REPORT

on

TRAINING WORKSHOP IN PARTICIPATORY RURAL APPRAISAL TECHNIQUES

and

A PARTICIPATORY RURAL APPRAISAL OF CASSAVA PRODUCTION, PROCESSING AND MARKETING IN THE GA RURAL DISTRICT OF THE GREATER ACCRA REGION

By

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FOREWORD

This report is presented in two parts (Part I, Part II).

Part I covers the theoretical aspects of the workshop on Participatory Rural Appraisal Techniques, highlighting the relevance of the workshop to the IDRC/ARCT Agro-Food enterprises Project.

Part II reports exclusively on the field work which was carried out as part of the workshop and was aimed at first providing opportunity for using the tools and techniques studied in the course of the workshop and secondly for studying the Cassava production, processing and marketing systems in Doblo Gonno and Mantsi - two communities in the Ga Rural District of Accra.

There was an evaluation session at the end of the workshop.

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PART I

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WORKSHOP ON PARTICIPATORY RURAL APPRAISAL TECHNIQUES

1.0 INTRODUCTION

The ARCT/IDRC Project "AGRO FOOD ENTERPRISES" aims to promote environmentally benign small and medium scale agro-food enterprises, particularly those dealing with cassava and fish, in selected African countries with a view to enhancing their techno-economic development on a sustainable basis, valorising their natural resources and generating employment.

The specific objectives are:

a. To identify technologies for agro-food enterprises using appropriate feasibility studies.

b. To establish and promote the viable operation of small/medium scale agro-food enterprises for cassava and fish, using the experience gained by the ARCT in previous projects.

c. To strengthen the capacities of entrepreneurs, policy-makers, researchers, technical personnel and institutions in the promotion of sustainable small and medium scale agro-food enterprises.

d. To disseminate relevant information so as to promote the utilisation of research results pertinent to the agro-food industry.

The project is implemented in 4 ARCT member countries: Benin, Ghana, Nigeria and Senegal. It is executed by 4 institutions of these countries:

- Direction de l'Alimentation et de la Nutrition Applique (DANA) in Benin, dealing with cassava processing in the frame work of this project.
- Food Research Institute (FRI) in Ghana on cassava processing.
- Nigerian Institute for Oceanography and Marine Research (NIOMR) on fish processing.
- Institut de Technologie Alimentaire (ITA) in Senegal on fish processing.

Two of these Institutions FRI and NIOMR, have in collaboration with ARCT established Pilot and Demonstration Units (PDU) dealing respectively with cassava and fish. Efficient

equipment developed in these PDU's, will be adapted and improved, and will be used in the agro-food small and medium scale enterprises in the 4 participating countries.

A workshop on Participatory Rural Appraisal (PRA) was organised from 18 to 27th November 1996 at the Food Research Institute, Accra, Ghana to:

i. Strengthen the capacities of researchers and technicians working on the Agro-Food project (cf. Objective 'C').

ii. To study the cassava production processing and marketing systems in the Ga Rural District of Accra.

2.0 METHODOLOGY

2.1 WORKSHOP PROGRAM

The program had the following components

1.	Planning	-	1 day
2.	Theoretical training and secondary data reviews	-	3 days
3.	Field Practicals and studies on cassava handling practices in two villages using PRA tools and techniques 4 days		
4.	Report writing and editing:	-	2 days.

2.2 TEAM COMPOSITION

The Team was composed of 5 members - one facilitator from ARCT and four FRI staff members. Three of the researchers from FRI have had some training & practice with PRA Tools whilst the other was not familiar with PRA methods, but had used conventional survey methods .

The composition of the team being made up of both persons familiar with the environment and persons not familiar with the environment has introduced a certain element of complimentarity, and has facilitated the limitations of biases linked to an over familiarity of team members with the environment.

The team was made up of 2 males and 3 females. This is in order and quite necessary since the processing of cassava is essentially in the domain of women.

The team members were:

1. Mrs. Mame Binta GAYE, specialised in rural economy and sociology, from ARCT, Facilitator.
2. Mrs. Phoebe Gifty Lokko, Food Technologist, and Socio Economist, Senior Research Officer in FRI.

3. Mr. Nanam Tay Dziedzoave, Biochemist /Food Technologist, Research Officer in FRI.
4. Mr. Cletus Kwadwo Gyato, specialised in machine design and construction, Research Officer in FRI.
5. Mrs. Wilhelmina Quaye, Agricultural Economist, Assistant Research Officer in FRI.

2.3 THEORETICAL TRAINING

The theoretical part lasted 3 days, it was conducted along the following lines

- Participants presentation
- Expectations and Apprehensions of participants
- Introduction to PRA
- PRA Tools and Techniques
- PRA planning
- Field organisation

2.3.1 Participants Presentation

The participants were paired up and requested to interview each other in order to obtain background information about their respective partners. Afterwards, each participant introduced his/her partner to the rest of the group. This exercise enabled participants to know each other better and helped evaluate their knowledge level in PRA.

2.3.2 Expectations and Apprehensions

2.3.2.1. Expectations

1. Further clarification on PRA/RRA tools and principles
2. Use of PRA/RRA in carrying out analytical survey
3. Field exercise to provide some useful information on cassava

4. Advantages of PRA over conventional survey methods
5. Difference between PRA and RRA
6. Ability to carry out the role in this project and in other subsequent projects.

7. Ability to train others and carry out field activities based on PRA/RRA
8. Gathering of general information about the villages and also in agriculture (especially on cassava handling practices).

2.3.2.2 . Apprehensions

1. Some level of hostility and indifference could be met from some members of the communities to be visited.
2. A field visit being just an exercise could bring some disappointment to the village when after an exercise, no practical benefit comes to them.
3. Some members of the community may give unreliable information due to some misconceptions they may have about researchers.
4. The reluctance of some respondents to give actual information for fear of being queried for their poor hygienic practices, or of being assessed for taxation by the government.
5. Being in a pre-electoral period, the communities could think that the researchers are politically motivated.
6. The community might look for a reward for giving out information.
7. The risk of meeting unfriendly respondents.

2.3.3 Objectives of the Workshop

1. To learn about principles, tools and organisation of the Participatory Rural Appraisal.
2. To familiarise ourselves with specific techniques for information gathering and analysis
3. To practice the methods in the field.
4. To identify cassava processing techniques.

5. To identify the actors involved in the cassava production, processing and marketing channel.
6. To identify constraints encountered by the actors.
7. To identify needs and aspirations.

2.3.4 Introduction to Participatory Rural Appraisal (PRA)

PRA is a process of learning about rural conditions in a systematic informal, intensive and iterative manner.

Systematic - The work plan is structured around a theme, or comprehension of a problem or an activity. This work plan is flexible.

Informal - A check list is used instead of a formal questionnaire. The discussions with respondents takes a conversational form.

Intensive - With the PRA, data is obtained and analysed quickly to generate results in a limited time.

Iterative - Researchers can review their approach and hypothesis, gradually, while acquiring a better knowledge of the situation.

PRA is based on principles. The main features are:

2.3.4.1 Triangulation

This is a form of cross - checking. Accuracy is achieved through diverse types of information, from different sources. Triangulation is done in relation to:

- Composition of the team
- Sources of information
- Tools

2.3.4.2 *Multidisciplinary Team*

The members of a PRA team should have different skills and background. The different viewpoints of team members will complement each other and will provide a more comprehensive picture. In this way, the team will approach the topic of the appraisal from different view points. All members of the PRA team are involved in all aspects of the study design data collection and analysis. PRA is a learning experience in which the participants also learn from each other.

2.3.4.3 *Substantial Use of Indigenous Knowledge*

PRA is carried out as close to the source as possible. The communities perceptions and understanding of resources, situations and problems are important to learn and comprehend because solutions must be viable and acceptable in the local context and because local inhabitants posses extensive knowledge about their resource settings. In many instances, PRA researchers have discovered that farmers are capable not only of devising viable solutions to local problems based on their own understanding, but also of conducting relatively sophisticated field experiments in response to local constraints and opportunities. An understanding of indigenous knowledge and practices is therefore extremely valuable for viables and appropriate rural development; many of the methods, tools and techniques of PRA have been selected for their ability to elicit, evaluate, understand and avoid misunderstanding indigenous knowledge.

2.3.4.4 *Mix of Techniques*

The PRA techniques are taken from a wide range of possible tools which are tailored to the specific requirements of the study.

2.3.4.5 *Flexibility and Informality*

Plans and research methods are semi-structured and are revised adapted and modified as the PRA field work proceeds.

2.3.4.6 *Interaction*

2 types of interactions: - interaction between researchers and interaction between researchers and population. The main aspect of the PRA is learning from, with and by members of the community. The team should empathise with the community member and be able to see their lives and their problems through the eyes of the community members. Most of the activities are done jointly with community members or by themselves (ex: planning, mapping, analysis). Involving community members can greatly facilitate interaction, understanding and analysis of collected data.

2.3.4.7 *Optimal Ignorance and Appropriate Imprecision*

The team avoids unnecessary detail, accuracy and over collection of data which is not really needed for the purpose of the PRA. The team asks itself: "What kind of information is required"? For what purpose? And how accurate does it have to be?

2.3.4.8 *On the Spot Analysis*

Learning takes place in the field and the analysis of the information gathered is an integral part of the field work itself. The team constantly reviews and analyse its findings in order to determine in which direction to proceed. This builds up understanding, knowledge and narrows the focus of the PRA .

2.3.4.9 *Offsetting Biases and Being Self Critical*

Biases such as Spatial bias, personal bias, socio-economic status bias, and gender bias are largely eliminted.

2.3.5 PRA Applications

PRA can be used for

- Needs assessments
- feasibility studies
- identifying priorities for development activities.
- implementing development activities where new information needs to be collected
- monitoring or evaluating development activities.

4 types of PRA can be identified:

Exploratory PRA	-	Collection of information on a general problem with a view to formulate hypothesis for future research.
Evaluation PRA	-	Appreciate the results of a program of action Hypothesis review and readjustment of program.
Participative Planning	-	Involving populations in planning, or readjustment relating to them. Identification of program, and implementation by population.
Thematic PRA	-	To investigate a specific theme identified during an exploratory PRA for the formulation of specific hypothesis and recommendation.

2.3.6 PRA Tools and Techniques

The use of tools and techniques is one of the great originalities of PRA. This method is based on virtual supports elaborated by community members themselves, gradually, during the discussion and self analysis process. This visualisation makes easy the appropriation of the results by the communities.

It presents several advantages:

- It is a good communication support that facilitates the discussions between members of the community, and between them and the researchers.
- It stimulates self analysis by the communities.
- It allows the elaboration of diagrams and maps which can be used later on in the framework of the analysis of the local situation, or as support to a monitoring process.
- It makes easy the involvement of marginalised groups.
- It is a good means of expression for populations who have not mastered the art of writing.

The PRA tools mostly used are:

2.3.6.1 Review of Secondary Sources

Secondary sources are sources of information which are relevant to the area or subject of planned PRA and are available in published or unpublished form (reports, statistics, maps, aerial photos, films). Secondary sources form the background information for any information gathering and much time can be saved by knowing which data already exist and do not have to be collected again. They are also useful for clarifying the PRA topic and formulating hypothesis by reviewing what has already been said or written about the topic and what has been missed in existing records by sources.

2.3.6.2 Direct Observation

Direct observation consist of:

- measurement, for example: field size, weight of harvest, volume.
- indicators: household type as an indication of wealth, dresses
- proverbs & anecdotes, photos, samples, children's toys.
- sites visits: markets, transportation, work sites, homes, schools

All these have to be used while observing, smelling, listening, touching, tasting, participating and sharing in the activities in the community.

2.3.6.3 . Semi-Structured Interviews (SSI)

SSI is one of the main tools used in PRA. It is a form of guided interviewing where only some of the questions are predetermined and a checklist is used. It is a flexible operation, the progress of which is determined by the interviewees response.

- Individual interview: For representative information, some persons are interviewed on the same topic.
- Key Informant Interview: For special information, where a community member has special knowledge on a particular topic.
- Focus Group discussion: To discuss in detail specific topics with a group.

