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**IS IT TOO EARLY TO EXIT SUBSISTENCE
AGRICULTURE? – CASE STUDY OF THE LOWER
NAITASIRI PROVINCE**

by

Reshika Vandhu Kumar

A thesis submitted in partial fulfillment of the
requirements for the degree of
Master of Arts in Pacific Studies

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Oceania Center for Arts, Culture and
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February, 2013

DECLARATION

Statement by Author

I, Reshika Vandhu Kumar, declare that this thesis is my own work and that to the best of my knowledge, it contains no material previously published, or substantially overlapping with material submitted for the award of any other degree at any institution, except where due acknowledgement is made in the text.

Signature Date

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Statement by Supervisor

The research in this thesis was performed under my supervision and to my knowledge is the sole work of Reshika Vandhu Kumar.

Signature Date

Name: Dr. Frank Thomas

Designation: Senior Lecturer

DEDICATION

I dedicate this to my husband Salesh Kumar, son Sahil Rajal and daughter Swasti Riya

ABSTRACT

Subsistence Agriculture is defined as an agricultural system where cash interaction does not eventuate. In this case study, subsistence agriculture partially involves exchange of cash to sustain the family income.

This supervised research project intends to justify the importance of subsistence agriculture to the farmers of Lower Naitasiri and how the cash derived from the sales of the subsistence products sustain their livelihoods.

The research was carried out in the Lower Naitasiri, in the Muaniweni settlement and two Fijian villages, involving a hundred participants. The mode of research method that was involved to obtain information in the villages was the Talanoa session method and questionnaires for the settlements.

Upon the completion of this project, it was observed that subsistence agriculture is still the most important means of sustenance for the people of Lower Naitasiri. The research also highlighted that subsistence agriculture was an important means of earning to meet daily expenses.

ACRONYMS

Ausaid – Australian Aid

BOP – Balance of Payment

Edu – Level of education

Eth – Ethnicity

FPFL – Food Processors Fiji Limited

GDP – Gross Domestic Output

HS – Household size

IPN – International Policy Network

Loc – Location

MDG – United Nations Millennium Goals

NFMWOF – Number of family members working off farm

NLTB – Native Land Trust Board

PIC – Pacific Island Countries

PNG – Papua New Guinea

VCC – Value Chain Concept

WHO – World Health Organization

WTO – World Trade Organization

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CHAPTER ONE: INTRODUCTION

Is subsistence agriculture still the foundation of economic development in Fiji? Subsistence agriculture is both traditional and dynamic and it supports majority of families and innovative commercial enterprises that have developed into export markets.

Subsistence agriculture, forestry and fishing sector account for 32.5% of the total Fijian informal sector output (Lal and Foscarini 2006). This is a significant contribution to Fiji's economy. According to Prasad (2006), the subsistence sector has helped in the development of fish, taro, kava, fresh fruits and vegetables as major domestic export commodities.

The overall objectives of this research were to 1) determine types and levels of agriculture in Lower Naitasiri; 2) Analyze significance of subsistence agriculture using collected data and 3) Compare and contrast existing literature on subsistence agriculture.

Sugarcane and subsistence farming dominate Fiji's agriculture sector. The preferential prices allowed the development of inefficient and unsustainable practices, including the expansion of sugarcane farming onto unstable slopes and areas of marginal soil. According to Barrack (1997), sugar contributes 50% of cash farm income only, while other cash crops and off-farm income contribute about 20% each.

Subsistence farming, including the use of forest and coastal resources, has traditionally met a range of rural households' needs. It acts as a barrier from the impacts of political upheavals, tropical cyclones, and other economic shocks on Pacific Island dwellers. Traditional systems will continue to be essential for family support. However, they need to be improved as increasing populations restrict the scope for shifting agriculture and communities in the Pacific.

Commercial farms are leasehold and many evictions and uncertainty about lease renewal have exacerbated a poorly developed land care ethic among farmers. With the expected reduction in the price of sugar, many farm households will need to improve yields or diversify to maintain their incomes. In fact, given the very low levels of income of most cane farmers, increasing off farm incomes is a most desirable goal.

People no longer easily accept the destruction of forests and important natural resources in order to make land available for agricultural use. Agriculture exports have changed dramatically with declining real prices for plantation products such as copra, coconut oil and cocoa. Increasingly, stringent quarantine regulations in countries where there are markets for South Pacific products pose difficulties and have stimulated the development of value added and processed products.

The following are the reasons for the research and survey on the development of subsistence oriented farming system:

1. Compatibility with the environment
2. Compatibility with the lifestyles of Pacific people
3. Consideration for the customs and traditional obligations
4. Compatibility with the land tenure systems in the Pacific
5. Caters for women involved in the subsistence sector
6. Enhances the economy
7. Major supplier of local markets for local consumption
8. Food security
9. Development of niche marketing systems for local products
10. More grassroot development through subsistence agriculture

According to Foraete (2000), the traditional support system was weakened during the transition from an agrarian based society to an urban based society. There was a need to produce more marketable foods required to feed Fiji's

increasing urban population. He goes on to say that Fiji's farmers mostly produce an impressive quantity and range of traditional food crops that are consumed by the people in their daily diets. Traditional food crops are grown throughout the country and are known to be the "hidden strength of the Fijian economy". He argues that the nation's food security is dependent on the continuation of subsistence farming. The transformation of subsistence oriented farming system to semi commercial farming system of production in Fiji has a competitive advantage. Until 50 years ago most of the population had sufficient quantities of their traditional foods. The people of Fiji had excellent systems to ensure that there was a sufficient supply of nutritious food. These include a wide range of root crops, coconuts, traditional rice varieties, fruits and vegetables. In addition, a significant volume of traditional crops are produced that is surplus to subsistence consumption and is sold to earn cash income. For example based on the Agricultural Census, it is estimated that 120,000 tons of root crops are traded for a farm gate value of \$F 60 million. Fiji's level of food imports remains comparatively low which suggests that domestic food supply has the ability to expand and meet the rising demand from the increasing urban population.

Food security is when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary and food preferences for an active and healthy life. It includes the availability of food, and the ability to access and make use of food. The availability of food would depend on both local production and imports. The ability to access food depends on how people are able to grow and/or buy their own food, which assumes markets for local products and labour, including labour costs relative to food costs.

It is a widely known factor in Fiji that the customs of communal land tenure together with dependence on family labour make it difficult for subsistence oriented farmers to expand their scale of production enough to sustain the economy. However, research has shown that there are a lot of traditional methods of sustainable farming that could be incorporated with the existing

technology to increase agricultural production. The traditional farming system itself contributes to sustainable production. Some of the sustainable methods used in Fiji include agro-forestry, rotational farming, diversification and semi-intensive farming systems in case of livestock production.

The advantages of developing subsistence oriented farming systems would appear to be the following:

Firstly, there is a need for protection of the small Pacific economies from external forces such as comparative advantage for products. Secondly, there is a need to reduce the dumping of cheap low quality products such as meat, some fruits and vegetables into the country. Thirdly, trade liberalizations could induce dependency and hinder infant industries from developing thus causing the Balance of Payment (BOP) to remain in deficit. A deficit in BOP as a result of increased imports, for example fruits and vegetables, will hinder the economic growth of a country. A significant amount of money is used for the purchase of imported agro inputs (such as machinery, chemicals, and fertilizers) used in the commercial agricultural sector. Viable subsistence sector can reduce dependence on imported foods and increase self reliance. Subsistence oriented agricultural development provides security against the instabilities of external markets. Sales of surplus farm produce and purchase of needs and wants adds to activities that help develop the economy.

Many efforts are being made to market agricultural products, carry out research activities and make changes in systems of land management to provide an environment for economic development. What policy makers need to recognize is that the main mode of production will continue to be based on village small holdings. The main aim for this village based small holdings of production system will be to provide for subsistence and the domestic market. It will also supplement exports from the subsistence sector.

Furthermore, traditional practices surveyed by Fleming (2007), could be used to improve agricultural production while maintaining the environment. In a research on Pacific agricultural systems he suggests a need for more robust agricultural production system to be able to withstand natural disasters. According to Warner (2007), the research on the development of new varieties of many crops in Solomon Islands is constrained by its culture, institutions and policies. Therefore, he emphasizes the importance of developing the subsistence agricultural sector which is more conducive to the Pacific lifestyle, culture and environment.

The subsistence sector also involves a majority of the women who tend to be overlooked as economically viable because national policies are focused on cash crops and livestock farming, which are generally the domain of men.

“Of the estimated 17,000 persons seeking employment each year, about 8,000 can be expected to succeed in gaining formal sector work. These 7,700 job opportunities will derive from the need to replace an estimated 2000 persons in the formal sector migrating each year and 3,300 leaving the formal sector due to natural attrition, plus an estimated 2,400 new jobs created in the formal sector annually (representing a growth rate of 2.0% per annum based on a 4.0 percentage per annum GDP increase and an output employment elasticity of 0.5” (Fiji Islands Bureau of Statistics 2006:1)

Under such a scenario, 9,300 job seekers each year will be entering a mixed cash crop and subsistence agricultural sector (Bureau of Statistics 2006). An increased number of people entering lesser productive activities and underemployment can be expected to increase.

There is a lot of land that is not suitable for arable or cash crop farming. To make matters worse, improper agricultural practices have taken a toll on soil fertility and productivity. Much of the rural population is in a downward spiral of land degradation and mounting poverty. Traditionally when soil nutrients and

moisture were depleted in one area, small-scale producers often moved to less degraded land, including forested land. This system of shifting agriculture is quite impossible now with the paradigm shift in land tenure systems and limited space. As a result, there is an increase in the use of fertilizers to replace nutrients. There is a need for irrigation systems to cope with drought conditions and intensive off-season production. There is an increase in the use of herbicides to control weeds that compete with crops for nutrients. Biotechnology is also being used to develop new crop varieties.

According to the study majority of the agricultural practices utilized by subsistence farmers are environmentally friendly. Resources used are usually left over from cash crop farms. Organic fertilizers, intercropping, crop rotation, interplanting and other sustainable agricultural practices were used.

The World Commission on Environment and Development drew attention to common challenges of population growth and strategies for sustaining food security and conserve natural resources. Agenda 21 states:

"Major adjustments are needed in agricultural, environmental and macroeconomic policy, at both national and international levels, in developed as well as developing countries, to create the conditions for sustainable agriculture and rural development. The major objective of sustainable agriculture and rural development is to increase food production in a sustainable way and enhance food security. This will involve education initiatives, utilization of economic incentives and the development of appropriate and new technologies, thus ensuring stable supplies of nutritionally adequate food, access to those supplies by vulnerable groups, and production for markets; employment and income generation to alleviate poverty; and natural resource management and environmental protection" (Agenda 21 1992:10)

By 1990's, sustainable development had come to the forefront. Development practiced by our forefathers was reintroduced as sustainable development theory. Likewise, sustainable agriculture was a reconstructed version of

subsistence agricultural practices that became morally ethical agricultural policies.

Sustainable development emphasizes “satisfying the needs of the current generations without compromising the ability to meet the needs of future generations,” not harming the natural system sustaining earth life: atmosphere, water and soil; not exceeding the carrying capacity of resources and the environment” (CCICED 2005:1)

Therefore, sustainable agriculture is generally concerned with need for agricultural practices that are economically viable and meet human needs for food and be environmentally friendly. Since these objectives can be achieved in a number of different ways, sustainable agriculture is not linked to any one particular technological practice. As mentioned earlier, research has shown that many traditional agricultural practices could be incorporated with modern technologies to sustain production. Research has shown that many farmers in Lower Naitasiri do not have high levels of education. Agriculture provides an alternative to school leavers. Therefore, most farmers practice an agricultural system that has been passed down across generations.

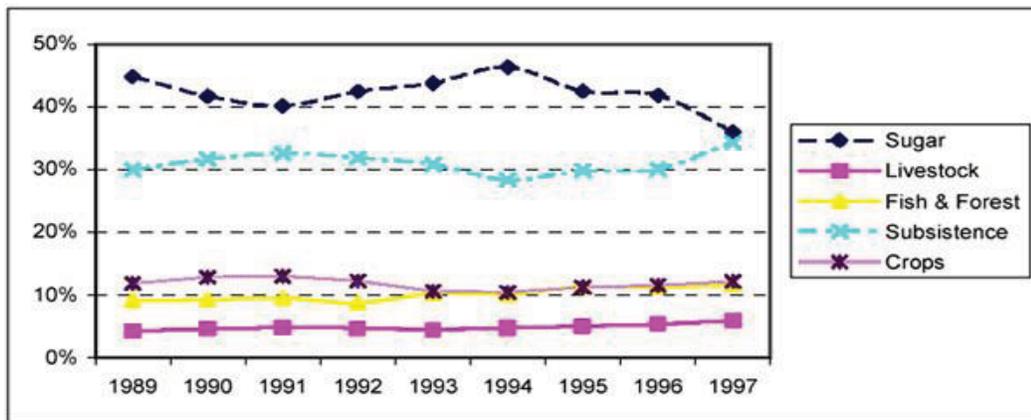
The traditional agricultural production systems in Pacific Island Countries (PIC) provide major food resources and resilience to small economies in times of external economic shocks or natural disasters. Unfortunately, there is no proper evaluation of contributions made by subsistence agriculture to PIC economy. The vibrant cultural and traditional practices ensure high food security through subsistence production. There is a need for awareness of threats caused by natural disasters and cheap import substitutes to agro-biodiversity in small island economies (e.g. cheap rice imports are displacing indigenous taro, yam and rice varieties). Subsistence farming systems have until now formed huge natural germplasm centers for many indigenous species of plants. Therefore, support from all stakeholders including people, government and consumers are needed to protect these naturally existing germplasm centers.

There is a need to assess the impact of food import policies related to maintenance of biodiversity including agro based biodiversity in home-gardens of small islands. Taro based home-gardens are widespread throughout the Pacific. Their conservation and sustainable management practices are essential for risk mitigation and self-sufficiency of islands. Governments largely have ignored the agricultural sector, often focusing on misguided attempts to industrialize. Poor infrastructure means that farmers have little access to inputs (such as fertilizer and pesticides) and also inadequate access to markets for finished products. Policies such as marketing boards, price controls and monopolies dominate market pricing and taxation has been used to benefit politically connected elite, while farmers have suffered.

Small size and remoteness of PIC make them vulnerable when trading and competing with larger economies in global market. Insularity in regards to success of small domestic markets and a lack of economies of scale, human resource, capital and entrepreneurship slows development. Prasad (2006) discovered that smaller islands are disadvantaged in doing business in global market due to high transport costs. Hence, most of PIC is characterized by a large informal sector and subsistence agricultural and fishing activities.

There is an urgent need for policy makers to divert their attention from exclusively export orientated cash crop production to subsistence agriculture and fisheries development as well. A policy development framework that looks into the welfare of subsistence level producers is required because it makes substantial contribution to Fijian economy. Chart 1 shows the percentages of the different agricultural enterprise contribution to the economy. Subsistence production happens to be second largest enterprise after sugar.

Chart 1 – Chart showing the percentage of the different agricultural enterprises that make up the agricultural sector



Source: Fiji Bureau of Statistics.

Agriculture is often the economic driving force in developing countries. World Trade Organization (WTO) statistics show that agriculture accounts for over one-third of export earnings for almost 50 developing countries, and for about 40 of them this sector accounts for over half of export earnings.

