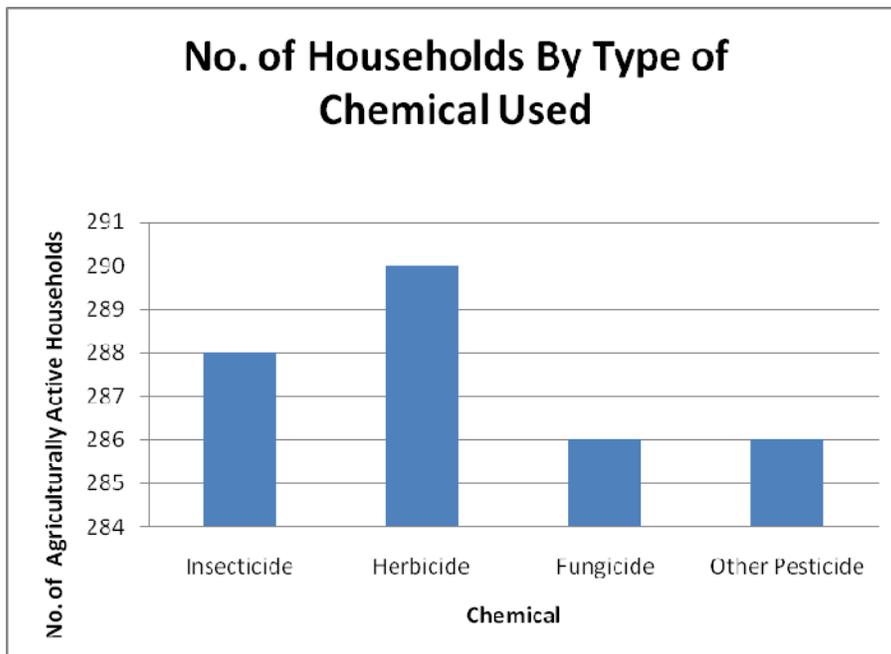
3.8 Fishing equipment

One hundred and twenty six household were recorded to own 130 canoes, 81 dinghies and 89 outboard motors. Thirty four households indicated that they had hired or borrowed a total of 19 canoes, 15 dinghies and 13 outboard motors.

3.9 Agricultural Chemicals

The Census recorded a relatively high number of agricultural active households using agricultural chemicals. However, there was no dominant chemical used as all herbicides, fungicide, insecticide and other pesticide were use by 68% of agricultural households.

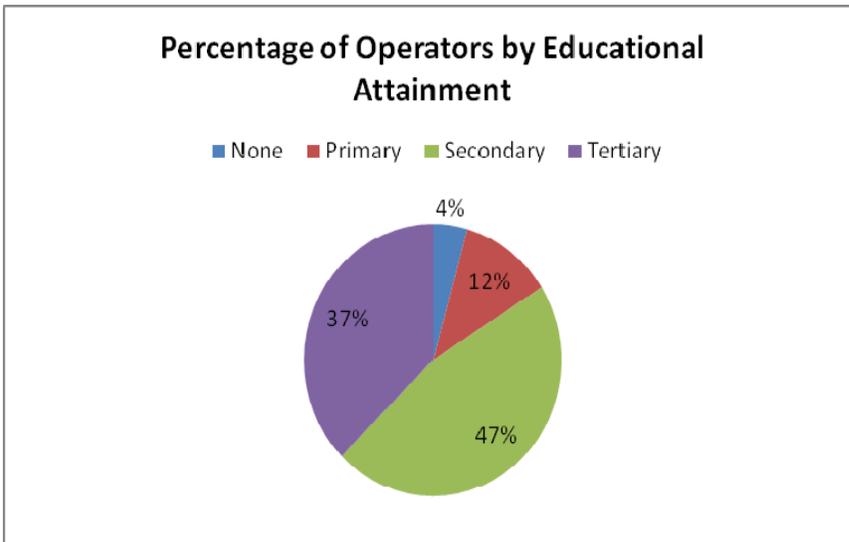
Figure 10



3.10 Operators

An operator plays an important role in the operation of the agricultural holding. He/She exercises management control over the operation of the holding. In the Pacific, it is common to be the Head of Household also plays the operators role.

