# ANALYSIS OF THE PERFORMANCE OF AGRICULTURAL CO-OPERATIVE SOCIETIES IN GANGOLA STATE: A CASE STUDY OF MICHIKA LOCAL GOVERNMENT AREA.

BY

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CERTIFICATION

This thesis titled "ANALYSIS OF THE PERFORMANCE OF AGRICULTURAL CO-OPERATIVE SOCIETIES IN GONGOLA STATE: A CASE STUDY OF MICHIKA LOCAL GOVERNMENT AREA" by Jongur, Abubakar Umaru meets the regulations governing the degree of Master of Science of Ahmadu Bello University, Zaria, and is approved for its contribution to scientific knowledge and literary presentation.

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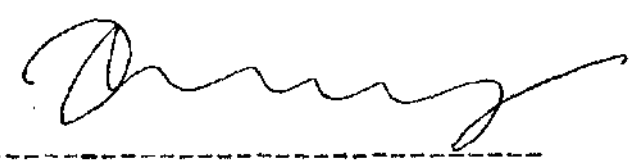
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# DECLARATION

The author hereby declares that the whole of the work now submitted for the Master of Science Degree (Agricultural Economics) of Ahmadu Bello University is the result of his research, except where reference is made to published literature and duely acknowledged. It has not been part of any presentation for any other qualification.



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Date: 24th February, 1994

The above declaration is confirmed

Professor C.I. Agbo

Date:

DEDICATION

This study is dedicated to my children, Hayatudeen Abubakar and Hajja Hauwa Abubakar, my parents, Alh. Umaru Jongur and Mrs. Fadimatu U. Jongur, my wife, Mrs. Fadimatu Abubakar, and to my late elder brother, Ahmed Umaru Jongur, for their unrelentless support and encouragement in my education.

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TABLE OF CONTENTS


| Content | | Page |
|---|---|---|
| Certification: | | i |
| Declaration: | | ii |
| Dedication: | | iii |
| Acknowledgement: | | iv |
| Table of Contents: | | vi |
| List of Tables: | | x |
| List of Figures: | | xii |
| Abstract: | | xii |
| CHAPTER I | | |
| 1.1 | Background: | 1 |
| 1.2 | Co-operative Behaviour as a Co-operative Game: | 1 |
| 1.3 | Objectives of Agricultural Co-operative Society in Gongola State: | 3 |
| 1.4 | Objectives of Gongola State Group Farming Societies: | 5 |
| 1.5 | Objectives of Gongola State Co-operative Credit and Marketing Societies: | 5 |
| 1.6 | Problem Statement and Justification for the Study: | 7 |
| 1.7 | Objectives: | 9 |
| 1.8 | Hypotheses: | 9 |
| CHAPTER II: | LITERATURE REVIEW | |
| 2.1 | Theories of Agricultural Co-operatives: | 11 |
| 2.2 | Co-operative Movement in Nigeria: | 12 |
| 2.3 | Types of Co-operatives: | 18 |

| | | Page |
|---|---|---|
| 2.4 | Problems of Agricultural Co-operative in Nigeria: :::::: :::::: :::::: | 21 |
| 2.5 | Impact of Agricultural Credit on Farmers:::::: | 23 |
| 2.6 | Small Holder (Farmer) Loan Scheme in Nigerian Agricultural and Co-operative Bank (NACB): :::::: :::::: :::::: | 26 |
| 2.7 | Performance of Nigerian Agricultural and Co-operative Bank (NACB) Small Holder (Farmer) Loan Scheme: :::::: :::::: | 27 |
| 2.8 | Performance of Agricultural Credit Guaranteed Scheme Fund (ACGSF): :::::: | 32 |
| 2.9 | Theoritical Framework of Regression Analysis :::::: :::::: :::::: :::::: | 35 |
| 2.9.1 | Production Function Approach: :::::: :::::: | 36 |
| CHAPTER III | | |
| 3.1 | Area of Study: :::::: :::::: :::::: | 38 |
| 3.2.0 | Sampling Technique and Data Collection: :::::: | 42 |
| 3.2.1 | The Selection of Agricultural Co-operatives Society (ACS) (Co-operators) and Non-Agricultural Co-operatives Society (Non-ACS) Non-co-operators: ::::::: ::::::: :::::: | 42 |
| 3.2.2 | The Selection of ACS (Co-operators: :::::: | 43 |
| 3.2.3 | The Selection of Non-ACS (Non-Co-Operators) :::::: :::::: :::::: | 44 |
| 3.3 | Analytical Technique: :::::: :::::: | 44 |
| 3.3.1 | Simple Descriptive Statistics: :::::: :::::: | 44 |
| 3.4.0 | Specification for Regression Models: :::::: | 46 |
| 3.4.1 | Budgeting Approach: :::::: :::::: :::::: | 47 |
| 3.4.2 | Declining Balance Methods: :::::: :::::: | 48 |
| 3.4.3 | Specification of Variables: :::::: :::::: | 48 |
| 3.4.4. | Measurement of Input-Output Data: :::::: | 50 |

| | | Page |
|---|---|---|
| CHAPTER IV | | |
| 4.0 | Gongola State Agricultural Co-operative Societies: :::::: :::::: :::::: | 53 |
| 4.1 | Organizational Structure of Agricultural Co-operative in Gongola State: :::::: :::::: | 53 |
| 4.2 | The Co-operative Body: :::::: :::::: | 57 |
| 4.2.1 | Committee Members: :::::: :::::: :::::: | 57 |
| 4.2.2 | The Secretary/Manager: :::::: :::::: | 57 |
| 4.2.3 | The Assistant Registrar of Co-operative Society: :::::: :::::: | 58 |
| 4.3 | Michika Agricultural Co-operative Society: :::::: :::::: :::::: :::::: | 58 |
| 4.3.1 | Origin and Brief History: :::::: :::::: | 58 |
| 4.3.2 | The Objectives and Functions of Michika Co-operators: :::::: :::::: :::::: | 58 |
| CHAPTER V | | |
| 5.0 | Data Analysis and Discussion of Results: ::::: | 60 |
| 5.1.0 | Socio-Economic Characteristics of the Respondents: :::::: :::::: :::::: | 60 |
| 5.1.1 | Age: :::::: :::::: :::::: :::::: | 60 |
| 5.1.2 | Farm's size : :::::: :::::: | 61 |
| 5.1.3 | Educational Levels of Respondents: :::::: | 62 |
| 5.1.4 | Sources of Farm Inputs Used: :::::: :::::: | 63 |
| 5.2 | Sources of Credit: :::::: :::::: :::::: | 64 |
| 5.2.1 | Agricultural Co-operative Market and Marketing: :::::: :::::: :::::: | 66 |
| 5.3.1 | Impact of Co-operative Societies in Gongola State: :::::: :::::: :::::: | 67 |
| 5.3.2 | Evaluation of Farm Size and other variables on the Amount of Credit taken: ::::: | 68 |
| 5.3.3 | Impact of co-operatives on the Farmers' Income: :::::: :::::: | 71 |

| | | Page |
|---|---|---|
| 5.3.4 | Comparison Between the Income of Co-operators and Non-Co-operators: :::::: | 72 |
| 5.3.5 | Strategies for Effective Administration of Co-operative Credit and Repayment Abilities: :::::: :::::: :::::: | 73 |
| 5.4.1 | Credit and Other Factors Affecting Net Farm Income of Michika Small Farmer Co-operatives: :::::: :::::: :::::: | 75 |
| 5.4.2 | Credit and Other Factors Affecting Net Farm Income of Michika Non-Co-operators: :::::: | 79 |
| 5.4.3 | Relationship Between Co-operative Credit, Net Farm Income and Other Farm Inputs: :::::: | 82 |
| 5.4.4 | Influence of Credit on Farmers Choice of Enterprises: :::::: :::::: :::::: | 84 |
| 5.4.5 | Shortcomings of Agricultural Co-operatives in Gongola State: :::::: :::::: :::::: | 86 |
| CHAPTER VI | | |
| 6.0 | Summary, Conclusion and Suggestions for Further Studies: ::::::: :::::: :::::: | 89 |
| 6.1.1 | Summary of Findings: :::::: :::::: :::::: | 89 |
| 6.1.2 | Conclusion: ::::::: :::::: :::::: | 92 |
| 6.1.3 | Suggestion for further Studies:::::: :::::: | 94 |
| | References: ::::::: :::::: :::::: | 95 |

LIST OF TABLES


| | | Page |
|---|---|---|
| 2.1 | Nigerian Agricultural and Co-operative Bank (NACB) Limited Small Holder Direct Loan Scheme Gongola State Statistics (1981-1990): | 31 |
| 2.2 | Loan Funds not given to only co-operative Societies: :::::: :::::: :::::: | 34 |
| 3.1 | Conversion Rate of Man, Woman and Children's Day of Work: :::::: :::::: | 52 |
| 5.1 | Age of Respondents: :::::: :::::: :::::: | 61 |
| 5.2 | Farm size of Respondents: :::::: :::::: | 62 |
| 5.3 | Educational Level of Respondents: :::::: | 63 |
| 5.4 | Sources of farm Inputs used by Respondents::: | 64 |
| 5.5 | Source of Credit used by Respondents: :::::: | 65 |
| 5.6 | Farm Structures of Respondents: :::::: | 68 |
| 5.7 | Estimated regression for co-operators use of Credit (Model I): :::::: :::::: | 69 |
| 5.8 | Correlation Coefficient for the Model I: ::::: | 71 |
| 5.9 | Net Farm Income Distribution of Co-operators and Non-Co-operators: :::::: :::::: | 73 |
| 6.0 | Regression Statistics on Net Farm Income (Model II) using Log-linear Function for Co-operators): ::::: :::::: :::::: | 77 |
| 6.1 | Estimated Regression for Non-co-operators using Log-linear function: :::::: :::::: | 81 |
| 6.2 | Correlation Coefficient for the Model II (Non-co-operators): :::::: :::::: :::::: | 82 |
| 6.3 | Correlation Coefficient for the Model II (Co-operators): ::::: :::::: :::::: | 83 |
| 6.4 | Farmer's Choice of Farm Enterprises: :::::: | 86 |

LIST OF FIGURES


| | | Page |
|---|---|---|
| 3.1 | Administrative Map of Gongola State: :::::: | 40 |
| 3.2 | Michika Local Government Area: Map of the Study Area: :::::: :::::: :::::: | 41 |
| 4.1 | The Three-Tier Structure of Co-operative Organization in Gongola State: :::::: | 53 |
| 4.2 | Michika Co-operative Office Administrative Chart: :::::: :::::: :::::: :::::: | 54 |
| 4.3 | The Organizational Chart of Gongola State Co-operative Society: :::::: :::::: | 56 |
| 4.4 | Net Farm Income Distribution of Co-operators and Non-Co-operators Farmer's: :::::: | 74 |

## ABSTRACT

This study was carried out to evaluate the performance of agricultural co-operatives in improving the output of peasant farmers in Gongola state.

Seventy (70) rural farmers comprising of co-operators and non-co-operators were selected at random for the study.

The result of the study indicated that 34. 28 percent and 11.43 percent of co-operators and non-co-operators respectively earned net farm income of less than N1,000.00 while 2.8 percent and 5.71 percent respectively earned net farm income of between N 1,000.00 and N3, 500.00.

The impact of credit was not significant to the net farm income of co-operators but significant to those of non-co-operators at 99 percent level of probability.

The result further showed that hectarage of 8.2 and 5.6 were cultivated by the co-operators and non-co-operators respectively, but the difference in hectarage was not significant at 95 percent level of probability.

It is also revealed that co-operators earned more net farm income than non-co-operators with avera'ges of N848.00 and N766.96 respectively.

Regression results identified farm size and family labour as common factors influencing the net farm income of both categories of farmers, while capital equipment was only specific to the net farm income of co-operators, and hired labour to that of non-co-operators.

The study finally showed that while the co-operators depended entirely on government and unions for their input supply, 80 percent of the non-co-operators got theirs from the market.

The following recommendations are made from the study:

(a) the need for planners of agricultural co-operatives to ensure proper design and implementation of co-operative programmes;

(b) the need for adequate transportation system and storage facilities for rural farmers;

(c) the provision of farm inputs to co-operators at subsidized prices;

(d) the provision of efficient marketing system that will guarantee high producer prices to rural farmers, and

(e) informative system of cooperative activities through efficient extension services.

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 Background

One of the most effective vehicles for organizing rural production is the "Co-operative" (Olayide, 1981). In Nigeria and other developing countries, governments have actively encouraged co-operatives in order to promote social and economic changes desirable for attainment of national development.

### 1.2 Co-operative Behaviour as a Co-operative Game.

An agricultural co-operative represents an attempt by farmers, each of whom has a different set of resources and perhaps goals, to integrate vertically into the food and fibre system. The co-operative involves more than just farmers but an elected board of directors, hired management, organized labour, government officials, bankers and others may be involved in decisions by the co-operative, and each group has its own preferences on how the co-operative should behave.

Although the preferences of the different participants may differ in some cases Co-operative participants, may still face two interrelated questions:

(a) Can the participants identify and agree upon a set of objectives yielding benefits of joint action?; and

(b) Can an allocation of the benefits and costs of this action be found that maintains the incentives of each group of participants in the activity ?

"The mere existence of potential gain does not necessarily mean that they can be realized. There is the problem of building an organization with sufficient cohesion to withstand the disintegrating forces arising out of conflicting interests" (Helmberger and Hoos, 1965).

Regarding the allocation of benefits and costs in a co-operative game, one would focus attention on the following questions:

(a) how do the policies of a co-operative regarding the allocation of benefits and costs among the membership affect the pay offs to various potential coalitions within the co-operative? and

(b) how do these pay offs affect the willingness of various coalitions to remain active in the co-operative as opposed to taking their business elsewhere?

According to AERLS (1983), agricultural co-operative exists when a number of farmers come together and pool their land and other resources together to ensure the inflow of more capital and better use of improved farm equipment. From this definition, it would appear that agricultural co-operative societies' (ACS) effort is more restricted to agricultural production, but it may also be applied to solving almost all of the farmers' socio-economic problems arising from banking, insurance, housing,

transportation, distribution of consumer goods, crafts, marketing and other numerous activities.

Agricultural co-operative societies are also used to mobilize the savings of farmers. This is because there are not enough rural banks to cater for farmers' needs. Therefore, through agricultural co-operative societies (ACS), farmers are able to "pool" their resources of land, labour implements, livestock and carry out production on the basis of joint ownership and management.

Agricultural co-operatives have been introduced in almost all the states of Nigeria. In spite of the potential advantages of such co-operatives, their growth rates have been rather slow. For instance, in 1972, group farming societies accounted for less than five percent of the membership of rural co-operatives in almost all the states of the federation (Osuntogun, 1980).

## 1.3 Objectives of Agricultural CO-operatives Society in Gongola State.

Co-operatives are often found to be a controversial part of a nation's development policy. The supporters usually declare that co-operatives have proven their usefullness and should be given a role to play, while the detractors claim that government funds invested in co-operative administration and subsidies are wasteful. The disagreement often stems from a different understanding of the objectives of co-operatives. The detractors take

their lead from the American view that frequently describes a co-operative as "just another form of business". As such, co-operatives stand or fall on their ability to compete effectively with private businesses without government support (King, 1974).

In countries with an educated and economically aware population, democratic co-operatives can be expected to be competitive but this should not be necessarily expected in less developed countries (LDCs) whose populations are in a transitional stage between tradition and modernity.

The essential first step in a critically constructive look at co-operatives must be to arrive at an explicit statement of the objectives. Only then can we begin to measure the performance of co-operative and consider ways of improving it. Below is a list of the objectives of Gongola State Co-operative Thrift and Credit Society Limited:

(i) to create funds to be lent to its members for necessary or productive purposes;

(ii) to provide facilities for regular thrift savings by the members without such savings being removed from their control;

(iii) to encourage among its members the spirit and practice of thrift, mutual help and self-help based on the principles of co-operative, and the promotion of co-operative spirit among the members, to work for the improvement of local educational and living standards; and

(iv) to encourage the development of the co-operative movement in Gongola state of Nigeria.

1.4 Objectives of Gongola State Group Farming

(i) to acquire land in the name of the society for the purpose of carrying out agricultural operation on a group basis;

(ii) to adopt better agricultural methods based on a planned economy;

(iii) to arrange sale of the produce of the land acquired by the society;

(iv) to purchase equipment, implements and other agricultural requirement that may be necessary in order to carry out the above objectives;

(v) to make necessary arrangements with outside bodies or agencies in order to carry out the above objectives; and

(vi) to undertake any agro-allied business within its financial resources.