This research thesis is divided into five chapters. Chapter one introduces the background, identifies the challenges and justifies the study and outlines objectives.

Chapter Two provides a conceptual framework linking key concepts and issues relating to research topic. Chapter Two provides an overview of relevant approaches, models and theoretical debates on subsistence agriculture, its importance and relevance to our society in modern era of commercialization. It also provides the background to the study area. It briefly discusses geography, history and economics of the study area.

Chapter Three provides a detailed methodology employed during research and a justification on the choice of methods and its implications.

Chapter Four focuses on research findings, analysis and discussion. It provides a detailed analysis of Home use Model, discussion and recommendations based on result analysis. It also identifies implications of research on subsistence agricultural policies.

Chapter Five provides a conclusion and a brief summary of recommendations and areas for future research on this topic.

CHAPTER TWO: LITERATURE REVIEW

2.1 Overview

Fiji has towns that are quite developed in comparison to other Pacific islands. Almost 39 percent of population lives and works in towns and two-thirds live within 8 kilometers of a town or service center, World Bank (1995). Most rural populations have access to markets and services. Proportion and growth rate of the urban population are increasing. By 2006, urban population had grown to 400,000. Two thirds of this population lives in the greater Suva region. Within the next 20 years, Fiji is likely to be transformed from a predominantly rural to a predominantly urban society.

In Fiji, home produced foods are more significant than in more developed countries and are identified as separate line aggregates in national accounts.

Table 1 illustrates the production of different agricultural enterprises in relation to the Gross Domestic Product.

Table 1 - Gross Domestic Product Shares by Agriculture Sector (%) GDP, 2001 – 2004

Sector	2001	2002	2003	2004
Livestock	0.6	0.6	0.7	0.7
Crops	6.9	7.1	6.7	6.4
Sugarcane	4.5	4.5	4.3	4.1
Other crops	2.4	2.6	2.4	2.3
Subsistence	4.5	4.4	4.4	4.2
Agriculture				
Total	12.3	12.5	12.0	11.6

Source: Government of Fiji, Strategic Development 2007 - 2011, (2006)

Kostov and Lingard (2004), argue that subsistence agriculture in transition economies result in dramatic institutional changes from a centrally planned to free marketing economy that took place in transitional countries such as Central and Eastern Europe. Institutions could be formal or informal and formal institution designs are convenient for analysis because they are well defined and usually in written form. Informal institutions are less tangible and often contain “tacit knowledge” that is difficult to analyze. Neoclassical economics tends to ignore informal institutions and concentrate on formal ones. The role of informal rules in the above argument is to support the formal institutions. Kostov and Lingard (2004) suggests that new economic paradigm of subsistence agriculture is the link across markets and adaptive behavior by rural decision makers that often compensate for apparent efficiency losses caused by market failures. Consequently, new economic paradigm affects implementation of efficient agricultural policies. Policies aimed at general economic development and creating income opportunities will in general exercise favorable effects on agricultural commercialization. This alters the environment in which subsistence farmers operate. “Trying to decrease subsistence agriculture by administrative measures means reducing the market because decreasing subsistence farming is neglecting the rural farmers’ decisions and their effort in economic growth” (Kostov and Lingard 2004:1)

Hone (2006) argues that relatively large size agricultural sector makes it important to base agricultural policy decisions on reliable data. Moreover, improvements in farm sector productivity are an important driver of economic growth in developing countries. Good data provide governments and citizens with reliable basis for identifying policy issues and assessing aggregate and distributional impacts of policy initiatives. Good data help to improve quality of analyses and helps government account for their decisions. In democratic settings, improved accountability will ensure public policy promotes high economic growth and development.

GDP estimates not inclusive of non-marketed agricultural, fisheries and forest production in an economy like Fiji's will underestimate the true size of rural sector and provide a misleading impression of the nature and extent of economic changes in the sector over time. However, actual practice on home produced consumption is based on pragmatic issue of the importance of subsistence production in the national economy. The importance of subsistence and rural sector development is its contribution to GDP and national development.

Imported goods, particularly foodstuffs have placed a heavy toll on trade balances, which cannot easily be rectified within the climate of globalization. The resulting impacts are manifested in elements of 'poverty', such as health, education, and general welfare.

In his first appearance as a Minister of Agriculture 2007, Jainend Kumar highlighted on achievements and constraints facing agriculture sector in Fiji to meet United Nations Millennium Goal (MDG) of increasing agricultural production in Fiji in order to reduce poverty and hunger and ensure food security.

Policies intended to ensure food security need to be more in harmony with the people's way of life and their vanua. The previous food security projects that had been implemented have failed. The important aspect to consider when planning for projects for commercial basis is the compatibility of the project with the people and their beliefs or culture. Ravuvu (1988), states that there is a strong deterrent to the commercial land use. The land is considered as sacred to the Fijian people.

*"..... (ne qau vanua) the land which supports me and to which I belong.....
(na vanua na tamata) the people are the land....."*

Religion plays an important part in people's lives. Sunday or Saturday (Sabbath Day Followers), working is taboo. Getting people to change their ways to suit the commercial rules of production may also mean breaking up of their cultural and religious values that are valuable to their sense of identity. Commercialization could also be a threat to of secular rituals that is found in everyday practices. Secular loss in agriculture refers to the traditional ways of growing and preserving crops and rearing of animals. Some of these methods such as subsistence organic farming, pest control, and food security and mixed farming systems not only ensure a continuous supply of food in all seasons but environmentally friendly.

Jones (2009:12) discusses the relation between secular and religious rituals within a holistic social system. "In Lau and Polynesia rituals associated with food production and harnessing of raw materials from natural world, the realm of Gods, is described as the 'work of Gods', a fundamentally religious process. The remarkable widespread ideology surrounding food production suggests an institution that is anchored in the deep values of Fijian and Polynesian society. The ideology has endured Colonization and Christianization, suggesting that it existed long before Western contact. Neo-traditional secular rituals as they are practiced today- including subsistence production and food consumption and distribution patterns – provide points of connection between social and material phenomenon."

Furthermore, she suggests that in traditional Fijian and Polynesian customs, a proper meal is composed of 'true food', starchy crops (e.g....taro, yams, sweet potatoes, cassava, breadfruit) and flesh food (most often seafood or wild life).

Many PIC adopted export market based agriculture at independence. Most commodities that satisfied European markets such as copra, coffee, sugarcane and beef were adopted. Agricultural development projects were initiated to encourage small holder's participation in commercial agriculture. Promotion of these exports became the focus for agricultural policies despite handicaps of

PIC location and distance from international markets. Today prices have fallen below production costs in PIC and farmers are inclined not to invest in new plantations. Therefore, it is reasonable to say that agricultural policies focusing development of these commodities have failed to produce significant outputs. In fact, statistics indicate that these productions are declining despite heavy subsidies.

Pollock (2004), aims to show how outsiders' interventions based on their own principles of 'development' brought to the Pacific over past 150 years, have led to the situation we label poverty today. Key manifestations of changes have led to the situation of food insecurity, in direct contrast to food riches of pre-contact time. "For example around 1924 Fiji was exporting butter but now importing to meet current demand. Self sustainable abilities of pre-contact communities were devalued with the pressure to produce cash crops, as the means towards a 'wealth' economy, came forefront in development plans in the 1970" (Pollock 2004:1)

Thus diversification out of export oriented cash crop and into traditional export crop policy objectives are required for economic growth. The identification of suitable crops must take into account their low volume, high value and non-perishable nature.

Lebot et.al (2001) suggests policy objectives that diversify into non-traditional agricultural export products. Careful research as well as sharing of experiences amongst those already engaged in this process is needed. Although in advocating such research, several pertinent issues warrant attention: the scarcity and diversity of local resources, inelastic world demand and role of PIC governments, regional organization and international community.

Uniyal and Awasthi (2003) studied the importance of traditional knowledge and practices in prudent resource use and biodiversity conservation. It was observed that forest based subsistence agriculture had given way to market dependent

cash crop planting. This change in farming practice has led to loss of biodiversity, depletion of forest and knowledge on use of important traditional food and medicinal plants. This traditional but important knowledge is being displaced by a dependence on the production of high value market commodities. People engage in activities geared for short term economic benefits which in the long run may not be sustainable.

Puniya et.al (2000) suggests that colonialism and industrial revolution has led to the disintegration and disorganization of erstwhile socioeconomic entities which has led to oblivion, even loss of much indigenous knowledge. “.....acculturalisation has led entire cultures into oblivion; synthetic pharmaceuticals have supplanted ayurvedic remedies; screwdriver technology industrialization has made the ergo logy of multifarious arts and crafts redundant and pushed generation upon generation, ever larger proportions of mentally and physically able adults into unskilled jobs; and centralization in decision making send administration deprived ever larger populations of the opportunity for active participation...” (Puniya et.al 2000:4)

Pacific people traditionally enjoyed diverse ways to achieve food security, (gardening, fishing, hunting, and selling products or labour for cash). But healthy and nutritious local food production has significantly been eroded away with urbanization and cheap, poor quality food imports. Climate change will increase threats to food security, through its impacts on food production. It will also affect health, infrastructure, ability of countries to import food and households to purchase food.

Heywood and Hide (1994) conducted research in Papua New Guinea (PNG) and found that participation in the cash economy through the production of cash crops has led, at the household level, to increase consumption of imported foods. “By 1978 it was estimated at the national level that 23% of all food consumed was imported. The single most important import was rice, which contributed to food energy rise from 5% in 1963-1964 and 16% in 1984-1985.

Household dependence on rice is much greater in the urban market, which accounted for approximately 30% of total consumption, where the contribution of rice to dietary energy in 1963-1964 was 15% and in 1984-1985 was 39%. The contribution of rice to dietary energy in rural households rose on average from 4% to 13% over the same period. Consequently, from the period 1975-1976 to 1982-1983, food imports as a percentage of total export revenues rose from 16% to 20% and as a percentage of agricultural exports from 50% to 69%. These trends were reinforced by the hard-currency strategy of successive post-independence governments, a fall in the real price of imported rice, and increases in the cost of locally produced alternative staples” (Heywood and Hide 1994:1)

He suggests that rising prices of domestically produced staples between 1971 and 1980, together with increased food imports, was interpreted as indicating a fall in local food production. Perhaps it indicates a decline in subsistence skills. These trends have led to some concern regarding PNG’s dependence on imported foods that consume foreign exchange. The excerpt indicates that domestic food production by small holder farmers is spread amongst urban consumers and not exported. It also means that income and employment of urban dwellers spills over to rural small holder producers of domestic food.

A majority of Pacific Islanders rely on subsistence farming and fishing for their survival. These sectors are also major foreign currency earners in a number of countries. In cultural terms, the very existence of ‘Pacific People’ is inseparable from the land and the sea. Although the risks to the physical and cultural survival of many Pacific Islanders as a result of sea-level rise have been widely publicized, it is agriculture, marine and terrestrial ecosystems that are likely to be affected first in the next century. Adverse effects on these systems will probably render many areas uninhabitable long before they are totally inundated, if they ever are. (Nunn 2004; Nunn 2000: 715-740)

Food security has not traditionally been regarded as an area of concern in Pacific Island populations. In normal times food is plentiful and it is only in

times of crisis, such as in the months following a cyclone, that measures have to be taken to ensure that food is available to those in need. Whilst this paper is not concerned with such times of crisis, it is noted that a population that is food secure in normal times will be better able to cope with food insecurity during crisis periods.

Campbell (2006) identifies food security as one of the four sets of traditional disaster reduction activities. He suggested the importance of growing resilient crops and diverse cultivars to cope with the considerable damage to agricultural systems through wind damage, salinization, water logging, silting and moisture stress. This type of farming system is only possible through subsistence agriculture where a range of crops and a diverse variety of crops and cultivars could be grown. Modern commercial farms mainly focus on mono cropping of mainly cash crops or export oriented crops. Disasters such as hurricanes, flooding or pest infestations may cause the total loss of farms especially those that practice mono cropping. Mono cropping does not provide the resilience against disasters and barriers against pests as well as diversified farms.

In traditional times, Pacific communities were composed of subsistence agriculturalists and throughout much of the contemporary Pacific region a strong subsistence economic sector still remains. Today this is often supplemented by commercial crop production, such as coconuts from which copra is derived, or food crops for sale in urban markets. Campbell (2006) states the importance of traditional crop growing, crops that had the ability to withstand strong winds. For example, crops such as yams, sweet potato, *Alocasia* and *Xanthosoma* are more resilient than cassava (*Manihot esculenta*). Similarly, leafy vegetables such as ota, rourou and watercress not only recover quickly after a disaster but are the major source of food for all ethnicities in Fiji.

Fiji had devaluation in 2010 with the aim to stabilize the Balance of Payments. It was also aimed at increasing exports, especially in the agricultural sector. Devaluation to encourage development of agricultural sector would mean an

incentive for farmers to produce more export oriented crops. There would be a rush by farmers to produce at commercial scale and neglect their subsistence crops. This could lead to a decrease in locally consumed food products. At the same time, the increase in price of imported food items would encourage people to buy more locally grown crops but because of the shortage in supply of locally produced food crops thus would cause a rise in price. The rise in price of the local products would cause the people to move away from local products to cheaper low quality imported products again. Therefore, the implementation of any policy regarding the development of agriculture in Fiji needs proper evaluation.

Heywood and Hide (1994) argues that high cash income raises dependence on imported foods and short-term in-elastic supply of domestically produced foodstuffs means any disruption to food supplies would cause great hardship immediately. Large upward movements in price of imported foods would cause considerable hardship in urban areas, while a fall in export commodity prices would hit hardest in rural areas. A transition to a fully cash economy and shift from subsistence food crops to cash crops appears to be bringing about even more serious nutritional problems.

Although specialization and development of markets and trade that characterize commercialization are fundamental to economic growth, significant advantages of market-oriented policies and powerful forces of trade for development are unquestionable.

Suggestions by International Policy Network (IPN) to campaign for free trade in agriculture is damaging for small island nations. Claims to increase agricultural production by intensive use of pesticides, fertilizers and modern technology undermines environment, considering the fragile nature of PIC. Investing into food processing programs to increase length of perishable products such as refrigeration, transportation and packaging increases their dependency on processed rather than grown food products. It also adds to the already polluted

environment increasing green house effect and climate change. Processed foods tend to be high in fat, sugar and salt which increase the chances of non communicable diseases such as diabetes, hypertension, obesity and many more.

The following is an abstract from Southgate and Southgate (2006:2) illustrates an example in Sub Saharan Africa where people are suffering from diseases caused by the lack of micro nutrients

“.....In addition to this lack of food energy (which is a standard indicator of malnutrition), Africans lack a range of vital vitamins and micronutrients. Iron deficiency is widespread, especially among women and children, with attendant anemia and associated ill health. In addition, diets lack iodine, vitamin A, zinc, and other micronutrients. As a result, the incidence of goiters, rickets, and other maladies is elevated. Likewise, protein deficiency is a severe problem, with average calorie intake from animal products below 200 per day in 32 African nations. Ironically, malnutrition is particularly severe in rural areas, with diets consisting almost entirely of roots, tubers, and grains which contain starchy carbohydrates and little else.

