



AGRICULTURE CENSUS

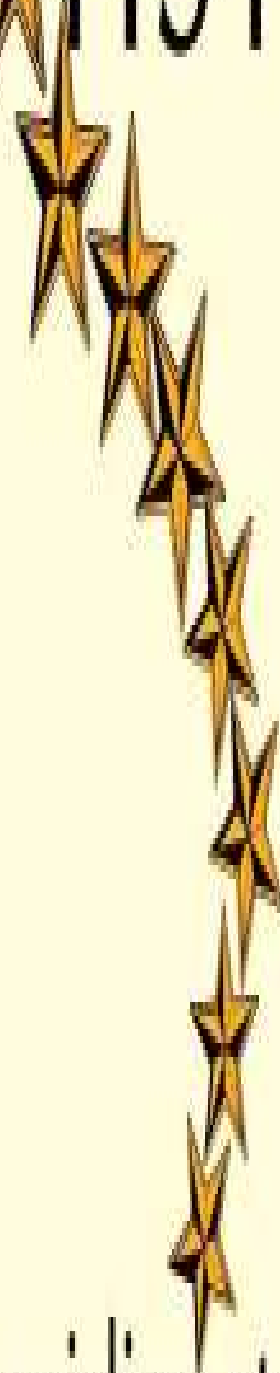
ANALYTICAL REPORT 2009

Ministry of Agriculture & Fisheries

Samoa Bureau of Statistics



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TABLE OF CONTENTS

TABLE OF CONTENTS.....	ii
LIST OF TABLES	v
LIST OF FIGURES	vii
FOREWORD.....	ix
PREFACE	x
Samoa Land Use Map	xii
CHAPTER 1 INTRODUCTION	1
Geography	1
Climate	1
Climate Change and Vulnerability	1
History	2
Government and Faasamoa.....	3
Population	4
Agricultural Censuses and Surveys	6
The Economy	6
Statement of Economic Strategy 2008 – 2015.....	6
CHAPTER 2 AGRICULTURE AND LAND TENURE SYSTEM	8
Farming Systems	8
Tree Crops Sub-Sector	8
Food Crops Sub-Sector.....	9
Other Root Crops	10
Kava	11
Fruits and Vegetables	11
Customary Land Tenure and Agriculture Development	11
CHAPTER 3 CONCEPTS, SCOPE AND DEFINITION	13
Authority for the Agriculture Census.....	13
Scope of Agriculture Census.....	13
Census Methodology.....	13
Sampling Errors	13
Definitions	14
Reference Periods Agriculture Census 2009	19
CHAPTER 4 DEMOGRAPHICS	21
Population	21
Households	23

Operators and other household workers	31
Paid Labourers	33
CHAPTER 5 AGRICULTURAL HOLDINGS	36
Characteristics of Holdings.....	36
Land Tenure	38
Land Use	39
Use of Fertilisers	39
Use of Agricultural Chemicals	40
Agricultural Equipment	41
Income from Agriculture	42
Loans	44
CHAPTER 6 CROPS	45
Land Area Used for Staple Crop Cultivation	45
Land Area Used for Fruit / Vegetable Crop Cultivation	47
Regional trends	49
Source: Samoa Bureau of Statistics Census of Agriculture	50
Household Consumption	51
Number of Holdings Growing Crops Mainly for Home Consumption	53
Number of Holdings Growing Crops Mainly for Home Consumption by Region	55
Number of Holdings Growing Nonu and Laupele for Home Consumption	57
Number of Holdings Growing Crops Mainly for Sale by Region – 2009.....	59
CHAPTER 7 LIVESTOCK.....	62
Cattle	63
Pigs	65
Chicken	66
Other Livestock	66
Domestic Animals.....	68
CHAPTER 8 FISHING	69
Households engaged in Fishing Activities.....	69
Types of Fishing Activities.....	70
Types of Fishing Gear	71
Type of Boats	71
Fishing Trips.....	72
Main Purpose of Fishing.....	72
Sales of Fish	72
Household Members Engaged in Fishing	74

CHAPTER 9 FORESTRY	75
Uses of Forest Trees Planted.....	75
APPENDIX.....	77
Census Methodology.....	77
Census Advisory Committee	77
Census Scope	77
Household list and Enumeration Area Maps.....	78
Data Users/Producers Workshop.....	79
Organization of Census Field Work and Recruitment of Enumerators.....	79
Printing Of Questionnaires and Instruction Manuals.....	79
Publicity	79
Training	79
Census Enumeration.....	80
Collection of Forms	80
Data Processing	80
Questionnaires.....	82

LIST OF TABLES

	Page
Table 1.1 Population of Samoa 1902 – 2006	5
Table 4.1 Population Comparison by Region	21
Table 4.2 Agriculture Census Population by Region 1989 – 2009	21
Table 4.3 Population by Age Group by Region 2009	23
Table 4.4 Number of Household (1989 – 2009)	24
Table 4.5 Number of Household and Population by Region 2009	24
Table 4.6 Household by Agricultural Activity 2009	25
Table 4.7 Number of Household by Region and by Agricultural Activity	26
Table 4.8 Number of Non Agricultural Households (1989 – 2009)	27
Table 4.9 Total Number of Minor Agricultural Activity	28
Table 4.10 Total Number of Subsistence Household (1989 – 2009)	29
Table 4.11 Number of Mainly Home Consumption Households	29
Table 4.12 Mainly for Sale (1989 – 2009)	30
Table 4.13 Total Number of Operators by Sex	31
Table 4.14 Total Number of Operators with Full Time Paid Job	32
Table 4.15 Total Number of Paid Labourers by Region (1999 – 2009)	33
Table 4.16 Number of Paid Labourers by Sex and by Region	34
Table 5.1 Holdings of agricultural active households	36
Table 5.2 Parcel of Land	38
Table 5.3 Land Tenure	39
Table 5.4 Proportion of Holdings using Agricultural Chemicals	41
Table 6.1 Percentage of Area (acres) as a Percent of Total Land Area by Major Crop	45
Table 6.2 Estimated Area (In Acres) Under Coconut (Single and Mixed Crop Cultivation), by Age of Trees	47
Table 6.3 Percentage of Area (acres) as a Percent of Total Land Area by Major Fruit / Vegetable Crop	47

Table 6.4 Average Weekly Household Consumption of Major Crops	51
Table 6.5 Average Weekly Household Consumption of Major Crops by Region – 2009	52
Table 6.6 Average Weekly Number of Coconuts for Feeding Animals by Region – 2009	53
Table 6.7 Number of Holdings Growing Crops Mainly for Home Consumption	54
Table 6.8 Number of Holdings Growing Crops Mainly for Home Consumption by Region 2009	56
Table 6.9 Number of Holdings Growing Fruit / Vegetables Mainly for Home Consumption by Region - 2009	57
Table 6.10 Number of Holdings Growing Crops Mainly for Sale	58
Table 6.11 Number of Holdings Growing Crops Mainly for Sale by Region 2009	59
Table 7.1 Total Number of Households and Percentage of Household keeping any Livestock by Region and Census year	62
Table 7.2 Number of Livestock kept, by type of Livestock, by Region, 2009	63
Table 7.3 Number of Cattle by Region and Census year	63
Table 7.4 Number of Cattles kept, slaughter, sold live or given away, by Region 2009	64
Table 7.5 Number of Pigs by Regions and Census year	65
Table 7.6 Number of Pigs slaughtered, sold live or given away, by Region, 2009	65
Table 7.7 Number of chickens kept, sold live or given away, by region and census year	66
Table 7.8 Number of Household keeping goats and number kept, by census year	67
Table 7.9 Number of Households keeping Horses and number kept by Census year	67
Table 8.1 Number of Households Engaged in Fishing 1989, 1999, 2009	69
Table 8.2 Number of Households Engaged in Fishing type, by Region, Samoa 2009	70
Table 8.3 Type of gear used by households engaged in Fishing	71
Table 8.4 Number of Households Engaged in Fishing by main purpose of Fishing and Region, 2009 vs 1999	72
Table 8.5 Number of Fishing Households by proportion of Catch Sold	73
Table 8.6 Percentage of Fishing Households by proportion of Catch Sold	74
Table 8.7 Households Members Engaged in Fishing by Gender, by Region and district 2009 vs 1999	74
Table 9.1 Number of Households that planted any Forest trees by Region and Census year	75
Table 9.2 Number of Households that planted Forest trees by Uses of trees planted and Region	76

LIST OF FIGURES

Figure 1.1 Percentage contribution of Agriculture and Fisheries (at constant price) to GDP	6
Figure 4.1 Total Population by Region and Census year	22
Figure 4.2 Population Distribution across Region and Census year\	23
Figure 4.3 Household level of Agricultural Activity	25
Figure 4.4 Non Agricultural Activity by Region and Census year	27
Figure 4.5 Minor Agricultural Activity by Census year	28
Figure 4.6 Total Number of Subsistence Household	29
Figure 4.7 Mainly Home Consumption by Census years	30
Figure 4.8 Mainly for Sale by Census year	31
Figure 4.9 Total Number of Operators by Gender and Census year	32
Figure 4.10 Operators with Primary or Less Education Attainment, 2009	33
Figure 4.11 Paid Labourers by Sex 2009	34
Figure 4.12 Paid Labourers other Benefits	35
Figure 5.1 Area of Agricultural Holdings	37
Figure 5.2 Changing distribution size of holdings	37
Figure 5.3 Proportion of holding by size of Holdings, 2009	38
Figure 5.4 Area of Land Use 2009 – Proportion of land in Region	39
Figure 5.5 Use of Organic Fertilisers (Compost)	40
Figure 5.6 Proportion of holdings using in organic fertilisers	40
Figure 5.7 Proportion of holdings using agricultural chemicals	41
Figure 5.8 Equipment Owned by Holdings by Region in 2009	42
Figure 5.9 Percent Change from 1999 to 2009 for Equipment Owned by Region	42
Figure 5.10 Changing Proportion of Income Usually Derived from Agriculture	43
Figure 5.11 Agricultural Active Households by Proportion of Income Usually Derived from Agriculture by Region and District, 2009	43
Figure 5.12 Proportion of Income Usually Derived Agriculture – Savaii	44
Figure 5.13 Number of Loans by Sources of Loans	44

Figure 6.1 Percentage of Area (acres) as a Percent of Total Land Area by Major Crop	46
Figure 6.2 Percentage of Area (acres) as a percentage of Total Land Area by Fruit / Vegetable Crop	48
Figure 6.3 Estimated Single Crop Equivalent Area (acres) for Coconut by Region	49
Figure 6.4 Estimated Single Crop Equivalent Area (acres) for Kava by Region	49
Figure 6.5 Estimated Single Crop Equivalent Area (acres) for Taro by Region	50
Fig 6.6 Estimated Single Crop Equivalent Area (acres) for Chinese Cabbage by Region	50
Figure 6.7 Average Weekly Household Consumption of Major Crops (Human Consumption)	51
Figure 6.8 Average Weekly Household Consumption of Major Crops by Region – 2009	52
Figure 6.9 Average Weekly Number of Coconuts for Feeding Animals by Region – 2009	53
Figure 6.10 % Change in the Number of Holdings Growing Staple Crops Mainly for Home Consumption	54
Figure 6.11 % Change in the Number of Holdings Growing Staple Crops Mainly for Home Consumption by Region 2009	55
Figure 6.12 Number of Holdings Growing Fruit / Vegetables Mainly for Home Consumption by Region 2009	56
Figure 6.13 Percentage change in the Number of Holdings Growing Crops Mainly for Sale	56
Figure 6.14 Number of Holdings Growing Crops Mainly for Sale by Region – 2009	60
Figure 6.15 Number of Holdings Growing Fruit / Vegetables Mainly for Sale by Region – 2009	61
Figure 7.1 Percentage of Households keeping Livestock by Region	62
Figure 7.2 Number of Cattle by Region and Census year	64
Figure 8.1 Proportion of Household Engaged in Fishing 1989, 1999, 2009	69
Figure 8.2 Percentage of Household Engaged in Fishing across Region	70
Figure 8.3 Proportion of Catch Sold by Region 2009	73
Figure 9.1 Number of Households that planted any type of forest trees of tree, 2009	75

FOREWORD

It gives me great pleasure to present the Analytical Report of the 2009 Census of Agriculture. The Tabulation Report that provides the preliminary tables was released in August 2011.

The 2009 Census of Agriculture is the third such Census carried out in Samoa. This major exercise was conducted jointly by the Samoa Bureau of Statistics and the Ministry of Agriculture and Fisheries with financial and technical assistance from its development partners.

The adoption of the Agriculture Sector Plan 2011-2015 recognizes the critical importance of agriculture to the Samoan economy and of the central role it can play in achieving sustained economic growth, trade development and poverty reduction.

The 2009 census therefore provided a wealth of information that can be used in formulating sound policies and strategic action in the development of this important sector.

I would like to extend my appreciation to the Government of Australia for their financial support under the 'Samoa and Australia Partnership Arrangement' that allowed us to conduct the 2009 census. Similarly, I wish to thank the Secretariat of the Pacific Community for their technical support without which we would not have completed the census successfully.

I would also like to take this opportunity to acknowledge the enormous effects made by those concerned, from the management of the two ministries, project management team, supervisors and enumerators who all contributed in completing the census successfully. To the people of Samoa who responded willingly to the questions put to them, faafetai tele, o lo outou sao taua lea I le atiinae o le tamaoaiga o Samoa.

I am confident that the comprehensive data on various aspect of agriculture provided in this report will be of great value to those concerned with the development of the agriculture sector in the country.



Tuilaepa Lupesoliai Sialele Malielegaoi

Prime Minister and Minister for Statistics.

PREFACE

Although the contribution of the agriculture sector to GDP has declined from 19 percent in 1999 to just over 10 percent in 2009, agriculture production remains a very important source of food security and provides income to meet other basic needs. The challenge therefore is to reverse this decline and to restore agriculture to its former prominent role as the main driver of Samoa's sustained growth, food security, trade development and employment creation.

For sound policy formulation and appropriate development strategies of the sector, updated, reliable and timely information is critical. The 2009 Agricultural Census therefore provides valuable information on the various aspects of agriculture in Samoa. Furthermore it provided a baseline for monitoring and evaluation of the sector's performance in the future.

As with previous censuses, the 2009 Agricultural Census was conducted as a joint exercise between the Samoa Bureau of Statistics and the Ministry of Agriculture and Fisheries.

This major undertaking would not have been completed successfully without the support and assistance of various organisations and individuals.

I wish to extend my appreciation to the Government of Australia for their financial assistance through the 'Samoa and Australia Partnership Arrangement' that made the conduct of the census possible. I am also grateful to the Secretariat of the Pacific Community for their continuous technical support, in particular the services rendered by Ms Leilua Taulealo, Data Processing Expert.

To the census management team, supervisors and enumerators, I wish to record my faafetai tele for your contribution to the successful completion of the census.

The continuous support and co-operation of all the people of Samoa in providing the information asked of them is very much appreciated. Your contribution will greatly assist in the development of agriculture for the benefit of all.

Finally, I would also like to record my appreciation to the Institutional Strengthening Project Team, Mr David Abbott and Ms Helen Stott for facilitating a one week workshop that produced the first draft of this report. To the participants of this workshop your contribution not only helped in the production of this report, but also provided you with new knowledge and skills for the development of your respective careers.

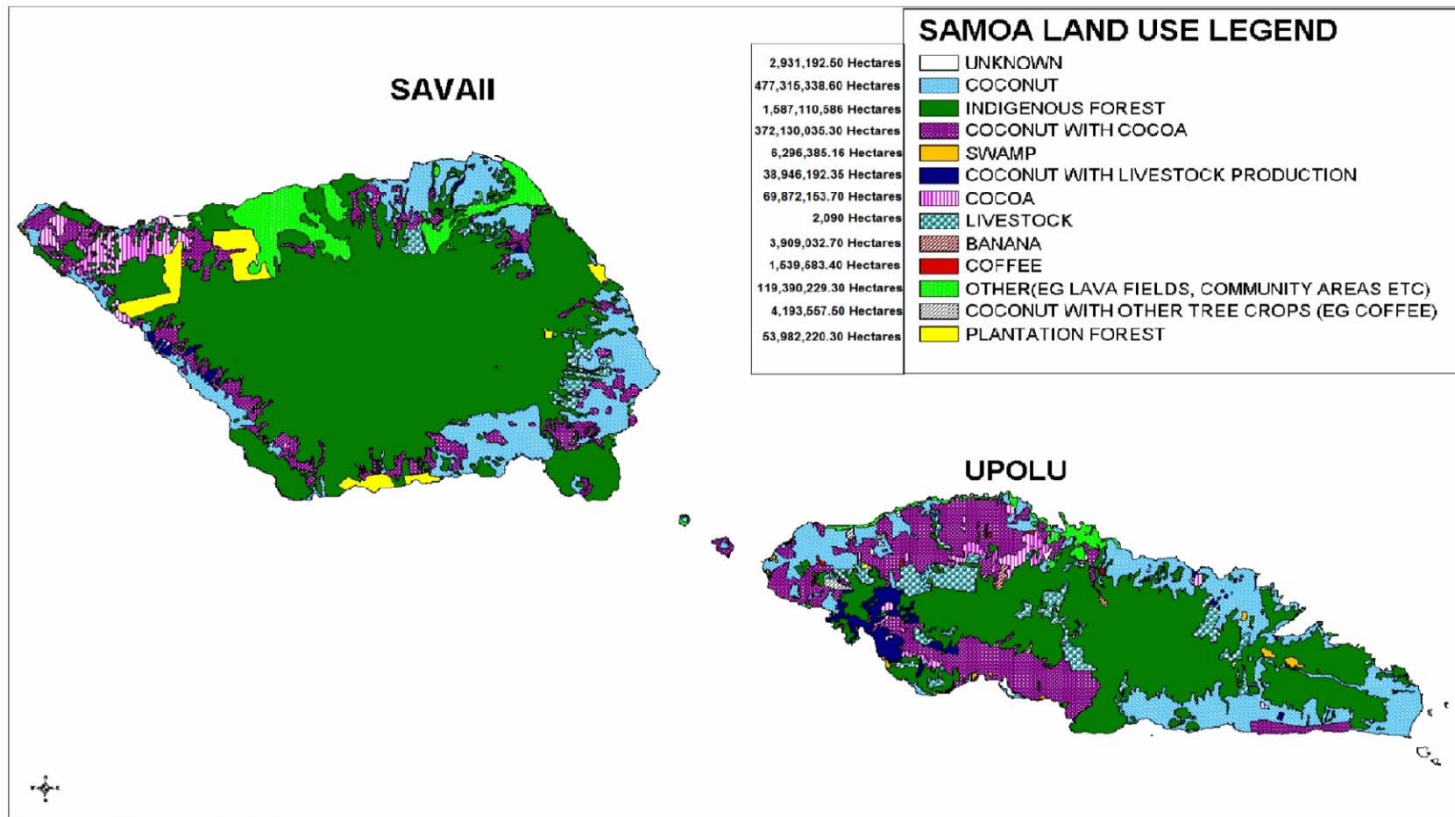


Muagututia S Reupena

GOVERNMENT STATISTICIAN

This report complements the 'Tabulation Report' already released. Whilst this report provides the reader with the analysis of key information collected from the 2009 Agricultural Census, the Tabulation Report contains the detailed tables that form the basis of the analysis. The reader is advised to use the two reports simultaneously for better understanding of the information contained in the reports and further analysis.

Samoa Land Use Map



CHAPTER 1 INTRODUCTION

Geography

- 1.01 The islands of Samoa in the Central South Pacific lie between latitude 13 degrees and 15 degrees south and longitude 168 degrees and 173 west, close to the international dateline. The Samoa group is located 2,600 miles Southeast of Hawaii, 1800 miles from New Zealand and 2700 miles from Sydney, Australia. The nearest neighbour is American Samoa, the capital Pago-Pago being only 80 miles away. The Independent State of Samoa consists of two main islands, Savaii and Upolu, with eight smaller islands Apolima, Manono, Fanuatapu, Namua, Nu'utele, Nu'ulua, Nu'ulopa, and Nu'usafe'e. The total land area is 1,100 sq. miles (2,830 sq. km.). Savaii is the largest island (660 sq. miles or 1,700 sq. km.). The second largest island is Upolu with an area of 430. Sq. miles or 1,100 sq. km where the capital Apia is located with a population of 38,000 in the 2006 Census. In the same year the population of Samoa totalled 181,000people, a population which includes the largest concentration of full blooded Polynesians in the world. The islands are of volcanic origin clearly visible in the form of several dormant volcanoes and lava fields. Beyond the narrow coastal plains, the mountain ranges rise steeply to a maximum of 6,095 feet (1,859 meters) on Savaii and 3,608 feet (1,100 meters) on Upolu intersected by fertile valleys. Lush vegetation and rain forest cover the greater part of the country.
- 1.02 The country, which consists of about 330 villages for administrative purposes, is divided into 41 districts. These districts are further grouped into four census regions namely Apia Urban Area, North-West Upolu, Rest of Upolu and Savaii. For census purposes, a village is divided into census blocks. There are in all 863 census blocks.

Climate

- 1.03 The climate of Samoa is tropical with abundant rainfall. Humidity averages 80 Percent. The average daily temperature range is from 220 C to 300C with very little seasonal variation. There are two major distinguishable seasons. The wet season extends from November through April, the dry season from May to October during which period the climate is pleasant because of fresh trade winds. The annual rainfall averages 2,880mm, although there is great variation with latitude and location.

Climate Change and Vulnerability

- 1.04 The adverse effects of climate change and sea level rise present significant risks to the sustainable development of Pacific Island Countries and Territories (PICTs), as noted in the Secretariat of the Pacific Regional Environment Programme 2005 Pacific Islands Framework for Action on Climate Change 2006 – 2015. PICTs such as Samoa experience a high level of risk from the effects of extreme weather and climate variability. Climate models suggest the tropical Pacific region will continue to warm. This warming has the potential to alter and indeed increase such risks, through changing the frequency and/or intensity of

extreme weather or climate variability phenomena or through accelerated sea-level rise. The impacts of these climate events will exacerbate already stressed marine, freshwater and terrestrial environments.

- 1.05 The Food and Agriculture Organization of the United Nations noted in its 2008 publication *Climate Change and Food Security in Pacific Island Countries* that climate associated disasters such as tropical cyclones, flash floods and droughts impose serious constraints on development in the islands, so much so that some PICs seem to be in “constant mode of recovery”.
- 1.06 In January 2004, Cyclone Heta struck the country damaging houses and plantations, in particular tree crops, and seriously affecting the economy. Furthermore, Samoa was struck by a tsunami caused by an earthquake of magnitude 8.2 on the early morning of Tuesday, 29 September 2009. It causes extensive damages to infrastructure, and affected some 50 villages, mainly in the eastern and south eastern coast of Upolu. The official death toll was 143, including foreigners, with 4 remain missing and presumed dead.

History

- 1.07 It is believed by many that Samoa is the cradle of Polynesia in which Savaii is the legendary island Hawaiki, the original home of Polynesians who later explored the Pacific from Hawaii to Easter Island. New Zealand archaeological research carried out in Samoa suggests that the islands have been inhabited for at least 2,500 years.
- 1.08 The first European who sighted the group and made brief contact with the population of Manua (American Samoa) was the Dutchman Jacob Roggerveen in 1722. The first ‘papalagi’ (white people) to settle in Samoa were sailors, whalers, beachcombers and escaped convicts, many of whom landed by chance in Samoa.
- 1.09 The first notable ‘agents of change’ were the missionaries. After the arrival of John Williams of the London Missionary Society in the 1830’s the Samoans were rapidly converted to Christianity. Methodist and Catholic Missionaries established Missions in the following years. From the 1840’s onward, Germany, the United States and Great Britain extended their influence on the island groups. In the 1880’s as rivalry amongst the largest factions intensified, the Samoans turned to the foreign powers for support. In 1889, naval ships arrived to settle the problems. A major battle was only averted by a hurricane, which wrecked six of the seven ships. The fighting ceased and an elaborate agreement was reached in Berlin by the major powers. Samoa was allowed to remain a neutral state ruled by the three nations.
- 1.10 After some initial problems, the German Administration was relatively stable and Samoa prospered. In 1914 New Zealand assumed the occupation of Samoa and in 1919 was granted a ‘League of Nations’ mandate to administer the country. Over the years, challenges to the New Zealand authorities grew, especially from amongst the matais (chiefs), the traditional leaders, who organized themselves in forming the only opposing, force (the Mau movement). Attempts to crush the

resistance failed and finally in 1936, with the Labour Party in power in New Zealand, the Mau was recognized as a 'Legitimate Political party'.

- 1.11 In 1953 preparations started for the transition to independence, which was finally obtained in January 1962 making Samoa the first South Pacific Island Nation to attain such status.

Government and Faasamoa

- 1.12 The country has a legislative assembly of 49 members of parliament, elected by those 21 years and over. However, only matai (customary title passed on land and kinship for most parts) are eligible to be elected as Member of Parliament. The Prime Minister is elected by Parliament and he/she in turn appoints twelve cabinet members.
- 1.13 Today, as in the past, the social unit of Samoan life is the 'aiga' or extended family. The 'aiga' is headed by at least one matai, who is appointed by the consensus of the aiga. There are two distinct types of matai titles, the "Ali'i" or Chief Matai and the 'Tulafale' or Orator Chief. The matai assumes responsibility for directing the use of family land, and, other assets belonging to the aiga. He must by his behaviour honour the title he bears and the people he represents. In return for his leadership, the matai is rendered services by the 'tautua' (untitled).
- 1.14 Local authority is also in the hands of the matai who constitute the council or 'fono' of the village. Presiding over the fono is the 'Sui o le Malo' (village mayor). A position appointed by Government on recommendation from the village council. A Women Representative 'Sui Tamaitai' is also appointed by Government on the recommendation of the women's' councils act as the contact between the government and the women in the villages.
- 1.15 Rooted in this social organization is the Samoan Way or 'fa'a-Samoa', which places great importance on the dignity and achievement of the group rather than its individual members. Religion plays an important role in Samoan life where the majority of the people are strong adherents to the Christian faith. This faith is symbolized in the motto of Samoa, 'Fa'avae I le Atua Samoa' (Samoa is founded on God) and is given physical expression in the impressive number of churches seen throughout the country.
- 1.16 The social and cultural institutions of Samoa Society (fa'a-Samoa) are strong and more intact than in most parts of Polynesia. The country's system of village government is particularly well organized and coherent and is the focal point of a network of social relationships that provide honour and prestige to its members. However, Samoa is no longer a society of largely self-sufficient local units. Imported food and other items are now established as basic household necessities.