Figure 11



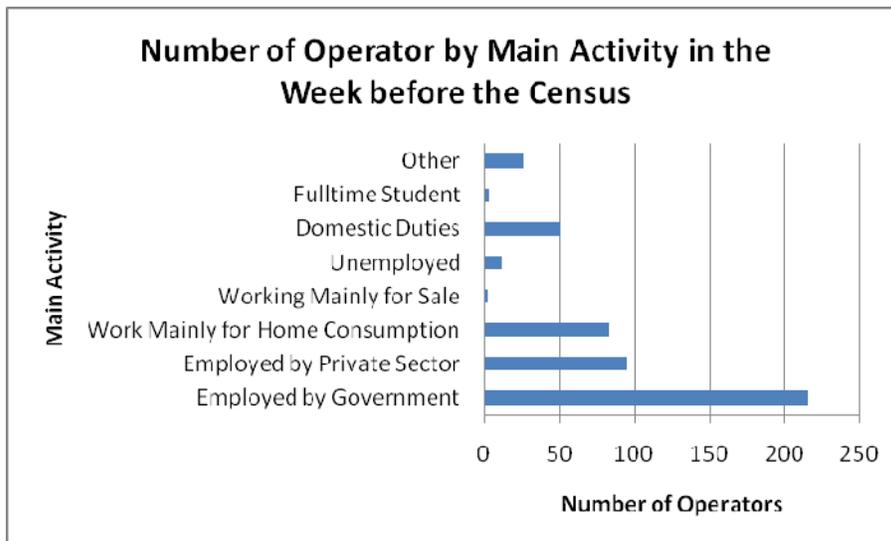
In some cases two persons from the same household may exercise management control on separate part of the holding. Example, the head of the household may be responsible for the plantation (crops) while the wife exercises management control of the livestock. In this case the agricultural

holding has two operators.

Some 96 percent of operators have attained primary education or higher, with close to 50 percent having attained tertiary education. This high level of educational attainment by operators will contribute to the development of agriculture in a variety of ways.

However, more than half (57%) of operators are fulltime employees

Figure 12



3.11 Labour Input

3.11.1 Household Member

Information on the average number of hours each household member 10 years and over spend working in the holding were collected. Although the majority of operator were fulltime employees, they also spent more hours working in the holding (12hours/week) than other household members who, on average spent 5 hours/week.

Table 9: Household members as Operators and Non-operators and times of working in Holding

Operators			Non-Operators		
Total Number	Total hours/week	Average hours/week	Total Number	Total hours/week	Average hours/week
488	5,846	12	785	4,060	5

3.11.2 Non Household Members

Labour inputs provided by non-household members working in the holding in the month prior to the census in a paid and unpaid capacity were collected from the agriculturally active households. In total, only ten persons were employed in the holdings in a paid capacity with an average wage of \$3.60 per hour and eight persons employed in an unpaid capacity in terms of wages but were all compensated with free meals.

Table 9: Non-household members employed in Holdings

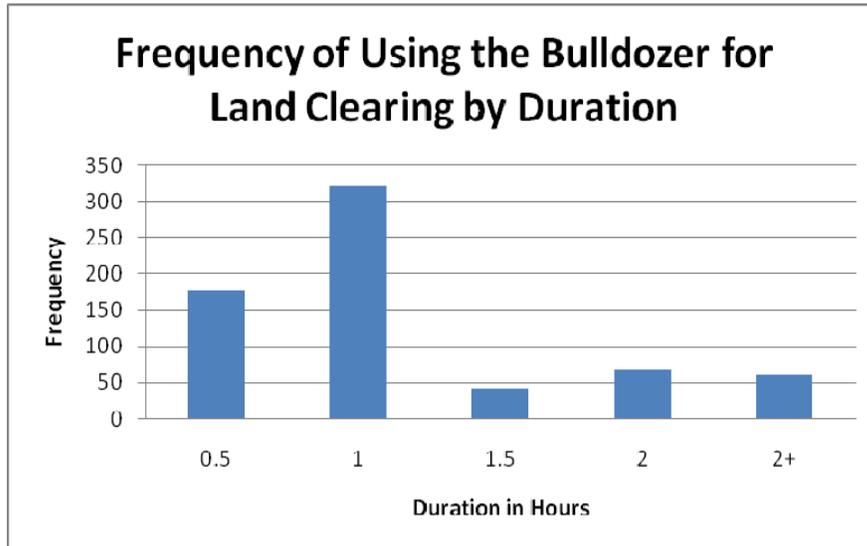
Methods of Compensation	Paid	Un-paid
Total	10	8
Monetary benefits	10	0
free or subsidized housing	0	0
free meals	0	8
other benefits	0	0

This indicated that most of the labour inputs into the holding were provided by household members and by other means.