Another standard indicator of food security (or lack thereof) is the percentage of children who are underweight, stunted, or wasted (i.e., on the verge of starving to death). In 1993, the World Health Organization (WHO) estimated that 27.4 percent of all children in Sub-Saharan Africa were underweight and that the stunted and wasted shares were 38.6 and 7.2 percent, respectively. Seven years later, at the turn of the twenty first century, the stunted share was estimated to have fallen only slightly, to 35.2 percent” (Southgate and Southgate 2006:2)

The risks of policy and market failures, deficiencies in knowledge and information of actors in production and markets at all levels, and household-level complexities and intra household conflicts are also determinants of inefficiencies and inequities during the transformation of traditional agriculture. The key to understanding agrarian change in Central Eastern Europe is

recognizing that survival of household rather than increasing efficient agricultural production is the primary motivation of a majority of the agricultural producers at this time. Recognition of holistic range of resources and activities, with and without direct monetary return are important for livelihood maintenance.

A study conducted by Reddy and Duncan (2007) revealed efficiency analysis for technical efficiency in four countries has not changed over the past four decades. The significance of the study stated that the efficiency analysis of Pacific agriculture needs to be carried out to help understand reasons for poor agricultural sector performance in PIC. Subsistence agriculture is a large part of total agricultural production in Pacific. Moreover, subsistence and commercial production are generally joint household activities. There are no separate measures of subsistence and commercial production. “The only available measures of total agricultural activity are the crop and livestock and total agricultural indices compiled by Food and Agriculture Organization (FAO). Therefore, in order to gain some understanding of developments in the totality of agriculture in the region, analysis is necessary” (Reddy and Duncan 2007:28)

The Samoan economy loss in 1993 due to taro blight is slowly recovering. Samoa was dependent on taro export as a major source of income until 1993 when it was destroyed by the taro blight. It caused total destruction of the industry as most of the farms were commercial and mono crop inclined. The Honorable Deputy Prime Minister at the time of the Independent State of Western Samoa, Tuilaepa Sailele Malielegaoi (1996) stated in his speech:

“...I have spoken at some length on the impact of the environment on agriculture and the resultant specific dire problems small island states face if severe climatic conditions prevail, but there are also other major problems we face in the form of agricultural pests. In 1993, when our food production recovery programme following the 1991 cyclone was making good progress, a particularly violent fungal blight, thereto unknown to our shores, completely

destroyed our main staple food and cash crop. Decisively such was the effect on our economy; it also altered the components of the normal diet of the local population. To counter this major blow to our food supplies we have since pursued an aggressive programme to diversify our food and cash crops but, as agriculturists know only too well, crop diversification requires considerable commitments in resources for research, crop development, convincing farmers, and consumer acceptance both in local and export markets. For small nations, our own efforts to diversify can only be sustained to reach a successful crop mix of food and cash crops as well as adequate production levels with help from donors. The entry into Samoa of the dangerous agricultural blight also highlighted the importance of adequate quarantine measures, not just at the import entry point but at the export exit point as well...”

‘...Before the onslaught of the infectious disease in 1993, taro exports in Samoa peaked at S\$9.5 million. The following year, this fell dramatically to a mere S\$0.2 million, and other neighboring islands like Fiji quickly filled the vacuum as a leading exporter of the product. While AusAID has been funding the TaroGen program in Alafua, Iosefa said this type of research had begun much earlier, in 1996...”

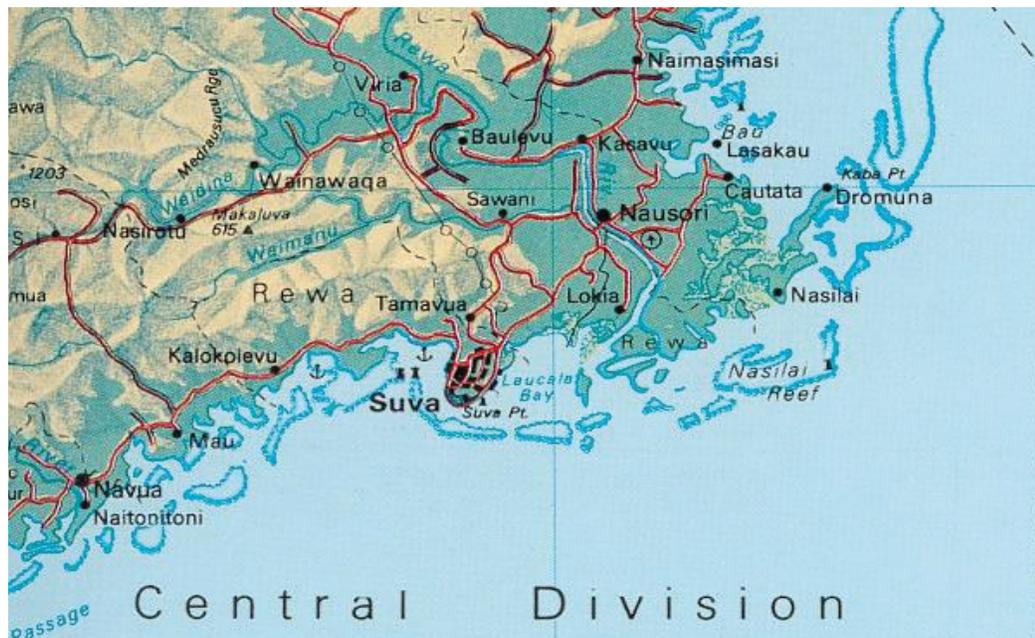
The Germplasm centers such as Regional Germplasm center in collaboration with South Pacific Community and Vudal University in PNG spend large sum of money in the conservation of plant species that traditionally was done cheaply through subsistence farming systems. Traditional preservation methods or diverse agricultural systems have been replaced by mono cropping farming practices intended for mechanization and market demands.

2.2 BACKGROUND OF LOWER NAITASIRI

2.2.1 GEOGRAPHY

Situated about 68 kilometers from the city of Suva are located two villages by the name of Muaniweni and Viria. They fall in the Lower Province of Naitasiri.

Closely located is the Naqali government station that consists of a Public Works Department Depot, Health Center and a Police Post. The area is a valley of flat land through which River Waimanu meanders itself proving sustenance which could turn into a disaster in times of flooding. When the sun rises early in the morning the whole valley gets covered with river fog. As the fog evaporates with the rising sun, the lush greenery comes into focus and one could see acres and acres of farm land ready for harvesting or planting. These areas are home to about 2000 to 3000 people. The road that leads to these villages has recently been tar sealed but the feeder roads that lead to the homes of these people are not in the best of shape. Most of the bridges that connect the banks are not in the best of the conditions. There are about three (3) primary schools and one secondary school that the students attend for their primary and secondary education. Many parents prefer to send their children to schools located in Suva and Nausori. Bus services are provided four (4) times a day and extra bus services are provided on Saturdays in the evening. Otherwise, the main means of transportation is by carrier. The people dwell on the hillsides and carry out farming on the flatlands. In Muaniweni the houses are found on the road side and their farms are located in land.



Source: Fiji Government Online Portal

2.2.2 HISTORY

The first sugarcane plantations were started in Viria when the first mill was constructed in Nausori. Sugarcane was carted via the Rewa River in punts for processing at the Mill. When it was discovered that sugarcane was better suited to the drier and sunnier climatic conditions, the mills and the plantations were shifted to the Western and later the Northern Divisions.

When the sugar mills were shifted, the area under sugarcane plantations in Lower Naitasiri was used to grow cotton and coffee. When cotton and coffee did not do well, rice was introduced. Low prices for paddy caused the cessation in rice farming. Farmers opted to grow small scale vegetable farms that supplied the two major towns namely Suva and Nausori. These farms were doing well until the introduction of root crops like taro and sweet potatoes in 1990's.

In 1993, when taro market became prevalent in Fiji, the area became well known for taro production till today. Most of the root crops that is consumed in Fiji and exported come from Naitasiri.

2.2.3 ECONOMICS

Today farmers still grow taro, cassava and kumala commercially and home consumption. The root crops are supplied as far as the Western markets from Sigatoka to Ba Municipal markets. Most of the hotels are supplied through the intermediate buyers from this locality. Intermediate buyers offer very low farm gate prices to farmers. Sometimes it is not sufficient to meet even the production costs. Subsistence agriculture is becoming prominent and farmers are now going back to growing most of the locally used products again. Most of the indigenous Fijian farmers are still using subsistence system of agricultural production as a source of income and food for their families. Table 2 briefly lists the needs, priorities, problems and policy issues affecting their farms.

Table 2 – Table showing the needs, problems and policy issues affecting the farmers in Lower Naitasiri Area

Needs priorities	Problems	Policy issues affecting farming	
Planting Taro	Poor drainage	MPI services	
Planting cassava	Poor MPI service	Drainage	
Planting ginger	High cost of production	Subsidy	
Planting kumala	Transport problem	Financial assistance	
Planting vegetables	Marketing	Road upgrading	
Land preparation	Lack of tools	Affirmative action	
Crop rotation	Other	Lease	Market assistance
Drainage		Animal damage	
Dairy farm		Weather	
Proper hygiene		House	
Organic farming		Education	
Share farming		Mataqali land	
No share farming		Stealing	
Stop farming	Less land area		
Maintain farming	High cost of labour		
Contract farming	Age		
Poultry farming	Lack of technical education		
Pig farming	Expiry of land lease		
Beef farming			
Fish farming			

The need of farmers is cash income, food for family and social obligations. Thus their priorities include activities such as the planting of cash crops such as root crops and vegetables. To be able to fulfill this need adequately they urgently require infrastructure development. The important infrastructure developments include road upgrading; provision of storage facilities and construction of drainage. Most of the Indo Fijian farmers opted to move to the city because they wanted access to proper social amenities such as schools and hospitals with proper facilities. The condition of the roads deteriorates in rainy seasons which make them difficult for the children to go to school. Transportation of fruits and vegetables is a big problem for the farmers as the road conditions make it difficult to reach market on time and much of the produce gets damaged on the way. The bad roads subsequently contribute to high transportation costs. The small bridges get submerged very quickly, even when there is moderate rainfall. To make matters worse these temporary bridges get washed away during heavy flooding and take so long to get repaired.

Then there is the problem of crop storage as there are no proper storage facilities available in Lower Naitasiri. This causes a major loss during seasonal planting when there is a glut in production and hence it gets wasted in the fields. During these periods or seasons when goods are in a glut, farmers are not able to sell their produce at reasonable prices. They are forced to sell at below cost prices. Also, there is no provision to process these products for longer shelf life.

Some farmers complained of uneven distribution of agricultural aid. The government of the day is trying different strategies to curb the problem by decentralizing it at district levels and involving more than one stakeholder to maintain transparency and accountability. I quote the words of a farmer during my survey and he said;

“.....our advisory councilor is not a fair man. He only helps those people who are in good terms with him or related to him. I work so hard and I am in

dire need for assistance to improve my farm. I have never got any assistance what so ever from him..... (*Personal com.*)

“.....even the locality Agricultural Officer demands bribe in return for assistance. He demands taro, kumala and animals which he comes to pick in his Government vehicle on Saturdays. During weekdays he will demand grog, root crops accompanied by a heavy lunch.....” (*Personal com.*)

As in other countries, our local farmers also require government protection and assistance in terms of subsidies, infrastructure development and marketing of their produce. The problem according to them is not planting but marketing of the produce. They can fill up their farms with produce on their own expense but at the end of the day the produce gets wasted in the farms because they are not able to sell them or find appropriate markets.

2.2.4 GENERAL INFORMATION

Table 3 – Table showing the farmers profiles

Variable	Sample Observation
Mean Age (years)	46 (152)
Gender (%)	
Male	84
Female	13
Marital status (%)	
Married	90%
Single	7%
Widowed	3%
Education Level (%)	
Primary	94%
Secondary	5%
Tertiary	1%
Ethnicity (%)	
Fijian	25
Indo-Fijian	71
Others	1
Years of Formal Education	1%
Size of Household	
Place of Residence (%)	
On Farm	70%
In village	30%
Other	
Family members working on farm	2-4 persons
Land Tenure (%)	
Mataqali	30%
Native lease	2%
Crown lease	57%
Freehold	1%

CHAPTER THREE: METHODOLOGY

3.1 Overview

Primary data was collected using the Dr. Sitiveni Halapua's *Ta-va social* theory or the *Talanoa Model*. The key strengths of *talanoa* as a cultural model for peace negotiation are its very own formal or philosophical character. "As a pan-Polynesian concept and practice, *Talanoa* involves the constant 'bearing' (*tala*; time; form) of the competing views of people in the form of stories (*va*; space; content) until such time when they reach a state of harmony, equilibrium or balance (*noa*). Once this is achieved, we all experience great exuberance, excitement and joy. In this respect, *Talanoa* can be considered a work of art, the principal concerns of which are the production of symmetry, harmony and beauty" (Mahina 2005:4)

The overall objectives of this research were to 1) determine types and levels of agriculture in Lower Naitasiri; 2) Analyze significance of subsistence agriculture using collected data and 3) Compare and contrast existing literature on subsistence agriculture.

3.2 Comparative study

"Given that the West has been pretty much done in (a'u ki he makulekule), where old ideas are continuously recycled in seemingly new though highly problematic ways-it is about time that we reflectively look at and into our own Pacific cultures – as we have done with respect to our own Tongan culture- with an innocence of eyes and ears and more importantly, of mind- forcefully but critically arising from within them or it with a sense of both creativity and originality" (Mahina 2005:5)

Talanoa sessions were used to ensure that people's way of living is understood and documented appropriately, Nabobo sighted by Tui Clery (2007). *Talanoa* is

especially intended to help farmers discuss information that is *nofu* (correct/true). According to Otsuka (2006), cross-cultural research must interpret the human condition in its social, cultural and historical context in order to understand it. It is essential to conduct culturally appropriate research with indigenous people such as Pacific Islanders. This produces more accurate and valid data to address local issues. A culturally appropriate methodology makes fieldwork more reliable and valued.

According to International Institute for Sustainable Development (IISD:1999), sometime during late 50's and 60's, a paradigm shift took place in the area of research from top down to participatory method of data collection and development known as participatory approach to research. Participatory research methods can be classified into four main types namely Participant Observer, Rapid Rural Appraisal (RRA), Participatory Rural Appraisal (PRA) and Participatory Action Research (PAR).

“Strategies used in participatory research (PR) focus on process and capacity building. In PR, the process of conducting research is as important as the research outcome. The PR process is intended not only to produce useful and sound information, but also to build capacity among the research participants. Capacity building occurs as community members identify research questions, carry out research activities, and in the process develop research skills and techniques. Community members learn to analyze information they have collected and decide how to use this information” (Krishnaswamy 2004). It is very important to consider the cultural context before using a particular tool. Culturally appropriate tools need to be designed with greater sensitivity and input when working with minority and ethnically diverse communities.

In the Fiji context, particularly in indigenous Fijian community, the establishment of good interpersonal relationship with Indigenous Fijian participants is of vital importance. This helps to bridge the gap between researchers and participants, so that they feel at ease to communicate with each other openly and freely. According to Vaioleti (2003) quoted by Otsuka (2006),

talanoa research is a very effective approach, since *talanoa* expects to share emotions of both parties (i.e., researchers and respondents). Therefore, it was obligatory and culturally appropriate to conduct research using the *Talanoa* Model. It was easier to conduct a survey using questionnaires in Indo-Fijian community as they had a more individualistic way of living.