1.5 Objectives of Gongola State Co-operative Credit and Marketing Societies.

The main objective is to increase the incomes of its members through the following functions:

(i) to organize the sales of produce in favour of producers;

(ii) to encourage members to adopt improved varieties and adhere to expert advice on storage of produce;

(iii) to provide savings facilities;

(iv)

(iv) to assist members in acquiring loans at lower interest rate;

(v) to allot (a portion) shares and create credit facilities on behalf of the members;

(vi) to expose them to modern farm practices/ management;

(vii) to repay the loan on time to benefit members;

(viii) to explore all avenues in order to motivate farmers on the need to be prudent, self-reliant and give mutual assistance to other members; and

(ix) to enlighten members on the essence of co-operatives between and among members, to organize literacy campaign so as to achieve mass/extension education; to improve the living standard of the people and to educate members on the need to set-up or form co-operative societies in Gongola state.

In summary, the primary objectives of Gongola state on Agricultural Co-operatives are:

(i) to evolve a virile system which will facilitate their practice and use in agriculture as an effective vehicle for social and economic development at grass-roots level throughout the state; and

(ii) to use agricultural co-operative as a machinery for rural transformation and development which will affect the various aspects of rural life.

## 1.6 Problem Statement and Justification for the Study

The various Nigerian governments (Federal and state) recognised the important role of agricultural credit in small farm development and have therefore set up Nigerian Agricultural and Co-operative Bank (NACB) in 1978 as an apex to small-holder co-opperatives. The major objective of the government efforts in credit administration to the small farmers is to attain self-sufficiency in food and fibre production which will increase farm income (Osuntogun, 1974).

It has been usually pressumed that the increased availability and improved access to formal credit by the small farmers will facilitate the adoption of improved techniques of production and thus act as an accelarator of increased productivity and ultimately boost farm income.

In Gongola state, credit facilities for small farmers are very poor and limited because, among other things, the small farmers are unable to offer acceptable securities. Consequently, the peasant producers are caught in a vicious circle, from which many cannot escape without some outside financial assistance (Nurkse, 1963).

The major concern of this study is to diagnose the reasons for the low level of production of the farmers. These farmers cultivate about 90 percent of the agricultural land area and derive virtually all their income from farming (Osuntogun, 1980).

The functions of the Agricultural Co-operative Society (cooperators) include the sourcing and disbursement of loans to members to stimulate agricultural production since it is a farmers' organization.

Unfortunately, experiences from previous studies by Ernest (1972), Osuntogun (1972), Okigbo (1979), and Ijere (1986) show that co-operative organizations have not performed effectively due to organizational problems centred around management, finances and operational activities.

Gongola state farmers are yet to feel the impact of agricultural loans, and therefore, the group lending approach is an attempt at resolving the issues of credit availability to the small farmers co-operatives.

Government agricultural policy makers formulate policies that affect not only the flow of funds and terms on which funds are made available, but also the dispensation of such funds (Falusi, 1973). Unfortunately, however, "such policy makers have, in almost all the cases, no idea of the extent to which credit is making the desired impact on the farmers' output and productivity" (Auchan, 1986). An impact study of this nature is thus justifiable because it will aid policy makers in determining the right amount to advance to farmers. For, in the words of Agbo (1989), "too much of credit may be as harmful as too little of it".

Finally, I hope that the findings of this study will enable financial institutions know how to tie their funds to viable agricultural project in order to avoid

high rate of loan default and increase the supply of loanable funds.

1.7 Objectives of the Study.

The broad objectives of this study is to investigate the effectiveness and efficiency of agricultural co-operatives society as a way of improving agricultural output and employment in Gongola state.

The specific objectives of this study include the following:

1. to examine the organization and structure of ACS in the state;
2. to determine the effectiveness and efficiency of using co-operative organization in supplying credit to the farmers;
3. to determine the impact of agricultural co-operatives on the participating farmers' income;
4. to compare the incomes of ACS with those of non-ACS;
5. to determine the major problems of ACS (co-operators); and
6. to suggest strategies for effective administration of agricultural co-operative societies and for the improvement of the repayment ability of the co-operative members.

Hypotheses

Three hypotheses were tested for this study:

1. that the co-operative organizations are efficient;
2. that there is a relationship between the amount

of loan and income of ACS loan receipients;

3. that the co-operative organizations have made impact.

# CHAPTER TWO

## 2.0 REVIEW OF LITERATURE

### 2.1 Theories of Agricultural Co-operatives.

A more recent review of the theoretical literature on co-operative enterprise in agriculture concludes: "The formal treatment of agricultural co-operation is currently imp overished by a long period of neglect" (Levay, 1983). The years between the early 1940s and the early 1960s were a period of creative ferment among co-operative theorist, the most durable products of which were several variants of the model of the profit-seeking firm from neoclassical price theory, with the profit maximization objective replaced by other simple maximizing criteria (Enke, 1945; Helmberger and Hoos, 1962).

Such models are capable of generating hypotheses about co-operative price and output levels, but more comprehensive theoretical analogues are necessary to investigate other important aspects of the modern, complex co-operative corporation in agriculture. It is the development of these latter that has suffered neglect.

Also, the provision of capital (in the form of credit) to the small holder farmers has become a very important issue. A report by the FAO (1973) pointed out the problems of meeting the credit needs of small-scale farmers are acute, both in the developed and developing countries. Inability to offer adequate security or collateral, high cost of administering a large number of loans, and long

distances over which bank officials have to travel to establish contacts with small farmers in isolated areas are some of the factors which have strongly militated against the availability of credit facilities to small farmers.

## 2.2 The Co-operative Movement in Nigeria.

Co-operatives started in Nigeria in 1934 after the submission of the Strickland Report on the "Introduction of Co-operative Societies in Nigeria". After this, co-operative movements in Nigeria were organized on regional basis and this was the case until 1967. With the creation of states, each state now has its apex co-operative organization which serves as umbrella for smaller and functional co-operative unions and societies.

Olayide (1975), has classified seven main functional types of co-operatives, namely, production, supplies, credit, marketing, processing, service and multipurpose. Olayide (1975) further classified co-operatives on the basis of linked organizational framework, such as primary co-operative societies, secondary co-operative societies and apex organizations, thus giving rise to a pyramidal form.

Osuntogun (1974), identified agricultural activities as the most predominant co-operative activity in former Western Nigeria. He further classified them into produce marketing societies, rural credit societies, fish farming co-operatives and group farming societies. Ijere (1975) also stressed the importance of agricultural co-operatives to the attainment of self-sufficiency in fibre and food production. In the same vein, Famoriyo (1977) went further and classified

co-operatives as:

(a) Agricultural co-operatives;

(b) Consumer co-operatives;

(c) Industrial or Craftmen/Artisan co-operatives;

(d) Thrift and credit co-operatives; and

(e) Multipurpose co-operatives.

Other areas of co-operatives include distributive trade, craft and building.

Osuntogun (1973) reported that government involvement in agricultural lending in Nigeria dated back to 1930 in the former Northern Nigeria, when the Native Administration (NA) gave loans for mixed farming and to stimulate adoption of improved technology in the region. The first nationwide credit institution was in 1946 when the Nigerian Local Development Board was established. The board was dissolved in 1949 because it lacked sufficient funds to discharge its duties. This was replaced by three Regional Development Boards for the West, East and Northern regions. This was again dissolved in 1955 (Adeyomo, 1982).

In 1963, the Fund for Agricultural and Industrial Development (FAID) was established in the former Eastern Nigeria to serve as a source of credit for small-scale private agricultural and industrial activities.

Similar programmes were organized in other parts of the country, such as the former western Nigerian Finance and Co-operative Bank which took over the administration of credit to farmers from 1955 to 1964. The former Mid-western Region Finance Corporation catered for the small farmers in the area.

In the Northern region, the administration of credit was placed in the hands of the co-operative registrar, under whom the government guaranteed loans from Barclays bank to cover pre-season loans to farmers. In 1965, the Northern Regional Development Corporation, now New Nigeria Development Company (NNDC) took over the granting of loans to farmers (Ijose and Abaelu 1973, Osuntogun, 1973).

Osuntogun (1973) noted that the operation of these formal credit institutions have been unsatisfactory and unsuccessful. Problems cited include cumbersome and time consuming procedure in loan approvals, over-centralization and dependence on government ministries for the processing of loan applications in most institutions. Bribery, political interference, repayment problems and land tenure problems were also cited.

Other views of early credit institutions attributed their poor performance to failure to reach a sizeable number of small farmers, unacceptable default, complex application processing procedure and the inability to provide loans when most required by the farmers (Famoriyo and Nwagbo, 1981).

It was therefore against this background and the need for a reliable and adequate source of credit to the agricultural sector, that Nigerian Agricultural Bank (NAB) was incorporated in 1972 and formally launched in March 1973. It commenced operations in August 1973 under the management provided by IBRD/UNDP technical assistance. In 1977, the management of the bank was fully Nigerianised and in 1978 its name was

changed to Nigerian Agricultural and Co-operative Bank (NACB) to highlight the role of the bank for financing viable co-operative projects. The bank has the following objectives:

a) to promote agricultural production and rural development, and

b) to improve the incomes and quality of life of Nigerian's rural population (NACB , 1987).

Also, having realised the reluctance of the commercial and merchant banks to extend credit facilities to farmers due to high default rate, high risk, lack of adequate collaterals on part of the small farmers, and the high administrative cost, the federal government, in 1977, established the Agricultural Credit Guaranteed Scheme Fund (ACGSF). The purpose of the scheme is to provide guarantee in respect of loans granted by commercial banks for agricultural purposes with the aim of increasing the level of bank credit to the agricultural sector.

Other sources of formal agricultural credit include those extended by the World Bank Sponsored Integrated Agricultural Development Projects (ADPs), various state ministeries of agriculture, the graduate of agriculture loan scheme in Gongola state and the National Directorate of Employment (NDE).

Ijere (1980) revealed that by 1975, there were 6,000 primary co-operative societies in Nigeria with a membership of 45,000, federated in 180 unions in the country and made up of mostly agricultural consumers, crafts and thrifts

and loans co-operatives. The report further showed that agricultural co-operatives concentrated on the marketing of export crops such as cocoa, groundnuts, cotton and activities in the food crops sub-sector. To back up this assertion, Ijere (1980) quoted the guidelines for the Third National Development Plan, 1975-1980, which stated:

> "Co-operative marketing has not been extended into the area of domestic food crops like rice, maize, groundnut, nor has co-operation by farmers. These are areas of considerable potential into which this form of organization can be extended for the benefit of the members and country".

Ijere (1980) also reported that co-operative thrift and loans have greatest impact in the former Eastern states and among the urban dwellers of large cities and big towns, while consumer co-operatives had the greatest impact in former western states, Lagos, Kano and former North Eastern state, in the area of retails business services by the co-operatives supply association.

The Kwara state 1970 - 1974 Development Plan revealed that "Co-operatives in the state have served as effective agents for bringing small producers together not only for mobilizing capital to process and market their products, but also for purchasing their supplies, obtaining technical assistance and other related facilities".

Osuntogun and Olufokunbi (1980) analysed the performance of marketing co-operatives in Bendel state of Nigeria during the 1976/77 cropping season. Their survey covered ninety five percent randomly selected primary societies in seven local government areas of Bendel state. The result on the need for information was low, low share capital marketing turn over skewed to the right while the distribution of gross margin per ton of product handed skewed to the left. The value of deposits and the value of loan advanced were very low with the value of unpaid overdue loan high.

Also the work carried out by Olowe (1976) on the factors affecting co-operative's supply of farm inputs in the former western state of Co-operative Society has been a major public policy effort aimed at "providing small-farmers with institutional access to new farm inputs, new technical agricultural information, the financial system and the market". The low membership (covering less than eight percent of the potential target in the currently), which the institution has so far achieved, has raised doubts regarding its capability of fulfilling this purpose.

The study by Olowe (1976) further sought to evaluate the farm input supply services of the existing co-operatives in the western state of Nigeria and also determined the potential that existed for increased farmers' use of services rendered.

## 2.3 Types of Co-operatives.

Khusro and Agarwal (1961) define a standard co-operative farm as a unit of operation in which several individuals or families voluntarily contribute land and other productive assets, work and manage these lands jointly and get a payment for their work in proportion of their efforts, and a profit or dividend in proportion to the property they contributed.

The fundamentals of genuine co-operation then are:

i. voluntariness in associations;

ii. managerial and manual work; and

iii. a payment for effort and a payment for property.

It can be seen then that a co-operative farm comes into being when peasants willingly decide to work their land jointly. No external agency forces them into an association for if it does, the principle of voluntariness and the democratic nature of the organization will be no more.

It is a different matter, however, if an external agency puts attractions and incentives in the way of prospective co-operators, and actuated by incentives peasants decide their own to form a co-operative association. The role of the government in genuine co-operative farming is confined merely to the creation of an atmosphere conducive to co-operation and to make the provision of external economies.

Also, a usable definition of co-operative, following Erdman and Tinley (1957), may be given as:

> "A co-operative association is a voluntary organization of persons with a common interest, formed and operated along democratic lines for the purpose of supplying services at cost to its members, who contributed both capital and business".

This definition embraces the main features of a co-operative association as enumerated in Khusro and Agawal's (1961) definition.

Co-operative credit is mainly used for short-term investment while the state credit long-term investment are made feasible, including investments which are needed for the improvement of infrastructure but do not directly earn profit. A typical example of taccavi loan in India which is a long-term loan to agriculturalist for the permanent improvement of land, while short and long-term for the current agricultural needs.

These are often provided by government through local authorities. Co-operative credit are not often only restricted to the funds of the societies built up by thrift and savings of the members. Through the establishment of central and apex banks the regional or inter-regional exchange of credit means may be ensured (Schiller, 1969).

Apart from the standard co-operatives Galeski (1977) outlined below categories as sub-co-operatives:

a) those created for ideological rather than economic purposes;
b) those created for the benefit of landless families;
c) those organized for national socio-economic purposes; and
d) those organized by farmers to achieve economies of scale.

Examples of the above type include "Kibbutizin and Moshavim" (Israel), "Ejdos" (Mexico), "Kolkhozy and Groupements Agicoles" (China).

Galeski (1978), outlined the effect of natural conditions and resources, socio-economic and socio-cultural system on collective farming following a previous study on collective farming. Examples were given on collective farming in Yuogoslavia, the USSR, Israel and China, and the future rate of this system in economic development were assessed.

Dicke (1978) analyse the appropriateness of a group farm as an institution. The group farms was based on two main areas of research and it attempted to provide guidelines for a more systematic approach to the introduction of and or support for appropriate institutions in the developing world, and the characteristic of group as institutions. The main hypothesis tested were:

a) group farms were likely to improve present farmer and administrator dissatisfaction with the establishment institutional structure;
b) the government was likely to view groups as a more efficient way of servicing the peasant sector, a way of getting the need for change more rapidly accepted, and benefits more equally distributed.
c) farmers would have improved access to government services and inputs;

d) problems would arise over conflicting goals of group and government; and

e) incentives would be crucial in the early stages.

Three case studies were conducted in the state group farms in the Gusau area. Benefits were found in access to government services and inputs. However, farm work well as extension tool, idealy there should be two groups in each village area, to include outside farmers. Optimum group size for extension purposes are usually 15 or more group size might usefully combine over inputs.

Chidebelu and Isiogugu (1980), revealed that a co-operative group farming scheme (CGFS) was adopted in the defund North Eastern state in 1974 and has made a positive impact on the state (Borno), especially among the co-operative farmers. However, by 1979 only fifty percent of the planned societies had been established. They further indicate the need for a comprehensive programmes of co-operative education among the small holders, using most local languages and dialects and incorporating local and religious leaders. The study also recommends the investigation of the demise of thirty percent of the societies.

## 2.4 Problems of Agricultural Co-operative in Nigeria

If rural progress were to be achieved through the aegis of co-operatives, the main distress problems of modern co-operatives, must be carefully stated, regorously tackled and solved to eliminate and/or minimize their hazards. Five of these problems according to (Olayide, 1981) include the following:

First is the problem of management. This problem centres round the low salaries and emoluments usually paid to managers and other executive officials of the association. Patrons are usually unwilling to pay high salaries and this frequently leads their services very cheap management which is nothing but efficient. Other problems include the recruitment of competent staff as well as staff training.

Second is the problem of smallness. The small size and dispersed nature of rural settlements necessarily imply growth of association with low volume of business. The Solution to this problem lies in the effective co-ordination and organization of co-operatives through integration of the activities and these are:
(a) independent local associations, (b) regional or state central association, (c) regional or state federated associations, and (d) national federated association into a tier system with effective linkages.