Six (6) keywords have to be used: Who, Why, What, Where, When, and How.

2.3.6.4 . Ranking

Ranking or scoring means placing something in order. This tool complements SSI by generating basic information which leads to more direct questioning.

Strengths of ranking:

- useful for sensitive information especially income and wealth.
- ranking score are easier to determine than absolute measurements.

Ranking methods include:

- *Preference Ranking Or Hierarchical Classification*: allows a quick determination of the main problems or preferences of individual villages and enables the priorities of different individuals to be compared easily.
- *Pair-wise Ranking*: It is a comparison, in pairs, of several variables. It allows the determination of the main problem of individual community members, identification of their ranking criteria, and a comparison of the priorities of different individuals.
- *Direct Matrix Ranking or Ranking Criteria Matrix*: It involves comparing different elements following certain criteria determined by the communities. It allows the establishment of a hierarchy of different solutions or options according to the criteria.

2.3.6.5 . Diagrams

A diagram is any simple model which presents information in an easily understandable visual form.

Value of Diagrams:

- They help to simplify complex information
- They facilitate communication
- They stimulate discussions
- They increase consensus among team members
- They are an excellent way to involve the community and to discover their views and categories.

Diagrams may be classified under various concepts

Concept	Type of Diagram
Space	Map, transect
Time	Seasonal calendar, daily roster chart, time trend, historical profile.
Relation	Flow diagram, livelihood analysis, system diagram
Decisions	Venn diagram

Maps are systematic representations which allow the visualisation of the space and its occupation.

Maps can be drawn for many topics:

- Demography
- Residential statistics
- A village's use of natural resources
- Fields and land use
- Use of the space by social groups
- Water
- Soils, infrastructure

Transects are diagrams of main land use zones. They represent the main features, resources, uses, and problems of different zones. It is made by taking a walk through the village and surroundings area and noting essential features, which adequately describe each zone. These features may be:

- soils
- crops
- livestock
- problems
- solutions

It is recommended, during this walk to pass through the direction presenting the most variability.

Seasonal Calendars present in a diagrammatic form the main activities, problems opportunities etc. throughout the annual cycle. It helps to identify months of greatest difficulty, and vulnerability, months of intensive work.

It can be used to summarise information on annual trends such as:

- Local seasons
- Climate (rainfall and t°)
- Crop sequences
- Crop pests and disease
- Livestock disease
- Labour demand for men, women and children
- Price, income and expenditures

Daily Routine Diagrams collect and analyse information on the daily patterns of activities of community members. It allows a comparison of the daily routine patterns for different groups of people and seasonal changes in these patterns.

Historical Profiles gives important information for understanding the present conditions in a community and their importance for the present situation. Such events may include:

- Creation of the village
- Building of infrastructure
- droughts and famine
- Introduction of new technology

Pie Charts are used for appreciating or materialising the relative importance of different elements (for example, work time for different activity, sources of income).

Venn Diagrams show the key institutions and individuals in a community, their relationship and importance for decision making, their relationship with other institutions or individuals outside the community.

. the size of the circle indicates the importance of the institutions.

. the size of the intersection indicates the importance of the relations.

Separate circles	-	no contact
touching circles	-	information interfaces between institutions
small overlap	-	some cooperation between institutions
large overlap	-	considerable cooperation between institutions

Flow Diagrams show causes, effects and relationships between key variables.

Examples are:

. Relationship between economical, political and the mentally depraved

. Flow of commodities and cash in marketing system

. Production cycle for a major commodity

2.3.6.6 . Analysis Group Discussions

It is an intensive, semi-structured session in which information gathered in the field is analysed and recommendations for further actions are made. It is an important tool which involves a number of the community members in decision making. It involves the field team and often outsiders with skilled experience, for example, village extensionist, and teachers. It allows community members to express their choice and priorities.

Diagrams can be used to summarise findings and interactions:

- problems tree
- hierarchical grid
- problems and hypothesis of solutions to grid
- pie chart

2.3.7 PRA Planning

Due to the multidisciplinary, interactive and iterative characteristics, the PRA planning has to be made rigorously. The following elements have to be considered:

1. Sites Selection

. Partners identification: institutions, communities, resource persons

. Partners information

. Logistical problems

2. Team Composition

The following criteria have to be considered:

. Team size

. Sex: men and women

. Professional diversity

. Ease of familiarisation with the prevailing situation

. PRA experience

3. Objectives definition and check-lists elaboration

The objectives and the checklists should be done by all the team members. The check lists are translated into key questions. The tools and techniques to be used are defined. The checklist should be reviewed during the field work and adapted to the circumstances.

PART II

FIELD WORK

CHAPTER 1

CASSAVA PRODUCTION, PROCESSING AND MARKETING AT DOBLO GONNO AND MANTSI

1.1. BACKGROUND INFORMATION

Root tuber crops and plantain are the major starchy staples of vital importance in the diets and food security of many developing countries. In Ghana the important staple foods include cassava, yam, cocoyam, plantain, maize, rice, millet sorghum, potatoe sweet and Irish. Cassava, yam, cocoyam and very limited quantities of Sweet and Irish potatoes contribute more than 60 percent of the daily calorie intake of majority of Ghanaians and ensures access of the population at all times to enough food for sustained and healthy life (F. Ofori, 1991).

In terms of production and relative importance of the listed staple foods in Ghana, cassava is by far the most important crop, followed by maize, with yam and cocoyam. Cassava's contribution to the Agricultural Gross Domestic Product (AGDP) is about 19% and this is higher than cocoa which is 13%. Table 1.1 shows the contribution of various crops to the GDP of Ghana in 1990.

1.1.1 Production Areas:

Cassava is grown in almost all the regions of Ghana with the greatest production in the Brong-Ahafo and Eastern Regions. Other regions that produce cassava in large quantities include Ashanti, Western, Volta, Central, Northern and Greater Accra. However limited quantities are also produced in the Upper East and West regions. Average yield of cassava is about 7.8 mt/hectare (Ministry of Agriculture, 1991).

Table 1.1 Contribution of various crops to GDP of Ghana (1990)

Crop	Percentage
Cassava	19.2
Yam	16.7
Cocoyam	10.2
Plantain	13.0
Cocoa	13.0
Maize	3.8
Rice	1.1
Sorghum	1.2
Millet	1.0

Source: PPMED, MOA (Policy Planning, Monitoring & Evaluation Division, Ministry of Agric.

1.1.2 Area Under Cultivation

There has been a steady increase in the area under Cassava cultivation in Ghana, over the years. The total estimated area under cassava cultivation for the past five years are as given in Table 1.2.

1.1.3 Level of Production

Production estimates of cassava in Ghana for the past five years are given in the Table 1.3 below. Cassava produced in Ghana is either cooked fresh for "Ampesi" or "fufu" preparation, or processed into other products. The processed cassava products include dried Cassava chips, Agbelima (fermented cassava dough), Gari, Kokonte, Starch, Tapioca, Yakayake, Agbelikakro, etc. for local consumption and for export.

Table 1.2: Area Estimates of Cassava in Ghana

Year	Estimated Area in Hectares
1990	322,800
1991	534,700
1992	551,900
1993	531,800
1994	520,400
1995	551,300

Source: PPMED, MOA, Accra.

Table 1.3: Production Estimates of Cassava in Ghana

Year	Production Estimates in '000MT
1990	2,717.000
1991	5,701.5
1992	5,662.0
1993	5,972.6
1994	6,025.0
1995	6,611.4

Source: P P M E D, MOA, Accra.

From the foregoing the importance of cassava as a food crop can not be over emphasised. In view of this two villages, namely Doblo Gonno and Mantsi , which produce and process significant quantities of cassava were chosen for the study.

1.2 METHODOLOGY

1.2.1 Preparation of Checklist

As part of the preparatory activities for the field work a checklist for PRA studies was prepared by the team. (Table 1.4)

The tools used during the study included:-

-Secondary data review

- Maps

-transects

-pie charts

-ranking

-direct observation

-SSI

-Venn diagrams

-seasonal calenders

-flow diagrams

1.2.2. Site Selection

The two villages, Doblo Gonno and Mantsi were identified prior to the commencement of the training workshop. Contacts were made with the chiefs, heads of the villages to announce the arrival of the PRA team .A contact person was identified in each village.

TABLE 1.4 CHECKLIST PREPARED FOR PRA STUDIES IN DOBLO GONNO AND MANTSI

TOPIC	SUB-TOPICS	APPLICABLE PRA TOOLS AND TECHNIQUES			
		SSI	DIAGRAM	DIRECT OBSERVATION	SECONDARY SOURCES"
PRODUCTION	Varieties	Farmers	Ranking	"	"
	Acreages under cultivation	"	transect	"	"
	Yield	"	ranking	"	"
	Role of Men & Women	"	bar chart	"	"
	Cultural Farming Practices	"	seasonal calenders	-	"
	Land tenure	"	ranking	"	"
	Labour	"	seasonal calender	"	"
	Pests & diseases	"	ranking, seasonal calender	-	"
	Financing	"	pie chart	"	"
	Other inputs	"	-	-	"
	Needs	"	ranking	"	"
	Associations	"	pie chart, venn diagram , ranking	"	"
	Help	"	pie chart, ranking	"	"
	Constraints	"	pie chart, problem tree, ranking	"	"

CHECKLIST.(CONTD)

TOPIC	SUB-TOPICS	APPLICABLE PRA TOOLS AND TECHNIQUES			
		SSI	DIAGRAM	DIRECT OBSERVATION	SECONDARY SOURCES"
PROCESSING	Source of raw material	"	pie chart	"	"
	Processing method	"	flow chart	"	"
	Processing sites	"	photo, graphs, maps	"	"
	Capacities & frequency of Processing	"	seasonal calender	"	"
	Equipment used	"	photo, graphs, drawings	"	"
	Level of Technology	"	-	-	"
	Labour	"	seasonal calenders	"	"
	Roles of Men & Women	"	matrix ranking	"	"
	Types of Products & Recovery Rates	"	pie chart, ranking	"	"
	Funding	"	rank, pie chart	-	"
	Association & organisation	"	transect, map, venn diagram, ranking	-	"
	Yield categorisation of processors	"	ranking, problem tree	-	"
	Constraints	"	ranking	"	"
	Needs	"	rank,	"	"
	Processing Cost	"	seasonal calenders	-	"
	Utilisation of secondary product by/waste products	"	flow chart, venn diagrams	"	"

CHECKLIST (CONTD)

TOPIC	SUB-TOPICS	APPLICABLE PRA TOOLS AND TECHNIQUES			
		SSI	DIAGRAM	DIRECT OBSERVATION	SECONDARY SOURCES"
Marketing	People involved	"	ranking	"	"
	Markets	"	channels, maps, ranking	"	"
	Transportation	"	ranking	"	"
	Pricing	"	seasonal calenders	"	"
	Packaging	"	photo graphs, ranking	"	"
	Storage	"	photo graphs	"	"
	Organisation of Market	"	venn diagram	-	"
	Financing	"	ranking, pie chart	-	"
	Needs	"	ranking	"	"
	Gender	"	photo graphs	"	"
	Constraints	"	problem tree, ranking	"	"

1.3 DOBLO GONNO AND MANTSI - LOCATION AND HISTORICAL PROFILES

The communities visited included Doblo Gonno and Mantsi all within the Ga rural district of the Greater Accra Region. Doblo Gonno is located about 6.5 kilometers west of Amansaman which is the capital of the district, (see Fig. 1.1). It has a population of about 400 people, comprising 250 adults and children of 0-5 years about 72 and 6-8 years of age about 65.