Population

- 1.17 The people of Samoa are Polynesian. The population in 2006 totalled more than 180,000 and though mostly Samoans, included other Pacific Islanders, some Chinese and Europeans, mostly from New Zealand.
- 1.18 Very little is known about the size of the population of the Samoan Groups before the arrival of missionaries in the early 1830's. Some estimates are available but knowledge about the islands was too limited and estimates made by early settlers were generally unreliable. The situation improved during succeeding years, particularly as a result of missionary reports, but the difficulty of collecting and verifying figures led to considerable variations in the accuracy of early estimates.
- 1.19 The 1853 and 1869 Missionary Censuses were perhaps the first attempt at scientific measurement of the population of Samoa. However these two censuses estimated the population at about 30,000 but given the limited capability to conduct censuses, they were both probably under counts of the true population. The various estimates available in the second half of the nineteenth century showed little variation from this figure. This relative stability over time was a consequence of the balance between the high birth rate, which led to rapid growth in some years, and the high death rates in other years as epidemics of diseases spread through the country.
- 1.20 The population of the Samoan archipelago since or even before Western contacts has been the subject of much discussion. Figures available for periods earlier than those covered by the Missionary census, suggest that in the 1830's the population was closer to 50,000, indicating that a steep decline in the population did occur in the islands that now constitute Samoa. During the nineteenth century a similar decline had been observed in other Polynesian countries. However, all these data should be treated with caution, since their source and reliability vary considerable. Though they provided some strong evidence that population decline occurred, the extent of that decline must remain very much in doubt.
- 1.21 More reliable population figures are available from censuses carried out during the twentieth century. The German Authorities made population counts in 1900, 1902, 1906 and 1911. In 1917 the New Zealand administration carried out its first census of Samoa and from 1921 introduced a regular 5 yearly census. In 1905 the German authorities also instituted a system of birth and death registration. The population as recorded at the various censuses from 1902 to 2006 is shown in Table 1.1 below.
- 1.22 In the beginning of the twentieth century several epidemics reversed the increasing trend in population growth that had occurred in the earlier years. The 1918 epidemic was the first major setback to New Zealand prestige and consequently great emphasis was placed on the improvement of health conditions and sanitation. This proved successful as shown by the rate of population growth in the next-decades, which grew as a result of continuing high fertility and a short-drop in mortality. After 1945, mortality continued to decline,

though less pronounced than in the 1920 and 1930s Fertility remained at a high level in conformity with the Samoan cultural tradition favourable to large families.

Table 1.1 Population of Samoa 1902-2006

Census Year	Samoan Population	Total Population (Including Other Nationalities)
1902	32,612	n. a.
1906	33,478	37,320
1911	33,554	38,084
1917	35,404	37,331
1921	32,601	36,422
1926	36,688	40,231
1936	52,232	55,946
1945	62,422	68,197
1951	80,153	84,909
1956	91,883	97,327
1961	113,101	114,427
1966	130,110	131,377
1971	144,111	146,627
1976	150,089	151,983
1981	153,920	156,349
1986	156,000	157,408
1991	158,121	161,298
2001	174,877	176,710
2006	175,839	180,741

Source: Samoa Bureau of Statistics

- 1.23 A distinctive feature of population of Samoa is emigration. Emigration in the first half of the twentieth century was of minor importance. It was only during 1960s that the trend of extensive overseas migration, especially to New Zealand began to accelerate. In 1976 it was estimated that more than 27,000 Samoan residents were enumerated there and by 2006 this figure has grown to some 131,000 people who indicated their place of usual residence as Samoa.(2006 NZ Population census) The impact of overseas migration on the growth of the population has been of major importance, and has also had a profound influence on the social and economic structure of the country. The greater part of the slowing growth rate at least up to the late 1980s, must consequently be explained by the large out flow of people from Samoa.

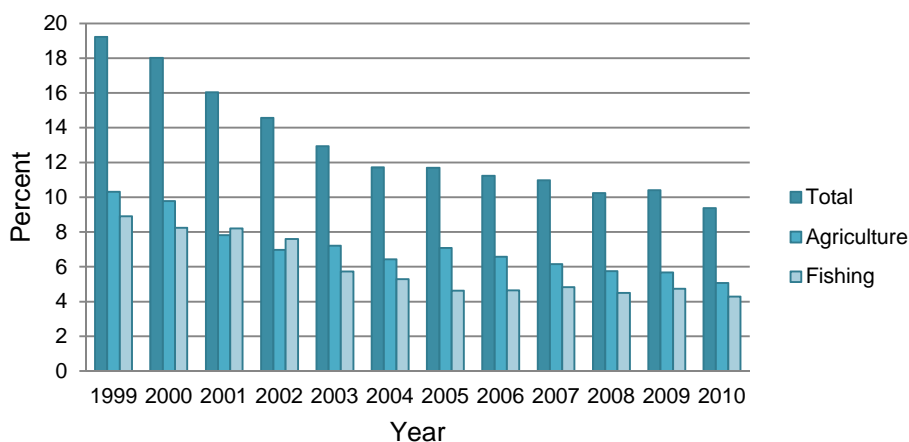
Agricultural Censuses and Surveys

- 1.24 Although Samoa had a history of Population censuses, the 2009 Agricultural Census is only the third agricultural census conducted in the country, with sample surveys in 2000, 2002, 2004 and 2005.
- 1.25 The 2004 survey collected some basic information to assess the impacted of cyclone Heta on major crops and its impact on agriculturally active households. It was estimated that more than fifty percent of coconuts were damage, forty percent of cocoa, thirty percent of taro and taamu, and twenty percent of breadfruit. Some forty percent of agriculturally active households experienced shortage of food supply and decreased of income from agriculture.

The Economy

- 1.26 The village economy of Samoa is dominated by village based agriculture, remittances from family members working overseas, tourism and external aid.
- 1.27 The contribution of the agriculture sector (agriculture and fisheries) to the economy has shrunk significantly over the past ten years from 17 percent in 1999 to less than 10 percent in 2010, as illustrated in Figure 1.1. Apart from Food, Beverages & Tobacco and other Manufacturing sectors which also recorded decreased contribution to the Gross Domestic Product, all other sectors recorded increases in the same period.

Figure 1.1 Percentage Contribution of Agriculture and Fisheries (at constant prices) to GDP



Source: Samoa Bureau of Statistics

Statement of Economic Strategy 2008 – 2015

- 1.28 The 2008-2015 Statement of Economic Strategies highlighted the production of an “Agriculture Sector Plan” that would provide a coherent framework for promoting the development of agriculture. The overall goal of the agricultural sector as indicated in the “Agricultural Sector Plan 2011-2015 is “to increase

Agricultures relative contribution to GDP from its current level of 10 percent to 20 percent by 2015''

- 1.29 The challenge, as stated in the Agricultural sector Plan 2011-2015, is therefore to revive village agriculture through initiatives to redevelop agricultural traditional crops as well as encouraging diversification. Government will provide supports in agricultural development, namely research, extension, quarantine, regulation, marketing information and infrastructure recognizing that the full development of crops shown to be technically viable requires private entrepreneurship.

CHAPTER 2 AGRICULTURE AND LAND TENURE SYSTEM

Farming Systems

- 2.01 Samoa's farming systems are characterized by closely interdependent production activities that cut across the crops, livestock, fisheries and forestry sub-sectors. The production base is however narrow, being confined to a few root crops, vegetables and fruits that are grown haphazardly on a small scale, plus coconuts and cocoa grown as cash crops.
- 2.02 The food crops sector is dominated by production of root crops, which are produced in sufficient quantities to ensure adequacy of carbohydrates for the people. The requirements of carbohydrates are augmented by banana and breadfruit production. Coconut, which provides an important source of food and cash, is the predominant crop.
- 2.03 Traditionally the production of tree and food crops has dominated Samoa's agriculture. Samoa's has relied on coconuts, banana, root crops, breadfruit and fish for much of their diet. However, the impact of natural disasters and the infestation by pests and diseases such as the taro leaf blight in 1993 have contributed to the decline in crop production in the past two decades.
- 2.04 The livestock sub-sector is mainly village based and is composed of cattle, pigs and poultry. Sheep farming is a relatively new initiative with the first shipment of some 40 animals (Fantastic sheep) from Fiji in 2004. These were raised by the Ministry of Agriculture and have been distributed to some farmers.
- 2.05 Fishing is an important occupation in the village economy and provides a major source of protein in the diet and an important source of cash income. It also provides a source of foreign reserves through exports.
- 2.06 During the last three decades, Samoa's forest has been depleted to the point of near exhaustion through commercial and agricultural use.

Tree Crops Sub-Sector

Coconut

- 2.07 Coconuts remain an important cash crop for Samoans. Exports of coconuts and coconut products since the late 1980s have been relatively non-existent however in the past few years the production of coconut oil for export has slowly increased following private sector investment in coconut processing with a demand of 400,000 nuts per week.

Cocoa

- 2.08 Cocoa is another long established crop for domestic consumption and was also a major source of export revenue however like coconuts, it also declined in the 1960s and early 1970s and very little replanting has taken place since then.



Food Crops Sub-Sector

Taro

- 2.09 Taro is the most commonly grown root crop and the preferred starchy staple. The corms, in addition to providing a highly digestible carbohydrate, have a high mineral content and are a good source of calcium. The outbreak of Taro Leaf Blight in 1993 completely destroyed the crop. However production steadily increased as resistant varieties have become available.



Banana

- 2.10 The banana industry of Samoa is predominantly a small farmer industry. It is a major item of food both in the villages where it is grown and in the urban markets (mainly Apia). In the past, large quantities were exported. Disease and nematode build up have been largely responsible for the decline of a once lucrative export business in bananas. The situation was made worse by the cyclones in 1990

(OFA), 1991 (VAL) and 2004 (Heta) which caused extensive damage to banana plantations.



Breadfruit

- 2.11 Breadfruit (*artocarpus altilis*) is an important carbohydrate staple in Samoa. It is already well established as a small holder crop with good distribution throughout the country. Breadfruit is indigenous to Polynesia and most of the known cultivators may be found in Samoa. Breadfruit is grown primarily as scattered crop.



Other Root Crops

- 2.12 Taamu (*Alocasia macrorhiza*), also known as the giant taro, and yam (*Dioscorea numularia*) are used mainly as a food reserve. It provides security of food supply to the rather fragile food system based on continuous supply and the absence of storage. It grows well locally and provides an acceptable taro substitute particularly after the devastation caused by Taro Leaf Blight in 1993.

- 2.13 The Pacific yam (*Dioscorea numularia*) is a white fleshed tuber with an attractive taste and texture. This crop is perennial and provides a useful food reserve. Its tolerance of shade gives it potential for inter planting in fuel wood plantations.

Kava

- 2.14 Kava was a major export crop for Samoa before the ban by Europe on imports. However, there is a strong domestic market for kava with most supplies to the Fugalei market and small stores around the country. Although the European market remains closed, there have been concerted efforts taken by Pacific Island kava producing countries to reopen the export market.

Fruits and Vegetables

- 2.15 Samoa has grown fruit and vegetables since the islands were originally populated. There has been a stronger vegetable than fruit cultivation in the past. The anticipated continuous growth in the tourism sector requires the continuous supply of high quality fruits and vegetables. The local supply of fruits and vegetables are mainly sold at the local market and for home consumption.
- 2.16 The recently adopted 'Fruit and Vegetables Sector Strategy for Samoa 2009' sets out to establish a fruit and vegetable sector to be a major economic vehicle in achieving the objectives of the Samoa Development Strategy by 2012. Significant amounts of fruit and vegetables are imported into Samoa. The substitution of imports by local production has been identified as a possible growth opportunity for the fruit and vegetable sector.

Customary Land Tenure and Agriculture Development

- 2.17 The basis of the 'fa'a-Samoa', the Samoan way of life, is clearly the matai system of chiefly titles, where extended (or multiple) families reside under the leadership of one of their members whom they select to hold the family's specific chiefly title or matai title. The matai systems in turn depend upon the matai's authority or pule over the members of his extended family and his pule over family lands.
- 2.18 In the traditional fa'a-Samoa, the lands are owned by the extended family or aiga, just as they own the chiefly matai title to which they elect one of their members. Once elected to the family title, the matai has pule, authority, over the members of the aiga and the lands of the aiga. It is this 'commercial' nature of the traditional Samoan family labour and land ownership, which has been the subject of much debate and discussion. Turner wrote in 1884 that the Samoan 'Communitic System is a sad hindrance to the industrious and eats like canker worm at the roots of individual and national progress.' Many other researchers view the Samoan land tenure system as an impediment to agricultural development. However Tim O'Meara, another researcher, says 'like other aspects of Samoan Culture, the apparent conservatism of the land tenure system is more superficial than fundamental'. In fact, a dramatic change toward individual land tenure has been occurring in Samoa villages since well before World War II. This change is rarely recognized outside of the rural villages, and has not been reported by previous researchers. The Land and Tittles Court do not accept the

modification of customary tenure as legitimate, and thus it has no legal sanction. But the change in tenure systems has proceeded to the point where the majority of village lands is now held by individuals rather than extended families, and is inherited directly by those individuals' children, rather than indirectly through the acquisition of matai titles as in the traditional system.

- 2.19 This change in customary land tenure is significant for two reasons. First, it shows that Samoans are not rigid or bound by tradition. They can and do adapt to changing economic circumstance. Second, the security of land rights is increased under the modified system because it assigns tenure to the individuals who clear the land, and inheritance rights are assigned exclusively to their children. Thus, except where the modified system may come in conflict with the Land and Titles Court, security of tenure is much greater under the modified system than it was under the traditional system. Because of this, security of tenure is not presently a significant cause of low productivity in village agriculture, as it may have been under the traditional tenure system. Instead, it is the low economic return to agriculture as compared to other sources of income which is the significant cause of the stagnation of village agriculture.

CHAPTER 3 CONCEPTS, SCOPE AND DEFINITION

Authority for the Agriculture Census

3. 01 The 2009 Agricultural Census was conducted as a joint exercise with the Ministry of Agriculture and Fisheries. Authority for the Census rested with the Government Statistician, who had the legal power to collect such information under Statistics Act 1971. The act provides for total confidentiality of the information collected in the census. The information can only be used for the purpose of compiling statistics and no individual information can be disclosed to anyone outside the census organization.

Scope of Agriculture Census

3. 02 The 2009 Agricultural Census aimed to measure Household Agricultural Activity over the 2009 period. Enumeration was carried out in November – December 2009 and households were asked about their activities since the beginning of 2009. The 2009 census covered a similar range of information as with the 1999 census with the following major changes:

- Collecting information on 6 additional crops grown
- Collecting information on consumption of 19 crops compared to 8 in 1999
- Deletion of sales information because of data quality problems
- Collecting information on pet animals.

Census Methodology

3. 03 The methodology for carrying out the census of Agriculture in Samoa was a combination of complete count and sample survey. Thus the census was basically two part operation. The first part involved all households who were required to complete the Household Form. The households identified as agriculturally active from the Household Forms (Subsistence, Subsistence and Cash and Commercial) were required to complete the Holding Form for every holding operated. The second part of the questionnaire was designed to cover 25 percent of all agricultural holdings as identified in the first part, with selection made on systematic sample basis (every fourth holding selected). Thus while the Household Form was canvassed in respect of all households, the Holding Form was to be completed by agriculturally active Households only and the Parcel Form was completed in respect of 25 percent of the agricultural holdings.

Sampling Errors

3. 04 Because of the systematic sampling some of the information in this report is subject to sampling errors. The information collected from the Parcel Form, covers the plot details such as method of sowing, age of coconut and cocoa trees, and crops already harvested are based on the sample and possible sampling errors need to be considered in examining the results.

Definitions

Household

3. 05 One or more persons who live together and have their meals together. Note that:
- Just one person, living on his own and looking after himself/herself is considered a household.
 - Usually a household occupies one building but in a few cases two or even more households may share one building. For example, four households living in an apartment building containing four apartments.
 - Alternatively, one household can occupy more than one building, for example, one household using a living fale, sleeping fale, kitchen fale and three small fale.
 - An Aiga is normally composed of several households.

Head of Household

3. 06 The person who is considered to be the head by the members of a household, that is, all persons living in the household.

Level of Agricultural Activity

3. 07 *Non-Agricultural*– This means that the household does not engage in any crop production. Such households may own or look after land NOT IN USE and also own or look after livestock. It may also engage in fishing activities.
3. 08 *Minor Agricultural Activity*–The household has only very few crops defined as less than 625 sq. yards (25 x 25 yds.) of land under garden crops or less than 20 coconut trees or less than 20 Banana plants or less than 20 other tree crops.
3. 09 *Subsistence Only*– The household produces crops to feed itself (home consumption) but does not sell.
3. 10 *Subsistence and Cash Cropping*– The household's main purpose of agricultural production is to feed itself (subsistence, or home consumption) but some crops or surplus crops are sold.
3. 11 *Mainly for Sale (Commercial)* – The households in this category differ from those in category 4 by the fact that their main purpose of production is to sell their produce either locally or for export.

Holding

3. 12 An agricultural holding is an economic unit of agricultural production under single management comprising of all livestock kept and all land used wholly or partly for agricultural production purposes, without regard to title, legal form or size. Single management may be exercised by an individual or household, jointly by two or more individuals or households by a clan, or tribe or by a juridical person such as corporation, cooperative or government agency.

3. 13 The holding's land may consist of one or more parcels, located in one or more separate areas or in one or more enumeration areas, provided the parcels share the same production means used by the holding such as labour, farm buildings or machinery.

Method of Operation of Holding

3. 14 *Individual Household on Own Account*– This refers to the holding operated by member(s) of a single household.
3. 15 *In Partnership* – The holding is operated in association with one or more partners who may be related or not related but who live in different households and thus have different principal homesteads.
3. 16 *Village Association*– The holding is operated by an association or committee, an example of this is the Women's Committee, which could operate the holding for crop or livestock or poultry production or any combination of them.
3. 17 *Institution* – The holding is operated by a religious institution or organization through a hired manager. An institution is an organization providing a specific service or performing some general public function for a group of individuals such a prison, hospital, hotel, church boarding school etc.

Operator

3. 18 An operator of agricultural holding is the person who exercises management control over the operation of the agricultural holding. Where a single household is operating the holding, the head of the household in most cases is the operator. A holding can have more than one operator especially in cases where the holding is being operated as partnership or some other form of joint operation. In some cases the operator is not necessarily the head of the household, or the owner of the place or the matai of an aiga, he/she may be a member of the owner's household, a hired manager, a tenant or a renter, a person who operates customary land as assigned to him/her by his matai or a person who operates the land under government permit.

Crops

3. 19 Crops not Grown –The crops were not on the field at time of visit nor at any time in 2009.

Crops currently growing

3. 20 The crops were on the field at time of visit.

Already Harvested - Not grown but grown in 2009

3. 21 The crops were planted in the last 12 months and have already been harvested, so are not on the field at the time of visit. This category of crops refers to short term crops.

Parcel

- 3. 22 A holding parcel is any piece of land entirely surrounded by other land, water, road, forest etc., and not forming part of this holding. A parcel may consist of one or more fields adjacent to each other. In other words a parcel is a contiguous piece of land in a holding. The entire land of the holding may consist of one or more than one parcel.

Illustration 1: A holding with one parcel with four plots

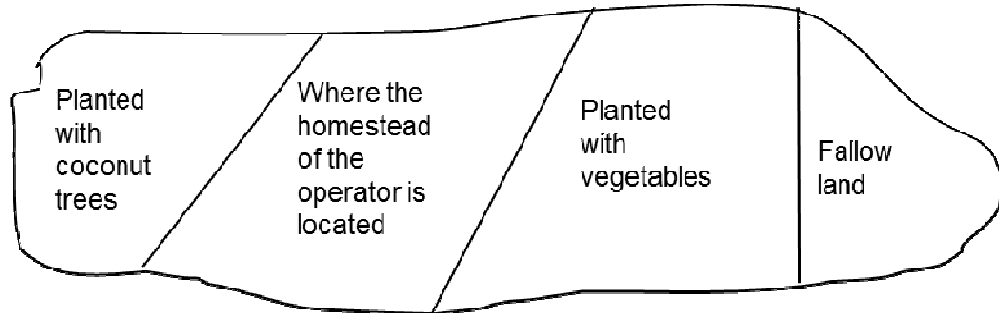


Illustration 2: A holding with two parcels in which one has two plots and the other has one plot.

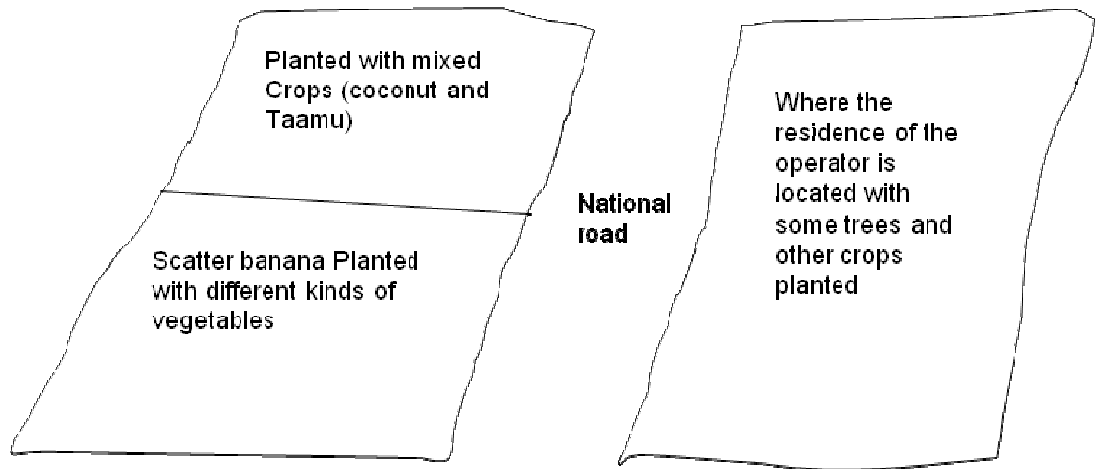
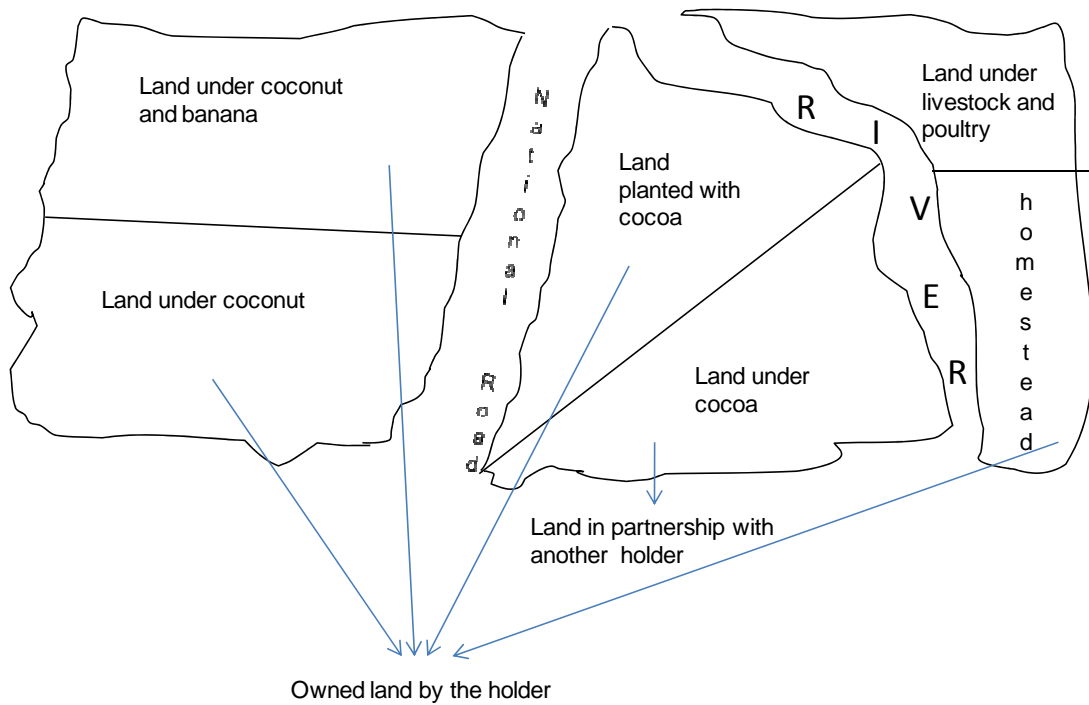


Illustration 3: A holder operates two holdings, one of his own and the other one in partnership with another holder who belongs to another household.



Note: The owned land of the holder has three parcels, two parcels with two plots each and another with one plot. The holding in partnership with another holder has only one parcel with only one plot.

Land Tenure

3. 23 Land Tenure refers to arrangements or rights under which the holder holds or uses holding land.

Land use

3. 24 This provides a classification of the holding according to the activity, which is directly related to the land, or holding, makes use of its resources or has an impact upon it.
3. 25 Land under tree crops –These are trees bearing edible fruits or nuts. The trees themselves should usually have an economic life of more than five years. Example includes mango, banana, coconut cocoa, citrus, breadfruit etc.
3. 26 Land under other crops–The other crops include field crops like taro, taamu, cassava, yam, sugarcane and vegetable crops like eggplant, beans, cabbage, tomato etc.
3. 27 Land under tree crops and other crops–If the land is both under tree crops and other crops, it should be classified as land under tree crops and other crops.

- 3. 28 Land under fallow–Fallow land is land that was used for growing crops sometime in the past but currently not used for growing crops.
- 3. 29 Land under non-agricultural uses –This is the land that is under buildings, roads and other non-agricultural uses.
- 3. 30 Land under livestock and poultry–This land is used for raising or tending livestock like cattle, goats, pigs, etc. and poultry like chickens, etc.

Period of Use

- 3. 31 This refers to the number of years that each reported parcels was used.

Plot

- 3. 32 A plot is a part or whole of a parcel on which a specific crop or crop mixture is cultivated. A plot can also be a fallow land or land ready for planting or bush plot or plot under other use like homestead.

Land Area

- 3. 33 Land area is the physical measure of the land in acres. There are 4,840 square yards in an acre. As a rough guide the following proportions of an acre are represented by squares whose sides have the following lengths.

Area in Acres	Length of sides of square in yards
1	70
$\frac{3}{4}$	60
$\frac{1}{2}$	50
$\frac{1}{4}$	35
$\frac{1}{8}$	25

Method of Cultivation

- 3. 34 *Single cropped pattern*–refers to one crop’ which has been planted in a regular pattern such as rows. If there are a few other trees/plants of different crops in scattered plantings over the plot, consider the plot to be ‘single cropped’ to the crop that is planted in a regular pattern.
- 3. 35 *Mixed crop pattern*– refers to two or more crops which are interplant in a regular pattern such as rows. Again if there are a few scattered plantings of other crops do not consider them to be crops that are inter-planted in a “mixed cropped” combination.
- 3. 36 *Scattered crop pattern* –refers to crops/plants which have not been planted in any regular pattern such as rows or some uniform method of spacing. Scattered crops/plants can be found among plants of a regularly (patterned) planted plot.

Single crop equivalent

3. 37 Single crop equivalent area is an estimate of the area that a crop grown in a Mixed crop pattern or a Scattered crop pattern would cover if the same amount of crop were planted in a Single crop pattern. It is based on the information provided on the proportion in the crop and/or the number of plants in the mixed or scattered crop planting.