“.....Tala literally means to inform, tell, relate, command, ask and apply. Noa literally means any kind, ordinary, nothing-in-particular; purely imaginary Vaoleti (2003) quoted by Otsuka (2006). Hence, *talanoa* literally means a face-to-face conversation whether it is formal or informal. It is commonly practiced by Pacific Islanders, such as ethnic Fijians, as it stems from their culture in which oratory and verbal negotiation have deep traditional roots. It culturally connotes talking about “nothing in particular”, and interacting without a rigid framework. *Talanoa* as “to chat; to tell stories; to relate something; to chat to someone; to chat together; to chat together about; a story, and account legend.” While *talanoa* is about chatting, it involves a deep, interpersonal relationship, the kind of relationship on the basis of which most Pacific activities are carried out. The custom of *talanoa* encourages ethnic Fijians often to hold *yaqona* sessions, social gatherings and *talanoa*, and it enhances people’s sense of “sharing” and “caring” within their communities. As a note, *yaqona* is *Piper methysticum*-a plant the roots of which are prepared and used by ethnic Fijians as either a formal or a casual social and ceremonial drink. *Yaqona* is a sacred drink in ethnic Fijian culture. It is also known as *kava*.....” (Otsuka 2006:2)

In *talanoa* research, researchers and participants share not only each other’s time, interest, and information, but also emotions of both parties. In fact, “*tala*” holistically intermingles with researchers’ and participants’ emotions, knowledge and experiences.

3.3 Community Research

This research was conducted in Muaniweni settlements, Viria and Savu villages, located in the Province of Naitasiri in central division of Fiji. Locality agricultural extension officer was sought to assist in meeting with the *Turaga ni koro* of the two villages. He helped meet with the advisory councilor to seek permission and set dates for the *Talanoa* sessions and conduct questionnaire survey. Questionnaires were distributed to people and with aid from a research assistant information was collected from farmers. This research was conducted over a two months period. *Talanoa* sessions were conducted with groups of farmers. Food items and *sevusevu* was presented. Heads of villages were very supportive and provided venues for conducting the *Talanoa* sessions. A research assistant was always available to translate information.

3.4 Ethics

Pacific Island Nations have been testing ground for Western ideologies within past two hundred years as argued by Howe: DG 402 Lecture notes (2006:54) "... Ideas and questions about human "civilization", relationships between nature and culture, racial classification and culture contact, cultural and biological survival and destiny have all been extensively examined using Pacific case studies...." Pacific Islands have not only been economically and politically colonized but, perhaps more profoundly, they have been intellectually occupied and conceptually shaped by the West. As a consequence, most of Pacific experiences and observations have been extensively influenced by Western interpretative framework.

Thaman (2003) argues importance of Pacific studies representations because science as a system of representation universalizes methods such that it makes the world orderly but not necessarily meaningful. Globalization remains Anglo American knowledge of values and practices. Therefore, Thaman (2003) argues that the mindsets about Pacific culture needs to be decolonized. This concept

became evident in Europe in the sixteenth century when culture was first associated with the domestication of animals and crops as in agriculture and horticulture. Later it was associated with the wealthy and then Western arts, music, literature, theatre and sculpture. Later Western scholarship, history and philosophy were also added. The spread of western cultures is compared by Thaman (2003:1), as “the spread of monocultures in agriculture where imported, hybridized, fertilizer-dependent seeds, produced at a profit for multinational corporations crowding indigenous local varieties.”

I would like to quote the words of Huffer (2007), in a lecture she stated “...doing Pacific philosophy, as a field of enquiry, means not only trying to understand Pacific concepts but also critically analyzing them, deconstructing and reconstructing them, building on them. This requires more than description and defining- it is theorizing. For instance, understanding and critically analyzing a Samoan theory of pule, a Pacific theory of talanoa, a Fijian theory of vanua so that these concepts become more than just words that get used carelessly (or stereotypical representations of one community or another) but that they take a dialogic feature – that they become a part of the governance discussion – that they become the building blocks of new paradigms which take up their full place in academia and in policy making (and are not thought of just as something that has to be catered to or dealt with)...”

In other words, Pacific studies also include study of its people and their livelihoods. The historical livelihood indicates closeness or cohesiveness between agricultural production systems and Pacific people. Before the colonial era indigenous populations have been practicing sustainable agriculture for their livelihood. Through colonization and its influences many development projects and ideas were introduced to benefit all. It benefited only a few, namely the elites.

Unfortunately, donors and aid packages were more influential in most government policies and ethics in Pacific. Capitalism had broken down family

networks to produce efficiently or profitably. Then there was the process of commercialization that mainly emphasized the importance of profit making, efficiency and intensive use of resources to attain the maximum benefit. It had not only replaced exchange of goods and services but also exchange of links and relationships.

So what is morality? Morality is about human well being. Morality typically concerns the promotion of well-being of others and avoidance or prevention of harm to others. Thus it might seem that pursuit of one's self-interest would hardly be seen as a form of moral action. For example, pursuing one's own profit in a free market will guarantee wealth of all to maximize. So those who believe in morality of self interest, it can never be a moral criticism that one is trying to maximize one's self interest, as long as one is not interfering with anyone else's self interest.

Ethics as a distinctive field of study was first conceived to be about good and bad habits that people acquire in response to what pleases and pains them. People's habits co-ordinate to form customs and their customs provide material of their culture. One important aspect of which constitutes primary phenomena of ethics is people's habit. People are prone to approve and condemn practices of other people which include those found in other cultures and those engaged in by some members of their own society. The question about what is 'ethical' also requires intensive focus or analysis of ethical enquiry process of deliberation of a person's culture and character. Deliberation of what is ethical is also governed by moral reasons. This is to determine if a person has or does not have a moral obligation.

"Ethics should be seen as an "action-guiding code" constituted by peoples' values, which are in turn nourished by their histories, traditions and the changes they have experienced. But before designing this code, communities must have the opportunity to examine, evaluate and express their values" (Huffer 2005:6)

Huffer (2005) uses an example from the Faculty of the University of the South Pacific where useful initiatives were conducted with local communities in the management of marine and other resources. In defining how they wish to manage their resources, communities are also making ethical statements and decisions about development. One possible avenue for pursuing political ethical statements is to engage communities in action research about their access to basic rights and services and to political participation. This would help build understanding about how they frame or view political goods and initiate discussions about contemporary political values.

Keeping ethics and morality in consideration, I used the working draft on research ethics by the School of Education and Humanities headed by Dr. Ana Tuifagalele, and a representative from all Pacific Islands countries under the USP banner. The research ethics itself will not be discussed in this research but utilized as a means to collect information in the field.

“The dilemma for many ethnic Fijians, in business and politics, has been to deal with (mainly) foreigners who have consistently attempted to water down or ignore Fijian knowledge on which the former base their very existence” (Huffer and Qalo 2004:107) “This upside-down thinking had to be tolerated by the Fijians for more than a century. Although dominating political power since independence, they had difficulty working with the prevailing knowledge paradigms from outside”. Huffer and Qalo (2005), argue that the instability of the parliamentary system in Fiji is similar to the collapse of the \$50-60 million Uluisaivou and Yalavou cattle schemes funded by New Zealand and Australia including the abandoned French funded Yaqara and American funded Viti Corp.

3.5 Challenges

The Talanoa sessions usually involve research over bowls of yaqona (*Piper methysticum*) but there is a growing awareness over the negative effects of yaqona and there is an important part of the society that does not indulge in the

practice of yaqona drinking involving women and children. There are people who do not take yaqona due to religious reasons thus are reluctant to attend sessions that involve yaqona drinking.

To overcome such barriers, the researcher organized afternoon tea or breakfast sessions to enable Talanoa for people who did not take yaqona. Participatory research methods also need to consider timing and day of research especially with farmers because of their work timetable. The researcher needs to collaborate closely with the participants to be able to work out convenient Talanoa sessions.

CHAPTER FOUR: RESULT ANALYSIS AND DISCUSSION

4.1 Results

The study of the Lower Naitasiri revealed two main types of farmers in the locality. The first category of farmers includes those that plant a variety of crops at subsistence level. These farmers mainly grow crops for household consumption and sell the surplus for cash income. Most farmers in this category were Indigenous Fijian who cultivate under the communal land tenure system. Sales of the subsistence products take place to cover expenses for basic necessities that cannot be produced on the farm. Basic necessities include education, medicine, clothing and food items.

The second category of farmers mainly consists of Indo-Fijian who produces four to five different types of enterprises or commodities such as taro, cassava, okra (bhindi) and beans commercially. This category of farms is generally located on Crown C lands. The Crown C Land belongs to the state or the national government and is leased to the tenants. These farmers also practice subsistence farming to supplement income and home consumption. Subsistence level for the purpose of this research is described as the production of agricultural products for home consumption and the surplus is sold for cash income.

According to data analysis in Table 4 there is more cash crop sales by Indo-Fijian farmers (95.73 percent) compared to Indigenous Fijian farmers (85.51 percent). Cash crops mainly consist of taro, cassava, kumala, bhindi, bean, ginger, yaqona and bananas. It is also noted that Fijian farmers' use 14.49 percent of their cash crops for home consumption. Most cash crops make up the staple diet for the people of both communities. But there is a significant difference between the use of vegetables for home consumption and sales between Fijian and Indo-Fijian farmers. Bulk of the vegetables grown for home consumption (57 - 88 percent) is supplied to the local market for sale by the

Indigenous Fijian and Indo Fijian respectively. Chart 2 given below illustrates the percentage sales and home use for cash and subsistence crops.

Chart 2 – Chart showing the percentage of sales and home use for the two different communities

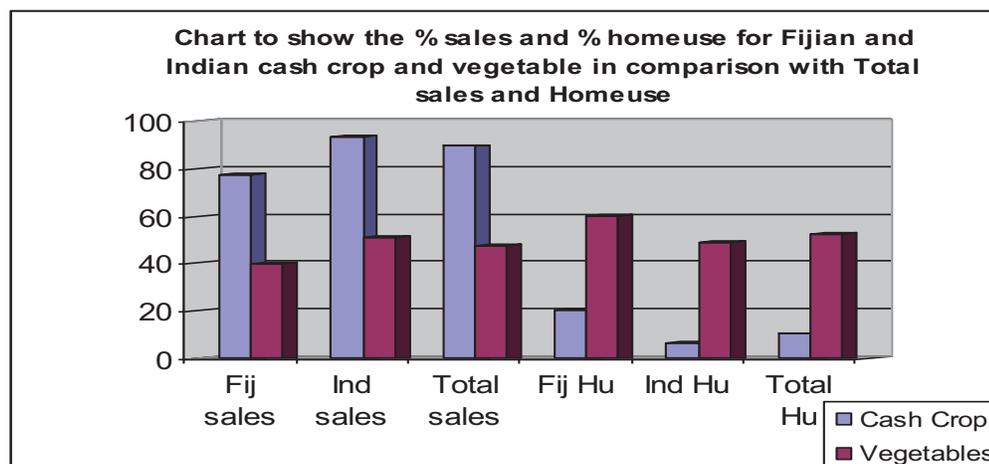


Table 4 – Proportions of agricultural produce for home use and for sales in the two major communities in Fiji

Type of farms	Crops	Vegetables	Livestock
1. Fijian farmers			
a) Home consumed	1147.20 (14.49)	352.40 (42.33)	1009.42 (42.28)
b) Sold	6768.00 (85.51)	480.00 (57.67)	1377.88 (57.72)
c) Total	7915.20 (100.00)	832.40 (100.00)	2387.30 (100.00)
2. Indo Fijian farmers			
a) Home consumed	666.90 (4.27)	252.68 (11.05)	242.54 (4.24)
b) Sold	14940.14 (95.73)	2033.10 (88.95)	5473.10 (95.73)
c) Total	15607.04 (100.00)	2285.77 (100.00)	5715.63 (100.00)

3. Total farmers			
a) Home consumed	805.77 (5.87)	277.84 (14.70)	447.84 (9.29)
b) Sold	12917.53 (94.13)	1611.86 (85.30)	4375.15 (90.71)
c) Total	13723.30 (100.00)	1889.69 (100.00)	4822.99 (100.00)

Note: Figures in parenthesis denote percentage to total.

Regression analysis is a statistical technique for estimating the relationship between several variables. In this model, Ethnicity is the independent variable together with all the other factors such as age, location, gender, education and number in family.

Table 5 – Table showing the summary output for the regression statistics

SUMMARY OUTPUT

<i>Regression Statistics</i>					
Multiple R		0.691346			
R Square		0.477959			
Adjusted R Square		0.436433			
Standard Error		9.513444			
Observations		96			

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	7	7291.948	1041.707	11.50986	2.71E-10
Residual	88	7964.495	90.50562		
Total	95	15256.44			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>
Intercept	9.912561	7.94197	1.248124	0.215296	-5.87043
Age	-0.03291	0.097412	-0.33781	0.736308	-0.22649
Gender	-0.98635	2.999135	-0.32888	0.74303	-6.9465
Eth	13.80852	3.305107	4.177935	6.91E-05	7.240315
Edu	3.373569	2.116738	1.593759	0.114576	-0.833
HS	-0.1493	0.541849	-0.27555	0.783542	-1.22611
Loc	-4.72508	3.572156	-1.32275	0.189344	-11.824
NFMWOF	1.663037	1.338052	1.242878	0.217214	-0.99606

4.1.1 Home Use Model

$$\text{Percent Home Use} = 9.9 - 0.03\text{Age} - 0.98\text{Gen} + 13.8\text{Eth} + 3.37\text{Edu} - 0.14\text{HS} - 4.72\text{Loc} + 1.66\text{NFM}$$

$$R^2 = 47.7 \text{ percent}$$

The empirical home use model was estimated using the primary data that was collected from the field during the research. The data reveals that ethnicity is a major determinant for use of total farm produce. This is the only variable in the model that is significant. The variables used in this model are obtained from the respondents not necessarily the head of the house. This is because in many instances the head of the house was not the farmer or was not available for Talanoa.

The results shown in the regression equation explains nearly 47.7% variation in total home consumption is due to inclusion of 7 independent variables. The coefficient of age, gender, household size and location are negative (-0.03291, -0.98635, -0.1493, -4.72508 respectively). A negative coefficient of age (-0.03291) indicates that an increase in age could increase home consumption. This is because an increase in age may mean restricted movement to the market to sell the produce thus increasing quantity home use of agricultural products. An increase in age could also be associated with an increase in cultural and family obligation may also cause an increase in home consumption. The negative impact of gender (on home consumption means that more involvement of women may increase home consumption as they will help in more informative decision making while planning which crops and animals to be grown and reared. Negative coefficient of household size shows that an increase in household size may increase home consumption as there will be more demand for food. The negative coefficient of location means there is an indirect effect on home consumption. This could be due to a ready market for the agricultural produce due to its close proximity to the two major urban centers namely Suva and Nausori.

The coefficient of ethnicity (13.80852) and number of family members working off farm (1.663037) is positive and significant at five percent level (5%) which shows a direct effect of the two variables on home use. The most significant variable ethnicity (13.80852) indicated that Indigenous Fijian farmers were more inclined towards home consumption of agricultural produce than the Indo Fijian farmers. This must be due to many reasons but the most obvious ones from the survey is the subsistence system of production on communal land. Subsistence products are mainly grown for home use but could be sold in times of need or when it harvested in abundance. The other reason is the robust traditional and cultural practices of rural Indigenous Fijian such as weddings, births and deaths. These rituals demand a lot of food to feed the people. Some of these rituals are quite long and it can take days or months to eventually come to a close. The foods required at such functions come from subsistence farms on communal lands. Home use increases with increase in traditional or cultural functions. An increase in home use in relation to land tenure system also indicates the difficulty of commercialization of agriculture on communal land. This could also explain the failure of many commercial agricultural projects that were implemented to improve the livelihoods of Indigenous Fijian farmers. The ability of the farmers to produce for home consumption and meet social obligations indicates that the subsistence farms of Indigenous Fijian is highly food secure even if they may not be commercially viable. Therefore, subsistence agriculture highly contributes to food security for Fiji.