3.12 Land Clearance

The use of the bulldozer for land clearing is still dominant with 64 percent of agricultural households using it. The census seeks information on the frequency and duration of use of the bulldozer which shall provide some estimated of land area cleared in the 10 months before the census.

Figure 13



From the above table, the estimated number of hours the bulldozer was used for land clearance was 600 hours (taking the 2+ hours as 2 hours. With an estimate of one hour plough equivalent to one acre, total land area cleared by the bulldozer was 600 acres.

3.13 Household Income from Agricultural Activities.

Some 77 percent indicated that they received little or none of their income from their agricultural/fishing activity. Eleven percent of households received about a quarter of their income from agricultural/fishing activity; 8 percent about half of their total income; 3 percent about quarter of their income and 1 percent indicated that all of their income was from agricultural/fishing activities.

This re enforces the fact that, agricultural activity in Niue is mainly for home consumption.

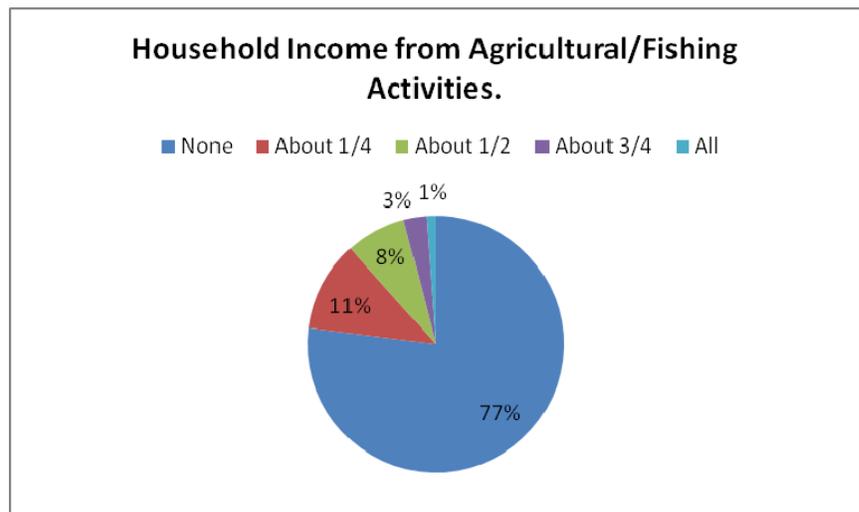
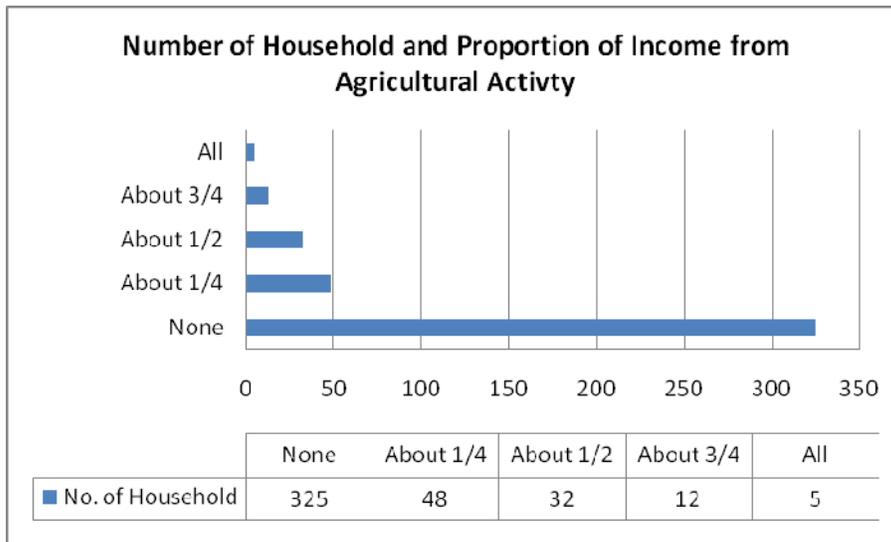


