THE UNIVERSITY OF THE WESTERN CAPE

INSTITUTE FOR POVERTY, LAND AND AGRARIAN STUDIES

THE ROLE OF NIGHT PADDOCK MANURING IN THE REDUCTION OF POVERTY AND CONFLICT AMONGST FARMERS AND GRAZERS IN SMALL BABANKI (CAMEROON)

PRESENTED BY:

NDJINYO FOUDA NDIKINTUM

(STUDENT NUMBER: 2832189)

SUPERVISOR:

Dr. MICHAEL ALIBER

Mini-thesis submitted in partial fulfillment of requirements for the award of the MPhil degree in Land and Agrarian Studies of the University of the Western Cape, South Africa

KEYWORDS

Indigenous Innovation, Night Paddock Manuring, Farmer-Grazer Conflict, Conflict Management, Poverty Reduction

DEDICATION

This work is dedicated to the Lord God Almighty and to the neglected farmers and grazers of developing countries who are generally ignored and exploited by elites in spite of their immense contribution in alleviating poverty.

ABSTRACT

Background

Agriculture and livestock production were the mainstay of the economies of many sub-Saharan African countries, including of Cameroon, in the 1970s. Things began to change with the discovery of petroleum products and natural minerals, and the push to industrialise. This led to a shift from agricultural production to other more 'beneficial' sectors. In the 1990s there was an 'imposed' liberalisation of the agricultural sector. This liberalisation was marked by a disengagement of most governments in developing countries from assisting agriculture. In Cameroon, disengagement was achieved by the promulgation of law No. 92/006 of 14th August 1992 and its decree of application No. 92/455/PM of 23rd November. This law encouraged the creation of common initiative groups which could independently pool their resources to increase agricultural production.

Although there has been a shift to non-agricultural sectors in many sub-Saharan countries, on the whole, however, many rural areas in these nations have remained essentially agro-pastoral. Unfortunately some rural areas, like Small Babanki in Cameroon, whose livelihoods are land-based are faced with soil erosion, population pressure and farmer/grazer conflicts which undermine the little economic gains made in these places. Rural-dwellers have resorted to several innovations to circumvent these constraints to agricultural production.

Objectives of the research

This research focused on an indigenous agricultural innovation called "Night Paddock Manuring" (NPM) which is practiced in various parts of Cameroon. The innovation involves a partnership between farmers and grazers whereby farmers build paddocks around their farms, and cattle herders drive their herds into farms where they deposit their manure. The idea of the practice is that it enriches the soil of the farms, provides the herds access to good fodder, and reduces conflicts between crop farmers and grazers. The objective of the study was to investigate the role this agricultural innovation is playing in reducing poverty and farmer/grazer conflicts. The research focused on a community called Small Babanki located in the North-West Region of Cameroon.

Research questions

To gain accurate insight into the role played by NPM, answers were sought to the following questions: (i) What are the causes of farmer/grazer conflicts in Small Babanki and how are these conflicts manifested? (ii) What efforts have been made hitherto by stakeholders to resolve farmer/grazer conflicts and what were the outcomes of such interventions? (iii) What motivated the development of the NPM farming system and how does the system function? (iv) How has the introduction of NPM affected the occurrence of conflicts and the resolution of conflicts when they occur? (v) Has NPM contributed to increasing the output, income and the market value of the products of farmers and grazers? (vi) How have the asset bases of grazers and farmers changed and what additional livelihood options are available to them as a result of adopting NPM? (vii) What

are the major constraints that hinder practitioners of the innovation from getting maximum returns from it?

Data collection method

The data collection method for this research involved a review of reports written on the innovation by NGOs promoting it. Within Small Babanki, a focus group discussion was held with farmers and an elaborate questionnaire was administered amongst 10 randomly selected farmer households and 10 randomly selected grazer households. Structured interviews were also held with key informants, such as local officials and traditional and religious leaders.

Findings and conclusions

The research supports the perception that, in Small Babakni, NPM benefits both crop farmer and grazer households by means of improving productivity, reducing poverty, and reducing conflict.

Respondents indicated that generally speaking the asset base and livelihood options of practitioners of NPM are constantly improving. They also stressed that improvements in education, health, nutrition, land tenure and safety of shelter are indicative of the amelioration of their state of wellbeing, and this in large measure can be attributed to the adoption of NPM.

Measurement of poverty using the both the US$1/day and the national poverty line of 503.19 CFA/day revealed that cropping households are living on the fringes of poverty while grazing households tend to live just above the poverty line. However, going by information provided by respondents on their

outputs, the proportion of what was consumed by the household, the proportion of what was sold and the proportion of what was retained enabled us to make an estimation of the cash and noncash incomes of both grazing and cropping households. It was discovered that at any point they seemed to have a significant noncash wealth reserve which could easily be converted into cash in order to meet daily expenses

Both the declarations of respondents and some official documentation suggest that NPM was contributing positively towards a reduction of conflicts between farmers and grazers in Small Babanki.

DECLARATION

This mini-thesis is the outcome of research carried out in Small Babanki, Cameroon, by the undersigned. It is an original work and wherever inspiration was drawn from a previously published or unpublished work, credit was given to the author accordingly.

DATE…… **SIGNATURE……**

ACKNOWLEDGEMENTS

This work would not have been possible without the understanding of my wife and children who permitted me to travel first to South Africa for the coursework and then several times to the research site.

I will always give credit to my mother, Mrs. Ekunda Ndikintum, for always being there for me. My sisters Cecile Ayuk and Enyanyo Biack and brothers, Fouda François, Nfii, Nyofi and Nyonunfon, were a source of mental, emotional and financial support. They do not say it but I can imagine that in their minds they keep asking, “When will he stop going to school?”

Gratitude goes to the lecturers and administrators at the Institute for Poverty, Land and Agrarian Studies (PLAAS) for making the course easy to assimilate though very rich in content. Prior to studying in South Africa, I had always been made to learn the hard way. My supervisor, Dr. Michael Aliber, believed in me and that stimulated me not to disappoint him. I will never forget the lovely South African and Zimbabwean students with whom I interacted during the course.

I acknowledge the kindness of Professor Tchawa Paul, Head of Department of Geography of the University of Yaoundé I, and of Mirabel, the North-West Regional Coordinator of the CIPCRE NGO for helpful documentation given to me.

Last but not least I would like to thank my respondents in Small Babanki, in particular Vitsuh Christopher, a crop farmer, and Yakubu Isa, a grazer, for their

contributions towards the success of this study. Many thanks go to Tandah Ernest who has always been a faithful friend. He proved his friendship once more by accompanying me everywhere during the research. On one of the days we trekked more than 10 km in the rain because we couldn't get a vehicle to take us back to Bamenda. On that fateful market day, drivers of all commercial cars that ply the Small Babanki-Bamenda road considered it more financially profitable to carry huckleberry than people.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AKIS	Agricultural Knowledge and Information Systems
AU	African Union
CIPCRE	Cercle International pour la Protection de la Création
D.O	Divisional Officer
FAO	Food and Agricultural Organization
FO	Farmer Organization
FSR	Farming Systems Research
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
MDG	Millennium Development Goals
MINEPIA	Ministère de la Pêche et des Industries Animale
MINADER	Ministère de l'Agriculture et du Développement Rural
NEPAD	New Partnership for African Development
NGO	Nongovernmental Organization
NPM	Night Paddock Manuring
OECD	Organisation for Economic Co-operation and Development
PO	Producer Organization
PRA	Participatory Rural Appraisal
SSA	sub-Saharan Africa
SDDARD	Sub Divisional Delegate of Agriculture and Rural Development
SLF	Sustainable Livestock Foundation
TOT	Transfer of Technology
TRC	Tubah Rural Council
UNDG	United Nations Development Group

GLOSSARY OF AGRICULTURAL TERMS

TERM	MEANING
Agro-pastoral	Based upon agriculture and the rearing of sheep
Cow manure	Cow slurry
Erosion	The wearing away of the land surface by water, wind, ice, or other geologic agents.
Fertiliser	Any organic or inorganic material of natural or synthetic origin which is added to soil to provide nutrients, including nitrogen, phosphorus, and potassium, necessary to sustain plant growth.
Fodder crops	Crops grown for consumption by livestock; for the edible plant parts other than grain that are grazed by animals or that can be harvested for feeding of animals.
Intercropping	The growing of two or more different species of crops simultaneously, as in alternate rows in the same field or single tract of land.
Irrigation	Application of water to soil for the purpose of plant production.
Nomadic pastoralism or nomadic transhumance	A form of agriculture where livestock are herded either seasonally or continuously in order to find fresh pastures on which to graze.
Perishable food	Foods that are subject to loss of quality, usually by destruction, decay or spoilage.
Pesticide	Any substance or mixture of substance intended for: - preventing, destroying, repelling or mitigating any pest
Slash and burn	A farming system, common in the tropics, in which land is cleared, the debris burned, and crops grown for a relatively short period until yields decline. The land is then abandoned. The original land is cleared and cropped again after a uncontrolled fallow period of 3-20 years, usually when soil fertility has been naturally restored by woody vegetation
Stubble	The short stalks left in a field after crops have been harvested

CHAPTER ONE:

INTRODUCTION

The current world food crisis has once more brought to the limelight the need for low-cost agriculture. The importance of agriculture for both individual economic survival and national economic development has been further reinforced by the release in 2008 of the World Development Report entitled, "Agriculture for Development." In some quarters, indigenous agriculture innovation is perceived as the most assured way to increase agricultural production. This perception is all the more welcome at a time when aid to agriculture is likely to further dwindle because of the current international economic situation.

1.1 PROBLEM STATEMENT

The economy of the North-West Region of Cameroon is essentially agro-pastoral. This is partly because of its favourable climatic, topographical and ecological endowments. The Region however has a longstanding history of conflicts between crop farmers and cattle herders. Population growth has led to an upsurge of these conflicts because there is now an ever-increasing competition for land suitable for grazing and farming. The problem has been aggravated by soil erosion, soil infertility caused by unsustainable farming practices such as 'slash and burn', etc. Noteworthy also is the recent trend of diversification of grazers into crop farming activities and vice versa. In some instances, this has led to a

collapse of the inter-dependence (symbiotic relationship) between farmers and grazers.

1.2 SPECIFIC OBJECTIVES AND RESEARCH QUESTIONS

The aims of this research are twofold. Firstly, the research seeks to understand the modus operandi of an indigenous innovation known as "Night Paddock Manuring" (NPM) and its role in reducing poverty in Small Babanki, a rural locality in the North-West Region of Cameroon. Secondly, it seeks to investigate whether NPM has contributed or not in reducing the frequency of farmer/grazer conflicts in Small Babanki.

The following specific research questions are addressed:

(i) What are the causes of farmer/grazer conflicts in Small Babanki and how do the conflicts manifest? (ii) What efforts have been made hitherto by stakeholders to resolve farmer/grazer conflicts and what were the outcomes of these interventions? (iii) What motivated the development of the NPM farming system and how does the system function? (iv) How has the introduction of NPM affected the occurrence of conflicts and the resolution of conflicts when they occur? (v) Has NPM contributed to increasing the output, income and the market value of the products of farmers and grazers? (vi) How have the asset bases of grazers and farmers changed and what additional livelihood options are available to them as a result of adopting NPM? (vii) What are the major constraints that hinder practitioners of the innovation from getting maximum returns from it?

1.3 RATIONALE AND SIGNIFICANCE OF THE RESEARCH

Poverty is rife in the rural areas of the North-West Region of Cameroon where the population's livelihood is essentially land-based. Unfortunately, farmer/grazer conflicts have caused an untold loss of life and property and have eroded some of the economic gains made in the Region. It is debatable whether the conflicts are strictly the effects of a diminishing asset base or whether they also have political, religious, tribal, customary and social undertones.

In order to ascertain the exact causes of the conflicts and to seek for a long-lasting solution to this cankerworm which is eating into the social and economic fabric of the Region, the Region's governor has commissioned ad hoc committees in some places to map the way forward. This study intends to provide suggestions that might be found useful by all, including these ad hoc committees.

1.4 DELIMITATION OF STUDY AREA/ASSUMPTIONS ON WHICH THE RESEARCH PROJECT RESTS

This research is largely based on reports and perceptions of grazer and crop farmer households, and administrative, traditional and religious leaders with regards to how NPM contributes to reduce poverty and conflicts amongst grazers and crop farmers in Small Babanki. An attempt shall not be made at comparing practitioners of NPM and non-practitioners of the innovation. This path was envisaged, but later dropped when it was observed that about 86 percent of farmers and grazers in the study area practice NPM, and that those not practicing NPM probably do not represent a good comparison group for those who do. (Non-practising crop farmers in particular appear to be too poor to invest in NPM, and thus are different from their practicing counterparts in important respects other

than the use/non-use of NPM. This is important in itself and has distinct policy implications, but effectively rules out a research design based on an inter-group comparison.) Moreover, the brief timeframe for the study did not allow for a before-and-after comparison research design, nor are there proper baseline studies available for the particular area in relation to which the current situation of NPM-practicing grazers and crop farmers could be compared. Therefore the evidence as to the impact of NPM falls short of a strict, quantitative causal analysis. Rather, the evidence comprises respondents' perceptions as to the impact of the adoption of NPM, and to some extent a before-and-after comparison based on respondents' recollections of their situations prior to adoption relative to after.

The standard US$1/day poverty line shall be used as the main poverty indicator in this study. Other indicators of wellbeing will also be highlighted in order to identify the impact of NPM on poverty in the research site. The research shall focus only on farming and grazing households that have practiced NPM for at least 10 years.

1.5 ORGANISATION OF THE THESIS

This thesis shall be presented as follows: Introduction; Literature review; Research design and methodology; Findings and analysis; Conclusions and recommendations.

CHAPTER TWO:

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 INTRODUCTION

This chapter presents a literature review comprising four main parts. First, the literature review discusses recent thinking on poverty and poverty reduction. Second, we briefly examine the meaning of 'conflict' and conflict reduction in the literature, with some attention to grazer/cropper conflicts in West Africa and in Cameroon. Third, we survey the literature on indigenous agricultural innovation, including factors that promote or inhibit agricultural innovation. And fourth, we summarise the sparse literature on the role of indigenous agricultural innovation in the reduction of poverty and grazer/farmer conflicts.

The final part of this chapter summarises the conceptual frameworks employed to frame the study, of which there are two: the Sustainable Rural Livelihood Framework, and the Inter-agency framework for conflict analysis.

2.2 POVERTY AND POVERTY REDUCTION

2.2.1 THE MEANING OF "POVERTY"

The concept of poverty is not static but dynamic. There has been a steady evolution in the terms used to define poverty in the last century. Firstly, there is the notion of income poverty, for example, whereby all individuals living on less than US$1

per day are considered poor. Secondly, there are the basic-needs and the lack of food entitlement approaches advocated by Sen (1981). The latter concepts are premised on the fact that starvation and lack of fulfillment of basic needs—which are expressions of poverty—do not occur necessarily because people are faced with a food shortage or absence of items to address their basic needs. It occurs because people have insufficient command or access to food and other basic needs—a food/basic needs entitlement decline. Ellis (2000) points out, "The terms of trade, under which their different income sources such as crop sales, wages and remittances can be exchanged for food and other basic-needs is unfavourable."

The same explanation applies to a third concept which defines poverty as a lack of environmental entitlements. Other poverty concepts include economic exclusion; social marginalization; class exploitation; and political disempowerment (see Béné, 2003).

2.2.2 POVERTY IN THE WORLD, SUB-SAHARAN AFRICA, WESTERN/CENTRAL AFRICA AND CAMEROON

The World Bank (2000a) indicates that an estimated 1.2 billion people lived on less than US$1 per day in 1998. At that time about 1.6 billion people were living on less than US$2 but more than US$1 per day. This means a total of about 2.8 billion people lived on between US$0 to US$2 per day in 1998. By the year 2002, the number of people living on less than US$1 remained relatively static at 1.2 billion. By that year, those living on less than US$2 but more than US$1 per day had grown to 1.85 billion i.e. an increase of 250 million people within a four-year period. The World Bank (2000b) reports that about two-thirds of the world's poor live in the rural areas of the developing world. Some 50% to 90% of these poor people are said to live in rural areas in sub-Saharan Africa. The

Western and Central Africa region remains one of the poorest in the world. Eighty percent of the population is living on less than US$2 a day, and about 50% on less than US$1 a day. Indeed, according to the UN's latest assessments, most countries in the region are unlikely to meet the Millennium Development Goals (MDGs)[1]. There are eight MDGs and twenty-one proposed targets for achieving these goals. With regards directly to the eradication of extreme poverty and hunger, which is one of the goals, envisaged targets include to:

- Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day.
- Achieve full and productive employment and decent work for all, including women and young people.
- Halve, between 1990 and 2015, the proportion of people who suffer from hunger.

Poverty is also rife in Cameroon. The table below summarises the poverty situation in the country:

Table 1: Poverty indicators for Cameroon

Total population (million), 2004:	16.0
Rural population density (people per km2), 2003:	128.5
Number of rural poor (million) (approximate), 2001:	3.8

[1] http://www.un.org/millenniumgoals/poverty.

Poor as % of total rural population, 2001:	49.9
GNI per capita (US$), 2004:	810.0
Population living below US$1 a day (%), 2001:	17.1
Population living below US$2 a day (%), 2001:	50.6
Population living below the national poverty line (%), 2001:	40.2
Share of poorest 20% in national income or consumption (%), 2001:	5.6
Human Development Index (HDI) Ranking	135th of 173 countries, 2002
Gender-related Development Index (GDI) Ranking	115th of 146 countries, 2000
Population using improved drinking water sources (% 2000)	
Total	58
Urban	78
Rural	39
Adult literacy rate (%), 2000	
Total	76
Men	82
Women	69

Source: Eyong (2007)

2.2.3 PATHWAYS OUT OF POVERTY

There have been longstanding debates as to how to reduce poverty amongst rural dwellers who by the year 2000 made up 60% of the total population of developing countries (FAO, 2000). Some argue that all poor rural households are essentially agricultural; therefore, agriculture is the best path out of poverty for such households. They argue that the employment elasticity in the agricultural sector is limited, consequently, agricultural growth results in a release of labour force into the non-agricultural sector, stimulating non-agricultural activities and employment and reducing poverty in rural regions, even amongst households with little or no land or other resources—production linkage. Also, increased income from agriculture is accompanied by increased demand for labour-intensive locally produced non-agricultural goods through consumption linkages.

Berdegué *et al*. (2002) argue that agricultural production can be a major element in poverty-reducing strategies, or it may play no role at all. In addition to agricultural development, the World Development Report (2008) identifies non-farm incomes, remittances, and rural-to-urban migration as important pathways out of poverty in developing countries. Hart (2000) argues that conceiving agriculture as the sole driver of industrialization is faulty because social organization of production, access to resources, investment, political and institutional arrangements as well as historical specificities are determining factors to consider.

Obviously, agricultural growth may produce a ripple effect through production and consumption linkages that will influence the other three pathways out of poverty which have been identified by the World Bank. But these three pathways can also be followed independently even in non-agricultural rural economies.

2.3 CONFLICT AND CONFLICT MANAGEMENT

2.3.1 DEFINITION OF THE TERM "CONFLICT"

Conflict refers to disagreements, clashes and other forms of divergence. Conflicts manifest in various ways and have their origin from different sources. Farmer-grazer conflicts are a particular type of clash.

2.3.2 FARMER/GRAZER CONFLICTS

Blench (1984) identifies four relationship levels between typical farmers—usually autochthonous people and transhumance grazers – which can lead to conflicts:

- Dominance relations, which are both historical and current. This has to do with the relations of power and authority both within and between the various ethnic groups and classes;

- The production system. In the case of farmers, this has to do with the crops planted, both for sale and subsistence modes of land preparation, and the means of mobilization of labour. In the case of grazers, the patterns of stock management, and the terms of co-operation with arable farmers might result into conflict;

- The allocation of economic rights and responsibilities within traditional social and political frameworks; and

- Belief systems, where a neighbouring pastoral group and the agriculturalists do not have the same religion, ideological differences may over-ride mutual economic advantage.

2.3.3 FARMER/GRAZER CONFLICTS IN WEST AFRICA AND CAMEROON

It is unlikely that one can have accurate data on the magnitude of losses caused by farmer-grazer conflicts in West Africa, including in Cameroon. This is because most of the countries in this region face both logistic and human resource challenges in their data collection efforts on most issues. Breusers *et al*. (1998) admit that these conflicts, which are on the increase in West Africa, are not a new phenomenon but can be traced to the time of biblical patriarchs. For example, there have been instances of farmer/grazer conflicts across borders, e.g. northern parts of Nigeria-Cameroon which are a new phenomenon. Previously conflicts were essentially local.