Third is the twin problem of the loss of autonomy and efficiency that is involved in the use of co-operatives by governments of developing countries. These hazards arise whenever co-operatives are organized simply as arms of state governments without due regard to their private role in the rural economic system.

Fourth is the problem of capital which is a perennial source of concern in view of the inherent inflexibility of co-operatives in their capital accumulation processes.

There are the consequent frustrations in matters of par stock, in active members, and lack of security trading.

Fifth is the problem of seemingly growing conflict between co-operatives and rural family-farm and/or rural individual properietorship.

In summary the world over faces certain basic problems but the problems seem more acute in respect to developing countries and, especially Gongola state. It is the intensity of the problems and the degree to which they have been solved that determine the success or otherwise of a co-operative society, unions or movement.

Problems of co-operatives in Gongola state include the following;

a) lack of patronage;

b) lack of good leadership and management,

c) lack of capital;

d) low level of education of members;

e) lack of well informed guidance; and

f) lack of storage facilities and marketing outlets.

## 2.5 Impact of Agricultural Credit on Nigerian Farmers

Any agricultural credit policy is directed towards increase in the major staple food and surpluses for export i.e. "self-sufficiency in food production".

Palmer and Ojo (1981) view that livestock and fisheries subsectors have since 1975 recorded an impressive growth rates in agriculture. This was because, the two subsectors have benefited from the agricultural credit schemes.

Also from the loan amount granted under the ACGSF in 1978 and 1980, poultry production accounted for 50 percent.

Stickley (1975) in studying the effect of short-term loans at harvest time, observed that credit was capable of increasing and the potential for accumulating savings also existed, provided that farms were large enough.

Mobayo (1987) assessed the impact of credit on small farmers income in Oyi Local Government Area of Kwara state using regression models to compare borrowers with non-borrowers. His results indicated that credit had a positive effect on the farmers' incomes.

Ilebami (1983) used cross-sectional data on borrowers and non-borrowers to study the impact of credit on small-scale farmers in Ondo state, and concluded that:

a) borrowers have larger farm than non-borrowers, and
b) operating expenses and investment per hectare were higher among borrowers than non-borrowers.

Also Auchan (1986) used input demand function to analyse the impact of institutional agricultural credit on the farm size, total output and adoption of new technology by farmers in Funtua Local Government Area of Katsina state. The researcher's general proposition was that the demand for a particular farm input by a borrower depend partly or wholly on borrowed funds and other explanatory variables such as years of formal education, non-farm income, farm size, value of assets and the gross farm income in the proceeding year.

The basic tenets of any agricultural loan are as follows:

a) every loan should be production oriented and should result in increase production;

b) loans should be incremental income generating;

c) every loan that goes in must result in creation of employment potential, and

d) in view of the fact that loans are production oriented and result in incre mental income generation, they should therefore, be self-liquidating.

Thus a thorough assessment of public and private sector role in agricultural finance should involve, not only a review of efforts to mobilize resources, but also an evaluation of the performance of the schemes.

Mohammed (1981) reported that out of the ₦4,130 million released by the commercial banks during the 1978/79 fiscal year, only ₦258.5m or 6.5 percent went to agricultural sectors. Also, out of the ₦4,729 million released by credit institutions during the 1979/80 fiscal year only ₦308.5 or 6.5 percent went to agricultural sectors, which shows an increase of 0,5 percent on the government target for the year.

However, Osuntogun and Oludimu (1981) view that from the total loan amount request of ₦32.8 million during the 1978/79 fiscal year, only ₦4.2 million or 12.8 percent was actually approved. From the loan amounts only 66.36 percent was actually disbursed, which shows 8.5 percent loan received by the farmers compared to 1977, when 24,878 farmers benefited from the loan scheme.

Also 18.31 benefited in 1978 out of the 2.8m farmers in Ondo state. Reasons given for the low coverage was inadequate of loanable funds and personnel problems.

2.6 Small Holder (farmer) Loan Scheme in Nigerian Agricultural and Co-operative Bank (NACB).

The Nigerian Agricultural and Co-operative Bank (NACB) limited, which is an apex development financial institution is set-up to extend agricultural credit to the agricultural and agro-allied sectors of the Nigerian economy. Any project in these sectors could be assisted by way of loans so long as the project for which assistance is being sought could satisfy the following general lending conditions:

(a) the aims and objectives of the project are not in conflict with the laws, bye-laws or regulations of any government in the country;
(b) it must be economically desirable i.e. it must be of some value in the agricultural and general economic development of the country;
(c) it must be commercially viable by showing that it would make satisfactory financial returns on investments and be able to generate sufficient cash flow to service the loans in accordance with the agreed terms and conditions of the loan.

NACB Limited has many loan schemes and each scheme is specifically designed to take care of the various requirements of a particular borrower. However, the largest and the most important sector of the country's agricultural production for nowand for the foreceable future is the small farmer.

The importance of the small scale farmer can be judged in the words of the National Policy Document for Nigeria:

> "It is estimated that over 90 percent of the total cultivated land in Nigeria is still in the hands of small scale farmers who also account for up to 90 percent of the total agricultural output. It is in recognition of this fact that the government will rely largely on the small scale farming strategy for the generation of incremental agricultural production necessary to meet the short fall in most agricultural commodities in Nigeria."

As an agricultural development bank, NACB has the duty to support this government policy and accordingly by 1989 the bank has been able to lent through its on-lending programmes a total of upwards of 600,000 farmers and to a total of 200,000 farmers through its Direct Small Holder Loan Scheme.

## 2.7 Performance of Nigerian Agricultural and Co-operative Bank (NACB) Small Holder (farmer) Loan Scheme.

The NACB's Small holder (farmer)loan was initiated by the Nigerian Agricultural and Co-operative Bank Limited on a pilot basis in 1981. By 1984 it was clear that the pilot scheme was a success in terms of both fund utilization by farmers for farming and loan recovery. As a result of the economic hardship in which the country found itself in 1984, and which led to large scale retrenchments in both the public and private sectors of the economy, the bank widened the scope of its direct small holders to take care of retrenched workers who wanted to take up farming as an

occupation.

Further to this, the widening of the scope took care of those still in employment in both the public and private sectors but who were interested in farming. In 1984, the volume of funds allocated to the scheme was increased to further test its viability and its efficacy in supporting the policy. By 1986, it was generally realised and acknowledge that this type of scheme of delivering credit to farmers directly by the bank is most beneficial. Accordingly commercial banks were directed to adopt the scheme.

The scheme is essentially a mechanism for delivering of credit designed to support our small farmers who are the pivot of our agricultural production and it involves the following elements:

(a) any farmer could obtain a loan of up to ₦10,000 thousand naira under the scheme;

(b) the requirement for collateral for the loan assistance is waived;

(c) all a farmer needs is to establish that he is resident in his locality or village;

(d) the applicant is a full-time farmer or substantially a full-time farmers;

(e) that the land on which he is farming belongs to him or belongs to his family;

(f) that there would be two guarantors of good standing in his village or locality who are prepared to guarantee his good behaviour and the loan to be given to him.

This scheme was designed to take care of the basic characteristics of the small scale Nigerian farmer which militate against his getting access to credit and other farm inputs. The characteristics are as follows:

(a) ignorance of availability of credit in the formal sector and an availability of improved farm inputs;

(b) his unwillingness to try new techniques which have the potential of increasing his production;

(c) lack of tangible assets and clear title of his farmland to pledge as security for the banking sector loans;

(d) small size farm holdings and therefore, small credit requirements;

(e) low utilization of modern agricultural production technique and therefore low productivity;

(f) little savings and low income from the farmer's toils on his farm;

(g) consumption - oriented production.

As a way of assisting farmers to overcome these obvious shortcomings to NACB has opened up about 267 representative offices at the local government level nation-wide to provide credit to farmers at grass-root level.

Finally, it must be emphasized that despite all these constraints the small holder farmer occupies a pre-eminent position in the agricultural economy of the country by the virtue of:

(i) his very efficient utilization of productive resources such as the labour, seeds and the farm equipment available within the static technology under which he operates;

(ii) his accounting for about 99 percent of the total of crops in Nigeria; and

(iii) his being the main producer of more than 98 percent of the food consumed in the country, with the exception of wheat.

There were about 26,343 small holder farmers who applied for the direct loan scheme of NACB between 1981 to 1990 in Gongola state, and only about 13,077 small holders farmers were successful for the loan which at period under reference (Table 2.1). Also, about ₦26,536,301 amount were disbursed to small holder farmers and ₦11,635,117.16 amount were repayed i.e. principal plus interest rate were repaid by Direct Small Holder Scheme.

Table 2.1: Nigerian Agricultural and Co-operative Bank (NACB) Limited Small Holder Direct Loan Scheme - Gongola State Statistics (1981-1990).

| S/No. | NACB Branch | No. of Application received | Loan Volume Applied for | No. of loans approved | Loan volume Approved | Amount Disbursed | Amount Repaid principal + Interest |
|---|---|---|---|---|---|---|---|
| 1. | Ganye | 576 | 1,364,000 | 841 | 2,867,100 | 3,096,487 | 1,880,291.86 |
| 2. | Yola | 25,343 | 48,899,251 | 12,236 | 22,844,871 | 23,439,814 | 9,754,825.30 |
| | Total | 25,919 | 50,263,251 | 13,077 | 25,711,971 | 26,536,301 | 11,635,117.16 |

Source: NACB Records (1991)

(i) Recovery rate calculated against amount due to about 60 - 70% This index is 94% in the livestock loans.

(ii) Amount disbursed is not due because of the gestation period of project concerned.

From the foregoing, it is apparent and conclusive that NACB has, by virtue of its national responsibility, seriousness and consistent dynamism, used the small holder scheme to place Nigerian small farmers on the centre stage of national recognition. The effective operation of the scheme in the past ten years has not only changed the course of the nation's agricultural history but has also changed the lives of men directly and indirectly. Directly because over 200,000 small scale farmers have joyfully benefited from the scheme and indirectly because their improved income and quality of life have had a multiplier effect on their environments. Besides, the operation of the scheme led to the creation of more jobs, more offices and more facilities, in the rural areas. Finally, it is hoped that with the strong determination of NACB, support of other finance houses, government and individuals, further pursuance of this scheme will one day bring Nigeria to the realisation of its avowed dream of self-sufficiency in food production.

## 2.8 Performance of Agricultural Credit Guaranteed Scheme Fund (ACGSF).

To show the dismal performance of the ACGSF, Atteh and Agbo (1988) showed that from 1978 to 1984, a total amount of loan granted under the scheme was only ₦2.2 million to some meagre 176 projects in Borno state, which at that period under reference represented about one percent of the national disbursement. Also between

1978 to 1988 the ACGSF has guaranteed loans of ₦537,619.3 from this amount the individual project got ₦269,442.0 (or 50.12 percent), while the co-operative projects got ₦251,139.7 (or 46 percent). With regards to loan amount, the co-operative societies got the least Ezeugoh (1989).

Some observations are discernible from this picture of performance. Bendel state got the highest amount of ₦64,490.9 (or 12 percent) guaranteed by ACGSF followed by Oyo state with ₦49,147.9 (9.14%) and Gongola state rank number twelve out of the former nineteen states with ₦21,161.1 (or 3.94 percent) Ezeugoh (1989), and Table 2.2. has shown.

Table 2.2: Loan funds not given to only Co-operative Societies.

No. and Amount of Loans guaranteed by ACGSF by states (1978 - 1988)

| States | No. | Percent of total | Amount (₦) | Percent of Total |
|---|---|---|---|---|
| Anambra | 3,941 | 6.91 | 34,394.4 | 6.40 |
| Bauchi | 5,405 | 9.48 | 24,823.4 | 4.62 |
| Bendel | 4,006 | 7.03 | 64.490.9 | 12.00 |
| Benue | 2,529 | 4.43 | 13,055.9 | 2.43 |
| Borno | 3,032 | 6.37 | 11,810.7 | 2.20 |
| C. River/ A. Ibom | 1,287 | 2.26 | 16.071.0 | 2.99 |
| Gongola | 2,057 | 3.61 | 21,168.1 | 3.94 |
| Imo | 1,476 | 2.59 | 23,719.2 | 4.41 |
| Kaduna/ Katsina | 6,918 | 12.13 | 46,421.9 | 8.63 |
| Kano | 1,969 | 3.45 | 27,853.5 | 5.18 |
| Kwara | 2,673 | 4.69 | 22,119.1 | 4.11 |
| Lagos | 1,098 | 1.93 | 48,411.1 | 9.00 |
| Niger | 4,226 | 7.41 | 18,422.0 | 3.43 |
| Ogun | 1,817 | 3.19 | 34,318.2 | 6.38 |
| Ondo | 1,607 | 2.82 | 24,186.9 | 4.50 |
| Oyo | 3,053 | 5.35 | 49,147.9 | 9.14 |
| Plateau | 2,691 | 4.72 | 20,335.1 | 3.08 |
| Rivers | 590 | 1.03 | 16,572.3 | 3.08 |
| Sokoto | 6,048 | 10.61 | 20,187.3 | 3.75 |
| Total | 57,023 | 100.00 | 537,508.9 | 100.00 |

Source: ACGSF Annual Reoports, Adapted from (Ezeugoh, 1989).

## 2.9 Theoritical Framework of Regression Analysis

In determining the effectiveness and efficiency of agricultural co-operative societies (ACS) organization, the impact this organization has on its members immediately comes to mind. The measurement of effectiveness can not be isolated from the operational efficiency of this organization. Efficiency of the co-operative organization is judged from the basic objective of this enterprise. Maximum efficiency of a co-operative is achieved if members are reaching their aims and aspirations to the degree that they desired. Difficulties may arise from the above because co-operations may have different effects on individual goals. This raises the question of 'how' to measure the degree of individual objective fulfilments.

Various techniques exist for productivity studies. Their application depends on the choice of the researcher who is normally constrained by the nature of the available data; resources and facilities available and the use to which the results are to be put. The common approaches are:

1. production function analysis;
2. linear programming analysis; and
3. farm budgeting analysis.

For the purpose of this study, the production function and farm budgeting approach were used, because the efficiency of a service organization is often determined by the analyses above. Though; they have some limitations like farms vary according to their gross farm income generated.

This gross farm income is a function of many factors like land size, inputs, etc. This makes it a better measure of size than any other single input measure. It is only a step further from the total physical output measure because the latter is multiplied by the price of output to obtain gross income.

2.9.1 Production Function Approach.

Production function is a mathematical way of describing the relationship between production of a given output and the factors affecting the production process. The production function has been the traditional tool for analysing problem of resource productivity and returns to scale.

A number of functional forms such as quadratic, linear, Cobb-Douglas, square root and spillman were possible in production function studies. For this study, the linear and Cobb-Douglas production functions were used.

Cobb-Douglas function have been subjected to severe criticisms from a statistical view point by Menderhausen and Tinbergen (1961) from the point of view of the differences between inter-firm, intra-firm and inter-industry as well as classical economics ground by Reder, Bronfenbremer, and Smith (1961) and from the view point of biased or unbiased estimates by Marschak and Andpews (Heady and Dillon, 1961).

In Nigeria, where emphasis is being placed on agro-industries and or agro-businesses, industry functions will serve the same useful functions that farms functions

have served, and will continue to serve (Olayide and Heady, 1982). This is especially true of marginal productivity of inputs, rates of technical substitution among inputs, elasticity of production with respect to each input, factor and product pricing, scale relationships, and general resources allocation coupled with the problems of co-operatives in Gongola state.

# CHAPTER THREE

## 3.0 METHODOLOGY

### 3.1 Area of Study

The study area is Michika Local Government Area of Gongola state. The state lies roughly between latitude 11° and 6° to south and longitude 9½° west and 14¾° east. The state capital, Yola lies on latitude 9°14" North and longitude 12°28" East.

Gongola state is the second largest state in Nigeria with a total area of 102,067 square kilometers (Gongola Official Diary, 1987). It shares boundaries with Bauchi and Borno states in the North and Benue and Plateau states in the South. Gongola state was created in 1976, with its capital at Yola. The state topography features mountanous lands transversed by a big river valleys of Benue, Donga, Taraba, Yedsaram and Gongola from which the state derived its name. It has two marked seasons; dry and wet (Gongola Official Diary, 1987).

The mean annual rainfall is between 762mm and 1016mm to less than 508mm in lean periods. Rainy season usually starts in May and ends in September. The dry season starts in October and ends in April with a dusty harmattan occuring in November up to April. The mean annual temperature range is between 15.2°C and 39.7°C (Gongola Official Diary, 1990).