Fertilizers and Agricultural chemicals

3. 38 *Inorganic fertilizers*—These are manufactured mineral substances applied to soil, or irrigation water, to supply plants with the necessary nutrients.
3. 39 *Organic fertilizers*—These are materials of organic origin, either natural or processed, that can be used as sources of plant nutrients. The most commonly used are dried leaves, chicken manure or other animal manure, etc.
3. 40 *Agricultural chemicals*—These are used for controlling or eliminating pests that destroy crops or livestock. These include insecticide, herbicides and fungicides.

Fishing Activities

3. 41 *Inshore Fishing*—Fishing activity done from the shoreline to the reef.
3. 42 *Offshore Fishing*—This is a deep sea fishing activity done beyond the reef.
3. 43 *Inland Fishing*—Fishing activity done in inland water like river.

Reference Periods Agriculture Census 2009

3. 44 The general reference period is one calendar year i.e. 1st January 2009 to 31st December 2009. However, for the purpose of this census, the reference period is from January 1, 2009 to the time of visit or day of enumeration.
3. 45 The *Enumeration Period* was between 31st October and 30th November 2009.
3. 46 The reference periods for different items are given below.

Number of Holdings and Method of Operation
Calendar year 2009

Total Area of the Holding Section and Crops Grown
Day of Enumeration and Calendar Year 2009

Livestock
Day of Enumeration

Labour Inputs
One week prior to day of enumeration

Agriculture Income
Calendar year 2009

Use of Fertilizers and Agricultural Chemicals
Calendar year 2009

Fishing
Calendar year 2009

Forestry
Calendar year 2009

CHAPTER 4 DEMOGRAPHICS

Population

4. 01 The Agriculture Census recorded a population of 163,523 in 2009, with males representing 52 percent of the total population and females 48 percent of the total.

Table 4.1 Population Comparison by Region

	Population Census 2006	Agriculture Census 2009	Percentage difference
Samoa	180,471	163,523	-9
AUA	37,708	30,206	-20
NWU	56,122	51,432	-8
ROU	43,769	40,855	-7
Savaii	43,142	41,030	-5

Source: Samoa Bureau of Statistics Census of Agriculture

4. 02 The 2009 Agriculture Census appears to undercount the number of households and the population, in a similar way to the 1989 Agriculture Census. The population recorded in the 2009 Agriculture Census was 9 percent lower than that recorded in the Population Census 2006. So increases from 1989 to 1999 may be exaggerated and patterns of growth between 1999 and 2009 may be underestimated.
4. 03 It appears that the Apia Urban Area has the largest undercount which reports a 20 percent decrease when compared to other regions.
4. 04 The Agriculture Census does not cover people living in institutions (such as hospitals, schools, visitors in hotels) but that will not account for all of the difference.

Total Population by Regions

4. 05 North West Upolu accounted for 31.5 percent of the total population 2009, with Savaii and Rest of Upolu both having 25 percent and Apia Urban Area with 18.5 percent.

Table 4.2 Agriculture Census Population by Region 1989-2009

	1989	1999	2009
	Total Population	Total Population	Total Population
Samoa	135,781	164,217	163,523
AUA	22,968	32,340	30,206
NWU	32,006	49,923	51,432
ROU	36,893	39,979	40,855
Savaii	43,914	41,975	41,030

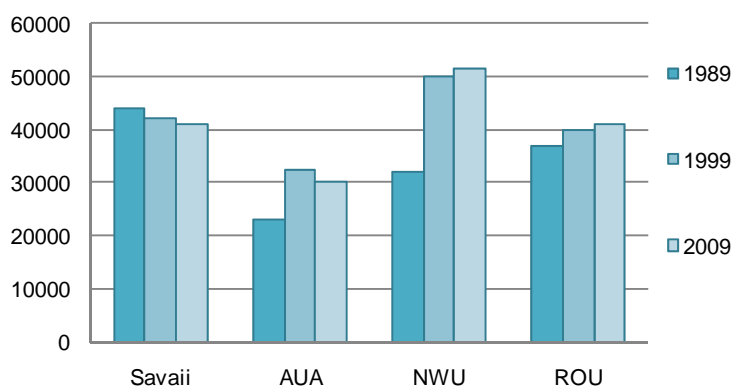
Source: Samoa Bureau of Statistics Census of Agriculture

4. 06 In comparison with the previous Agriculture Censuses the reported population increased by 20 percent from 1989 to 1999 but showed a slight decrease of 0.1 percent from 1999 to 2009, but as discussed above, the population undercounts in 1989 and 2009 mean that the national trend and the Apia Urban Area figures in particular should be treated with caution.

4. 07 In the other regions:

- Savaii's population showed a steady decrease throughout the reporting years, falling by a total of 6.6 percent between 1989 and 2009.
- North West of Upolu showed a significant increase of 56 percent between 1989 and 1999, and a further 3 percent increase between 1999 and 2009. Again, this pattern may be affected by undercounts in 1989 and 2009.
- Rest of Upolu showed a steady rate of increase over the years rising by a total of 8 percent over the period 1989 to 2009.

Figure 4.1 Total population by region and census year



Source: Samoa Bureau of Statistics Census of Agriculture

Total Population by Age Groups

4. 08 Most of the population is in the age group of 15-59 years. It accounts for 54 percent of the total population.

4. 09 The age group Under 15 Years accounts for 38 percent of the total population, 15-59 Years for 54 percent, 60 years and Over age group for 7 percent and the Not Stated for 1 percent of the total population.

4. 10 Amongst the regions, North West Upolu is the region that contributes the most to the total in the age group of 15-59 years.

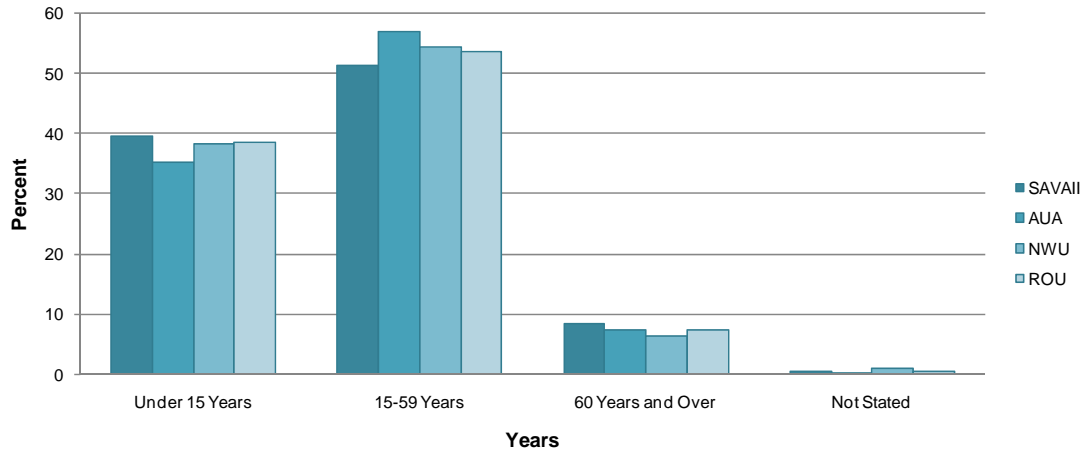
Table 4.3 Population by Age Group by Region, 2009

	Under 15 Years	%	15-59 Years	%	60 Years and over	%	Not Stated	%
Samoa	62,393	100.0	88,133	100.0	12,059	100.0	938	100.0
AUA	10,678	17.1	17,171	19.5	2,252	18.7	105	11.2
NWU	19,659	31.5	28,007	31.8	3,291	27.3	475	50.6
ROU	15,793	25.3	21,889	24.8	3,012	25.0	161	17.2
Savaii	16,263	26.1	21,066	23.9	3,504	29.1	197	21.0

Source: Samoa Bureau of Statistics Census of Agriculture

4. 11 Looking at the proportion of people in each age group in each region shows that Savaii reported the highest percentage of people in the young and older age groups, but the lowest percentage of people in the age group 15 to 59 years.

Figure 4.2 Population Distribution across Regions by Age Groups



Source: Samoa Bureau of Statistics Census of Agriculture

4. 12 Apia Urban Area had the highest percentage of people in the age group of 15 to 59 years and the lowest percentage of younger people in the age group under 15 years.

4. 13 North West Upolu has the lowest percentage of 60 years and over.

Households

4. 14 The 2009 Agriculture Census enumerated 23,164 households in Samoa, compared with a total of 20,521 households in 1999, an increase of 13 percent in the number of households.

4. 15 Of the total number of Households in Samoa, 32 percent were in the North West of Upolu followed by both Savaii and Rest of Upolu with 24 percent, and 20 percent in the Apia Urban Area.

Table 4.4 Number of Households (1989-2009)

	Number of Households			Percentage of Region to the Total Number of Households		
	1989	1999	2009	1989	1999	2009
Samoa	15,474	20,521	23,164	100.0	100.0	100.0
AUA	2,964	4,449	4,555	19.1	21.7	19.7
NWU	3,883	6,189	7,447	25.0	30.2	32.1
ROU	4,124	4,761	5,509	26.7	23.2	23.8
Savaii	4,503	5,122	5,653	29.1	25.0	24.1

Source: Samoa Bureau of Statistics Census of Agriculture

4. 16 In the 1989 Agriculture Census, Savaii accounted for 29 percent of the total households but the total percentage has dropped to 25 percent in 1999 and 24 percent in 2009.
4. 17 Apia Urban Area recorded 19 percent of the total number of households in the 1989 Agriculture Census, 22 percent of the total in 1999 and 20 percent in the 2009 Agriculture Census.
4. 18 The North West Upolu region showed an increasing trend throughout the reporting years 1989 to 2009. This region recorded 25 percent of the total number of households in 1989, 30 percent in 1999 and 32 percent in 2009.
4. 19 In 1989, Rest of Upolu represented 27 percent of the total number of household, compared to 23 percent in 1999 and 24 percent in 2009.
4. 20 These changes in the number of households may be affected by the undercount in 2009 and 1989.

Table 4.5 Number of Households and Population by region, 2009

	Number of Households	Total Population	Average number of people in Households
Samoa	23,164	163,523	7.1
AUA	4,555	30,206	6.6
NWU	7,447	51,432	6.9
ROU	5,509	40,855	7.4
Savaii	5,653	41,030	7.3

Source: Samoa Bureau of Statistics Census of Agriculture

4. 21 The average number of people per households nationally is 7.1. The average number of people per households across regions varied from a low of 6.6 in Apia Urban Area to 7.3 in Savaii and 7.4 in the Rest of Upolu. This shows a trend towards smaller households when compared to an average of 8.0 people in a household in 1999 and 8.8 in 1989.

Households and their Agricultural Activity

- 4.22 Five categories were used in the Agriculture Census to establish the level of Agricultural Activity of each household. Non Agricultural and Minor Agricultural households were classified as Non-Agriculturally Active, while Subsistence (Home Consumption only), Mainly for Home Consumption and Mainly for Sale households were classified as Agriculturally Active.
- 4.23 For the country as a whole, 32 percent of the total households were Non Agriculturally Active and 68 percent were Agriculturally Active.

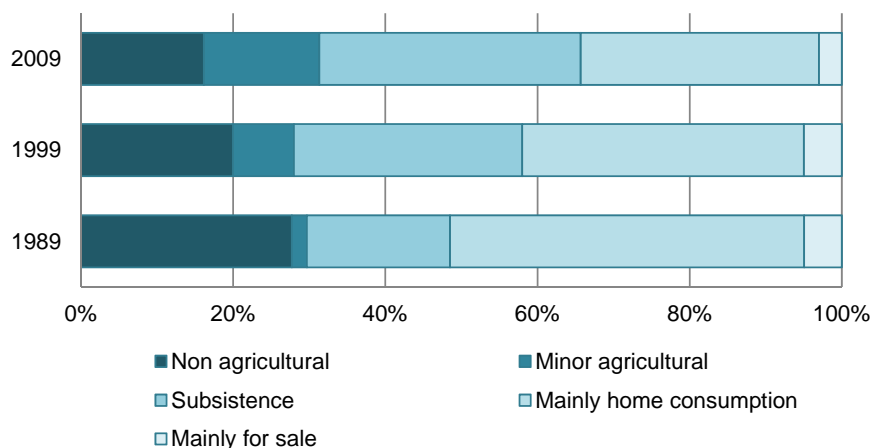
Table 4.6 Household by Agricultural Activity 2009

Level of Agricultural Activity	1989	1999	2009	Percentage		
	Number of Households	Number of Households	Number of Households	1989	1999	2009
Non agricultural	4273	4199	3,806	28%	20%	16%
Minor agricultural	317	1597	3,572	2%	8%	15%
Subsistence	2881	6216	7,776	19%	30%	34%
Mainly home consumption	7211	7549	7,282	47%	37%	31%
Mainly for sale	792	960	728	5%	5%	3%
Total	15474	20521	23,164	100%	100%	100%

Source: Samoa Bureau of Statistics Census of Agriculture

- 4.24 Most households in the Agricultural Census 2009 reported that they were engaged in Subsistence agricultural activity. This accounted for 34 percent of the total number of households. The Mainly for Home Consumption households accounted for 31 percent, Non Agricultural with 16 percent, Minor Agricultural with 15 percent and Mainly for Sale with 3 percent.
- 4.25 The pattern of agricultural activity has shown significant change over the census periods.

Figure 4.3. Household Level of Agricultural Activity



Source: Samoa Bureau of Statistics Census of Agriculture

4. 26 Throughout the reporting years, Non Agricultural households showed a decreasing trend while the Minor Agricultural, Subsistence and Mainly for Home Consumption households all recorded increases. This indicates the shifts in agricultural activities of households from non-agricultural to minor and subsistence. Households tend to operate vegetables garden around their homestead.

Table 4.7 Number of Households by Region and by Agricultural Activity

2009					
	Non Agricultural	Minor Agricultural	Subsistence	Mainly for Home Consumption	Mainly for Sale
AUA	1771	1834	626	228	96
NWU	1508	1293	2747	1666	233
ROU	313	309	2009	2641	237
Savaii	214	136	2394	2747	162
1999					
	Non Agricultural	Minor Agricultural	Subsistence	Mainly for Home Consumption	Mainly for Sale
AUA	2329	901	807	279	133
NWU	1555	605	2282	1373	374
ROU	156	32	1728	2584	261
Savaii	159	59	1399	3313	192
1989					
	Non Agricultural	Minor Agricultural	Subsistence	Mainly for Home Consumption	Mainly for Sale
AUA	2069	201	425	243	26
NWU	1786	86	846	1030	135
ROU	264	19	1003	2731	107
Savaii	154	11	607	3207	524

Source: Samoa Bureau of Statistics Census of Agriculture

Non Agricultural Households

4. 27 Of the total number of households, 16 percent was classified as Non-Agricultural in 2009. Compared to 1999, Non Agricultural households were 20 percent of the total households and 1989 was 28 percent of the total households. As a result of the decreases throughout the years, it may indicate that more households are now engaged in Minor Agriculture, Subsistence, and Mainly for Home Consumption.

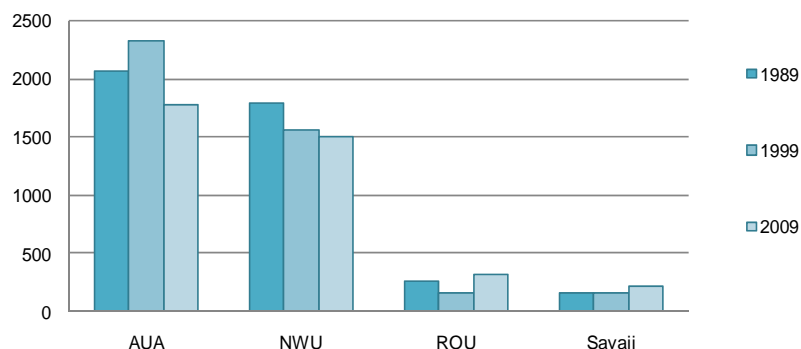
Table 4.8 Number of Non-Agricultural Households (1989-2009)

	1989	1999	2009
	Non-Agricultural	Non-Agricultural	Non-Agricultural
Samoa	4273	4199	3806
AUA	2069	2329	1771
NWU	1786	1555	1508
ROU	264	156	313
Savaii	154	159	214

Source: Samoa Bureau of Statistics Census of Agriculture

4. 28 The major decrease in the number of Non-Agricultural Households recorded in the 2009 results would appear to have occurred in the Apia Urban Area which recorded a 24 percent fall in the number of Non-Agricultural Household.

Figure 4.4 Non Agricultural Activity by Region and Census year.



Source: Samoa Bureau of Statistics Census of Agriculture

Minor Agricultural Households

4. 29 Of the total numbers of households, 15 percent were classified as Minor Agricultural in 2009 compared with 8 percent in 1999 and 2 percent in 1989. Increases throughout the reporting years may suggest that households that were classified as Non Agricultural are now engaging in Minor Agricultural Activities.
4. 30 Although these households are deemed to be not agriculturally active in the aggregate figures, it does suggest that many households have begun to be more engaged in home gardening type of activities as part of a coping strategy in the face of rising food prices.

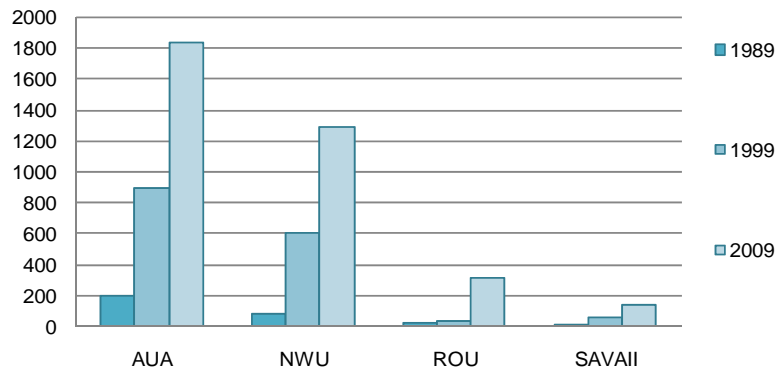
Table 4.9 Total Number of Minor Agricultural Activity

	Minor Agricultural Activity		
	1989	1999	2009
Samoa	317	1597	3572
AUA	201	901	1834
NWU	86	605	1293
ROU	19	32	309
Savaii	11	59	136

Source: Samoa Bureau of Statistics Census of Agriculture

4. 31 Significant increases in the numbers of households reporting as Minor Agricultural are seen particularly in Apia Urban Area and North West of Upolu. These are the urban and peri-urban areas where small-scale home gardens appear to be becoming much more common. In both regions, the number of households classified as Minor Agricultural has doubled.

Figure 4.5 Minor Agricultural Activity by Census year



Source: Samoa Bureau of Statistics Census of Agriculture

Subsistence (Home Consumption Only)

4. 32 Households engaged wholly in subsistence activities represent 34 percent of the total number of households, compared with 8 percent in 1999 and 2 percent in 1989. Again, this may reflect households that were non-agricultural are now moving to subsistence, and that some households were previously selling some of their produce no longer did.

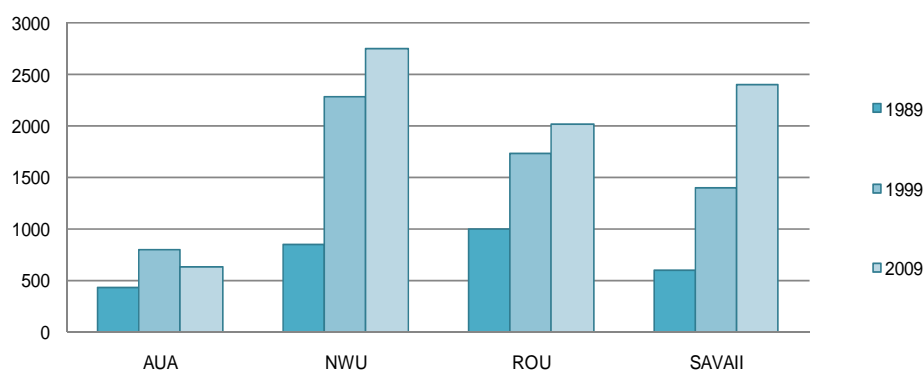
Table 4.10 Total Number of Subsistence Households (1989-2009)

	Subsistence		
	1989	1999	2009
Samoa	2881	6216	7776
AUA	425	807	626
NWU	846	2282	2747
ROU	1003	1728	2009
Savaii	607	1399	2394

Source: Samoa Bureau of Statistics Census of Agriculture

4. 33 Savaii recorded a major increase of 71 percent in the number of households producing for subsistence only.

Figure 4.6 Total Number of Subsistence Households by Regions and Census years



Source: Samoa Bureau of Statistics Census of Agriculture

Mainly Home Consumption Households

4. 34 Households producing mainly for home consumption accounted for 31 percent of the total number of Households compared with 37 percent in 1999 and 47 percent in 1989. There was a decrease of 4 percent in the number of Households in this classification between 1999 and 2009, and this may reflect the growth in full subsistence production.

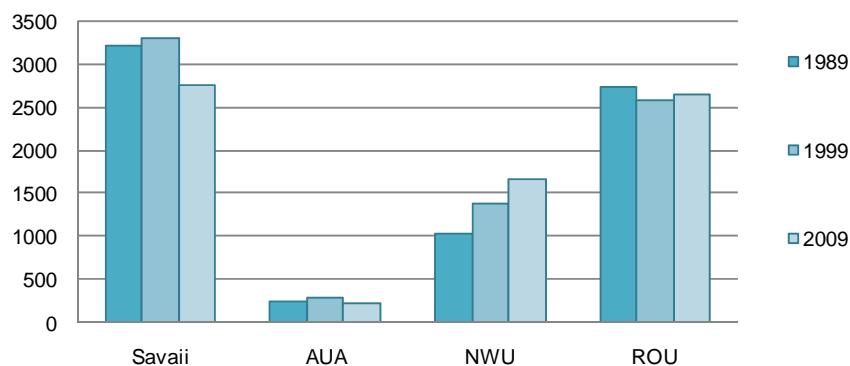
Table 4.11 Number of Mainly Home Consumption Households

	1989	1999	2009
Samoa	7211	7549	7282
AUA	243	279	228
NWU	1030	1373	1666
ROU	2731	2584	2641
Savaii	3207	3313	2747

Source: Samoa Bureau of Statistics Census of Agriculture

4. 35 Savaii recorded a decrease of 17 percent in the number of households classified as Mainly for Home Consumption. This may be a mirror of the increase in those households now engaged in Subsistence.

Figure 4.7 Mainly Home Consumption by Census years



Source: Samoa Bureau of Statistics Census of Agriculture

Mainly for Sale Households

4. 36 Households engaged in agriculture mainly for sale represent 3 percent of the total number of households compared with 5 percent both 1999 and 1989. It is likely that many of these households would have stopped producing for sale but produce for home consumptions only.

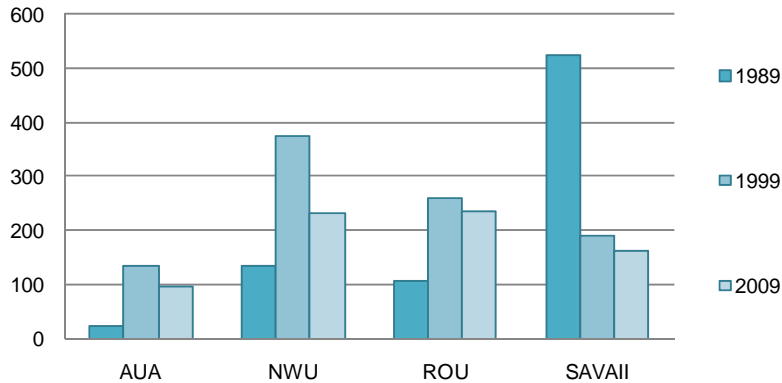
Table 4.12 Mainly for Sale (1989-2009)

	1989	1999	2009
	Mainly for sale	Mainly for sale	Mainly for sale
Samoa	792	962	728
AUA	26	135	96
NWU	135	374	233
ROU	107	261	237
Savaii	524	192	162

Source: Samoa Bureau of Statistics Census of Agriculture

4. 37 In all regions, there was a decrease in the number of households recorded as mainly for sale. This may also be a reflection of the increase in the number of households engaged wholly in subsistence.

Figure 4.8 Mainly for Sale by Census year



Source: Samoa Bureau of Statistics Census of Agriculture

Operators and other household workers

4. 38 There were 24,640 operators recorded in 2009 of which 77 percent were males and 23 percent of the total operators were females. However, in Savaii 82 percent of the operators were males and only 18 percent were females.

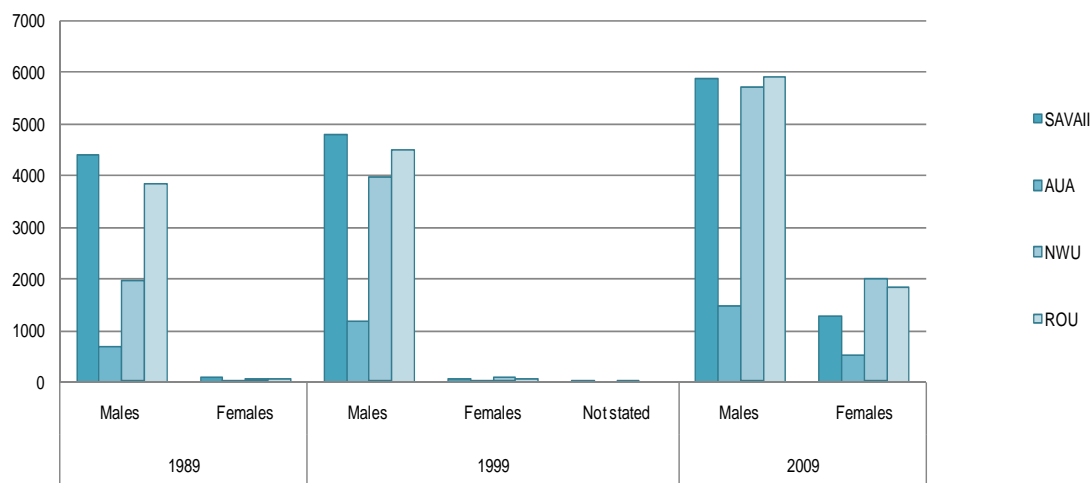
Table 4.13 Total Number of Operators by Sex

	1989		1999			2009	
	Males	Females	Males	Females	Not stated	Males	Females
Samoa	10896	268	14455	255	68	19009	5631
AUA	683	33	1202	28	3	1497	518
NWU	1975	57	3959	77	16	5705	1979
ROU	3847	81	4502	73	5	5913	1860
Savaii	4391	97	4792	77	44	5894	1274

Source: Samoa Bureau of Statistics Census of Agriculture

4. 39 In 2009 all people in the household were asked whether they were a holding operator. This was different in the previous two censuses, when only one operator was listed for each holding. This means that the number of operators, and the breakdown by sex may not be comparable with the earlier years

Figure 4.9 Total Number of Operators by Gender and Census year



Source: Samoa Bureau of Statistics Census of Agriculture

4. 40 Seventy nine percent of the operators were in the age group of 15-59 years, with 21 percent aged 60 and over.
4. 41 Of the country as a whole, 19 percent of the total number of operators had other full time paid employment. Across the regions, Apia Urban Area recorded 45 percent of operators had other full time paid employment and 28 percent in North West of Upolu. In contrast, the rural areas of the Rest of Upolu, only 11 percent had other full time employment and 10 percent in Savaii.