It is however widely acknowledged that these conflicts exist wherever transhumant Fulani communities co-exists with sedentary 'autochthonous' groups of people. The modern Fulani, who live in sub-Saharan Africa between the Sahara and the tropical rain forests, can be divided into the settled Fulani (15 million people) and the nomadic Fulani (up to 13 million people), sometimes called the M'Bororo (or Bororo) or the Wodaabe. The nomadic Fulani live in the African middle savannah belt, from eastern Senegal to the Central African Republic, and are the most numerous nomadic group in this area. Because of their nomadic lifestyle it is not uncommon to encounter farmer-grazer conflicts in most parts of West Africa, from Senegambia to Western Sudan. The reason is that the Fulani

have expanded westwards from the Gambia River over the last thousand years. They are now pressing the limits of the territory that can be exploited through nomadic pastoralism.

The Fulani in the North-West Region of Cameroon in general and in Small Babanki in particular, are becoming more and more sedentary. They are also increasingly diversifying their livelihood options to include other activities like crop production, taxi driving, etc. However, even so, because of unavailability of sufficient pasture and the incidence of tsetse flies, the Fulani are compelled to move their animals from place to place in search of pasture. Cattle which are also occasionally moved to cattle markets often violate tracks meant for conveyance. It is common knowledge that in the process of conveying cattle to the market crops of more sedentary autochthonous people occasionally get destroyed

2.4 INDIGENOUS INNOVATION

2.4.1 DEFINITION OF THE TERM "INNOVATION"

The International Fund for Agricultural Development (IFAD, 2007) reports that, pro-poor innovation in the context of rural areas can be defined as processes that add value or solve problems faced by the rural poor. It has to do with the "development of improved and cost-effective ways to address problems and opportunities faced by the rural poor and these encompass institutional and technological approaches, as well as pro-poor policies and partnerships." Innovation is a process, not just an output, and as such involves continuous learning. According to Hussein *et al*. (2008) a simple model of the innovation

process involves the analysis of local circumstances and the recognition of specific problems or issues to be solved, articulation of demand, development of an innovative solution and its testing and implementation in the field. Successful innovations may be disseminated, shared and 'scaled up' by involving a wider number of actors and 'scaled out' by implementing the innovation in different contexts.

2.4.2 AGRICULTURAL INNOVATIONS FOR POVERTY REDUCTION

From the early 1970s to date, thinking with regards to the use of innovation to reduce rural poverty has gone through several changes. Firstly, there was the concept of transfer of technology (TOT) which involved carrying out laboratory experiments and field trials independent of farmers. In this approach, those for whom the innovations were meant were conceptualised as passive end-beneficiaries and indeed all was done to ensure that farmers' resistance to the adoption of the proposed innovation crushed. This paradigm has been criticised for its failure to develop solutions that respond to the needs of farmers, which are adapted to local circumstances and that pay sufficient attention to the source and dynamics of innovation processes.

Secondly, the On-farm research and Farming Systems Research (FSR) approach developed in the 1980s. This approach emphasised participatory research, although activities implemented differed with regards to the degree of participation and on how farmer-directed research is managed. The paradigm also brought the fact that the agricultural production system in developing countries is

quite complex and requires participation of individuals from many disciplines to contribute to understanding farmers' problems and opportunities to focus (Chambers *et al*. 1989).

Thirdly, the 'Farmer First' and Participatory Rural Appraisal (PRA) paradigm emerged in the late 1980s and 1990s. These employed a wide range of visualisation techniques, work with groups of the rural poor and consultative methods with the aim of empowering farmers and local actors to lead development processes, enabling them to express and share knowledge and information, thus stimulating indigenous innovation processes, farmer driven project discussion and analysis (Guijt 1997, Brown *et al*. 2002, Chambers 1993).

Fourthly, the concept of Agricultural Knowledge and Information Systems (AKIS) developed in the 1990s recognised that research is not the only means of generating and providing access to knowledge. Röling *et al*. (1992) explain that under this approach scientific research and extension systems were also seen as not being the only actors involved in generating and disseminating agricultural innovation. The AKIS integrated farmers, agricultural educators, researchers, and extension workers to harness knowledge and information from various sources for better farming and improved livelihoods. This integration was suggested by the "knowledge triangle" where rural people, especially farmers, are at the heart. Communities and individuals with little or no academic or scientific background, including illiterate farmers, were recognized as innovators and attention focused on locally-developed innovations (Sumberg *et al*. 2003).

Fifthly, the Innovation Systems Approach (ISA) saw the light of day in the late 1990s. In the ISA, development programme staff and extension agents

stimulate farmer-led exploration and farmer-to-farmer dissemination instead of merely transferring scientific knowledge to local communities (Veldhuizen *et al.* 2005). Indeed, when an innovative practice is developed, this usually happens at a local level and often in an isolated way. It then spreads geographically – with or without external assistance - from a local to regional or global scale; or from a state of isolation to 'systematization' as it becomes a common practice at the local level.

2.4.3 FACTORS THAT ENCOURAGE ACCESS TO INNOVATIONS

Key factors that foster innovation systems and processes and promote or hamper access to innovation have been identified through an electronic consultation of development actors from October 2007 to March 2008. A recent electronic consultation in Western and Central Africa[2] illustrated the range of factors, types of policies and concrete tools needed to promote the access of rural poor people to innovation. For example: use of rural radio; sharing innovations in school programmes; exploring reliable and efficient information system to regulate prices and motivate farmers; policies that address the needs of the most vulnerable populations; and on-site demonstrations and innovation fairs.

The following factors have encouraged access to innovations:

- Appropriate and adequate infrastructure: access to equipment and credit at the right scale, development of infrastructure such as roads and other transport and communication facilities to facilitate access to markets and

[2] Consultation was undertaken by the IFAD Scouting and Sharing Innovation Initiative (SSI) in Western and Central Africa. See: http://www.fidafrique.net/rubrique703.html.

urban centres, communication tools for an efficient information and communication strategy.

- Social, institutional and legislative context: strong levels of organization and "networking" among FOs and POs, training (e.g. functional numeracy and literacy, especially for women) and the organization of local, national and/or regional workshops and innovation fairs to share experiences.

- Characteristics of the innovation: ease of implementation, low-cost simple technologies, benefiting from existing local infrastructure. This would be effectively supported by the establishment of an innovations database and observatory in order to record and share experiences to benefit other rural actors and regions, thus promoting the uptake of pertinent technologies and institutional innovations.

2.4.4 FACTORS THAT HAMPER ACCESS TO INNOVATION

Factors that impede innovation include:

- Lack of infrastructure and equitable access to resources, e.g. difficulties of access by producers to small-scale equipment, communication tools and information technology; difficulties in accessing credit, particularly for the poorest and women farmers.

- Social, institutional and legislative context, e.g.: high rates of illiteracy, absence of a national policies in relation to innovation and in general, an unsuitable policy framework to promote innovation, the impatience of donors and political decision-makers in relation to research results, the low rate of female representation in institutional and political decision

making fora which manage access to innovations, research and dissemination priorities, and the policies that regulate access to innovations.

- Aspects of the innovations themselves which: might generate conflicts of interest between users, promoters of innovations and researchers; may require complex methodologies unsuited for many producers.

2.5 THE ROLE OF INDIGENOUS AGRICULTURAL INNOVATION IN REDUCING POVERTY AND FARMER/GRAZER CONFLICTS

2.5.1 POVERTY REDUCTION POTENTIAL OF INDIGENOUS AGRICULTURAL INNOVATIONS IN THE CONTEXT OF THE WORLD FOOD CRISIS

Agricultural growth in Western and Central Africa has been impressive over the years. According to recent studies by the World Bank and the OECD, growth in agricultural production in many countries in this region averages more than 4%. However, population growth is also rapid at around 2.5%-3% a year. This constitutes a challenge where agricultural systems cannot increase productivity quickly. But this also provides an opportunity for smallholders as urban and regional markets for agricultural products expand.

The global food, commodity, fuel and input price surges observed since 2007 underline the need for urgent action to address the challenge of increasing productivity, and ensuring access to food, particularly for food deficit households. This context places agriculture and rural development firmly in the centre of development efforts in sub-Saharan Africa (SSA) and development actors

increasingly emphasize the need for massive investment in the sector. The UN MDG Africa Thematic Group on Agriculture and Food Security and the Bellagio Conference on promoting an African Green Revolution in the first quarter of 2008 have identified a need for new investment in the form of grants totalling some US$8 billion per year to stimulate a green revolution in Africa.

Identifying and supporting innovative solutions to the challenges that face farmers in improving their livelihoods and productivity are central. Agriculture remains the largest economic sector in most countries, accounting for some two thirds of total employment and the bulk of export earnings in many Western and Central Africa countries. Recent studies by IFPRI (2007) have shown that agricultural sector growth is the primary source of poverty reduction in the region. However, despite positive trends, regional agricultural growth rates have not yet reached the 6% required according to the AU/NEPAD to generate the types of growth required to foster poverty reduction to meet the MDGs. Prices of agricultural products and food grains have recently been growing rapidly with prospects of these price rises staying high in the medium term due to trends in international commodity markets, the end of large food surpluses in OECD countries, increased demand due to population growth, the development of vibrant urban centres and increasing demand for bio-fuel feedstock. While this represents an opportunity for some producers with access to assets, land, improved seeds and inputs, it is also a challenge for many of the rural poor including smallholder farmers in Western and Central Africa. Increased prices should translate into increased incomes for producers; but net food consumers, which include many of the urban and rural poor, suffer escalating prices for wheat, maize and other staples.

Berdegué *et al.* (2002) identify increased production and income for farmers as direct benefits from agricultural innovation while lower food prices and increased employment are considered as indirect effects. Innovation, whether local and farmer-generated, derived from scientific research, or drawn from international experience, is clearly essential to respond to the food production, consumption and income needs and expectations of a growing population (IFAD 2004 and 2007; Zoundi *et al*. 2005; Jones 2005; NEPAD 2005).

2.5.2 NIGHT PADDOCK MANURING IN CAMEROON

2.5.2.1 INTRODUCTION

Night Paddock Manuring, also known as "Paddock Farming" is the name given by researchers to a high-yielding indigenous agricultural innovation practiced in Cameroon. The name derives from the fact that the main feature of this low-input farming system consists in building paddocks around irrigable or un-irrigable farmland. A path is negotiated to enable cattle to be safely driven into and out of the paddocks. Before cultivating crops, cattle are made to spend several nights within paddocks —1 to 3 months depending on the farm size—until they have uniformly 'fertilised' the farm. It must be noted that during this period, the cattle could be taken regularly out for grazing and brought back into the paddocks for the night. The dung and urine deposited on farms during the nights spent in paddocks is allowed to ferment and decompose after which the soil is ploughed and cultivated.

Although the farming technique began with a single person, without any formal extension support, the system spread rapidly in the upper part of Small

Babanki. Reportedly, nearly all households (500 families) in upper Small Babanki are currently practicing the technique. An investigation of the scale of practice of the technique in two neighbourhoods of Small Babanki (Chuku and Tsimisuih) revealed that 86% of farmers were involved (see Tchawa, 2001).

The spread of the technique has coincided with the development of other relevant technologies in response to challenges faced. Accordingly, in the year 1990, Mr. Ndong Philip developed a device for the harvesting of the fast growing huckleberry[3] cultivated using the technique. Previously the vegetable was harvested with one's bare hands and this caused some discomfort. Moreover, the stems of the vegetable were strained (twisted) during the process of harvesting, with the result that it took more time for the leaves to rejuvenate. Ndong Philip called his device a "three-hole razor blade." It consists of tying a well known brand of razor blade which has three holes to a bamboo stick of about 20 cm. He considered this device cheap as compared to using knives because the blade costs only 25 CFA (R0.5). He could therefore buy several razor blades to ensure the vegetables are harvested faster rather than buying and using many knives. Moreover, he observed that knives were never as sharp as his blade and therefore strained the plant stems in the process of harvesting. Presently, all producers of huckleberry use Ndong Philip's device, even those who had previously been pessimistic.

Another farmer, Christopher Vitsuh, developed a gravitational irrigation scheme when he realized that demand for huckleberry remained high during the dry season. He noted that it was this off-season production that yields greater

[3] A local vegetable plant whose leaves are eaten after cooking.

returns to farmers because of the increased price of the vegetable. He began this practice on his farms in 1986, drawing inspiration from the fact that in the 1960s, water was channelled from streams into local brick producing industries. Since his introduction of the irrigation scheme, there has been an ever-increasing demand by farmers to be connected to it.

According to Tchawa (2001), as at 1999 the gravitational irrigation scheme began by Mr. Vitsuh was said to be irrigating about 40 farms totalling 10 hectares in an area inhabited by 500 families. This 5 km irrigation scheme cost farmers 110,000 FCFA (R2200) as opposed to 6,000,000 FCFA (R120,000) which was initially required by technicians who were consulted to construct the channels. The irrigation scheme has expanded and currently supplies at least 25 hectares of farmland belonging to 580 families. A major challenge faced in the scheme is that of getting large pipes to link spots separated by gulfs. To improvise, farmers have to fell down trees and bore holes through their entire lengths to serve as pipes. There is also the challenge of strengthening the walls of the irrigation tract in places where the soil structure is fragile. To do this, trees are planted close to the irrigation tracts.

Other cost-reducing and efficiency-enhancing improvements continue to be introduced in NPM. These include the establishment of live fences (i.e. hedges) in order to reduce the cost of reconstructing fences every 3-4 years, and the planting of fodder crops around the vicinity of paddocks for feeding of cattle.

2.5.2.2 THE POVERTY REDUCTION POTENTIAL OF NPM

A survey report on the NPM farming system executed by the sustainable livestock foundation (SLF) on behalf of the CIPCRE NGO in 1996 states, "The farmer who uses NPM technique is better off from the economic standpoint than the farmer who uses chemical fertiliser. His yields are higher, his soil is more productive and he has more income. He has at least 151,000 CFA (R3020) more per hectare of huckleberry cultivated than the farmer who uses chemical fertiliser each year."

Results obtained from research carried out in Small Babanki have proven that Night Paddock Manuring is indeed a yield-enhancing innovation. Four randomly selected plots of 500 m² each belonging to 4 different farmers were subdivided into 5 (i.e. 100 m² each) and subjected to different treatments. The control plots were neither manured by cattle nor chemically fertilised, while the other plots held 12 cattle for 1 week, 2 weeks, 4 weeks and 6 weeks respectively. Results obtained were as follows:

Table 2: Summary of output (number of bags) of vegetables harvested on plots subjected to different treatments

	Harvest 1	Harvest 2	Harvest 3	Harvest 4	Harvest 5	Total
Control	1.5	3	2.25	1	0	7.75
1 week	2.25	5.75	5.75	4.75	2	20.5
2 weeks	3.75 →	5.5	7.5 →	6	2	24.75
4 weeks	3	5.75	6.5	6.5	8.5	30.25
6 weeks	3	6.5 →	7.5 →	7.5 →	10 →	34.5
Total	13.5	26.5	29.5	25.25	22.5	117.25

Source: Tchawa (2001)
Note: arrows indicate the highest production recorded per harvest

As observed, the quantity of bags harvested in the control plots and plots which held cattle for just a week peaked at the second harvest. The quantity of bags harvested in plots which held cattle for 4-6 weeks peaked at the fifth harvest, when there was nothing to harvest from the control plots. Moreover, the total quantity of bags of vegetable harvested from either of the plots which held cattle for 4 or 6 weeks quadrupled what was harvested from the control plots.

A major advantage of NPM is the fact that it is cost-saving, particularly as the price of chemical fertilisers continues to increase. The innovation has also been credited for bringing about both a quantitative and qualitative increase in yields of crops like huckleberry. The consequence is that farmers do not only eat well but also produce high-value products which attract a greater price premium, most especially during off-season production.

2.5.3 THE CONFLICT REDUCTION POTENTIAL OF NIGHT PADDOCK MANURING IN CAMEROON

No studies have been undertaken yet to determine the direct impact of NPM in reducing farmer grazer conflicts. Tchawa (2001) however mentions the fact that from the ranking of developmental constraints expressed by village-dwellers in Small Babanki, it could be said that farmer/grazer conflicts have reduced tremendously particularly in the upper part of Small Babanki where NPM is practiced. He gives no special evidence for this however apart from the fact that farmer/grazer conflicts ranked fourth out of the six constraints mentioned by participants in his focus group discussion.

Tchawa (2001) can however be credited for going beyond just considering farmer/grazer conflicts to determining other potential types of conflicts which have surfaced because of the practice of NPM. In view of this, he observes the following six interest groups who may be conflict-prone in Small Babanki:

- The traditional chiefdom and farmers of the lower part of Small Babanki;
- NPM innovators and farmers of the upper part of Small Babanki;
- Pastoralists;
- The intervening NGOs;
- The middlemen and women ('buyam sellams') and road transporters;
- State administrative structures.

The following are potential areas of tension between and within the interest groups mentioned above as highlighted by Tchawa (2001):

- Power tussles between NPM innovators of the upper part of Small Babanki and villagers who are non-practitioners of NPM in the lower part of Small Babanki where the chief's palace is located;
- Conflicts of interest between resource-rich NPM innovators in the upper part of Small Babanki who are often looked upon for protection against destructive external interventions and resource poor farmers practicing NPM in the upper part of Small Babanki;
- Exploitation of farmers by NGOs who target readymade 'success stories' with the intention to use them to advance their institution's cause;

- Frustrations caused by feelings of neglect nursed by villagers in the lower part of Small Babanki who are often jealous of positive external interventions in the upper part of Small Babanki;

- The shift from the previous free use of cattle for manuring farms to the charging of high fees by cattle owners;

- The near-neglect of practitioners of NPM by government ministries of agriculture and livestock and the often supposed biased interventions of state administrative officers in the resolution of farmer/grazer conflicts etc.

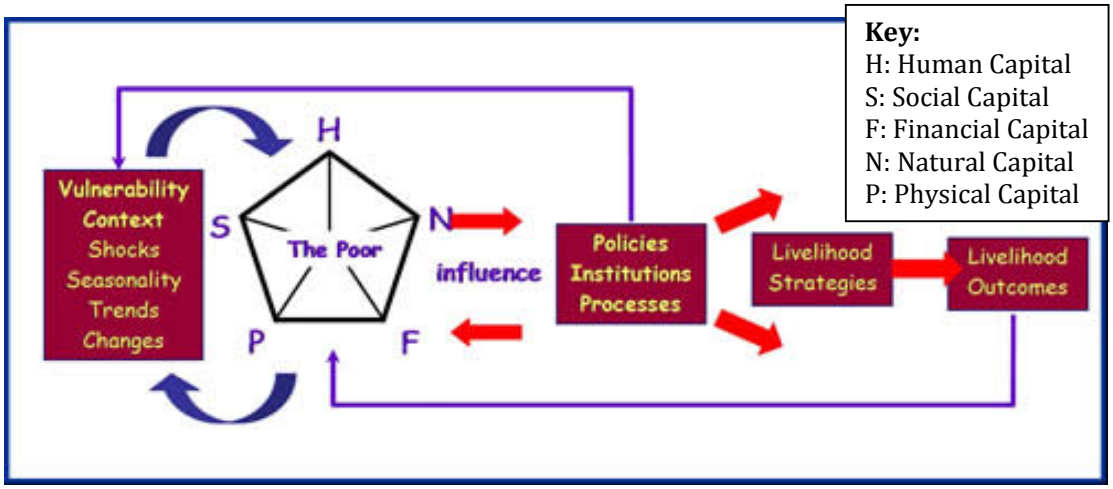
2.6 CONCEPTUAL FRAMEWORK

The Sustainable Rural Livelihood Framework (SLF) will serve as the basis for the analysis of poverty dynamics in this study. To better comprehend the role of agricultural innovation in poverty reduction there is a need to analyse the assets and context of rural poverty in specific locations and to understand both the direct and indirect effects of increases in agricultural productivity on different classes of poor people. Hence there is a need to base such a study on the Sustainable Rural Livelihood (SRL) Framework which explores and addresses the multiple factors that influence livelihood quality. This non-sectoral framework also explicitly highlights the central impact on livelihoods of policy and institutional issues.

The framework is presented in schematic form below. It shows the main components of SLA, how they are linked and the way they can be used for

analysing the livelihoods options of poor people. It underscores the many factors that affect livelihoods, the way they interact and their relative importance within a particular setting. For the purpose of this study we shall be concentrating on the assets component of the (SLA) framework.

Figure 1: Sustainable Livelihood Approach Framework



Source: http://www.ifad.org/sla

The sustainable livelihood framework reveals that there are five types of assets (capitals) available to the rural dwellers:

- Natural Capital: The natural resource stocks from which resource flows useful for livelihoods are derived (including land, water, wildlife, biodiversity, environmental resources);

- Social Capital: The social resources upon which people draw in pursuit of livelihoods (i.e. networks, membership of groups, relationships of trust, access to wider institutions of society);

- Human Capital: The skills, knowledge, ability to labour and good health important to the ability to pursue different livelihood strategies.

- Physical Capital: The basic infrastructure (transport, shelter, water, energy and communications) and the production equipment and means which enable people to pursue their livelihoods;

- Financial Capital: The financial resources which are available to people (whether savings, supplies of credit or regular remittances or pensions) and which provide them with different livelihood options.