The people are predominantly farmers and processors of cassava. Historically the people of Doblo Gonno migrated from Akatsi in the Volta Region. In 1924 Mr. Ahiaba, native of Akatsi migrated from Akatsi and settled at the present Doblo Gonno with Mr. Clarke Mills who owned land. In about 1929 close relations of Ahiaba also moved from Akatsi and joined him. The chronological historical profile of major events in Doblo Gonno is shown in Table 1.5

Mantsi is located about 4.5 kilometers east of Medie, which is north of Amasaman on the Accra Nsawam road. It has a total population of about 500 people, of which 292 are adults. Like Doblo Gonno the people are mostly farmers that have migrated from Akatsi and surrounding areas. See Table 1.6 for the Chronological historical profile of major events in Mantsi.

Maps of Doblo Gonno and Mantsi were prepared in the field showing the distribution of residences, farmlands, important buildings and land marks over the total land area covered by the two villages. (Fig 1:2 and Fig 1:4) A transect of Doblo Gonno showing a cross sectional representation was also prepared (Fig. 1:3)

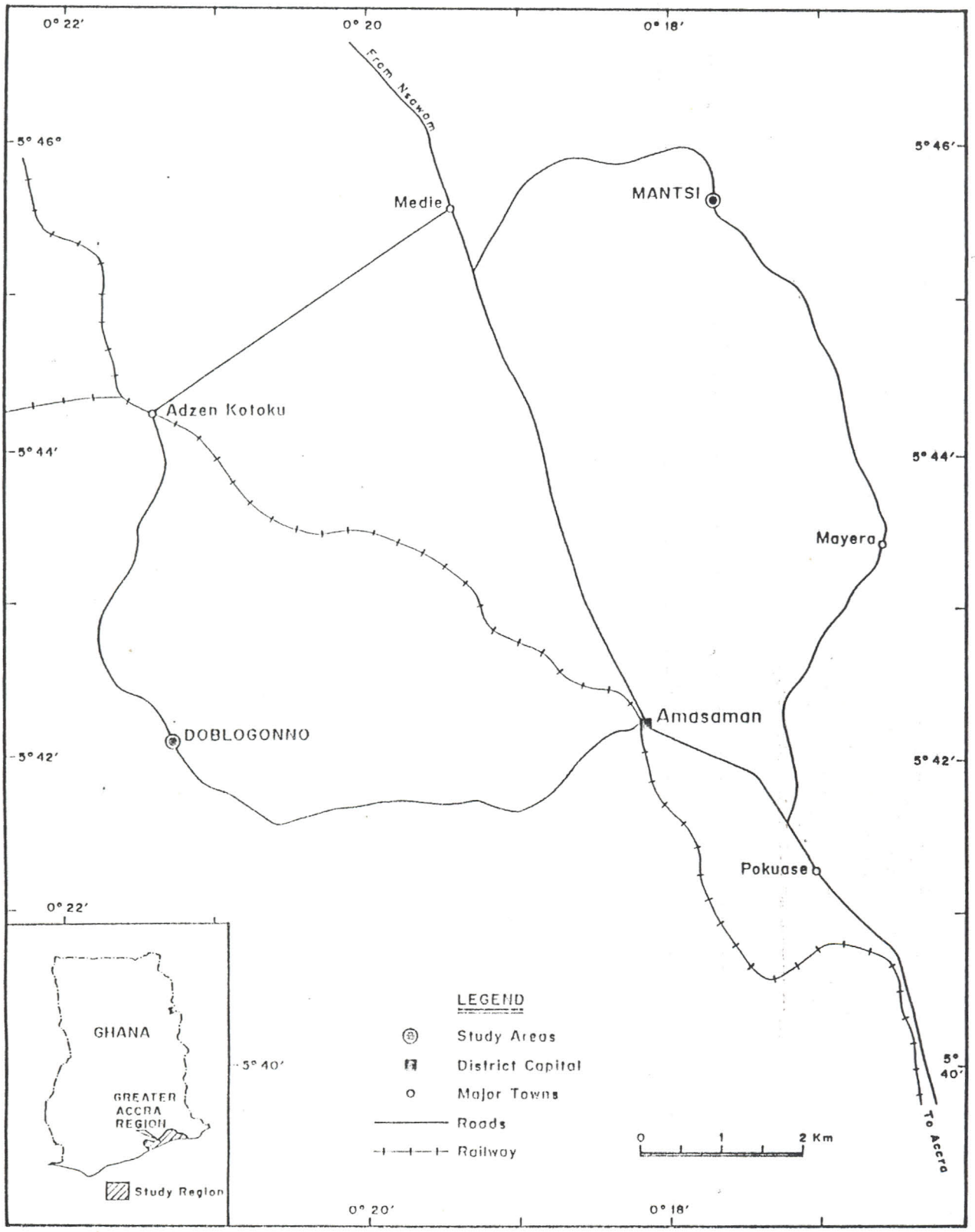
Table 1.5 Chronological Historical Profile of Major Events In Doblo Gonno

Year	Major Events
	Mills Clarke, first man to settle on Land (Land Owner of Doblo Gonno)
1924	Ahiaba migrated from Akatsi and settled with Mills Clarke on the land
1929	Other people migrated from Akatsi and joined Ahiaba on the land
1960	Construction of road through Doblo Gonno from Amasaman to Adzenkotoku
1969	Ahiaba left Doblo Gonno to resettle in Ho
1990	Sod cutting for the foundation of Gari Processing Project by Africa 2000
1991	Establishment of Evangelical Free church in Doblo Gonno
1991	Installation of the Processing Mill (Corn Mill and Cassava Grater)
1993	Planting of wood lot in Village
1996	Establishment of Nursery/Primary School in Doblo Gonno

Table 1.6 Chronological Historical Profile of Major Events in Mantsi

Year	Major Events
17th Cen.	Acquisition of land from the Akwapims
19th Cen.	Other settlers from Akatsi and surrounding areas joined
	Gari Roasting begun in the village
1945	Enstoolment of Current Chief - Nii Amoo
1975	Installation of First Cassava Grater (Owner - Agartha)
1978	Installation of Second Cassava Grater - (Owner - Gavachi)
1984	Installation of first Cassava Press
1985	Establishment of Ghana Agricultural Workers Union (GAWU) in village
1987	Start of Primary School in Village
1992	Establishment of Apostolic Church in Village.
1992	Establishment of Evangelical Presbyterian Church of Ghana in Village
1994	

FIG. 1.1 MAP SHOWING THE STUDY AREAS



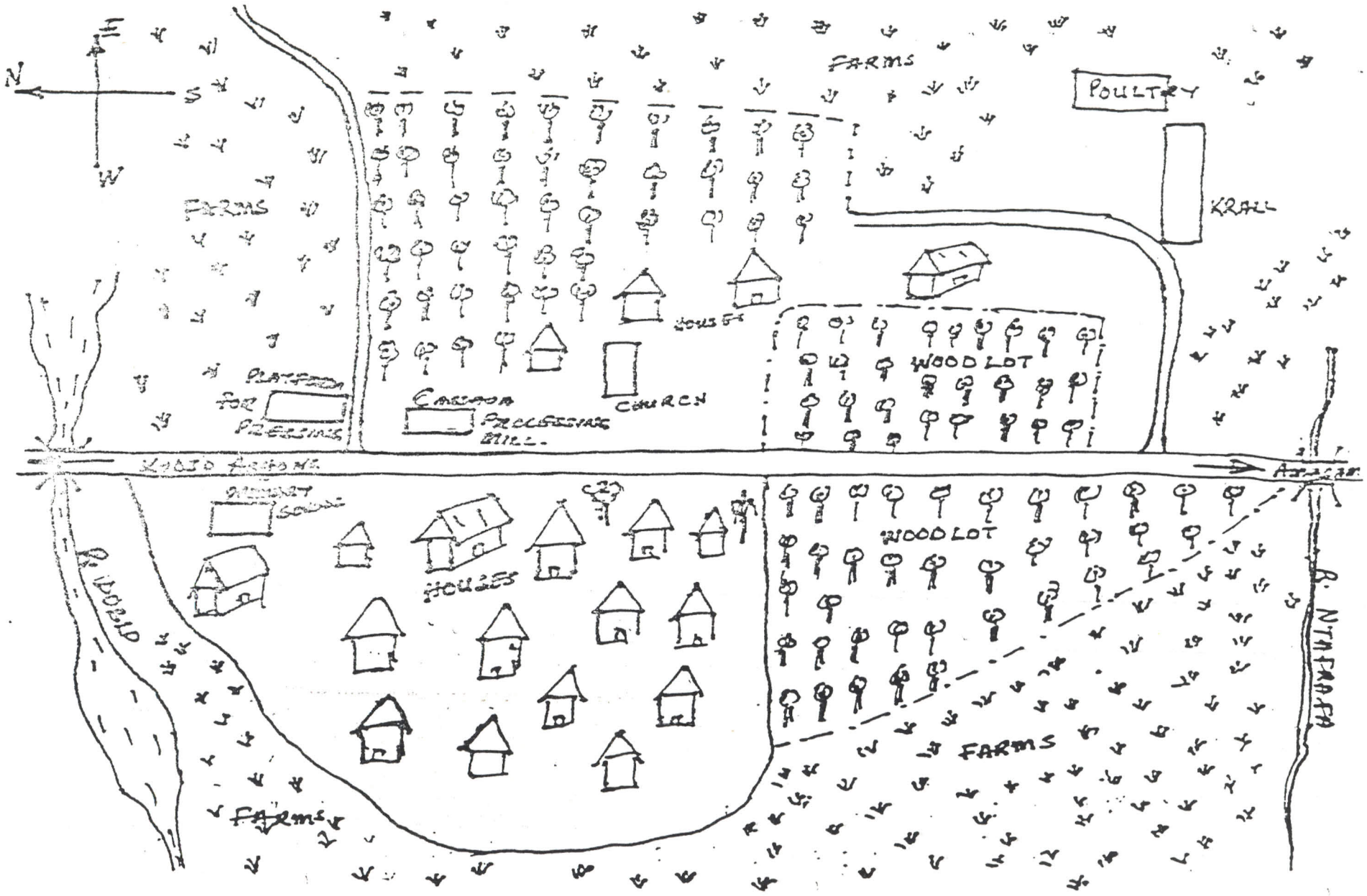
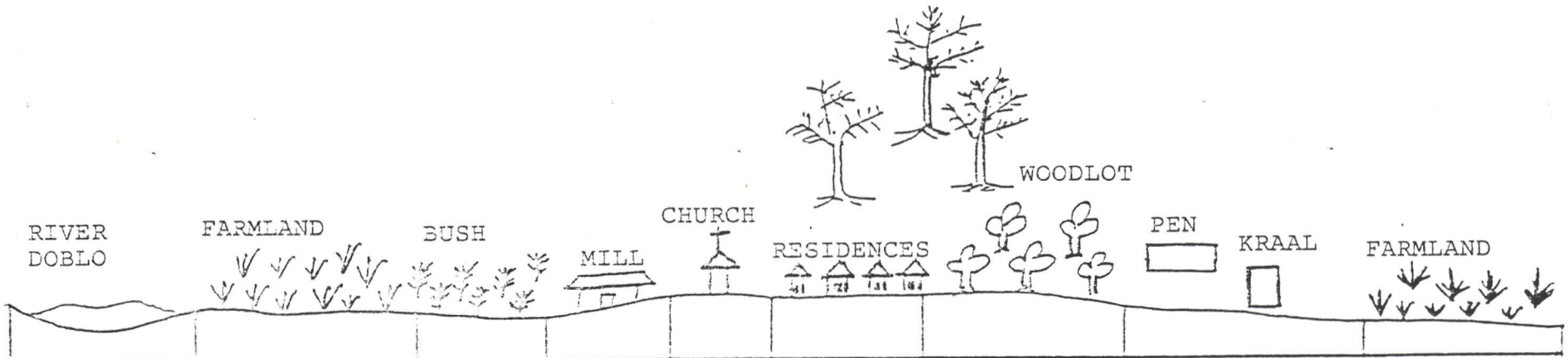