The number of family members working off farm (1.663037) also contributes positively at five percent (5%) to home use because of the disposal income from outside that is able to meet most of the family expenses. Subsistence farm produce is mainly grown for home use to supplement the diet. Most of the people are casually employed outside so when the income earner loses job during slack times the farm produce is sold for income. This is also indicative of the importance of subsistence agriculture to cushion the negative impacts of recession by providing food security and income.

Hence, the study proves that subsistence agriculture still plays an important role as the base for economic, social and cultural development in Fiji.

The most significant factor affecting home consumption is ethnicity and in this case Indigenous Fijian farmers tend to retain more food for home consumption in comparison with Indo Fijian farmers.

$$\begin{array}{rcccc}
 \text{HU} = & 9.7 & - 0.014 \text{ Age} & - 0.328 \text{ HS} & + 19.934 \text{ Eth}^* & & R^2 = 69.6 \% \\
 & (4.771) & (0.080) & (0.515) & (2.210) & &
 \end{array}$$

(Figures in parenthesis are standard errors).

The proportions of agricultural produce for home use and for sales in the two major communities in Fiji in Table 4 and the empirical model in Table 5 suggests that Indigenous Fijian farmers, on average, consume 19.9 percent more of their output at home relative to Indo-Fijian farmers. This is also reflected in a survey by Narsey (2008) where more rural Indo-Fijian people were found on the lower side of poverty compared to the rural Indigenous Fijian. There are many reasons for this but one major reason noted during the research was the high cost of production for cash crops that lacked market and many times caused farmers great losses. The research shows that Indo-Fijian farmers tend to grow more commercial crops and at the same time liquefy most of the subsistence products into cash rather than use for home consumption, compared to Indigenous Fijian farmers who use substantial amounts of their products for home consumption.

The dependence of Indigenous Fijian on subsistence based agriculture for their daily living is quite significant regardless of age of the respondent and household size which does not have an effect on home consumption. Most of the farm products fulfill their daily food needs while at the same time fulfill cash needs. This also means that subsistence agriculture is still vibrant in food security especially in the Indigenous Fijian farming community where

regardless of age or number in household, the home consumption is substantial (69.6%).

Table 6 - Daily per Capita Food Availability in Kilocalories as a Percentage of Requirements (1990-92)

Country	Food Availability	Food Requirement	Percent Availability
Cook Islands	-	-	-
Fiji	2769	2170	127.6
Papua New Guinea	2347	2066	113.6

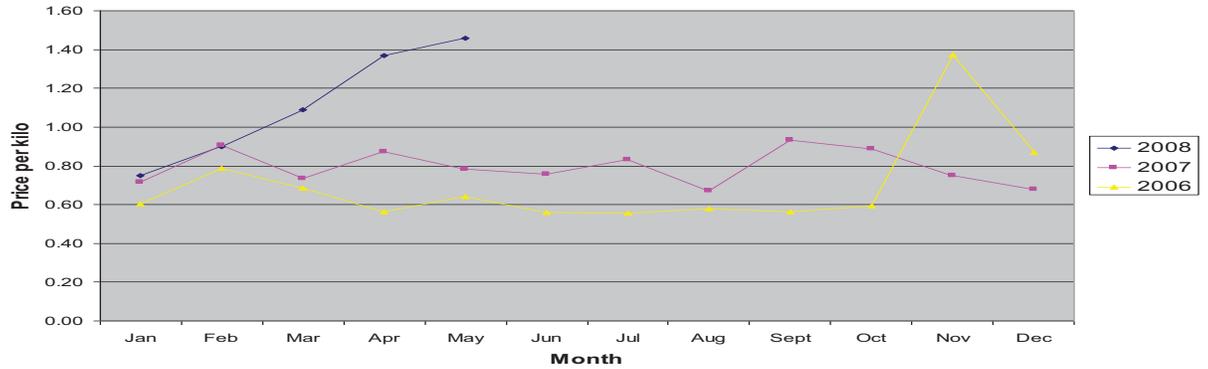
Source: FAO Corporate Document Repository

Table 6 above shows the food availability and requirement for three (3) Pacific Island countries. According to the table, Fiji is well supplied with food and yet has one of the highest rates of non communicable diseases. In relation to the survey, non communicable diseases are more prevalent in Fiji because most foods grown through subsistence agriculture that are a high source of vitamins and minerals usually end up in the market to be replaced with cheap low quality imported substitutes such as turkey tails or lamb flaps. Many times the income from cash crop sales is not sufficient or regular to provide adequate daily needs and at other times get exchanged for cheaper, processed or low quality imported foods. Food items such as rice, flour and dhal make up the major expenses. Although rice could easily be grown at subsistence level for home use, farmers opt to plant root crops for export because rice is cheaper to buy than produce. Countries such as China, India and Vietnam have a comparative advantage to rice production in comparison to Fiji. Government export policy also affects the production of crops on farms. Incentives such as subsidies and fiscal aid to increase exports by the government initiates farmers to grow more export oriented agricultural enterprises such as taro and cassava. Appendix One (1) shows details of food crops that are produced.

The research indicates that out of the seventy one (71) Indo Fijian farmers interviewed; only one farmer grows rice for home consumption. According to Owen (2002) Indo-Fijian consume more rice and flour compared to Indigenous Fijian. Yet Indo Fijian tends to grow more root crops. The reason for farmers investing more in root crops is that it is more profitable selling root crops than planting rice. Thus the government is compelled to import more rice.

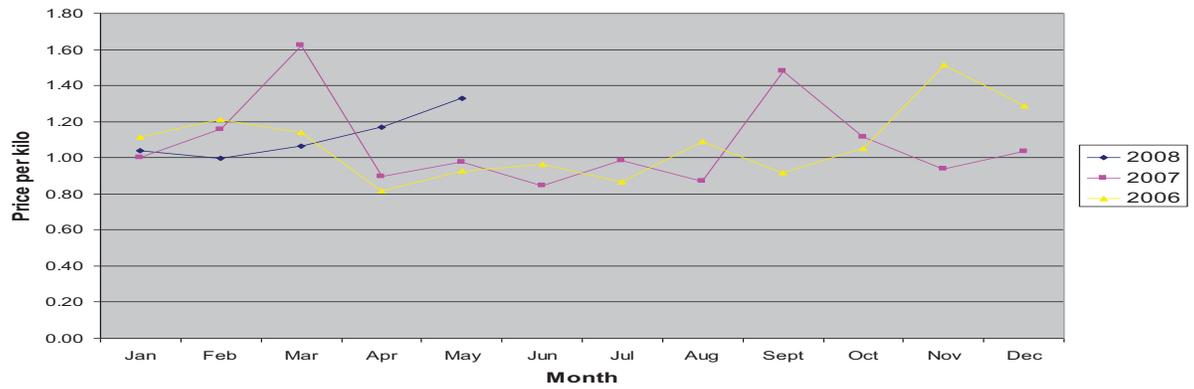
According to Appendix One, subsistence agriculture makes 38 percent of the Total Agricultural GDP. This indicates that the subsistence sector has considerable potential to develop as a niche market. Subsistence farming also plays an important role as it provides food security. Many farmers face marketing problems with commercial agricultural products. Government incentives cause a hike in the production of export oriented products. According to the interviews, many farmers have produce grown at commercial level rotting on their farms because of the unavailability of market. Transportation costs are high and road conditions are the worst during adverse weather conditions. The lack of cold storage facilities and processing plants to increase the shelf life of many of the perishable products especially subsistence products, further aggravates the situation. Farmers are reluctant to invest in commercial farms fully because the produce when in glut fetches very low prices. To grow vegetables out of season is costly and government incentives to support off season production in terms of input cost and subsidies are unavailable to these farmers. The prices of pesticides, fertilizer and weedicides required to produce in bulk are high. The bad road conditions are one of the major reasons for the farmers opt to grow root crops because they are hardy and have the ability to withstand rough handling without perishing. The root crops keep for a longer period of time compared to vegetables. Farmers end up selling root crops to the middle men at lower prices than what they could get if they had the opportunity to sell it themselves. The following charts 3-5 show fluctuations in root crop prices.

Chart 3 – Chart showing price fluctuation of cassava for the period 2006-2008



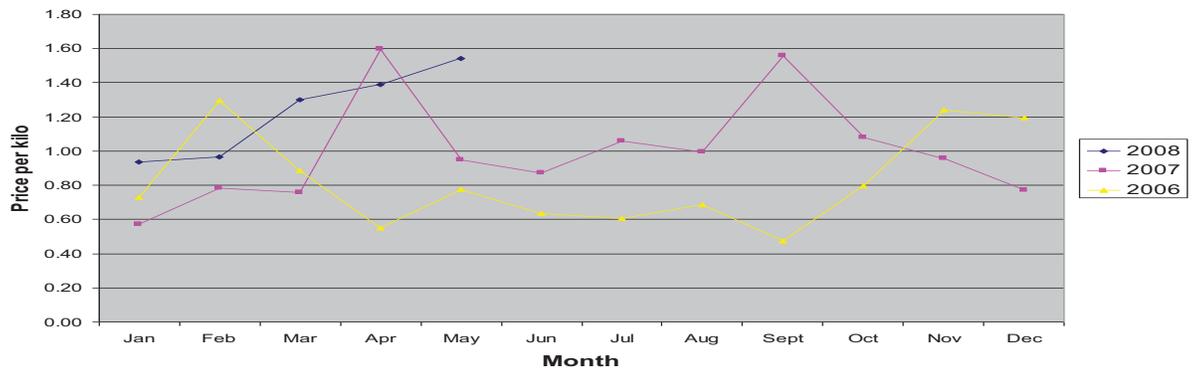
Source: Ministry of Agriculture, Fisheries and Forestry

Chart 4 – Chart showing price fluctuation of taro for the period 2006-2008



Source: Ministry of Agriculture, Fisheries and Forestry

Chart 5 – Chart showing price fluctuation of kumala for the period 2006-2008



Source: Ministry of Agriculture, Fisheries and Forestry

The fluctuations in the price of cassava and taro are not as significant as those for kumala. It is important to understand price fluctuation because budgets are prepared well in advance. Sometimes the budgets are prepared more than 10 months to a year in advance such as in taro and sugarcane. Many budgets use present price and costs. According to about 90 percent of the farmers pricing of their farm products is also a significant problem. Unsteady prices sometimes cause the farmers great losses. Thus, the forecasted budget sometimes goes below the anticipated income and profit. Agricultural marketing begins before farmers' plant their crops. They must know that there is a market for what they plan to produce. Without such knowledge they could be wasting their money and forecasted price may not be the same as the real price. The longer the production cycle, the more uncertain farmers are of the prices they will receive. As a risk management strategy, farmers' produce subsistence crops to provide much needed income.

The sharp increase in food prices due to inflation in the past two years has serious implications for food security among poor people in the developing countries. "In 2007 the food price index calculated by the Food and Agriculture Organization of the United Nations (FAO) rose by nearly 40 percent, compared with 9 percent the year before, and in the first months of 2008 prices again increased drastically. Nearly every agricultural commodity is part of this rising price trend. Since 2000—a year of low prices—the wheat price in the international market has more than tripled and maize prices have more than doubled. The price of rice jumped to unprecedented levels in March 2008. Dairy products, meat, poultry, palm oil, and cassava have also experienced price hikes. When adjusted for inflation and the dollar's decline (by reporting in euros, for example), food price increases are smaller but still dramatic, with often serious consequences for the purchasing power of the poor" (Braun 2008:1)

"Subsistence crops are relatively stable, while cash crops are subject to fluctuations of world prices. Peasants with an export crop monoculture would

face disaster with a major price decline. Conversely, peasants who hold subsistence crops would not be so vulnerable. A subsistence sector is not only more stable but also gives people direct resources for everyday life...” (Miyachi ND: 1)

A survey conducted by Ram (1989), revealed that diabetes was more prevalent in Indo Fijians (3.1%) compared to Indigenous Fijians (0.6%). The Fiji Poverty Report of 1996 also suggested that “one quarter of the population was living below the poverty line, based on basic living costs for a household of five people of about \$US83 a week. The poor people of Fiji are not necessarily the subsistence villagers or the unemployed” (Ram 1997:1)

Subsistence farmers are not necessarily the poor and the undernourished and according to the survey carried out by Ram (1989) non communicable diseases like diabetes are more prevalent among Indo-Fijians. Table 7 illustrates the consumption of individual crops for sales and home consumption by the two major communities in Lower Naitasiri. Subsistence agriculture does not require too much input in comparison to cash cropping. Subsistence farming is more environmentally friendly because it does not use chemicals.

Table 7 – Sales vs home consumption of local crops along ethnic lines

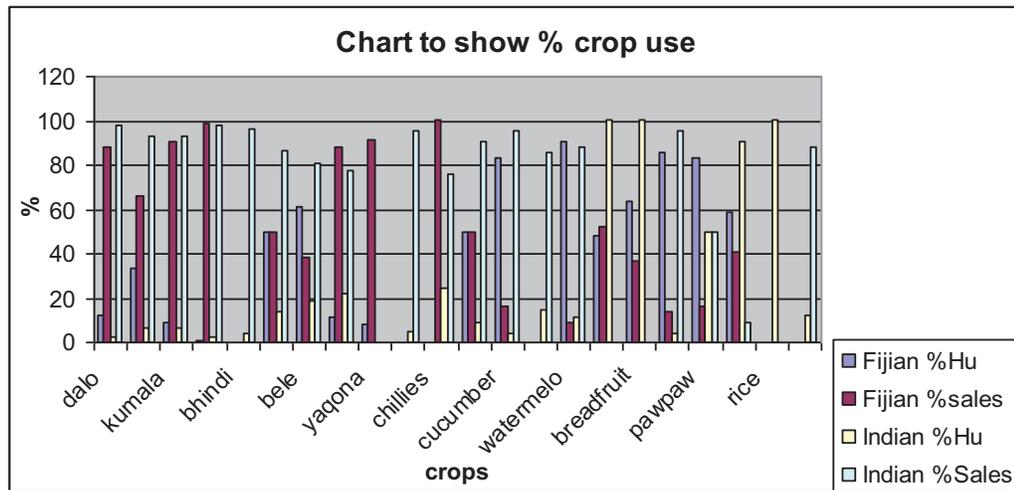
	Fijian		Indian	
	%Hu	%sales	%Hu	%Sales
Taro	12	88	2.41	97.593
Cassava	33.871	66.129	6.92	93.076
Kumala	9.0909	90.909	6.90	93.095
Ginger	0.9826	99.017	2.42	97.575
Bhindi	#DIV/0!	#DIV/0!	3.96	96.042
Bean	50	50	13.50	86.498

Bele	61.458	38.542	18.98	81.024
Banana	11.784	88.216	22.22	77.785
Yaqona	8.3173	91.683	#DIV/0!	#DIV/0!
Pumpkin	#DIV/0!	#DIV/0!	4.85	95.146
Chillies	0	100	24.26	75.74
Leaves	50	50	9.35	90.648
Cucumber	83.333	16.667	4.24	95.763
Baigon	#DIV/0!	#DIV/0!	14.31	85.693
Watermelon	90.909	9.0909	11.76	88.235
Yams	47.826	52.174	100.00	0
Breadfruit	63.636	36.364	100.00	0
Tomato	86.022	13.978	4.26	95.745
Pawpaw	83.333	16.667	50.00	50
Duruka	58.824	41.176	90.91	9.0909
Rice	#DIV/0!	#DIV/0!	100.00	0
Gourds	#DIV/0!	#DIV/0!	11.85	88.154

Note: Computed from primary data.