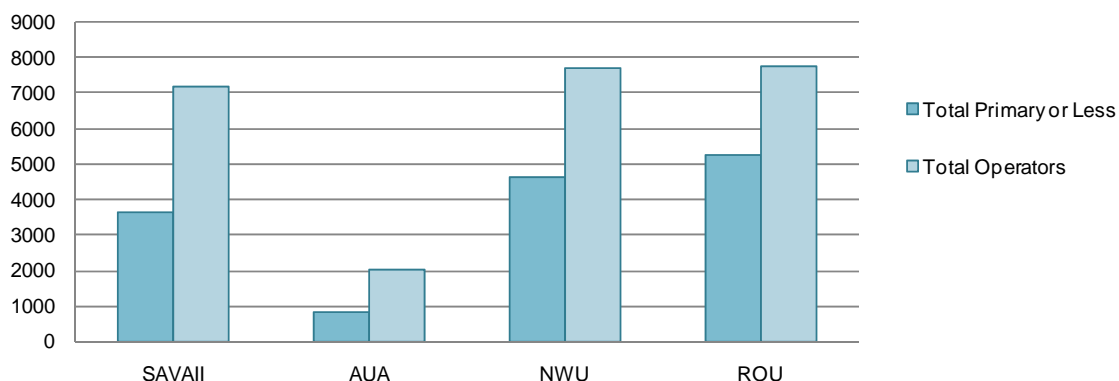
Table 4.14 Total Number of Operators with Full Time Paid Job

	Total operators	Full time Paid Job	Percentage
Samoa	24,640	4,656	18.9
AUA	2,015	904	44.9
NWU	7,684	2,148	28.0
ROU	7,773	859	11.1
Savaii	7,168	745	10.4

Source: Samoa Bureau of Statistics Census of Agriculture

4. 42 Over the country as a whole, 58 percent of operators had attained primary education. However, there were wide variations between the regions. In Apia Urban Area 42 percent of operators had attained primary level, 51 percent for Savaii, 61 percent for North West and 68 percent for rest of Upolu.

Figure 4.10 Operators with Primary or Less Education Attainment; 2009



Source: Samoa Bureau of Statistics Census of Agriculture

4. 43 Many Samoans, not just operators work on holdings. Overall 43 percent of those aged 15 and over worked some hours on their holding, with over 50 percent of those aged between 35 and 59 working some hours.

Paid Labourers

4. 44 A total number of 3,045 paid labourers were recorded in the Agriculture Census. This compares with a total of 1,366 paid labourers in 1999. Of those employed in 2009, 41 percent were in Savaii, 26 percent in the Rest of Upolu, 24 percent in North West Upolu and the balance of 9 percent were in the Apia Urban Area. The biggest increases in the numbers employed are seen in Savaii (up by 110 percent), the Rest of Upolu (up by 247 percent) and North West of Upolu (up by 118 percent).

Table 4.15 Total Number of Paid Labourers by Region (1999-2009)

	All Ages	
	1999	2009
Samoa	1366	3045
AUA	203	260
NWU	337	736
ROU	231	801
Savaii	595	1248

Source: Samoa Bureau of Statistics Census of Agriculture

Paid Labourers by Sex

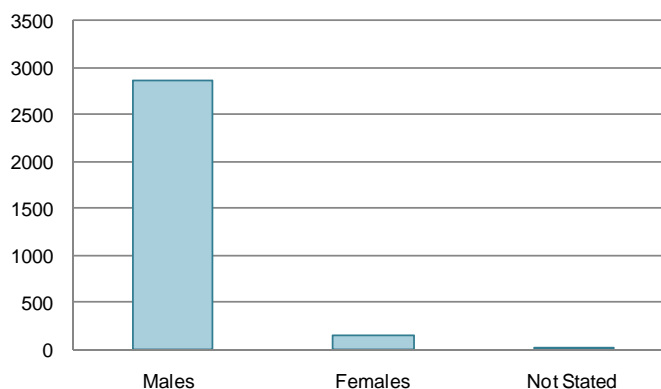
4. 45 In 1999, 87 percent of paid workers were males, in 2009 the proportion increased to 94 percent. Females account for 5 percent of the total number of paid labourers and the not stated with 1 percent of the total.

Table 4.16 Number of Paid Labourers by Sex and Region

	2009			
	Total	Males	Females	Not Stated
Samoa	3045	2869	148	28
AUA	260	255	5	0
NWU	736	676	59	1
ROU	801	789	9	3
Savaii	1248	1149	75	24

Source: Samoa Bureau of Statistics Census of Agriculture

Figure 4.11 Paid Laborers by Sex 2009

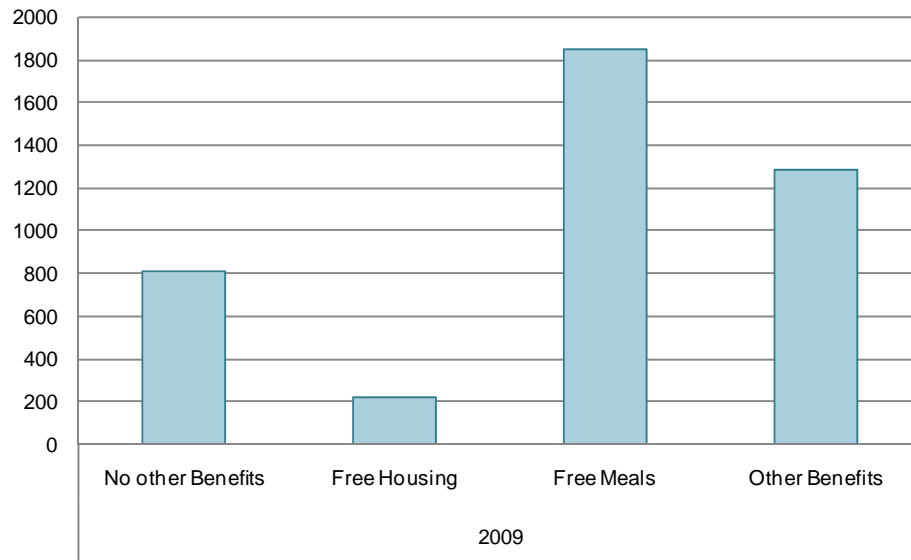


Source: Samoa Bureau of Statistics Census of Agriculture

Paid Labourers by Other Benefits

4. 46 Money is not the only reward or payment for labourers employed on holdings. People were also being paid or reward with other benefits they received, such as Free Housing, Free Meals and other benefits. Other benefit include paying labourers by offering them alcohol, cigarettes and other benefits aside from money payment, free housing and free meals.
4. 47 From the total number of paid labourers, 26.6 percent of the total received only cash as payment of being employed on holdings. The remaining 73.4 percent of the total number of paid labourers received other benefits such as free housing, free meals and other benefits.
4. 48 Free meals were the main benefit that labourers received as payment of being employed on holdings with 1847, followed by Other benefits (eg Alcohol, cigarettes) with a total of 1290 receiving other benefits.

Figure 4.12 Paid Laborers by Other Benefits



Source: Samoa Bureau of Statistics Census of Agriculture

CHAPTER 5 AGRICULTURAL HOLDINGS

Characteristics of Holdings

5.01 The reported number of agriculturally active households has increased significantly over the last 20 years and with it the number of agricultural holdings. However the total area of land in household-operated agricultural holdings as reported in the agricultural censuses has decreased significantly.

Table 5.1 Holdings of agriculturally active households

	Number of Agriculturally Active Households	Number of Holdings	Total area (acres)¹
2009	15,786	15,793	92,310
1999	14,725	14,734	131,909
1989	10,884	11,099	166,485

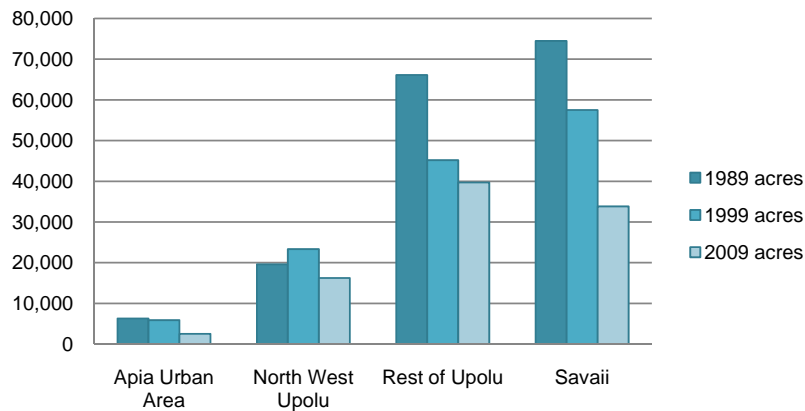
Source: Samoa Bureau of Statistics Census of Agriculture

- 5.02 In 2009, 92,310 acres were in household holdings, representing about 13% of Samoa's total land area of 702,000 acres (2841 square kilometres).
- 5.03 The total area of agricultural land in Samoa is currently estimated by the FAO to be 66,000 hectares². In 2009 the area under use by agriculturally active household was 37,300 hectares, which represents about 57% of the estimated agricultural land in the country.
- 5.04 There has been a drop in the total area of agricultural holdings across all regions in the past 20 years with the biggest drop in Savaii. The area of household agriculture holdings in Savaii dropped by 41% between 1999 and 2009, following a 23% drop between 1989 and 1999. The area of holdings in the Apia Urban Area dropped by 57% between 1999 and 2009, reflecting the increasing concentration of population in Apia.

¹ 67,376 hectares in 1989, 53,384 hectares in 1999 and 37,358 hectares in 2009

² Source: World Bank databank - <http://data.worldbank.org/country/samoa>. Agricultural land refers to the share of land area that is arable, under permanent crops, and under permanent pastures. Arable land includes land defined by the FAO as land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land under market or kitchen gardens, and land temporarily fallow. Land abandoned as a result of shifting cultivation is excluded.

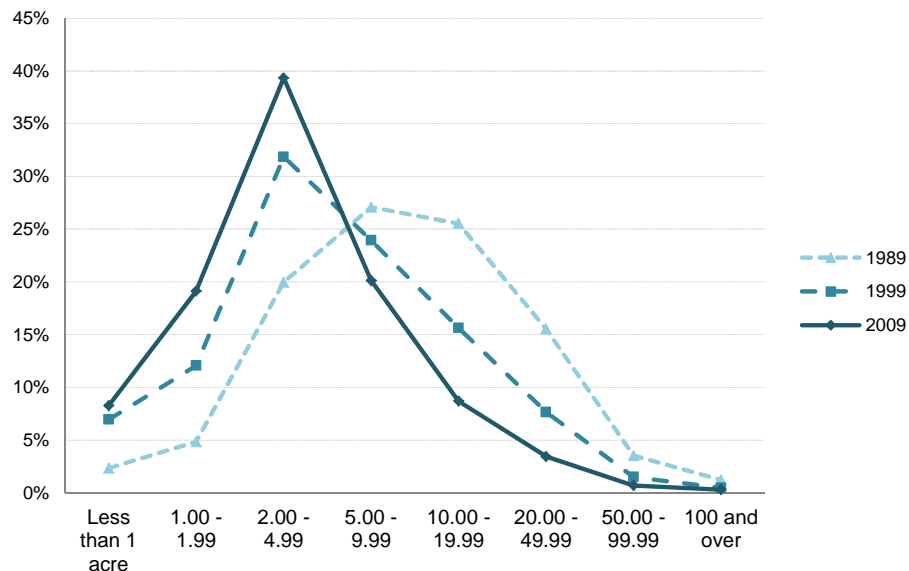
Figure 5.1 Area of agricultural holdings



Source: Samoa Bureau of Statistics Census of Agriculture

- 5.05 The average size of household agricultural holdings has dropped considerably over the period from 1989 to 2009. The average size of holdings in 2009 was 5.8 acres in 2009, compared with 9.0 acres in 1999 and 15.0 in 1989.
- 5.06 Larger holdings in particular declined over the last 10 and 20 years. Larger holdings (more than 50 acres) have dropped from 20 percent of holdings in 1989 to 10 percent in 1999 and to 4 percent in 2009, with a corresponding increase in smaller sized holdings. Holdings of less than 5 acres increased by 87 percent between 1989 and 1999 and increased by a further 31 percent in 2009.

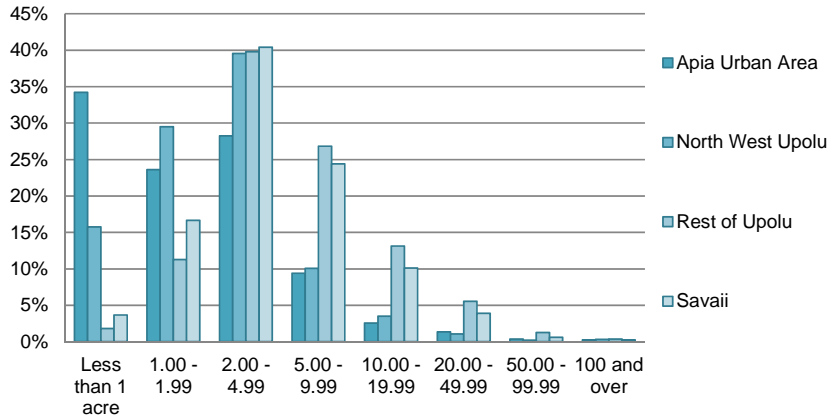
Figure 5.2 Changing distribution of size of holdings



Source: Samoa Bureau of Statistics Census of Agriculture

- 5.07 Across Samoa, the smaller holdings are most evident in Apia Urban Area and North Western Upolu, the regions most impacted by increasing urbanisation and the development and subdivision of areas close to Apia such as Vaitele and Aleisa for example.

Figure 5.3 Proportion of Holdings by Size of Holdings, 2009



Source: Samoa Bureau of Statistics Census of Agriculture

5. 08 With the drop in the size of holdings there has also been a change in the pattern of fragmentation. Most holdings consist of more than one parcel of land, but the total number of parcels of land has not changed much. This means the average number of parcels per holding has got smaller. At the same time the average size of parcels has reduced, contributing to the overall drop in agricultural land use.

Table 5.2 Parcels of Land

	Total Parcels	Average number of parcels per holding	Average area of parcels (acres)
2009	33,332	2.11	2.77
1999	35,317	2.40	3.74
1989	33,796	3.04	4.93

Source: Samoa Bureau of Statistics Census of Agriculture

5. 09 All of these changes are consistent with the increasing use of agricultural holdings to produce for home consumption only.

Land Tenure

5. 10 In 2009, 86 percent of the household agriculture holdings were customary land, a small drop from the 90 percent in 1999. The drop came from the small increases in freehold land and to a limited extent in leased Government and leased freehold land.

Table 5.3 Land Tenure

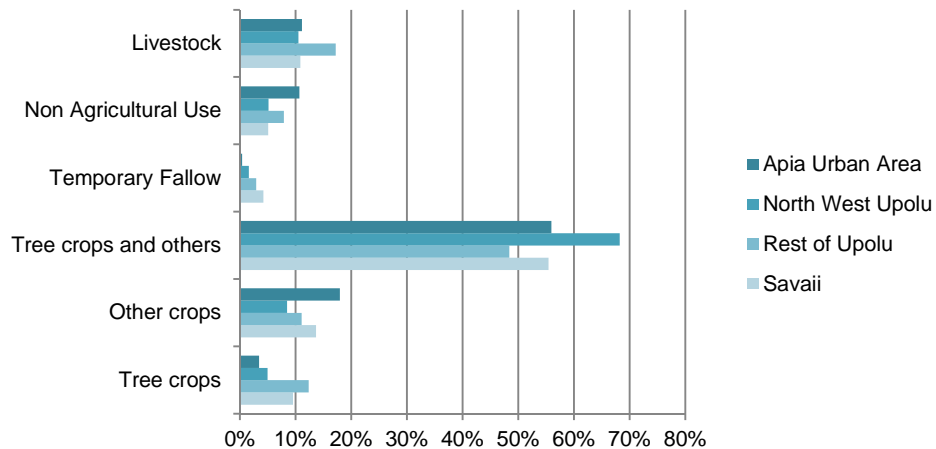
	1989	1999	2009
Customary Land	94%	90%	86%
Leased Customary Land	1%	1%	1%
Leased Government Land	2%	2%	3%
Own Freehold Land	3%	6%	9%
Leased Freehold	0%	0%	1%
Others/not stated	0%	1%	1%

Source: Samoa Bureau of Statistics Census of Agriculture

Land Use

5. 11 Land under tree crops decreased from 24 percent in 1999 to 10 percent in 2009. Some of this may have been converted to livestock which went up from the 5 percent of the total in 1999 to 14 percent in 2009. Savaii showed the biggest proportion of change: 2 percent of its agricultural land holdings were in livestock in 1999 compared to 11 percent in 2009.
5. 12 Tree crops are more common in Rest of Upolu and Savaii, Tree Crops and Others most common in North West Upolu, Livestock most common in Rest of Upolu, and Other Crops most common in Apia.

Figure 5.4 Area of Land Use 2009 - Proportion of land in region in:



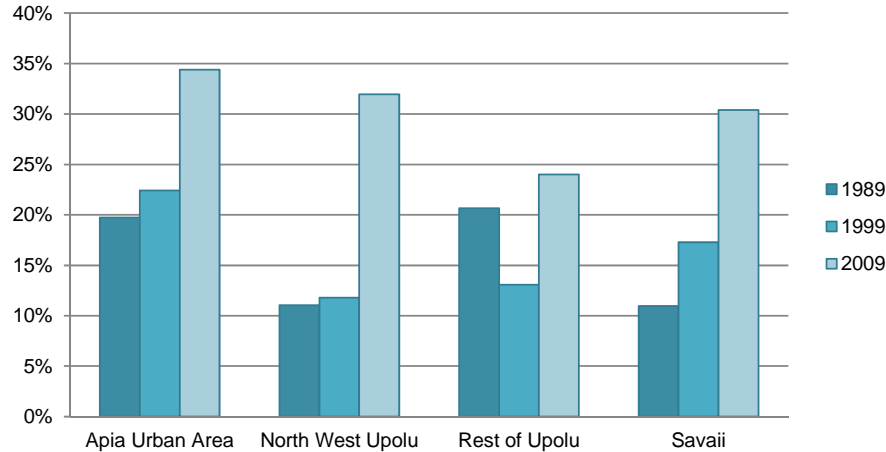
Source: Samoa Bureau of Statistics Census of Agriculture

Use of Fertilisers

5. 13 The use of organic fertilisers consistently increased throughout the regions between 1999 and 2009, increasing from 15 percent of all holdings to 29 percent. Overall there was little change between 1989 and 1999, with Savaii increasing its use of organic fertilisers but the Rest of Upolu dropping to 13 percent in 1999

before increasing to 24 percent of holdings. Use of composting has been encouraged, for example, through newspaper articles and education in recent times.

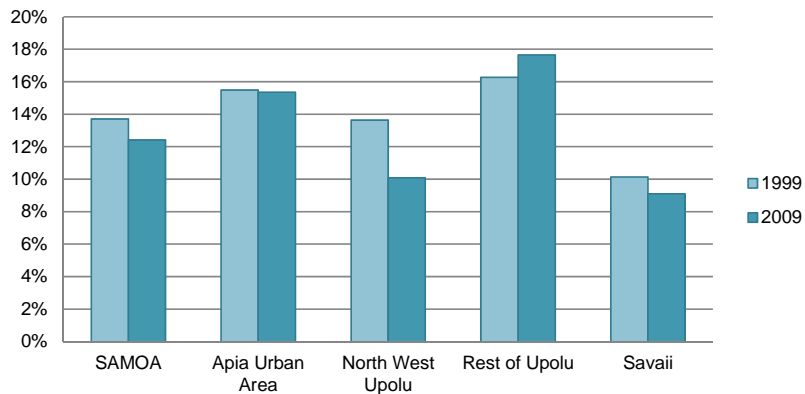
Figure 5.5 Use of Organic Fertiliser (compost)



Source: Samoa Bureau of Statistics Census of Agriculture

5. 14 Conversely, the use of inorganic fertilisers has generally shown some decline in the last 10 years.

Figure 5.6 Proportion of holdings using inorganic fertilisers



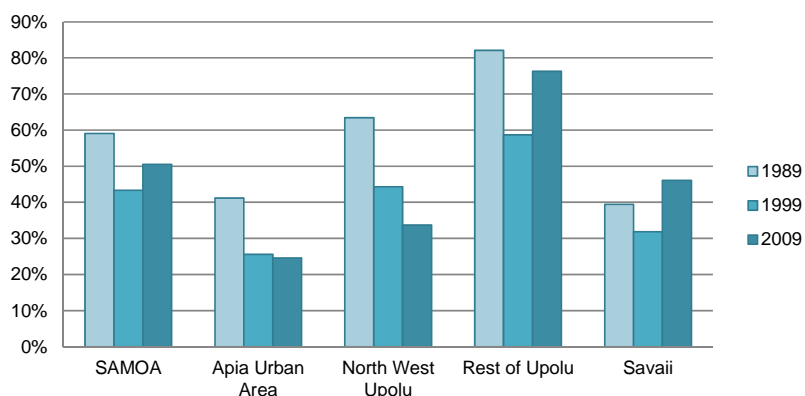
Source: Samoa Bureau of Statistics Census of Agriculture

5. 15 Note that the question wording changed between 1989 and 1999 which means that there is no comparable data on inorganic fertiliser use for 1989.

Use of Agricultural Chemicals

5. 16 The reported pattern of use of agricultural chemicals (herbicides, insecticides or fungicides) has varied across the previous censuses and across the regions in Samoa.

Figure 5.7 Proportion of holdings using agricultural chemicals



Source: Samoa Bureau of Statistics Census of Agriculture

5. 17 The low use of chemicals in 1999 in the Rest of Upolu and Savaii may reflect that these were the prime commercial taro growing areas and were still badly affected by the taro leaf blight, with smaller commercial plantings at that time. The decline in use in Apia and Northwest Upolu may be related to the transition to mostly growing for home use, and more recently, the growth of organic farming practices.
5. 18 In 2009 information was collected about the types of chemicals used. This showed that most of the use was of herbicides with only a small number of holdings using insecticides or fungicides. The most common herbicides used were Paraquat based.

Table 5.4 Proportion of Holdings using Agricultural Chemicals

	Herbicides			Insecticides	Fungicides
	Total	Sting	Gramoxone/ Paraquat	Total	Total
SAMOA	50%	13%	30%	0.9%	0.4%
Upolu	52%	13%	31%	1.1%	0.4%
Apia Urban Area	22%	11%	9%	2.8%	1.8%
North West Upolu	33%	12%	18%	1.3%	0.1%
Rest of Upolu	76%	14%	48%	0.6%	0.4%
Savaii	46%	12%	29%	0.4%	0.3%

Source: Samoa Bureau of Statistics Census of Agriculture

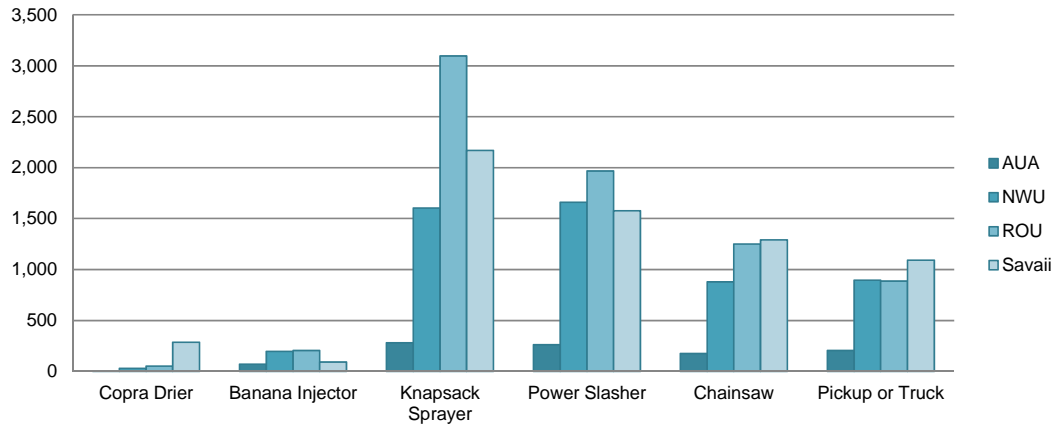
5. 19 The use of herbicides was particularly high in the Rest of Upolu, while the use of fungicides and insecticides was much higher than average in Apia Urban Area.

Agricultural Equipment

5. 20 Over the years, agricultural households have more equipment available. The most common in 2009 were knapsack sprayers, power slashers, chainsaws and pickups or trucks. The knapsack sprayer was particularly common in the Rest of

Upolu. 63% of holdings had these available in ROU, 41 percent in Savaii, 35 percent in the North West of Upolu and 29 percent in the Apia Urban Area. Overall 72 percent of holdings had some form of equipment available.

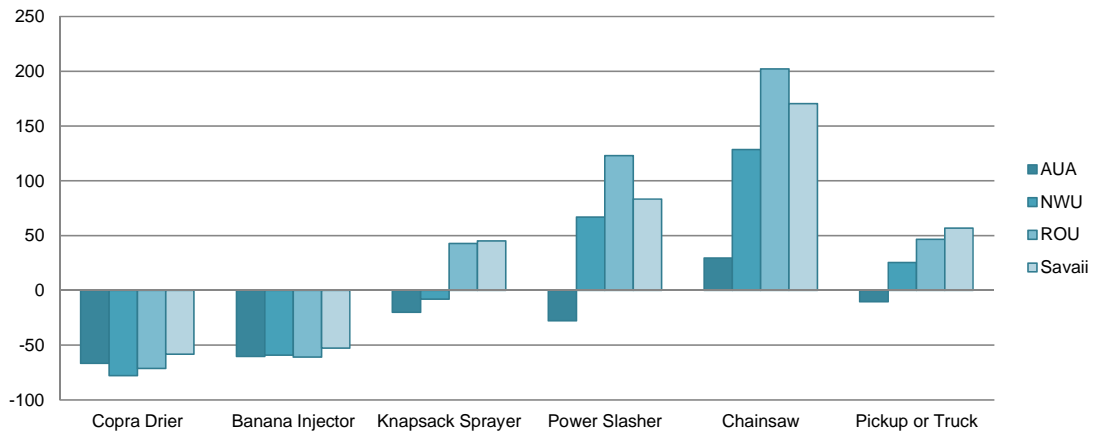
Figure 5.8 Equipment Owned by Holdings by Region in 2009



Source: Samoa Bureau of Statistics Census of Agriculture

5. 21 The availability of copra driers dropped significantly reflecting the lower demand from the export markets for copra. Banana Injectors dropped between 1999 and 2009 reflecting the continued decline in demand from export markets due to problems with disease and quarantine requirements.