Figure 14

Figure 15



3.14 Location of Households and Holding

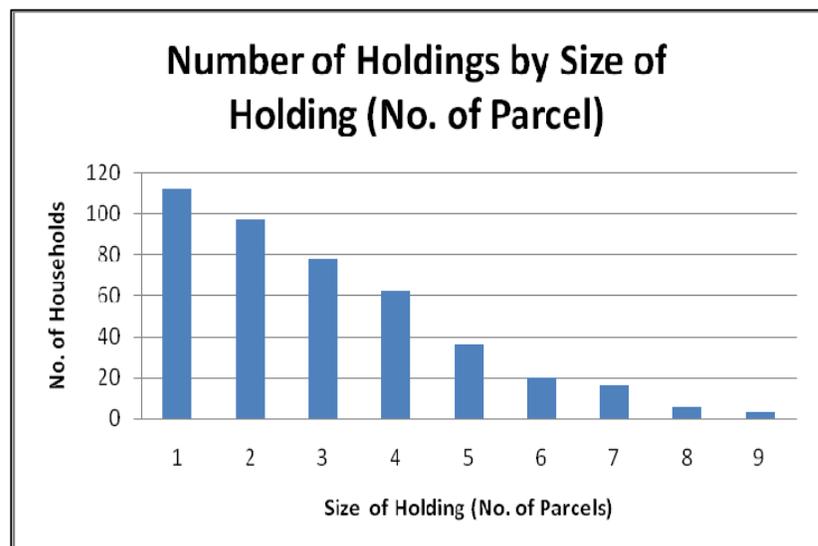
In five of the villages (Makefu, Toi, Mutalau, Hakupu and Vaiea) all of the holdings were located in the same village as the household. In the remaining villages, 1 to 3 of the holdings were located elsewhere from the location of the household.

Since the 'location of the holding' is taken as the village where the major portion of the holding was located, there may be some parcels of a holding located in different villages than where the holding and household was located.

3.14.1 Holdings and Parcels

An agricultural holding may consist of one or more parcels. Almost fifty percent (49%) of the holdings had between 1 and 2 parcels of land.

Figure 16

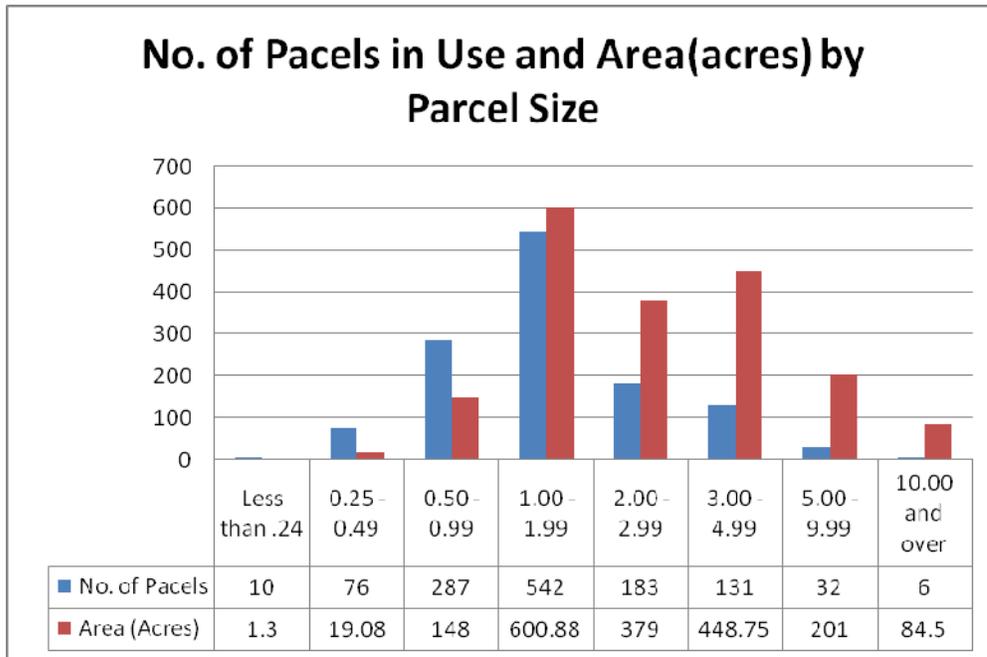


The census recorded 1,267 parcels of land 'in use' with an estimated area of 1,882 acres at

the time of enumeration, with about 90% of the parcels were between half and five acres in size. However, parcel size of 1-2 acres accounted for 32% of the total parcel area.