In order to analyse the causes and nature of conflicts between farmers and grazers, we employ the Inter-agency framework for conflict analysis in transition situations, developed by the United Nations Development Group (UNDG).

An overview of the framework is shown below:

Table 3: Overview of the Inter-agency framework for conflict analysis

Stage 1: Conflict Analysis	
Step 1	Analysis of key conflict factors
Step 2	Actor analysis
Step 3	Analysis of capacities for peace
Stage 2: Analysis of ongoing responses	
Step 1	Mapping of ongoing responses
Step 2	Assessment of the impact of ongoing responses in relation to conflict
Stage 3: Strategic & programmatic conclusions for transition planning	
Step 1	Strategic recommendations for transition planning
Step 2	Programmatic recommendations for transition programming

For purposes of this study, Stage 1 of the framework will be particularly emphasised. This stage entails an analysis of key conflict factors, actor/stakeholder analysis and analysis of capabilities for peace.

- Step 1 of Stage 1 of the above framework requires an identification/analysis of both structural (pervasive and longstanding issues and differences that may create pre-conditions for conflict) and proximate (issues likely to contribute to a climate conducive to violent conflict) factors which cause conflicts. This analysis brings a large number

of issues to light, and helps in assessing the relative importance of factors that cause conflicts and the interrelationship between these factors.

- Step 2 of Stage 1 requires an identification/analysis of individuals, groups and institutions engaged directly or who are indirectly affected by the conflict. The analysis helps to bring to the light each stakeholder's stated interests, hidden agendas as well as resources they have and those they still require in order to realise their agenda. It also helps to provide an understanding of the interaction between different parties who are either directly or indirectly affected by the conflict.

- Step 3 of Stage 1 requires an identification/analysis of capacities for peace. This refers to structures, mechanisms, processes and the institutions that exist in the community and that can contribute towards the peaceful and constructive management of conflicts. Capacities for peace include informal approaches to conflict resolution, the role of traditional authorities, the role of the judiciary, cultural tolerance, traditional courts, etc.

In applying Stage 1 to this study, the following questions will be used as guides:

- "What are the causes of farmer/grazer conflicts in Small Babanki and how do the conflicts manifest?" (i.e. key conflict factors)

- “What efforts have been made hitherto by all stakeholders to resolve farmer/grazer conflicts and what were the outcomes of such interventions?” (stakeholder analysis and capacities for peace) and
- “How has the asset base of farmers and grazers changed?”

CHAPTER THREE:

RESEARCH DESIGN AND METHODOLOGY

3.1 DESCRIPTION OF RESEARCH AREA

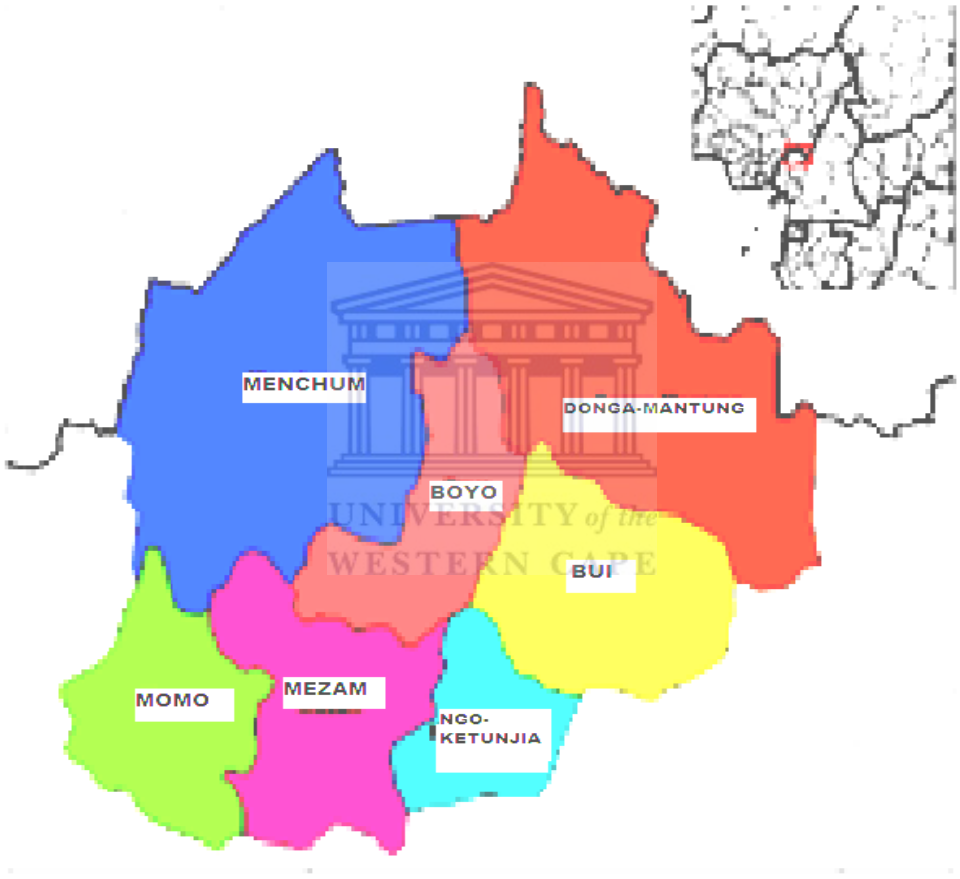


Figure 2: Map of the North-West Region showing its 7 divisions, including Mezam, where Small Babanki is located

Cameroon has a total of ten regions, of which two are primarily English speaking; one of these is the North-West Regions. The North-West Region is found in the western highlands of Cameroon. It lies between latitudes 5°40’ and

7° north of the equator, and between longitudes 9°45' and 11°10' to the east of the meridian. The Region has a surface area of 17,812km². It is surrounded by three other regions to the south, south-west and east, but bordered by Nigeria to the north.

The North-West Region is the third most populous region in Cameroon. It has one major city, namely Bamenda, which is its capital. The region saw an increase in its population from about 1.2 million in 1987 to an estimated 1.8 million people in 2001. The population density, at 99.12 people per square kilometre, is far higher than the national average of 22.6 people per square kilometre. The regional urban growth rate is 7.95% compared to the national average of 5.6%. The rural growth rate on the other hand is 1.16%, which is the same as the national rate. According to the Regional Statistical Services of the North-West Region, in 2001 the population of the region was largely a young one, with over 62% of its residents aged less than 20 years. The dependency rate is therefore high in the region, particularly in the rural areas.

The region was created in 1972, at which time it was referred to as a Province. Like other regions in Cameroon, the North-West Region is made up of administrative divisions. Its five divisions as at 1972 included: Mezam, Bui, Momo, Donga-Mantung, and Menchum. It now has seven divisions. The new ones are Ngoketunjia (carved out of Mezam Division) and Boyo (carved out of the Donga-Mantung Division). Each division is made up of subdivisions. There are thirty-one subdivisions in the North-West Region. The basic unit of local government, however, is the council; there are thirty-two councils in the region.

Small Babanki, a village in the North-West Region, in Mezam division and Tubah subdivision, is the specific site of this research. Also known as Kedjom Ketinguh "people who live under the rocks" – Small Babanki is located 20 km east of Bamenda, the Regional capital. It is found at an altitude of between 1100 to 1800 metres above sea level, has an annual rainfall of 2450 mm and an average temperature of 18˚C to 21˚C.

3.2 RESEARCH METHODOLOGY

The research was carried out in three phases. The first phase, which entailed a review of reports produced by CIPCRE, an NGO promoting NPM in the North-West Region, was done from the 7th to the 15th of October 2008. The second phase, which was done from the 14th to the 24th of November 2008, consisted of a focus group discussion with croppers and the administration of a detailed two-part questionnaire to 10 randomly selected grazing households and 10 randomly selected cropping households who practice NPM. No focus group discussion was held with grazers because it is difficult to convene meetings of grazers, not least because they are cautious vis-à-vis strangers. The grazing households who answered questionnaires were however also subjected to one-on-one interviews to make up for the inability to interview them through a focus group discussion.

Questionnaires were administered in the homes of the respondents. Household heads were usually the main respondents to the questionnaires. But nursing mothers provided answers to questions pertaining to children between 0-6 months and occasionally children below age 18. Some children aged less than

18 years directly provided answers to questions concerning them while all youths (i.e. children aged more than 18 years but less than 25 years old) directly answered questions relating to them.

To conclude, structured key informant interviews were held with administrative, traditional and religious authorities, namely the Divisional Officer of Tubah subdivision, the Sub-divisional Delegate of Agriculture and Rural Development (SDDARD) of Tubah subdivision, the Mayor of the Tubah Rural Council (TRC), the Chief's representative, the pastor of the Baptist denomination in Small Babanki and the sheikh of the mosque in Small Babanki. This was done on the 25th and 26th November 2008.

3.3 ETHICS STATEMENT

Interviewees were informed about the objectives of the study. They were informed that they could choose whether they wanted to disclose their identity or not, and that they were free to choose what questions they didn't want to answer and whether they wanted to discontinue the interview. Household responses were not disclosed to any administrative or traditional leaders to avoid victimization of people because of personal opinions they expressed.

CHAPTER FOUR:

FINDINGS AND ANALYSIS

4.1 INTRODUCTION

As concerns the contribution NPM makes to reduce conflicts between crop farmers and grazers, this study relies on:

- Facts obtained from farmers and grazers themselves;
- The Sustainable Livestock Foundation's (SLF) estimates of the cost of inputs required to cultivate 1 hectare of land manured by 50 cattle (Reviewed and updated);
- Some comparative figures obtained from agricultural research on the yields of maize (Zea mays) and cowpea (Vigna unguiculata) using chemical fertiliser as opposed to when cattle dung is used;
- The author's own budgetary estimates, personal inferences and projections made from the other three sources mentioned;
- Literature from other authors' complaints.

4.2 CAUSES OF FARMER/GRAZER CONFLICTS AND HOW CONFLICTS MANIFEST

Discussions held with farmers, grazers and the sub-divisional delegate of agriculture revealed that farmer/grazer conflicts in the North-West Region in general and in places like Small Babanki in particular emanate from the following sources:

- Destruction of crops by cattle which have wandered away from grazing land or paddocks in which they were kept. When the former happens, it might be because of momentary negligence by the herdsman. The latter happens when a farmer who hired cattle from a Fulani cattle owner does not build a solid paddock and cattle therefore break into a neighbouring farm. The former scenario is a cause of true farmer/grazer conflicts while the latter scenario could lead to pseudo farmer/grazer conflicts or outright farmer/farmer conflicts.

- Destruction of crops during the movement of cattle from grazing areas to cattle markets. There is a cattle track used for conveying cattle from the Northern part of the North West Region (Donga/Mantung Division) to the Southern part of the Region (Mezam Division) where the major regional cattle market is located. Cameroon Presidential Decree No. 78/263 of 3rd July 1978 states that farmers cultivating crops in the vicinity of cattle tracks must keep a distance of at least 25 metres away from the cattle track and build fences around their farms. Unfortunately, some farmer/grazer conflicts have been caused because of the non-respect of this law by farmers who not only farm too close to the cattle track but also do not build fences around their farms. When this happens, it is difficult to

pinpoint whose cattle destroyed crops since hundreds of herds of cattle may have transited on the day crops were destroyed. It becomes easy to direct aggression to a completely innocent herder.

- Encroachment by farmers into grazing land to undertake farming activities. The ever-increasing competition for land suitable for farming caused by population pressure has resulted in a situation whereby some farmers forcefully occupy grazing land. Wealthy farmers have also been known to purchase plots in the heart of grazing land thus subsequently exposing their crops to the possibility of damage.

Conflict situations between farmers and grazers manifest in various ways. In some cases there are exchanges of harsh words and the issue of threats. At other times farmers organise a sit-down strike in grazing territory and even go to the extent of working the land and planting crops. The worst expressions of conflict involve ghastly fights, destruction of houses and farming land, hurting of animals and killings.

4.3 EFFORTS MADE BY STAKEHOLDERS TO RESOLVE CONFLICTS AND THE OUTCOMES OF INTERVENTIONS

In the course of discussions with the sub-divisional delegate of agriculture and staff at the divisional office, the procedure for resolving farmer/grazer conflicts in Cameroon became apparent. The discussions also elucidated the role played by various stakeholders in resolving the conflicts. In view of that, there are generally five routes by which farmer/grazer conflicts are resolved in Cameroon: (i) the route of mutual compromise; (ii) the administrative/executive

route; (iii) the traditional/customary route; (iv) the judicial route and (v) other mediated solutions.

4.3.1 THE ROUTE OF MUTUAL COMPROMISE

When this option is chosen, conflicting parties seek for an amicable negotiated solution to the problem. The solution may entail compensating a farmer for crops destroyed by cattle, for example.

4.3.2 THE ADMINISTRATIVE ROUTE

When this route is followed the complainant—whether a farmer or grazer—files a complaint at the divisional officer's office. The divisional officer summons both the complainant and the accused to his office in order to have an objective two-sided appraisal of the exact situation. The divisional officer then suggests an amicable 'win-win' solution to the conflict. If one of the parties is not satisfied, the divisional officer deploys the divisional sub commission of conflict resolution to the field in order to obtain firsthand knowledge of the facts of the conflict. This sub commission is generally composed of 7 members: (i) the assistant divisional officer; (ii) the sub divisional delegate of agriculture and rural development; (iii) the sub divisional delegate of the ministry of livestock production; (iv) the 'ardo' who is the head of Fulani community to which the complainant or accused belongs; (v) the chief of the village; and (vi) two notables from the village.

After the sub commission has made its findings and provided recommendations, the divisional officer issues directives on what must be done to solve the conflict. Often the divisional officer might issue an injunction order; request for a demarcation of farmland from grazing land; request for the definition of individual's grazing land and community forests; order for the payment of compensation for damages, etc. If one of the parties involved in the conflict is not satisfied by the decision taken by the divisional officer after consultation with his sub commission, they reserve the right to launch an appeal. When this is done, the matter is handled by the full commission for conflict management. The composition of the full commission is basically the same as that of the sub commission but the divisional officer is the chairperson himself, instead of his assistant. The function of secretary is ascribed to the divisional chief of lands instead of the sub divisional delegate of agriculture and rural development who remains a member. And the divisional chief of service for surveys is included.

The decision taken after the examination of findings by the full commission is often final and irrevocable. The decision can be contested only on grounds that there were assaults during the conflict which were unaddressed by the full commission.

4.3.3 THE JUDICIAL ROUTE

When this route is followed the complainant, be it a farmer or grazer, files a complaint at the police or gendarmerie. This route is generally recommended when a conflict was characterised by assault on people's lives. Cases referred to

the police or gendarmerie are transferred to the courts when a compromise cannot be arrived at by the conflicting parties.

4.3.4 THE TRADITIONAL/CUSTOMARY ROUTE

When this route is followed, the complainant files a complaint with the quarter head, who is the chief's representative in the quarter. The quarter head invites conflicting parties to discuss a solution to the conflict. If the quarter head fails to obtain a lasting solution to the conflict, recourse is sought from the zonal head who is the chief's representative over a group of quarters. If a solution cannot be gotten by the zonal head, the case is sent to the internal land dispute committee of the traditional council. This committee examines the situation and recommends a way forward which is validated by the chief.

4.3.5 OTHER MEDIATED SOLUTIONS

In some villages, many other actors are involved with the resolution of farmer/grazer conflicts. This is particularly true when they have the reputation of being peaceful and trustworthy people. Some individuals or groups whose help may be sought to resolve conflicts include village patriarchs, religious leaders, para-church organizations, nongovernmental organizations, etc.

An attempt was made at determining the outcome of interventions to solve farmer/grazer conflicts in Small Babanki by studying files at the D.O.'s office at Tubah. About 37 documented complaints of farmer/grazer conflicts in the 4

villages making up the Tubah sub division were lodged at the divisional office from 2006 to 2008. Of these complaints, 4 (10.8%) were instigated by grazers who reported that their grazing land was invaded by farmers. Thirty-three complaints (89.2%) originated from farmers who reported that their crops were destroyed by uncontrolled cattle. It was observed that all complaints received from grazers were sanctioned either by an injunction order against farmers, a request for a demarcation of grazing from farming land or a request to define individuals grazing land. From studies of files at the D.O.'s office, it was observed that just one case initiated by a farmer was sanctioned by the signing of an undertaking by the grazer promising to pay a compensation of 155700 CFA (R3114) for crops damaged.

4.4 THE DEVELOPMENT OF THE NPM FARMING SYSTEM AND ITS *MODUS OPERANDI*

Discussions with a key informant in the cropping community and studies of the work of Tchawa (2001) helped in the tracing of the history of the development of NPM. It was gathered that the NPM farming system was developed by farmers in Small Babanki in the early 1980s. These farmers were faced with a dilemma. They were expected to supply a certain quantity of huckleberry to a vegetable cooperative in Bamenda. But the degraded nature of soils, lack of inputs and demographic growth leading to reduced accessibility to arable land were limiting factors to their meeting the set target. Moreover it was not uncommon for cultivated crops to be destroyed by wandering cattle owned by Fulani herders. At the time, therefore, the Fulani and their cattle were generally

looked upon with disgust. The Fulani and their cattle were therefore compelled to survive on the hilly fringes of Small Babanki.

A certain villager, Toh Samuel, aged 59, also noticed that the period of time required to leave previously cultivated farmland fallow in order to restore fertility was becoming longer. He began to climb up the hills to collect dung deposited by the cattle owned by Fulani herders in order to manure his farms. He noticed that this was helping with his output of huckleberry. He however noticed that yields were even a lot higher when crops were grown directly on land which had previously been grazed by cattle. This discovery happened when the farmer climbed up the hills and cultivated crops on grazing land abandoned by a certain grazer who moved base to another village. This finding led the farmer to conclude that there must be something special in the urine found on previously grazed land. This special 'factor' found in urine was thought to be responsible for the extraordinary yields obtained, compared to what was gotten before, when only dung was used to manure his farms. Consequently, Mr. Toh Samuel negotiated for the herd of cattle belonging to a Fulani friend to be driven down the hills and into his farm in order to deposit dung and urine on his farm. To ensure that the cattle were safe, he built a wooden fence around his farm.

Faced with various challenges, Mr Toh Samuel continued to improve on the practice. For instance, he realized that all the cattle had the tendency to crowd together and therefore were not 'fertilising' the farm uniformly. In response to his observation, he subdivided his farm into several paddocks and rotated the cattle between the sub-compartments until the entire farm was uniformly fertilised.

With regards to the modus operandi of NPM, during the study it was discovered that the following transactions are commonly undertaken:

- The mixed farming scenario, whereby, the farmer—usually but not always an 'autochthonous' person—owns cattle which he uses to cultivate his own crops. This type of farmer is relatively autonomous.

- The scenario which I will describe as the 'landlord-tenant' scenario, whereby a grazer or resource-rich farmer who also owns a large area of farming land builds paddocks, 'fertilises' them with cattle dung and urine and rents them out to farmers. It is said that during the dry season, a farming bed of 1.5 metres wide and 20 metres long which can yield more than a bag of huckleberry is rented for 4000 CFA (about R80). Some landowners—including certain non-village dwellers—who can have ready access to cattle though not proprietors of cattle are also known to rent out farms which they 'fertilised' themselves.

- The collaborative agreement between farmers and grazers, whereby a crop farmer who owns no cattle negotiates with a Fulani cattle owner to drive his cattle into the farmer's fenced plot. In some instances, the crop farmer may be required to pay a hiring fee for the cattle and to take care of the herdsman's food—25,000 CFA (R500)/month for a herd of 50 cattle and 10,000 CFA (R200)/month for the herdsman's food, respectively. The crop farmer may also have to buy salt for the herd of cattle. The crop farmer may also be required to work the Fulani herder's farm after working his, in compensation for the services rendered by the cattle. Otherwise, the Fulani

herder could receive a share of the crop harvested in compensation for the services rendered by his cattle.

It was reported by the Fulani that in Small Babanki, herders invariably do not charge any hiring fee for their cattle. They only require that cattle be served with salt and that the food of the herdsman should be taken care of.

- The option which I describe as the 'low-resourced farmer' scenario, whereby farmers who cannot afford to negotiate for cattle to spend nights on their farms are left with no choice than to depend on manure collected from grazing land. When provided with manure by others, they are expected to pay for the dung received.