There are two notable vegetational zones within the state; the sub-sudan zone (in the northern part) and the

northern Guinea savanna zone (in the southern part).

There are six main ethnic groups in the state. They include the Fulani, Bata, Higgi, Chamba, Jukun and Mumuye who live in segmented, large and small communities. The estimated population of the state (base on 1991 census estimate) is 3,604,639.

The major towns include Yola, Mubi, Michika, Ganye, Wukari, Jalingo, Numan, Gembu (Figure 3.1).

The state is heavily dependent on agriculture. The major crops grown all over the state are coffee, tea, groundnut, cotton, maize, yam, cassava, guinea corn, millet, rice and vegetable like hot pepper. Production is usually carried out by small-holder farmers with limited capital and on scattered farm lands.

Michika agricultural cooperatives society was chosen as the study area because, at present, it has 48 primary societies and it is the largest local government area out of the twenty-one (21) local government areas of the state. Credit and marketing co-operatives in this area date back to early 1960s when groundnut, cotton, pepper and hides and skins were transported to Maiduguri and Warri for export (Figure 3.2).

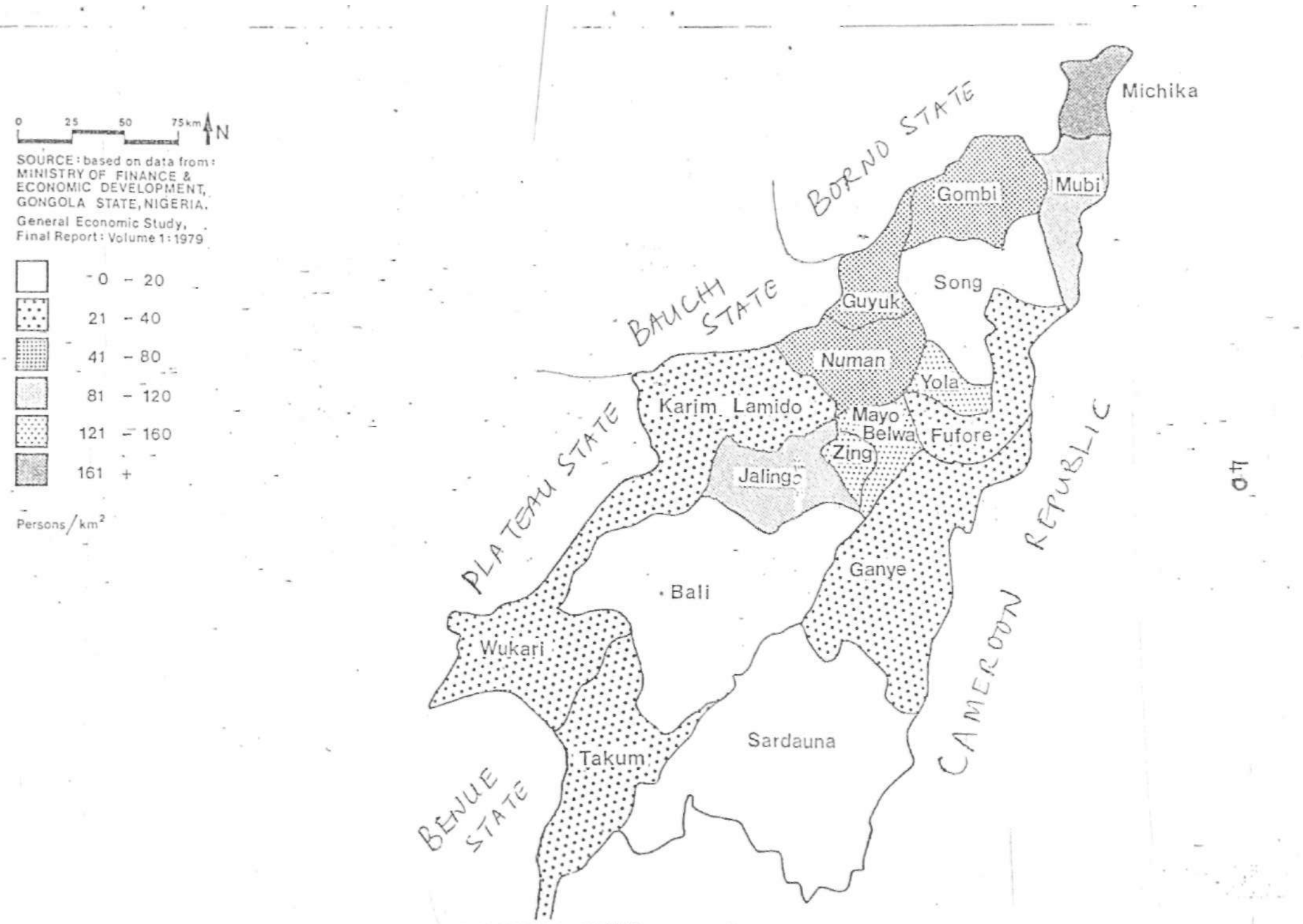
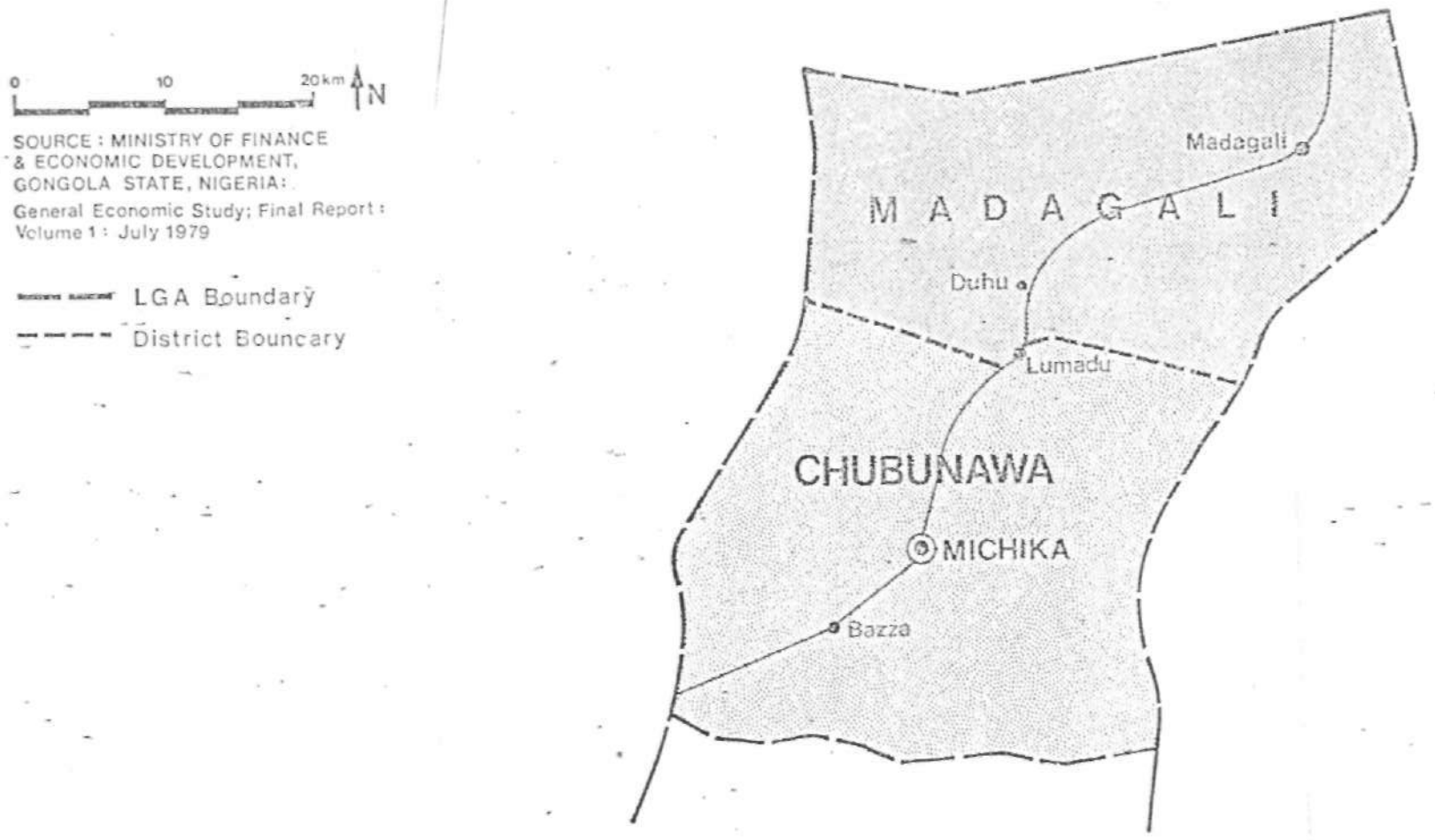



Fig. 3.1: ADMINISTRATIVE MAP OF GONGOLA STATE.




| District | Population 1963* | Population 1978 | Area ($km^2$) | Density ($p/km^2$) |
|---|---|---|---|---|
| Madagali | 102 853 | 143 067 | 885 | 161.7 |
| Chubunawa | 169 613 | 235 880 | 1 050 | 224.6 |
| Michika L G A | 272 466 | 378 947 | 1 935 | 195.8 |
| Gongola State | 2 617 712 | 3 743 580 | 99 906 | 37.5 |

* Census Figures

Fig. 3.2: MICHIKA L.G.A: MAP OF THE STUDY AREA.

### 3.2.0 Sampling Technique and Data Collection

The universe of the investigations defined as all primary agricultural unions and societies in Michika Local Government Area (L.G.A.). The sampling frame consists of these organizations. There are two stages in the sampling operation as described below.

### 3.2.1 The Selection of Agricultural Co-operators and Non-Co-operators.

In order to get into the operation and performance of agricultural co-operative societies (ACS) in Michika L.G.A. a sample of five functional societies from a total of 48 primary societies in the area was randomly selected. For the purpose of this study, survey method was employed. Seventy (70) questionnaires were randomly administered to seventy (70) rural farmers which comprised of cooperators and non-cooperators. Other sources of information were the administrative and intelligence records which include:

(a) the area co-operative office in Michika for data on ACS activities and policies regarding loan disbursement and repayment abilities of farmers;

(b) the Ministry of Commerce, Industry and Co-operative Headquarters in Yola for data on assembling secondary data on ACS; and

(c) the Ministry of Agriculture for information on fertilizer procurement and distribution as well as extension services rendered to co-operative societies.

This information came from departmental files, bank annual reports, records and bulletins from Yola and Michika. Then five ACS were randomly selected from the list of the registered societies with the area co-operative officer based on the three sub-area co-operative offices that made up the seven development areas of the L.G.A. viz: Michika, Madagali, Garta, Gulak, Shuwa, Moda and Bazza.

The current market price was used for the sold crops in the open market. Also verbal interview was conducted by the researcher to ACS officials. Other information on the socio-economic profiles include variables like age, educational background, farming experience, household size, position and date of membership, storage and marketing problems, the amount of loan obtained and the assessment of the loan.

### 3.2.2 The Selection of Agricultural Co-operative Societies (ACS) (Co-Operators (Farmers)

There is a total of 48 primary societies with area co-operative officer in Michika L.G.A. as at the time of pre-survey conducted by the researcher. Five of the these were selected by a means of simple random method. The co-operative members were selected for interview by the use of a random number. Also 35 survey questionnaires were administered through simple random method to them (i.e. 7 questionnaires to each of the 5 selected ACS).

### 3.2.3 The Selection of Non-Co-operators (Non-ACS)

The selection of non-ACS was similar to those of ACS, that is, a total of 35 non-ACS was randomly selected all over the Michika L.G.A. (i.e. 7 questionnaires to each of the 5 selected non-ACS).

Simple random method was applied to select individual societies visited for the purpose of this study.

## 3.3 Analytical Technique

The tools of analysis used in this study include:

(a) simple descriptive statistics,

(b) farm budgeting techniques; and

(c) regression analysis.

### 3.3.1 Simple Descriptive Statistics.

Descriptive statistics was used to achieve some of the objectives of the study. These involved the use of measures of central tendency: percentage, mode, median, mean, frequency distribution and measures of variations such as variance and standard deviation. These statistical tools were used for comparison between co-operators and non-co-operators.

Differences between the mean value of co-operators and non-co-operators was tested with respect to land size, net farm income, expenses on chemicals, hired labour and total cost of production.

The difference between the two mean values (co-operators and non-co-operators) were tested for significance through the calculation of t-value for any one variable using this formula:

$$t = \frac{x_1 - x_2}{m_1 + m_2}$$

where:

$t$ = calculated t-value

$x_1$ = means for co-operators

$x_2$ = means for non-co-operators

$m_1$ and $m_2$ = standard error for co-operators and non-co-operators respectively.

Regression analysis was used for measuring factor productivity of credit and impact of credit on the co-operators. The regression model is:

$$Y = a + b_i + x_i + u$$

where:

$Y$ = dependent variable

$a$ = intercept

$b_i$ = co-efficient

$x_i$ = independent variable

$e$ = error term.

Farm budget was used to assess the net farm income of the farmers.

To determine the efficiency of co-operative organization, the resources of land, labour and capital were considered important elements in measuring the efficiency of co-operative organization.

## 3.4.0 Specification of Regression Models

Model I:

This model was used to determine the effectiveness and efficiency of using co-operative organization in supplying credit to the farmers. A regression model is given as:

$$L = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + E$$

Where:

L = value of credit taken (₦)

$x_1$ = farmers size of holdings (Ha)

$x_2$ = family labour input (man-hrs)

$x_3$ = cost of hired labour (man-hours)

$x_4$ = cost of chemical (₦)

$x_5$ = cost of capital equipment (₦)

$x_6$ = cost of seeds (₦)

$x_7$ = managerial ability (yrs)

a = constant

b = regression coefficient

e = error term.

For the achievement of objective 2, this model was used to evaluate farm size and other factors on the amount of credit taken by small farmer co-operators. The production function is given above (model I).

Model (II):

This second model was used to explain credit and other factors which might influence the amount of net farm income of Michika small farmers. The production function is given as:

$$NFI = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8 + E$$

Where:

NFI = Net farm income (₦)

$x_1$ = Value of credit taken (₦)

$x_2$ = Farm size (Ha)

$x_3$ = Family labour input (man-hrs)

$x_4$ = Cost of hired labour (man-hrs)

$x_5$ = Cost of chemicals (₦)

$x_6$ = Cost of capital equipment (₦)

$x_7$ = Cost of seeds (₦)

$x_8$ = Managerial ability (yrs)

$b_1 - b_8$ = Coefficient

a = Constant

b = Regression coefficient

e = Error term.

3.4.1 Budgeting Approach

The farm budget model is one of the oldest tools of analysis used in farm management and production studies. A number of researchers such as Orewa (1978), Ofojekwu (1982), Mobayo (1987), Olukosi and Erhabor (1988) have used it for profitability in farm production practices.

Farm budget analysis leads to the estimate of total cost and total income for the same production period (Olayemi and Oni, 1971). The differences between the two parameters measure the Net farm income.

The general equation for obtaining the net farm income is:

NFI = GFI - TC

Where:

NFI = Net farm income

GFI = Gross farm income

TC = Total farm expenditure

For the purpose of this study, current prices were used. Farm houses were considered as part of farm capital so its cost was added to the farm income. Declining balance method was used in this study (i.e. 10% depreciation). The reason for this is explained below (3.4.2)

3.4.2 Declining Balance Method

The declining balance method (DBM) assumes a fixed rate of depreciation. The salvage value is not substracted from the initial cost but the fixed rate is applied to the uncovered balance till the salvage value is reached. Since the value of the asset is greater at the beginning when the rate is applied the amount of depreciation is also greater at the beginning and less at the end. Hence, this method is useful for assets which lose value fast at the beginning of its use (Olukosi and Erhabor, 1988).

3.4.3 Specification of Variables

(a) Net Farm Income: This is defined as the gross receipts less than total cost of production (Olukosi and Erhabor, 1988).

(b) Farm Size

This was included in the model as a result of the direct relationship between farm size and income; and it was measured in hectares (for the purpose of this study).

(c) Labour Input

Labour input was measured in man-hours for both family and hired labour. These determine how labour influence, the output and hence farm income and farm size of the cooperators.

To measure labour utilization, data were collected on family and hired labour and were recorded on the basis of man-hours. Within each category, the labour input was subdivided in male adult, female adult and children. Since work rates may be affected by age, sex of the workers as well as the task being performed (Spencer, 1972), a problem arises in chosing the weights to be used in aggrevating various categories of labour input in man-hours.

To overcome this problem of aggregation, the conversion rate suggested by Norman (1967) and adapted to Nigeria context were used (Table 3.2).