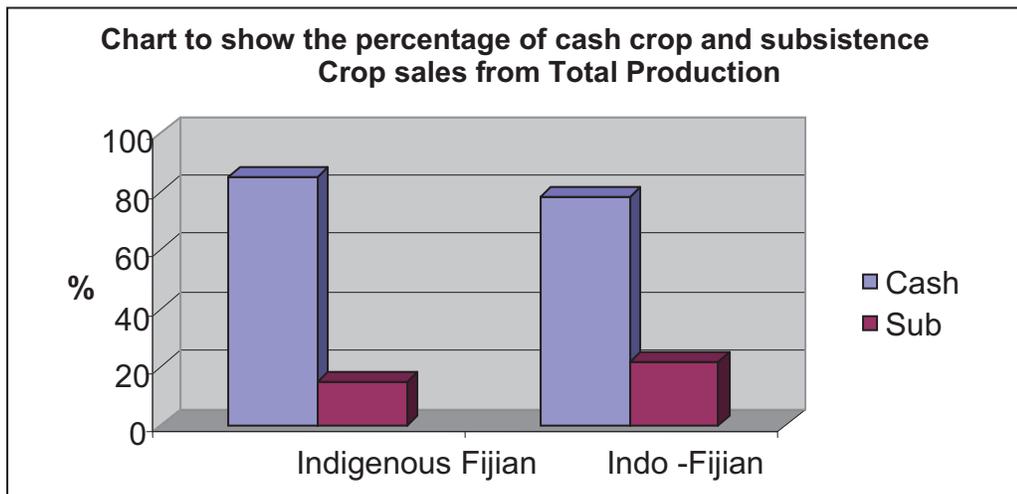
Chart 6 further shows that subsistence agriculture is important because many households are dependent for food. This reduces the dependence on imported food thus reducing food inflation. Thus a significant improvement in the sector is required to increase the low productivity.

Chart 6 – Chart showing Sales verses home consumption of local crops along ethnic lines



Subsistence farming is a source of food and cash income for the farmers but a source of cheap and nutritious source of vitamins and minerals for the people living in the urban. Subsistence products are sold in the local municipal markets. Chart 7 shows the sales of cash and subsistence crops by the two major ethnic groups in the area of study.

Chart 7 – Chart showing percentage cash crop and subsistence crop sales for Indigenous Fijian and Indo Fijian farmers in lower Naitasiri



Indigenous Fijian farmers tend to consume most of what they grow whilst the Indo-Fijian farmers tend to sell most of the subsistence crops to finance their daily requirements such as rice, flour and dhal plus protein and other essentials.

A visit to the *'teitei'* (garden) of an Indigenous Fijian farmer reveals the diversity of plants grown for home consumption. This bio diversity ranges from plants used for medicinal and religious purposes to food crops varieties that may not be considered as worthy to an institutionalized economic system. Many crops can grow in the natural environment without much care and inputs.

Many of the subsistence crops and livestock support cultural and religious functions. Many of these cultural practices are dependent on the provision of food items and products from the traditional *'teitei'* where those products are grown and tendered for until needed. Some products such as the *'vutu'* (*Barringtonia edulis*) for making mats and *'vau'* (*Hibiscus tiliaceus*) for masi come from these *"teitei"*. Dye for painting, yaqona for social gatherings, yams and greens necessary for funerals, births and weddings come from this subsistence oriented gardens.

On an Indo-Fijian subsistence farm, one can find a diversity of fruit trees, herbal medicines and religious plants growing together with subsistence crops. Many plants are natural bio control for pests and diseases. These subsistence oriented farms are natural germplasm center. Most of the crops grown are from seeds of traditional varieties can grow seasonally and withstand natural disasters, thus ensuring food security. The exceptional performance of some traditional varieties is so appealing to farmers that they are reluctant to forgo these varieties. This linkage between robust traditional crops and culture plays an important role for subsistence agriculture to survive in this modern day technology.

The survey reveals that subsistence agriculture is still prominent in the Lower Province of Naitasiri. In fact, it is the main system of agricultural production for

the Indigenous Fijians still today. There are many reasons why people choose to adopt the subsistence system of agricultural production. One of the most important reasons is the concept of land tenure.

4.2 Discussion

There are two main types of land tenure systems in this case study. These include communal land tenure system adopted mostly by Indigenous Fijian farmers and Crown land C or state leasehold (western tenure) adopted mainly by Indo-Fijian farmers. Fiji has four main types of land holdings namely State Lands, Freehold Lands, Native Leases and *vakavanua* Native Lands. These land holdings can be further classified into two different types of land tenure systems, as 'western' land tenure system and a 'customary' land tenure system. Freehold Lands, State Lands and the portion of Native Land that are leased out as 'Native Leases' operate under the 'western' land tenure system, while the communally held Native Lands operate under the 'customary' or *vakavanua* land tenure system (Department of Land and Surveys 1992:3)

Communal or customary land tenure system is based on Fijian customs and traditions and applied to all Native Land (until they become Native Leases, for which the 'western' system applies). The term "Native Lands" refers to lands that belong to the *itaukei*, (Indigenous Fijians) and are held in accordance with their customs and traditions. Native lands include those lands that are farmed or used by the *itaukei* for their subsistence and, increasingly, commercial needs, as well as Native Reserves, (lands that in principle, have been set aside to be used exclusively by the Indigenous Fijians only). However, Eaton: Department of Lands and Surveys (1992) pointed out that some of these lands have been leased to Indo Fijian farmers under the customary or *vakavanua* arrangements.

Native lands cannot be sold and any dealings or works to be done on or with respect to the land requires the approval of the majority of the members of the *mataqali* that are over 21 years of age. Legally the final approval/decision rests with the NLTB. Although Native Lands cannot be sold, they can be officially

leased out with the consent of the *mataqali* landowners through the NLTB. Once leased out they naturally come under the 'western' system of land tenure for the duration of the lease. The advantages of the customary tenure system for the *itaukei* is that it has prevented outright land sales and land speculation. This was implemented to ensure that the people do not become landless people in their own land. It has also helped the *itaukei* maintain their land-based customs and traditions which are based on the maintenance of family and kinship ties, and ultimately on the basic principles of sharing and caring, principles that have prevented the Indigenous Fijians as a whole from being swept away by the materialism of the modern age and urbanization.

“The customary land tenure system was intended to preserve for all time, the lands and customs of the *itaukei*. However, the existing customary tenure system is based on the British Administration crystallizing a system that was in operation at a particular place and time. Given their non-Fijian background and the economical and political constraints of the time, it was only natural that they would modify or exclude some seemingly less important but quite significant details in the system that they imposed on Fiji” (Ravuvu: Department of Lands and Surveys 1992:3)

Table 8 shows the land that is under the different tenure systems and the annual rent earned as a result under the Native Lands that have been leased out by the NLTB. Most of the land is leased for agricultural purposes which earns the majority of the rent.

Table 8 – Lease Statistics by Lease Type

Lease Type	No. Leases	Area (Hec)	Annual Rent
Agricultural	14,675	445,377	\$9,496,027.19
Commercial	1,522	132,756	\$4,318,369.75
Industrial	419	1,123	\$ 961,817.90
Other	1,667	44,651	\$ 1,839,727.74
Residential	13,599	6,327	\$ 3,919,728.01
Totals	31,882	630,233	\$ 20,508,670.59

Source: Native Land Trust Board Statistics: Department of Lands and Surveys (1992)

According to chart 8, majority of the land is leased for agriculture. The Indigenous Fijian farmers chose to carry out subsistence farming system because it is more compatible with the customary land tenure system. In a customary land tenure system, the whole *mataqali* has a right to use the land for farming. There are no marked demarcations to the ownership of that piece of land. The land does not belong to an individual. This makes it a challenging situation if one wishes to practice agriculture at commercial scale, especially livestock farming. The construction of permanent structures such as livestock sheds and fences is quite impossible. The imaginary boundary lines could begin or end anywhere. The *mataqali* operates on mutual understanding. Commercial scale farming requires a substantial capital investment which mostly farmers do not have. To obtain a loan, the lending institutions require security in the form of land titles. In a customary land tenure system, the land title is not awarded to one person. Thus, customary land tenure cannot be accepted by the lending institutions for security purposes. In this case, subsistence agricultural farming system becomes the best option for an individual who wishes to use communal land for farming.

Chart 8 – Chart showing area under lease for different activities



Source: Native Land Trust Board Statistics (2004)

The Indo-Fijian farmers are more inclined towards commercial farming system because they have limited number of lease for a certain cost. The objective is to maximize production and cover costs plus makes a profit. In case of non renewal of lease titles, the farmer needs to be able to save for relocation, otherwise prepare to pay for goodwill and land rent. They also choose to carry out commercial farming because the priority of the farmer is profit making. Food security is secondary option.

All farmers in Lower Naitasiri practice subsistence oriented farming system to support their livelihood. Commercial products take a long time to mature for sales and farmers need a continuous supply of cash to meet their daily needs. The cash needs are supplemented with sales of subsistence produce. The early maturity and low inputs help the farmers considerably. Subsistence products also serve as an important source of food security for the family.

Therefore, it is important for policy makers to focus on the development of the subsistence agricultural sector. Although subsistence agriculture is not institutionalized such as sugarcane or taro it is still an important and integral part of many farmers' livelihood. It is an important sector for the government to develop to maintain food security in the country.

Secondly, subsistence oriented farming inter relates with people's way of living. Most of the Indigenous Fijians adopt the subsistence oriented agriculture system of agriculture because it is more compatible with their lifestyle and supports their cultural obligations. Many traditional and cultural practices demand considerable time and resources. For example, when there is a death in an Indigenous Fijian family, they are required to practice a 100 days and 100 nights ritual for the *vanua* to come together to pay homage to the dead in the deceased's village immediate family members. Relatives far and wide arrive and stay during that time. These gatherings require large amounts of food. This requirement is met by subsistence oriented gardens of the village. The animals reared through subsistence oriented farming provide the protein needs and the

crops make up the staples for the meals. Social obligations would be considered an expense in a commercially oriented farming system. Culture and traditions are part of a person's identity in Fiji because losing one's culture is like losing one's identity.

Unfortunately, business is generally not sensitive to cultural values. Business even separates the owner from the business. Thus, cultural obligations may not be compatible with a closed economic system that demands timely operations to be able to meet contracts and markets. Cultural practices such as marriage or birth also demand high levels of commitments from the people. Many times this has been seen as a hindrance to business and thought of as a major drawback to development.

Prasad (2006) argues that capital aid and technology did not see to the successful completion of a lot of agricultural projects. The reason was that initiatives to aid the Indigenous Fijian society had been largely through literature written and applied in other countries where the culture, environment and epistemology are different. These concepts and principles were replicated without modifications or being tailored to suit the local community.

Fiji needs business development infrastructure that is compatible with its unique cultures and sensitive to traditional practices. One has to understand that these cultural practices and traditions have, over so many decades, helped the Indigenous Fijians to survive. For instance, the *kerekere* system is not what people understand it to be. This is a similar system to the *bubuti* system in Kiribati where the people borrow and share knowledge from each other for a favor or as a payment. Payment does not necessarily happen in the form of cash but it can be in the form of food items, clothes, mats, *tabua* (whale's tooth which has a very high traditional value in the Indigenous Fijian society for resolving conflicts, matrimony and building relationships) or materials of high value. It could be in abstract form also where it can take the form of knowledge regarding traditional knowledge medicine, fishing grounds, agriculture or

witchcraft. This concept of barter system may not be understood in an economic system of production where everything has monetary value and every transaction is considered in monetary value. We need to come out of the closed economic system operation to understand the Fijian concept of multi cultures and traditions that still sustain economic growth policies and principles.

Many cultural practices demand many “non productive” days of a person’s life. During this period the farmer may not be able to attend to his daily chores regularly. In commercial farming systems this may be costly as farming is regulated by the weather. Timely agronomic activities need to be carried out for the best yields and timely production of agricultural commodities. Tables 9-10 and Charts 9-10 illustrate the importance of agriculture to the Fijian Gross Domestic Product. Table 9 illustrates the Gross domestic Product for years 2000 – 2006 and Chart 9 illustrates growth pattern. Agriculture, fishing and forestry clearly account for a significant slice of Fiji’s GDP, and subsistence production is an important component of these sectors. The official data indicate that agriculture, fisheries and forestry sectors together contribute around 16 per cent of total GDP while subsistence activities produce approximately 37 percent of the total output in the combined sectors (Table 9 and chart 9). Consequently about 50 per cent of the food (fish plus agriculture excluding sugarcane) is produced and consumed within the same household.