4.5 INTRODUCTION OF NPM, OCCURRENCE AND RESOLUTION OF FARMER/GRAZER CONFLICTS

Below, find a table showing the frequency of conflicts reported in the 4 villages which make up the Tubah subdivision and the extent of damages sustained:

Table 4: Frequency of conflicts reported in villages and extent of damages caused

No.	Name of village	March 2009 population estimates	Number (percent) of conflicts reported	Worth (percent) of damages caused by conflict
1	Bambili	10,000	15 (40.5%)	16,752,000CFA (R 335,040)
2	Bambui	10,000	15 (40.5%)	29,779,350CFA (R 595,587)
3	Kedjom Keku (Big Babanki)	18,000	5 (13.5%)	1,830,750CFA (R36,615)
4	Kedjom Ketinguh (Small Babanki)	17,000[4]	2 (5.5%)	0[5]
	TOTAL	55,000 people	37	48,362,100CFA (R 967, 242)

Sources: Files studied at the divisional office and the sub-divisional delegation of agriculture at Tubah. Population estimates were gotten from Joshua Project: http://www.joshuaproject.net and Cameroon Association for Bible Translation and Literacy (CABTAL): www.cabtal.org

There seems to be an inverse relationship between the practice of NPM and the occurrence of farmer/grazer conflicts in Tubah subdivision. From the table it can be observed that from 2006 to 2008, Small Babanki, the birthplace and the only place where NPM is intensely practiced in the subdivision, had just 2 (5.5%) conflicts. It might be argued that Small Babanki is the least accessible village to the D.O.'s office of the four villages under review because of its bad

[4] Inhabitants of Sabga (about 5000 people) who are an integral part of Small Babanki are excluded from this estimate.

[5] Both cases involved invasion of grazing land by farmers, an act which is often not destructive.

road. Consequently, fewer farmers and grazers will file complaints of their conflicts at the D.O.'s office because of the high cost of transportation involved.

The exact number of farmers and grazers in each of these villages could not be determined. It is common knowledge however that between 75-85% of rural-dwellers in Cameroon are involved in agriculture. Hence Small Babanki probably has more farmers and grazers than the other three villages, especially if the location called, Sabga (5000 people), which forms an integral part of Small Babanki is included. By implication, because of its relatively large population, more reports of farmer/grazer conflicts would have been expected from Small Babanki than from Bambui, Bambili and Big Babanki.

We cannot also overlook the possibility that although Bambili and Bambui are less populous than Big and Small Babanki they probably have a higher population density because they are more urbanized. A higher population density would mean increased competition for access to land by farmers and grazers, which could result in conflicts. Unfortunately, it was impossible to obtain information on the population density of each of the villages in Tubah subdivision from the D.O.'s office. The best that could be obtained was information about the population density of the entire Tubah subdivision (17.8 people per square kilometres). Hence it cannot be affirmed that Bambui, Bambili and Big Babanki have higher population densities than Small Babanki and therefore are more prone to farmer/grazer conflicts because of competition for resources.

That said, all stakeholders interviewed during this study acknowledged that NPM has contributed immensely to reduce farmer/grazer conflicts in Small Babanki. Some grazers traced the last conflict to about 7 years back. At the time,

certain farmers invaded grazing land, organized a non-violent sit-down strike, planted seeds on land belonging to grazers and asked the grazers to leave the area. The request was not granted because the chief intervened, declaring the land under contention as territory officially allocated to the Fulani grazing community. Farmers in Small Babanki reported that the amount paid as compensation for crops destroyed between 2006 and 2008 was 280,000 CFA (R5600). This amount is far less than the worth of damages caused to crops in the other three villages studied. It was also reported that these compensations were obtained after 'win-win' compromises by grazers and farmers. The new Islamic sheikh who was 14 months old in Small Babanki remembered facilitating the resolution of 4 minor farmer/grazer conflicts through 'win-win' compromises. Upon considering the sheikh's observations critically, it was noticed that the conflicts he had mediated were more of farmer/farmer conflicts (pseudo farmer/grazer conflicts).

The respect traditional authorities in the North-West Region command makes them the priority point of call when there are any types of conflicts amongst their subjects. Big Babanki may be excluded from the latter allegation because in 2006 there was a crisis of confidence between the chief, Fon Vugah II, and his subjects. Fon Vugah II who was accused of many things, including that he was giving out indigenous people's land to Fulani 'foreigners' was eventually burnt to death by his subjects. The chief's representative in Small Babanki could not remember any cases of farmer/grazer conflicts requiring the chief's personal attention in the last years. The fact that within the last few years the Small Babanki villagers filed the least number of complains at the D.O.'s office and none at the chief's palace is quite indicative of the fact that farmer/grazer conflicts have reduced tremendously. Thirty complaints of farmer/grazer conflicts

were filed at the D.O.'s office from Bambili and Bambui. But it is likely that even more complaints were taken to the chief's palace in these villages for reasons previously mentioned.

It is important to notice that the data of complaints received at the D.O.'s office is only indicative of the frequency of farmer/grazer conflicts. Several factors militate against farmers filing complaints at the D.O.'s office. Some suggest that the administration in Cameroon is generally more favourably disposed towards grazers in issues of conflict between them and farmers. Others report that the cost involved with getting sub commissions or commissions to the field to investigate and resolve conflicts is too expensive. At times the amount involved is thought to be more than the money value of crops under cultivation.

It would be incorrect to assume that all is cosy with regards to social relationships in Small Babanki. This study revealed that there were occasional farmer-farmer conflicts. These occur for instance when cattle break the fence into which they were enclosed and destroy crops on a neighbouring farm. A conflict was also personally observed between two farmers. A farmer who had had his own fair share of water was reluctant to block the flow of water into his farm so that the track would be opened for water to flow into another farmer's farm. Tchawa (2001) also highlights the existence of such conflicts amongst farmers practicing NPM in addition to other conflicts of interest amongst a broad-spectrum of groups.

4.6 CONTRIBUTION OF NPM TO INCREASED OUTPUT AND INCOME

Two case scenarios will be considered in an attempt to show how NPM affects farmers' output. Firstly, we shall look at budgetary estimates for a farmer who keeps a grazer's cattle on his personal farm. Secondly, we shall consider the scenario whereby a farmer hires an already manured farm belonging to someone else.

4.6.1 SCENARIO INVOLVING THE KEEPING OF A FULANI'S CATTLE IN A FARMER'S FENCED FARMS

Table 5: Cost of inputs required for 1 hectare of land (given 50 cattle)[6]

Activity	Input(s)	Quantity	Unit cost (CFA/R)	Amount (CFA/R)
Fencing of farmland/partitions	Poles Bamboos Twine Labour	600 250 100 -	100 CFA (R2) 50 CFA (R1) 100 CFA (R2)	60,000 CFA (R1200) 12,500 CFA (R250) 10,000 CFA (R200)
Construct herdsman's shed	Poles Bamboos Twine Grass roof		20000 CFA (R400)	20,000 CFA (R400)
Provision of food money to herdsman during 3 month of manuring activity		12weeks	2000 CFA (R40) per week	24,000 CFA (R480)
Salt for cattle	Salt	12 bags for 12 weeks	2500 CFA (R50) per bag	30,000 CFA (R600)
TOTAL				156,500 CFA (R3130)

Source: Estimates provided in survey report produced by SLF in 1996 (revised and updated because of inflation)

RETURNS

(a) Value of manure applied to the soil

The survey report produced by SLF states that field experiments conducted in PAFSAT trial centres revealed that a cow of 200 kg (average weight of cattle in a well structured herd) produces 2000 kg of manure nocturnally in a year. It therefore produces 500 kg of manure in 3 months. The total amount of manure

[6] It is assumed that family labour is used, which is why labour cost is not considered. The cost of maintaining irrigation channels is also not considered because these estimates relate to the rainy season.

produced by a herd of 50 cattle in 3 months is 25,000 kg and this is deposited and applied on a 1 hectare plot.

Zweier's (1990) analysis reveals that cow dung contains the macro nutrients NPK thus: N= 0.7%; P= 0.35%; K= 0.43%. Therefore, the quantity of each of these macro nutrients in 25,000 kg of manure is as follows:

N= 175 kg P= 87.5 kg K= 107.5 kg

By comparison, 100 kg of the compound chemical fertiliser NPK 20:10:10 contains 20 kg N, 10 kg P and 10 kg K, therefore, a standard 50 kg bag of fertiliser contains half as much of each of these. In other words 25,000 kg of cow dung (i.e. three months' worth of nocturnally deposited cow dung) yields roughly the same amount of NPK as 17.5 bags of chemical NPK 20:10:10 fertiliser, with an excess of 20 kg of K. In the village of Small Babanki 1 bag of NPK 20:10:10 costs 18,500 CFA (R370).

The value of manure collected from 50 cattle on 1 hectare can be calculated as follows:

Table 6: The worth of manure collected from a herd of 50 cattle

No. of cattle	Quantity of manure deposited in 3months	Nutrient content	No. of 50kg bags of fertilizer NPK 20:10:10	Nutrient remaining	Value in CFA (R)
50	25,000 kg	N= 175kg P= 87.5kg K= 107.5	17.5 bags	K= 20 kg	323,750 CFA (R6475) 11,500 CFA (R230)
TOTAL					335,250 CFA (R6705)

Source: Estimates provided in survey report produced by SLF in 1996 (Revised and updated because of inflation)

(b) Crop Yields

Cow dung/fertiliser trials were carried out around the North-West Region in 1988 to determine their effects on crop yields. A trial in Chua, a quarter of Small Babanki, to investigate the effect of cow dung and fertiliser (NPK 20:10:10) on maize/soybean intercropping revealed the results displayed on the next page:

Table 7: Comparison of output of a maize/soybean crop using fertiliser and dung

Treatment	**Nothing** M SB	**Cow Dung (10t/ha)** M SB	**Fertiliser (250kg/ha)** M SB
Yields/ha	1600 1710	4571 2286	3429 2286

Source: Van Ranst *et al*. (1988)
Note: M= Maize, SB= Soya bean (Glycine max)

Considering the fact that once fences have been built and cattle have been brought into the paddocks to manure them, production can go on for 3-4 years

before plots are re-manured, it can be inferred that the flow of input costs and returns within a 3 year period are as are as revealed on the next page:

Table 8: Comparison of the profitability of cultivating maize on 1 hectare using NPM and chemical fertiliser

Designation	Year1	Year2	Year3	Observations
(a) Flow of input costs incurred in NPM system	126500 CFA (R2530)	15000 CFA (R300)	15000 CFA (R300)	All the cost of fencing, housing & herdsman's food was inputted in year1
(b) Flow of input costs for farm cultivated with chemical fertiliser	92500 CFA (R1850)	92500 CFA (R1850)	92500 CFA (R1850)	5 bags of NPK 20:10:10 is used every year of which a bag costs 18500 CFA
(c) Flow of returns on manure in NPM	111750 CFA (R2235)	111750 CFA (R2235)	111750 CFA (R2235)	Once manured farms remain viable for 3 years
(d) Yield/Worth of maize from manured plot	4571 kg/ 799925 CFA (R15999)	4571 kg / 799925 CFA (R15999)	4571 kg/ 799925 CFA (R15999)	A bag of 100 kg of maize cost 17,500 CFA (R350)
(e) Yield/Worth of maize from chemically fertilised plot	3429 kg/ 600075 CFA (R12002)	3429 kg/ 600075 CFA (R12002)	3429 kg/ 600075 CFA (R120002)	A bag of 100 kg of maize cost 17,500 CFA (R350)
(f) Profit flow for manured plot (d+c-a)	785175 CFA (R15704)	896675 CFA (R17934)	896675 CFA (R17934)	
(g) Profit flow for chemically fertilised plot (e-b)	507575 CFA (R10152)	507575 CFA (R10152)	507575 CFA (R10152)	In this case (b) represents the least amount that would be spent on fertiliser
Difference (f-g)	277600 CFA (R5552)	389100 CFA (R7782)	389100 CFA (R7782)	Performance of manured farm is clearly superior

Source: author's inferences from Tables 4, 5, and 6

During interviews that led to the production of the survey report on NPM technique by SLF, farmers said their yields of crops like maize doubled with the

use of cow manure as compared to when chemical fertiliser is used. A look at Table 6 above reveals that from Van Ranst *et al*.'s (1988) experiment, maize output increased by 25% when cow manure was used compared to chemical fertiliser. It might be argued that maybe the difference in maize harvest emanates from the fact that farmers probably use lower amounts of fertiliser than Van Ranst *et al*. (1988) used.

During the focus group discussion organised with farmers for this study, it was categorically stated that as far as huckleberry is concerned, yields tripled with the use of cow dung compared to when chemical fertiliser was used for the same farm size. Farmers also affirmed that yields of onion, leeks and carrots are far better with the use of manure compared to when chemical fertiliser is used.

The claim that under NPM farmers harvest at least thrice as much huckleberry compared to what obtains when they use chemical fertiliser has not been proven scientifically. But obviously, from their observations, they have realised that yields are far better when using cattle dung compared to chemical fertiliser. Also, it is not uncommon for farmers to have cattle manure their farms for up to three months, thus seriously enriching the soil. Under this premise, it is quite possible that their claim of having a three-fold increase in harvest when using cattle dung compared to chemical fertiliser is plausible. This is especially likely given that research has proven that holding cattle for just 6 weeks i.e. half of the period which farmers typically keep cattle within their farms, yields remarkably more output than when the farm is not fertilised chemically (see Table 2). Moreover cattle dung does more than enrich the soil. It also improves soil structure and the cation exchange capacity of the soil. All these probably go a

long way to explain farmers' assertion of having a significant increase in harvest when cow dung is used compared to when chemical fertiliser is used.

4.6.2 SCENARIO WHEREBY MANURED PADDOCKS ARE RENTED OUT

NPM has also proven to be beneficial to resource-poor farmers who neither have access to land or cattle to manure their farms. These have the opportunity to rent manured plots from resource-rich farmers and grazers. During the dry season, a ridge of 20 metres long by 1.5 metres wide, which can produce 4 jute bags of huckleberry, is rented out for 4000 CFA (R80) i.e. 133 CFA/sqm (R2.7/sqm). A plot of 1 hectare (i.e. 10000 square metres) is supposed to have 10000/20x1.5= 333.3 ridges. For the sake of estimation (since furrows exist between ridges) we shall assume that there are about 300 ridges of dimension 20 metres x 1.5 metres, worth 1,200,000 CFA (R24,000) under cultivation. On average a ridge of 20 m x 1.5 m yields 4 jute bags of huckleberry each, i.e. 1200 bags in all. If a jute bag can be sold for 3000 CFA (R60), 1200 bags will cost = 3,600,000 CFA (R72000). The farmer's profit for that season is therefore = 3,600,000-1,200,000= 2,400,000 CFA (R48,000). It is assumed that it is a year void of outbreaks of diseases, pests and other negative weather changes. In such a year additional expenses will not be incurred on pesticides, etc. Other expenses related to fencing, construction of herdsman's hut, provision of food money to herdsman and salt for cattle is not the resource-poor farmer's direct responsibility. Products are also purchased on the farm (at times even before they are harvested) therefore no cost is incurred for transportation to the market.

The resource-rich farmer who cultivates huckleberry on a farm of 1 hectare which he owns will earn 3,600,000 CFA (R72,000), unlike the resource-poor farmer who earns 2,400,000 CFA (R48000). This is because while the resource-poor farmer incurs 120,000CFA (R24000) on rent, the resource-rich farmer pays no rent. In addition, he will farm on his manured plot for 3-4 years without having to pay any rent since he is the owner of the farm plot.

Depending on how well resource-poor farmers negotiate with resource-rich farmers, they are able to make maximum profit during the off-season (dry season) farming on rented irrigable plots. At the peak of the dry season a jute bag can sell for 5500 CFA (R110). When this is the case, however, they may be charged more per ridge rented because additional costs would be incurred in maintenance of irrigation channels.

Crops cultivated on manured paddocks in Small Babanki include huckleberry (Black Morella), onion (Allium cepa), maize (Zea mays), Irish potatoes (Solanum tuberosum), cabbage (Brassica spp), celery (Apium graveolens), leeks (Allium ampeloprasum), tomato (Lycopersicum esculentum), etc. Of these products, huckleberry, leeks and onion are the most marketed.

Products which are cultivated using NPM can be easily distinguished from those cultivated using other methods. The visual appearance, taste, and reputed health benefits of products cultivated using NPM make them highly-priced compared to products cultivated otherwise. This is particularly true with regards to the sales of the products in urban centres. In Small Babanki village where products abound, they may compete equally, independent of the system used to cultivate them. This is because farmers find themselves stuck with products

which they cannot quickly transport to urban centres because of bad roads and therefore fear losing them since they are perishable. Farmers reported that, once they succeed to access urban markets, products like huckleberry can be sold for up to three times the usual price especially in the dry season.

Below are some characteristics of huckleberry produced using NPM which enables it to sell at a higher price than that produced otherwise, as reported by farmers:

- It is greener and has broader leaves;
- It is more juicy and looks healthier;
- It does not cause running stools, heartburn or bloating of the stomach as sometimes occurs with chemically fertilised huckleberry;
- It does not rot as quickly as crops cultivated with chemical fertiliser.

Cattle herders' perceptions of the economic advantages of NPM are quite diverse. The readiness with which they make their cattle available for the functioning of the system suggests that there are some benefits that accrue to them. Tchawa (2001) states that between 1981 and 2001 the number of cattle in Small Babanki doubled. Grazers widely acknowledged that by participating in NPM, their cattle have access to certain yield-enhancing grasses like Brachiaria, Elephant grass (Pennisetum purpureum), Guatemala grass, tick clover (Desmodium gangeticum) and Stylosanthes which they do not have enough access to otherwise. Moreover, grazers reported that it is cost-ineffective to personally grow these yield-enhancing grasses relative to participating in the NPM system. Seeds were not only said to be expensive but the cost of building

wired fences around cultivated land was also said to be high. Failure to do this has often resulted in cattle eating the attractive grasses while still in the nursery.

Below are some perceived economic advantages of involvement in NPM as revealed by cattle herders, crop farmers and other non-farming stakeholders:

- Farmers interviewed during the study revealed that grazers receive a rental fee for cattle used for manuring plots. They claimed that cattle herders receive as much as 25,000 CFA/month (R 500/month) for a herd of 50 cattle used in the system. Grazers interviewed during the study denied renting out their cattle to farmers but affirmed giving them out free of charge on condition that cattle were kept safe, given salt and the herdsman was well fed. The reason for the contradiction in the declaration of farmers and grazers on this point is unclear. Maybe the grazers interviewed denied receiving a rent for the services rendered by their cattle because they do not consider various other types of compensation other than financial to be a rental fee. As has been stated previously, however, there are other forms of compensation apart from financial. For example, the crop farmer may be required to work the Fulani herder's farm after working his. Otherwise, the Fulani herder could receive a share of the crop harvested by the farmer.

- The increase in yield of products cultivated under NPM has resulted in an upsurge in demand for labour. Tchawa (2001) reports that there is an emergence of job opportunities for harvesters of huckleberry, especially for women and children (500 CFA (R10) for each jute bag of 18kg

harvested) and night-watchman (12000 CFA (R240/month) working from 7.00 p.m. to 6.00 a.m.);

- The key informant in the grazing community said there is an increase in milk production by about 50%;
- Grazers interviewed admitted that there is an increase in the calving rate since there is a reduction of miscarriages caused by stress sustained by animals from trekking long distances in search of grass;
- Grazers stated that there was a reduction in post-partum mortality because lactating cows become good mothers since they are kept in enclosures and are therefore compelled to suckle their calves;
- Grazers stated that the incidence of diseases is reduced; animals look healthier and build more muscles;
- Grazers said that their previously over-exploited grazing land is allowed to rejuvenate during the period when cattle are kept in farmers' paddocks for several nights. This is because during the day herdsmen are allowed to remove cattle from paddocks and graze them on generally less exploited grazing land belonging to farmers and also on stubble left on farmers' fields after harvest. Eventually grazers have access to fresher grass when their cattle are returned at the end of the three months during which they were used to manure farms.

4.7 CHANGES IN THE ASSET BASE AND LIVELIHOOD OPTIONS AS A RESULT OF ADOPTING NPM

4.7.1 CHANGES IN THE ASSET BASE OF FARMERS AND GRAZERS

Below is an analysis of the perceived changes that have occurred in the asset base of farmers and grazers because of their involvement in NPM:

4.7.1.1 HUMAN CAPITAL

NPM is a labour-intensive farming system. Moreover, it does not require the use of skilled labour. It was observed that of the 8 male-headed cropping households interviewed, 5 (62.2 %) were polygamous. Literally all family heads of the remaining 3 male-headed monogamous cropping households indicated that they were positively predisposed to marrying another wife and building a large family. The exact reason for the predisposition to polygamy is not known. But it seemed that this inclination towards polygamy is based on the rationale that the more wives one has the more children one would have and consequently the greater the labour force one would have at one's disposal. Polygamous homes were seemingly better-off compared to monogamous homes; however, it is uncertain to what extent they are well-off because they are polygamous or polygamous because they are well-off. In any case polygamy also seemed to be a source of status.

With an average family size of approximately 8, there seems to be enough labour available for farming activities. Moreover, all age groups in the household seem to contribute positively (directly or indirectly) to the realisation of the family objectives – increased agricultural output. It was observed that all children 7 years old and above participate to varying extent in the cultivation of

huckleberry and other crops. The youngest children perform household chores like cleaning the house, fetching water and scooping water from irrigation channels with a plate and watering huckleberry farms because of lack of sprinklers. Older household members are more active on the farm. They are responsible for building and maintaining paddocks, digging the channels needed to divert water into farms, etc.