Measurement of expenditure on hired labour was made based on wage rate in naira per day, unit length of ridges or total heaps made per day e.g. ₦25 - ₦35 for female and male per day.

(d) Cost of Chemicals and Capital Equipment.

The inclusion for the cost of chemical and capital equipment in the model, was to assess indirectly the effect

of chemical and equipment inputs on the farm income of the farmers sampled.

(e) Credit

The need for credit inclusion in the model was to enable the co-operators and non-co-operators respectively acquire farm lands, hired labour, buy chemical or cost of chemical and buy or cost of capital equipment, all which in turn may affect farm income.

(f) Efficiency

Efficiency is generally defined as the quantity of output (Y) per unit of input (X) used in the production process, that is the average physical productivity (APP) (Olukosi and Erhabor, 1988).

Efficiency of a co-operative organization is judged from the basic objectives of the enterprise i.e. crops or livestock.

(g) Error Term.

The error term in the model is due to thefact that all the quantifiable variables stated in the model may not completely explain all the variations observed in the value of farm income and farm size.

3.4.4 Measurement of Input-Output Data

This section gives a brief description of the techniques used in the measurement of the factors of production used and the output of the various crops.

On measurement of output, various units were employed. This include bags, "Mudus", "Tiya" or "MAMSER", bundles, baskets each having its own scale e.g. 4 baskets or 30 "Tiya" or 60 "mudus" in equal to 100kg bags of sorghum.

To measure labour utilization, data was collected for family and hired labour and was recorded on the basis of man-hours. Within each category, the labour input is subdivided into male, female and children days of works. The Norman (1967) study was used in calculating the labour input per days work.

Table 3.1: Conversion Rate of Man, Woman and Children's Days of Work.

| Labour class | Age (Years) | Male Adult Equivalent |
|---|---|---|
| Small child | under 8 | 0.0 |
| Older child | 8 - 17 | 0.50 |
| Female adult | 18 - 60 | 0.75 |
| Adult male | 18 - 60 | 1.0 |
| Male and female adult | above 60 | 0.50 |

Source: Norman (1967), Olukosi (1988).

# CHAPTER FOUR

## 4.0 GONGOLA STATE AGRICULTURAL CO-OPERATIVE SOCIETIES

### 4.1 Organizational Structure of Agricultural Co-operative in Gongola State.

In Nigeria, and in Gongola State in particular, the organization of agricultural co-operatives is generally based on three-tier structure: the primary at village, secondary at local government levels and apex or tertiary at the state level (Table 4.1). The primary societies are the functional units which member-patrons easily recognise and participate fully in. With regards to agricultural co-operatives, the primary societies are usually organized at the village level.

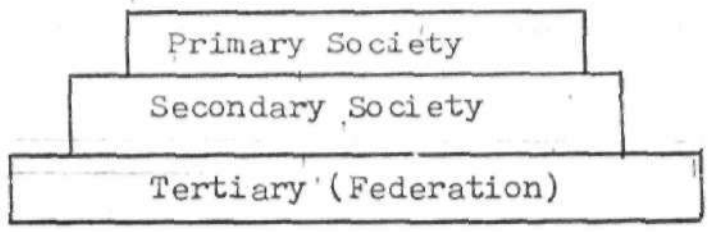



Fig. 4.1: The Three-Tier Structure of Co-operative Organization in Gongola State.

Source: Survey Data, 1991.

The various primary societies at the village level form the Federated state Unions at the district or local government level (Table 4.2). Not all members of the primary societies attend the union meetings but they usually elect representative to represent them at union meetings. The apexes function at the state level and all the unions in the state are members of the apex co-operative movements.

There is an overall umbrella of all co-operative organization in the country at the Federal level in the form of the Federal Department of Co-operatives.

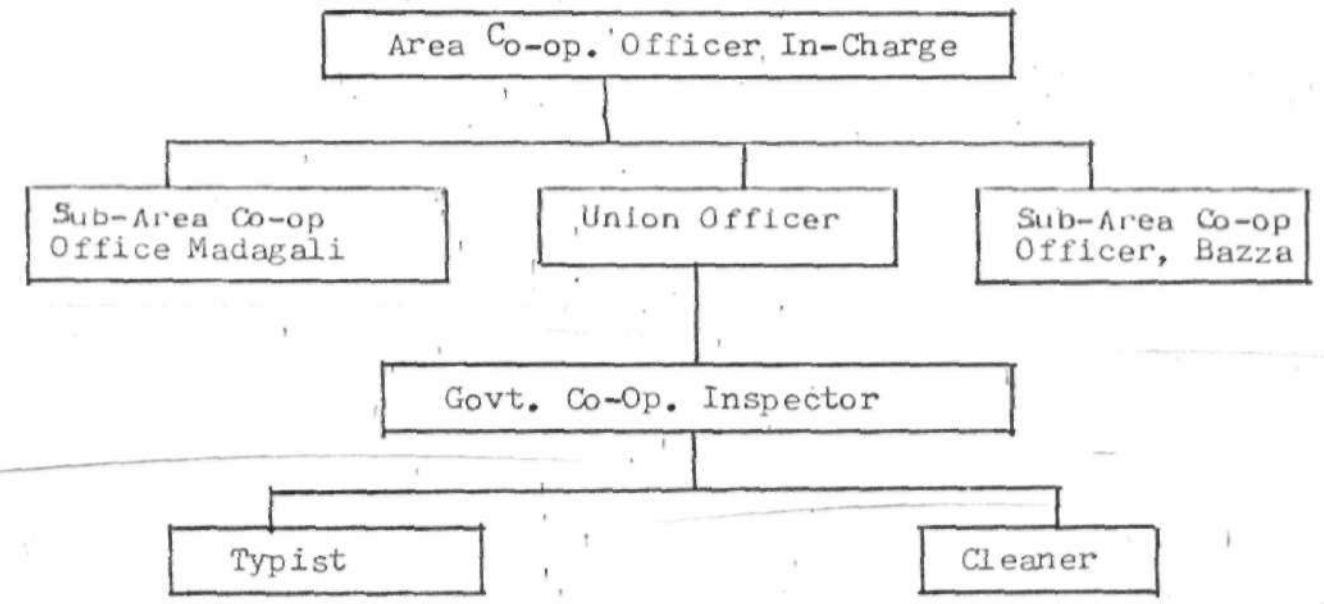



Fig. 4.2: Michika Co-operative Office Administrative Chart.

Source: Survey data, 1991.

In effect, therefore, Nigeria has a four-tier organization of co-operative but the Federal level organization was quite inactive until recently. It was after the submission of the "Report of the Review Panel on Co-operative Principles, Laws and Regulations in Nigeria" in 1976 that the Federal Government started to play some role in the organization of co-operatives, particularly in the area of agricultural production and marketing and the distribution of essential commodities. Although the actual co-operation activity no doubt takes place at the societal level i.e. the primary level, the other levels are important as channels for effective control, organization and education at all the societal

level i.e. the primary level, the other levels are important as channels for effective control, organization and education at all the societal levels. Training of co-operative officers, for example, is done by the apex organizations at the Federal level. Also, agricultural credit is usually channelled through the apex and union organizations.

The pattern of authority in Gongola state is similar to any state in Northern Nigeria. It starts with the political appointed commissioner to director-general of the ministry (Fig. 4.3). There are usually three or more directors attached to the ministry and out of these three are: the directors of commerce, co-operatives and trade. Then the Chief Registrar of co-operatives down to the co-operative officer in the state.

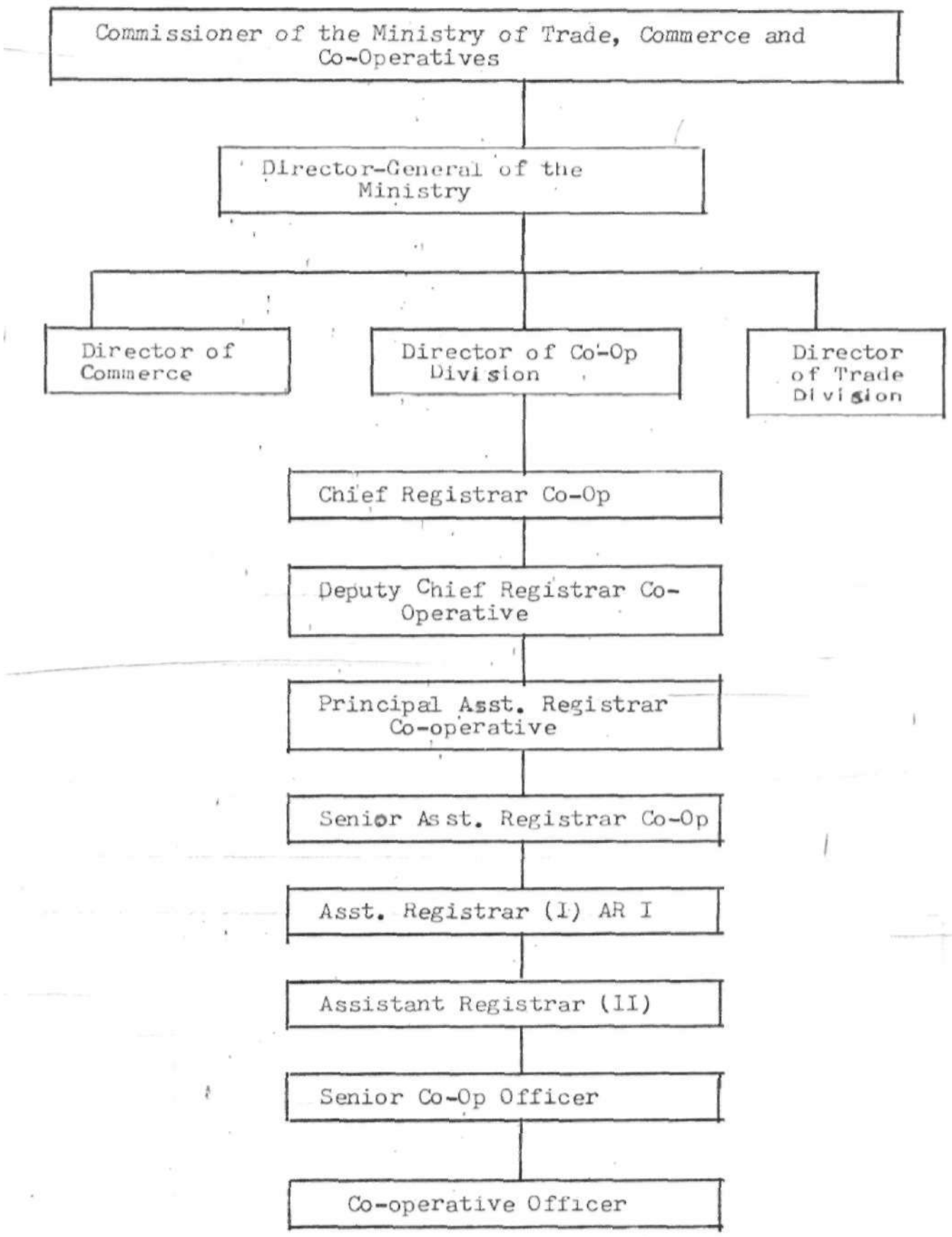



Fig. 4.3: The Organizational Chart of Gongola state Co-operative Society.

Source: Survey Data, 1991.

## 4.2 The Co-operative Body

The union the co-operative body comprises all the representative of the societies within the union. The co-operative body in Michika L.G.A. is made up of two delegates from each of the 48 primary societies that made up the union. The body meets at least once yearly to elect new members of the committee and ratify other policy issues taken on behalf of the organization.

At the society level it includes all registered members of the societies and the functions are the same as those at the union level.

### 4.2.1 Committee Members.

The committee members are the governing body of the co-operative organization at all levels of the organization. It comprises of a president (Shugaba); Vice-President (Matai makin shugaba); a Treasurer (Ma'aji) and two other members. They are elected at the annual general meetings by the co-operative body.

### 4.2.2 The Secretary/Manager

The secretary/manager is a paid employee of the organization at all levels. He combines the duties of the secretary to the committee and that of the manager. His duties are simply to keep the account of the union or society and receive members produce in the store. He also liaises with the committee and the ministry officials in co-operative matters as they affect his own organization. Such matters

include the arrangement for credit and supply of inputs to co-operators.

The secretary is the overall boss of the society/ union and other employees take directives from him.

4.2.3 The Assistant Registrar of Co-operative Society

He is a government worker charged with overseeing the co-operative activities within his area of operations. He advises the co-operative societies on government policies and arranges for seminars for co-operators. He attends both the annual general meetings and the committee meetings. He plays important role in the processing and disbursing of loan to co-operators.

## 4.3 Michika Agricultural Co-operative Society

### 4.3.1 Origin and Brief History

Agricultural co-operative society in Michika Local Government Area began with the organization of "gayya", "Mushike" and "Gama Kai" as far back to 1950s. According to the available information with the area co-operative office, the first registered co-operative society in Chubunawa (Michika) area was co-operative credit and marketing society established on 20th July 1965.

### 4.3.2 The Objectives and Functions of Michika Co-operators.

The objectives and functions of Agricultural Co-operatives in Gongola state are similar. Hays (1973) observed that

similar bye-laws exist with minor amendments throughout Northern Nigeria.

The earlier objectives of the Michika Co-operators before the adoption of the bye-laws of Northern Nigeria were:

a) to assist co-operator (farmer) in farm operations in the events of sickness or death; and

b) to donate cash or in kind during wedding ceremonies of a co-operator.

# CHAPTER FIVE

## 5.0 DATA ANALYSIS AND DISCUSSION OF RESULTS

### 5.1 Socio-Economic Characteristics of the Respondents

#### 5.1.1 Age.

Farming requires that one has to reach a certain age to be able to attain a certain stage of both mental (physiologically and morphologically) and managerial ability. This is especially true with farming within the study area, since the majority of farming activities require manual labour, the provision of which is partly determined by age.

The modal age of the Co-operators was 31 - 40 years (31.43 percent) and non-co-operators modal age was 41 - 50 years (31.43 percent) having recorded the highest frequencies of 11 farmers (Table 5.1). About 5.7 percent and 8.6 percent of co-operators and non-co-operators respectively were over 60 years old (Table 5.1). A t-test carried out showed that there was no significant difference between the age of a co-operator and that of a non-co-operator. These findings may be of some importance with respect to the productivity of credit used by the farmers, since at 60 years and above, a farmer may be too old to significantly increase his productivity through the use of credit.

Table 5.1: Age of Respondents

| Age Group (years) | Co-operators | | Non-Co-operators | |
|---|---|---|---|---|
| | No. of farmers | Percentage | No. of farmers | Percentage |
| 20 - 30 | 8 | 22.86 | 6 | 17.14 |
| 31 - 40 | 11 | 31.43 | 6 | 7.14 |
| 41 - 50 | 8 | 22.86 | 11 | 31.43 |
| 51 - 60 | 6 | 17.14 | 9 | 25.71 |
| above 60 | 2 | 5.71 | 3 | 8.57 |
| Total | 35 | 100 | 35 | 100 |

Source: Survey Data, 1991.

5.1.2 Farm's Size

The size of the farm cultivated is a function of population pressure, size of the family, labour available and financial background of the farmer. The frequency distribution of sampled farms is shown in Table 5.2.

The total land area to all co-operators was 287.0 hectares and total land area for non-co-operators was 194.4 hectares. The size of farm holdings for the co-operators range from 1.0 to 30 hectares while the size of the holdings for non-co-operators range from 1.0 to 14 hectares (Table 5.2). About 31.14 percent of co-operators and 41.86 percent of the non-co-operators hold farm sizes less than four hectares (Table 5.2). The average size of holdings for a co-operator was 8.14 hectares while that of a non-co-operator was 5.6 hectares. A t-test showed that there was no significant difference at 95 percent probability level.

The modal sizes of holdings for co-operators and non-co-operators were 6.1 (or 48.57 percent) and 11 (or 31.43 percent) respectively as shown in Table 5.2.

Table 5.2: Farm Size of Respondents

| Hectares | Co-operators | | Non-Co-operators | |
|---|---|---|---|---|
| | No. of farmers | Percentage | No. of farmers | Percentage |
| under 1 | 2 | 5.71 | 3 | 8.57 |
| 1.1-2.0 | 4 | 11.43 | 3 | 8.57 |
| 2.1-3.0 | 4 | 11.43 | 4 | 11.43 |
| 3.1-4.0 | 3 | 8.57 | 5 | 14.29 |
| 4.1-5.0 | 4 | 11.43 | 5 | 14.29 |
| 5.1-6.0 | 1 | 2.86 | 4 | 11.43 |
| 6.1 and above | 17 | 48.57 | 11 | 31.43 |
| Total | 35 | 100 | 35 | 100 |

Source: Survey Data, 1991.