Table 9 – Gross Domestic Product summaries [FJD]

Indicator	2000	2001	2002	2003	2004	2005	2006 [p]
GDP(per capita) current	3,874	4,039	4,228	4,438	4,778	5,033	5,474
GDP (per capita) at constant 95 average prices	3256.7	3297.1	3370.5	3369.4	3544.2	3539.0	3636.6
GDP Current Prices [FJD million]	3138.2r	3296.0r	3484.0r	3696.9r	3989.5r	4237.9r	4647.7
GDP Current Prices (Annual Growth Rate %)	-4.4	5.0	5.7	6.1	7.9	6.2	9.7
GDP Constant (1995 prices) [FJD million]	2637.9	2690.4	2777.3	2806.7	2959.4	2979.9	3087.5
GDP Constant (1995 prices) (Annual Growth Rate %)	-1.7	2.0	3.2	1.1	5.4	0.7	3.6

Source: Fiji Islands Bureau of Statistics

Chart 9 – Chart showing GDP growth for the period 2000 - 2006

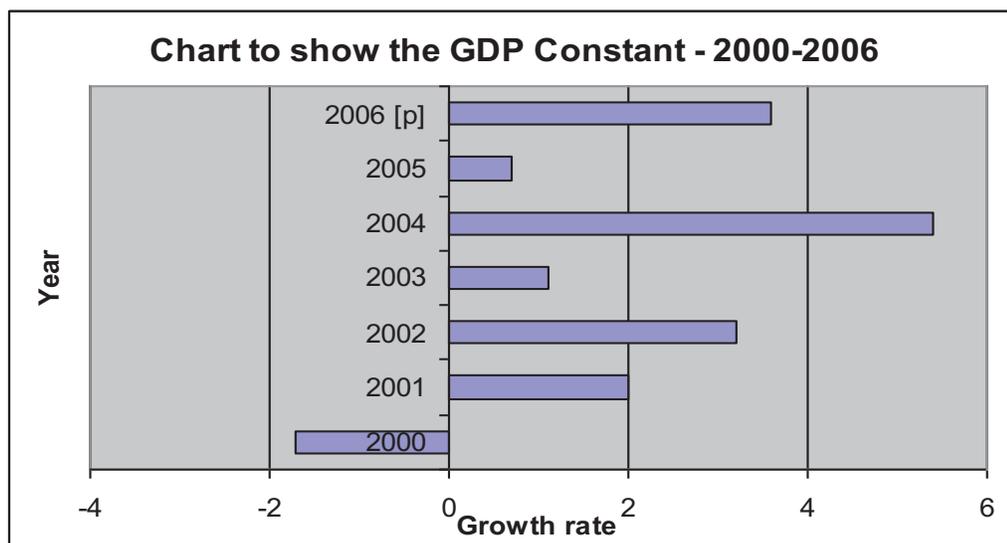
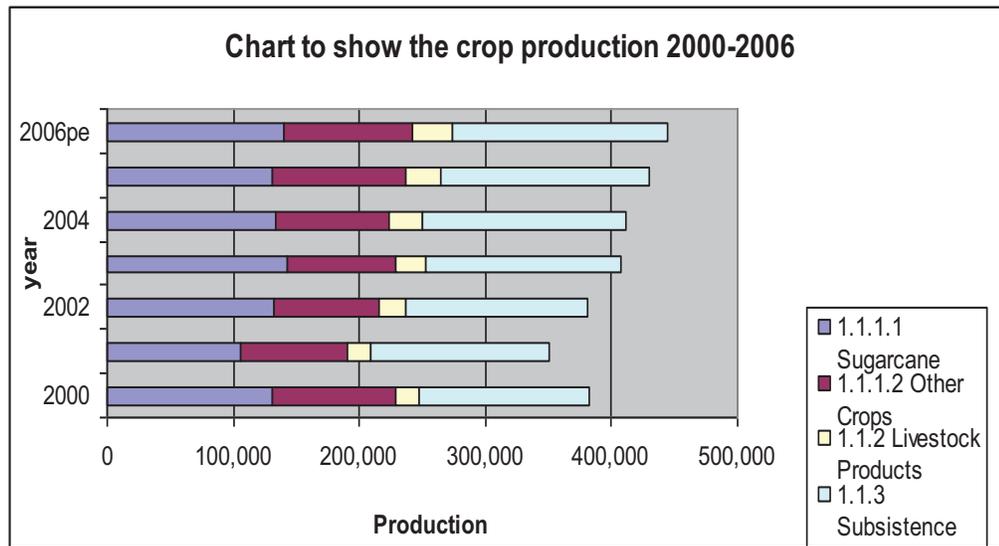


Table 10 – Agricultural Gross domestic product summary [FJD]

Activity	2000	2001	2002	2003	2004	2005r	2006pe
1.Agriculture, Forestry, Fishing and Subsistence	535,433	489,542	533,661	545,776	579,593	615,914	615,653
1.1.1 Crops	228,578	190,160	215,125	229,354	223,730	237,184	241,636
1.1.1.1 Sugarcane	131,192	105,193	131,620	142,777	133,129	130,915	140,289
1.1.1.2 Other Crops	97,386	84,968	83,506	86,577	90,602	106,269	101,347
1.1.2 Livestock Products	18,208	18,718	21,250	23,685	26,853	27,300	32,402
1.1.3 Subsistence	135,549	142,196	143,949	154,626	161,394	165,642	169,977

Source: Agricultural Statistics, 2006

Chart10 – Chart to show total crop production for the period 2000 – 2006



Source: Agricultural Statistics: Bureau of Statistics, 2006

Over the years the rate of growth in agricultural production has stagnated. Failure to keep pace with the needs of a rapidly growing population has resulted in a progressive increase in import bills for food and industrial raw materials. The potential of the agri-business sector as a major employer of the growing labour force and an earner of foreign exchange has also been undermined. As a result, majority of Fiji’s people many of whom lives in rural areas (approximately 50 percent), remain poor. Under the Agriculture Strategic Development Plan 2008-2010, agricultural development will be vigorously pursued, with the aim of achieving food security and reducing poverty.

Growth in the importation of agricultural produce by hotels and resorts due to the inability of domestic farmers to provide consistent supply of quality agricultural products is putting significant pressures on Fiji’s balance of payments. Emphasis must be placed on increasing the production, quality and standards of agricultural produce demanded by Fiji’s hotel and resorts through

the adaptation of the Value Chain Concept (VCC). VCC is supplying fruits and vegetables in terms of quality, quantity and consistency.

Planners have argued for years whether farmers should diversify or specialize. Subsistence farmers tend to be highly self sufficient and diversified, whereas commercial farmers have moved more towards specialization and many areas now concentrate mainly on one product. “Diversification occurs when a firm produces a new product without ceasing to produce any existing one. It may be either horizontal or vertical. Horizontal diversification refers to having several enterprises and products. Vertical diversification exists if many steps in producing one end product occur within the business...” (Aregheore and Hunter 2001:109)

Although economists today think that commercial farmers with limited capital should equip adequately to produce a few products efficiently, diversification spreads risk by providing a hedge against variations in output, cash income, consumption and savings. It also spreads income and labour and machinery use over the year and reduce working capital needs.

Therefore, the third important reason for the adoption of subsistence agriculture is its ability to diversify. In subsistence farming, such diversification extends to mixed and intercropping, relay cropping and mixed farming (combinations of crop and livestock enterprises). Although diversification seems to reduce average annual profit, it reduces the variability of that profit and subsistence oriented farmers tend to select enterprises that they regard as most stable. Besides reducing risks, diversification enables farmers to use spare resources productively and provides more scope for managers to use their skill and knowledge without becoming too complex to manage (Aregheore and Hunter 2001:109).

Agriculture, forestry and fisheries sustain many households. A majority of livelihoods of Pacific Island countries for the foreseeable future will depend on

agriculture. Many smallholders in rural communities depend on household food production and intermittent crop, fish and small livestock sales. Improvement and transformation of smallholders into sustainable income-generating activities through improved productivity and marketing will enhance self-reliance and reduce poverty over time.

Thus the existing government policies regarding subsistence agriculture need to be enhanced further to ensure the sustainability of this farming system. This is to ensure continued food security. For many Pacific Islanders, subsistence crops are the main source of their daily food requirements. All the different communities living in the Lower Naitasiri not only rely on subsistence agriculture for their daily food requirements but also play an important role in the provision of food for the two major urban centers in the periphery of this area. The two major urban centers are Nausori and the larger Suva area. These urban centers make up a population of more than 200,000 who rely heavily on the local municipal markets and road side vendors for their food needs. The main suppliers to these market vendors are farmers from the area in study.

“... Governments throughout the Pacific islands seek policies to improve agricultural productivity and nutrition, and conserve genetic resources, by working at both national and regional levels. The objective is to achieve sustainable food security within the framework set by the Rome Declaration of the 1996 World Food Summit (WFS), reaffirmed at the WFS five years later and expressed in the Millennium Development Goals (FAO quoted by Singh 2007). However, throughout the region there is little agriculture research and development (R&D) to improve productivity, even for the major food crops, and where it occurs, the results are neither widely shared nor disseminated. If increased productivity is not achieved, it is unlikely that people will have sufficient time for other economic enterprises such as processing and value addition of presently grown crops, or diversification into new economic activities. Thus, unemployment will continue to rise, with concomitant increases in migration to urban centers...” (Singh et.al 2007:2)

The fourth reason subsistence system of production is important relates to the fragile nature of the Pacific Island countries. Economic growth has brought with it considerable pressure on natural resources and the environment. Commercial production for the increase in export oriented products such as sugar and root crops (cassava, taro, ginger) has caused considerable loss to the production in locally consumed fruits and vegetables. Hence, the government ends up importing more food to meet local consumption. The use of excessive fertilizer and herbicide to carry out commercial production has had deteriorating effects on the marine environment. The intensive cultivation of land on flats and slopes has contributed to the rivers becoming shallow and caused flash flooding. It has also caused compaction and thus water runoffs and drought conditions have become more prevalent. Drinking water is becoming scarce as the rivers are becoming contaminated and intermittent. Food is becoming scarce during natural disasters as commercial production has overtaken the land area previously used for growing disaster resistant crops.

Halavatau (2004) quoted by Kurika et.al (2007), reported that there is considerable resilience within island communities to temporary food shortages caused by natural disasters. However, Halavatau also notes that this is bound to change due to urbanization and as the people plant fewer drought tolerant crops and lose traditional knowledge about how to cope with natural disasters. Subsistence agriculture is in fact a natural germplasm center for traditional plants and crops. Many of these plant varieties are resilient to the harsh environmental conditions of the PIC's. Maradel and Gate (ND) elaborate on sustainability in the Pacific and how it is not a new phenomenon to people. In fact, sustainability and self sufficiency had been the keys for the survival of island societies. Thus, I strongly recommend that self sufficiency not be eroded with the introduction of commercial farming at the expense of subsistence farming.

“...Life on small, isolated islands in a large expanse of ocean can be precarious. That people and cultures evolved over generations on these islands is testament

to the ability of early settlers to make decisions which ensured their survival. These decisions, based on an appraisal of what was available to use, and how it could be maintained through time, constitute an early form of sustainable living. In prehistoric times, there were few or no opportunities to supplement the local resource base with outside supplies, and self-sufficiency was the rule. Early European explorers found indigenous people who apparently were healthy and lived "good" lives in the eyes of these earliest visitors. Starvation and deprivation of basic life needs were not noted in early accounts of the islands. While Pacific storms probably destroyed food resources then, as they do now, systems of interchange with other islands eventually were developed to meet even those naturally-caused shortages. The introduction of new ideas, materials, and desires accompanied the early whalers, traders, missionaries, and colonialists who, in successive waves, washed over the islands. Increasingly, traditional methods of survival were displaced by imported ideas and products, and people moved away from their self-sufficient ways into models of living more dependent on outside sources for survival. This dependency was reached in various parts of the Pacific at various times and to varying degrees. On some islands, there are still practiced remnants of the traditional life-style. From these remaining traditional cultures, we can learn about the e patterns of life that were tied more closely to utilization and stewardship of what was naturally available, and discerns methods which may again become vitally useful to the island people..." (Maradel and Gate ND: 1)

An important finding from the survey is that subsistence agriculture is not only confined to women but a substantial number of men are also full time subsistence farmers. Subsistence agriculture is an important source of employment for the Indigenous Fijian males. Indigenous Fijian men in Lower Naitasiri are heavily involved in subsistence agriculture as a major source of income to meet their family's food needs and social obligations. Indo Fijians use subsistence agriculture to support home consumption and purchase basic needs. Income from the commercial crops is used for infrastructure development, land rent, land preparation and drainage.

The gross margins reveal most of the commercially grown crops are running into a loss. Farmers do not realize this because they hardly have any kind of records that would help them calculate the income, expenditure, profit or loss. Subsistence agriculture utilizes resources that are available on the farms such as organic manures and seeds from local varieties. These varieties adapt well to the environment giving high yields at low cost of production. Subsistence crops have ready market in the urban centers. Thus subsistence agriculture becomes an important source of profit and savings for the family.

Recently there has been a substantial movement of people across the country from the rural areas to the urban centers and this has caused an increase in population around Suva and Nausori. Food needs have increased in the urban centers. As a result Government has had to increase imports such as rice to meet the local food demand. This arisen has resulted from decrease in labour to grow locally consumed foods. Urbanization has created gap in the production of subsistence oriented crops. Governments focus on subsistence agriculture is needed to produce locally grown foods to reduce food imports. Imports of low quality food items to replace local high value crops has caused a more serious problem leading to nutritionally related diseases and the loss of food security.

“...Provincial and household food security is of more serious concern than national food security. Although the degree of segmentation varies by country, national food security follows a dualistic structure. Rural food security systems and urban food security systems are either separated or weakly related, chiefly due to deficiencies in marketing infrastructure. Food availability in rural areas primarily comes from local production, whereby access to food by household is determined by access to natural resources (arable land and artisanal fishing grounds). As long as natural resources are abundant, rural food security systems remain strong and sustainable. The most vulnerable provinces are those with high population pressure. The most vulnerable households are poor, with inadequate command over resources to produce subsistence foods and cash income. With the exception of Tonga, all countries studied are facing increased

rural poverty that has become a serious threat to household food security in rural areas. One of the main causes in Papua New Guinea and Vanuatu is a high population growth rate, but Tonga and Fiji have managed to avoid this problem through emigration...” (Simatupang and Fleming 2000: 43)

There is a need to put policies in place to safe guard the subsistence agricultural sector to maintain adequate levels of food security. The policies in relation to the enhancement of the subsistence agricultural sector development should include infrastructure development such as roads, bridges, storage facilities, niche marketing and availability of social amenities to the farmers. Policies relating to agricultural sector development must ensure that a person’s most valuable assets (homes, land, trees, plants, animals) are maintained. These policies should not alter a person’s lifestyle to suit the economy but work in collaboration with the person’s way of living so that it blends and becomes compatible with the social and physical environment. For a development project to be successful it needs to blend with the existing lifestyle and only then will people accept it.

According to Hone (2003) people are changing their eating habits due to policies that push towards availability of cheaper imported products. Hone uses the example of policy of using up idle land and resources, providing tariff protection and extension support that would increase dairy production in Fiji. This would reduce milk importation thus raising value of the Fijian dollar. There will be relative changes in food prices making imported foods cheaper than locally produced foods. This has negative effect on the subsistence farmers. Sometimes, government support for one industry tends to shift resources such as land and labour into that industry at the expense of the other agricultural industries. Subsistence agriculture is the most affected by this shift in resources.

Subsistence agriculture is given less attention because of limited data. Farmers tend to be involved in high cash crop production at the expense of subsistence production to access government aid. As a result the subsistence sector is

neglected and people are forced to buy cheaper imported substitutes. Government is obliged to buy imports to satisfy people's nutritional needs. Television and other media advertisements convince people to buy and consume cheap and high carbohydrate products although the recent efforts to buy Fiji made products are appreciated.

According to the Ministry of Agriculture Corporate Plan (2007) "...Eighty percent of the farmers are operating at subsistence level. Under the economic recovery program that has been put in place the Ministry hopes to reduce this percentage gap in uplifting their standards to semi-commercial and commercial levels. ..."

From a development theory perspective, the colonial government's employment of the term rural development for its projects was a misnomer. In development theory, rural development is a "process of growth...springing from within' in rural society that involves a growing individual and collective self reliance and focuses not only on material and economic needs but also on emotional, ethical and political empowerment. This change had not been guided by indigenous knowledge and pedagogy. In light of the top-down or center-periphery unilateral change, the projects initiated by the colonial government can be more correctly described as de-concentrated rather than rural development..." (Meyer 2001:10)

Development economists in general and agricultural economists in particular have long focused on how agriculture can best contribute to overall economic growth and modernization. Agriculture's primary role in the transformation of a developing economy was seen as subordinate to the central strategy of accelerating the pace of industrialization (Stringer and Pingali 2004:3).

Provision of small holder factories and storage facilities reduces the government's burden of subsidies. The study shows that the farmers want the government to help in the development of infrastructure and provision of social amenities (such as educational, educational, treated water and electricity) rather

than the handout policy. Subsidies drive the production of few types of crops in surplus that are dumped in the world market reducing the price of these goods. The government should provide opportunities for farmers to diversify. Diversification also reduces risk of uncertain outcomes

There is also a need to focus on niche marketing and smallholder projects. This system of production and processing shall look at market outlets closer to the farmers. Processing plants should be more widely distributed in the rural areas rather than a large centralized processing unit situated in the urban centers. This will not only ease farmers marketing problems but also help in rural development and ease problems such as urban drift. Lack of infrastructure and social amenities is an important factor causing urban drift.