Figure 5.9 Percent Change from 1999 to 2009 for Equipment Owned by Region



Source: Samoa Bureau of Statistics Census of Agriculture

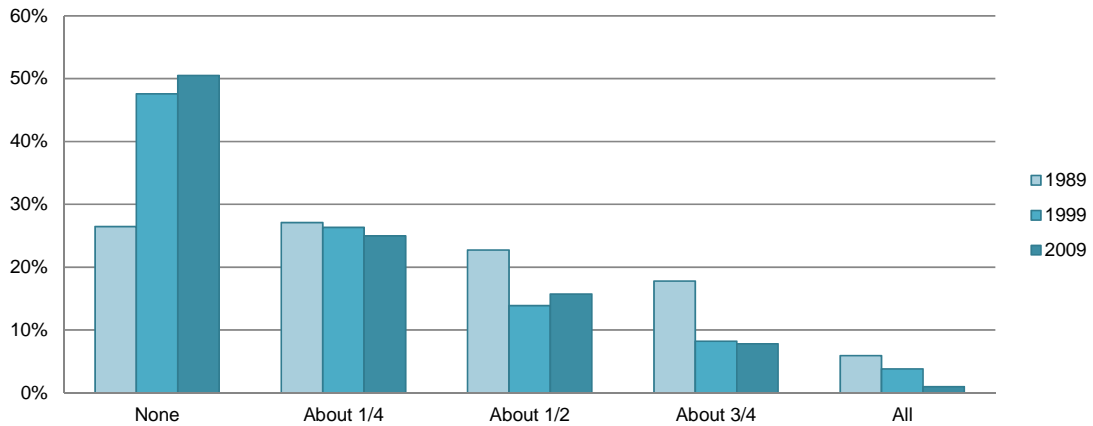
5. 22 The number of power slashers available has grown from a very small base in 1989 to the second most common piece of equipment, reflecting the growth in the availability of these tools. The number of chainsaws have also grown significantly particularly between 1999 and 2009.

Income from Agriculture

5. 23 Agriculture in Samoa is to a large extent for home consumption, with only a small proportion of holdings producing mainly for sale. However the income from

agriculture has been a significant addition to households, but this has been dropping as a proportion of income over the period of the three censuses.

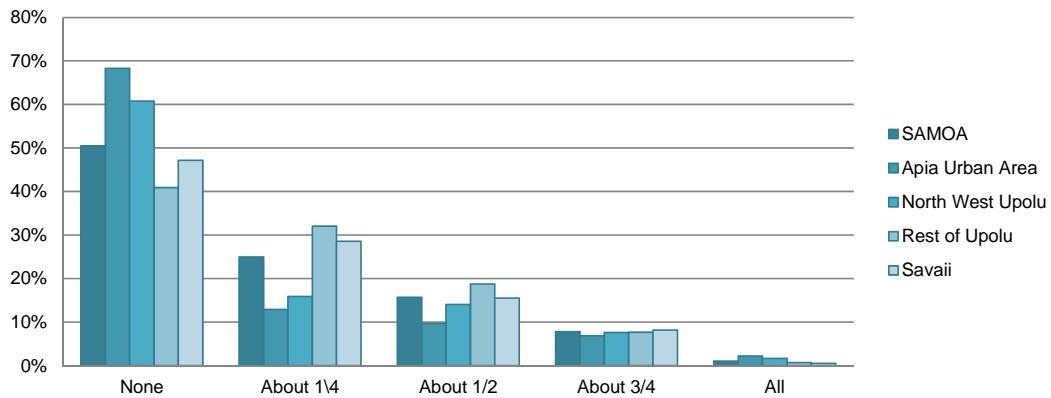
Figure 5.10 Changing Proportion of Income Usually Derived from Agriculture



Source: Samoa Bureau of Statistics Census of Agriculture

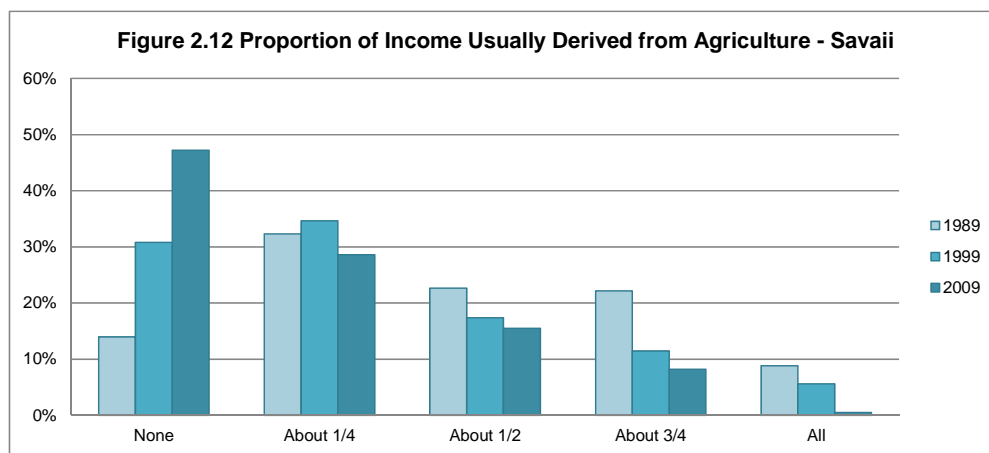
- 5. 24 Many holdings (51 percent) are earning nothing from agricultural activity in 2009. This reflects the growth in agriculture activity for home consumption only (26 percent of holdings in 1989, 42 percent in 1999 and 49 percent in 2009).
- 5. 25 There are regional differences in income derived from agriculture with Savaii and the Rest of Upolu deriving more of their income from agriculture. 68 percent of holdings in Apia had no income derived from agriculture compared with 61 percent in the North West Upolu, 47 percent in Savaii and 41 percent in Rest of Upolu.

Figure 5.11 Agriculturally Active Households, by Proportion of Income Usually Derived from Agriculture by Region and District: 2009



Source: Samoa Bureau of Statistics Census of Agriculture

- 5. 26 In 1989, Savaii agriculture was an income earner for almost all households, with 86 percent of holdings deriving some income and only 14 percent deriving no income from their agricultural activity. By 2009 47 percent of households were deriving no income from their agricultural activity.

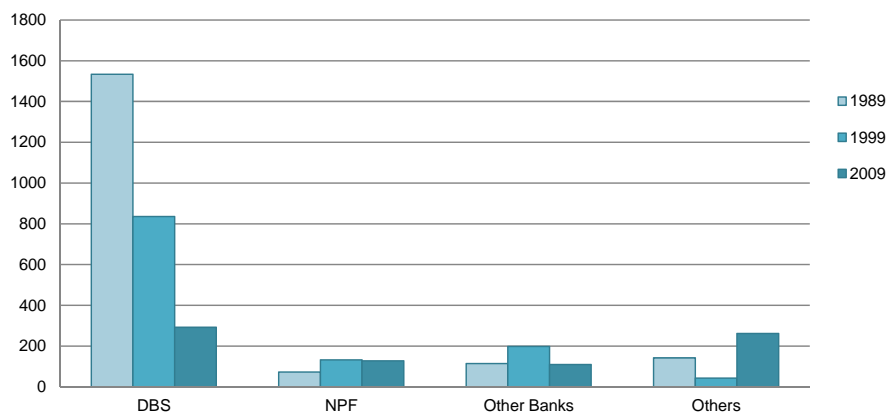


Source: Samoa Bureau of Statistics Census of Agriculture

Loans

5.27 A small proportion of households take out loans for agricultural purposes: 5 percent of households in 2009 had loans, 9.6 percent in 1999 and 22.2 percent in 1989. The major change has been the role of the Development Bank as the number of loans from the bank dropped significantly over the years. In 1989, the proportion of loans from the Development Bank for agricultural purposes went from 64 percent in 1989 to 59 percent in 1999 and a further decrease in 2009 to 37 percent of all loans for agricultural purposes.

Figure 5.13 Number of Loans by Sources of Loans



Source: Samoa Bureau of Statistics Census of Agriculture

5.28 Most households reported that they were able to use their agriculture sales to service their loan. Apia Urban Area had the highest proportion (86 percent) reporting that they were able to service their loan from their agricultural income but this is based on a very small number of agriculturally active households with loans.

CHAPTER 6 CROPS

Land Area Used for Staple Crop Cultivation

6.01 The total land area covered by the 15,793 holdings in Samoa was 92,310 acres giving an average holding size of 5.8 acres in the 2009 Census. Of the 92,310 acres in holdings, 70,367 acres have been used for crop cultivation. As compared to the last census in 1999, the total land area covered by holdings has gone down by nearly 39,600 acres; a drop of 30 percent. Land under crops has declined about 44,400 acres; a 39 percent decrease.

Table 6.1 Percentage of Area (acres) as a Percent of Total Land Area by Major Crop³

Major crops	1989	1999	2009
Coconut	34.6	35.1	29.3
Taro	21.9	5.0	19.7
Cocoa	9.8	7.5	6.7
Ta'amu	4.8	9.0	7.4
Banana	3.4	8.1	13.7
Breadfruit	1.6	2.4	3.9
Kava	0.4	2.3	0.7
Yam	0.4	1.0	1.6

Source: Samoa Bureau of Statistics Census of Agriculture

Area under Taro

6.02 Taro is one of the main staple crops in Samoa. As at the Census of 1999 the effects of the Taro Leaf Blight of 1993 had been long felt by many farmers as land used for planting taro had declined to a mere 5 percent of total land area. In 2009, strong signs of recovery can be observed as land use for planting taro has increased more than 3 fold from 6,569 acres in 1999 to 18,145 in 2009, but was still only 57% of the area planted in 1989.

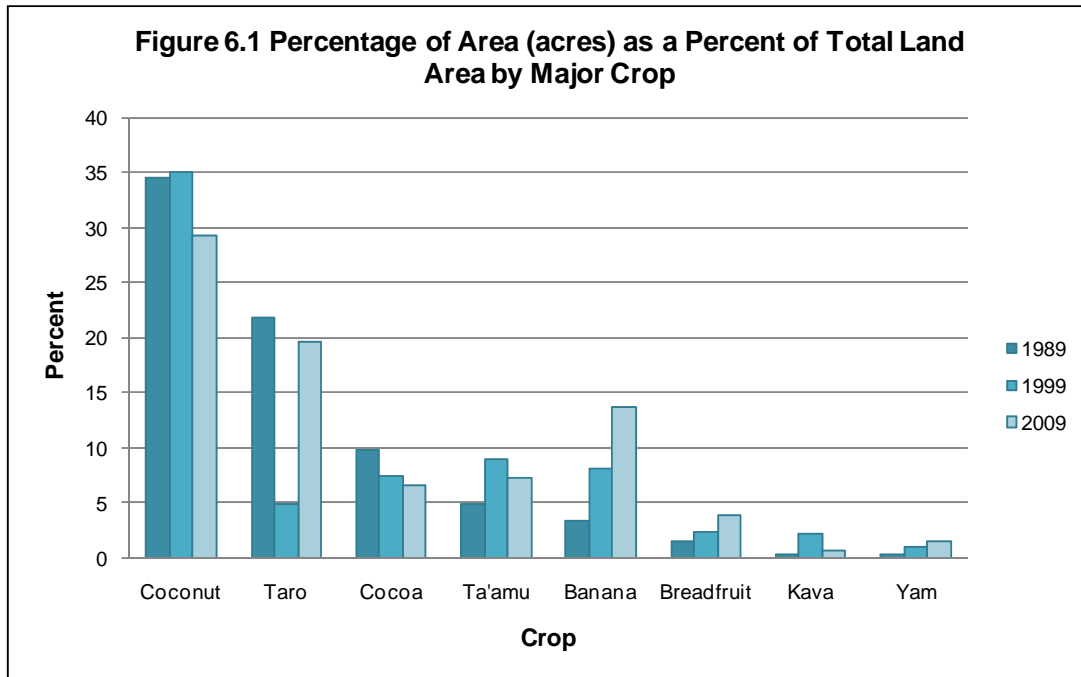
Area under Ta'amu

6.03 Land use for ta'amu (a close substitute for taro) grew in 1999 to 9.0 percent of total land area at the same time land use for taro was on the decline. Because of the taro leaf blight, a shift to planting ta'amu became increasingly important for household consumption. Although land use for ta'amu has decreased as of the 2009 census, it still remains higher than that of 1989 indicating the importance of crop diversification to farmers.

³ Based on single crop equivalent acres. Not all crops were included in the table therefore total may not add up to 100 percent.

Area under Banana, Breadfruit, Yam

6.04 Land use for growing banana, breadfruit and yam (other main staples) has shown continual growth as a proportion since 1989. Crop diversification can be seen in the rise of planting other staple crops in the form of trees such as banana and breadfruit. Banana being a year round crop and breadfruit being a seasonal crop illustrates some steps farmers are taking in protecting themselves from the threat of other possible outbreaks such as taro leaf blight.



Source: Samoa Bureau of Statistics Census of Agriculture

Area under Kava

6.05 As at the 1999 census, land use for growing kava was at its peak utilizing 2.3 percent of total land area as demand for kava in the European markets was on the rise. However, as of the 2009 census, land use for kava had declined about 70 percent from 1999 as the same European markets for kava closed around 2001 reducing the incentive to grow kava.

Area under Coconut

6.06 Although land use for coconut has declined since 1999, coconut continues to be a major crop in Samoa, not only for human consumption but also for feeding animals

6.07 In recent years, however, there has been a push from the Ministry of Agriculture in encouraging farmers to replant coconut trees in order to supply foreign market demand for coconut oil and other bi-products of coconut. In addition, the Scientific Research Organisation of Samoa has been piloting the use of coconut oil for fueling diesel engines (SROS Annual report).

6.08 The overall reduction in the estimated acreage under coconut means that coconut plantings do not look significant. However the age of trees reported in

2009 shows that there has been a more significant drop in the older trees, and the proportion of younger trees has grown as shown in Figure 6.2 below.

Table 6.2 Estimated Area (In Acres) Under Coconut (Single and Mixed Crop Cultivation), by Age of Trees

Age of Trees	1989	1999	2009
Less than 8 years	1,907	5,306	1,978
8 - 14 years	7,629	6,660	2,249
15 - 39 years	22,458	16,945	6,503
40 - 59 years	11,782	9,163	1,914
60 Years and Over	8,900	3,646	696
Not Stated	8,869	4,464	3,690
Total	61,546	46,184	17,030

Source: Samoa Bureau of Statistics Census of Agriculture

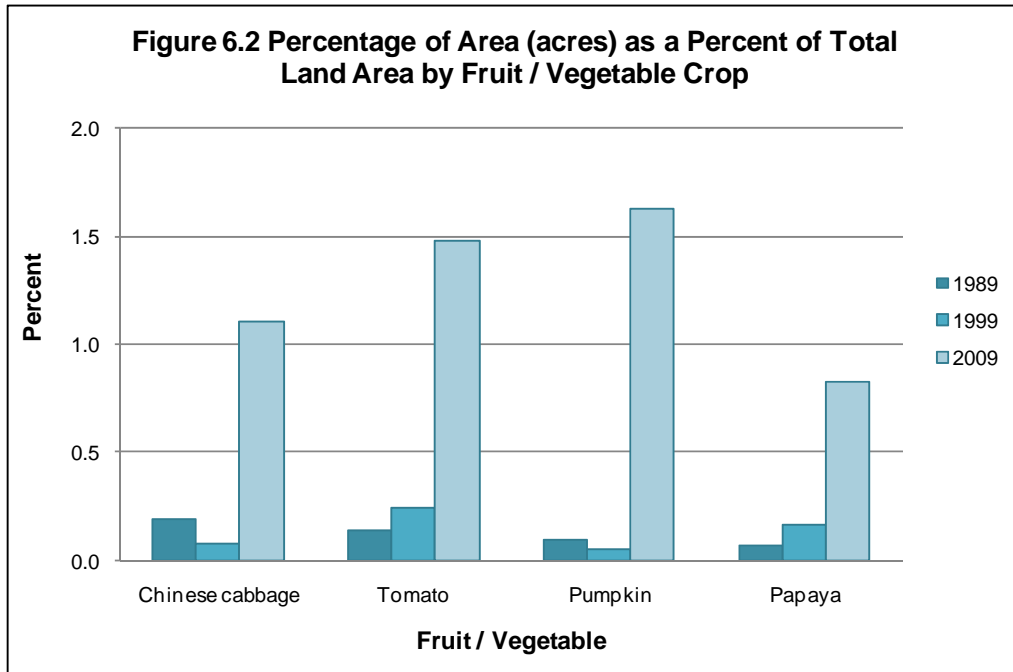
Land Area Used for Fruit / Vegetable Crop Cultivation

6.09 The 1989 and 1999 census of agriculture showed very little activity by way of land use for growing fruits and vegetables. However, the 2009 census reveals encouraging growth in land use under fruit and vegetables, both as a proportion of the total and in the actual area grown.

Table 6.3 Percentage of Area (acres) as a Percent of Total Land Area by Major Fruit / Vegetable Crop

Vegetables / Fruits	1989	1999	2009
Chinese cabbage	0.2	0.1	1.1
Tomato	0.1	0.3	1.5
Pumpkin	0.1	0.1	1.6
Papaya	0.1	0.2	0.8

Source: Samoa Bureau of Statistics Census of Agriculture

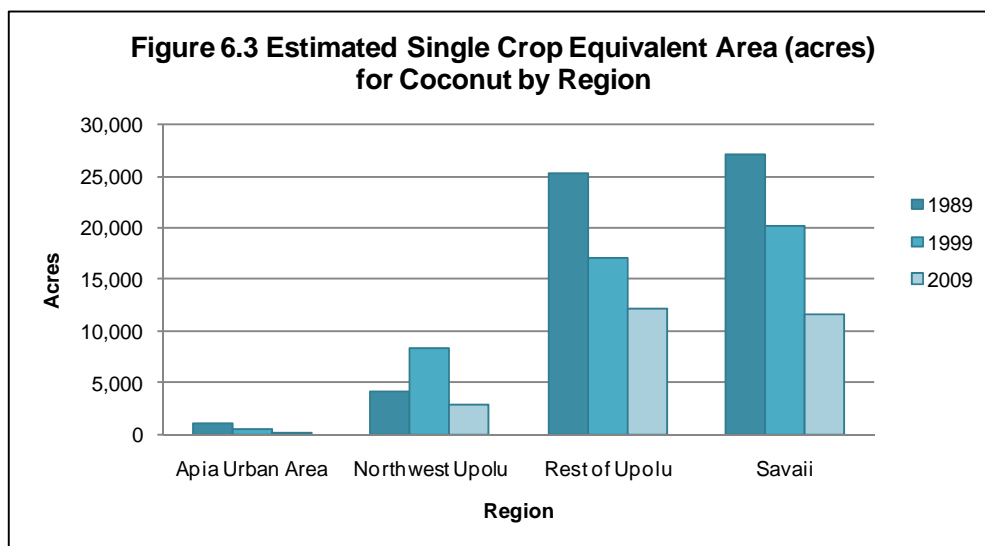


Source: Samoa Bureau of Statistics Census of Agriculture

- 6.10 In line with the growth of land use for fruit and vegetable farming as of the 2009 census, are some of the initiatives that were undertaken by the Ministry of Agriculture and Fisheries. Outlined in their Annual Report of 2006 – 2007⁴ are numerous programs the Crops Division has carried out in the promotion of fruit and vegetable farming. Among those initiatives were farmer training and farm visits in both the rural areas of Upolu and Savaii, distributing of planting material, fruit trees, and setting up community nurseries.
- 6.11 There was an export market for papaya to New Zealand at one point in 2006 but has since been discontinued due to quarantine issues and the unwillingness of farmers to take on the expenses associated with exporting this type of perishable produce.

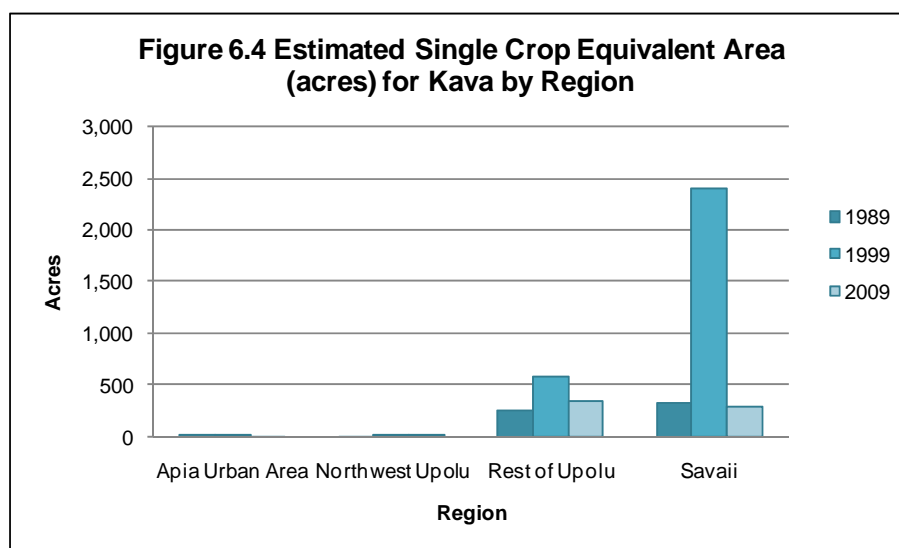
⁴Ministry of Agriculture and Fisheries Annual Report 2006 – 2007. P 18 - 19

Regional trends



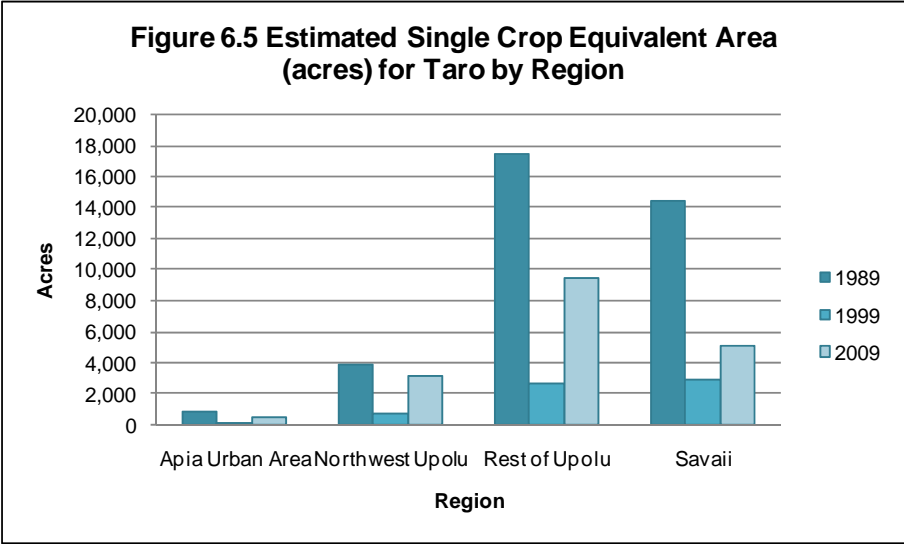
Source: Samoa Bureau of Statistics Census of Agriculture

- 6.12 Land use for coconut farming showed a general decline throughout the four regions with the exception of the Northwest Upolu region almost doubling its land use for coconut in 1999 and then declining 65 percent in 2009.



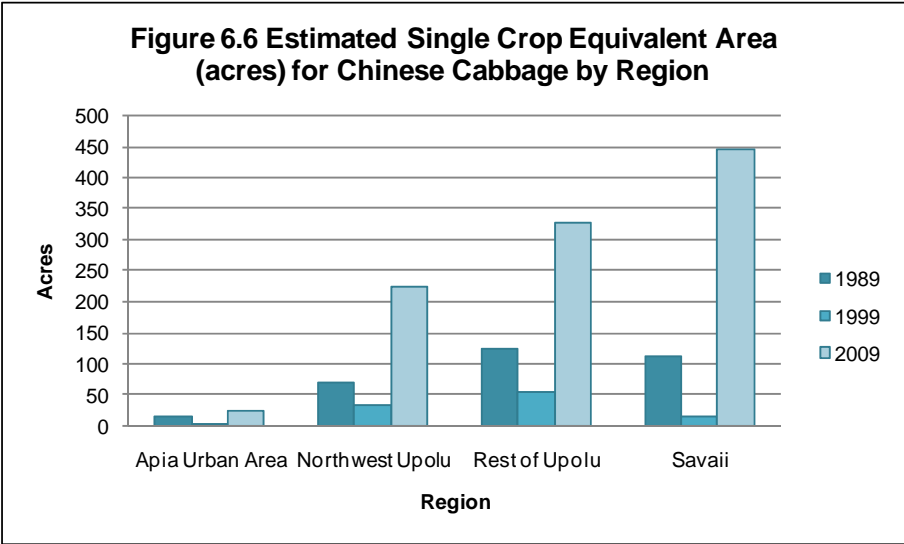
Source: Samoa Bureau of Statistics Census of Agriculture

- 6.13 Land used for Kava farming proved to be very low in the Apia Urban Area and the Northwest Upolu region of Samoa. However, in the Rest of Upolu and Savaii regions, considerable increases in land use can be observed in 1999 in line with the expansion of the European market for Kava giving farmers incentives for growing kava. Conversely, the closure of this same European market in 2001 is also evident in the downturn in land use for kava farming in 2009.



Source: Samoa Bureau of Statistics Census of Agriculture

6.14 Land use for taro trended rather consistently throughout the four regions and censuses. Although acres of land used for taro farming was quite low in 1999 as a result of the taro leaf blight, solid signs of recovery from the blight can be seen in 2009 with the Rest of Upolu region registering the highest land use for taro recording nearly 10,000 acres.



Source: Samoa Bureau of Statistics Census of Agriculture

6.15 Substantial growth in land use for farming Chinese cabbage is evident throughout all four regions in the last 10 years with the Savaii region recording the largest growth from 16 acres in 1999 to 444 acres in 2009.