The labour force is not only quantitative but also qualitative. An analysis of the questionnaires administered during this research revealed that there were a total of 103 children/youths in all the households interviewed. Only 3 (2.9%) children acknowledged that they had never been to school. Four (3.9%) of the children could be considered as primary school dropouts. Seventy (67%) out of the 103 children were attending school, while 23% were not yet of school going age. This means that everything being equal, households are likely to have additional non-farm income sources in future. In addition, of the 17 youths (children above 18 years old) who responded to the questionnaires, 12 (70.6%) stated that their health status was either very good or good while the remaining 29.4% conceived of their health status as fair. The overall state of health of households interviewed was good and only one case of death of a child in the households was recorded.

4.7.1.2 SOCIAL CAPITAL

There is a clear improvement in the social capital base in Small Babanki resulting from the practice of NPM. This can be observed in several domains, particularly with regards to:

- The self-propagation of NPM within Small Babanki with little assistance from outside;
- The institutional arrangements governing the practice of NPM in Small Babanki;
- The ability practitioners of NPM have to mobilise themselves around a common cause, e.g., to reduce the share of middlemen and women in the marketing of huckleberry;
- The degree of integration and tolerance between the Fulani and 'autochthonous' people which knows no precedence in the North-West Region.

The NPM innovation is self-replicating. The most important element in the system is negotiation between a cattle herder and a crop farmer. Farms in Small Babanki are often contiguous and there is therefore a need to also negotiate a path through which cattle can be driven into one's farm, passing through a neighbour's farm. This practice of negotiating both with the cattle herder and other farmers in the vicinity of one's farm by itself fosters relationships between farmers and grazers and also amongst farmers. The innovation which a handful of farmers began has been adopted by about 86% of farmers in the upper part of Small Babanki. This is largely due to this the ease with which negotiations between farmers and grazers and amongst farmers is achieved.

The establishment of the irrigation scheme which was initially one man's business has since become the responsibility of more than 500 households. Group work is done in digging the canal, boring holes through trees to produce 'pipes', planting trees to solidify the walls of canals and maintaining canals.

The institutional arrangements governing the practice of NPM in Small Babanki includes the establishment of a management committee in every neighbourhood where the irrigation scheme is functional. These committees are responsible for the day-to-day management of the irrigation scheme, including the enforcement of agreed rules, the distribution/rationing of water to farms and the resolution of conflicts between farmers. Farmers who fail to participate in digging irrigation channels are required to pay a fee to the management committee in order to be supplied. The fee, which is often in kind, consists of a jug of 20 litres of palm wine, a basket of corn flour and a cock.

The ability practitioners of NPM have to mobilise themselves around a common cause is exemplified in actions taken towards obtaining higher profits from the sales of huckleberry. A great solidarity has developed amongst farmers and between farmers and elites in the cities. Farmers have been known to occasionally undertake communal actions to circumvent middlemen and women called buyam-sellams. These buyam-sellams often make exorbitant gain from the sales of vegetables in the big cities. They mapped out the village into zones and had the monopoly of purchase of the vegetables, often paying for their vegetables in advance before it was harvested. Through sensitization campaigns both at the village and in cities, farmers mobilized and refrained from selling through buyam-sellams to selling directly to city dwellers themselves. Support has also

been sought from elites in cities to facilitate sales of vegetables directly. Farmers claim that at least three quarters of huckleberry buyers in Yaoundé, the capital of Cameroon, buy directly from them.

The degree of integration and tolerance between the Fulani and 'autochthonous' people in Small Babanki knows no precedence in the North-West Region. This integration and tolerance has been enhanced to a certain extent by the participation of people from both communities in NPM. The assistant chairperson of the traditional council, who is married to an 'autochthon,' is from the Fulani community. Fulani people are also known to represent their quarters in various capacities when traditional council meetings are convened. Although inter-tribal marriages are still a taboo, casual relationships between 'autochthons' and the Fulani are tolerated. Some Fulani cattle herders stated categorically that inter-tribal marriages were forbidden on religious grounds and could only be allowed if people switched religions. They however admitted that if their daughters chose to marry the 'autochthons' they would be disappointed but would not disown them. 'Autochthonous' people mentioned differences in lifestyle and livelihood preferences as the main reason why they do not engage in inter-tribal marriages with the Fulani people.

About eighty-eight percent of households from both communities who admitted having little to eat some time in the year either borrowed food or took credit from a store, indiscriminate of which of the communities the store owner was from. There were no instances where household members found themselves completely stranded, collected food from rubbish bins or worked for food. Only 6 (30%) of the households sampled were indebted. All debts incurred had a social

connotation because they were all either from community members, fellow farmers, friends, clients, or savings groups.

4.7.1.3 NATURAL CAPITAL

Consistent with its name Kedjom Ketinguh which means “People who live under the rocks,” 90% of households acknowledged that they have adequate access to stones. These stones are used for several purposes including the building of parts of their houses, the construction of public potable water points and the construction/maintenance of roads. Ironically, none of the houses of the respondents to questionnaires was made completely from stones. Ninety-five percent of respondents stated that they had enough access to mud. Accordingly, 85% of homes were made either completely of mud or of mud plastered with cement. Seventy-five percent of respondents stated that they had enough access to wood which could be used to cooking, roofing and construction of paddocks within the framework of NPM.

Sixty percent of grazing households who participated in this study obtain their drinking water from streams while 40% obtain theirs from springs. Forty percent of the grazing households stated that they had enough access to drinking water from the aforementioned sources throughout the year. Forty percent of respondent cropping households admitted that they have access to pipe-borne water all year round. Thirty percent of the cropping households stated that they had access to multiple sources of drinking water including streams and springs. Ironically, in spite of the fact that up to 80% of all households interviewed

depend exclusively on streams or springs for drinking water, the overall state of health of household members was fairly good, as highlighted in subsection 4.7.1.3.

The greatest returns from NPM accrue to households who have access to water to irrigate their farms. This is because the price of produce like huckleberry doubles in the dry season. Fifty percent (50%) of crop farmers who responded to questionnaires stated that they had adequate access to water for irrigating their farms.

Sixty percent of grazing households and 40% of cropping households said they had enough access to wild food plants. Amongst these wild food plants is a shrub commonly called “Bitter leaf” (Vernonia amygdalina). The leaves of this shrub are harvested, sliced, washed to reduce its bitterness, cooked and eaten with “fufu corn” (pap) or tubers. Thirty percent of grazing households stated that they had access to edible wild animals like blesmols (bathyergidae) which are commonly called “mole-rats” which are an important source of animal protein. The reason for the greater availability of wild food plants and edible wild animals to grazing households than cropping households cannot be stated categorically. It however appears that during the three months cattle spend in paddocks – away from grazing land belonging to grazers – both pasture and wild food plants rejuvenate and the population of wild animals increases.

Tenure of farming and grazing land could be judged as fairly secure. All respondents to questionnaires admitted having access to garden plots and cultivable fields. Seventy-five percent of respondents said they had access to grazing land. The tenure of garden plots and cultivable fields was as follows:

family/communal = 40%; inheritance/donation from relative = 30%; and privately owned with written purchase agreement countersigned by the chief = 30%.

Tenure security is enhanced by the participation of quarter heads and the chief in the issuing of sales agreements. These agreements were designed at the chief's palace. All sales transactions are concluded by the signing of a sales agreement by the seller, the buyer, the quarter head in whose jurisdiction the land which is being sold is found, and the chief. Whereas land was randomly allocated at the discretion of the chief in the past, presently all land has been distributed. There are no proactive measures to favour previously disadvantaged groups like women who were not allocated land during the 'discretionary era.' There is however no discrimination against women as far as their purchasing land and bequeathing the same to their offspring are concerned.

4.7.1.4 PHYSICAL CAPITAL

The tools (producer goods) used to cultivate crops in the NPM system are rudimentary—hoes, cutlasses, rakes, buckets and aluminium plates for watering crops, knapsacks for application of pesticides, etc. The non-utilization of tractors and animal traction can be explained by the hilly nature of the upper part of Small Babanki. Animal traction is more commonly used in the lower part of Small Babanki, which is down in the valley.

A visit to farms during the study revealed that there was an impressive irrigation scheme in the upper part of Small Babanki, as Tchawa (2001) also discusses. Apart from the challenges faced by the scheme which Tchawa (2001)

underscores, two other challenges were personally noticed. Firstly, there is a need to install sprinklers or underground drippers to evenly distribute water to crops. In the absence of these, what is typically done is the energy-consuming task of scooping out water from irrigation channels to water crops using aluminium plates. Secondly, there is a challenge of negotiating turns with fellow farmers in the vicinity to ration water channelled into farms.

There is a motorable road which enables the conveyance of huckleberry and other produce to the regional capital of Bamenda. Unfortunately the near-inaccessibility of the patch of the road between Small Babanki and Mile 11 (a neighbourhood midway between Small Babanki and Bamenda), which is not tarred, represents an obstacle to marketing during the rainy season. The result is that transporters charge more per bag of produce conveyed to the market. The price of produce also occasionally suffers because they do not get to the market in the best of states. This is because there are delays in accessing a vehicle to convey products to the market as a result of increased competition for the few available vehicles.

All respondent households stated that they owned the house in which they lived and that their homes were both unsusceptible to water and wind damage. Four (25%) respondent households affirmed that their homes were located at a readily accessible distance from a public tap. Only 3 (15%) respondent households had access to electricity for lighting.

As per the availability of water, electricity, intra-rural road infrastructure, health care provision by the health centres, etc., sources at the chief's palace revealed that projects were self-initiated from within the village. Projects are

therefore sustainable because they are not completely dependent on the magnanimity of elites outside the village. Thus villagers contributed 7 million CFA (R140, 000) towards the realization of the water scheme while elites from outside the village contributed 5 million CFA (R100, 000). Villagers also contributed a greater part of the money required to build the Baptist health centre worth 21 million CFA (R420, 000).

The second assistant mayor of the Tubah Rural Council (TRC) stated that the council generates substantial income from fees charged to farmers, retailers and transporters of crops to the regional capital of Bamenda. The second assistant mayor also reported that the incomes generated were used for infrastructural development efforts both in Small Babanki and elsewhere in the subdivision. The amount generated per annum was however not disclosed.

4.7.1.5 FINANCIAL CAPITAL

The study revealed that there were no formal credit-providing institutions specifically financing production under the NPM system. Activities are therefore either completely self-sponsored or characterized by sporadic dependence on fellow farmers, savings clubs or other informal lending sources for financial or material support.

Seven (35%) households interviewed had savings at the time of the research. Amongst others, agricultural purposes were mentioned as one of the reasons for saving. Six (30%) households had debts at the time of the interview.

But as mentioned before, all debts were with individuals or informal credit-providing institutions.

An analysis of the output of huckleberry, leeks, onion, maize, carrots and cabbages cultivated in Small Babanki per cropping season is indicative of the financial worth of farmers and grazers. It must be stated that these are not the only income-generating crops cultivated in Small Babanki. An examination of herd/flock sizes of cattle (Bos indicus), sheep (Ovis aries), goats (Capra aegagrus hircus), and pigs will also reveal the financial worth of farmers and grazers.

It is important to note that figures provided by both farmers and grazers are thought to have been understated for various reasons. Firstly, some fear researchers are government taxation agents who want to ascertain what they possess in order to levy them. Secondly, no matter how hard researchers try to explain their mission, farmers and grazers read something else into the declared intent. After realising that some of them were understating what they owned, a farmer acknowledged, “I am saying all these so that you can help us to get people in South Africa to assist our village.”

On the next page, are estimates of the annual income of farmers and grazers based on the declaration of their crop and livestock base:

Table 9: Estimates of annual income of farmers and grazers based on their declaration of their crop and livestock base

Crop / Animal	Quantity harvested/owned		Total amount worth CFA/(R)[7]	Total worth of the quantity sold[8] CFA/ (R)	Comments
	Grazer	Farmer			
Huckleberry	700 bags (12600 kg)	1138 bags (20484 kg)	7,811,500 CFA (R156,230)	7,030,350 CFA (R140,607)	@ 4250 CFA/bag (R85/bag) which is average price between rainy & dry season
Leeks	300 bundles	378 bundles	1,695,000 CFA (R33,900)	1,525,500 CFA (R30,510)	Leeks priced @ 2500 CFA/bundle (R50/bundle).
Onions	1300 buckets	282 buckets	6,328,000 CFA (R126,560)	5,695,200 CFA (R113,904)	4000 CFA/bucket (R80/bucket)
Maize	95 bags	220 bags	2,756,250 CFA (R55,125)	2,480,625 CFA (R49,612.5)	8750 CFA/50 kg bag (R175/50 kg bag)
Rice	10 bags	-	150,000 CFA (R3000)	135,000 CFA (R2700)	15000CFA/50bag (R300/50kg bag)
Carrot	200 buckets	40 buckets	600,000 CFA (R12,000)	540,000 CFA (R10,800)	2500 CFA/bucket (R50/bucket)
Cabbages	10 bags	-	50,000 CFA (R1000)	45,000 CFA (R900)	5000CFA/bag (R100/bag)
Crop Totals			19,390,750 CFA (R387,815)	1,7451,675 CFA (R349,033.5)	
Cattle	224 heads	94 heads	47,700,000 CFA (R954,000)	9540,000 CFA (R190,800)	A head was evaluated at only 150000CFA (R3000)
Sheep	37 heads	9 heads	1,610,000 CFA (R32,200)	322,000 CFA (R6440)	35000 CFA/head (R700/head)
Goats	-	6 heads	210,000 CFA (R4200)	42,000 CFA (R840)	35000 CFA/head (R700/head)
Pigs	-	12 heads	600,000 CFA (R12,000)	120,000 CFA (R2400)	50000 CFA/head (R1000/head)
Chicken	105	175	700,000 CFA (R14,000)	140,000 CFA (R2800)	2500CFA/chicken (R50/chicken)
Livestock Totals			50,820,000 CFA (R1,016,400)	10,164,000 CFA (R203,280)	
Milk[9]	4200 litres	2100 litres	1,008,000 CFA (R20,160)	1,008,000 CFA (R20,160)	
GRAND TOTAL			71,218,750 CFA (R1,424,375)	28,623,675 CFA (R572,473.5)	

[7] Exchange rates estimated from trends in the month of October 2008: R1=50 CFA; US$1= 430 CFA.

[8] Farmers stated that 9/10th of the crops they produce is sold. The price of huckleberry = 4250/bag (R85/bag) being the average of the highest price during the dry season i.e. 5500 CFA/bag (R110/bag) and the lowest price during the rainy season i.e. 3000 CFA/bag (R60/bag). The proportion of livestock and milk sold/consumed each year was estimated at 1/5th for livestock and 5/5 i.e. 100% for milk.

[9] Considering that all the milk produced is either sold (cash income) or consumed (non-cash income). A litre costs 160 CFA (R3.2).

Source: Author's evaluation of the financial worth of farmers and grazers based on their declaration of the number of crop and livestock they own

The incomes of farmers and grazers in Small Babanki could be broadly distinguished as follows:

- Cash income from the sales of crops produced (generally 9/10th of annual production);
- Cash income from the sales of livestock produced (generally 1/5th of annual production);
- Non-cash income in the form of crops consumed (generally 1/10th of annual production);
- Cash income plus non-cash income from the sales and consumption of the milk produced (individual proportions of what was sold and what was consumed could not be determined hence this income heading is considered as one whole in this study).

Going by the analysis above, the 20 households interviewed in this study could be estimated to be living on the average on a cash income of 27,615,675 CFA (R552, 314) from all crops and livestock sold, plus a non-cash income of 1,939,075 CFA (R38,782) in the form of crops consumed, plus a cash/non-cash income of 1008000 CFA (R20,160) in the form of milk sold/consumed. This means that the 20 households might be living on a total cash and non-cash income of 30,562,750 CFA (R611, 255) annually. Therefore each household might be living on the average on at least a cash and non-cash income of 30,562,750

CFA/20 households = 1,528,138 CFA (R30,563) annually. Considering that the average household in Small Babanki is made up of 8 members, it can be said that each household member might be living on the average on at least 191,017 CFA (R3820) annually, which means 523.3 CFA (R10.5) daily i.e., US$1.23 daily. At first sight, this suggests that household members might be living basically above the income poverty margin of US$1/day. But a detailed analysis reveals that they own an impressive non-cash wealth which can be readily converted into cash income or consumed. In chapter 5 of this thesis more light would be shed on this.

4.7.2 LIVELIHOOD OPTIONS RESULTING FROM ADOPTION OF NPM

From analysis of interviewees' response to questionnaires and personal observations, it can be said that practitioners of NPM have diversified their livelihood options to include the following:

- People who were solely cultivators of crops are getting involved with stocking cattle and other animals. All cropping households interviewed owned some animals. Forty percent of the households could be considered as mixed farmers because they have a stock of more than 20 cattle each. This group was relatively autonomous because they used their own cattle to manure their farms.

- The previously nomadic Fulani have become sedentary and are diversifying from rearing only cattle to cultivating crops. All grazing households sampled are involved in the cultivation of crops to varying extents. Ninety percent of grazing households sampled stated that they

depend on purchased maize for 3-5 months in the year, meaning that they produce enough maize to cater for their needs for between 7-9 months. Ten percent of grazing households sampled depend on purchased maize for just 2 months in the year.

- Some farmers are getting involved in rural non-farm activities like bee farming, store-keeping, harvesting of thatch for roofing houses, making mattresses, etc.

- Some farmers have diversified into activities whereby both the rural farm economy and the urban non-farm economy are exploited to their advantage.

4.8 CONSTRAINTS TO OBTAINING MAXIMUM BENEFITS FROM NPM

Farmers and grazers interviewed during this study mentioned the lack of enough cattle to be used in fertilising farms, poor roads, lack of financial assistance, shortage of electric power, occasional theft of cattle, etc., as hindrances to the maximization of benefits from NPM.

A focus group discussion with farmers who practice NPM in Small Babanki carried out by Tchawa (2001) is indicative of the pros and cons militating against economic development in Small Babanki. Thirty-five men, women and children participated in the discussion. They were required to rank factors militating against economic development in Small Babanki using a scale that went from 0 (not an issue at all) to 5 (extremely serious issue). The opinions

expressed agree with declarations made by farmers and grazers during interviews in this study:

Table 10: Ranking of agro-pastoral problems as perceived by farmers in Small Babanki

Problems	Neighbourhoods (Quarters)					Total	Rank
	Chua	Ãhuku	Timinshui	Tingeh*	Tualoh**		
Fertility of soils	5	2	4	4	3	18	1
Roads	0	4	0	5	1	10	2
Wild fires	1	2	1	0	5	9	3
Farmer/grazer conflicts	0	1	0	5	0	6	4
Water for irrigation	5	0	0	0	0	5	5
Lack of land	0	0	4	0	0	4	6

Source : Tchawa (2001)
* Neighbourhood in the upper part of Small Babanki but far from where NPM is practiced
** Neighbourhood in the lower part of Small Babanki

Loss of soil fertility was identified by farmers as the main hindrance to the economic development of Small Babanki. During my interview with farmers they said, “We lack enough cattle to manure our farms.” By this statement, they were acknowledging three things. Firstly, that they had definitely observed that there was a decline in soil fertility. Secondly, that they perceive NPM as a solution to the loss of soil fertility in Small Babanki. Lastly, that they consider unavailability of cattle in sufficient numbers as hindering NPM’s potential to contribute to economic development in Small Babanki.

Another important limitation stated during interviews and confirmed by Tchawa (2001) is the bad state of roads which obstruct the conveyance of products to the market. The least constraint identified from analysis of questionnaires in this study was lack of land. This is consistent with Tchawa (2001) who ranked lack of access to land as the least hindrance to economic development in Small Babanki.

Farmers also complained that crops cultivated under NPM are more prone to destruction by cutworms and soldier ants than crops cultivated using traditional methods.

It is pertinent to take note of the fact that farmer/grazer conflicts were not considered a threat in the parts of upper Small Babanki where NPM is practiced. Although the neighbourhood in which farmer/grazer conflicts was recognized as a threat is located in upper Small Babanki, it is far from the main centre where NPM is practiced.

CHAPTER 5:

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

To conclude, we assess poverty from two perspectives. First, the way farmers and grazers describe poverty shall be highlighted, with consideration given to the question of whether going by their perspective, both categories of respondent households could be considered poor. Second, an attempt is made to determine whether both categories of households – cropping households taken individually and grazing households taken individually – are poor going by the standard 'dollar poverty line.' We shall afterwards turn to the issue of the conflict reduction potential of NPM.

Once more, it is important to observe that the conclusions drawn are based on the perceptions of those interviewed during this study and to some extent their own comparisons of before-and-after adoption of NPM. As such, the methodology employed has permitted only tentative conclusions regarding the impact of NPM on poverty and conflicts amongst farmers and grazers in Small Babanki.