5.1.3 Educational Levels of Respondents

Education is very important in farming and it contributes significantly to managerial performance. Management here means the organization and co-ordination of factors of production such as land, labour and capital.

In this study, about 22.86 percent of the co-operators had no formal education (Table 5.3). About 14.28 and 8.57 percent of co-operators and non-co-operators attended Koranic schools. About 20 percent of both co-operators and 23 percent of non-co-operators had West African School

Certificates and Teachers grade II certificates. About 11 percent of the co-operators and 6 percent of non-co-operators had educational level above secondary school (Table 5.3).

Table 5.3: Educational Levels of Respondents.

| | Co-operators | | Non-Co-operators | |
|---|---|---|---|---|
| | No. of farmers | Percentage | No. of farmers | Percentage |
| Koranic School | 5 | 14.28 | 3 | 8.57 |
| Less than Primary Six | 8 | 22.86 | 12 | 34.28 |
| Primary Six | 7 | 20.0 | 8 | 20.0 |
| WASC | 7 | 20.0 | 8 | 22.86 |
| Teachers Grade II | 4 | 11.43 | 3 | 8.57 |
| Above secondary | 4 | 11.43 | 2 | 5.71 |
| Total | 35 | 100 | 35 | 100 |

Source: Survey Data, 1991.

5.1.4 Sources of Farm Inputs used

To determine the effectiveness of using co-operative organization in supplying credit (farm inputs) to the co-operators. It has been hypothesized that more rural employment has been created and that co-operators have better access to inputs such as loans, fertilizers, machinery, improved seeds, and higher prices for their produce. Table 5.4 shows the respondents' access to inputs, whether it is from government, union or local market.

Farm inputs is one of the determinants of yield if available at the right time. Table 5.4 shows about 29 percent and 20 percent of co-operators and non-co-operators respectively had their inputs supply from government/ ministry of Agric., and about 34 percent and 80 percent of co-operators and non-co-operators respectively had their input supply from the market. This indicates that co-operators solely depend on government and society for their input supply while non-co-operators got their inputs supply from the market. There is no significant difference in the use of farm inputs by the respondents as Table 5.4 has shown.

Table 5.4: Sources of Farm Inputs used by Respondents

| Input Supply | Co-operators | | Non-co-operators | |
|---|---|---|---|---|
| | No. of farmers | Percentage | No. of farmers | Percentage |
| Govt/MOA | 10 | 28.57 | 7 | 20.0 |
| Market | 12 | 34.29 | 28 | 80.0 |
| Union/Society | 13 | 37.14 | 0 | - |
| Total | 35 | 100 | 35 | 100 |

Source: Survey data, 1991.

5.2 Sources of Credit

There was no significant difference in the the amount of credit given to co-operators and non-co-operators. A total of N59,644.50 and N45,928 were collected as credit by both co-operators and non-co-operatoes from different sources,

such as banks, society/union and other sources like friends, relatives, neighbours and some had no credit at all. Most of the co-operators received their loans through the society i.e. about 31.43 percent (Table 5.5) and non-co-operators received loan/credit from banks. While about 20 percent and 34 percent of co-operators and non-co-operators respectively received credit from other source, like friends and relatives etc. Also about 20 percent and 29 percent of cooperators and non-co-operators respectively received credit from other source, like friends and relatives etc. Also about 20 percent and 29 percent of co-operators and non-co-operators respectively received nothing.

Table 5.5: Sources of Credit Used by Respondents

| Loan Source | Co-operators | | Non-co-operators | |
|---|---|---|---|---|
| | No. of farmers | Percentage | No. of farmers | Percentage |
| Society/Union only | 11 | 31.43 | - | - |
| Banks | 4 | 11.43 | 13 | 37.14 |
| Both Bank/ society | 6 | 17.14 | - | - |
| Other source | 7 | 20.0 | 12 | 34.29 |
| No Loan | 7 | 20.0 | 10 | 28.57 |
| Total | 35 | 100 | 35 | 100 |

Source: Survey Data, 1991.

5.2.2 Agricultural Co-operative Market and Marketing.

This section examines the extent of farmers access to market, for both the inputs used and the crops product. It also compares the individual farmer's prices of these variables with the prices paid by the co-operative farmers. The elements considered in this section are the organization of marketing within the co-operative society, where members market their produce, price paid by the co-operative institutions and their storage facilities. Other elements exained include local buying agents involved in the marketing system.

Marketing activities of the co-operative societies in Michika were examined through the responses of the members of the organization. On the question of organization of marketing within the society, about 80 percent of the co-operators and 55 percent non-co-operators respectively stated that the marketing organization was mean satisfactory. Only 20 percent and 45 percent co-operators and non-co-operators respectively were satisfactorily. The consequence is that the 97.6 percent and 100 percent of co-operators and non-co-operators respectively sold their produce in the local market, while only 2.3 percent of the co-operators sold their produce through the co-operative society.

With regards to the prices paid, the farmers stated that the societies had not been paying higher price than the prices in the local market, and in some cases they even paid lower than the prevailing local market prices.

All the co-operators stated that the society bought in bulk unlike the sale of one or two bags in the market. The farmers also complained that it took months before payments are received in respect of produce delivered.

All the farmers (co-operators and non-co-operators) stated that they individually carried out the sorting, collecting, grading and transporting of their produce and almost all of them individually provided local storage barns (Rumbu) for their produce. About 92.85 percent of co-operators and 100 percent of non-co-operators used their storage facilities while about 2.5 percent co-operators used the co-operative society's storage facilities.

The institutional structure of the market in which the farmers sold their produce and bought their necessities was not such as to favour the interest of the farmers because of the activities of the middlemen which affect their profits. Even the society purchased produce through the local buying agents and selected buyers by the society committee.

There was no significant difference in the co-operators and non-co-operators market respectively. The major problems for both of them were transportation and spare parts for their ox-plough waggons.

5.3.1 Impact of Co-operative Societies in Gongola State

The impact that a particular co-operative organization has on its members is a very useful criterion for evaluating the performance of its organization. This section is organized into the following sub-sections:

5.3.2 Evaluation of Farm Size and Other Variables on the Amount of Credit Taken .

A multiple regression analysis shows that farm size, cost of chemicals, cost of capital equipment, cost of seeds and managerial abilities or farming years were significant while family labour and cost of hired labour were not significant (not influencing factor) as shown in Table 5.6 and 5.7.

Table 5.6: Farm Structures of Respondents.

| Item | Co-operators | Non-co-operators |
|---|---|---|
| No. | 35 | 35 |
| Average Net Farm income/ha | 848 | 767 |
| Average Loan (₦) | 1704.13 | 1312.23 |
| Average Land (ha) | 8.2 | 5.6 |
| Average family labour (man-hrs) | 2621.77 | 2046.56 |
| Average hired labor (man-hrs) | 947.71 | 661.14 |
| Average cost of chemical (₦) | 340.73 | 577.37 |
| Average cost of capital equipment (₦) | 1304.67 | 1375.88 |
| Average cost of seeds (₦) | 235 | 180.83 |
| Average cost of production/ha | 656 | 452 |

Source: Survey Data, 1991.

Table 5.7: Estimated Regression for Co-operators' use of Credit (model I)
Regression Co-efficients

| Dependent Variable | Constant | $X_1^{***}$ | $X_2$ | $X_3$ | $X_4^{***}$ | $X_5^{**}$ | $X_6^{***}$ | $X_7$ | $R^2$ | F-value |
|---|---|---|---|---|---|---|---|---|---|---|
| L | 21 | 181 | -0.427 | 0.987 | 2.66 | -0.835 | -7.18 | 118 | 67.6 | 8.03 |
| t-values | (0.33) | (3.98) | (-1.80) | (1.43) | (3.79) | (-2.34) | (-2.94) | (1.93) | | |

where:

** Significant at 95 percent probability level.

*** Significant at 99 percent probability level.

L = Value of credit taken

$X_1$ = Farm size (ha)

$X_2$ = Family labour (man-hrs)

$X_3$ = Cost of hired labour (man-hrs)

$X_4$ = Cost of chemical (₦)

$X_5$ = Cost of capital equipment (₦)

$X_6$ = Cost of seeds (₦)

$X_7$ = Managerial ability (yrs)

t = Student t-values

f = Overall significance for the regression equation.

The coefficient of determination, $R^2$, was 67.6 percent (0.676) which shows that the equation explained about 68 percent of the variation for the credit taken. The F-value which measures the overall significant of the regression is 80.3 percent with 59.2 percent (adjusted R-square). This is lower than the tabular value and significant at 99 percent.

The correlation results are shown in Table 5.8. All the coefficients are significantly or positively correlated to the dependent variable L, value of credit taken. This shows that credit has increased farmers size of holdings, helped in hiring more labourers, and helped in buying chemicals and it also increased the managerial ability for the farmers. While family labour, cost of capital equipment and cost of seeds were negatively correlated (not influencing) to the dependent variable. This shows that the farmers use their carryover seeds for planting, unable to buy capital equipment (since the credit is very small or not given at all) and use their family labour. This study shows the opposite of family labour, cost of seeds and cost of capital equipment which were supposed to have an increase on the production. Also it may be due to diminishing returns or irrational zone of production.

Table 5.8: Correlation Coefficients for the Model I.

| | L | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ |
|---|---|---|---|---|---|---|---|---|
| L | 1.0 | | | | | | | |
| | $X_1$ | 0.586 | | | | | | |
| | $X_2$ | -0.009 | 0.043 | | | | | |
| | $X_3$ | 0.259 | 0.486 | 0.378 | | | | |
| | $X_4$ | 0.410 | 0.131 | 0.060 | 0.100 | | | |
| | $X_5$ | -0.185 | 0.002 | 0.420 | 0.598 | 0.015 | | |
| | $X_6$ | 0.002 | 0.330 | -0.098 | 0.332 | 0.351 | 0.097 | |
| | $X_7$ | 0.062 | -0.072 | 0.141 | 0.403 | 0.061 | 0.526 | -0.101 |

### 5.3.3 Impact of Co-operatives on the Farmers' Income

The element examined under was the net farm income of co-operators and non-co-operators. The average net farm income of co-operators was ₦848.00 and ₦767.00 for non-co-operators as shown in Table 5.6.

It was hypothesized that there is no relationship between the beneficiaries income and inputs used. This was not true, since the net farm income of co-operators is higher than the non-co-operators and it also reveals the importance of farm holdings and hired labour on their production. Most of the co-operators and non-co-operators use their previous or carryover seeds for planting.

Also hypothesized was that the co-operators have larger farms than the non-co-operators.

This was shown in Table 5.6 also, the average farm size for co-operators was 8.2 hectares and 5.6 hectares for non-co-operators. In terms of management larger farms are more difficult to maintained than smaller farms. For instance in the event of crop failure like last year in the study area, the larger farm had a greater losses to that of smaller farms. Management in co-operative organization is an important factor in measuring its efficiency or in calculating its net farm income.

From the result of the analysis in Table 5.6 it was found that the cost of hired labour is higher in co-operative farms. Since average cost of hired labour in co-operative was 947.71 man-hrs and 661.14 man-hrs for non-co-operators.

### 5.3.4 Comparison Between the Income of Co-operators and Non-Co-operators.

The elements examined are the differences between net farm income of co-operators and non-co-operators. About 25 farmers or 71.44 percent of the co-operators earned net farm income less than ₦1,000.00 about 24 farmers or 68.57 percent of the non-co-operators earned net farm income less than ₦1,000.00. About 10 farmers or 28.56 percent of the co-operators earned net farm income more than ₦1,000.00 and about 11 farmers or 31.4 percent of the non-co-operators earned net farm income of more than ₦1,000.00 respectively as shown in Table 5.9.

Table 5.9: Net Farm Income Distribution of Co-operators and Non-co-operators.

| Net farm Income | Co-operators | | Non-co-operators | |
|---|---|---|---|---|
| | No. of farmers | Percentage | No. of farmers | Percentage |
| 0 - 500 | 13 | 37.14 | 20 | 57.14 |
| 501 - 1000 | 12 | 34.28 | 4 | 11.43 |
| 1001 - 1500 | 5 | 14.28 | 4 | 11.43 |
| 1501 - 2000 | 2 | 5.71 | 3 | 8.56 |
| 2001 - 2500 | 1 | 2.86 | 1 | 2.86 |
| 2501 - 3000 | 1 | 2.86 | 1 | 2.86 |
| 3001 - 3500 | 1 | 2.86 | 2 | 5.71 |
| Total | 35 | 100 | 35 | 100 |

Source: Survey Data, 1991.

From the result of the analysis, it could be seen in Table 5.9 and figure 4.4 that farmers in co-operatives had higher net farm income at 34.28 percent or farmers earnings from ₦501 to ₦1,000. Though there is no significant difference in the distribution of incomes between the co-operators and non-co-operators, it could be seen that co-op. credit would have had an impact on the net farm income distribution of Michika small farmers.

5.3.5 Strategies for Effective Administration of Co-operative Credit and Repayment Abilities.

It was hypothesized that co-operative organization was not efficient in supplying credit to the farmers. This was not true, since the amount of loan disbursed to

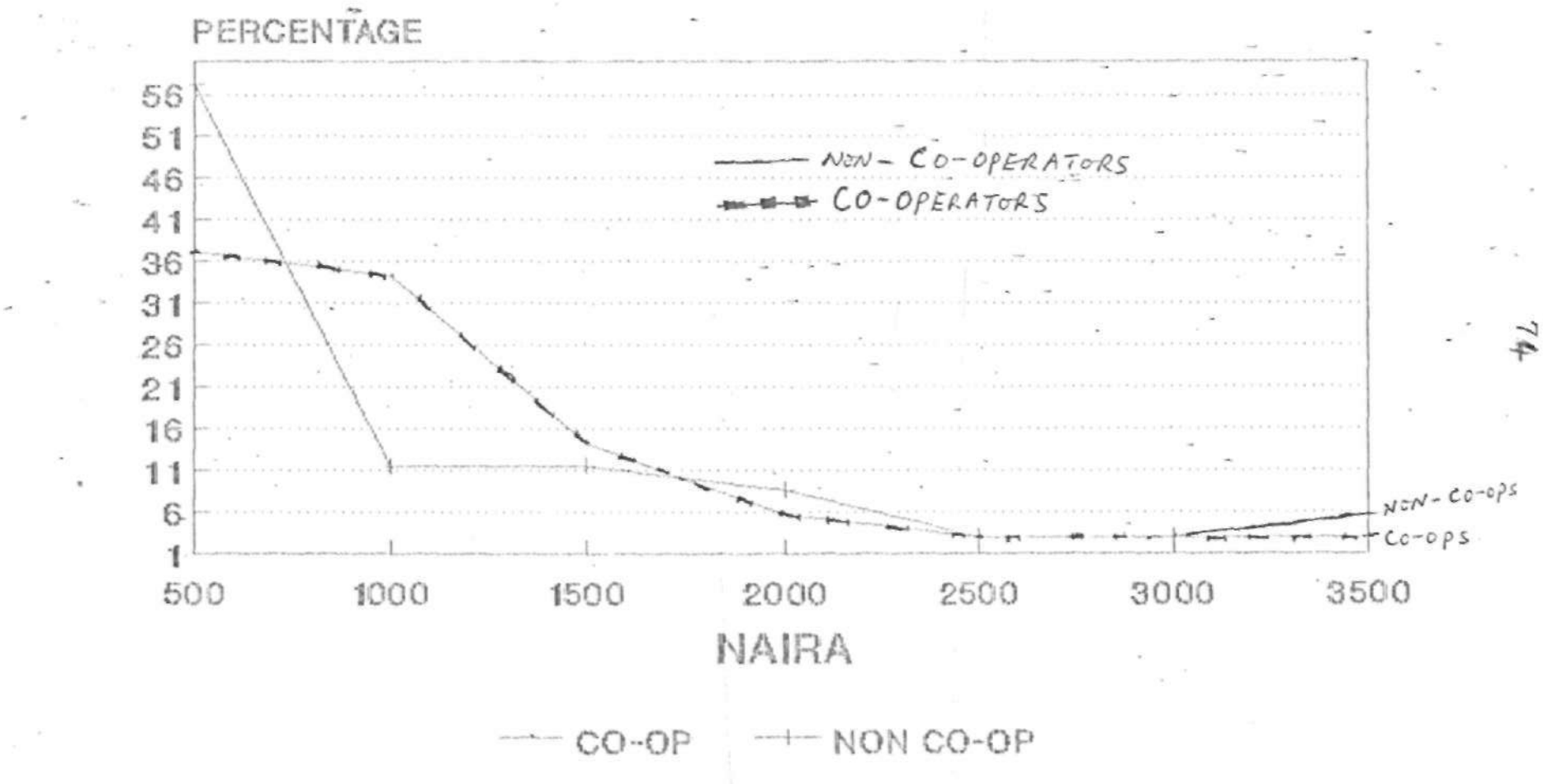



FIG. 4.4: NET FARM INCOME DISTRIBUTION OF CO-OPERATORS AND NON-CO-OPERATORS FARMERS

co-operators was significantly higher than the non-co-operators as shwon in Table 5.6. An average sum of ₦1,704.13 and ₦1,312.23 to co-operators and non-co-operators was received as loans. This further shows that co-operative is an efficient organization of loan delivery to the grass root.