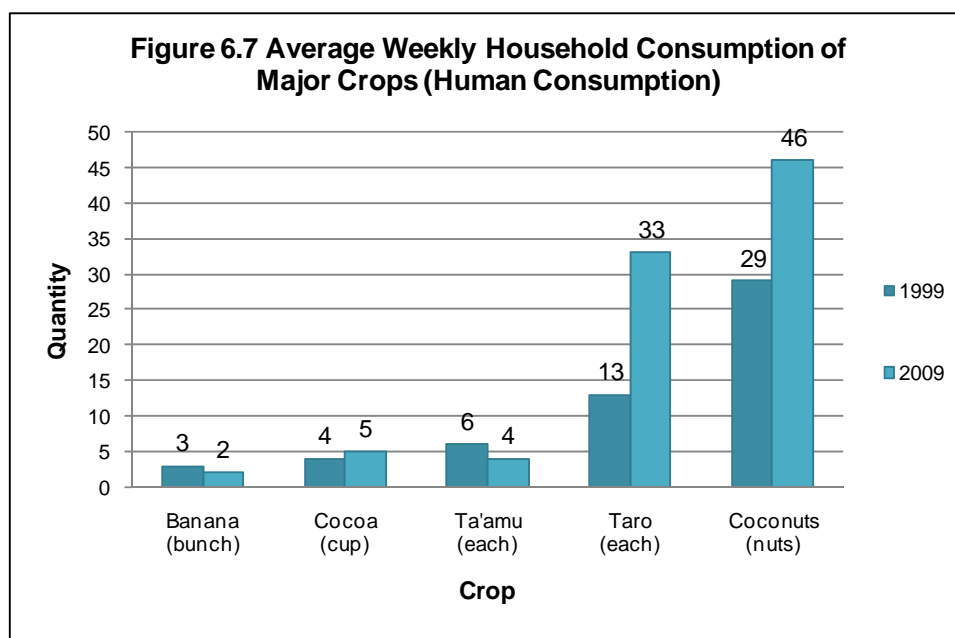
Household Consumption

- 6.16 Comparing average weekly household consumption in Samoa from 1999 to 2009 shows relatively little movement in the quantities of each major crop consumed with the exception of taro whose consumption was almost triple that of 1999.

Table 6.4 Average Weekly Household Consumption of Major Crops

Major Crop	1999	2009
Banana (bunch)	3	2
Cocoa (cup)	4	5
Ta'amu (each)	6	4
Taro (each)	13	33
Coconut (nuts) ⁵	29	31

Source: Samoa Bureau of Statistics Census of Agriculture



Source: Samoa Bureau of Statistics Census of Agriculture

Consumption of Taro

- 6.17 Subsequent to the expansion in land use for growing taro in 2009, consumption of taro increased almost 3 fold from 1999 with the highest consumption of taro being recorded in the Rest of Upolu region of Samoa.

⁵Coconut for human consumption

Table 6.5 Average Weekly Household Consumption of Major Crops by Region - 2009

Major Crop	Apia Urban Area	Northwest Upolu	Rest of Upolu	Savaii
Banana (bunch)	2	2	2	3
Cocoa (cup)	4	5	4	6
Taamu (each)	3	4	3	6
Taro (each)	18	18	46	37
Coconut (nuts)	15	26	31	40

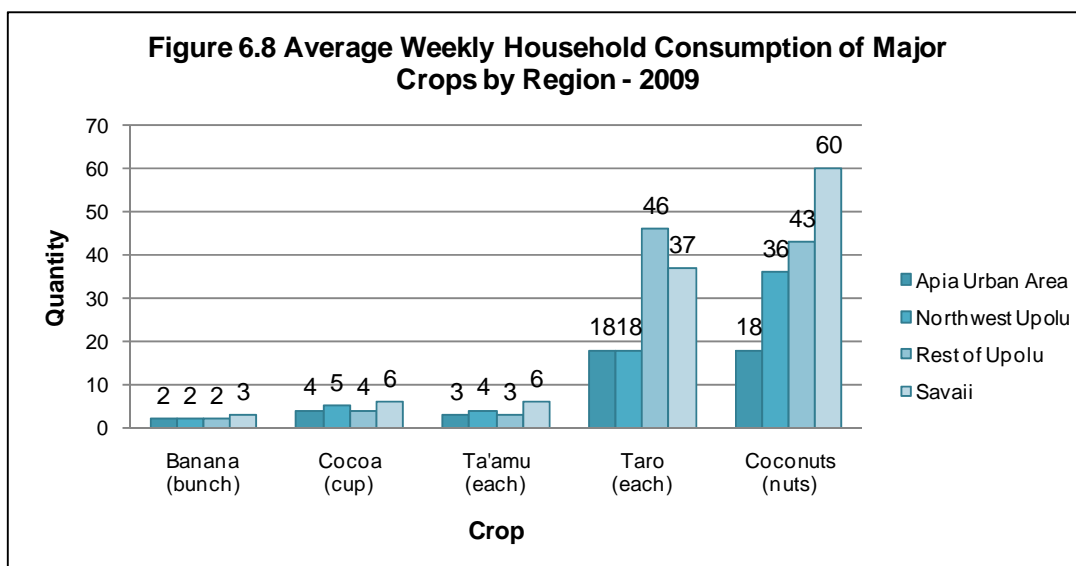
Source: Samoa Bureau of Statistics Census of Agriculture

Consumption of Banana and Ta’amu

- 6.18 Similarly, taro’s staple substitutes of banana and ta’amu fell slightly illustrating a shift in preference for taro which was high in availability in 2009.

Consumption of Coconut and Cocoa

- 6.19 Consumption of coconut for drinking and cooking rose almost 7 percent from 1999 with highest consumption being recorded for the Savaii region. Cocoa consumption increased about 25 percent.



Source: Samoa Bureau of Statistics Census of Agriculture

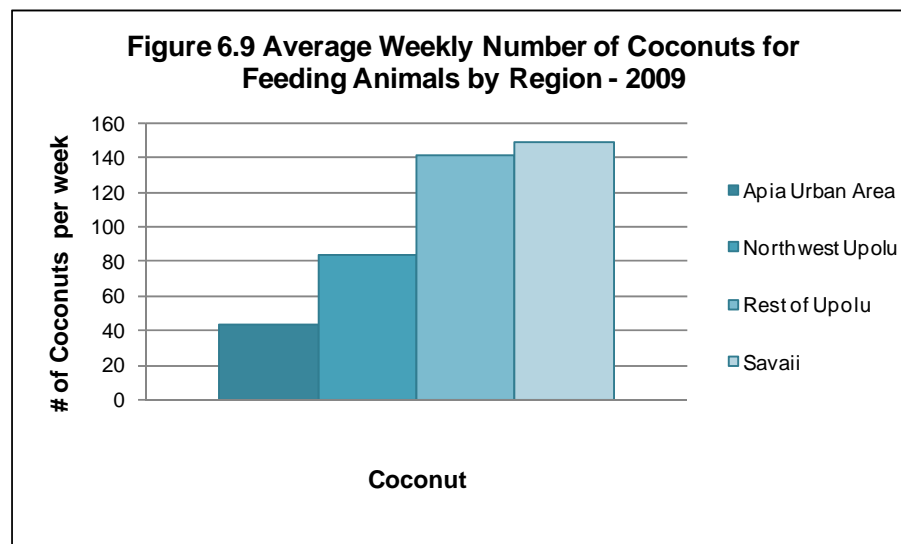
Consumption of Coconut for Animal Feeding

- 6.20 The average weekly number of coconuts for animal feeding increased more than 25 percent from the 1999 census. The increase in consumption in the 2009 census is inconsistent with the decrease in the average number of pigs per household, as pigs most commonly consume coconut.

Table 6.6 Average Weekly Number of Coconuts for Feeding Animals by Region - 2009

	Apia Urban Area	Northwest Upolu	Rest of Upolu	Savaii
Coconut	44	84	141	149

Source: Samoa Bureau of Statistics Census of Agriculture



Source: Samoa Bureau of Statistics Census of Agriculture

Number of Holdings Growing Crops Mainly for Home Consumption

Holdings Farming Taro

- 6.21 The number of holdings recorded in the 2009 census revealed a general rate of decline in total number of holdings growing staple crops for home consumption. However, in accordance with the consistent growth in land use for taro farming as well as taro consumption is the increase in the number of holdings growing taro rising more than 21 percent from 1999.

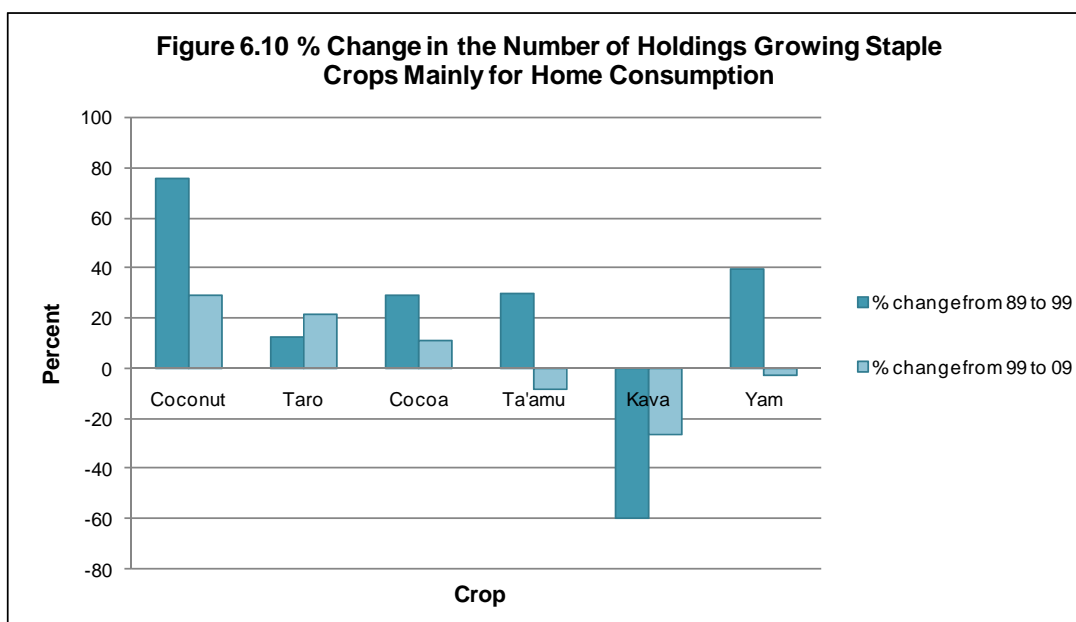
Holdings Farming Ta'amu and Yam

- 6.22 Subsequent to the increase of the number of holdings for taro farming in the last 10 years, ta'amu and yam recorded negative growth rates of 8.6 percent and 2.7 percent respectively suggesting a shift in staple crop preference among farmers for home consumption.

Table 6.7 Number of Holdings Growing Crops Mainly for Home Consumption

Major Crop	% Change From 1989 to 1999	% Change From 1999 to 2009
Coconut	76	29
Taro	13	22
Cocoa	29	11
Ta'amu	30	-9
Kava	-60	-26
Yam	39	-3

Source: Samoa Bureau of Statistics Census of Agriculture



Source: Samoa Bureau of Statistics Census of Agriculture

Holdings Farming Coconut

- 6.23 Coconut farming recorded a considerable decline in the number of holdings growing coconut from 1999 to 2009 registering a less significant growth rate of 29.4 percent (down from 75.8 percent from 1989 to 1999).

Holdings Farming Cocoa

- 6.24 The number of holdings farming cocoa also fell in the last 10 years recording smaller growth rate of 11.3 percent from 1999 to 2009 (down from 28.8 percent from 1989 to 1999).

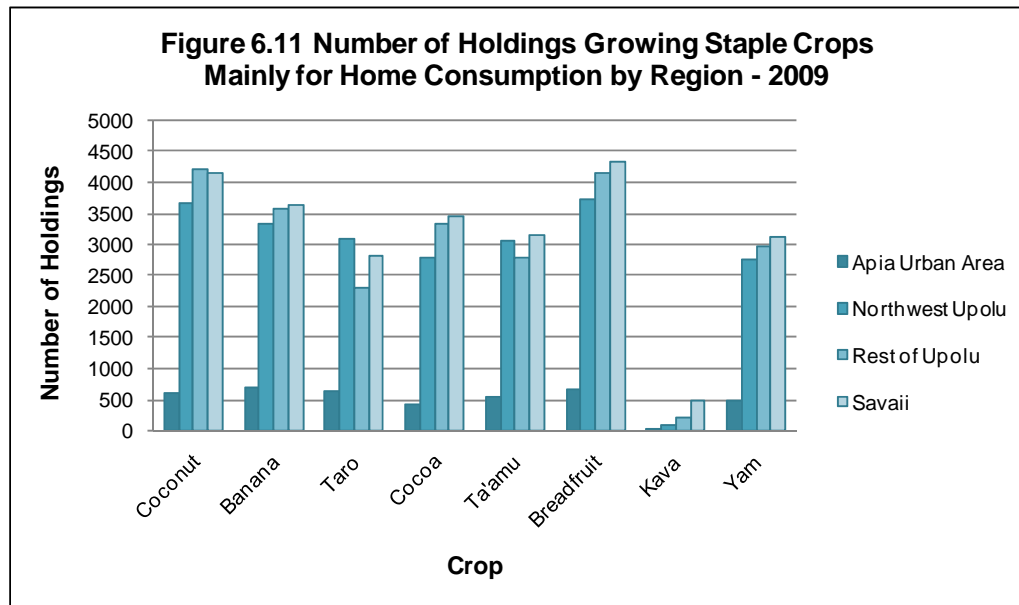
Holdings Farming Kava

- 6.25 Holdings for kava farming recorded a negative growth rate of 59.8 percent from 1989 to 1999 for home consumption. In the past 10 years however, holdings for kava growing has shown marginal improvements although recording a negative 26.4 percent growth rate.

Number of Holdings Growing Crops Mainly for Home Consumption by Region

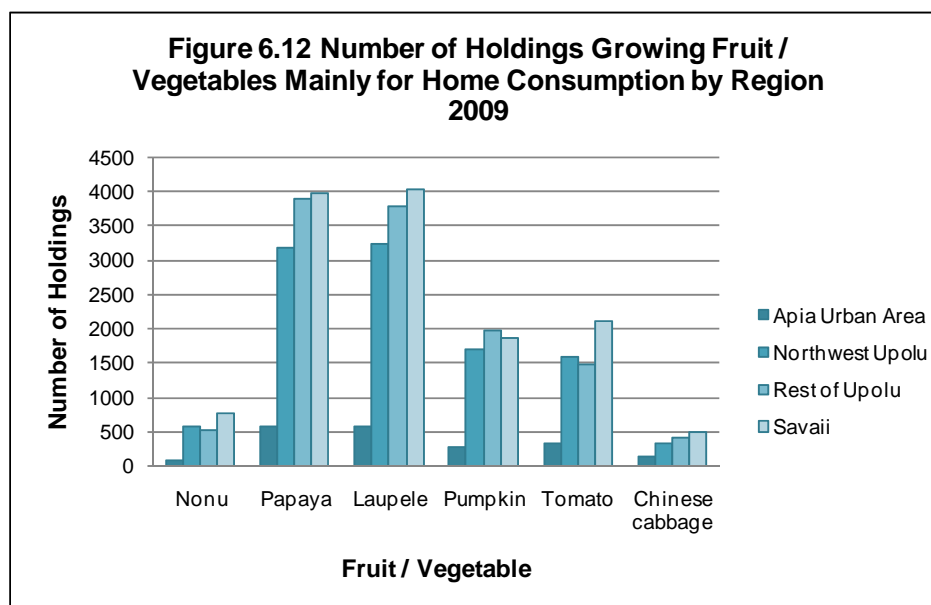
Number of Holdings – Apia Urban Area

- 6.26 The number of holdings farming major commodities mainly for home consumption recorded significant decreases in the urban area from 1999. In particular were kava, ta'amu, and yam registering about a 63 percent, 35 percent, and 29 percent fall respectively from the last census.
- 6.27 Taro on the other hand was the only staple commodity in the Apia Urban Area that recorded a 15.5 percent (555 holdings in 1999 to 641 holdings in 2009) improvement in the number of holdings growing taro from 1999.



Source: Samoa Bureau of Statistics Census of Agriculture

- 6.28 The number of holdings farming fruit and vegetables in the urban area showed solid increases from 1999 with the exception of papaya in which the number of holdings dropped almost 12 percent. Holdings for pumpkin and tomato rose 49 percent and 47.4 percent respectively while holdings for Chinese cabbage increased almost 4 fold from 1999.



Source: Samoa Bureau of Statistics Census of Agriculture

Number of Holdings – Northwest Upolu

- 6.29 In the Northwest Upolu region, taro, breadfruit, and coconut recorded the largest increases in the number of holdings being cultivated for farming these crops from 1999. The number of taro holdings rose almost 97 percent; breadfruit 24 percent; coconut almost 20 percent from the 1999 census.
- 6.30 The number of holdings for fruit and vegetables in the Northwest region showed major growth from the previous census. Chinese cabbage recorded the most growth from 56 holdings in 1999 to 342 in 2009; pumpkin rose from 542 holdings in 1999 to 1,692 in 2009; tomato more than doubled its growth in holdings in 2009. Holdings for papaya increased more than 51 percent.

Table 6.8 Number of Holdings Growing Crops Mainly for Home Consumption by Region 2009

Major Crop	Apia Urban Area	Northwest Upolu	Rest of Upolu	Savaii
Coconut	594	3,674	4,211	4,141
Banana	705	3,331	3,571	3,643
Taro	641	3,099	2,304	2,811
Cocoa	428	2,794	3,334	3,466
Ta'amu	558	3,048	2,789	3,140
Breadfruit	673	3,736	4,161	4,348
Kava	28	92	207	496
Yam	494	2,757	2,962	3,120

Source: Samoa Bureau of Statistics Census of Agriculture

Number of Holdings – Rest of Upolu

- 6.31 Of all the regions in Samoa, the Rest of Upolu region recorded the highest growth in coconut holdings with a 54.4 percent improvement from 1999. Cocoa and breadfruit registered a 13 percent and 8 percent increase respectively.
- 6.32 Similarly with all regions of Samoa, the Rest of Upolu also recorded substantial growth rates in the number of holdings growing fruit and vegetables. In particular, Chinese cabbage expanded from 18 holdings in 1999 to 423 holdings in 2009, pumpkin rising from 636 holdings in 1999 to 1,979 in 2009, tomato increasing from 680 holdings in 1999 to 1,473 in 2009. Papaya experienced more than a 54 percent rise in the number of holdings farming papaya for home consumption.

Table 6.9 Number of Holdings Growing Fruit / Vegetables Mainly for Home Consumption by Region - 2009

Fruit / Vegetable	Apia Urban Area	Northwest Upolu	Rest of Upolu	Savaii
Nonu	95	585	530	771
Papaya	568	3,187	3,891	3,968
Laupele	573	3,236	3,786	4,043
Pumpkin	286	1,692	1,979	1,877
Tomato	317	1,598	1,473	2,121
Chinese cabbage	140	342	423	506

Source: Samoa Bureau of Statistics Census of Agriculture

Number of Holdings – Savaii

- 6.33 The Savaii region recorded a general rise in the number of holdings cultivating almost all major crops with the exception of yam and banana slightly declining 5.3 percent and 0.4 percent respectively from the last census. Holdings growing coconut, taro, and breadfruit registered the highest increases with 30.7 percent, 14.1 percent, and 11.6 percent respectively from 1999.
- 6.34 The number of holdings growing fruit and vegetables in the Savaii region also revealed significant gains from 1999. Chinese cabbage recorded an increase from 69 holdings in 1999 to 506 holdings in 2009. The number of holdings farming pumpkin was more than tripled in 2009 increasing from 603 holdings in 1999 to 1,877 holdings in 2009. Holdings growing tomato rose 28.2 percent while papaya holdings in Savaii experienced a 29.4 improvement over 1999.

Number of Holdings Growing Nonu and Laupele for Home Consumption

- 6.35 Although data for nonu was not collected in the 1999 census, the 2009 census recorded a total of 1,981 holdings in Samoa farming nonu for home consumption with 771 of those holdings being maintained in the Savaii region. A large number of households in Samoa continue to grow this fruit because of the many medicinal properties believed to be contained not only in the nonu leaf but also the nonu fruit. For example nonu is used in herbal preparations aimed at combating and preventing diabetes and other illnesses common among young children.

- 6.36 The 2009 census was the first census to collect data on the growth and consumption of laupele. Laupele is a spinachy leaf and is widely used in cooking and is very healthy. The number of holdings growing laupele for consumption is substantial throughout all regions of Samoa with a total of 11,638 holdings. Of all vegetable crops in Table 6.9, the number of holdings growing laupele clearly outnumbers the number of holdings growing other vegetable crops. Hopefully, the next census will continue the collection of data on laupele and will provide a basis of comparison going forward.

Number of Holdings Growing Crops Mainly for Sale

- 6.37 In the first 10 years between the 1989 and 2009 census, the number of holdings farming major crops outlined in table 6.8 showed significant growth with the exception of coconut and cocoa, which recorded a 53.5 percent and 5.3 percent decrease in the number of holdings respectively.
- 6.38 However, in the most recent decade from the 1999 to 2009 census a notable change has taken place with regards to the number of holdings farming major crops for sale. The percentage of holdings farming mainly for sale has registered major reductions from the 1999 census with kava (down 78.9 percent), taro (down 70 percent), and cocoa (down 66.8 percent) topping the list.

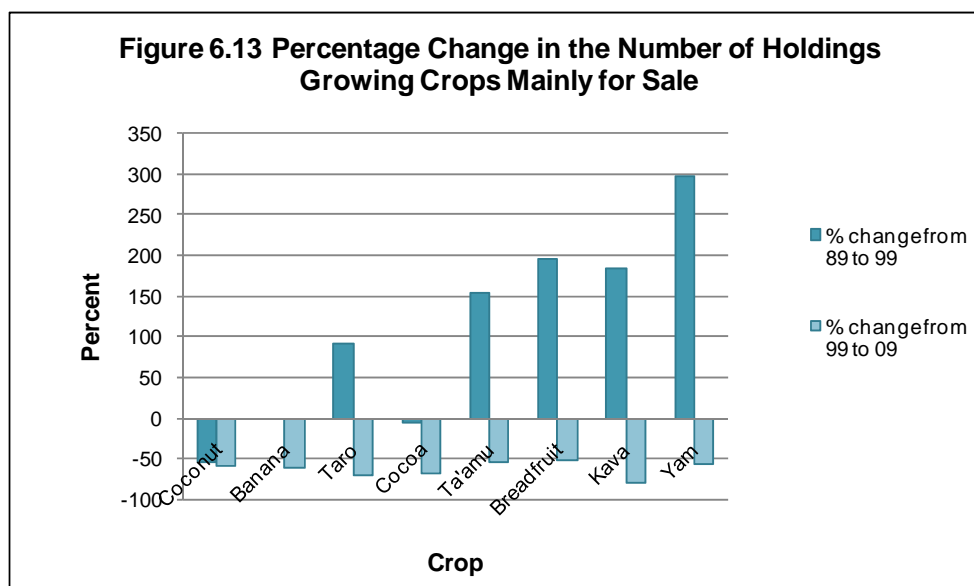
Table 6.10 Number of Holdings Growing Crops Mainly for Sale

Major Crop	% change from 89 to 99	% change from 99 to 09
Coconut	-53.5	-57.5
Banana ⁶	N/A	-60.9
Taro	91.5	-70.0
Cocoa	-5.3	-66.8
Ta'amu	154.1	-54.6
Breadfruit	196.3	-50.6
Kava	182.8	-78.9
Yam	297.2	-56.6

Source: Samoa Bureau of Statistics Census of Agriculture

- 6.39 The significant drop in the number of holdings growing crops mainly for sale in the past 10 years can be viewed in the context of the global economic crisis of 2008 that led to the rise in prices of imported food being brought in to Samoa. Consistent with this downturn is the steady increase in the number of subsistence households as well as the continual decline in non-agricultural households throughout the 3 censuses, as discussed in Chapter 4.

⁶ Data on banana was not available in the 1989 census.



Source: Samoa Bureau of Statistics Census of Agriculture

Number of Holdings Growing Crops Mainly for Sale by Region – 2009

Table 6.11 Number of Holdings Growing Crops Mainly for Sale by Region 2009

Major Crop	Apia Urban Area	Northwest Upolu	Rest of Upolu	Savaii
Coconut	10	29	8	47
Banana	17	61	19	55
Taro	13	84	11	68
Cocoa	10	57	28	37
Ta'amu	9	146	17	52
Breadfruit	7	29	6	37
Kava	13	21	250	244
Yam	14	100	26	48

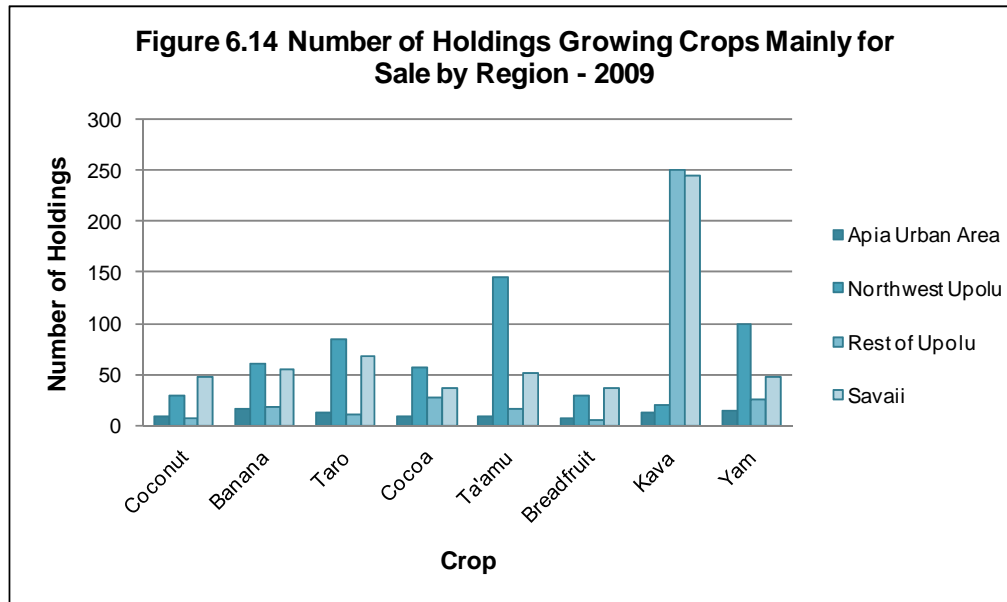
Source: Samoa Bureau of Statistics Census of Agriculture

Number of Holdings – Apia Urban Area

- 6.40 Coconut recorded the largest decrease in the number of holdings growing crops mainly for sale in the Apia Urban Area with nearly a 92 percent drop from 1999. Kava and ta'amu also recorded 75 percent and 74 percent declines respectively in the corresponding period.
- 6.41 On the positive side, the number of holdings in the Apia Urban Area growing pumpkin, papaya, and Chinese cabbage for sale recorded considerable increases from 1999. The number of holdings farming tomato registered a 33 percent decline in the same period.