FIG 1.2 - AERIAL MAP OF DOBLO GONNO



TOPOGRAPHY	Lowland	Lowland	Lowland	Upland	Upland	Upland	Upland	Lowland	Lowland
PLANTS/CROPS	Water plant	Cassava, Pepper, Okro, Cowpea, Maize	Acheamp-ong weed	Cassava Proces-sing Site	-	Fruit Trees -Coconut -Cashew -Pawpaw	Acacia	-	Cassava, Pepper, Okro, Cowpea, Maize
ANIMALS	Fish; -Mudfish -Tilapia	Pests: -Locusts -Grasshoppers	Game -Grass-cutter -Ante-lope	-	-	Fowls -Goats -Sheep	-	Poultry -Goats -Sheep	Pests -Locusts -Grass-hoppers

FIG 1.3 A TRANSECT MAP OF DOBLO GONNO

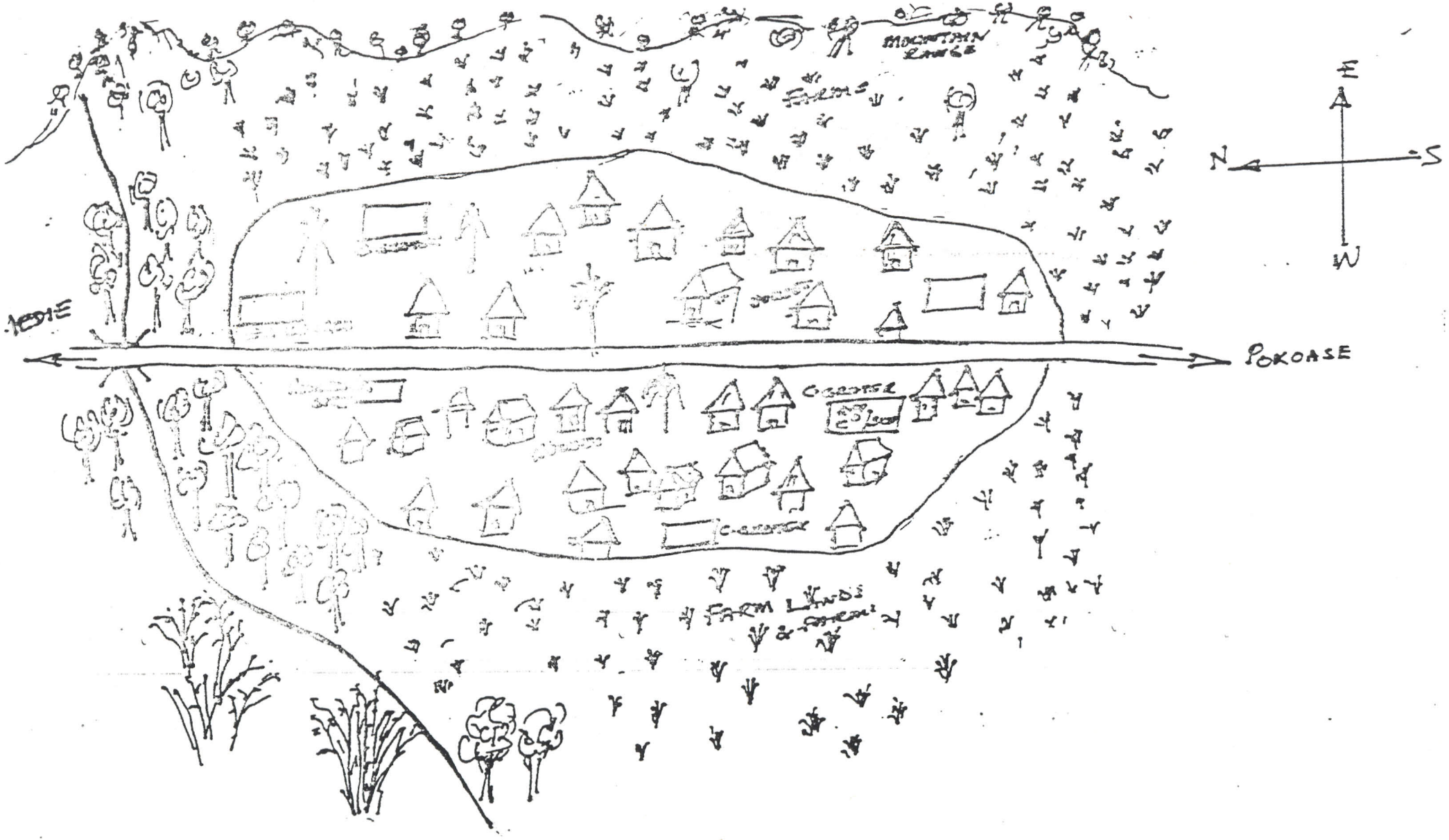


FIG 1.4 - MAP OF MANTSI

CHAPTER 2

2.0 THE CASSAVA PROCESSING INDUSTRY - DOBLO GONNO AND MANTSI

2.1 CASSAVA PRODUCTION

Cassava production in Doblo Gonno and Mantsi is financed from farmers' own resources and sometimes by loans from the local credit union (locally called "Susu"). Technical advice is sometimes obtained from the Extension Services Dept. of the Ministry of Agriculture.

2.1.1 Land Tenure And Acreage Cultivated

The Achiaman chief owns the land at Doblo Gonno whilst at Mantsi the land is owned by the local chief. Two systems of land tenure exists namely:

i. Leasing of land

ii. Renting of land

An acre of land could be leased at a rate of between ¢16,000.00- ¢40,000 per year for as many years as one wishes, but subject to renewal every 10 years. However, for renting, an acre of land could be rented at ¢20,000 for one year only. The acreage cultivated is between 2-8 acres per farmer. The common unit of land measure is the "rope". At Mantsi a rope measure 90ft. x 90ft; and 6 ropes = 1 acre. At Doblo Gonno a rope measures 72ft x 72ft; and 9 ropes is equivalent to 1 acre.

2.1.2 Cultural Practices

There are two planting seasons - March/April and August/Sept as shown in Table 2.1 and 2.2 - the seasonal calendar for crop production activities. Cassava is normally intercropped with maize and beans. Seasonal crop production, processing and game hunting calendars are shown in Figs. 2.1 and 2.2. for Doblo Gonno and Mantsi respectively. In Doblo Gonno, different cassava varieties are rotated seasonally on each cultivated land. No one particular plot is cultivated in succession with the same variety of cassava. Another common practice is the yearly rotation of tractor ploughing with hand weeding on each piece of land - the rational is to preserve the fertility and texture of the soil.

TABLE. 2.1 SEASONAL CALENDAR FOR CROP PRODUCTION ACTIVITIES . MANTSI

MONTH	ACTIVITY
January	Harvesting of Maize
February	Resting and Hjelping women to Process
March	Land clearing
April	Planting (Maize then Cassava)
May	Weeding
June	Weeding
July	Weeding Cassava farms Harvesting Maize
August	Rest and Land preparation
September	Minor season planting (maize then cassava)
October	Weeding
November	Weeding
December	Rest and helping women to process.

TABLE 2.2 SEASONAL CALENDAR FOR CROP PRODUCTION ACTIVITIES DOBLO GONNO

MONTH	ACTIVITY
January	Harvesting of minor season maize
February	Resting, Men hant for bush meat and women engage in processing
March	Land preparation for major season planting
April	Planting (maize and cassava)
May	Weeding
June	Men engaged in fishing and hunting, women engaged in processing
July	Land preparation for planting vegetables
August	Planting of vegetables
September	Land preparation for minor season planting (maize and cassava)
October	Harvesting of vegetables and Weeding
November	Resting, women engaged in processing
December	Resting, women engaged in processing