The average parcel size in Niue is about 1.5 acres

Figure 17



3.15 Land Tenure

Most of the land in Niue is classified as 'family own' accounting for 89 percent of parcels equivalent to 92% of the parcel area. Only 4% of parcels were leased with the remaining 7% under 'other' forms of land tenure such as being looked after for families/friends overseas.

3.16 Land Rotation

Land rotation was derived from the information collected about the number of years that each parcel of land had been in 'continuous use'. The census recorded some 715 parcels or 56% of land had been in continuous use for less than 5 years. This in itself indicates that shifting cultivation is still widely practice in Niue. However, the full extent of this practice may be understated for two reasons. Firstly, on parcels supporting permanent crops, the number of years of continuous use is dictated by the age of trees, even if shifting cultivation of short term crops is practice in the same parcel. Secondly, while a parcel is classified as under continuous use for a number of years, shifting cultivation may have been still carried out between plots within a parcel.

3.17 Parcel Damaged by Wild Pigs

Information was collected on the number of parcels of land damaged by wild pigs. Some 231 parcels or about 18% of all parcels were reported to have sustained some damages from wild pigs. Of the 231 parcels, the reported proportion of damages ranges from 3% of parcels been completely damaged.

3.18 Crop Detail

Information on crops was collected for both crops growing at the time of the census and crops that had been planted 12 months prior to the census but already harvested. This is particularly important to ensure proper coverage of short term and seasonal crops. Thirty six crops were listed in which information on whether they are currently growing, not grown or had been grown but already harvested.

In addition, information on crops grown but already been harvested were collected for each parcel.

To overcome the problem of double counting in mixed crop cultivation, the concept of 'single crop equivalent' was used. That is, the area covered by a crop if it had been grown as a single crop.

The table below summaries the "single crop equivalent area' in acres of the crops with more than 10 acres.

Table 9: Number of Plots by Method of Cultivation and estimated Single crop equivalent Area of major Crops.

CROP NAME	Plots		Estimated Single Crop Equivalent Area(acres)			
	Single	Mixed	Single	Mixed	Scattered	Total
Taro	740	73	652	55	6	713
Coconut	89	6	157	6	162	324
Vanilla	55	6	43	3	5	51
Yam	27	41	16	14	2	31
Green Banana	7	2	4	1	26	30
Breadfruit	-	-	-	-	24	24
Nonu	1	1	1	1	15	18
Watermelon	10	3	11	1	1	13
Kumara	3	24	5	7	1	12
Mango	1	-	0	-	12	12
Cassava	7	29	2	7	2	11
Vi	-	-	-	-	11	11

Of the 713 acres of taro, (single crop equivalent), 652 were grown as a 'single crop (89%), 55 as 'mixed' (8%) and the remaining 6 acres as 'scattered' plants. In the case of coconut, the

proportions of single and scattered, in terms of single crop equivalent were similar (48 and 50 percent respectively). Yam, on the other hand was either grown as a single or mixed crop.

3.19 Crops Planted in the Last 12 Months Prior to the census and Already Harvested.

As well as collecting information on crops on the ground at the time of the census, the census also sought information on crops grown in the census year but already been harvested. This is particularly true on short term crops.

Altogether, some 57 acres of crops were planted and harvested in the 12 month before the census.

Taro features prominently accounting for 82 percent of the total area of such crop.

Only spring onions and kumara indicated planted and harvested areas of more than an acre. All other crops account for about 4 acres.



Appendices

Appendix 1

Complete Set of Tables

Appendix 2

Crop Density Factor

Appendix 3

Definitions

Appendix 4

Copy of Questionnaires

Appendix 5
Staff

List of Enumerators and Supporting

Appendix 6

Copy of the Statistics Act 2009