5.2 ASSESSING POVERTY THROUGH THE PEOPLE'S EYES

The farmers and grazers interviewed in Small Babanki had a lot to say about poverty. Some of their declarations included the following: "Poverty is the worst of things," "Poverty is not a good thing," "Poverty is worse than HIV AIDS," "Poverty is a bad sickness," "You can never really tell who is poor since you are not the one feeding or clothing them," "Poverty leads to underdevelopment, unhealthy community, illiteracy," "A hungry man is an angry man," "Health is wealth," etc.

When asked how poverty expresses itself, the interviewees said by: "Not being able to send children to school," "Aimless visits with the hope that one would be offered food," "Wearing of dirty clothes," "A lack of adequate shelter," "A lack of land to farm," "Inability to work because of a handicap," "Lack of money to pay for financial expenses," etc.

In light of the people's declarations it is doubtful whether they can be considered poor. In all aspects highlighted from their own perception, they seem to be faring better than worse. Firstly, with regards to children going or not going to school, analysis of questionnaires showed that 67% of children were attending school while 23% were not yet of school going age.

Secondly, pertaining to declarations that indicated that "health is wealth," 71% of youths (children who were above 18 years old) and could therefore answer questions concerning their health status with precision, stated that their health status was either very good or good. The remaining 29% conceived of their health status as fair. The overall state of health of households sampled was good.

Only one case of death of a child in the households was recorded in the last 5 years and this was not due to illness but to an illegal abortion. There were no records of any woman dying during pregnancy or childbirth within the last 5 years.

Thirdly, with regards to the idea that poor people are those who lack food to eat, 40% of adult members in grazing families eat twice a day, while 60% eat thrice a day. All children aged 0-6 years in grazing households eat at least thrice a day, with 63% eating four times daily. As for cropping households, 50% of adults eat twice a day, while the remaining 50% either eat four or five times daily. All children aged 0-6 years eat at least twice a day, of which 80% eat four or five times daily.

Fourthly, looking at poverty as a lack of ownership of land, all grazing and cropping households affirmed not only having secure access to grazing and farming land but owning land.

Fifthly, talking about a secure shelter, all households considered their shelter secured enough, especially as homes are not prone to wind or water damage.

5.3 ASSESSING POVERTY USING THE 'DOLLAR/DAY' POVERTY LINE

5.3.1 ASSESSING POVERTY FOR BOTH CATEGORIES OF HOUSEHOLDS

As previously stated, at first sight, household members interviewed seem to be living on the average on US$1.23/day, which is just a bit above the US$1/day poverty line. Upon second thought, however, it seems such a conclusion might turn out to be hasty.

Although household members interviewed in Small Babanki might appear to be living just above the poverty line, if one considers that only 1/5th of their stock of cattle, sheep, goats, pigs and chicken are sold yearly (4/5th of stock is retained at any point in time) one would understand the whole picture. From Table 9 it can be inferred that the farmers and grazers interviewed have non-cash wealth worth 40,656,000 CFA (R813,120) in the form of cattle, sheep, goats, pigs and chicken at any given moment. This is equivalent to almost one and a half times the worth of what farmers and grazers earned as cash income from sales of 9/10th of the crops and 1/5th of the livestock produced. Plus what they get as cash/non-cash income from the sale/consumption of the milk they produce. This non-cash wealth reserve appears to be used as a safety net which is readily convertible into cash to meet major expenditure like paying school fees and other unforeseen circumstances. It could also become a form of non-cash income when it is consumed by the household.

Moreover, the analysis focused only on agriculture-related cash and non-cash incomes. A number of farmers and grazers interviewed admitted having some non-agricultural income sources. Furthermore, as stated before, for various

reasons already mentioned, farmers and especially grazers obviously appeared to understate their incomes.

An overall national poverty line of 508.19 CFA adult equivalent per day was calculated by the government statistics office from its 1996 household consumption survey using the cost-of-basic needs approach. A food poverty line was calculated for a typical household food basket composed of 61 food items, yielding 2900 kcal per adult per day. A representative basket of consumer choices was priced and to it was added of non-food basic needs evaluated at a third of the cost of food items (Government of Cameroon, 2003). Going by the national poverty line of 508.19 CFA, both categories of households could still be thought of as living above the poverty line, since our estimates show that household members could be living on about 523.3 CFA/day.

5.3.2 POVERTY AMONGST CROPPING HOUSEHOLDS

From Table 9 above, it can be deduced that cropping-households declared that they produce crops worth 8,934,500 CFA (R178,690) annually. Considering that 9/10th of crops produced is sold, annual cash income generated from sales could easily be worth 8,041,050 CFA (R160,821). If this were the case, on the average each household might earn annual cash income of about 804,105 CFA (R16,082) from the sales of crops, meaning each household might earn 2203 CFA daily from the sales of crops.

The annual non-cash income in the form of crops consumed by households (1/10th of total production) could possibly be valued at 893,450 CFA (R17,869).

Consequently, each household might be enjoying an annual non-cash income in the form of crops consumed worth 89,345 CFA (R1787). This means there is the possibility that each household might be enjoying a daily non-cash income in the form of crops consumed worth 244.8 CFA (R4.9).

From Table 9, we realise that cropping-households might be producing 2100 litres of milk. If this were the case, the annual cash/non-cash income generated/enjoyed by cropping-households from the sales/consumption of milk would be 336,000 CFA (R6720). This means each household might be enjoying an annual cash/non-cash income in the form of milk sold/consumed worth 33,600 CFA (R672), i.e. a daily cash/non-cash income of 92.1 CFA (R1.8).

From Table 9, it could be estimated that cropping-households might possess an astonishing 15,326,500 CFA (R306,530) worth of livestock. Considering that about 1/5th of livestock are sold per year, the annual cash income generated from sales of livestock could be an impressive 3,065,300 CFA (R61,306). This means each household might be earning an annual cash income from livestock sold worth 306,530 CFA (R6131), i.e., a daily cash income of 840 CFA (R16.8).

From the analysis above, considering that the average household size in Small Babanki is eight members, it could be estimated that every cropping-household member might be living on a total cash and non-cash income of 275.4 CFA + 30.6 CFA + 11.5 CFA + 105 CFA = 422.5 CFA/day (R8.5/day) or US$0.98/day. Going by the overall national poverty line of 508.19 CFA per adult equivalent per day, cropping households could be thought of as poor:

Bearing in mind the limitations of this research which were previously emphasised, an analysis of the situation of the cropping-households exclusively, reveals that each of its members could be living on the fringes of the US$1/day poverty line. But for reasons stated before, it seems their situation is better off than appears on the surface. They appear to retain a wealth of livestock worth 12,261,200 CFA (R245,224), which could be converted into cash or consumed at any time. Cropping-households seem to somehow be in charge. They seem to have a wealth of livestock which they could convert into cash or consume at their own will, thus whether they live below or above US$1/day seem to be a matter of choice.

This is not the case of farmers who are non-practitioners of NPM, because their output of huckleberry and other crops is generally a third of what practitioners of NPM obtain. Also practitioners of NPM have a greater tendency to build up their stock of animals which can be eventually used in the system.

5.3.3 POVERTY AMONGST GRAZING HOUSEHOLDS

From Table 9, it can be deduced that grazing-households declared that they could be producing crops worth an amazing 10,456,250 CFA (R209,125). Considering that they reported that 9/10th of crops produced is sold, cash income generated from sales could easily be worth an impressive 9,410,625 CFA (R188, 213). Grazing-households seem to enjoy a non-cash income in the form of crops consumed worth 1,045,625 CFA (R20, 913). From Table 9, it can be estimated that grazing-households might possess livestock worth 35,157,500 CFA

(R703,150). Considering that about it was reported that 1/5th of stock of livestock are sold per year, the cash income generated from sales of livestock could be 7,031,500 CFA (R140,630). Annual milk cash/non-cash income sold/consumed by grazing-households could be worth 672,000CFA (R13,440).

The annual total cash and non-cash income from sales/consumption of crops, sales of livestock and sales/consumption of milk might be 9,410,625 CFA+ 1,045,625 CFA + 7,031,500 CFA + 672,000 CFA = 18,159,750 CFA (R363,195). By implication, the average grazing-household might be living on 1,815,975 CFA (R36, 320) per year or 4975.3 CFA (R99.5) per day, or US$11.6/day. This means with an average family size of 8 people each member might as well be living on 622 CFA/day (R12.4/day) or US$1.45/day. Going by the overall national poverty line of 508.19 CFA per adult equivalent per day, grazing-households could be thought of as not being poor.

The analysis of the situation of grazing-households reveals that members might be living above the income poverty line of US$1/day. Moreover, they appear to retain a wealth of livestock worth 28,126,000 CFA (R562,520) which could be converted into cash or consumed at any time. They might somehow also be in charge because the quantity of livestock they convert into cash or consume at their own will could determine whether they could be said to be living below or above $1/day.

This seems not to be the case for grazers who are non-practitioners of NPM. As stated by the key informant in the grazing community, non-practitioners of NPM record 50% lower milk yields. In addition, they are said to experience other limitations that could reduce their output of meat, calving percentage, etc.

Moreover, grazers who do not practice NPM are said to generally harvest only a third of the output of huckleberry and other crops compared to grazers who are involved in the innovation.

5.3.4 ASSESSING THE CONFLICT REDUCTION POTENTIAL OF NPM

Farmer/grazer conflicts are as old as the time when God gave Moses the Ten Commandments on Mount Sinai. God's prescription for the resolution of a typical farmer/grazer conflict was simple: "If a man causes a field or vineyard to be grazed, and lets loose his animal, and it feeds in another man's field, he shall make restitution from the best of his own field and the best of his own vineyard."[10]

While it is true that today's world has become far more complex than Moses' time, God's simple solution is still valid. This seems to be the predominant form of resolution of the few farmer/grazer conflicts which occur in Small Babanki. As noticed in Table 4, only two conflicts were reported at the D.O.'s office from 2006 to 2008. The symbiotic relationship that has developed between grazing-households and cropping-households has not only led to a reduction of farmer/grazer conflicts but to an internal arrangement for resolution of conflicts that occasionally crop up. This symbiotic relationship has been cemented through the practice of Night Paddock Manuring.

5.4 RECOMENDATIONS

[10] The Holy Bible, Exodus 22:5.

NPM seems to be contributing substantially to reduce poverty and farmer/grazer conflicts in Small Babanki. In order to improve on the seeming impact of this practice, the following recommendations are noted:

- An extensive study of the NPM farming system should be undertaken in order to establish with more certainty than has been possible through this study, whether NPM does indeed contribute to the reduction of poverty and conflicts amongst farmers and grazers.

- Should the farming system prove effective beyond mere perception, it could be experimented with in various other places in the North-West Region and also in the three Northern Regions, which are the greatest producers of cattle. It could then be replicated elsewhere and adapted to the specific context in these places. If the system proves effective it might be a solution in the Northern Regions where farmer/grazer conflicts have taken a trans-boundary connotation. Some farmer/grazer conflicts in the Northern Regions have been caused by the destruction of crops by cattle coming from neighbouring Nigeria.

- More involvement by the staff of the Ministries of Livestock (MINEPIA) and of Agriculture and Rural Development (MINADER) in promoting NPM is desirable. At present, practitioners of NPM have little or no support from the said Ministries.

- Government actions aimed at removing hurdles in the way of practitioners of NPM and rural inhabitants in general, will be more than welcome. This should take the form of rendering farm-to-market roads more accessible,

providing loans to NPM practitioners who have already proven their capacity to produce and therefore repay loans, and assisting crop farmers without the means to invest in NPM on their own, etc.

- An approach to rural development which consists of considering farmers as partners in the creation of innovations and not just as people, who have to passively wait for the next innovation to be imposed on them, should be encouraged. An aspect of this approach could take the form of government sponsored agricultural innovation shows. During these events farmers will exhibit their innovations and the best innovators would be given prizes. These agricultural innovation shows will also afford agricultural development stakeholders the opportunity to discover local innovations and to work with farmers on improving them.

- The government must provide the divisional officers and other law enforcement agents with the necessary logistics for field intervention.

- The demarcation of land for grazing and for farming in the North-West Region and the three Northern Regions is desirable. Being compatible with the NPM farming system, this will go a long way to reduce farmer/grazer conflicts.

APPENDIX ONE:

DISCUSSIONS/INTERVIEWS WITH FARMERS AND GRAZERS

The following questions were raised with farmers and grazers during the focus group discussion and interviews respectively:

QUESTIONS RELATED TO NPM, AGRICULTURAL OUTPUT & INCOME

- What constitutes poverty in Small Babanki?
- Why do you practice Night Paddock Manuring (NPM)?
- What crops do you cultivate using the system?
- How does your harvest under NPM compare to what obtained before?
- Which attracts a better market price, products produced under NPM or the system doesn't make a difference in terms of price?
- What are advantages of consuming products produced using NPM compared to products cultivated using traditional methods?
- What are the constraints of the system and how can the system be improved?

QUESTIONS RELATED TO NPM AND CONFLICT REDUCTION

- What are the causes of farmer/grazer conflicts in Small Babanki and how do conflicts manifest?
- What efforts have been made hitherto by all stakeholders to resolve conflicts and what were the outcomes of these interventions?
- What is the estimated loss caused by farmer/grazer conflicts within the last ten years?
- How has the introduction of NPM affected the occurrence of farmer/grazer conflicts and the resolution of conflicts when they occur?
- What other types of conflict occur apart from farmer/grazer conflicts and what is peculiar to them?
- What suggestions do you have to ensure there is lasting peace between farmers and grazers?

QUESTIONS RELATED TO RESOURCE BASES OF PRACTITIONERS OF NPM

- What is the nature of land tenure of practitioners of NPM and how secure is it?
- How has your asset base changed since adoption of NPM?
- What livelihood options do you presently enjoy which is attributable to your adoption of NPM?

APPENDIX TWO:

QUESTIONS FOR KEY INFORMANTS

QUESTIONS RAISED WITH RELIGIOUS LEADERS

- Have you heard about Night Paddock Manuring (NPM)?
- Are you aware that there are often outbreaks of farmer/grazer conflicts in the Region?
- Tell me about some farmer/grazer conflicts which occurred here in Small Babanki since you became a religious leader?
- Have any of your members reported that his/her crops were destroyed by cattle belonging to or temporarily in the keeping of someone from a different religion?
- Have members of other religions reported that cattle belonging to or temporarily in the keeping of one of your members have destroyed his/her crops?
- What have you done specifically to ensure that farmer/grazer conflicts do not occur in Small Babanki?
- Do you think a major farmer/grazer conflict can occur in small Babanki within the next 10-20 years, especially with population growth and diversification of farming activities by both farmers and grazers?

QUESTIONS RAISED WITH TRADITIONAL/ADMINISTRATIVE AUTHORITIES

- How is land currently administered in Small Babanki compared to the situation 20 years ago?

- What are you doing to prevent elite capturing and to promote access to land by women, youths etc

- What is the procedure for launching complaints when there are conflicts between farmers and grazers over destruction of crops, cattle or other property?

- When complaints are launched, what role do traditional/administrative authorities play in resolving them?

- Do you keep data on the cases of farmer/grazer conflicts reported to you and the outcomes of such cases?

- At how much can you evaluate losses caused by farmer/grazer conflicts from 2006 to 2008?

- At how much can you evaluate the economic returns linked to the practice of NPM obtained by your council within this same timeframe?

- What is the estimated contribution of farmers and grazers to major projects in Small Babanki compared to the contribution of elites living outside the village?

APPENDIX THREE:

QUESTIONNAIRE ADMINISTERED

SURVEY NUMBER _ _ _ _ _ _

PART 1: Questions relating to each adult household member (18 years and older) individually

1.What is the person's name?	**2. What is the person's relationship to the head of the household (hh)?** 1. Head 2. Spouse or partner 3. Brother or sister 4. Child 5. Parent of hh/ spouse/partner 6. Parent of other household member 7. Indirect (non blood) relation 8. Paying lodger 9. Other 10. Grand parent 11. Grand child 12. Other blood relative	**3. What is the person' sex?** 1. Male 2. Female	**4. How old is the person?**	**5(a). How long have you been living in this address ?** 1. Less than one year 2.1-2 yrs 3. 2-5 yrs 4. More than five years **5(b). Where did people move from?** **……**	**6. What language /s can the person speak?** 1. Xhosa 2. English 3. Afrikaans 4. Other **Choose all relevant**	**7. What is the highest standard you have passed at school?** 1. Never went to school. 2. Is still at school 3. Standard 3 or less 4. Standard 5 5. Standard 6-8 6. Standard 9-10 7. Tertiary diploma / degree 8. Other	**8. Can the person read?** 1. No 2. Yes 3. A bit	**9. Can the person write?** 1. No 2. Yes 3. A bit
1.	1 2 3 4 5 6 7 8 9	1 2	yrs	1 2 **2.** 4 ……	1 2 3 4	1 2 3 4 5 6 7 8	1 2 3	1 2 3
2.	1 2 3 4 5 6 7 8 9	1 2	yrs	1 2 **2.** 4 ……	1 2 3 4	1 2 3 4 5 6 7 8	1 2 3	1 2 3
3.	1 2 3 4 5 6	1 2		1 2 **2.**	1 2 3 4	1 2 3 4 5	1 2 3	1 2 3

	7 8 9		yrs	4 ……..		6 7 8		
4.	1 2 3 4 5 6 7 8 9	1 2	yrs	1 2 2. 4 ……..	1 2 3 4	1 2 3 4 5 6 7 8	1 2 3	1 2 3

10.What kind of task does the person normally do for more than 1 hour per day?	**11. How much paid work does the person do?**	**12. (a) Does the person receive any of the following state social grants, and how much is it?**	**13.(a) Was the person away for more than one month during the last year?**	**14. How many nights a week does this person normally sleep here?**	**15. What is the person's overall health like?**	**16. What does this person need most?**
1. House work (cleaning and cooking) 2. Work in garden or field to produce food for household 3. Care for children 4. Care for aged people 5. Cares for disabled people 6. Cares for sick people 7. Fetch water 8. Fetch woods 9. Look for work 10. Student 11. Self-employed in agricultural/ food activities (e.g., selling food) 12. Agricultural/ food work for someone else (e.g., farm labourer) 13. Self-employed in non-agricultural / non-food activities 14. Other 15.Shoping CHOOSE ALL RELEVANT	1. Has no paid work 2. Is self employed 3.Works all year for a set weekly or monthly wage 4. Is seasonally employed 5. Has work occasionally CHOOSE ALL RELEVANT	1.Grant for the aged (R570/ R620) 2. Disability grant (R570/ R620) 3. Child support grant (R110/R130) 4. Foster child grant (R410/R450) 5. Care dependency grant (R570/ R620) 6. None **12 (b) If any, how much does it cost to collect** (e.g. Taxi fare) 7. Less than R10 8. R10 – R29 9. R30 – R49 10. R50 – R79 11. R80 – R99 12. R100 –R300 13.More than R300 **12 © If any, how much did it cost to register / qualify?** 14. Less than R10 15. R10 – R29 16. R30 – R49 17. R50 – R79 18. R80 – R99 19. R100 –R300 20. More than R300 **Choose all relevant**	1. Yes 2. No **13 (b) If yes, why did they go away?** 3. For work 4. For education 5. Other CHOOSE ALL RELEVANT	1. One 2. Two 3. Three 4. Four 5. Five 6. Six 7. Seven / Every night 8. None 9. Now and then	1. Very good (almost never sick) 2. Good (sick for about 2 weeks last year) 3. Fair (sick for about 4 weeks last year) 4. Poor (often sick) 5. Very poor (mostly sick)	1.Education 2. Work 3. Health care 4. Housing 5. Food 6. Water 7.Electricity 8. Other Choose only one
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1 2 3 4 5	1 2 3 4 5 6 7 8	1 2 3 4 5	1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1 2 3 4 5	1 2 3 4 5 6 7 8	1 2 3 4 5	1 2 3 4 5 6 7 8

17. If a person does paid work, what kind of work does the person do.	**18.What health related problems did the person have in the last 4 weeks?**	**19.. If the person had any health problems, did the person seek any medical help?**	**20. If q 19= yes (the person did seek medical help), what did the person do?**	**21. If q19=no (the person did not seek medical help), why did the person not seek medical help?**
1. None 2.Farm work on commercial farm 3.Domestic worker	1. TB 2. Measles 3. HIV/AIDS 4. STD's 5. Diarhoeal diseases	1.Yes 2.No	1. Hospital admission 2.Hospital out patient 3.Day hospital 4.Local clinic	1.No money/could not afford it 2. No time 3. Could not get off from