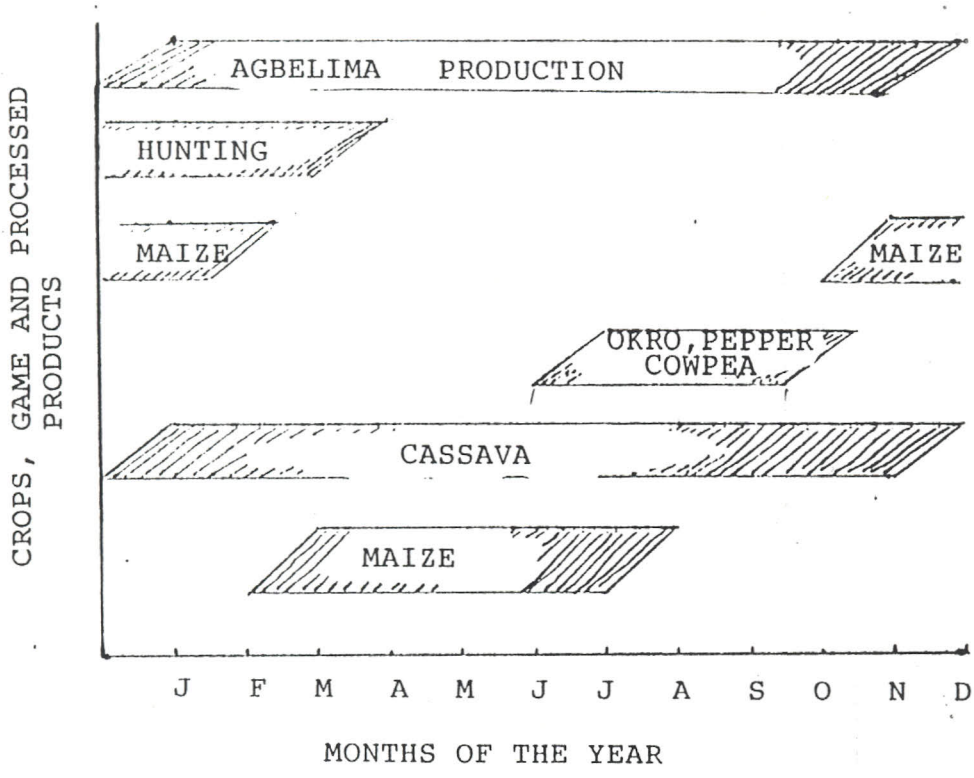


FIG 2.1 SEASONAL CROP PRODUCTION, PROCESSING AND GAME HUNTING CALENDAR FOR DOBLO GONNO

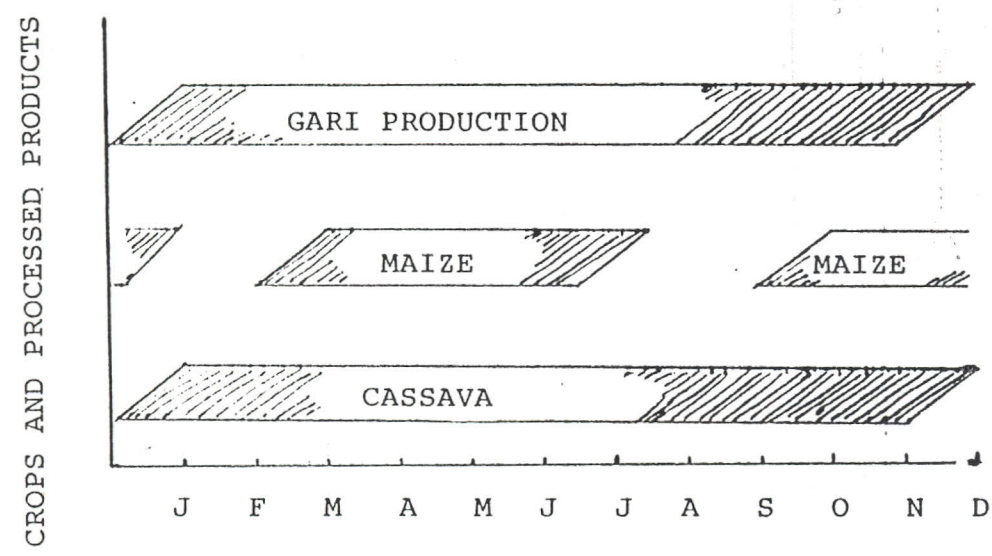


FIG. 2.2 SEASONAL CROP PRODUCTION AND PROCESSING CALENDAR FOR MANTSI

FIG 2.3 A PIE SHOWING THE RELATIVE IMPORTANCE OF CROPS IN TERMS OF INCOME GENERATION AT DOBLO-GONNO

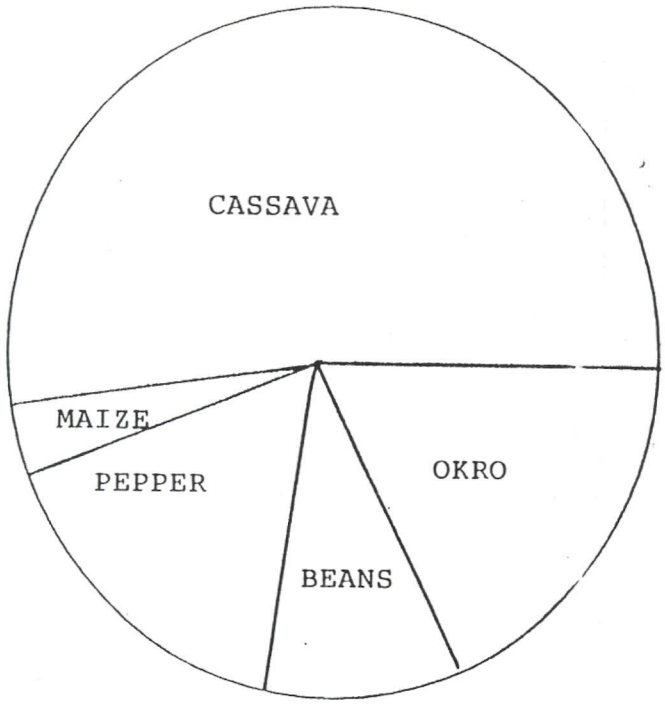


TABLE 2.3 RELATIVE IMPORTANCE OF CROPS IN TERMS OF SALES OF CONSUMPTION

	CROPS				
CRITERIA	CASSAVA	OKRO	PEPPER	BEANS	MAIZE
CONSUMPTION	*	*	**	****	******
SALES	***** *****	****	****	***	*

The relative importance of the different crops in terms of income generation on one hand and sales and consumption on the other are respectively shown in Fig. 2.3 and Table 2.3.

2.1.3 Cassava Varieties

Six cassava varieties are grown within the area. These include Bosome Nsia, Biafra, Yebeshie (Togolese), Penyivi, Memuna and GC88-05 (an improved variety). Bosome Nsia is early maturing (6 months), low yielding and very good for fufu preparation. It is however not liked for Gari preparation, and therefore not grown in commercial quantities. Biafra is late maturing, higher yielding than Bosome Nsia and also good for fufu preparation. Due to its low moisture content, it gives very high product recovery rates when used for processing Gari and other products. Yebeshie, also known as Togolese, gives the highest yield but due to its high moisture content, it gives very low product recovery rates when processed. It is early maturing and good for fufu as well. Penyivi gives very big tubers but less tubers per plant. It is higher yielding than Biafra, but the product recovery rates of the two are comparable. The GC88-05 (also called Canabar) is early maturing, high yielding but not good for fufu. Memuna - Not much information was available on it.

Some of the characteristics of GC88-05, Bosome Nsia and Biafra as already indicated by respondents are in consonance with documentation by Lartey (1993). Also the observed high product recovery rate for Biafra variety is in conformity with studies carried out at the Cassava Processing Demonstration Unit by Dziedzoave (1992) which compared Biafra, Bosome Nsia and other improved variety GC-88-07.

2.1.4 Pests And Diseases

The prevalent diseases affecting cassava in the areas visited are, leaf curls, leaf spots, rotting stem and roots, and tuber rot. Rotting stem and roots reduce the yield of cassava whilst the tuber rot completely destroys the cassava.

2.1.5 Labour And Gender Roles

Figures. 2.4 and 2.5 show the seasonal calendar for intensity of farm activities in Doblo Gonno and Mantsi respectively. The months of most intensive activity are April-May, and Sept.-Oct for Doblo Gonno on one hand; then March-June and Sept.-Nov. for Mantsi on the other hand.

The activities requiring the most intense labour include land clearing and inter-cultivation, hoeing and uprooting of guinea grass. Manual labour (pooled or hired) is very often used even though scarce, but tractor services are also readily available for those who can afford it. Due to the scarcity of labour, farmers have to go to Akatsi their place of origin to get farm especially labour for the period of weeding. The scarcity of labour is due to the presence of other more financially rewarding jobs like sand winning.

With respect to gender roles both men and women cultivate their own farms. Men are however mostly involved in land clearing, uprooting, weeding and planting whilst the women plant, weed farm and carry harvested cassava to the processing sites.

2.1.6 Other Cost Elements In Cassava Production

At Mantsi where a rope of cassava measures 90ft x 90ft:

Land clearing and Inter-cultivation:	.¢4,000/rope without feeding
	.¢3,500/rope with feeding
Hoeing and Uprooting of Guinea Grass:	.¢5,000/rope
Tractor Hiring	.¢20,000 per acre.

At Doblo Gonno, a rope of cassava measures 72ft x 72ft. Labour rates for Land clearing and inter-cultivation were:

	.¢3,000 per rope without feeding
	.¢2,000 per rope with feeding

2.1.7 Associations And Organisations

The Ghana Agricultural Workers Union (GAWU) of TUC has a local branch at Mantsi. The branch is actively engaged in group farming with about 5 acres of land under cassava cultivation and another 5 acres woodlot for use as fuelwood. Funds for the group farm came from the National GAWU.

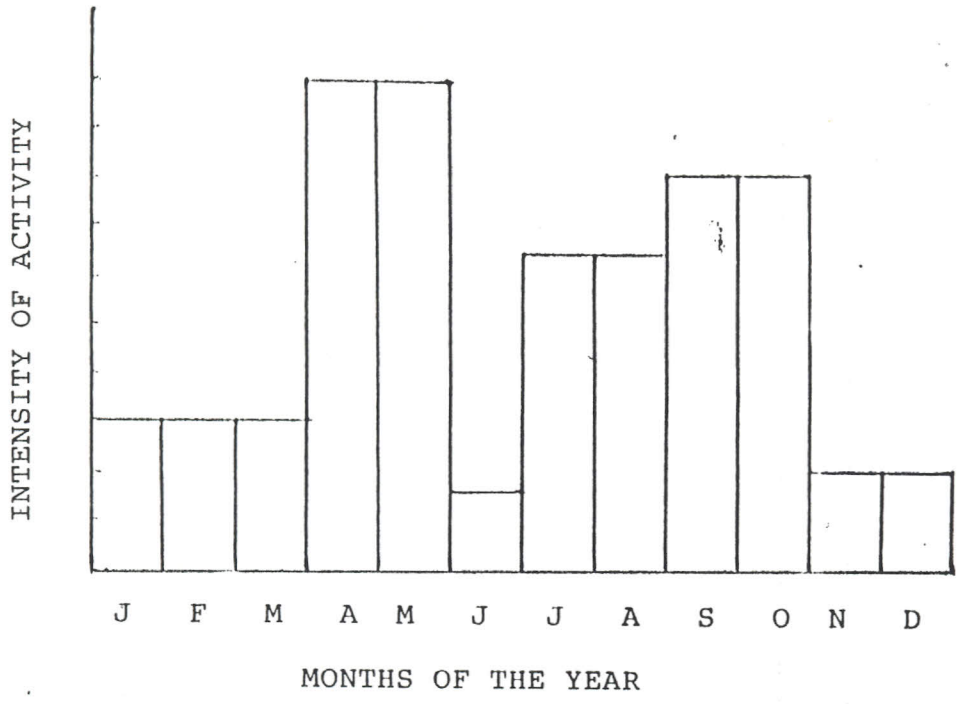


FIG 2.4 SEASONAL CALENDAR FOR INTENSITY OF FARM ACTIVITY AT DOBLO GONNO

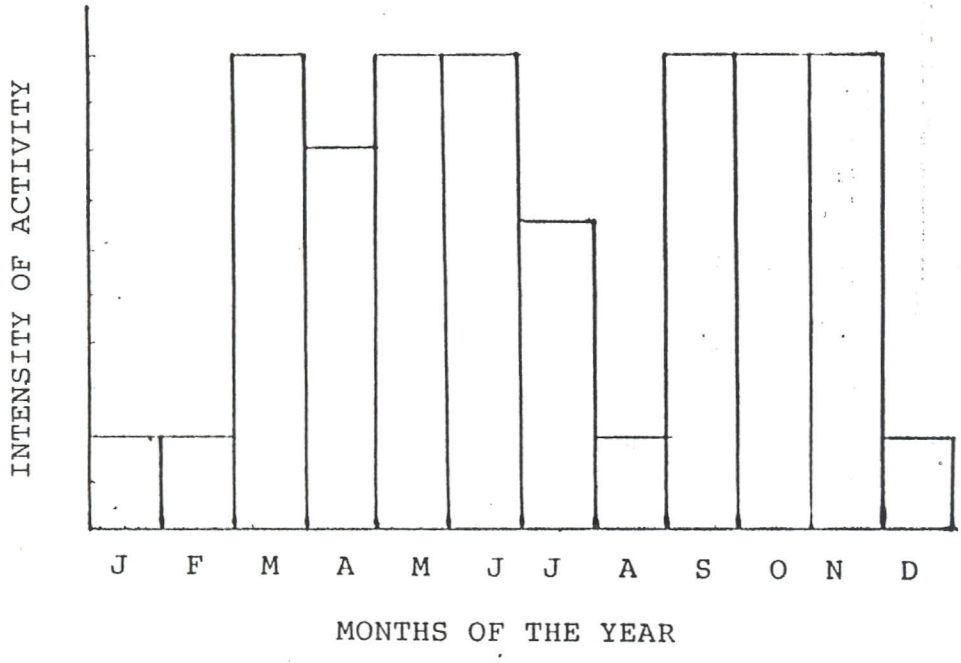


FIG 2.5 SEASONAL CALENDARFOR INTENSITY OF FARM ACTIVITY AT MANTSI

2.2 CASSAVA PROCESSING

The principal cassava products into which cassava is processed are Gari and Agbelima. In Mantsi, Gari is the major processed product because it had been the tradition handed on to them. Agbelima is processed only for domestic consumption. On the other hand Agbelima is processed on a commercial scale at Doblo Gonno. Gari is processed only when Agbelima is returned from the market unsold; and they are compelled to convert Agbelima to Gari to facilitate storage. All the cassava processed is obtained from within the two communities. A larger proportion (¾ in Mantsi) however comes from processors' own farms whilst the remaining is purchased from other farmers in the community. Processing activities are normally carried out partially in processors' homes and partially at the milling sites: and the financing of processing activities is normally from processors' own resources. Sometimes however, raw materials are credited and paid for after sale of products.

2.2.1 Gari Production

Gari is a fermented partially gelatinised granular cassava product which is very popular in Ghana (Al-Hassan, 1991) and other African countries like Nigeria (Westby & Twiddy, 1992) and Sierra Leone (Blanshard, 1994).