Food Processors Fiji Limited (FPFL) is a locally owned company that buys locally grown vegetables from rural areas and processing them for sale in local and export markets. This company was established to provide market for seasonal and surplus agricultural products for remote areas where alternative markets were not available and enhance the livelihood for the rural people. According to this research, transportation is one of the biggest problems for the farmers. The roads are pathetic and the transportation is so costly...we might as well stop farming and go and live in the cities...” said by many of the farmers (*Personal com.*)

FPFL has not been able to serve the purpose it was entrusted with. Pacific Island nations are small in their land mass and the fragile environments make it important for us to make decisions as to how we are to plan the nature of economic development of the agricultural industry.

To resolve these problems, industries related to processing of agricultural commodities should move closer to the farmers so that their costs could be reduced and incentives in the form of jobs be provided to their family members. Smallholder factories shall have shares for farmers in the company. This will

create an incentive for the people operating it and create an air of ownership when their own children get employed in the industry created by them. It will also give the opportunity to get involved with the sales process and value adding of the products that will increase shelf life of perishable products. The profits will also go back to the people after taxation. As mentioned earlier, this ownership will make people look after the welfare of the industry. Farmer co-operatives require further studies on ways to make it successful in Fiji.

Another way to improve the welfare of the farmers is to provide storage facilities for seasonal products and especially when there is a glut in the market. These storage houses can also be used to keep fruits and vegetables when in surplus and used during the times of emergency from natural and man-made disasters. Storage facilities will help farmers to store their produce when they are unable to reach the market. This also should ensure a continuous market to factories which are trying to add value to increase shelf life of agricultural products. This would help both the subsistence and commercially oriented farmers. Storage facilities will help factories obtain a continuous supply of agricultural products in good conditions preventing wastage of raw material and the farmer losing income.

“...Industrialized countries like Japan, the United States and the European Union sometimes cause environmental degradation to the Pacific through unfair agricultural subsidies or protectionism. The European Union, for example, pays preferential prices for Fiji sugar but also pays preferential prices for African and Caribbean sugar. The European Union also limits importation of sugar into Europe and dumps excess production in other parts of the world, driving prices down. The World Bank’s answer to decreasing world prices for agricultural products from developing countries is to encourage the Pacific island countries to increase the production of other primary goods for export. When many countries in the Pacific and the developing world produce more of the same goods, such as spices, sugar or bananas, the price comes down and the market collapses. For example, a large increase in vanilla production in Madagascar

and other parts of the world forced the price of vanilla in Tonga from T\$80 a kilo in 1997 to T\$60 a kilo in 1998 resulting in a loss of \$T20, 000 per tonne...” (Kitakyushu 2000:1)

The challenge of adding value for the primary producer of agricultural products is considerable, and is heavily influenced by the structure of the marketing chain and the effectiveness of the market intelligence channels. Consequently, producers in the Less Favored Areas (LFAs) who contribute in Agri-environmental policies (AEP) may be able to add value to their produce through the development of niche markets by placing emphasis on the product quality demanded by consumers, the production methods used and the regional identity often associated with tourist areas.

Another important factor to consider is the environment. The Lower Naitasiri is not only the supplier of food to the urban dwellers but also has to maintain quality water for the treatment plants based nearby. The rivers running through this province are the main source of raw water that is supplied to the whole of Suva and Nausori urban centers. Therefore, one needs to be careful not to pollute these sources with chemical fertilizers and pesticides. These rivers are directly linked to the sea. Women who collect shell fish down the stream will be affected.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMENDATIONS

Subsistence agriculture is still vibrant in Fiji and we cannot exit from it to promote the development of the economy exclusively through commercialization of the agricultural sector. The overall objectives of this research was to 1) determine types and levels of agriculture in Lower Naitasiri; 2) Analyze significance of subsistence agriculture using collected data and 3) Compare and contrast existing literature on subsistence agriculture.

In the Lower Naitasiri, more than 80 percent of the farmers still rely on subsistence farming food and income. In Viria and Muaniweni, farmers grow local food crops using limited resources that can easily find a local market. The growing urban population buys these locally produced fruits and vegetables for their daily needs. Both men and women are vigorously involved in the production of these subsistence crops. Out of the two major ethnic groups in the area, Indigenous Fijians rely on subsistence farming more than the Indo Fijian farmers. The family size ranges from 3-10 people and they are supported from the food and income from subsistence agriculture. The subsistence products are also used to feed the family three times a day. One of the hidden benefits of subsistence farming is that since the family's survival depends on the land, farmers carefully cultivate it and rotate crops to avoid soil degradation. There are several major barriers to improving agricultural productivity and farm income for subsistence farmers. These barriers include a lack of integrated approach to education about food security in schools, lack of data in food security indicators and health data, insufficient drought response system, inadequate infrastructure and transportation for better market access.

This research was conducted in Muaniweni settlements, Viria and Savu villages, located in the Province of Naitasiri in central division of Fiji. Locality agricultural extension officer was sought to assist in meeting with the *Turaga ni koro* of the two villages. He helped meet with the advisory councilor to seek

permission and set dates for the *Talanoa* sessions and conduct questionnaire survey. Questionnaires were distributed to people and with aid from a research assistant information was collected from farmers. This research was conducted over a two months period. *Talanoa* sessions were conducted with groups of farmers.

The survey carried out in the Lower Naitasiri revealed that market and storage were important deterrents to the productivity and yields of crops. As discussed earlier, without property rights, subsistence farmers cannot obtain the technology to protect against droughts, and without a marketing infrastructure, they cannot increase their income by marketing the crops that survive the droughts. Despite macroeconomic reforms and market liberalization, Fiji has experienced only moderate improvement in general social and economic conditions. Fiji's agricultural sector needs to review its traditional export crops and re-look at the subsistence sector for potential export commodities. Increased productivity of subsistence crops will allow subsistence farmers to grow crops for profit; marketing will transform from quick cash and food for the family to exporting of crops. Increased subsistence food production will also enable a more food secure Fiji.

The empirical home use model was estimated using the primary data that was collected from the field during the research. The data reveals that ethnicity is a major determinant for use of total farm produce. This is the only variable in the model that is significant. The variables used in this model are obtained from the respondents not necessarily the head of the house. This is because in many instances the head of the house was not the farmer or was not available for *Talanoa*. The most significant factor affecting home consumption is ethnicity and in this case Indigenous Fijian farmers tend to retain more food for home consumption in comparison with Indo Fijian farmers.

$$\begin{aligned}
 \text{HU} = & 9.7 & - 0.014 \text{ Age} & - 0.328 \text{ HS} & + 19.934 \text{ Eth}^* & & R^2 = 69.6 \% \\
 & (4.771) & (0.080) & (0.515) & (2.210) & &
 \end{aligned}$$

(Figures in parenthesis are standard errors).

The research also shows that Indo-Fijian farmers tend to grow more commercial crops and at the same time liquefy most of the subsistence products into cash rather than use for home consumption, compared to Indigenous Fijian farmers who use substantial amounts of their products for home consumption.

The dependence of Indigenous Fijian on subsistence based agriculture for their daily living is quite significant regardless of age of the respondent and household size which does not have significant effect on home consumption. Most of the farm products fulfill their daily food needs while at the same time fulfill cash needs. This also means that subsistence agriculture is still vibrant in food security especially in the Indigenous Fijian farming community where regardless of age or number in household, the home consumption is substantial (69.6%).

To understand the issue of food security in Fiji, it is important to first consider the local units that make up the agricultural economy. These are the subsistence family farms, which represent majority of those involved in agricultural production. Another issue that affects agricultural productivity is the lack of a farm marketing infrastructure. The Food and Agricultural Organization (ND:1), states that “efficient marketing infrastructure such as wholesale, retail and assembly markets and storage facilities is essential for cost-effective marketing, to minimize post-harvest losses and to reduce health risks”. This proved to be an important factor in determining agricultural production in Fiji.

In Fiji, agricultural development programs were too often government-led and focused too much on the promotion of export-oriented, high risk, high-value crops with uncertain market opportunities. The economic contribution of traditional food production also tends to be insufficiently recognized by agricultural and national planners, and is underestimated in national accounts. Despite the mixed results of agricultural development projects, most Pacific island countries retain strong traditional agricultural production systems and farmers grow an impressive quantity and range of local foods. Local food

production at subsistence level has been identified as a hidden strength of Pacific economies.

The Food and Agriculture Organization of the United Nations is a leading agency in the development of the value chain approach and in making it more applicable to the small-farmer agriculture context. If agribusiness development is to play a key role in reducing rural poverty, then governments will need to understand and have the capacity to create enabling conditions for agribusiness while also monitoring and taking necessary steps to protect and enhance the livelihoods of small scale farmers and other members of rural and urban communities likely to be affected by agribusiness and agro-industry development.

5.1 Limitations and recommendation

Subsistence agriculture has a lot of potential for further research. Given time and funding, the research could be taken further to upper Naitasiri. More time and funding are required to study the policies related to subsistence agriculture. There is a need for policy developments that are not necessarily bureaucratic but help to enhance a healthy subsistence agriculture development to protect and enhance the livelihood of small scale farmers. More research is required in developing authentic data in relation to subsistence agriculture output and the contribution it makes to the economic development of the country. A huge gap exists between subsistence agriculture on the field and written available data.

I highly recommend research for policy development and authentic data collection in relation to subsistence agriculture so that government could create development strategies that are more applicable in reducing poverty and increasing food security in Fiji. The research could also help develop an appropriate agricultural development model for smaller Pacific island countries.

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APPENDIX

FIJI - AGRICULTURE PRODUCTION							
	Unit	2000	2001	2002	2003	2004	2005p
1 SUGAR PRODUCTION							
Sugarcane Production	000 tonnes	3,598	3,077	3,216	2,817	3,076	
Sugar Production	000 tonnes	335	310	317	308	323	
Farmers	No.	22,000	22,000	22,000	18,000		
Sugar Export							
Quantity	000 tonnes	341	240	289	271	230	
Value	\$'million	238	222	235	231	178	
Molasses Production							
Volume	000 tonnes	164	110	110	49	96	
Value	\$'000	14,168	9,503	12,387	10,112	9,960	
2 COCONUT PRODUCTION							
Copra Production							
Quantity	tonnes	13,177	16,553	14,349	9,505	10,280	12,057
Value	\$'000	4,967	5,925	5,840	4,353	5,063	5,426
Coconut Oil Production							
Quantity	000 tonnes	5,634	7,738	9,143	n/a	n/a	n/a
Value	\$'000						
3 ROOTCROP PRODUCTION							
<u>DALO</u>							
Production	tonnes	25,279	29,669	36,796	39,083	65,545	83,750
Av farm gate price	\$/tonne	733	1,100	1,100	1,100	1,100	1,100
Output value	\$'000	18,530	32,636	40,476	42,991	72,100	92,125
Farmers	No.	23,485	18,461			45,957	35,000
Export							
Quantity	Tonnes	9,274	8,997	9,733	9,661	9,946	9,959
Value	\$'000	12,834	14,002	16,504	16,068	19,133	19,006
<u>CASSAVA</u>							
Production	tonnes	27,605	29,074	35,300	39,885	47,374	59,647
Av farm gate price	\$/kg	0.71	0.55	0.55	0.40	0.50	0.40
Output value	\$'000	19,491	15,991	19,415	15,834	23,687	23,687
Farmers	No.	31300			31870	41936	37,328
Export							
Quantity	Tonnes	829	937	1,120	1,623	1,220	1,799
Value	\$'000	825	1,708	1,794	2,099	1,919	1,819
GINGER INDUSTRY							
<u>MATURE GINGER</u>							
Production	tonnes	1,660	1,436	3,711	3,287	3,680	
Av farm gate price	\$/kg	1.1	0.75	0.75	0.75	0.75	
Output value	\$'000	1,820	614	1,399	641	672	
Farmers	No.				205	176	
Export							
Quantity	Tonnes	224	446	182	208	247	
Value	\$'000	400	1,000	600	700	700	

FIJI - AGRICULTURE PRODUCTION

	Unit	2000	2001	2002	2003	2004	2005p
<u>IMMATURE GINGER</u>							
Production	tonnes	2,254	617	1,846	2,436	2,783	2,950
Av farm gate price	\$/kg	0.82	0.75	0.75	0.75	0.75	0.75
Output value	\$'000	1,858	463	1,385	1,827	2,087	2,213
Farmers	No.	784				668	805
Export							
Quantity	Tonnes	1,449	860	950	974	1,306	1,533
Value	\$'000	8,600	6,000	7,000	6,600	6,700	7,118
4 FRUITS INDUSTRY							
<u>PAWPAW</u>							
Production	tonnes	1,602	1,742	1,179	2,403	2,757	1,870
Av farm gate price	\$/kg	0.87	1.00	1.00	1.00	0.75	1.00
Output value	\$'000	1,396	1,742	1,179	2,403	2,068	1,870
Farmers	No.	1403			1233		1,581
Export							
Quantity	Tonnes	101	101	150	208	303	284
Value	\$'000	437	331	507	1,246	1,115	994
<u>PINEAPPL</u>							
Production	tonnes	2,423	2,323	1,865	2,787	3,488	2,986
Av farm gate price	\$/kg	1.11	0.80	0.80	0.80	0.80	
Output value	\$'000	2,697	1,858	1,492	2,230	2,790	
Farmers	No.	2613				4172	2,272
Export							
Quantity	Tonnes	1.00	0.30	1.00	0.35	3.00	0.4
Value	\$'000	1.60	0.40	3.00	0.40	4.20	2
5 VEGETABLE INDUSTRY							
<u>ASSORTED VEGETABLES</u>							
Production	tonnes	14,025	18,205	15,669	20,642	25,217	24,656
Av farm gate price	\$/kg	n/a	1.00	1.00	1.00	1.00	1.00
Output value	\$'000	n/a	18,205	15,669	20,642	25,217	24,656
Farmers	No.	11,060	11,060	11,060	24,159	23,335	20,861
Export							
Quantity	Tonnes	n/a	1,411	1,126	1,314	1,708	2,200
Value	\$'000	n/a	2,197	1,771	2,651	4,410	5,100
6 CEREALS							
<u>RICE</u>							
Production	tonnes	12,239	19,071	12,851	15,504	14,161	15,189
Av farm gate price	\$/kg	0.47	0.34	0.34	0.34	0.40	0.50
Output value	\$'000	5,700	6,500	4,400	5,300	5,600	7,595
Farmers	No.	7,140	7,140	7,140	5,098	5,098	6,707
Import							
Quantity	Tonnes	38,619	28,522	27,495	33,955	36,107	37,500
Value	\$'000	16,174	19,231	18,669	18,986	22,338	21,943
7 YAQONA							
Production	tonnes	3,084	5,161	4,039	2,691	2,149	2,260
Av farm gate price	\$/kg	17	17	17	15	17	25
Output value	\$'000	52,428	87,737	68,663	40,000	37,000	56,500
Farmers	No.	12,929			18,554	21,596	14,118
Export							
Quantity	Tonnes	315	417	144	144	142	122
Value	\$'000	5,700	5,100	1,992	1,592	2,230	2,553