Number of Holdings – Northwest Upolu

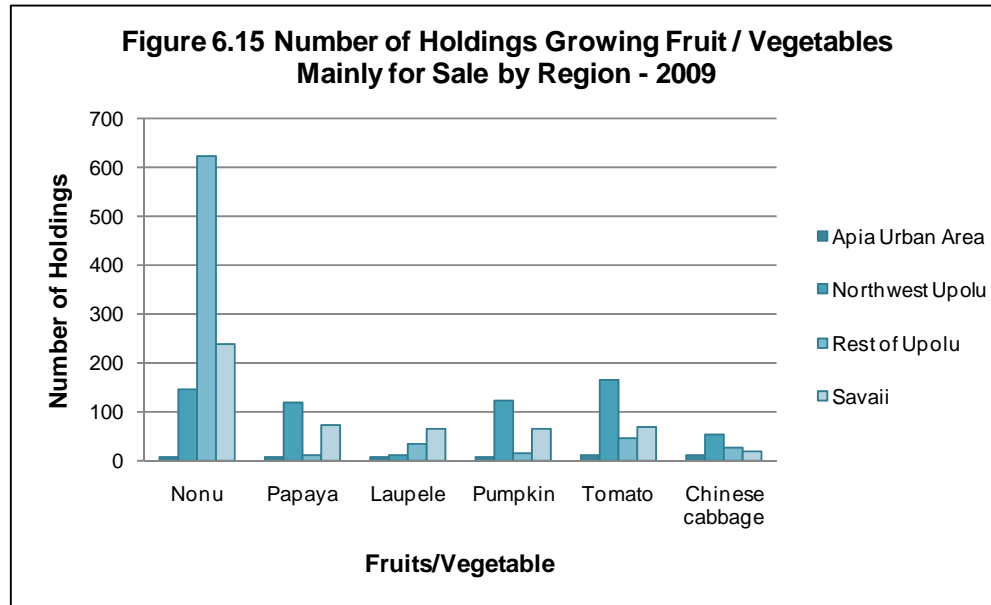
- 6.42 In the Northwest Upolu region, Coconut, banana, and kava registered the largest declines in the number of holdings farming for sale with a 65.5 percent, 62.6 percent, and 62.5 percent fall respectively from 1999.
- 6.43 Holdings growing fruit and vegetables for sale in the Northwest Upolu region recorded positive growth for papaya (up 49.4 percent) and Chinese cabbage more than doubling its number of holdings from 1999. Holdings farming tomato and pumpkin fell 29.5 percent and 1.6 percent respectively in the same period.



Source: Samoa Bureau of Statistics Census of Agriculture

Number of Holdings – Rest of Upolu

- 6.44 Similarly with all regions of Samoa, the number of holdings in the Rest of Upolu region farming major crops for sale also fell from 1999. The top three commodities showing the largest declines were holdings growing taro with a 91.2 percent drop, holdings growing coconut with a 75 percent decrease, and holdings growing ta'amu registering a 74.2 percent reduction from 1999.
- 6.45 Chinese cabbage recorded the largest increase in its number of holdings for sale more than doubling from 1999. The number of holdings growing tomatoes remained unchanged while holdings growing pumpkin and papaya fell 46.9 percent and 7.7 percent respectively in the corresponding period.



Source: Samoa Bureau of Statistics Census of Agriculture

Number of Holdings – Savaii

- 6.46 The Savaii region recorded significant reductions in the number of holdings farming for sale with kava (down 85.7 percent), cocoa (down 79.7 percent), and taro with a 77.1 percent decrease from 1999.
- 6.47 The number of holdings farming fruit and vegetables for sale in the Savaii region increased from 1999. Chinese cabbage showed the largest growth increasing from 6 holdings in 1999 to 18 holdings in 2009. Holdings farming pumpkin expanded from 25 holdings in 1999 to 64 holdings in 2009. Holdings growing papaya rose from 42 holdings in 1999 to 72 holdings in 2009. Tomato was the only vegetable in the Savaii region to record a negative growth rate with a 31 percent decrease from the last census.

CHAPTER 7 LIVESTOCK

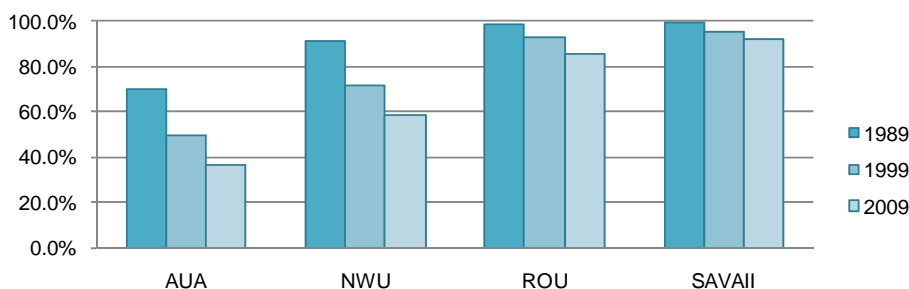
7.01 Livestock plays a major role in the economy of Samoa. The opportunity provided by the Census of Agriculture was used to collect numbers of livestock of important species from the household sector. The 2009 census collected information on livestock kept as of the day of enumeration, number of animal slaughtered, live animals sold and given away as gifts. Basic information was collected for domestic animals.

Table 7.1 Total number of Households and Percentage of Households keeping any Livestock by Region and Census year

REGION	Total Number of Households			Total Number of Households Keeping Livestock			Percentage of Household Keeping Livestock by Region		
	1989	1999	2009	1989	1999	2009	1989	1999	2009
AUA	2,964	4,449	4,555	2,066	2,213	1,650	69.7%	49.7%	36.2%
NWU	3,883	6,189	7,447	3,541	4,412	4,383	91.2%	71.3%	58.9%
ROU	4,124	4,761	5,509	4,050	4,416	4,722	98.2%	92.8%	85.7%
Savaii	4,503	5,122	5,653	4,463	4,860	5,200	99.1%	94.9%	92.0%
Samoa	15,474	20,521	23,164	14,120	15,901	15,955	91.2%	77.5%	68.9%

Source: Samoa Bureau of Statistics Census of Agriculture

Figure 7.1 Percentage of Households keeping Livestock by Region



Source: Samoa Bureau of Statistics Census of Agriculture

7.02 The number of households keeping any livestock recorded no significant change from 1999. However, the percentage of households keeping any livestock has decreased from 91 percent in 1989 to 78 percent in 1999 and 69 percent in 2009. Apia Urban Area showed the largest decrease in percentage of household keeping any livestock. All other regions also recorded decreases.

Table 7.2 Number of Livestock kept, by type of Livestock, by region, 2009

REGION	Number of Livestock	Type of Livestock						
		Cattle	Pigs	Chicken	Goats	Sheep	Ducks	Horses
Samoa	500,071	38,949	152,145	307,060	128	249	281	1,259
AUA	39,531	3,495	6,804	28,950	87	75	98	22
NWU	119,635	4,977	24,659	89,728	21	25	98	127
ROU	159,232	14,006	54,226	90,206	20	34	51	689
Savaii	181,673	16,471	66,456	98,176	0	115	34	421

Source: Samoa Bureau of Statistics Census of Agriculture

- 7.03 Table 7.2 shows the number of livestock kept by households by type of livestock for the four regions in Samoa. The 2009 Census recorded a total number of cattle at thirty nine thousand (38,949), one hundred and fifty two thousand (152,145) pigs, three hundred and seven thousand (307,060) chickens, one hundred goats (128), two hundred sheep (249), three hundred ducks(281) and one thousand horses (1,259).

Cattle

- 7.04 Almost thirty nine thousand (38,949) cattle were recorded in the 2009 Census; an increase of about 40 percent was recorded when compared to 1999 and almost tripling its number in 1989 (189 percent). This increase was due to the increasing demand for cattle since it is the most prestigious livestock for faalavelave nowadays.

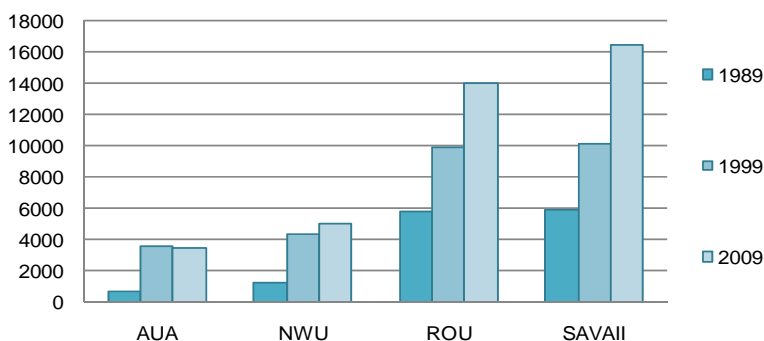
Table 7.3 Number of Cattle by Region and Census Year

REGION	Cattle		
	1989	1999	2009
Samoa	13,431	27,883	38,949
AUA	643	3,516	3,495
NWU	1,187	4,320	4,977
ROU	5,756	9,943	14,006
Savaii	5,845	10,104	16,471

Source: Samoa Bureau of Statistics Census of Agriculture

- 7.05 Of the total cattle in 2009, 40 percent were classified as cows, 21 percent as heifers, 13 percent as bulls, 5 percent as steers, 14 percent as calves and the remaining 7 percent are other cattle (6 months to 2 years).
- 7.06 The district of Safata in the Rest of Upolu region recorded the largest number of cattle accounting for 12 percent of the total cattle in Upolu, Faleata West, Vaimauga West and Falealili accounted for 10 percent each were next in ranked in terms of cattle kept.

Figure 7.2 Number of Cattle by Region and Census year.



Source: Samoa Bureau of Statistics Census of Agriculture

7.07 In Savaii, the districts of Faasaleleaga 1, Fasaleleaga 2, Palauli West, Palauli le Falefa and Salega each recorded more than one thousand cattle accounting for 54 percent of the total cattle in Savaii.

Table 7.4 Number of Cattle kept, slaughtered, sold live or given away, by Region, 2009

REGION	Number of cattle kept	Slaughtered				Live Cattle		
		Total	Sold	Consumed	Faalavelave	Total	Sold	Given Away
AUA	3,495	569	266	2	301	152	109	43
NWU	4,977	477	175	8	294	102	79	23
ROU	14,006	2,674	989	38	1,647	554	357	197
SAVAII	16,471	4,079	1,207	93	2,779	986	470	516
SAMOA	38,949	7,799	2,637	141	5,021	1,794	1,015	779

Source: Samoa Bureau of Statistics Census of Agriculture

7.08 Table 7.4 gives the inventory of the number of cattle kept at the time of the Agriculture Census visit, and the number slaughtered, sold and given away live during 2009. There were about 8,000 cattle slaughtered in Samoa of which 34 percent were sold, 2 percent were consumed by households and 64 percent were used in 2009 for faalavelave (funerals, weddings, bestowment etc.). The number of cattle slaughtered for faalavelave increased significantly to 5,021 in 2009 from 3,071 in 1999. Of the 1794 live cattle recorded, 1015 cattle were sold and 779 were given away as gifts by households.

7.09 Of households keeping cattle, 25 percent kept 5 to 9 animals, with 25 percent kept 10 or more and 50 percent kept less than 5.

Pigs

- 7.10 Pigs are traditionally important in the village life of Samoa. They were generally considered to be the most prestigious offering on ceremonial occasions and most were kept for this purpose.

Table 7.5 Number of Pigs by Region and Census year

REGION	Number of Pigs kept		
	1989	1999	2009
Samoa	189,813	167,316	152,145
AUA	13,557	9,305	6,804
NWU	35,965	29,191	24,659
ROU	69,285	61,403	54,226
Savaii	71,006	67,417	66,456
Average Number of Pigs per Household	15	14	13

Source: Samoa Bureau of Statistics Census of Agriculture

- 7.11 The number of pigs kept in the past census years show decreases in the number of pigs kept in all the regions and consequently a decrease in the count of pigs nationally. The average number of pigs per household keeping pigs also decreased between the census years.
- 7.12 Of the 152,145 pigs recorded in Samoa at the time of the census, 56 percent were in Upolu and the remaining 44 percent in Savaii.
- 7.13 Of the total 85,989 pigs in Upolu region in 2009, 63 percent were recorded in the Rest of Upolu, 29 percent in the North West Upolu and 8 percent in Apia Urban Area.

Table 7.6 Number of Pigs slaughtered, sold live or given away, by Region, 2009

REGION	Slaughtered				Live Pigs		
	Total	Sold	Consumed	Faalavelave	Total	Sold	Given Away
AUA	2,615	365	1,130	1,120	598	397	201
NWU	8,326	1,148	3,725	3,453	1,775	728	1,047
ROU	19,022	2,668	9,092	7,262	3,128	1,407	1,721
SAVAII	20,619	1,438	9,905	9,276	3,251	1,075	2,176
SAMOA	50,582	5,619	23,852	21,111	8,752	3,607	5,145

Source: Samoa Bureau of Statistics Census of Agriculture

- 7.14 Aside from number of pigs kept as of the time of the census, there were about 51,000 pigs slaughtered in Samoa in 2009. With most households preferring

cattle for faalavelave, a decrease of 8 percent was recorded from 1999 in the number of pigs slaughtered.

- 7.15 Of these, 11 percent were sold, 47 percent were consumed and 42 percent were used for faalavelave (funerals, weddings, bestowment etc). It was also recorded that 8752 live pigs were disposed of in 2009, of which 41 percent were sold and 59 percent were given away as gifts.

Chicken

- 7.16 Chickens also play a major part in traditional faalavelave or traditional ceremonies, although they are not as prestigious as pigs and cattle. Overall, there has been a reduction in the total number of chickens kept between the 1999 and 2009 census. In terms of slaughtered chickens, there has been a substantial decrease within the same period.
- 7.17 The 2009 census recorded 307,000 chickens kept by 13,350 households of which 68 percent of chickens kept were in Upolu and the remaining 32 percent in Savaii.
- 7.18 Of 89,494 chickens slaughtered in 2009, 62 percent were consumed, 29 percent were for faalavelave and the remaining 9 percent were sold. More than 13,000 live chickens were either sold or given away as gifts.

Table 7.7 Number of chickens kept, sold live or given away, by region and census year

Region	Number kept		Slaughtered						Live Chicken		
			sold		consumed		faalavelave		sold		given away
	1999	2009	1999	2009	1999	2009	1999	2009	1999	2009	2009
AUA	52,353	28,930	694	799	9,701	5,892	3,432	2,197	988	528	510
NWU	121,936	89,728	1,648	2,951	19,228	13,785	7,724	6,462	8,201	2,038	1,941
ROU	124,000	90,206	1,530	2,606	23,645	18,217	11,661	8,267	788	1,911	2,181
SAVAII	132,801	98,176	1,103	1,565	24,511	17,977	14,542	8,776	1,705	1,763	2,365
SAMOA	431,090	307,040	4,975	7,921	77,085	55,871	37,359	25,702	11,682	6,240	6,997

Source: Samoa Bureau of Statistics Census of Agriculture

- 7.19 The total number of chickens kept recorded decreases of 29 and 9 percent from the 1999 and 1989 censuses respectively. Slaughtered chickens for consumption and faalavelave decreased by 28 and 31 percent respectively. Live chickens sold also decreased by 47 percent. However, slaughtered chickens sold increased by 59 percent.

Other Livestock

Goats

- 7.20 A large decrease in goat's production occurred since 1999 census. This decrease was due to decrease in demand for goats and livestock farming preferences. At the time of the 2009 census, 128 goats were recorded in Samoa and all were in

the Upolu region. The number of households keeping goats in 2009 shows a huge drop between the three year censuses.

Table 7.8 Number of Households keeping goats and number kept, by census year

	1989	1999	2009
Number of Goats kept	1,094	1,993	128
Number of Households	159	121	7

Source: Samoa Bureau of Statistics Census of Agriculture

Sheep

- 7.21 Sheep farming was first introduced into Samoa in 2004. The “fantastic sheep” was imported from Fiji with an initial shipment of some 40 animals. In the 2009 census, 249 sheep were recorded with 134 in Upolu and 115 in Savaii. The average number of sheep kept was 10 animals. The largest sheep herd was recorded in the Rest of Upolu Region.

Ducks

- 7.22 A total of 281 ducks were recorded in the 2009 census with 247 kept by 47 households in Upolu and 34 were kept by 10 households in Savaii. There were also 28 ducks recorded slaughtered for household consumption and 11 live ducks were given away as gifts. The average numbers of ducks kept were 5 birds.

Horses

Table 7.9 Number of Households keeping Horses and number kept, by census year

	1989	1999	2009
Number of Horses kept	3,114	1,799	1,259
Number of Households	2,174	974	821

Source: Samoa Bureau of Statistics Census of Agriculture

- 7.23 The number of horses kept revealed a decrease of 16 percent from the 1999 and 62 percent from the 1989 census. A total of 1259 horses were recorded in Samoa at the time of the Census, out of which 55 percent were in the Rest of Upolu region, 33 percent in Savaii, 10 percent in the North West and the remaining 2 percent were in the Apia Urban Area. About 70 percent of the households keeping horses kept one animal only. 71 households reported that they had sold or given away 97 horses in 2009. This reduction in the number of households keeping horses aligns with the increase in the number of pick-ups and trucks, indicating less reliance on horses.

Domestic Animals

7.24 The 2009 Census recorded 16,000 households keeping domestic animals of which there were about 40,000 dogs and 13,000 cats. 14 percent of dogs (5086 males and 632 females) and 4 percent of cats (370 males and 93 females) were de-sexed.

CHAPTER 8 FISHING

Households engaged in Fishing Activities

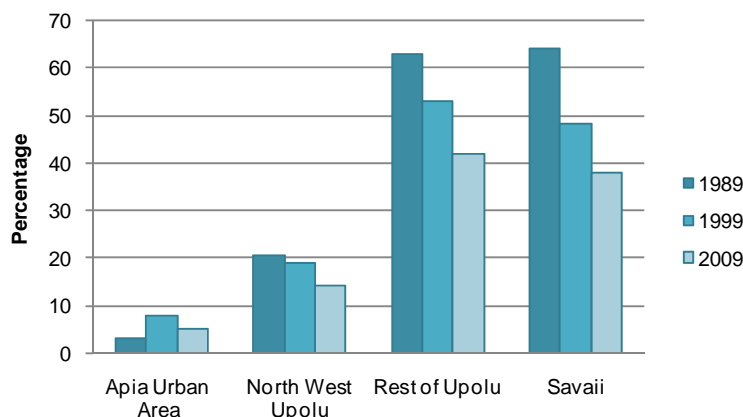
8.01 The total number of households engaged in fishing during the reference period stood at 5,752 as in Table 8.1. Of these, 63 percent of households engaged in fishing reside in Upolu and 37 percent in Savaii. Samoa's vulnerability to abnormal weather patterns coupled with the devastating tsunami in 2009 are likely to be contributing factors to the significant drop of 14 percent in total number of households engage in fishing activities since 1999. Overall, total households engaged in fishing were reduced by 5,132 or 47 percentage points over the two decades.

**Table 8.1 Numbers of Households Engaged in Fishing
1989, 1999, 2009**

Regions	Total Households			percent Change	
	1989	1999	2009	1989 to 1999	1999 to 2009
Samoa	10,884	6,699	5,752	-38.5	-14.1
Upolu	6,546	4,149	3,608	-36.6	-13.0
AUA	694	385	243	-44.5	-36.9
NWU	2,011	1,199	1,062	-40.4	-11.4
ROU	3,841	2,565	2,303	-33.2	-10.2
Savaii	4,338	2,550	2,144	-41.2	-15.9

Source: Samoa Bureau of Statistics Census of Agriculture

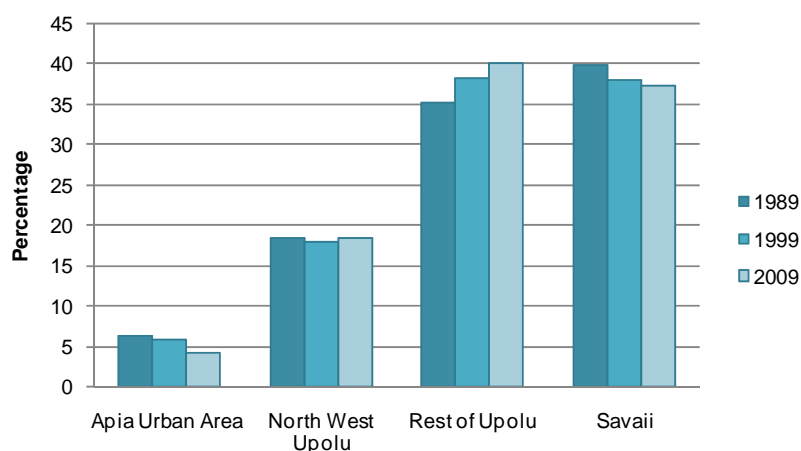
**Figure 8.1 Proportion of Households Engaged
in Fishing 1989, 1999 and 2009**



Source: Samoa Bureau of Statistics Census of Agriculture

8. 02 The majority of fishing households reside in Upolu Island (63 percent) and thus dominated the reported fishing activities compared to Savaii (37 percent) during the reference period.
8. 03 The 2,303 fishing households in the ROU (Rest of Upolu) region represented 40 percent of the overall total of 5,752 compared to other regions of Samoa. During the reference period Savaii has dropped from having the largest number of fishing households (40 percent of all households engaged in fishing were in Savaii in 1989), to second place in 2009 with 37 percent of all fishing households.

Figure 8.2 Percentage of Household Engaged in Fishing across Regions



Source: Samoa Bureau of Statistics Census of Agriculture

Types of Fishing Activities

8. 04 Fishing Activities were categorized in three types as shown in Table 8.2.

Table 8.2 Number of Households Engaged in Fishing by Fishing Type, by Region, Samoa 2009

Region	All Types	Inshore Fishing	Offshore	Both
Samoa	5,752	4,159	539	1,054
Upolu	3,608	2,642	331	635
AUA	243	160	49	34
NWU	1,062	805	123	134
ROU	2,303	1,677	159	467
Savaii	2,144	1,517	208	419
Upolu (%)	62.7	63.5	61.4	60.3
Savaii (%)	37.3	36.5	38.6	39.7

Source: Samoa Bureau of Statistics Census of Agriculture

8. 05 Out of the total household engaged in fishing activities, 4,159 (72 percent) inshore waters, 539 (9.4 percent) fish in the deep sea or offshore and 1,054 (18 percent) fish in both. Limited numbers of motorized boats available as discussed below may contribute factor to the drop of three percent over the decade.

Types of Fishing Gear

8. 06 Fishing gear is a gadget or tool for catching or trapping fish and other aquatic products. As shown in Table 8.3 below, households engaged in fishing need to use at least one type of fishing gear but many use more than one.
8. 07 Spear fishing was the most common method of fishing with 4,311 households (74.5 percent of fishing households) using spears. 60.5 percent of households who used the equipment reside in Upolu with the rest in Savaii.
8. 08 Gleaning (faiva i le aloalo), a type of fishing, also recorded high numbers of household engaged in fishing during the reference period. From which, Upolu Island also dominated the category by 61 percent with few of those in Savaii.
8. 09 At national level, Savaii Island had the highest uptake with 110 compared to 29 in 1999. Of the increase, 32 percent and 38 percent was recorded from Palauli East and Gagaifomauga II respectively..

Table 8.3 Type of gear used by households engaged in Fishing

Region	Total H/Holds Engaged	Types of Fishing Gears						
		Long Line	Fish Net	Fish Fence	Hook & Line	Spear	Gleaning	Fish Trap
Samoa	5,752	285	1,546	185	1,556	4,311	1,670	739
UPOLU	3,608	191	1,016	75	937	2,607	1,023	350
AUA	243	30	58	-	96	106	21	16
NWU	1,062	42	298	14	155	621	339	79
ROU	2,303	119	660	61	686	1,880	663	255
Savaii	2,144	94	530	110	619	1,704	647	389

Source: Samoa Bureau of Statistics Census of Agriculture

Note: Households may engage in more than one fishing method.

Type of Boats

8. 10 Households may also rely on canoes and motorised boats while catching fish. Motorized boats recorded during the reference period were 183, a drop of 11 compare to 1999. The decrease in motorized boats was consistent with the decline of 27.3 percent in long line gears from 1999 to 2009.
8. 11 About thirty-eight (38 percent) percent of fishing households owned and/or hired canoes compared to an estimate three percent (3.6 percent) who owned and/or hired motorized boats.
8. 12 The number of boats totalled 2,104, ninety-two percent (91 percent) of which were non-motorised and the rest were motorised.

Fishing Trips

8. 13 Of the total 31,980 fishing trips, about sixty six percent (67 percent) of the trips were in inshore while 11 percent were offshore and 23 percent in both areas.

Main Purpose of Fishing

8. 14 The main purpose of engaging in fishing was for home consumption only. However, some households also occasionally sold some of their catch. As reported in 2009, only 146 (2.5 percent) out of 5,752 fished mainly for commercial purposes: 1,842 (32 percent) occasionally sold and the majority of 3,764 (65percent) engaged in fishing for household consumption only. In 1999 the corresponding proportions were, 4.9 percent mainly for sale 22 percent Home consumption with occasional selling and 72 percent Home Consumption only. Fishing for an occupation was recorded by 1.3 percent of households in 1999 but was not recorded in 2009.
8. 15 The number and proportion engaged in fishing for home consumption with occasional selling has shown an increase despite the decline in total households engaged in fishing, as is shown in the next section on sales of fish.

Table 8.4 Number of Households Engaged in Fishing, by Main Purpose of Fishing and Region, 2009 vs 1999

Region	Total		Home Consumption Only		Home Consumption with Occasional Selling		Mainly for Sale		Occupation	
	1999	2009	1999	2009	1999	2009	1999	2009	1999	2009
Samoa	6,699	5,752	4,819	3,764	1,471	1,842	325	146	84	N/A
Upolu	4,149	3,608	2,781	2,365	1,023	1,119	265	124	80	N/A
AUA	385	243	217	182	70	45	62	16	36	N/A
NWU	1,199	1,062	730	674	361	336	83	52	25	N/A
ROU	2,565	2,303	1,834	1,509	592	738	120	56	19	N/A
Savaii	2,550	2,144	2,038	1,399	448	723	60	22	4	N/A

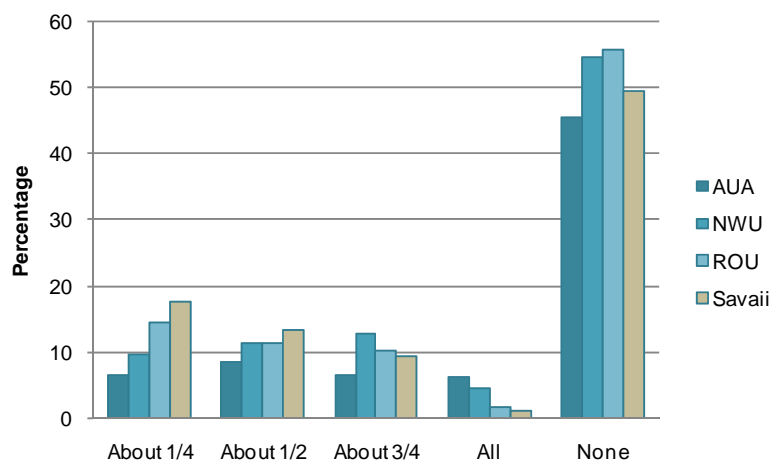
Source: Samoa Bureau of Statistics Census of Agriculture

8. 16 Note that the questions on purpose of fishing and sales of fish and separated in the Census questionnaire and the answers may not align, for example, 'home consumption only' is not exactly the same as 'none sold.'