2.2.1.1 Production Process

The production process as shown in Figure 2.6 involves:

- harvesting of cassava
- peeling of cassava
- washing of peeled tubers
- grating
- dewatering & fermentation
- disintegration
- roasting
- packaging

GARI PRODUCTION

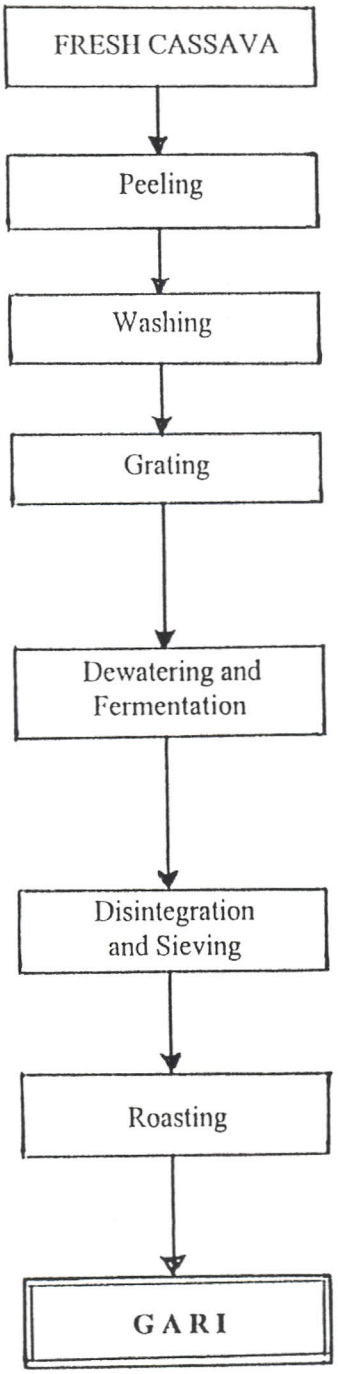
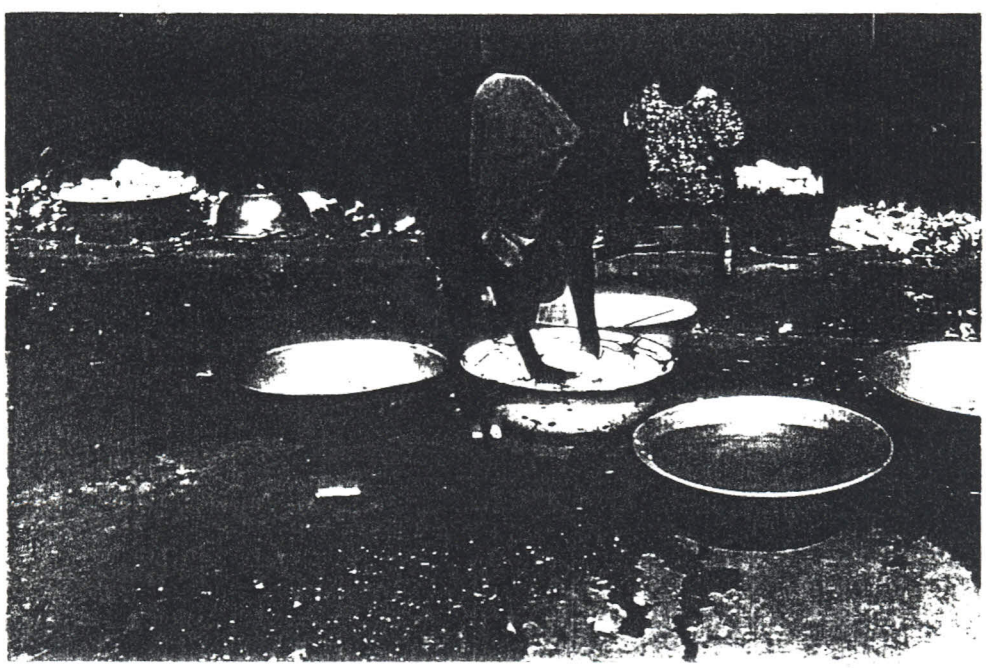


FIG. 2.6FLOW CHART FOR GARI PRODUCTION

Scenes at Doblo-Gonno showing

Peeling of cassva



Washing of cassava

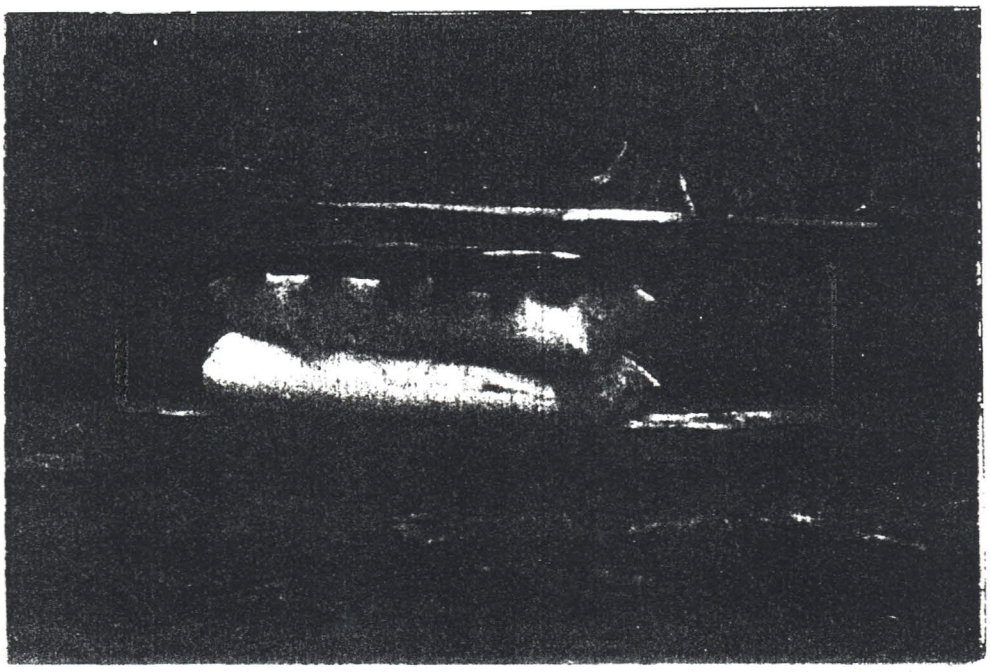


Fig. IV: Scene at Mantsi showing gari processing activity (Dewatering of grated cassava)

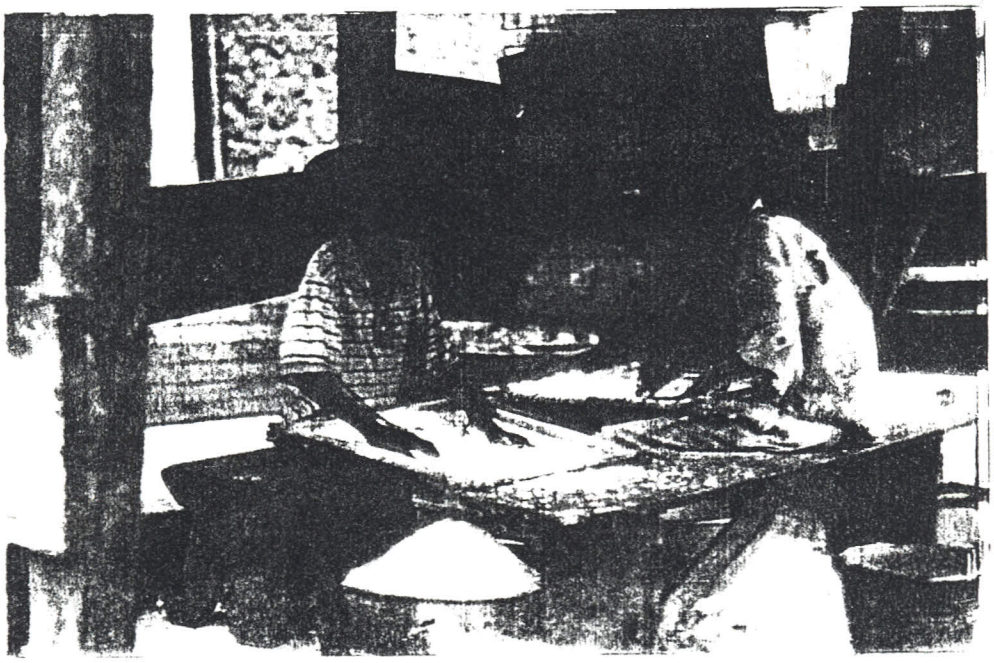


Fig. V: Scenes at Mantsi showing gari processing activity (Disintegrating of dough)

Scenes at Mantsi showing

Fig.V I Roasting of Gari

Packaging of Gari

Peeling and washing are done manually by hand, whilst grating involves the use of a diesel-engine-operated cassava grater. The three processes of peeling, washing and grating are carried out on the same day. Thereafter the grated mash is either loaded into polypropylene sacks, and placed under a parallel board press immediately or it is loaded into a basket to drain overnight before pressing. Fermentation takes place during the process of dewatering and this could last for between 1 - 3 days depending on the rate of roasting. The pref erred fermentation time is 2 days. Disintegration is carried out using the traditional bamboo cane sieve. The disintegrated product is then roasted in aluminium roasting pans mounted on the traditional mud hearth. Roasting is normally done by 2 - 4 person in series using broken calabash stirrers: the intensity of heating being highest for the 2nd and 4th persons in the roasting chain. Occasionally when labour is not readily available, roasting is carried out by 1 person. The final Gari is bulk-packaged in polyethylene-lined polypropylene sacks. The level of the technology for Gari production as practised in Mantsi may therefore be considered as medium.

2.2.1.2 Capacities & Recovery Rates

Production capacities vary from processor to processor, and it ranges from 3 minibags (about 150kg) per week to 20 minibags (1000kg) per week per processor. The recovery rate is about 3 - 4 mini bags (150 -200kg) of Gari per 1 rope of cassava. A 'rope' of cassava is equivalent to the weight of cassava obtained from a field of size 90ft x 90ft.

2.2.1.3 Labour & Gender Roles

Three types of labour are usually available,

- pooled labour
- hired labour
- family labour

Pooled labour involves a number of processors coming together to help each other in turns to process, whilst family labour refers to the use of family members to carry out a particular processing activity. Whereas pooled labour does not attract any cash payments, hired labour is paid for at the rates specified below. Family labour is paid only in some instances.

- Haulage by head-load - ¢200.00 - ¢500.00 per head load depending on distance of farm from processing site.
- Peeling - ¢1,000.00 per day per persons
- Washing - ¢1,000.00 per day pr person
- Disintegration - ¢1,000.00 per day per person.
- Roasting - ¢1,000.00 per day per person
- Uprooting of cassava - ¢2,000.00 per rope.

Gari processing is principally carried out by women. The major activities in which the men give significant assistance in the processing chain include uprooting of cassava, splitting of firewood and peeling. Occasionally some men assist in the roasting process.

2.2.1.4 Other Cost Elements

Firewood	-	¢10,000.00 required to roast 1 rope of cassava
Grating	-	¢2,000.00 - ¢5,000.00 for grating 1 rope of cassava
Cost of Roasting Pan	-	¢15,000.00
Cost of Broken Calabash Stirrer	-	¢5,000.00
Haulage By Truck	-	¢1,500.00 per truck load (1 truck load = 1 rope of cassava)

2.2.1.5. Associations & Organisation

Most of the Gari processors in Mantsi belong to the local branch of the Ghana Agricultural Workers Union (GAWU) of the Trade Union Congress. The local branch comprises both farmers and processors. The processors are further organised into 2 working groups. Each of these groups carry out Gari processing on group basis two times in a month. Proceeds from this group work are shared and utilised as follows:

a third of profits	-	used to develop the local primary school at Mantsi
a third of profits	-	reserved for group work
a third of profits	-	shared amongst group members.