### 5.4.1. Credit and Other Factors Affecting Net Farm Income of Michika Small Farmer Co-operators.

To determine the efficiency and effectiveness of using co-operative organization in supplying credit to the farmers in Michika L.G.A., the net farm income of small farmers co-operatives was used. The Loglinear and Cobb-Douglas type of production functions were employed for the regression so as to enable the researcher choose the "best fit". Though it has been subjected to severe criticisms from the statistical viewpoints by many researchers like Heady (1961) and Dillon (1961). The values of net farm income represented NFI or independent variable was regressed against the amount of credit taken and other important variables or factors affecting the net farm income. In this model II, the independent variable was represented by $X_1$, $X_2$, $X_3$, $X_4$, $X_5$, $X_6$, $X_7$, and $X_8$ where:

$X_1$ = Value of Credit taken (₦)

$X_2$ = Farm size (Ha)

$X_3$ = Family labour input (man-hrs)

$X_4$ = Cost of hired labour input (man-hrs)

$X_5$ = Cost of chemical (₦)

$X_6$ = Cost of capital equipment (₦)

$X_7$ = Cost of seeds (₦)

$X_8$ = Managerial ability (yrs)

All the variables proposed above were fitted into log-linear and Cobb-Douglas regression equation. Then from the two regressions the best fit was chosen i.e. log-linear. The result of the log-linear is shown in Table 6.0.

From the result of the analysis in Table 6.0, the coefficient of multiple regression $R^2$ was (682). This shows that 68.2 percent of the observed variation in net farm income of Michika Co-operators as the explanatory variables indicated in the log-linear equation. The adjusted $R^2$ was 55.5 percent (.555). The result shows that farm size, cost of capital equipment and managerial ability were important in explaining net farm income in the study area.

As indicated in the log-linear equation and the related t-value Table 6.0, the most significant factor that influenced net farm income of Michika co-operators was size of farm holding. Since increased in farm size of a co-operator would normally result in higher output and consequently higher net farm income, the result of the analysis shows the opposite. The sign of the coefficient of farmers size of holding was negative (Table 6.0) and the t-value was insignificant at 99 percent probability.

Table 6.0: Regression Statistics on Net Farm Income (Model II) Using Log-linear Function for Co-operators.

| | Regression Coefficients | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dependent Variable | Constant | $X_1$ | $X_2$** | $X_3$ | $X_4$ | $X_5$ | $X_6$** | $X_7$** | $X_8$ | $R^2$ | $R^2$(adj) | F |
| NFI | 1357 | 0.0475 | -51.3 | 0.093 | -0.010 | 0.006 | -0.581 | 0.077 | 40.7 | 68.2 | 55.5 | 5.37 |
| t-value | (3.48) | (0.81) | (-2.73) | (0.85) | (-0.04) | (0.02) | (-2.72) | (0.13) | (1.23) | | | |

where:

** 99 percent level of significant.

$X_1$, $X_2$, $X_3$, $X_4$, $X_5$, $X_6$, $X_7$, and $X_8$ as specified earlier.

The result further suggests that increase in one hectare in the farm size of Michika farmers would lead to an increase of ₦848.00 in their net farm income as shown in Table 5.6.

Family labour was the second factor influencing the net farm income of Michika co-operators, increase in the use of family labour would result in increase in farm size and output of the co-operators which in turn increase their net farm income.

Cost of capital equipment was the third factor influencing the net farm income of Michika co-operatoys. It is a common belief that small farmers would innovate more readily if not for lack of capital. Thus co-operative credit should have a positive effect on the farmer's innovations in farming and their net farm income. The economic relationship between co-operative credit and net farm income was negative. The regression coefficient for co-operative credit in the study area was negative and insignificant at 99 percent level having recorded a t-value of 0.81 (Table 6.0). The result of the study therefore, confirms the theoritical relationship between cost of capital equipment and net farm income. Hence, the co-operative credit programmes had a negative and insignificant impact on the net farm income of Michika small farmers.

These other factors also contributed to the observed variations in net farm income of Michika co-operators, but their effects were not significant enough to individually

influence the net farm income of Michika co-operators.

### 5.4.2 Credit and Other Factors Affecting Net Farm Income of Michika Non-co-operators.

The most important factors which influence the net farm income of Michika farmers were analysed. Similarly multiple regression analysis was used to isolate credit and other important factors that influenced the net farm income of the non-co-operators were regressed against credit and other important factors affecting net farm income; the independent variables were represented by $X_1$, $X_2$, $X_3$, $X_4$, $X_5$, $X_6$, $X_7$ and $X_8$.

Where:

$X_1$, $X_2$, $X_3$, $X_4$, $X_5$, $X_6$, $X_7$ and $X_8$ are as explained earlier.

All the variables stated above were fitted into a log-linear function as in the case for the co-operators. The reasons for choosing log-linear function was because of the physical nature of agricultural production function, which was supported by many researchers like (Olayide and Heady, 1982). These researchers indicated that agricultural output is a mathematical function of the quantities of labour, land and capital for a production to take place.

From the result of the analysis (Table 6.1) the coefficient of multiple regression ($R^2$) was .972 with adjusted R-square .972 for the log-linear function. This showed that 97.2 percent variation in the net farm income of Michika non-co-operators was jointly explained by credit and other explanatory variables specified in the model.

$$NFI\ (Y) = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + b_7x_7 + b_8x_8 + E.$$

As indicated in the log-linear equation and the related t-values (Table 6.1) the most important factor influencing the net farm income of Michika non-co-operators was credit ($x_1$). This shows that non-co-operators would innovate if co-operative credit were given. Since it would enable them buy more farm inputs and expand their farm lands. Also farm management principles will be given to them by the co-operative staff in general. The economic relation therefore suggest a direct positive relationship. The coefficient of credit with a t-value of 7.33 was positive and significant at 99 percent level (Table 6.2).

Other significant factors are the farm holding, family labour and cost of capital equipment while the other factors were not significant.

Table 6.1: Estimated Regression for Non-co-operators Net Farm Income.

| Dependent Variable | Constant | $X_1$*** | $X_2$** | $X_3$** | $X_4$** | $X_5$ | $X_6$** | $X_7$ | $X_8$ | $R^2$ | $R^2$(adj) | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NFI | 1251 | 0.141 | -82.1 | 0.0659 | -0.387 | -0.008 | 0.353 | -0.21 | -2.33 | 97.2 | 92.7 | 21.98 |
| t-value | (3.91) | (7.33) | (-1.40) | (1.11) | (-1.54) | (0.02) | (1.89) | (-3.57) | (-0.24) | | | |

where:

*** 99 percent level of significance

** 90 percent level of significance

$X_1$, $X_2$, $X_3$, $X_4$, $X_5$, $X_6$, $X_7$, and $X_8$ as defined earlier.

Table 6.2: Correlation Coefficient for the Model II (Non-Co-operators).

| | NFI | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ |
|---|---|---|---|---|---|---|---|---|---|
| NFI | 1.0 | | | | | | | | |
| | $X_1$ | 0.670 | | | | | | | |
| | $X_2$ | -0.405 | 0.164 | | | | | | |
| | $X_3$ | 0.333 | 0.243 | 0.300 | | | | | |
| | $X_4$ | 0.020 | 0.293 | 0.194 | -0.106 | | | | |
| | $X_5$ | -0.078 | 0.245 | 0.754 | 0.349 | 0.043 | | | |
| | $X_6$ | -0.385 | -0.263 | 0.367 | 0.117 | 0.528 | 0.207 | | |
| | $X_7$ | -0.065 | -0.344 | 0.106 | 0.203 | -0.045 | 0.137 | 0.289 | |
| | $X_8$ | -0.274 | -0.233 | 0.209 | 0.033 | 0.371 | -0.061 | 0.310 | -0.022 |

5.4.3 Relationship Between Co-operative Credit, Net Farm Income and Other Farm Inputs.

The assumptions are that farmer's net farm income are influenced by independent variables in the regression equation.

The cardinal objectives of a farmer is to increase his output and therefore his money income, Regression and correlation analyses were carried out to show the relationship between the value of co-operative credit and other variables and the net farm income. The pearson correlation analysis was conducted. The correlation coefficients were given for the dependent variable net farm income (NFI).

Table 6.3: Correlation Coeffients for the Model II (Co-operators)

| | NFI | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ |
|---|---|---|---|---|---|---|---|---|---|
| NFI | 1.0 | | | | | | | | |
| | $X_1$ | 0.081 | | | | | | | |
| | $X_2$ | -0.415 | 0.573 | | | | | | |
| | $X_3$ | 0.209 | 0.003 | -0.066 | | | | | |
| | $X_4$ | -0.423 | 0.079 | 0.343 | 0.413 | | | | |
| | $X_5$ | 0.181 | 0.368 | 0.049 | 0.062 | -0.080 | | | |
| | $X_6$ | -0.365 | -0.275 | 0.048 | 0.489 | 0.651 | -0.032 | | |
| | $X_7$ | -0.298 | 0.350 | 0.487 | -0.133 | -0.034 | 0.231 | 0.151 | |
| | $X_8$ | 0.129 | 0.013 | -0.072 | 0.772 | 0.447 | 0.005 | 0.571 | -0.163 |

The coefficients of determination ($R^2$) was .682 which shows that the equation explains 68 percent of the variation in the "farmers' income. The f-table which measures the overall significance of the regression was 5.37 (Table 6.0) and insignificant at 99 percent probability level.

The correlation results shown in Table 6.3 reveals that co-operative credit had a negative impact on farm size of co-operators and it was insignificant at 99 percent probability level. This may be due to the fact that co-operative credit were not only used in farm development per se. Also, because of the high labour costs and small amount of loan, only a small number of hired labourers could be employed and these few labourers cannot significantly increase the small farmer co-operative size of farm holding. It was assumed that in the absence of the

co-operative credit, the co-operators (farmers) resorts to the other sources of funds. The $X_2$ which is the farm size in the equation was highly and positively correlated to farmers' income; $X_3$ in the equation was the family labour input; $X_4$ was the cost of hired labour. Both $X_3$ and $X_4$ had great impact on farmers' income. The cost of capital equipment (depreciation) was calculated on ox-plough, while costs on hoes, cutlasses, baskets were assumed to be used up during production process.

From the correlation results of (Table 6.3) it has been shown that increase in farm size, family labour and cost of capital had increased the net farm income of co-operators. Increase in credit taken, cost of hired labour, cost of seeds and managerial ability which were supposed to increase the net farm income of the co-operators was not so. These might be due to the state of diminishing marginal returns of the co-operators farms.

### 5.4.4 Influence of Credit on Farmers Choice of Enterprises

In the rural areas of Gongola state and in particular Michika L.G.A., farmers, especially the small holders, inherit what their grand parent plant. There are many traditions, beliefs and taboos attached to the planting, tendering the harvesting of most food crops.

In general, co-operators concentrate more on the production of sorghum, cowpeas and maize. Also the non-co-operators concentrate on the same food crops i.e. sorghum,

cowpeas and maize. However, there is no significant difference in their choice of enterprises as shown in Table 6.4. The result of the study showed that about 31 percent and 28 percent of co-operators and non-co-operators grow cowpeas; while about 24 percent and 22 percent of co-operators and non-co-operators grow maize and only about 2 percent of co-operators grow cassava Table 6.4 showed that Michika co-operators planted more crops like maize, cowpeas and sorghum which have a shorter gestation (maturity) period. Some of the farmers interviewed argued that sorghum resisted drought and maize and cowpeas had a high return, brought quick money and required less labour compared to crops like cassava. Co-operators tended to be rational on the choice of farm enterprises. The foregoing analysis does not imply that non-co-operators were not rational in the choice of their farm enterprise, but from the study, it was found that they were not facing any constraint like the co-operators, hence they were free to select their crop enterprises either to suit their traditional believes, status in the society or plant the crops that would satisfy family needs.

Table 6.4: Farmer's Choice of Farm Enterprises

| Farm Enterprises | Co-operators | | Non-co-operators | |
|---|---|---|---|---|
| | No. of farmers | Percentage | No. of farmers | Percentage |
| Sorghum (G/corn) | 13 | 30.95 | 16 | 27.58 |
| Maize | 10 | 23.80 | 13 | 22.41 |
| Rice | 2 | 4.76 | 1 | 1.72 |
| Groundnut | 2 | 4.76 | 4 | 6.89 |
| Cowpeas (beans) | 12 | 28.57 | 16 | 27.58 |
| Bambara nuts | - | - | 2 | 3.45 |
| Cassava | 1 | 2.38 | - | - |
| Millet | 3 | 7.14 | 6 | 10.34 |
| Total | 42 | 100 | 58 | 100 |

Source: Survey data, 1991.

5.4.5 Shortcomings of Agricultural Co-operatives in Gongola State.

To determine the major problems of agricultural co-operative society was the objective five of the study. Co-operatives, the world over, face certain basic problems but the problems seem more acute in respect to Gongola state. It is the intensity of the problems and the degree to which they have been solved that determine the success or otherwise of a co-operative society, union or movement. The major problems include the following:

1. Lack of Patronage:

   Most of the co-operatives were organized along political or tribal lines, thus the co-operation is not strictly a business unit, but primarily an ethical or political movement.

2. Lack of Good Leadership and Management:

   The co-operative lack trained personnel to manage their affairs, and literacy level among the farmer members is very low. The co-operative's depends on the staff from the Ministry and co-operative federation limited, but the agricultural co-operative itself is not adequately staffed and this leads to poor organizational structure. Therefore a new reshufflement of the organization of co-operative is necessary.

3. Lack of Capital:

   There are lack of adequate capital and credit facilities to members. There are bottlenecks in obtaining finance from any financial institutions (especially deleyance and segregation of choising beneficiaries).

4. Low Level of Education of Members:

   Members of agricultural co-operatives are people mostly without any formal education. These groups of people therefore need to be educated on the concept and practices of co-operatives for them to appreciate the worth of such ventures. However, co-operative officers make the task of educating co-operative members difficult.

5. Lack of Storage Facilities and Marketing Outlets:

In agriculture, storage facilities and marketing outlets for produce are very important for the increased production to be of any benefit to farmers. In most L.G.A.'s of the state especially Michika L.G.A., however, adequate storage facilities for agricultural produce are almost non-existent.

6. Lack of Adequate Extension Services or Agents:

For the effective administration of agricultural co-operative society and for the improvement of the repayment ability of the co-operators, these major problems listed or enumerated have to be adequately solved i.e. lack of patronage, lack of leadership and management, lack of capital or credit facilities, lack of storage and marketing outlets, low level education of members, lack of adequate extension services and so on.

# CHAPTER SIX

## 6.0 SUMMARY, CONCLUSION AND SUGGESTIONS FOR FURTHER STUDIES

### 6.1.1 Summary of Findings.

The study was designed to measure the performance of agricultural co-operative society programmes on the farmer (member) income in Michika L.G.A. The major objectives of the study were the determination of the efficiency and effectiveness of using co-operative organization in supplying credit to the farmers, impact of credit on their (farmers) net farm income, size of holding and choice of enterprise. To achieve these objectives, the farm structure, the use of credit and other farmers productivity were analysed. Farm operations and net income of the farmers were analysed with tools that have been developed and used for such purposes. The following were the results of the analysis:

1. From the survey, it was discovered that co-operators have larger farm size than non-co-operators. For instance, a co-operator has, an average, 8.2 hectare of cultivated land as compared to 5.6 hectares of a non-co-operator. The difference was significant at 99 percent probability level.
2. Co-operators employed more hired labour and family labour than non-co-operators. On average co-operators employed a total of 2,621.77 man-hours of family labour, while non-co-operators employed 2,046.56 man-hours. Also 947.71 and 661.14 man-hours of hired labour were employed

by co-operators and non-co-operators. The difference was statistically significant at 99 percent level.