Sales of Fish

8. 17 Fishing appears to have grown as a minor source of income when comparing 2009 to 1999. In 2009, 39 percent of fishing households sold some or all of their catch, compared to 33 percent in 1999. In 2009, 14 percent of household engaged in fishing reported having sold about a quarter of their fish catch, 12 percent have sold about half, 10 percent have sold three quarters and 2.2 percent sold all of their catch.

**Figure 8.3 Proportion of Catch Sold by Region
2009**



Source: Samoa Bureau of Statistics Census of Agriculture

8.17 In comparison with the last 10 years, there were increases in those selling part of their catch, particularly those selling about a quarter of their catch. However the number of households that fished for consumption only (none sold) showed a decrease of 21.9 percent between 1999 and 2009, and the number that sold all of their catch decreased by 66 percent.

Table 8.5 Number of Fishing Households by Proportion of Catch Sold

Region	Proportion of Catch Sold											
	Total		None		About 1/4		About 1/2		About 3/4		All	
	1999	2009	1999	2009	1999	2009	1999	2009	1999	2009	1999	2009
Samoa	6,699	5,752	4,502	3,516	637	830	681	694	518	588	361	124
Upolu	4,149	3,608	2,672	2,257	367	453	446	408	369	388	295	102
Apia Urban Area	385	243	232	175	15	16	26	21	50	16	62	15
North West Upolu	1,199	1,062	694	655	123	102	143	122	139	135	100	48
Rest of Upolu	2,565	2,303	1,746	1,427	229	335	277	265	180	237	133	39
Savaii	2,550	2,144	1,830	1,259	270	377	235	286	149	200	66	22

Source: Samoa Bureau of Statistics Census of Agriculture

8.18 The change in proportion sold has been driven by different changes across the regions. The proportion of households selling some or all of their catch has decreased significantly in Apia Urban Area and to some extent in North West of Upolu, but increased significantly in the Rest of Upolu and in Savaii.

Table 8.6 Percentage of Fishing Households by Proportion of Catch Sold

Region	None		Part		All		Any Sales	
	1999	2009	1999	2009	1999	2009	1999	2009
Samoa	67.2	61.1	27.4	36.7	5.4	2.2	32.8	38.9
Apia Urban Area	60.3	72.0	23.6	21.8	16.1	6.2	39.7	28.0
North West of Upolu	57.9	61.7	33.8	33.8	8.3	4.5	42.1	38.3
Rest of Upolu	68.1	62.0	26.7	36.3	5.2	1.7	31.9	38.0
Savaii	71.8	58.7	25.6	40.3	2.6	1.0	28.2	41.3

Source: Samoa Bureau of Statistics Census of Agriculture

Household Members Engaged in Fishing

8.19 On average, 2 members of each fishing household engaged in fishing in 1999 and 2009. There were more males (81 percent) than females (19 percent) involved in fishing activities in 2009. However there was an increase in the number of females engaged in fishing of 28 percent between 1999 and 2009, while the number of males engaged dropped. This is consistent across the regions except in Apia where the both the number and proportion of females engaged in fishing has dropped.

Table 8.7 Household Members Engaged in Fishing by Gender, by Region and District 2009 vs 1999

Region	Total		Gender			
			Female		Male	
	1999	2009	1999	2009	1999	2009
Samoa	10,143	9,245	1,388	1,772	8,755	7,473
Upolu	6,331	5,770	976	1,125	5,355	4,645
AUA	666	406	67	28	599	378
NWU	1,771	1,643	216	349	1,555	1,294
ROU	3,894	3,721	693	748	3,201	2,973
Savaii	3,812	3,475	412	647	3,400	2,828

Source: Samoa Bureau of Statistics Census of Agriculture

CHAPTER 9 FORESTRY

9. 01 The number of households in all four regions that planted forest trees reduced in the last ten years as people tend to grow crops as well as the increased usage of modern building materials. A total of 8,753 households that planted any forest trees were recorded in the 2009 census. Sixty eight percent (68 percent) were from the Upolu Regions and the remaining thirty two percent (32 percent) were from Savaii.

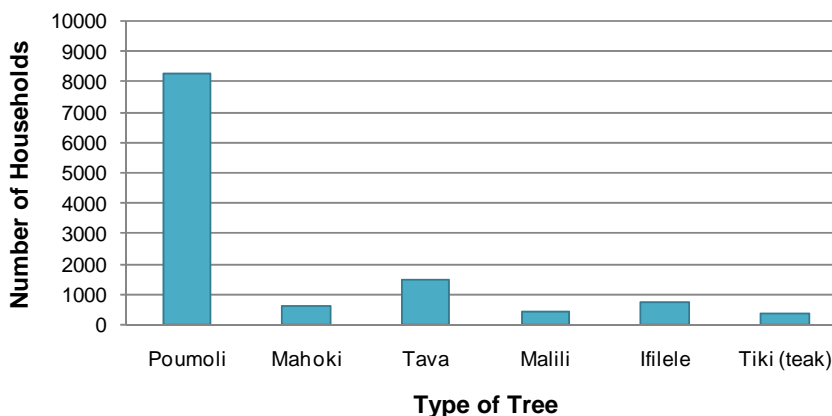
Table 9.1 Number of Households that planted any Forest trees, by Region and Census year.

REGION	Number of Households	
	1999	2009
AUA	1,338	862
NWU	3,444	2,603
ROU	2,742	2,536
SAVAII	3,022	2,752
SAMOA	10,546	8,753

Source: Samoa Bureau of Statistics Census of Agriculture

9. 02 The majority of households that planted any forest trees planted Poumuli (94 percent), 17 percent planted Tava while a few planted Ifilele, Mahoki, Maalili and Tiki (teak).

Figure 9.1 Number of Households that planted any type of forest trees by type of tree; 2009.



Source: Samoa Bureau of Statistics Census of Agriculture

Uses of Forest Trees Planted.

9. 03 Most forest trees are planted mainly for the purpose of building houses. Some are for making farm or house fences, firewood for cooking and also for handicrafts.

9. 04 In the 2009 census, 9,535 households planted any type of forest trees for the purpose of building houses (Fale), 4,979 households intended to use these for fencing (Pa), 3,544 households were to use the trees for firewood (Fafie) while 687 intended to make them into handicrafts (Meataulima).

Table 9.2 Number of Households that planted forest trees, by Uses of trees planted and Region

REGION	Uses of Forest trees planted.			
	Fale	Pa	Fafie	Meataulima
AUA	943	488	277	162
NWU	2,571	1,076	496	61
ROU	2,618	1,363	634	181
SAVAII	6,403	2,052	2,137	283
SAMOA	9,535	4,979	3,544	687

Source: Samoa Bureau of Statistics Census of Agriculture

APPENDIX

Census Methodology

A. 01 The methodology for carrying out the census of Agriculture in Samoa was a combination of complete count and sample survey. Thus the census was basically two part operation. The first part involved all households who were required to complete the Household Form. The households identified as agriculturally active from the Household Forms (Subsistence, Subsistence and Cash and Commercial) were required to complete the Holding Form for every holding operated. The second part of the questionnaire was designed to cover 25 percent of all agricultural holdings as identified in the first part, with selection made on systematic sample basis (every fourth holding selected). Thus while the Household Form was canvassed in respect of all households, the Holding Form was to be completed by agriculturally active Households only and the parcel form was completed in respect of 25 percent of the agricultural holdings .

Census Advisory Committee

A. 02 For the successful implementation of the Census programme, a census Advisory Committee was formed with the representatives from the following departments.

1.	Government Statistician	Chairperson
2.	Representative	Ministry of Foreign Affairs
3.	Director of Agriculture	Ministry of Agriculture
4.	Representative	Ministry of Internal Affairs
5	Representative	Ministry of Finance
6	Representative	Ministry of Women Affairs
7	Farmers Association	

A. 03 This Committee met frequently and approved the work plan, scope and coverage of census methodology, questionnaires and manuals. The committee also reviewed the progress of work from time to time.

Census Scope

A. 04 The table below summaries the data items collected in the 2009 census compared to 1999

ITEM No.	DATA ITEMS	1999	2009
Household Form			
1	Level of Agriculture Activity of the Households	√	√
2	Number of Holdings and Method of Operation*	√	√
3	Total Area of the Holding*	√	√
4	Crops Grown*	32 crops	38crops
5	Sale of Major Crops	8 major crops	not collected
6	Consumption of Major Crops	8 major crops	19 major crops
7	Livestock (additional data on number of petanimals)	3 data items	4 data items
8	Amenities at the Principal Homestead	√	√
9	Household Composition	√	√
10	Labour Inputs*	√	√
11	Household Income and credit*	√	√
12	Use of Agricultural chemicals*	4 data items	4 data items
13	Fisheries	7 data items	7 data items
14	Agriculture Equipment were included	14 data items	13 data items
15	Forestry	√	√

Household list and Enumeration Area Maps

A. 05 For any Census to be successfully carried out, good household lists and enumeration area maps are pre-requisites. A list of households in respect of each enumeration block in the country was prepared in 2005 for the 2006 Population census. The updated Household list from the 2006 Population census was used as a frame For the Agricultural census.

- A. 06 The pretest of the tentative questionnaires was done by the staff of the Department of Statistics on 4th and 5th August 2009. Thereafter a Pilot Census was carried out in two villages, namely Solosolo and Tuanai in Upolu. The results of the pretest and pilot census were used in finalizing the questionnaires. The pilot census assisted the census staff to work out proper time schedule for the field work, helped them to clearly understand the concepts and definitions and also exposed them to some of the field problems. The pilot survey also proved very useful in preparing the training materials and in finalizing the tabulation programme of the Census.

Data Users/Producers Workshop

- A. 07 A two day workshop of data users and producers was held on 29-30 July 2009, where the scope of the Census and the questionnaires were discussed. It was a most interesting workshop and provided an opportunity for the interaction of data users and producers.

Organization of Census Field Work and Recruitment of Enumerators

- A. 08 The preparation of updated household list very much facilitated the demarcation of enumeration areas. Full time enumerators were recruited from the open market for field work. The job of recruitment of enumerators was left to the Agriculture Extension officers who acted as supervisors for the Census field work. In all 300 enumerators were recruited. The Agricultural officers and senior officers of the Bureau of Statistics acted as supervisors.

Printing Of Questionnaires and Instruction Manuals

- A. 09 In all there were three questionnaires and two instruction manuals one in Samoan and one in English. The three questionnaires were printed on different coloured paper for ease of identification.
- A. 10 All census documents were printed and distributed well in advance of the start of the field work.

Publicity

- A. 11 The main purpose of the census publicity is to ensure cooperation of the holders to provide requisite data Samoa being a small country word spreads through quickly. During the training period and field enumeration there were spot-advertisements on the T.V and Radio twice daily and these became very popular. In view of this, when the enumerators approached the households, they did not encounter any problems as the households were fully aware the census programme.

Training

- A. 12 One of the objectives of the project was to train the national staff on all aspects of agriculture census procedures including data collection, processing analysis, retrieval and dissemination. Extensive training programmes were organized at various levels to achieve this objective. It was a three stage training programme.

- A. 13 The first stage was for the Supervisors from the Bureau of Statistics. About 20 officials participated in this three day training programme held on 18-20 August 2009. Training materials prepared included questionnaires and manuals and slides on the objectives of the census, scope, coverage, concepts and definitions. The Trainees in the programme were utilized as enumerators in the pretest.
- A. 14 The second stage training was for Bureau of Statistics and Agriculture Officers who acted as supervisors. This was done separately for Upolu and Savaii on 1-2 October 2009 respectively. The training of supervisors was entirely handled by the National Project Coordinator.
- A. 15 The third stage training was enumerators. Two 2-day Training were conducted for the Apia Urban Area and Rest of Upolu regions. Three and four 2-day training were conducted for the North West and Savaii regions respectively. This was done by three training teams lead by senior officers of the Bureau.
- A. 16 One officer of the Bureau attended a two week attachment at the Secretariat of the Pacific Community, Noumea to familiarize herself with the data processing aspect of the census.

Census Enumeration

- A. 17 The Census enumeration started in October 31st, both in Upolu and Savaii. In addition to the Supervisors, ten officers of the Department of Statistics were appointed as coordinators to oversee the field work on a daily basis. Four were based in Savaii throughout period of the fieldwork.
- A. 18 The enumeration of the Apia Urban Area was conducted by officials of the department and two senior officers were appointed to co-ordinate and supervise the fieldwork.
- A. 19 In addition the National Project Coordinator and the counterpart officers from the Ministry of Agriculture Forests, Fisheries visited the enumerators both in Upolu and Savaii during the fieldwork period. The fieldwork was completed in November in most parts of the country and all completed questionnaires were collected by the third week of December.

Collection of Forms

- A. 20 The collection of forms from the field followed an established procedure with the payment of honorarium to the enumerators being dependent on the completion of field work to an acceptable standard. The filled in forms were first required to be deposited with the supervisors. After scrutiny by them, the forms were collected by the coordinators. All the forms were stored in a systematic manner by enumeration area and by district at the Bureau of Statistics.

Data Processing

- A. 21 The Secretariat of Pacific community (SPC) provided technical assistance for data processing. The TA was delivered in two separate missions, first to

implement data entry, and the second mission was to perform data editing and generate final tabulation for final report.

- A. 22 Prior to the start of data entry, Siaumau Misela of Samoa Bureau of Stats was invited to SPC in December 2009 for a two weeks attachment. Misela worked closely with the SPC data processing specialist in developing the data entry system using CPro (Census and Survey Processing System).
- A. 23 The first mission of the data processing specialist in January 2010 was to finalize and implement data entry. The second mission in October 2010 concentrated mainly on data editing, data recode and generating final tables.
- A. 24 The data processing (manual and computer) was done in the Data Processing Section of the Samoa Bureau of Statistics. To facilitate the manual and machine processing of the forms, questionnaires from the same enumeration area were bound together in a batch / folio and assigned a batch id. This id consists of the District, Village and the enumeration area codes. These forms were subjected to manual data scrutiny and corrections.
- A. 25 The data entry was implemented using ENTRY of CPro, and BATCH EDIT for the validation of encoded data items. Data entry was run through a network, which link all data entry work station to a server. A team of 6 staff (1 permanent and 5 temporary) were assigned to do the data processing. 50 percent key verification was also done on all the batches, and questionnaires with key verification error rate higher than the tolerance limit was subjected to 100 percent key verification. Additional checks were added in the validation program. Detected errors and inconsistencies were corrected in the batch files.

SECTION I – HOUSEHOLD COMPOSITION (as of the Day of Enumeration).

The usual composition of household excludes temporary visitors but includes usual household members.

No.	Full Name	Sex M-1 F-2	Date of Birth dd/mm/yy	Age	Level of Educational Attainment (Code)	All Persons Aged 15 Years and over			
						Main Daily Activity (Code)	Paid Job F/Time-1 P/Time-2 None-3	Avg. Hrs/Week Working On Holding	Holding Operator Yes-1 No-2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1			/ /						
2			/ /						
3			/ /						
4			/ /						
5			/ /						
6			/ /						
7			/ /						
8			/ /						
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18			/ /						
19			/ /						
20			/ /						

Level of Educational Attainment

- 1 None
- 2 Kindergarten
- 3 Primary
- 4 Secondary
- 5 Tertiary

Main daily activity

- 1 Employed by government
- 2 Employed by Private Sector
- 3 Work Mainly for Home Consumption
- 4 Work Mainly for Sale

- 5 Unemployed
- 6 Domestic Duties
- 7 Fulltime Student
- 8 Other

SECTION III – LIVESTOCK and DOMESTIC ANIMALS

1) Does the household have any livestock as of the day of enumeration? (*Encircle "1" for Yes, otherwise encircle "2" for NO and enter code in box provided.*)

1 YES 2 NO → **GO TO Question 2**

Kind of Livestock	Code	Number Kept (as of visit)	Slaughtered (Jan. 1, 2009 to time of visit)			Number of Live Animals (Jan. 1, 2009-visit time)	
			Sold	Consumed	Customary	Sold	Given away
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
01 Cows	01						
02 Heifers(2 years & over)	02						
03 Bulls	03						
04 Steers (2 Years & over)	04						
05 Calves (less than 6 months)	05						
06 Other Cattle (6 months old and less than 2 years)	06						
07 Total Cattle	07						
08 Pigs	08						
09 Chicken	09						
10 Goats	10						
11 Sheep	11						
12 Ducks	12						
13 Horses	13		////	////////////////	////////////////		

(2) Does the household have any domestic animals as of the day of enumeration? (*Encircle "1" for Yes, otherwise encircle "2" for NO and enter code in box provided.*)

1 YES 2 NO → **GO TO Section IV**

Domesticated animals	Code	Number as of Day of Enumeration	Number De sexed
(1)	(2)	(3)	(4)
1 Total Dogs	1		
2 Male Dogs	2		
3 Female Dogs	3		
4 Total Cats	4		
5 Male Cats	5		
6 Female Cats	6		

SECTION IV– FISHERIES (during the period Jan. 1, 2009 to the Day of Enumeration)

(1) Did any members of this household engage in fishing anytime from January 1, 2009 to Day of Enumeration? (Encircle "1" for Yes, otherwise, encircle "2" and enter the code in the box provided).

1 YES 2 NO → **Go To Section V**

(2) If Yes, what type of fishing did the household engage in? (Encircle the appropriate code and enter in the box provided).

1 Inshore Fishing
2 Offshore Fishing
3 Both

(3) Did the household use the following in their fishing activities? (Encircle code "1" for Yes, otherwise Encircle code "2" for NO then enter the code in the box provided).

a) Long Line	1 Yes	2 No	<input type="checkbox"/>
b) Fish Net	1 Yes	2 No	<input type="checkbox"/>
c) Fish Fence	1 Yes	2 No	<input type="checkbox"/>
d) Hook and Line	1 Yes	2 No	<input type="checkbox"/>
e) Spear	1 Yes	2 No	<input type="checkbox"/>
f) Gleaning	1 Yes	2 No	<input type="checkbox"/>
g) Fish Trap	1 Yes	2 No	<input type="checkbox"/>

(4) How many fishing trips did the household make during the last month? (Enter the number of fishing trips made during the last month in the boxes provided).

(5) What is the average number of hours per trip?

(6) How much of the fish or other aquatic products caught during the last month were sold? (Encircle appropriate code and enter in the box provided.)

0 None 3 About 3/4
1 About 1/4 4 All
2 About 1/2

(7) How many members of this household are normally engaged in fishing? (Enter the number of household members in the boxes provided).

Total Number of Household Members engaged in fishing

Number of Female Members

Number of Male Members

SECTION VI – CONSUMPTION OF MAJOR CROPS (from own Holding)

Did the household consume the following crops in the last 2 weeks? (Encircle "1" for Yes and "2" for No). If Yes to any of the crops mentioned below, what is the average fortnightly consumption?

Major Crops	Code	Yes or No		Units	Number/ Fortnight
(1)	(2)	(3)		(4)	(5)
Drinking coconut	01	1 – Yes	2 – No	Each	
Mature coconut for cooking	02	1 – Yes	2 – No	Each	
Coconut for feeding Animal	03	1 – Yes	2 – No	Each	
Cocoa	04	1 – Yes	2 – No	Cups	
Banana, Palagi	05	1 – Yes	2 – No	Bunch	
Banana , Misiluki	06	1 – Yes	2 – No	Bunch	
Banana, Others	07	1 – Yes	2 – No	Bunch	
Breadfruit	08	1 – Yes	2 – No	Each	
Taro	09	1 – Yes	2 – No	Each	
Taro Palagi	10	1 – Yes	2 – No	Basket	
Taamu	11	1 – Yes	2 – No	Each	
Yam	12	1 – Yes	2 – No	Tolo	
Cassava	13	1 – Yes	2 – No	Basket	
Chinese Cabbage	14	1 – Yes	2 – No	Bundle	
Tomatoes	15	1 – Yes	2 – No	Packet	
Water Cress	16	1 – Yes	2 – No	Bundle	
Pumpkin	17	1 – Yes	2 – No	Each	
Laupele	18	1 – Yes	2 – No	Lau / Leaf	
Esi	19	1 – Yes	2 – No	Each	

SECTION VII FORESTRY

Did your household plant any forest trees listed below from Jan 1 2009 to the day of enumeration? Encircle "1" for Yes or "2" for No and enter the code in the box provided.

1 YES		2 NO		→ End of Interview		
Line No.	Local Name	Code	USES (Encircle code)			
			Fale	Pa	Fafie	Meataulima
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Poumuli	1	1	2	3	4
2	Mahoki (Mahogany)	2	1	2	3	4
3	Tava	3	1	2	3	4
4	Malili	5	1	2	3	4
5	Ifilele	6	1	2	3	4
6	Tiki (Teak)	7	1	2	3	4

END OF INTERVIEW FOR THIS HOUSEHOLD IF THEIR AGRICULTURAL ACTIVITY IS CODE 1(NON AGRICULTURE) OR 2 (MINOR AGRICULTURE) IN SECTION 11.

OTHERWISE, CONTINUE TO THE HOLDING FORM.

The information is being collected under the Statistics Act 1971.

GOVERNMENT OF SAMOA

SAMOA BUREAU OF STATISTICS AND MINISTRY OF AGRICULTURE AND FISHERIES

SAMOA CENSUS OF AGRICULTURE 2009

Holding Form

HOLDING FORM

Region: _____ Region Code: Ea Code:
 District: _____ District Code: Household Number:
 Village: _____ Village Code: Holding Number:
 Head of Household: _____ Enumerator: _____

SECTION I – NUMBER OF HOLDINGS AND METHOD OF OPERATION *(During the period January 1 2009 to Day of Enumeration)*

List the different **agricultural holdings** that the household is engaged in: (sole operation, family or other group operation – each combination forms a different holding). Check for parcels adjacent to the house, fallow land and parcels with abandoned or semi-abandoned crops.

Holding Number	Name(s) of Operator(s)*	Method of Operation <i>(Enter Code)</i>	Number of Separate Parcels	Location <i>(Enter Code)</i>	
				District	Village
(1)	(2)	(3)	(4)	(5)	(6)

* Write the name of the household head or the operator in the case of individual household operations or write the names of individual members if partnership or group operation – Encircle the respondent to be used for each holding if more than one operator.

- Code for the Method of Operation (Col.3):**
- 1 Individual Household on Own Account
 - 2 In Partnership
 - 3 A Village Association
 - 4 Institution

SECTION II- TOTAL AREA OF THE HOLDING (as of the Day of Enumeration)

Parcel Number *	Location		Total Area *		Land Tenure (Code)	Land Use (Code)	Period Of Use (Years)
	District (Code)	Village (code)	Whole acres	Fractions of acre			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1(Homestead)							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
TOTAL							

* Compute for the total number of parcels and the total area.

Codes for:

Land Tenure (Column 6)

- 1 Customary Land
- 2 Leased Customary Land
- 3 Leased Government Land
- 4 Own freehold land
- 5 Leased Freehold
- 6 Others

Main Land Use (Column 7)

- 1 Land under tree crops
- 2 Land under other crops
- 3 Land under tree crops and others
- 4 Land under Temporary Fallow
- 5 Land under non Agricultural Use
- 6 Land under livestock

1 Yes

2 No

→ **Go to section V**

SECTION V - USE OF FERTILIZERS, AGRICULTURAL CHEMICALS *(during the period Jan. 1, 2009 to the Time of Visit)*

(1) Did the household use any inorganic fertilizers? (Encircle "1" for Yes or "2" for No and enter in the box provided.)

1 YES

2 NO

(2) Did the household use any organic fertilizers such as leaves, animal manure, etc.? (Encircle "1" for Yes or "2" for No and enter in the box provided.)

1 YES

2 NO

(3) Did the household use any agricultural chemicals? (Encircle "1" for Yes or "2" for No and enter in the box provided.)

1 YES

2 NO

→ **Go to Section VI**

(5) If Yes, specify the agricultural chemicals used.

Main chemical used

(office use only)

1 Insecticide

2 Herbicide

3 Fungicide

SECTION VI – CROPS GROWN (during the period Jan. 1, 2009 to the Time of Visit)

For EACH CROP listed indicate the **CROP STATUS CODE** and, if Codes 1 or 2, the **CROP USE CODE** must be filled up.

Did the household grow any of the crops during the reference period or before the reference period but still growing? (If 'YES' encircle 1, otherwise encircle 2 and End interview.

1 YES

2 NO

→ **END OF INTERVIEW**

Name of Crop	Crop Code	Crop Status Code			Crop Use Code			Name of Crop	Crop Code	Crop Status Code			Crop Use Code		
(1)	(2)	(3)			(4)			(1)	(2)	(3)			(4)		
Coconut	01	0	1	2	1	2	3	Taro Palagi	21	0	1	2	1	2	3
Cocoa	02	0	1	2	1	2	3	Taamu	22	0	1	2	1	2	3
Breadfruit	03	0	1	2	1	2	3	Umala	23	0	1	2	1	2	3
Lemon, Lime	04	0	1	2	1	2	3	Cassava	24	0	1	2	1	2	3
Oranges	05	0	1	2	1	2	3	kava	25	0	1	2	1	2	3
Avocado	06	0	1	2	1	2	3	Yam	26	0	1	2	1	2	3
Mango	07	0	1	2	1	2	3	Egg Plant	27	0	1	2	1	2	3
Vi	08	0	1	2	1	2	3	Tomatoes	28	0	1	2	1	2	3
Banana	09	0	1	2	1	2	3	Peanut	29	0	1	2	1	2	3
Vanilla	10	0	1	2	1	2	3	Pineapple	30	0	1	2	1	2	3
Star fruit	11	0	1	2	1	2	3	Watermelon	31	0	1	2	1	2	3
Rambutan (lychee)	12	0	1	2	1	2	3	Papaya	32	0	1	2	1	2	3
Apiu	13	0	1	2	1	2	3	Beans	33	0	1	2	1	2	3
Coffee	14	0	1	2	1	2	3	Cucumbers	34	0	1	2	1	2	3
Nonu (Juice)	15	0	1	2	1	2	3	H/ cabbage	35	0	1	2	1	2	3
Pele	16	0	1	2	1	2	3	C/ Cabbage	36	0	1	2	1	2	3
Chilli	17	0	1	2	1	2	3	Lettuce	37	0	1	2	1	2	3
Green Pepper	18	0	1	2	1	2	3	pumpkin	38	0	1	2	1	2	3
Ginger (fiu)	19	0	1	2	1	2	3	Others		0	1	2	1	2	3
Taro	20	0	1	2	1	2	3		39	0	1	2	1	2	3

Codes for Crop Status (column 3)

- 0 – Not grown
- 1 – Currently growing
- 2 – Not Growing now BUT grown during 2009

Codes for Crop Use (column 4)

- 1 – Mainly grown for home consumption
- 2 – Mainly grown for sale
- 3 – Partly grown for home consumption and partly for sale