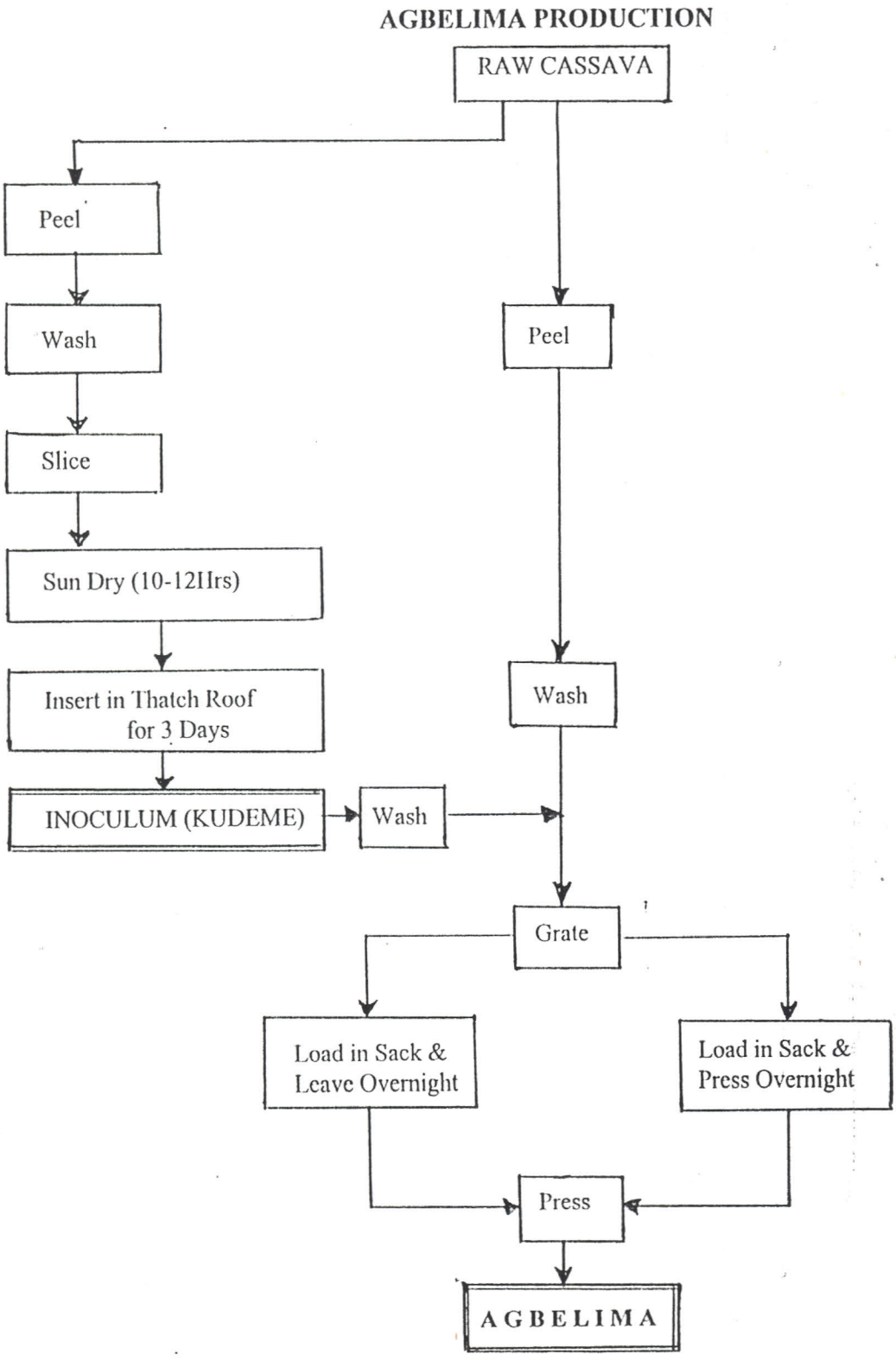
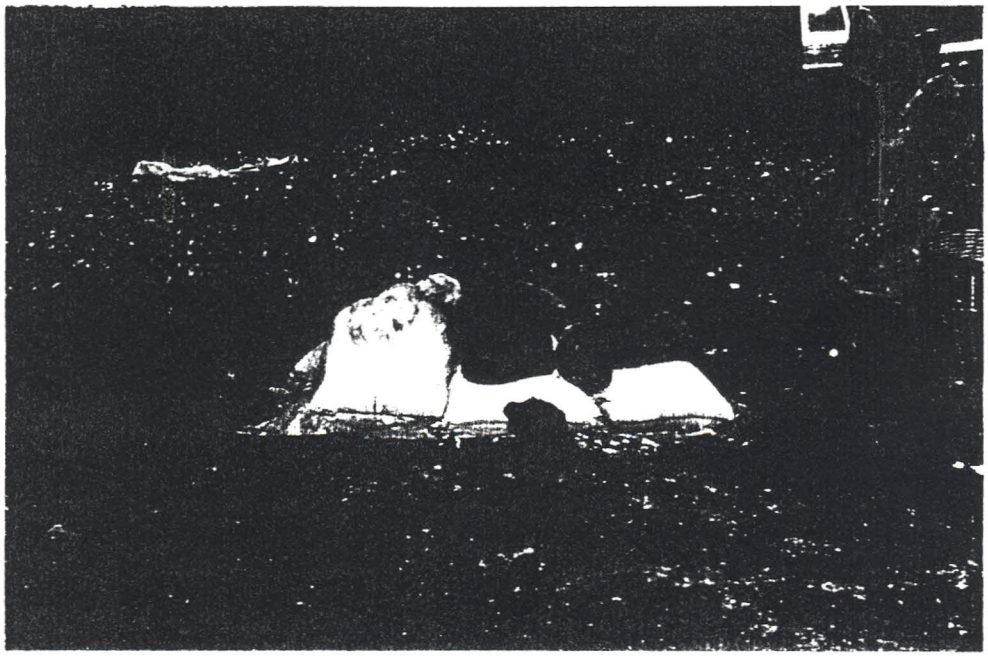


FIG. 2.7 FLOW CHART FOR AGBELIMA PRODUCTION

Scenes at Doblo-Gonno showing agbelima processing activity

Fig. II: Grating



Dewatering

2.2.2.2 Production Capacities & Recovery Rates

Production capacities of each processor normally depends on the availability of cassava and adequate labour. Under normal circumstances one processor could process between 1 - 3 ropes of cassava per week.

2.2.2.3 Labour & Gender Roles

Agbelima production does not involve the use of hired labour. Pooled and family labour are more commonly used. But these do not attract any cost except for the offering of some kind of gift to any one who assists. Most of the work involved is done by women, and apart from the harvesting of cassava, no significant role is played by men in Agbelima production. The cost of uprooting a rope of cassava is ¢3,000.00.

2.2.2.4 Other Cost Elements

Cost of Grating - ¢250 per minibag of grated cassava

2.2.2.5 Associations & Organisations

The Agbelima processors at Doblo-Gonno do not belong to any association, neither are they organised in any form of processing groups.

2.3 MARKETING OF CASSAVA AND CASSAVA PRODUCTS

2.3.1 Marketing of Cassava

Marketing of fresh cassava outside the localities of Doblo Gonno and Mantsi was rare. Most of the farmers did not even explore available marketing opportunities for fresh cassava. Marketing of fresh cassava in the locality is done in two different ways. Firstly, the cassava is sold on the farm in ropes to be uprooted by the buyer, and secondly, the farmers uproot and sell the cassava in minibags of approximately 50kg weights. The volume of fresh cassava sold in the dry season is less than that sold in the wet season due to the difficulty in uprooting cassava. Prices for fresh cassava are therefore highest during the dry season. Thus for the current year the highest price of about ¢30,000/rope of cassava was reached in the dry season whilst the lowest price of about ¢20,000/rope wasreached in the wet season this year.

A large proportion of cassava produced in the study areas is processed by the women in the communities. Very little cassava is sold to itinerant traders who sometimes come to the village. The diagram in Fig. 2.8 depicts the marketing channel for fresh cassava produced in the villages. The thickness of the arrows corresponds the volume of cassava purchase cassava.

Adjei (1989), indicated that most of the cassava produced in the Akuapim South District were sold in the Local market due to availability of ready market, and other markets. Besides most farmers enter into contractual agreement with buyers who come to the production areas to buy. However, those farmers who sold their produce outside the local market attracted higher prices for their produce. He observed that the marketing channel, for the processed products were shorter than that of the cassava.

A survey conducted on marketing of cassava and its products in 30 villages in Ghana by Al-Hassan (1991) also showed that only 23% of villages have markets within the village. Sixty-one percent (61%) of the remaining villages trade in rural markets only, 11% in urban markets only; while the remaining 28% have access to both rural and urban markets. The average distance of villages from the principal rural and urban markets are 9.3km and 34.4km

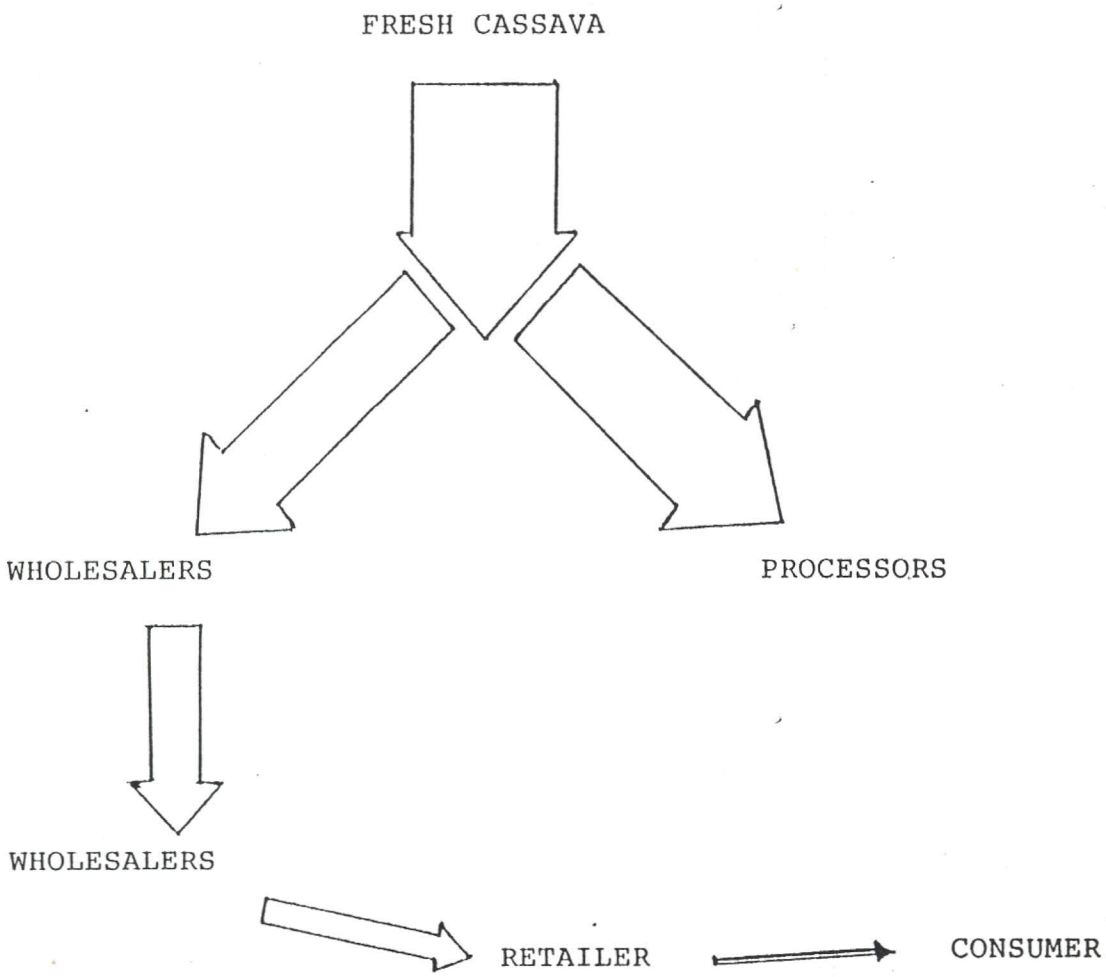


FIG 2.8 MARKETING CHANNEL FOR FRESH CASSAVA

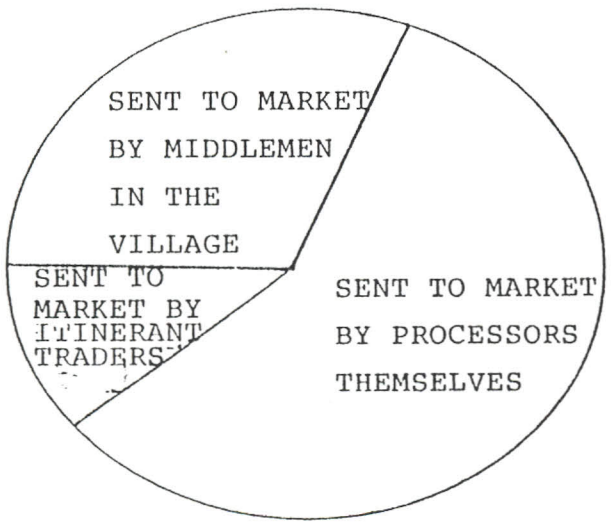


FIG 2.9 A PIE CHART REPRESENTING THE VOLUME OF GARI SOLD BY DIFFERENT AGENTS INVOLVED IN THE MARKETING OF GARI.

respectively. The secondary markets are farther away, at an average distance of 25.8km for the rural and 53.3km for the urban market. It was also observed that sales of fresh cassava are most common in June and July falling gradually in August and September since the period June to September is the maturity period for most 12 to 18 months varieties.