4.Other skilled work 5.Factory worker in food sector 6.Factory worker in non-food sector 7.Public sector worker 8.Private sector worker 9.Self-employed CHOOSE ALL RELEVANT	6. ARD (Acute respiratory diseases of the lungs) 7. Bad coughs 8. Asthma 9. Cancer 10. Diabetes mellitus 11. High blood pressure 12. Cold/ flu 13. Epilepsy 14. Heart disease 15. Stroke 16. Bone disease 17. Injury due to accident 18. Injury due to attack 19. Injury due to domestic violence 20. Injury due to work CHOOSE ALL RELEVANT		5.CHW 6.Traditional healer 7.General practitioner **Please write the health problem number (from q.18) behind the relevant number**. Choose all relevant	work 4. Could not leave the home 5. No transport 6. Too weak/ sick 7.Had to care for other 8. Other Choose all relevant
1 2 3 4 5 6 7 8 9 10 11 12 13 14	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1 2	1 ………… 2………….. 3 ………… 4………….. 5 ………… 6………….. 7 ………… …………..	1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12 13 14	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1 2	1 ………… 2………….. 3 ………… 4………….. 5 ………… 6………….. 7 ………… …………..	1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12 13 14	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1 2	1 ………… 2………….. 3 ………… 4………….. 5 ………… 6………….. 7 ………… …………..	1 2 3 4 5 6 7 8
1 2 3 4 5 6 7 8 9 10 11 12 13 14	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	1 2	1 ………… 2………….. 3 ………… 4………….. 5 ………… 6………….. 7 ………… …………..	1 2 3 4 5 6 7 8

Questions relating to all the children (below 18 years old)

1. What is the child's name?	**2. How old is the child? (For young children write in months)**	**3. What was the childbirth weight?** (If the person is sure, write answer as is, if the person is not 100% sure, write + -)	**4.What is the child's sex?** 1.Male 2.Female	**5. (a) Is this child?** 1. Not yet at school 2. Attending school 3. No longer going to school (stopped going to school) 5. (b) If a child of school going age is not going to school, what are the reasons? 4.Parent died 5.Child is too sick 6.No money / household is too poor 7. Child is needed at home (e.g., parent is sick, etc.) 8.If is too difficult to get to school 9.Other **Choose all relevant**	**6. Does this child get a social grant from the government?** 1. Child support grant (R110/R130) 2.Care dependency grant (R570/R620) 3.Foster child grant (R410/R450) 4.Disability grant (R570/R620) 5. Does not get any grant	**7.What kind of tasks does the child normally do for more than 1 hour per day?** 1. House work (cleaning / cooking) 2. Work in garden or field to produce food for household 3. Care for children 4. Care for aged people 5. Cares for disabled people 6. Cares for sick people 7. Fetch water 8. Fetch woods 9. Look for work 10. Student 11. Self-employed in agricultural/ food activities (e.g., selling food) 12. Agricultural/ food work for someone else (e.g., farm labourer) 13. Self-employed in non-agricultural / non-food activities 14. Other 15.Shoping CHOOSE ALL RELEVANT
1.			1 2	1 2 3	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
2.			1 2	1 2 3	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
3.			1 2	1 2 3	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
4.			1 2	1 2 3	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
5.			1 2	1 2 3	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
6.			1 2	1 2 3	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

BREASTFEEDING: CHILDREN (ONLY IF THERE IS A 0-6 MONTHS OLD BABY IN THE HOUSEHOLD)				Office use	
SURVEY NUMBER					6
1. How old is your baby? ……					
2. Has the child ever been breastfed?	1=Yes	2=No	3=Don`t know		
3. How long after birth did you put the child to the breast?	1=Within first hour	2=Within 8 hours	3=After 8 hours		
4. Is …… (child`s name) still breastfed?	1=Yes	2=No	3=Don`t know		
5. Within first three days after delivery, before your milk began flowing regularly, did you feed …… (child`s name) the fluid that come from your breast?	1=Yes	2=No	3=Don`t know		
6. Since this time yesterday, has been given anything to drink form a bottle with a nipple or teat	1=Yes	2=No	3=Don`t know		12

7. Since this time yesterday, has…….. (child`s name) received any of the following? How many times did the child receive any of the items since this time Yesterday? **Please indicate all categories**

Vitamin, mineral supplements or medicine	1=Yes	2=No		
Plain water	1=Yes	2=No		
Breast milk	1=Yes	2=No		
Sweetened, flavored water or fruit juice or tea	1=Yes	2=No		
Oral hydration solution	1=Yes	2=No		
Tinned, powdered or fresh milk or infant formula	1=Yes	2=No		
Any other fluids (specify)	1=Yes	2=No		
Commercially prepared infant food e.g., Purity	1=Yes	2=No		
Gave infant cereal e.g., Nestum	1=Yes	2=No		
Solid or semi-solid (mushy) food	1=Yes	2=No		
Other	1=Yes	2=No		23

8. **If speaking with the mother ask:**

Have you ever provided …….. (child`s name) with a Breast milk substitute?	1=Yes	2=no	3=Don`t know		
9. If yes, what was it (specify)?……					
……					26

			Office use	
10. ***WHAT WERE THE REASONS?*** *PLEASE INDICATE ALL CATEGORIES*				
Mother did/ does not have enough milk	1=Yes	2=No		27
Mother has cracked, sore nipples or is not able to breastfeed	1=Yes	2=No		
Mother was / has been in poor health	1=Yes	2=No		
Protection of child from HIV/AIDS	1=Yes	2=No		
Mother was/ is pregnant	1=Yes	2=No		
Mother was/ is working	1=Yes	2=No		
Age of child was/ is greater than four months	1=Yes	2=No		
Other	1=Yes	2=No		

11. Did anyone encourage you to provide a substitute for breast milk?

1=Yes	2=No	3=Don`t know		
				35

12. Who encouraged you to do so?

Husband	1=Yes	2=No		
Mother	1=Yes	2=No		
Mother-in law	1=Yes	2=No		
Other family member	1=Yes	2=No		
Physician or other health practitioner	1=Yes	2=No		
Community health worker	1=Yes	2=No		
Traditional healer	1=Yes	2=No		
Neighbour	1=Yes	2=No		
Media (radio/ television / press)	1=Yes	2=No		
Other	1=Yes	2=No		

13. If the child has diarrhoea do you continue to breastfeed?

1=Yes	2=No		
			46

14. If the child has diarrhoea do you give any fluid by mouth?

Yes, more fluids	1	
Yes, less fluids	2	
No change	3	
Stop giving fluids	4	
Don`t know	5	
Other, specify	6	

15. If the child has diarrhoea do you give any food by mouth?

Yes, more food	1		
Yes, less food	2		
No change	3		
Stop feeding	4		
I give food on demand	5		
Don`t know	6		
Other, specify	7		48

Office use

16. Can the mother hold the health chart the right way up?

1=Yes	2=No		
			49

17. Does she know what the vertical axis represent?

1=Yes	2=No	

18. Does she know what the horizontal axis represent?

1=Yes	2=No	

19. What signs will make you realize that child is not well nourished?

Oedema	1=Mentioned	2=Not mentioned		52
Peeling skin	1=Mentioned	2=Not mentioned		
Irritability	1=Mentioned	2=Not mentioned		
Brown sparse hair	1=Mentioned	2=Not mentioned		
Distended abdomen	1=Mentioned	2=Not mentioned		
Big appetite	1=Mentioned	2=Not mentioned		
Moon face	1=Mentioned	2=Not mentioned		
Lack of physical activity	1=Mentioned	2=Not mentioned		59

PART 2: QUESTIONS RELATING TO THE TOTAL HOUSEHOLD
(All people in the household together)

Office use

SECTION 1: SHELTER

SURVEY NUMBER ☐☐☐☐☐☐ 6

1. What is the main building of your home made of?

Concrete	1	
Stone	2	
Blocks	3	
Mud	4	
Wood	5	
Plastic	6	
Zinc	7	
Other	8	☐ 7

2. What is the roofing of main home made of?

Thatch	1	
Tiles	2	
Corrugated iron (zinc)	3	
Wood	4	
Plastic	5	
Asbestos	6	
Other	7	☐

3. Is your home: ***(Please indicate all categories)***

Waterproof (susceptible to water damage)	1=Yes	2=No	3=N/A	☐
Windproof (susceptible to wind damage)	1=Yes	2=No	3=N/A	☐
Fireproof (susceptible to fire damage)	1=Yes	2=No	3=N/A	☐
Having ceiling	1=Yes	2=No	3=N/A	☐
Having electricity	1=Yes	2=No	3=N/A	☐
An RDP house	1=Yes	2=No	3=N/A	☐
Electricity cut off/ blocked	1=Yes	2=No	3=N/A	☐ 13

If electricity was cut off/ blocked, why?

Electricity bills not paid	1=Yes	2=No	3=N/A	☐
Water bills not paid	1=Yes	2=No	3=N/A	☐
Owe money to council (other than for electricity and water bills	1=Yes	2=No	3=N/A	☐

We have no money to buy pre-paid electricity	1=Yes	2=No	3=N/A	

Please choose all relevant

OFFICE USE

4. How many rooms do you have in your household (including inside bathroom and toilet)?

1 - 2	1
3 - 4	2
5 - 6	3
7 and more	4

5. How many rooms are used for sleeping?

1 -2	1
3 - 4	2
5 - 6	3
7 and more	4

6. Do you:

Own	1
Rent	2
Squat	3
Other	4
Occupation according ESTA	5

16

7. How much do you pay off per month for housing?

R……

21

8. What fuel do you mostly use for cooking?

Wood	1
Coal	2
Paraffin	3
Gas	4
Electricity	5
Other	6

9. What fuel do you mostly use for heating?

Wood	1
Coal	2
Paraffin	3
Gas	4
Electricity	5
Other	6

10. What fuel do you mostly use for lighting?

Candle stick	1	
Coal	2	
Paraffine	3	
Gas	4	
Electricity	5	
Other	6	☐

OFFICE USE

11. What type of toilet do you use?

Ventilated pit latrine	1	
Pit latrine	2	
Bush	3	
Flush toilet	4	
Bucket toilet	5	
Do not have	6	
Other	7	
Chemical toilet	8	☐

12.If you do have a toilet at home, does every member of the family use the toilet?

Every member of the family use it	1	
Adults use it, children do not use it	2	
Children use it, adult do not use it	3	
Other	4	
N/A	5	☐

13.How is children's waste disposed?

We burn it	1	
We burry it…	2	
We discard it in latrine	3	
It is eaten by pigs, dogs or chicken	4	
Other	5	
N/A	6	☐ 27

14. What happens with most of your refuse/rubbish?

We dump it outside somewhere	1	
We burn it	2	
We bury it	3	
Removed by local authority once per week	4	
Removed by local authority once per month	5	
Other	6	☐ 28

15. Where do you get drinking water most of the time?

River	1	
Stream	2	
Public tap	3	
Hand tap at home	4	
Tap inside home	5	
Borehole	6	

	Spring	7
	Edam or pond	8
	Rainwater tank	9
	Other	10

Municipality water is 1=ON 2=OFF 3=DRIP 4=N/A

Municipality water is cut off/ blocked, why?

Electricity bills not paid	1
Water bills not paid	2
Owe money to council (other than for electricity and water bills	3
Other	4

Please choose all relevant

SECTION 2: RESOURCES

16. Does your household have any of the following in working order? Please indicate

ALL CATEGORIES

Refrigerator	1=Yes	2=No	
Radio	1=Yes	2=No	
Television	1=Yes	2=No	
Coal stove	1=Yes	2=No	
Electric stove	1=Yes	2=No	
Primus stove	1=Yes	2=No	
Flame stove/ Gas Stove	1=Yes	2=No	
Microwave oven	1=Yes	2=No	
Telephone (landline)	1=Yes	2=No	
Cellular phone	1=Yes	2=No	
Vehicle/ car	1=Yes	2=No	
Sewing machine	1=Yes	2=No	
Other	1=Yes	2=No	

30

42

17. How many of the following livestock does your household have? Please indicate all categories

Cattle			00=We do not have
Sheep			00=We do not have
Goats			00=We do not have
Horses			00=We do not have
Donkeys			00=We do not have
Pigs			00=We do not have
Chicken			00=We do not have
Geese / ducks			00=We do not have
Other			00=We do not have

69

6

18. Does your household have any of the following policies?

Burial insurance	1=Yes	2=No		
Life insurance	1=Yes	2=No		
Possessions	1=Yes	2=No		
Disability	1=Yes	2=No		
Education	1=Yes	2=No		
Other	1=Yes	2=No		12

19. Does your household have a bank account or post office?

1=Yes	2=No	

20. Do you have any savings or investments at the moment?

1=Yes	2=No	

OFFICE USE

21. If yes, is the amount

Less than R100	1		
R100- R499	2		
R500-R999	3		
R1000- R1999	4		
R2000- R4999	5		
R5000- R9999	6		
More than R10 000	7		
N/A	8		15

22. For what purpose do you save? Please indicate all categories

To buy food	1=Yes	2=No		
To pay rent	1=Yes	2=No		
To pay for school	1=Yes	2=No		
To pay for health care/ medical services	1=Yes	2=No		
To set up the business	1=Yes	2=No		
To pay for vehicle/ car	1=Yes	2=No		
To pay for feast, wedding, burial, etc	1=Yes	2=No		
For agricultural purposes	1=Yes	2=No		
To pay other debts	1=Yes	2=No		
Other	1=Yes	2=No		25

23. Does your household grow mealies?

1=Yes	2=No	

24. If yes for what purpose? (Please indicate all categories)

Household use only	1=Yes	2=No		
Household use and to sell some	1=Yes	2=No		
Household use and trade some	1=Yes	2=No		
Household use and to give some away	1=Yes	2=No		
Other	1=Yes	2=No		31

25. About how much is harvested in 50kg bags per year?

Less than 1 bag	1
1-5 bags	2
6-10 bags	3
Other	4
N/A	5

32

26. What else does your household grow, and what is the main purpose? (Please indicate one category only)

	1= Own use	2= To sell	3= To trade with	4= To give away	5=N/A
Grains	**1**	**2**	3	4	5
Vegetables	1	2	3	4	5
Fruit	1	2	3	4	5
Other	1	2	3	4	5

27. Does your household have access to the following used for keeping and/, Livestock or the planting of grains, vegetables or fruits?

Garden plot	1=Yes	2=No
Field/ for cultivation	1=Yes	2=No
Grazing land/s	1=Yes	2=No

39

28. What is the nature of your tenure?

a) Garden plot

Does not have this	1
Permit to occupy	2
Communal land	3
Title deed- bought it	4
Title deed- inherited it	5
Just occupies it	6
Just uses it	7
Other	8
Farmer/Employer gives permission	9
Permit to rent	10

b) Field/s for grazing

Does not have this	1
Permit to rent	2
Communal land	3
Title deed- bought it	4
Title deed- inherited it	5
Just occupies	6
Just uses it	7
Other	8
Farmer/Employer gives permission	9
Permit to rent	10

41

c) Grazing land/s

Does not have this	1
Permit to rent	2
Communal land	3
Title deed- bought it	4

Title deed- inherited it	5	
Just occupies	6	
Just uses it	7	
Other	8	42
Farmer/Employer gives permission	9	
Permit to rent	10	

OFFICE USE

29. Do you have adequate access to the following natural resources:
(Please indicate all relevant categories)

Woods	1Yes	2=No	3=Don't know	
Thatch/grass	1Yes	2=No	3=Don't know	
Wild animals	1Yes	2=No	3=Don't know	
Wild food plants	1Yes	2=No	3=Don't know	
Medicinal plants	1Yes	2=No	3=Don't know	
Sand	1Yes	2=No	3=Don't know	
Stone	1Yes	2=No	3=Don't know	
Mud	1Yes	2=No	3=Don't know	
Water	1Yes	2=No	3=Don't know	
Fish	1Yes	2=No	3=Don't know	
Natural grazing land	1Yes	2=No	3=Don't know	
Wind	1Yes	2=No	3=Don't know	
Sun	1Yes	2=No	3=Don't know	
Other	1Yes	2=No	3=Don't know	56

30. a). Have you received any payment/gift in kind during the last month?

1Yes	2=No	

b) What kind of gift? (Please indicate all categories)

Money	1Yes	2=No	
Food	1Yes	2=No	
Clothes	1Yes	2=No	
Furniture	1Yes	2=No	
Electric appliance (TV, stove, fridge, etc.)	1Yes	2=No	
Other	1Yes	2=No	
Money	1Yes	2=No	64

31.If you are getting a pension, how much do you pay for the following?

Debts	R	
Food	R	
Grandchildren's school	R	
Other	R	68

SECTION 3: INCOME

32. How much income did your household receive last month from the following sources?

			1	2
Wage labour	R	00=Don't know		
Self employed agricultural activities	R	00=Don't know		

Self employed non agricultural activities	R	00=Don't know	
Social grants	R	00=Don't know	
Rent	R	00=Don't know	
Casual work	R	00=Don't know	
Seasonal work	R	00=Don't know	
Remittances	R	00=Don't know	
Pension fund from work	R	00=Don't know	
Money from your secret lover/ assistant	R	00=Don't know	
Marijwa	R	00=Don't know	
Other	R	00=Don't know	78

33. What was the total household income last month? 1

1=R	2=None	3= Don't know

34. What was the total household income last week? 1

1=R	2=None	3= Don't know

35. Could you tell me what your household income was during the following months?

			1	2
March 2002	R	2=Don't know		
FEBRUARY 2002	R	2=Don't know		
January 2002	R	2=Don't know		
December 2001	R	2=Don't know		
November 2001	R	2=Don't know		
October 2001	R	2=Don't know		
September 2001	R	2=Don't know		
August 2001	R	2=Don't know		
July 2001	R	2=Don't know		
June 2001	R	2=Don't know		
May 2001	R	2=Don't know		
April 2001	R	2=Don't know		

SECTION 4: EXPENSES and DEBTS

36. Does your household have any debts?

1=Yes	2=No

				Office use
37. If yes, (your households has debts) where does it come from? (please indicate all categories)				
Bank loan	1=Yes	2=No		
Lay-buy	1=Yes	2=No		
Microlender	1=Yes	2=No		
Village credit organisation	1=Yes	2=No		
Farmer	1=Yes	2=No		
Community members	1=Yes	2=No		
Stokvel	1=Yes	2=No		
Church	1=Yes	2=No		
Unions	1=Yes	2=No		
Friends	1=Yes	2=No		
family	1=Yes	2=No		
Employer	1=Yes	2=No		
Burial society	1=Yes	2=No		
Savings group	1=Yes	2=No		
Hire purchase	1=Yes	2=No		
Fines	1=Yes	2=No		
Council – for electricity in arrears	1=Yes	2=No		
Council – for water in arrears	1=Yes	2=No		
Council – for rates in arrears	1=Yes	2=No		
Other	1=Yes	2=No		
38. How much is your total household debt?				
Less thanR100			1	
R100- R499			2	
R500- R999			3	
R1000- R2999			4	
R3000- R4999			5	
R5000- R9999			6	
R10 000- R50 000			7	
R50 000- R100 000			8	
More than R100 000			9	
N/A			10	
39. If your household has debts, for what purpose did you borrow money?				
To buy food	1=Yes	2=No		
To pay rent	1=Yes	2=No		
To pay for schooling	1=Yes	2=No		
To pay for health care/ medical services	1=Yes	2=No		
To set up a business	1=Yes	2=No		
To pay for a vehicle/car	1=Yes	2=No		
To pay for feasts, wedding, etc.	1=Yes	2=No		
To pay for burial / funeral etc.	1=Yes	2=No		

			OFFICE USE
For agricultural purposes	1=Yes	2=No	
To pay other debts	1=Yes	2=No	
Other	1=Yes	2=No	
N/A	1=Yes	2=No	

40.What were the total expenses of your household last month? ***(Please indicate all categories)***

			1	2
Rent	1=R	2=Don't know		
Energy (wood, gas, electricity)	1=R	2=Don't know		
Food	1=R	2=Don't know		
Alcohol	1=R	2=Don't know		
Tobacco	1=R	2=Don't know		
Education	1=R	2=Don't know		
Health- visit to the doctor	1=R	2=Don't know		
Health - medication	1=R	2=Don't know		
Health - travel cost	1=R	2=Don't know		
Health – loss of income	1=R	2=Don't know		
Health – extra food expenses	1=R	2=Don't know		
Health – traditional leader	1=R	2=Don't know		
Entertainment	1=R	2=Don't know		
Gambling	1=R	2=Don't know		
Insurance	1=R	2=Don't know		
Debt repayment	1=R	2=Don't know		
Furniture, clothes	1=R	2=Don't know		
Rates	1=R	2=Don't know		
Fine	1=R	2=Don't know		
Supporting other people (e.g., giving or sending money to other people)	1=R	2=Don't know		
Running own business	1=R	2=Don't know		
Funeral expenses	1=R	2=Don't know		
Other	1=R	2=Don't know		

SECTION 5: FOOD

41. How many months in a year do you rely on bought maize-meal?

1 month/year	1
2 months/year	2
3 to 5 months/year	3
6 to 8 months /year	4
9 to 11 months/year	5
All year	6
N/A	7

42. Last year was there a time when you and your household had very little to eat?

1=Yes	2=No	

				OFFICE USE
43. If yes, when? (Please indicate all categories)	**JANUARY**	1=Yes	2=No	
	February	1=Yes	2=No	
	March	1=Yes	2=No	
	April	1=Yes	2=No	
	May	1=Yes	2=No	
	June	1=Yes	2=No	
	July	1=Yes	2=No	
	August	1=Yes	2=No	
	September	1=Yes	2=No	
	October	1=Yes	2=No	
	November	1=Yes	2=No	
	December	1=Yes	2=No	

44. What did you do when household had very little to eat?
Please indicate all categories

Borrowed food	1=Yes	2=No	
Asked for credit at the store	1=Yes	2=No	
Worked for food	1=Yes	2=No	
Could not do anything	1=Yes	2=No	
Other	1=Yes	2=No	
Collected food from rubbish bins / rubbish dump	1=Yes	2=No	

5. How many meals did the adults in your household have yesterday?

0	1	2	3	4	5	

46. How many meals did children (0-6 years) in your household have yesterday?

N/A	0	1	2	3	4	5	

47. When food is not enough to serve everybody in your household, who gets first preference

Father	1	
Mother	2	
Grandparents	3	
Girls	4	
Boys	5	
Younger children	6	
Other	7	

48. How long does it take to get to the nearest store/supermarket to buy most of your food (i.o.w. the bulk of your food)?