3. On the use of credit, an average of about ₦1,704.13 and ₦1,312.23 was received as credit by co-operators and non-co-operators during the study period. These loans were used for the purchase of fertilizers, herbicides, insecticides, etc.

4. Co-operators have higher net farm income than non-co-operators. On average, a co-operator farmer earned a net farm income of ₦848.00. While the non-co-operatoes earned net farm income of ₦766.96k. The differences were significant at 99 percent probability level.

In terms of distribution, about 34.28 percent of co-operators earned net farm income of less than ₦1,000.00 and 31.43 percent of non-co-operators earned net farm income less than ₦500.00. About 28.57 percent of co-operators earned net farm income less than ₦500.00 and 22.86 percent of non-co-operators earned net farm income of less than ₦1,500.00 and only about 2.86 percent and 5.71 percent of co-operators and non-co-operators earned net farm income of more than ₦3,000.00.

Further analysis showed that co-operators had a more evenly distributed net farm income than non-co-operators.

5. The result of the analyses showed that 68.2 percent of the observed variation in net farm income of co-operators was jointly explained by all the observed variables indicated in the model II. The adjusted $R^2$ was (.555) or

55.5 percent. The results further shows that farm size, family labour inputs and cost of capital equipment were important in explaining net farm income in the study area. The economic linkage therefore suggests a direct positive relationship. The sign of the coefficient of farmers size of holding was negative and the t-value was insignificant at 99 percent probability level. Also in Model II, credit showed an increase but insignificant relationship with the net farm income.

6. The result of the pearson correlation conducted showed a negative relationship between credit and net farm income and insignificant, having recorded a t-value of 0.81. Hence the co-operative credit programmes have a negative and insignificant impact on the net farm income of co-operators, although very low, it was significant at 99 percent of non-co-operators net farm income.

7. On farm enterprise choice, most of the co-operators and non-co-operators interviewed favoured sorghum, maize and cowpeas. On the whole co-operators and non-co-operators farmers planted the same crops with shorter gestation period.

8. The analyses shows that about 29 percent and 20 percent of co-operators and non-co-operators respectively had their inputs supply from government, and about 34 percent and 80 percent of co-operators and non-co-operators had their input supply from the market and only 37 percent of co-operators got their input supply from the union or society. This had indicated that co-operators solely depended on government

and society for their input supply, while the non-co-operators got their input supply from the market.

9. A total loan amount of ₦59,644.50k and ₦45,928.00 was collected as credit by co-operators and non-co-operators from different sources such as banks, society etc. The analyses also shows that about 31.43 percent co-operators receive loan from the society and about 37 percent and 30 percent of co-operators and non-co-operators receive nothing or no loan was given at all.

6.1.2 Conclusion

The results of the various analyses carried out in this study showed that co-operative credit has no impact on the net farm income of co-operators, though credit has an impact on the non-co-operators net farm income. There was no significant difference in the cost of production for co-operators and non-co-operators per se. This is not to say that the cost of production for non-co-operators was low or cheap. The insignificant impact of co-operative credit on its members is not unconnected with the fact that cost of production tends to be high coupled with low output prices. This high cost of production is attributed to high cost of chemicals, capital equipment and cost of seeds in the area. Also according to the respondents, an average labour cost of ₦30.00 per man-day was charged, and chemicals (Basagram) costs about ₦450.00 per 10 litres; fertilizer which cost the average of ₦50.00 per bag or more. This is cost of farm input coupled with low output prices tend to inhibit co-operative credit from exerting a significant impact

on the net farm income of its members.

Co-operative credit had negative impact on farm size of co-operators but was insignificant at 99 percent probability level. This may be due to the fact that co-operative credit was not used in farm development per se.

Secondly, because of the high labour costs and small amount of loan, only a small number of hired labourers could be employed and these few labourers cannot signficantly increase the small farmer co-operative size of farm holding.

The result also shows an even or fair distribution of net farm income of co-operators, about 34.28 percent and 22.86 percent of co-operators and non-co-operators respectively earned net farm income less than ₦1,000.00.

It has been observed in this study that co-operators had a fair distribution of net farm income than the non-co-operators, even through credit had an impact on the net farm income of non-co-operators. Then, planners for agricultural co-operative should continue to focus on the design and implementation of co-operative activities. However, such activities or movement must be articulated with adequate transport system, storage facilities, availability of improved and cheap farm inputs, efficient marketing system that will guarantee high producer prices to the rural small farmers, patronage, high level of education, well informed guidance and or efficient extension services.

6.1.3 Suggestions for Further Studies.

Administrators of co-operatives, co-operators, group farms, farmers and extension agents will find the suggestions in this thesis of a great value. These suggestions are:

a) Low level of education of members; programmes should plan to suit the local condition and local training of members, so that they can develop interest and participate in the programmes.

b) Government should give aid in the cause of drought occurrence or any natural disasters, which can be in kind (seeds, fertilizers, chemicals etc) or cash (money).

For efficient administration of co-operative programmes, input supply must be timely and adequately supplied, educational programmes like adult education classes should be used.

Agricultural co-operative society involves many aspect of co-operative activities which can either be co-operative marketing, group farming in crops or livestock or artisan enterprise. Therefore, one would wish to suggest that future researchers should go into other aspects of co-operative, e.g. how farm size or family labour or cost of capital equipment influences the net farm income of these co-operatives (marketing) group farming, artisan etc).

REFEERENCES


1. Adegeye, A.J. and J.S. Dittoh, (1983).
"The Origin and Principles of Co-operatives" Essentials of Agricultural Economics, pp. 193-197, Published by Centre for Agricultural and Rural Development University of Ibadan.

2. Adeyemo, R. (1984).
"Loan Delinquency in Multipurpose co-operative Union in Kwara state; Nigeria". Savings and Development Quarterly Review, No. 3, VIII.

3. AERLS (1983).
"Extension Guide, Co-operative", series No. 1, pp. 3, A.B.U., Zaria, Published in Jan. 1983.

4. Agbo, C.I. and R. Phillip (1988).
"Evaluation of Alternative Grain Stabilization Programmes for Nigerian Food Security", Agric. Admin. and Extension, No. 30, pp. 65-75.

5. Aliyu-Auchan, S.M. (1986).
"An Empirical Study of the Impact of Institutional Agricultural Credit at Farm Level in Funtua L.G.A. of Kaduna State", unpublished M.Sc, Thesis, Ahmadu Bello University, Zaria.

6. Atteh, D. and C.I. Agbo (1988).
"Formal Agricultural Credit Delivery System in Nigeria: A case study of Borno state", paper presented at the Fifth Annual Conference of the Farm Management Association of Nigeria, Abeokuta, Sept. 1988.

7. Chidebelu, S.A. and M. Isiogugu, (1982).
"The Impact of Co-operative Group Farming Societies in Nigeria: A case Study of Borno state", Ministry of Trade and Co-operative Publication, Maiduguri, Borno state, Nigeria.

8. Dickiel, A. (1981).
"A Group Farming in North Western Nigeria. Development Study", Department of Agricultural Economics and Management, University of Reading No. 18, pp. 159.

9. Enke, Stephen (1945).
"Consumer Co-operatives and Economic Effieiency" American Agricultural Economic Association (AAEA) Journal. Rev. 35 (1945): 148-55 cited by Peter Vitaliano (1983) in Co-operative Enterprise: AAEA Journal (1983) pp. 1077.

10. Erdman, H.E. and J.M. Tinley (1957).
"Principles of Co-operation". Bulletin 758 of the California Agric. Expt. Station, Berkeley, California, Fed. 1957, 33 pp. cited in Olayide, S.O. et al, (1981), Element of Rural Economics, pp. 223.

11. Ernest, O.M. (1972).
"The Role of Co-operative Marketing in Agricultural Development in Zambia", pp. 56-176. Unpublished Postgraduate Certificate Dissertation, University of Zambia.

12. Ezeugoh C.S. (1989).
"Ten years of (ACGSF) 1978-1988. Achievements Problems and Prospects" "Bullion Vol. 13, No. 3 and 4, pp. 2, 1989. Central Bank of Nigeria Publication.

13. Famoriyo, O.A. (1977).
"Institutional Promoting Rural Development in Nigeria". Conference of Rural Development and Regional Planning held at the University of Science and Technology: Kumasi, Ghana, 11-16 P April.

14. Famoriyo, S. and E.C. Nwagbo (1989).
"Problems of Agriculture and Agricultural Finance in Nigeria". Agricultural Finance in Nigeria: Problems and Prospects. Proceedings of a Seminar Organised by the CBN, April, 1981.

15. FAO (1973).
"Agricultural Credit in the near East and the Mediterranian Basin" Report on the Seminar for Selected Countries of the near East Region and the Mediterranean Basin. Held in Rome, Italy, 29th Jan. to 9th Feb. 1973.

16. FAO (1974).
Report of the FAO Finland Regional Seminar on Agricultural Credit in Africa. Held in Accra Ghana 3-14 December, 1973.

17. Galeski, B. (1977).
"Collective Farming Characteristics", Agricultural Y-Sociedad 1977, 3, 66 - 109.

18. Galeski, B. (1978)
"Aspects and Problems of Collective Farming" Agricultural Y-sociedad 6, 9-30 pp.

19. Gongola State (1990).
Official Diary: Bye-laws of Co-operative Societies (no date) and statistic and Economic Survey.

20. Hays, H.M. (1973).
"The Organization of the Staple Grain Marketing System in Northern Nigeria". A study of Efficiency of Rural-Urban Link. Unpublished Ph.D Thesis, Kansas State University, pp. 78-79. Cited in Ali, O.P. (1985) Co-operative Marketing of Palm Produce: A case study of Igala Co-operative Marketing Union Benue state. An. M.Sc Thesis A.B.U., Zaria.

21. Heady, E.O., and J.L. Dillon (1961).
Agric. Production Functions, Iowa State University Press, Ames, Iowa.

22. Helmberger, P.G. and S. Hoos, (1965).
"Co-operative Bargaining in Agriculture", Berkeley: Univ. of California Division of Sci., 1965. Cited by Staaz John, M. (1983) AAEA, pp. 1085.

23. Helmberger, P. (1962).
"Co-operative Enterprise and Organization Theory". Journal of Farm Econ. 44 (1962) 275 - 90, Cited by Vitaliano, Peter (1983) AAEA.

24. Hornby, (1980).
ELBS Dictionary.

25. Ijere, M.O. (1980).
"Co-operative Development Plans", Nigerian Journal of Co-operative Studies, Vol.1, No. 1. 1980.

26. Ijere, M.O. (1980).
"The Future of Co-operative in Developing Countries: A case study of Co-operative Management in Nigeria", Agric. Admin 7(3) 1980, 169-197pp.

27. Ijose, A. and J.N. Abaelu (1973).
"Institutional Credit for Small Farmers. A Case Study of Western Nigeria Agricultural Credit Corporation". A.I.D. Spring Review of Small farmer Credit Vol. 6, No. SR 106.

28. Ilebami, B.C. (1983).
"Impact of Credit on Small-scale Food Producing Farmers of Akoko South and Akoko North".
Unpublished M.Sc Thesis, Ahmadu Bello University Zaria.

29. Khusro, A.M. and A.N. Agawal (1961).
The probelms of Co-operative Farming in India
Asia Publishing House, Londonn,pp. 52 - 59.

30. King, Roger (1974)
"Agricultural Credit to Small Farmers".
Co-operative Growth for Agric. Development.
Edited by Mijindadi, N.B. (1974), p. 140.

31. King, Roger (1974).
"Achieving the Objectives of Farmers Co-operatives with Particular Reference to Parts of Northern Nigeria", pp.77 - 78, Edited by Mijindadi, N.B. (1974), Co-operative Growth for Agricultural Development.

32. Kwara State (1970-74).
Second Development Plan, 1970 - 1979.

33. Levay, Clare (1983).
"Agricultural Co-operative Theory: A Review"
Journal of AAEA 34 (1983) 1-44 pp. Cited by Vitaliano, Peter (1983), Journal of AAEA pp. 1076.

34. Marschak and Andpews (1961)
Cited in Olayide and Heady (1982). "Introduction to Agric. Prod. Economics, I.U.P. pp. 45.

35. Mendermausen and Tinbergen (1961).
Cited in Olayide and Heady (1982). Introduction to Agric. Prod. Economics, I.U.P., pp. 45.

36. Mobay , W.T. (1987).
"Impact of Public Agricultural Credit Programmes on the Incomes of Small-Farmers: A case study of Oyi L.G.A. of Kwara State", An unpublished M.Sc Thesis, Dept. of Agric. Economics and Rural Sociology, Ahmadu Bello University, Zaria.

37. Mohammed, M.A. (1981).
"Commercial Banks and Agricultural Finance: Problems and Prospects in the 1980s".
Proceedings of a Seminar organised by CBN, April, 1980.

38. Mohan, D. and G. Singh, (1977).
"Cost and Productivity of Institutional Credit to the Farmers", Financed by SFDA; in Punjab.
Savings and Development, No. 1, 1977.

39. NACB (1987).
Guidelines to Applicant on Small Holder Loan Scheme.

40. NACB (1991).
Small Holder Loan Scheme for Nigerian (1981-1990).

41. Norman, D. (1967)
"An Economic Study of 3 Villages in Zaria Province: Input-out relation, Samaru Miscellaneous Paper, No. 33, A.B.U., Zaria.

42. Nurkse, R. (1963).
Problems of Capital Formation in Under Underdeveloped Areas. Oxford University Press, New York.

43. Olayemi, J.K. and S.A. Oni (1971).
"Cost and Return in Peasant Cocoa Production. A case Study of Western Nigeria". Bulletin of Rural Econs. and Soc. University of Ife.

44. Olayide, S.O. (1981).
"Organizing Rural Production Co-operatives"
Element of Rural Economics, pp. 8, 225,
University of Ibadan Press (I.U.P), Ibadan.

45. Olayide, S.O. and E.O. Heady (1982).
Introduction to Agric. Production Economics,
University of Ibadan (IUP) pp. 44-46.

46. Olowe, M.O. (1976).
"Factors Affecting Co-operative Supply of Farm Inputs in Western state of Nigeria",
University of Massachusetts Publication.

47. Olukosi, J.O. and P.O. Erhabor, (1988).
Introduction to Farm Management Economics: Principles and Application, Agitab Publishers, Zaria.

48. Osuntogun, A. (1972).
"Co-operative Functions and Suggestion for Improvement, Experiences in the Western State of Nigeria, in N.B. Mijindadi (ed)
Co-operative Growth for Agricultural Development.
Zaria, AERLS, A.B.U.

49. Osuntogun, A. (1973).
"Agricultural Credit Societies for Nigerian Farmers: Small Farmer Credit in Africa/A.I.D. Spring Review on Small Farmer Credit, Vol. VI, No. 106.

50. Osuntogun, A. (1974).
"Current Co-operative Functions and Suggestions for Improvements: Experiences in the Western State of Nigeria". p. 62 - 68. In Co-operative Growth for Agricultural Development. Edited by N.B. Mijindadi, 1974.

51. Osuntogun, A. (1976).
"Co-operative and Agricultural Development, the Nigerian Experience" Review of International Co-operation 1976 69(2) 61-64 pp. Dept. of Agric. Econs. & Ext., University of Ife, Ile-Ife, Nigeria.

52. Osuntogun, A. (1980).
"Co-operative and Small-scale Farmers in Nigeria". Nigerian Small-Farmers-Porblems and Prospects in Integrated Rural Development. Edited by Olayide, S.O. CARD University of Ibadan.

53. Osontogun, A. and B. Olufokunbi (1980).
"Improving the Performance of Marketing Co-operatives in Nigeria in the 1980s", Nigerian Journal of Co-operative, Vol. 1, No. 1, 1980.

54. Osuntogun, A. and O. Oludimu (1981).
"Extending Agricultural Credit Through Public Institutions in Nigeria: A Comparative Study of the Ondo state Agricultural Credit Co-operation and the Ogun State Development Corporation", Proceeding of a Seminar organized by the CBN April, 1989.

55. Palmer, E. and M.O. Ojo (1981).
"An Appraisal of the Role of the Public Sector in Agricultural Finance in Nigeria", Proceeding of a Seminar Organized by CBN, April, 1981.

56. Reder, Bronfenbremer and Smith (1961).
Cited in Olayide and Heady (1982). Introduction to Agric. Production Economics, I.U.P., pp. 45.

57. Schiller, O.M. (1969).
Co-operation and Integration in Agricultural Production, Asia Publishing House, Bombay, pp. 59 - 60.

58. Staatz, J.M. (1983).
"The Co-operative as a Coalition: A Game Theoretic Approach", AAEA Journal (1983) pp. 1084-5.