2.3.2 Marketing of Cassava Products And Types of People Involved

Cassava products sold in the study area are Agbelima and Gari which are mainly produced in Doblo-Gonno and Mantsi respectively. Agbelima processors in Doblo-Gonno sell their products at Mallam Atta Market - which is about 30km from Doblo Gonno on every Saturday. Gari processors in Mantsi sell at Mallam Atta and Makola markets which are about 30km from Mantsi. The market day at Mallam Atta is Saturday, whereas Makola has no specific market day. Gari processors also patronise Mallam Atta market every Saturday but Makola market is patronised any other day. The Gari sold at Makola is sieved in order to meet the requirements of the customers.

Agbelima is sent to the market solely by the processors. However, Gari is sent to the market by three categories of people namely, the processors themselves, itinerant traders who purchase at the village and other processors in the village who also operate as middlemen. The itinerant traders come from Tema, Ashaiman, Mamprobi Makola and Agbogbloshie Markets. The volume of Gari sold by each agent is represented, in Fig. 2.9.

Studies by Lartey (1993) confirmed that most of the Agbelima producers undertake their own marketing and distribution as done in Doblo-Gonno. His study also revealed the existence of two main channels of marketing and distribution of Gari and Agbelima namely agents or bulk purchasers and direct sales to consumers. Agents include NGO's, individual market women who also distribute mostly on wholesale basis to their retail customers during market days in large towns and cities. Bulk sales of Agbelima are done either at the processing site or at specific markets on market days.

2.3.3 Organisation and Accessibility to Markets

The processors have easy access to the Mallam Atta Market which is a wholesale market. The Mallam Atta market though organised by Accra Metropolitan Assembly has less restriction as compared to Makola Market where Market Queens for the various commodities regulate the number of sellers on the market. The women pay market tolls of ¢200 per mini bag of Agbelima and ¢500 per maxi bag of Gari.

2.3.4 Packaging and Storage

Gari is packaged in polypropylene sacks with polythene lining and Agbelima is packaged in baskets lined with polythene or polypropylene sack. The Agbelima is kept in the open air till ready for market but Gari is kept in the processors bedrooms. At the retail level, Gari is displayed unpacked in enamel bowls and retailed in old newsprint and polyethylene pouches of about 0.2mm gauge.

2.3.5 Transportation

The women processors arrange for means of transportation in advance. The commonest means of transportation is the mummy truck. The transport charges for a maxi bag of Gari from Mantsi to Mallam Atta is ¢3,000 and that for a mini bag of Agbelima from Doblo Gonno to Mallam Atta is ¢400. Handling cost involved in transportation of Gari is about ¢1,000 per maxi bag. No handling cost is involved in the transportation of Agbelima and the women accompanied their loads free of charge. However, they paid ¢250 for their return journey. The products are transported on Friday evenings and the women sleep in the structures at the market site overnight.

The Feeder roads from both villages joining the main tarmac road are motorable in all seasons. However Alhassan (1991) reported that out of 13 villages visited in Ghana, 19% used tarmac roads to market; 40% of these are either poorly motorable or not motorable in all seasons. The rest used dirt road to the market which may not be motorable in all seasons. Lartey (1993) also

found that head loading or wheel carts are used to convey Gari and Agbelima to the selling points in places where processing sites are close to the market.

2.3.6 Seasonality of Sales

The seasonal pattern of sales of Agbelima is similar to sales of fresh cassava. High frequency of sales occur in the months of April, May, June and July, when cassava is available and when there is less work on the farm for the women processors in Doblo-Gonno.

Gari sales occur most often in the period March to July, with a peak in June. There is however, a sudden drop in sales in August. Price determination is highly influenced by the supply conditions at the market. Thus the selling price of Agbelima and Gari during the peak season this year were ¢4000 per mini bag and ¢900 per "olonka" respectively. In the lean season, selling price of Agbelima and Gari were ¢6000 per minibag and ¢1200 per "olonka" respectively. One "olonka" is equivalent to about 2.2kg.

2.3.7 Financing & Associations

The women finance their business from their own resources. However, the Gari buyers pay half the cost of supplies on the spot and the rest are credited for a period of one week. The Agbelima processors at Doblo-Gonno do not belong to any market association. However the gari processors at Mantsi who belong to the local branch of the Ghana Agricultural Workers Union (GAWU) of the Trade Unions Congress also do marketing of Gari in groups.

CHAPTER 3
CONSTRAINTS AND NEEDS

3.1 CONSTRAINTS

The results of the PRA study in Doblo-Gonno and Mantsi indicated several problems associated with the production, processing and marketing of cassava and cassava products.

- High among the list of constraints is lack of financial support and credit facilities from both governments and donor sources.

- Land acquisition is a problem because the respondents are settler farmers and have to contend with the stiff and expensive land tenure systems.

- The extension services, of the Ministry of Agriculture have not been very helpful either. Visits to the farms have been rare, therefore depriving the respondents of information on new and improved cassava varieties as well as general maintenance of the farms.

- There is low yield of cassava due to impoverishment of the soil brought about the repeated use of the same land for cassava cultivation (Hans et al, 1979).

- Labour is needed for land preparation and farm maintenance. It is both expensive and difficult to get as the business has to compete with other more lucrative businesses, such as sand winning.

- Increasing level of pests and diseases are a major constraint to the production of cassava since it reduces crop yield.

- Membership of an organised group or association can be very helpful in acquisition of funds

or inputs, tractor services or labour. The respondents at Doblo Gonno do not belong to any such association.

- The constraints for cassava processing in Doblo Gonno were slightly different from those of Mantsi due to the different products processed.

- The major constraint in cassava processing is the low level of mechanisation. The laborious and time consuming nature of the operations and processes result in low output. In addition the respondents in Mantsi had to contend with high cost and unavailability of fuel-wood for their operations.

There were other problems identified in addition, to these constraints.

- The cassava wash water is used over and over again because of scarcity of water. During the dewatering process, the water from the mash is allowed to drain freely, losing starch and making the area soggy therefore presenting an unhealthy environment. During Gari roasting, the women suffer a great deal of discomfort because of the heat, smoke and long periods of sitting at the same place, sometimes, without any shelter. Besides the highly perishable nature of cassava also requires that it is processed quickly and that puts a lot of pressure on the women.

- The main constraint in marketing of cassava and its products is the high transportation cost to marketing centres, and which is a contributory factor to the high selling prices. The market for the cassava products is limited and so the respondents do not benefit fully from their labour. . The women experience great discomfort at the market as they have to sleep overnight.

3.2 NEEDS

Apart from the constraints, the respondents also expressed their specific needs.

- They need credit to finance their operations from production to marketing.

- Funds are needed for purchase of tools and inputs, for expansion of farms, hiring of labour and tractor services. They also need money to purchase chemicals for pest control and fertilizers. Money is needed for purchase of drugs to meet their health needs.

- There were needs peculiar to Doblo-Gonno. The respondents needed a bore hole to provide them with good drinking water and to save them from walking long distances to fetch water. They needed a school for their children as the children now occupy a building that should house a Gari processing plant. Respondents from both villages expressed the need for a cassava grater, a cassava peeler and a cassava press.

- The needs peculiar to Mantsi were; provision of sheds for roasting Gari, shed for pressing area, platform for pressing, fuel-wood and an export market for their product. The respondents expressed their misgivings about the mode of payment for their Gari by customers.

Tables 3.1 and 3.2 indicate the preference ranking of some problems/needs in Doblo Gonno and Mantsi respectively.

TABLE 3.1 PREFERENCE RANKING OF PROBLEMS/NEEDS IN DOBLO-GONNO

PROBLEMS/NEEDS	RANKING
Money for farm expansion	3
Money for hiring tractor	1
Money for hiring labour	2
Lack of extension services	4

TABLE 3.2 PREFERENCE RANKING OF PROBLEMS/NEEDS IN MANTSI

PROBLEMS/NEEDS	RANKING
Cassava Grater	1
Shed for Roasting	5
Platform for pressing	4
Shed over pressing area	3
Cassava press	2
Export Market	7
Fuel-wood	6

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSION

The results obtained during the field work and the experience gained by the participants show that the training received by participants during the workshop has sufficiently equipped them with Participatory Rural Appraisal tools and techniques, for any future work on their own as well as for the training of others on the use of PRA.

The major observations made during the field work may be summarised as follows:

1. The fact that cassava supply is constant throughout the year shows how committed farmers in the two communities are to their work. This commitment is further confirmed by their desire to expand their farms. To achieve this they would need some level of mechanisation of their farming operations, such as the use of tractors etc. This must be combined with the use of fertilizers and improved high yielding cassava varieties, which give good quality products and high recovery rates for the cassava products peculiar to these localities.

2. Sometimes various diseases and pests attack the cassava plants in these communities but usually not at levels that seriously affect the supply. Introduction of disease resistant cassava varieties, chemical crop protection practices and biological control programmes would be of great assistance to the communities.

3. Water for processing is a very serious problem at Doblo-Gonno, and the provision of at least one bore hole is a necessity.

4. The technology for cassava processing is rather low, and the adherence to good manufacturing practice is at a minimum. Products are limited to Gari and Agbelima.

5. Hired labour is very scarce.

6. Processors at Mantsi were highly organised whilst those at Doblo-Gonno were not organised at all.

7. The unavailability of financial and technical assistance in the form of bank credits, tools, equipment & training in improved processing methods is a serious impediment to the smooth operation of the processors.

8. There are no guaranteed prices for cassava products. Processors are therefore at the mercy of buyers.

4.2 RECOMMENDATIONS

1. The technology for cassava processing should be upgraded through:
   a. Provision of suitable processing equipment at reasonable cost on credit basis.

   b. Training of processors in improved techniques of cassava processing, adherence to principles of good manufacturing and quality control practices and the storage of processed products.

2. Processors and farmers who are organised into association should be strengthened to achieve enterprise status by

   a. Providing some form of infrastructure (building or shed) to house their operations.

   b. Linking them with appropriate government or donor agencies to facilitate access to some form of credit for their operations. Rural banks in particular should be encouraged to institute a policy of providing credit lines for processors.

c. Training processors on elementary management principles and proper business practices.

d. Assisting in the management of these enterprises.

Those who are not organised should be encouraged to form associations.

3. An effective strategy for marketing cassava products should be developed. This should embody components like:

a. Proper costing of products

b. Establishing guaranteed prices

c. Exploring export markets for products, as well as potentially good local markets for packaged products.

4.3 WORKSHOP EVALUATION

At the end of the workshop, there was an evaluation season by the team, who arrived at the following:-

4.3.1 Time

Time allocations for preparation, theoretical aspects and field practicals were adequate.

4.3.2 Training Content - Good

4.3.3 Theoretical Approach - Very Good

4.3.4 Field Work - Excellent

4.3.5 Group Dynamics

Group dynamics was very good. Contributions and questions from Team members were very effective and complementary and this made discussions lively. However in a few isolated cases, especially at Mantsi, there was problem with on-the-spot translation of community responses to team members.

4.3.6 Interaction With The Communities

The interaction between the research team and the communities was very cordial and lively. The key informants were also very co-operative, objective and flexible. Although some female members of the community were very busy, team members assisted in the various lobs being carried out and in the process gathered the necessary information. Interaction with community was quite excellent.

4.3.7 Logistical Organisation - Above Average

4.3.8 Report Writing

The report was written in two days at the Food Research Institute in Accra. Each team member was assigned a portion of the report to draft, after which the report was discussed and corrected. The time for the report writing was however too short.

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