Less than 30 minutes	1	
30 minutes to an hour	2	
1 hour-2hours	3	
More than 2 hours	4	
Other	5	

OFFICE USE

49. In a week, how often do people in your household eat the following?

	1=Once week	2=4-5 week	3=Hole week	4=DN eat	5=Don't know	
Peanut butter	1	2	3	4	5	
Margarine / butter	1	2	3	4	5	
Cooking oil	1	2	3	4	5	
Bread	1	2	3	4	5	
Milk in tea / coffee	1	2	3	4	5	
Drinking milk	1	2	3	4	5	
Sour milk	1	2	3	4	5	
Vegetables	1	2	3	4	5	
Fruits	1	2	3	4	5	
Eggs	1	2	3	4	5	
Meat	1	2	3	4	5	
Canned fish	1	2	3	4	5	
Fried fish	1	2	3	4	5	
Fried chicken	1	2	3	4	5	
Tribe / Pense	1	2	3	4	5	
Pig legs	1	2	3	4	5	
Chicken skins	1	2	3	4	5	
Mieliemeal	1	2	3	4	5	

b) Does your household currently eat more or eat less or eat the same amount of food compared to this time last year? (Please indicate all categories)

	1=More	2=Less	3=Same	4=DN eat	5=Don't know	
Meat	1	2	3	4	5	
Sugar	1	2	3	4	5	
Fruits	1	2	3	4	5	
Vegetables	1	2	3	4	5	
Beans	1	2	3	4	5	
Samp	1	2	3	4	5	
Corn	1	2	3	4	5	
Snacks (cakes, ice-cream etc)	1	2	3	4	5	

50. When you compare to previous years, does your household eat:

1 = More	2 = Less	3 = Same	

SECTION 6: GEO-SOCIAL INTEGRATION

OFFICE USE

Survey number

51. Is it easy for household members to get to the following: (Please indicate all categories)

	1= Easy	2= Difficult	3= Very difficult	4= Impossible	5=N/A
Work	1	2	3	4	5
Clinic/doctor	1	2	3	4	5
School	1	2	3	4	5
Traditional healer	1	2	3	4	5
Visit friends/ family	1	2	3	4	5
State grant collection point	1	2	3	4	5
State office	1	2	3	4	5
Others	1	2	3	4	5
Work	1	2	3	4	5
Nearest CHW (community health worker)	1	2	3	4	5

52. How long does it usually take to get to?

a) Work (for the main breadwinner)

Less than 10 minutes	1
10-30 minutes	2
31-60 minutes	3
1-2 hours	4
More than 2 hours	5
A day or more	6
Don't know	7
N/A	8

b) Doctor/ clinic (for the person being interviewed)

Less than 10 minutes	1
10-30 minutes	2
31-60 minutes	3
1-2 hours	4
More than 2 hours	5
A day or more	6
Don't know	7
N/A	8

OFFICE USE

c) How long does it take for the youngest school-going child to get to school?

Less than 10 minutes	1
10-30 minutes	2
31-60 minutes	3
1-2 hours	4
More than 2 hours	5
A day or more	6
Don't know	7
N/A	8

d) How long does it take for the elder school-going child to get to school?

Less than 10 minutes	1
10-30 minutes	2
31-60 minutes	3
1-2 hours	4
More than 2 hours	5
A day or more	6
Don't know	7
N/A	8

53.a) How does the main breadwinner to work?

Walk	1
Lift	2
Employer	3
Bus	4
Bicycle	5
Taxi	6
Other	7
N/A	8
Train	9

b) How do you get to the clinic / doctor

Walk	1
Lift	2
Employer	3
Bus	4
Bicycle	5
Taxi	6
Other	7
N/A	8
Train	9

c) How does the oldest child get to school?

Walk	1

Lift	2	
Employer	3	
Bus	4	
Bicycle	5	
Taxi	6	
Other	7	
N/A	8	
Train	9	☐

54. How much does it cost to get there for a single journey? **(If less than R9, please write the amount in the column)**

a) Work (for the main breadwinner)	Not paying	1	
	Less than- R9	2	
	R10- R15	3	
	R16- R19	4	
	R20- R39	5	
	R40- R69	6	
	R70- R99	7	
	R100- R150	8	
	More thanR150	9	
	N/A	10	☐
b) Clinic / doctor (for the interviewee)	Not paying	1	
	Less than- R9	2	
	R10- R15	3	
	R16- R19	4	
	R20- R39	5	
	R40- R69	6	
	R70- R99	7	
	R100- R150	8	
	More thanR150	9	
	N/A	10	☐
c) School (for the eldest child)	Not paying	1	
	Less than- R9	2	
	R10- R15	3	
	R16- R19	4	
	R20- R39	5	
	R40- R69	6	
	R70- R99	7	
	R100- R150	8	
	More thanR150	9	
	N/A	10	☐

OFFICE USE

55. Does a household member participate in the following organization? (Please all categories indicate)

Stockvel	1=Yes	2=No	
Burial association	1=Yes	2=No	
Village credit organisation	1=Yes	2=No	
Livestock group	1=Yes	2=No	
Range management group	1=Yes	2=No	
Vegetable garden group	1=Yes	2=No	
Grocery group	1=Yes	2=No	
Field/ cropping group	1=Yes	2=No	
Sports club	1=Yes	2=No	
Church	1=Yes	2=No	
Political party	1=Yes	2=No	
Singing/music group	1=Yes	2=No	
Youth group	1=Yes	2=No	
School committee	1=Yes	2=No	
Other	1=Yes	2=No	
Gang	1=Yes	2=No	
Drinking / shebeen group	1=Yes	2=No	
Street committee	1=Yes	2=No	
Health committee	1=Yes	2=No	

SECTION 7: VULNERABILITY

56. Has your household suffered from disasters / big problems / shocks in the last 12 months?

Natural disasters (fire, floods, damage, wind, etc.)	1=Yes	2=No	
Death in the household	1=Yes	2=No	
A serious illness in the household	1=Yes	2=No	
Loss of job of the main breadwinner	1=Yes	2=No	
General joblessness in the household	1=Yes	2=No	
Loss of possession / theft	1=Yes	2=No	
Assault of household member	1=Yes	2=No	
Witchcraft	1=Yes	2=No	
Violence in the household	1=Yes	2=No	
A serious accident	1=Yes	2=No	
Death of many livestock	1=Yes	2=No	
Rape	1=Yes	2=No	
Other	1=Yes	2=No	
Violence in the community	1=Yes	2=No	

Deserted by husband/ wife/ long-term partner	1=Yes	2=No	

OFFICE USE

57. Has anyone in your household suffered from the following during the Past 5 years?

Permanent loss of a full-time job	1=Yes	2=No	
Being evicted by farmer or landlord or headman	1=Yes	2=No	
A woman who died during pregnancy or childbirth	1=Yes	2=No	
A child who died	1=Yes	2=No	

84. (a) Has someone in your household left the farm in the past 5 years, were they evicted or did they leave freely?

1=Own free will	2=Evicted	

84. (b) If someone was evicted from a farm, what was the reason?

1=Farmer is bankrupt	2=Reduction of staff	3=Retrenchment	4= Other	5=N/A	

58. Has your household taken in any children of relatives or friends who died or became terminally ill during the last 5 years?

1=Yes	2=No	

59. How often have someone in your household:

a) Felt unsafe from crime in your home or your community?

Never	1	
Rarely	2	
Sometimes	3	
Often	4	
Don't know	5	

b) Gone without medicine or medical treatment?

Never	1	
Rarely	2	
Sometimes	3	
Often	4	
Don't know	5	

c) Gone without clean water to drink?

Never	1	
Rarely	2	
Sometimes	3	
Often	4	
Don't know	5	

d) Gone without enough to eat?

Never	1	
Rarely	2	
Sometimes	3	
Often	4	

Don't know	5	

OFFICE USE

e) Gone without fuel for heating or cooking?

Never	1
Rarely	2
Sometimes	3
Often	4
Don't know	5

f) Gone without adequate shelter?

Never	1
Rarely	2
Sometimes	3
Often	4
Don't know	5

COPING WITH DIFFICULTIES

60. Who do you rely on in difficult times?……
……

88. Who do you talk to when you are lonely?……
……

61. Did you vote in the last elections?

1=Yes	2= No	3= Don't remember

62. Do you know who is your local councilor?

Does not vote	1
A household member	2
Husband/wife	3
Family member	4
Someone in the community	5
The candidate	6
Nobody, I decide for myself	6
Other	7
N/A	8

63. If you were a victim of crime (e.g. assault, theft, etc), would you report it to the police?

1=Yes	2=No

64. If the answer is **no, why**?

Police cannot solve the crime	1
Does not trust the police	2
Cannot get to the police	3
Scared of revenge	4
Other	5

N/A	6	

SECTION 9: HEALTH ISSUES

OFFICE USE

65. How many has been sick from the following during the last 4 weeks

TB			00= DNK	
Measles			00= DNK	
HIV/AIDS			00= DNK	
STD's			00= DNK	
Diarhoeal diseases			00= DNK	
ARD (Acute respiratory diseases of the lungs)			00= DNK	
Bad coughs			00= DNK	
Asthma			00= DNK	
Cancer			00= DNK	
Diabetes mellitus			00= DNK	
High blood pressure			00= DNK	
Cold/ flu			00= DNK	
Epilepsy			00= DNK	
Heart disease			00= DNK	
Stroke			00= DNK	
Bone disease			00= DNK	

66. How many has been sick from the following during the last 4 weeks?

Always sick			00= DNK	
Drinking too much			00= DNK	
Smoking tobacco			00= DNK	
Using drugs			00= DNK	

67.How many household members are disabled? Please write number

Blindness			00= DNK	
Deafness			00= DNK	
Physical disability			00= DNK	
Mental illness			00= DNK	
Other			00= DNK	

68. Has the youngest child been immunized for the following? **Children 0-6 months only (Please ask for the card to check for immunization)**

TB	1=Yes	2=No	3=DNK	4=NA	5=Lost	6=Missing	
Measles	1=Yes	2=No	3=DNK	4=NA	5=Lost	6=Missing	
Polio	1=Yes	2=No	3=DNK	4=NA	5=Lost	6=Missing	
Dwt	1=Yes	2=No	3=DNK	4=NA	5=Lost	6=Missing	

Others	1=Yes	2=No	3=DNK	4=NA	5=Lost	6=Missing	

HIV/AIDS

OFFICE USE

69. Have you had any information on HIV/AIDS during the last year?

1=Yes	2=No	

70. If the answer is **yes**, from where? *(Choose all relevant)*

Family and friends	1	
Radio	2	
Television	3	
From the clinic/ doctor	4	
Social worker	5	
Community health workers	6	
Church	7	
Other	8	
N/A	9	

72. If the answer is **yes**, can you tell me how?

1=Yes	2=No	

……

……

73. Can HIV/AIDS be cured at the moment?

1=Yes	2=No	3=Don't know	

74. If yes, can you tell me how?

……

……

……

75. Have you heard of any household/s in which somebody is sick with HIV/AIDS or has died of HIV/AIDS

1=Yes	2=No	

76. If yes, could you tell me how much you think this HIV/AIDS illness is costing/ has costed that household extra per month? (For example if there was loss of income, additional travel, medical or food expenses.

Nothing extra	1	
Less than R100 per month	2	
R100- 249 per month	3	
R250- R 499	4	
R500- R999	5	
R1000- R1 999	6	
More than R2000	7	
Don't know	8	

N/A	9	

HIV/AIDS	OFFICE USE

87. Can you tell me whether you think the following statements are true, false, or don't you know?

Many people who are infected with HIV can look and feel healthy?	1=true	2=false	3=don't know	
AIDS can be cured if it is treated early enough?	1=true	2=false	3=don't know	
Mothers can pass HIV to their babies through breast milk?	1=true	2=false	3=don't know	
People who are careful to have sex only with healthy-looking partners won't become infected with HIV?	1=true	2=false	3=don't know	
If a person is thin they are likely to have HIV /AIDS?	1=true	2=false	3=don't know	

77. Can you tell me what is the impact of HIV/AIDS in your community?

……

……

78. How would you rate your household at the moment?

We always have enough/we are well-off	1
We mostly have enough	2
We sometimes have enough, sometimes not	3
We sometimes do not have enough/we are sometimes poor	4
We often do not have enough/we are often poor	5
We never have enough/we are very poor	6
We are almost dying of poverty	7
I don't know	8

79. Over the last five years, have things:

Got a lot better for your household	1
Got a bit better for your household	2
Stayed about the same	3
Went up and down but no real change for your household	4
Got a bit worse for your household	5
Got a lot worse for your household	6
Don't know	7

80. What do you and your household need most at the moment?
In other words, what could other people, the community, or the government, do to help you and your household to improve your life?

……

OFFICE USE

89. The aim of CHWs is to help the community to be healthy and happy. What are the main things they should do?

Home visits	1=Mentioned	2=Not mentioned
Give medication	1=Mentioned	2=Not mentioned
Home-based nursing/care	1=Mentioned	2=Not mentioned
First Aid	1=Mentioned	2=Not mentioned
Water& sanitation	1=Mentioned	2=Not mentioned
Referrals	1=Mentioned	2=Not mentioned
Workshops	1=Mentioned	2=Not mentioned
Hygiene promotion	1=Mentioned	2=Not mentioned
Job creation	1=Mentioned	2=Not mentioned
Advice	1=Mentioned	2=Not mentioned
Other	1=Mentioned	2=Not mentioned

81. Is there any thing that you would like to tell me about poverty?

……

……

……

82. Do you think your household will be better or worse off in five years time?

1= Better off	2= Same as now	3= Worse off	4= Don't know

83. Can you tell me why?

……

……

……

OFFICE USE

90. Have you or anyone in your household had a visit by a CHW in the past 3 months?

1= Yes	2= No

91. If yes, what did the CHW do?

Follow-up	1
Treatment	2
Advice	3
Referral	4
Other	5
N/A	6

92.Was the person referred to another service?

1=Yes	2=No

93. If yes, which?

Medical	1
Social services	2
Legal	3
School	4
NGO	5
Labour	6
Housing	4
Other	5

APPENDIX FOUR:

SELECTED PHOTOGRAPHS

Photograph 1: Huckleberry under cultivation within a paddock

Photograph 2: Bags of huckleberry ready to be transported to the market

Photograph 3: Typical cropping household in Small Babanki (farmer, 3 wives and 8 children)

Photograph 4: Typical grazing household in small Babanki (grazer, wife and children)

Photograph 5: Working session with key informant from the Fulani community

REFERENCES

Béné, C. 2003. When Fishery Rhymes with Poverty: A First Step Beyond the Old Paradigm on Poverty in Small-Scale Fisheries. *World Development*. vol. 31, no. 6, pp.949-975.

Berdegué, J.A & Escobar, G. 2002. Rural Diversity, Agricultural innovation Policies and poverty reduction. *Agricultural Research & Extension Network Paper*. no. 22.

Blench, R. 1984. Conflict and Co-operation: Fulbe Relations with the Mambila and Samba people of Southern Adamawa. *Cambridge Anthropology*. vol. 9, no. 2.

Breusers, M., Nederlof, S., & Rheenen, T.V. 1998. Conflict or Symbiosis? Disentangling farmer-herdsman relations: the Mossi and Fulbe of the Central Plateau, Burkina Faso. *The Journal of Modern African Studies*. Cambridge University Press. no. 36, pp 357-380.

Brown, D., Howes, M., Hussein, K., Longley, K. and Swindell, K. 2002. *Participation in Practice: Case Studies from The Gambia*. ODI: London.

Chambers, R., Pacey A. & Thrupp L.A. 1989. *Farmers First: Farmer Innovation and Agricultural Research.* Intermediate Technology Publications: London.

Chambers, R. 1993. *Challenging the Professions: Frontiers for rural development.* Intermediate Technology Publications: London.

Ellis, F. 2000. Rural Livelihoods and Diversity in Developing Countries. In *Diversification and Agrarian Change*. Oxford University press: United States.

Eyong, C. 2007. Poverty Eradication and Sustainable Development in Cameroon. *Journal of Sustainable Development in Africa. vol* 5, no.2, pp. 30–58.

FAO. 2000.FAOSTAT Database < http://apps.fao.org>.

Government of Cameroon. 2003. The *poverty reduction strategy paper*. Ministry of planning, programming and regional development.

Guijt, I. 1997. *Impacts and institutions, partners and principles: Third review of the development and use of participatory rural appraisal and planning.* Redd Barna: Kampala.

Hart, G. 2000. Regional Linkages in the Era of Liberalization: A critique of the New Agrarian Optimism. *Development and Change*. vol. 29, no. 1, pp 27-54.

Hussein, K., Chiara, C., & Mohamed, B. 2008. Promoting technological innovation and innovative practices for rural poverty reduction in Western and Central Africa Division. International Fund for Agricultural Development (IFAD): Rome.

IFAD. 2004. *IFAD Initiative for Mainstreaming Innovation.* International Fund for Agricultural Development (IFAD): Rome.

IFAD. 2007. *Strategic Framework 2007-2010.* International Fund for Agricultural Development (IFAD): Rome.

IFAD. 2007. *Innovation Strategy*. International Fund for Agricultural Development (IFAD): Rome.

IFPRI. 2007: *The Role of Agriculture in Development: Implications for Sub-Saharan Africa.* Research Report No. 153.

Jones, M. 2005. Key challenges for technology development and agricultural research in Africa. *IDS Bulletin.* vol. 36, no.2, pp. 46-51.

NEPAD. 2005. www.nepad.org/2005/files/caadp (2008, October 15th).

Orville L. F. 1968. *World without hunger*. Praeger :New York.

Reddy, S., Sujata, V., & Muhammad, A. 2006. *Inter-Country Comparisons of Income Poverty Based on a Capability Approach*. Department of Economics, Barnard College. Available at http://ssm.com/abstact (2008, October 10th).

Rogers, E. M. 2003. *Diffusion of innovations (5th Ed.)*. Free Press: New York.

Röling, N.R. & Engel, P.G.H. 1992. The development of the concept of Agricultural Knowledge and Information System: implications for extension. In Rivera, W. & Gustafson, D.J. (Eds). *Agricultural Extension: Worldwide Institutional Evolution and Forces for Change.* Elsevier: Amsterdam.

Sen, A. 1981. *Poverty and famines: an essay on entitlement and deprivation*. Oxford Clarendon Press.

Sumberg, J., Okali C., & Reece, D. 2003. Agricultural research in the face of diversity, local knowledge and the participation imperative: theoretical considerations. *Agricultural Systems*. no.76, pp. 739-75.

Tchawa, P. 2001. Chain of innovations by farmers in Cameroon. In *Farmer Innovation in Africa: A source of inspiration for Agricultural Development*,edited by Reij, C. & Waters-Bayer, A: Amsterdam, Netherland.

Van Ranst, E., Pauwels, J.M., Debaveye, J., and Zweier, K. 1988. Soil characterization and maize fertilization of PAFSAT Experimental farms in the Southern part of the North West Province.

Veldhuizen, L van, Waters-Bayer A & Wettasinha C. 2005. Participatory technology development where there is no researcher. In *Participatory Research and Development for Sustainable Agriculture and Natural Resource Management: a resource book.*. no.1, pp.165–171.

World Bank. 2000 a. *Income poverty. The latest global numbers*. Available at http://worldbank.org/poverty/data/trends/income.htm (2008, December 8th).

World Bank. 2000 b. *World Development Report 2000, Consultation Draft*. World Bank: Washington, DC.

World Bank, 2008. *World Development Report 2008: Agriculture for Development*. World Bank Publications.

Zoundi, J.S., Hitimana, L. & Hussein, K. 2005. *The family economy and agricultural innovation in West Africa: Towards new partnerships*. SWAC: Paris.

Zoundi, J. S. & Hitimana L. 2006. *The Challenges facing West African Family Farms in Accessing Agricultural Innovations: Institutional and Political Implications.* SWAC: Paris.

Zweier, K., Anagho, & R., Moki, P. 1990. PAFSAT Trial Report. Bamenda.